

Revised December 2002

Safety & Health Performance Report

OF THE AUSTRALIAN
MINERALS INDUSTRY

2000-2001

health

commitment

safety

statistics

benchmark

people

trends



**MINERALS
COUNCIL**
OF AUSTRALIA

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Definitions

Injury Definitions

FATAL INJURY – (F)

An injury that results in death.

LOST TIME INJURY – (LTI)

An injury that results in a minimum of one full shift's absence (AS1885.1 – 1990).

SEVERE INJURY – (SI)

An injury that results in a minimum of two weeks off work. This definition is used by South Africa as an injury measure.

Rate Definitions

The performance of the minerals industry is measured as a rate, allowing for the comparison of different sectors or years on a comparable basis. Three rate measures are used to characterise the performance of injury – incidence, frequency and duration.

INCIDENCE RATE – (IR)

The number of injuries per 1000 employees. This rate is calculated using the following formula:

$$\frac{\text{number of occupational injuries} \times 1000}{\text{number of employees}}$$

FREQUENCY RATE – (FR)

The number of occupational injuries expressed as a rate per million hours worked.

This rate is calculated using the following formula:

$$\frac{\text{number of occupational injuries} \times 1,000,000}{\text{number of hours worked}}$$

FATAL INJURY FREQUENCY RATE – (FIFR)

The number of fatal injuries per one million hours worked.

LOST TIME INJURY FREQUENCY RATE – (LTIFR)

The number of lost time injuries per one million hours worked.

DURATION RATE – (DR)

The average time lost for every lost time injury. This is a measure of the severity of the injuries occurring.

This rate is calculated using the following formula:

$$\frac{\text{total days lost}}{\text{number of lost time injuries}}$$

SEVERITY RATE – (SR)

The average number of days lost per one million hours worked

$$\frac{\text{number of days lost} \times 1,000,000}{\text{number of hours worked}}$$

NUMBER OF HOURS WORKED

The total number of hours worked by employees in the recording unit during the recording period.

SAFETY AND HEALTH

Vision

“An Australian minerals industry **free** of fatalities, injuries and diseases.”

SAFETY AND HEALTH

Beliefs

- All fatalities, injuries and diseases are preventable.
- No task is so important that it cannot be done safely.
- All hazards can be identified and their risks managed.
- Everyone has a personal responsibility for the safety and health of themselves and others.
- Safety and health performance can always improve.

SAFETY

Awareness

“The state of mind where we are constantly aware of the possibility of injury and act accordingly at all times.”

Introduction

The Minerals Council of Australia is the national body representing the exploration, mining and minerals processing sector of the Australian economy. Members of the Council are responsible for about 90 per cent of Australian mineral production.

The Minerals Council publishes annual safety and health data to:

- encourage the industry to seek continuous improvement in safety and health performance;
- determine the minerals industry's performance and trends;
- compare the safety and health performance of the major sectors of the industry;
- provide a benchmark for comparison with other major mining countries;
- recommend strategies to improve the industry's safety and health performance;
- help individual enterprises benchmark their performance;
- compare industry data with that of other recognised Australian sources such as the National Occupational Health and Safety Commission; and
- demonstrate the minerals industry's continuing commitment to improving safety and health performance.

This report includes:

- a review of minerals industry safety performance 1991-1992 to 2000-2001 drawn from fatality and injury data collected by State/Territory mines inspectorates;
- a review of minerals industry safety and health performance drawn from preliminary workers' compensation claims data collated by the National Occupational Health and Safety Commission for 1999-2000; and
- an international benchmarking comparison.

2000-2001 MINERALS INDUSTRY

Performance at a Glance

- There were 14 fatalities in the Australian minerals industry, five fewer than in 1999-2000.
- One miner died for every 14.2 million hours worked in the industry (11 million hours in the previous year).
- One miner died for every 6759 workers employed in the industry (5119 workers).
- 2093 injuries occurred (2294 injuries), requiring at least one full shift absence (LTI).
- For each lost time injury, an average of 20 days' absence (18 days) was recorded (duration rate).
- In this reporting year, 213 days (200 days) were lost per million hours worked (severity rate).
- For every million hours worked, 11 injuries occurred (11 injuries) that required at least one full shift absence (LTIFR).

Executive Summary

Fatal Injuries

There were 14 fatalities in the Australian minerals industry in 2000-2001. This is five fewer than the previous year when 19 deaths¹ were recorded but is still double that of 1995-1996, in which the lowest number of fatalities was recorded this decade.

In 2000-2001, the Fatal Injury Frequency Rate (FIFR) was 0.07 fatal injuries per one million hours worked, down from 0.09 in 1999-2000. This rate, as with the previous year, remains lower than the average total industry FIFR for the past ten years of 0.10 fatalities per one million hours worked and is the third-lowest rate this decade. Nationwide, minerals sector FIFRs have shown significant variation over the past decade, providing little evidence of a real reduction in the risk of fatalities. For the second consecutive year, South Australia and the Northern Territory were fatality free.

Three sectors shared the highest number of fatalities for this period. Underground coal, open-cut metalliferous and underground metalliferous reported four fatalities each, while two fatalities were reported across the remaining four sectors. As with the previous period, there were no fatalities in the smelting/refining or exploration sectors.

The underground metalliferous sector has consistently recorded the highest FIFR of any sector, with a ten-year average of 0.26, a reduction of 0.07 from the previous year. In 2000-2001, this sector recorded an FIFR of 0.15 (down from 0.37 in 1999-2000). This is at the lower end of the range compared with previous years, but is still above the lowest FIFR for the sector of 0.10 recorded in 1995-1996.

The underground coal sector continued a four-year trend, increasing from 0.22 in 1999-2000 to 0.23 in 2000-2001. This is above the sector's ten-year average FIFR of 0.21.

Open-cut coal recorded an FIFR of 0.00, compared to the ten-year average of 0.04 and within the relatively low rates seen during the past four years. In general, the open-cut coal sector performance has remained consistent over the decade unlike other sectors that have recorded fluctuating rates.

There were no significant trends in fatalities at State/Territory level. As expected, States/Territories with the most mining activity in the highest risk sectors generally experienced the highest number of fatalities.

Rockfalls, roof and rib collapses were involved in seven of the 14 fatalities that occurred in the Australian mining industry this year. Last year, two fatalities were due to those causes. Of the seven fatalities, four occurred in the underground coal sector. Those four deaths account for 80% of the fatalities in this sector. The remaining three occurred in the underground metalliferous sector, and accounted for 75% of its total fatalities.

The main cause of fatalities in the open-cut and extractive industries was related to the operation and maintenance of mobile plant and machinery, accounting for 75% of fatalities.

The National Occupational Health and Safety Commission (NOHSC) workers' compensation system data for 1999-2000 (the most recent data available from this source) identified 13 deaths in the mining industry. Of those 13 fatalities, 11 were due to injury/poisoning and a further two deaths due to disease. It should be noted that the two disease deaths revealed in the NOHSC data may be in addition to fatalities recorded in mines inspectorate data (as mines inspectorate data is unlikely to include disease deaths). However, it is not possible to confirm this because of confidentiality restrictions.

In 1999-2000, the injury/poisoning fatalities included six fatalities in the Metal Ore Mining sector and four in coal mining. The other three fatalities occurred in the Other Mining sector. Oil and Gas Extraction and Services to Mining did not report any fatalities during the 1999-2000 period.

Lost Time Injuries

The declining trend in the number of lost time injuries (LTI) has been a key feature for more than ten years and has continued in 2000-2001.

In 1990-1991, the industry recorded 7,190 lost time injuries. This figure halved by 1997-1998 and has halved again, with 2,093 lost time injuries recorded in 2000-2001. Similarly, in 1991-1992, the industry recorded an LTIFR of 42, which was halved by 1995-1996. In 1999-2000, this rate fell further to 11 and has remained at this rate in 2000-2001. However, when taken to two decimal places, the LTIFR has improved from 11.33 (1999-2000) to 10.55 (2000-01).

¹ Note that in the 1999-2000 Safety and Health Performance Report 18 fatalities were reported – this figure has been increased to 19 due to an additional fatality being attributed to the minerals industry in Western Australia.

A comparison of performance in each sector produced results similar to those experienced in recent years. The LTIFR in the coal sector of 21 is substantially higher than that in other sectors (primarily due to underground coal mining). The metalliferous LTIFR decreased to 8, extractive industries records a rate rise to 10 and smelting and refining increases to a rate of six.

Most States/Territories improved on last year's performance with the exception of Tasmania and New South Wales. Tasmania's LTIFR of 22 was its highest in five years, and contrasts with Western Australia's rate of six. Queensland recorded a result of 10, down from the LTIFR of 12 recorded last year, while South Australia recorded the lowest LTIFR in the mining industry of four. New South Wales' LTIFR increased to 25 from last year's low of 23.

Data suggests that the industry LTIFR performance may have reached an asymptote such that future variations may reflect random fluctuation rather than genuine performance improvements or decrements.

Duration and Severity Rates

In 2000-2001, an average of 20 days were lost per lost time injury (the duration rate). This was an increase of two more days lost over the previous three years. The only State or Territory to report a reduction in duration rate was the Northern Territory, recording a 27% decline.

The severity rate (SR) rose 7% to 213 days lost per one million hours worked over the previous year. Only the Northern Territory, Queensland and South Australia showed reductions in SR.

Workers' Compensation Claims

In 1998-1999, the incidence and frequency rates for new workers' compensation cases for injuries resulting in five or more days lost time for the mining division (excluding Victoria) were 31 and 14, respectively. In 1999-2000, these rates remained relatively stable at 33 and 14, respectively. This is the first time in three years that this data has not shown a decline.

NOHSC workers' compensation system data for 1999-2000 show that disease accounts for 5.6% of workers' compensation claims in all industries. This is considerably lower (a 57% reduction) than the 12.9% recorded in the previous year.

Within each of the mining sectors at least 88% of total claims are made up of a combination of claims due to injury/poisoning and to diseases of the nervous system and sense organs (ie hearing loss) – with the former being the major contributor. In all sectors at least 75% of total claims were due to injury/poisoning, and the majority of remaining claims were caused by diseases of the nervous system and sense organs.

The overall cost to the industry in 1999-2000 was \$31,041,791. This is an increase of 10% on the 1998-99 cost, but remains substantially lower than the \$40,416,958 recorded in 1996-97. Note, however, that these data are preliminary figures and will change over time.

International Comparisons

The Australian minerals industry average FIFR for the ten-year period 1991-1992 to 2000-2001 was 0.10. Internationally, this compares well with South Africa, which recorded an average of 0.37 in the period 1989 to 2001, and the United States (US), with an average FIFR of 0.12 for the period 1992 to September 2001.

In the metalliferous sector, Australia's average FIFR was 44% below the US average rate of 0.12. There were similar results in the coal sector where Australia performed substantially better than the US, with a rate 62% lower than the US rate of 0.24.

Lost time injury data are difficult to compare internationally because of the different systems and definitions that apply. Traditionally on this indicator the US has outperformed Australia in the metalliferous and coal sectors. However, for the past two years the Australian minerals industry performance appears to be slightly better than or comparable with that of the US.

Commitment to Safety and Health

Five years after the minerals industry's collective agreement to make safety and health its highest priority, new approaches continue to be developed. The Minerals Council of Australia is taking a leadership role through the implementation of a strategy, pursued by the Safety and Health Committee, which is designed to improve the industry's safety and health performance.

An ambitious work program by the committee during 2001 was based on a well-established program involving awards and communicating the experience and performance of the industry. Some re-focusing of priorities was undertaken to give greater emphasis to risk management. The committee continues to be committed to the elimination of all fatalities, injuries and diseases.

An overview of the committee's activities, outcomes and achievements is outlined below. These activities are grouped under four headings – leadership, learning and continuous improvement, recognition, and risk management – which represent the key drivers used by the Safety and Health Committee to pursue its goals.

Leadership

DRIVER:

Use of leadership by the Minerals Council and the industry to drive improvements in safety and health performance.

- **Industry CEOs leading by example** – The Council's Executive Committee continued to address safety and health as the first substantive agenda item at its meetings. It also continued to share information on fatalities and significant incidents at that forum. Members of the Executive Committee reaffirmed the value of individual presentations to the group on personal efforts to improve safety and health performance within its own organisation.
- **CEO Safety and Health session** – The fourth annual session focussed on communicating safety and the role of leadership. Participants considered the session to be very worthwhile and an effort will be made to engage a broader audience at future sessions.
- **Influencing policy formulation and implementation** – The Council continued its involvement in the ANZMEC Mine Safety Taskforce's development of a strategic national framework for mine safety regulation which was presented to ministers and endorsed by them in March 2002. The Council continued to contribute to leadership initiatives of the National Occupational Health and Safety Commission (NOHSC).
- **Promote the Council's role and safety and health activities** – Awareness of the Council's safety and health objectives, activities and performance was raised through various publications and other communications tools, including *Monthly Minerals Update*, the *Safety and Health Performance Report*, four quarterly *Safety Survey Reports* and the safety and health page on the Council's website. A significant number of speeches were also delivered at prominent events, including the Council's Safety and Health Conference, AusIMM Young Leaders' Conference and the Queensland Mining Industry Health and Safety Conference.

Learning and Continuous Improvement

DRIVER:

Rapid and effective information sharing across the industry, resulting in learning and continuous improvement beyond current best practice.

- **Measuring and reporting industry performance** – The annual *Safety and Health Performance Report* for the Australian minerals industry is published each year.
- **Enhanced performance indicators** – Work continued on three fronts towards the development of positive performance indicators. *Positive Performance Measures: A Practical Guide* is being trialed at sites; a broader outcomes measure incorporating total recordable injuries is being considered; and a useful and relevant national industry safety and health self-evaluation tool based on the MINEX criteria is being developed.
- **Enhanced learning from significant incidents** – A significant incident reporting scheme and database with alert system, *SafetyShare*, is being trialed before being launched nationally.

Recognition

DRIVER:

Adoption of best practice and innovation to achieve improvements in safety and health performance.

- **MINEX Awards** – Coal & Allied's Bengalla Mining Company received the 2001 MINEX Award, becoming the first operation in New South Wales to do so. Planning for the 2002 MINEX Awards has resulted in a reaffirmation of the marketing approach from 2001 and enhanced evaluator training modules to attract new and experienced industry evaluators.
- **National Safety and Health Innovation Awards** – Now in its third year, the National Safety and Health Innovation Award was this year presented to MIM Holdings' Oaky North underground mine. The award celebrates an innovative load indicator plate for fibreglass rib bolts, which is designed to avoid the roof bolts being twisted and shattered as they are inserted. The innovation responds to a high-consequence injury issue for the industry. A booklet profiling each of the national finalists is published each year and is available on the Council's website www.minerals.org.au

Risk Management

DRIVER:

Industry awareness, understanding and adoption of a comprehensive approach to risk management that integrates catastrophic risk, behaviour/culture and systems.

- **Catastrophic risk management conference** – The Council's second national safety and health conference was well attended and considered by delegates to be extremely valuable. Risk management activities are seen by the industry as an important area to pursue in 2002.
- **Risk analysis guidelines** – As a result of the conference, work has been commissioned to develop national minerals industry risk assessment guidelines. Workshops are envisaged to promote their use in each State/Territory during 2002.

About the Data Used in This Report (2000-2001)

This report used data primarily from two different sources and for two different time periods:

- The primary and most comprehensive and current data are collected through the State/Territory mines inspectorates (usually located in a mining department). This report contains 2000-2001 data from this source.
- The second data set is from the National Occupational Health and Safety Commission (NOHSC) collected through State workers' compensation authorities. This report contains 1999-2000 data (the most recent available) from this source.

Both sets of data have their limitations as detailed below, but used together they can provide a more complete picture of the minerals industry's safety and health performance.

The sources of international data included in this report are also described below.

Mines inspectorate data – parameters and limitations

These data are supplied to inspectorates directly by mines. In most States/Territories reporting is a mandatory requirement of mining safety and health regulation.

In the New South Wales coal industry, data are collected by Coal Services Pty Ltd (formerly the Joint Coal Board) through the industry coal mines insurance scheme. All compensatable injuries and disease are captured in this system. Companies supply denominator data (numbers of employees and hours worked) to Coal Services on a quarterly basis.

Prior to 1992-1993 the only complete data sets came from Queensland, New South Wales and Western Australia. Since then, the comprehensiveness of data from other States/Territories has improved.

Some inconsistencies remain, however. The various State/Territory inspectorates have different jurisdictional scopes and, as a result, each has a unique definition of what constitutes the mining industry. Some States/Territories include smelters/refineries, extractive industries and exploration activities within their scope. In other States/Territories these activities may be completely or partially excluded.

For the purposes of this report, data have been collected in a way that permits separation into the identified minerals sectors, and in most cases State inspectorates were able to provide data in a manner consistent with guidelines supplied by the Minerals Council.

The only difficulty related to the smelting/refinery sector where, except for Western Australia, Tasmania, the Northern Territory and South Australia, data were gathered directly by the Minerals Council from individual companies.

In summary, the limitations of data contained in this report from the State Mining inspectorates include:

- reliance on mines submitting accurate data;
- variations in coverage by inspectorates of minerals sectors in each State; and
- exclusion of disease cases.

National Commission data – parameters and limitations

The following limitations apply to data collected by the National Occupational Health and Safety Commission (NOHSC) from claims for workers' compensation made under the Commonwealth, State and Territory Workers' Compensation Acts:

- Only cases compensated under general Commonwealth, State and Territory workers' compensation legislation are included. Excluded, therefore, are occurrences covered under separate legislation for specific groups of workers.
- The data includes fatality, permanent disability or temporary disability involving an absence from work of five working days or more (Victoria, however, has estimated the number of workers' compensation cases resulting in five or more days' lost time as it currently reports cases of ten or more days' absence).
- Differences in the State workers' compensation arrangements may impact on attempts to make comparisons between States (for example, different definitions of compensatable deafness cases exist in each State).
- Data for the ACT is not available.
- The data has been adjusted to adhere to NOHSC's confidentiality policy. This includes the suppression of small cell values to ensure that confidential information about employers and employees is protected.
- The data presented here are preliminary and subject to revision.
- The use of Australian Bureau of Statistics (ABS) estimates of numbers employed and subsequent calculations of hours worked can produce errors by underestimating or overestimating incidence and frequency rates.

The NOHSC reports according to ANZSIC Classification. The ANZSIC Mining Division includes the following sub-divisions:

- Coal mining, including black and brown coal mining;
- Oil and gas extraction;
- Metal ore mining, including iron ore mining, bauxite mining, copper ore mining, gold ore mining, mineral sand mining, nickel ore mining, silver, lead zinc ore mining;
- Other mining, including construction material mining (such as gravel and sand quarrying);
- Services to mining, including petroleum and mineral exploration and contracting activities.

About the international statistics

When reporting international accident statistics there are limited data readily available for direct comparisons and benchmarking. The injury data are often presented using different criteria, depending on each country's legislative reporting requirements. Consequently, some of the data used in this section have been adjusted to provide a comparison of performance.

This report compares injury rates for three countries. It is necessary to recognise that the statistical data have some differences due to variations in the definition of injury, country culture and degree of reporting.

These variables are difficult, if not impossible, to take into account. Therefore, the data presented are assumed to be of equivalent quality, but care should be exercised when making direct comparisons or drawing any conclusions. Nonetheless, the analysis below should provide a reasonable indication of the relative qualitative safety performance of the countries concerned.

The US data are reported annually by the US Mine Safety and Health Administration. The US injury data for open-cut and underground mining are for production mining, which excludes office and support workers. Figures for the total sector (eg the coal sector) include the injury profile of office and administration workers. Due to lower injury rates experienced in the administration sector, inclusion of this data will act to underestimate miners' injury rates in the mining sectors. Data for the US for 2001 are available only up until 30 September.

The South African injury data have been obtained from information courtesy of the South African Department of Mines.

Ontario, Canada, injury data have been collected from the Ontario Mines and Aggregates Safety and Health Association. Ontario does not have a coal mining industry, hence only comparisons to metalliferous sectors are possible.

The qualitative comparison refers to averages when comparing fatality rates. As the number of fatalities is a relatively small figure and can fluctuate significantly, particularly in the case of a multiple fatality incident, it is thought that an average taken over a number of years provides a better basis for comparison. However, the years over which the average is taken varies due to different data availability in each country. For example, while South African data are averaged over 1989 to 2001, Ontario data are only available for the past three years.

Links

Provided below are links to organisational and government web sites that provide information and data on mining-related health and safety activities in Australia and overseas.

US

Mines Safety and Health Administration

www.msha.gov

and

www.msha.gov/fatals/fab.htm²

South Africa

South African Department of Minerals and Energy

www.dme.gov.za

Canada

Ontario Mining Association

www.oma.on.ca

Mining and Aggregates Safety and Health Association

www.masha.on.ca

Australia

The National Occupational Health and Safety Commission

www.nohsc.gov.au

Minerals Council of Australia

www.minerals.org.au

² Fatal alert bulletins and fatalgrams are part of the Mine Safety and Health Administration's (MSHA) program to alert the mining industry in a timely manner of a tragic loss of life in the mines. The information is provided to organizations and individuals who may be able to enhance safety awareness in the industry.

Data from the Mines Inspectorates 2000-2001

Fatalities Statistics

In 2000-2001, the Australian minerals industry recorded 14 fatalities. The highest number of fatalities was shared between underground metalliferous, open-cut metalliferous and underground coal mines, with four fatalities recorded in each sector. As with previous years, underground mining activities accounted for the majority (57%) of the total fatalities. As in the previous three years, smelting/refining and exploration services have remained fatality-free.

Of the 14 fatalities, five were in Western Australia, three each in New South Wales and Tasmania, two in Queensland and one in Victoria. South Australia and the Northern Territory did not record any fatalities in 2000-2001.

The 14 fatalities this period were five less than in 1999-2000 and four more than in 1998-1999.

In the past decade the minerals industry has recorded 198 deaths, an average of more than 19 deaths a year. The number of fatalities has varied widely from year to year, ranging from a low of seven in 1995-1996 to a high of 33 in 1996-1997.

TABLE 1: Fatalities by sector

	2000-01	1999-2000	1998-99
Open Cut Coal	0	1	1
Underground Coal	4	4	2
Open Cut Metalliferous	4	2	2
Underground Metalliferous	4	10	5
Extractive Industries	2	2	0
Smelting/Refining	0	0	0
Exploration	0	0	0
Total	14	19	10

No trends have emerged in the preceding years for the total number of fatalities recorded annually. However, there remains a strong consistency in the sectors where most of the fatalities have occurred. In 2000-2001, 57% of fatalities were recorded in underground mines compared with 77% in 1999-2000 and 70% in 1998-99. The underground metalliferous sector has, on average, accounted for 66% of fatalities in underground mines in the past three years.

Open-cut coal recorded no fatalities this reporting year, while open-cut metalliferous recorded four fatalities – two more than the previous two years. Extractive industries recorded two deaths – the same result as last year – while exploration and the smelting/refining sectors were fatality free.

Rockfalls, roof and rib collapses were involved in seven of the 14 fatalities that occurred in the Australian mining industry this year. Last year, two fatalities were due to these causes. Of those seven fatalities, four occurred in the underground coal sector. Those four deaths account for 80% of the fatalities in this sector. The remaining three occurred in the underground metalliferous sector, and accounted for 75% of its fatalities.

The main cause of fatalities in the open-cut and extractive industries was related to the operation and maintenance of mobile plant and machinery, accounting for 75% of fatalities.

CHART 1 Fatal Injuries 1991-92 to 2000-01

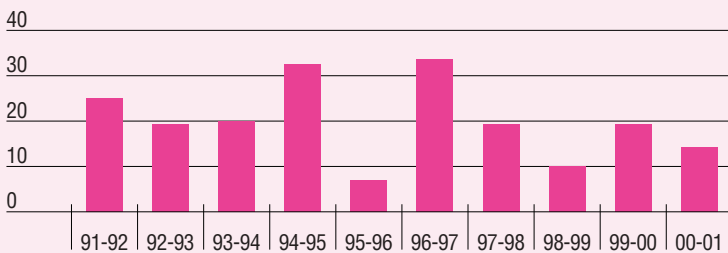


CHART 2 Fatal Injuries by Sector 2000-01

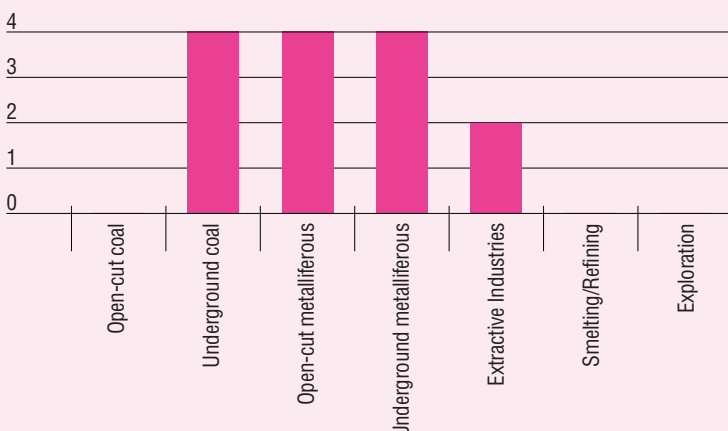


CHART 3 Number of Fatalities by State 1991-92 to 2000-01



Fatality Incidence Rate (FIR)

The national minerals industry fatality incidence rate (FIR – fatalities per 1,000 employees) was 0.15 in 2000-2001, down 25% from 0.20 for the last period.

Tasmania recorded the highest FIR of 0.63 resulting primarily from its underground coal sector, which recorded an FIR of 13.89. The second highest FIR of 0.19 was recorded by New South Wales followed by Victoria at 0.18. Western Australia and Queensland recorded an FIR of 0.12 and 0.10 respectively. The Northern Territory and South Australia recorded an FIR of zero.

By sector, underground coal recorded the highest rate of 0.49. This was similar to last year's rate of 0.46. Underground metalliferous recorded an FIR of 0.34, down from the previous year's rate of 0.89, a reduction of 62%. The extractive industries recorded a rate of 0.31 with open-cut coal and open-cut metalliferous recording an FIR of 0.09. Smelting/refining and exploration reported an FIR of zero.

Fatal Injury Frequency Rate (FIFR)

The risk of fatalities is measured by the Fatal Injury Frequency Rate (FIFR – the number of fatal injuries per one million hours worked).

In 2000-2001, the national FIFR was 0.07, a reduction of 22% from the previous year. Despite remaining below the ten-year average FIFR of 0.10, no consistent reduction in FIFR over the past ten years is observable from Chart 4.

Sector performance

In 2000-2001, all minerals industry sectors recorded either the same or an increased FIFR with the exception of underground metalliferous and open-cut coal, which recorded a 59% decrease (from 0.37 to 0.15) and a 400% decrease (from 0.04 to 0.00) respectively. Extractive industries recorded the only substantial increase in FIFR: 31% from 0.13 the previous year to 0.17. All sectors, with the exception of underground coal mining and extractive industries, reported rates lower than the ten-year average for their sector.

As with the previous year, three sectors returned rates higher than the national mining average for the year of 0.07: underground coal (0.23), extractive industries (0.17) and underground metalliferous (0.15).

In the previous five years the underground metalliferous sector consistently recorded the highest FIFR. This year the underground coal sector recorded the highest FIFR of 0.23, which is 53% higher than that of the underground metalliferous sector.

CHART 4 Fatal Injury Frequency Rate 1991-92 to 2000-01

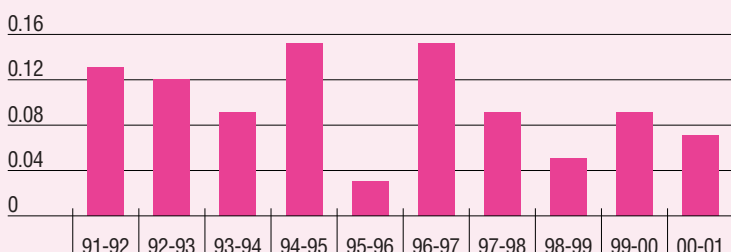


TABLE 2: Australian Minerals Industry Fatal Injury Frequency Rate

Year	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	Average
Open-cut coal	0.07	0.07	0.07	0.03	0.06	0.03	0.03	0.04	0.04	0.00	0.04
Underground coal	0.25	0.13	0.10	0.58	0.05	0.41	0.05	0.11	0.22	0.23	0.21
Total coal	0.16	0.09	0.08	0.26	0.06	0.18	0.04	0.07	0.11	0.09	0.11
Open-cut metalliferous	0.05	0.06	0.05	0.12	0.00	0.07	0.02	0.02	0.03	0.05	0.05
Underground metalliferous	0.36	0.30	0.15	0.23	0.10	0.46	0.39	0.14	0.37	0.15	0.26
Total metalliferous	0.09	0.13	0.08	0.15	0.03	0.17	0.12	0.05	0.10	0.08	0.10
Extractive Industries			0.46	0.20	0.00	0.00	0.09	0.00	0.13	0.17	0.13
Smelting/Refining			0.04	0.02	0.02	0.05	0.00	0.00	0.00	0.00	0.02
Total Industry	0.13	0.12	0.09	0.15	0.03	0.15	0.09	0.05	0.09	0.07	0.10

State/Territory performance

In the 2000-2001 period, Western Australia recorded five fatalities, New South Wales and Tasmania three each and Queensland two. Victoria, unfortunately, had its first fatality in seven years: a death in the underground metalliferous sector. South Australia and Northern Territory were fatality free.

Tasmania and Victoria were the only States with an increase in fatalities. All other States/Territories either reduced fatalities (Western Australia and New South Wales) or experienced the same number as the preceding year (Queensland, South Australia and Northern Territory). Tasmania's three fatalities (which included a double fatality) represented the highest number recorded in 10 years, while New South Wales' three was the second-lowest number in a decade.

Tasmania had the highest number of fatalities per million working hours (FIFR of 0.36), followed by Victoria (0.12), New South Wales (0.10), Western Australia (0.06) and Queensland (0.04). Only New South Wales (0.31 to 0.10) and Western Australia (0.07 to 0.06) achieved reductions in FIFR.

Western Australia has experienced a relatively stable FIFR over the past ten years, showing minimal variation compared to other States. The rate of 0.06 shows a reduction of 0.01 from the previous year and is a midrange result. There is no evidence of any reduction in the risk of fatality during the past ten years.

Queensland's FIFR continues to remain relatively low compared to peaks that occurred in 1994-1995 and 1996-1997 and was below the State and national average ten-year rates for the fourth consecutive year.

Tasmania has recorded its highest FIFR (0.36) in ten years. The large variation in FIFR was due to the relatively small size of the minerals industry in that State.

CHART 5 Fatal Injury Frequency Rate by Sector 1991-92 to 2000-01

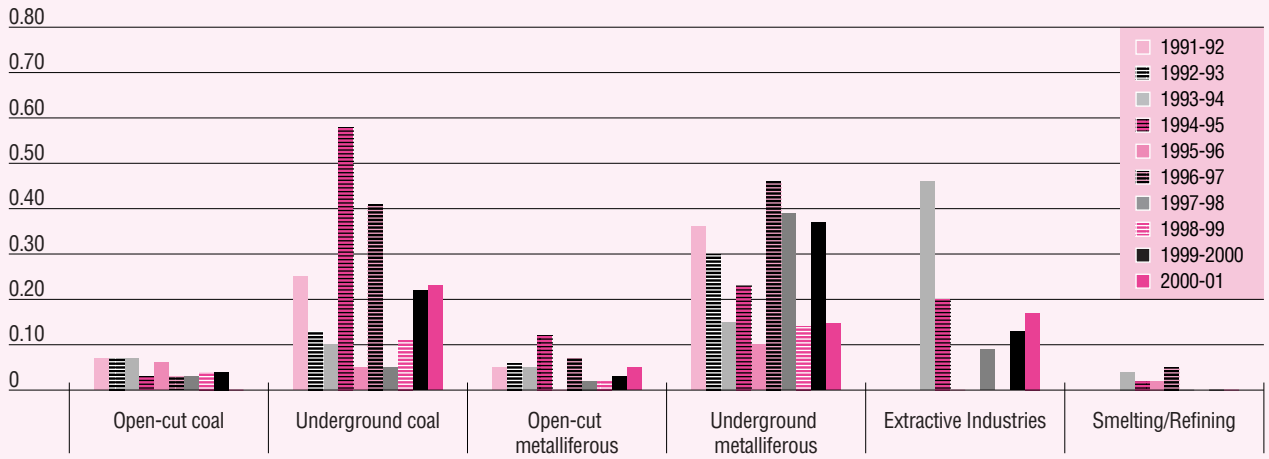


CHART 5a Australian Minerals Industry Fatal Injury Frequency Rate 1991-92 to 2000-01

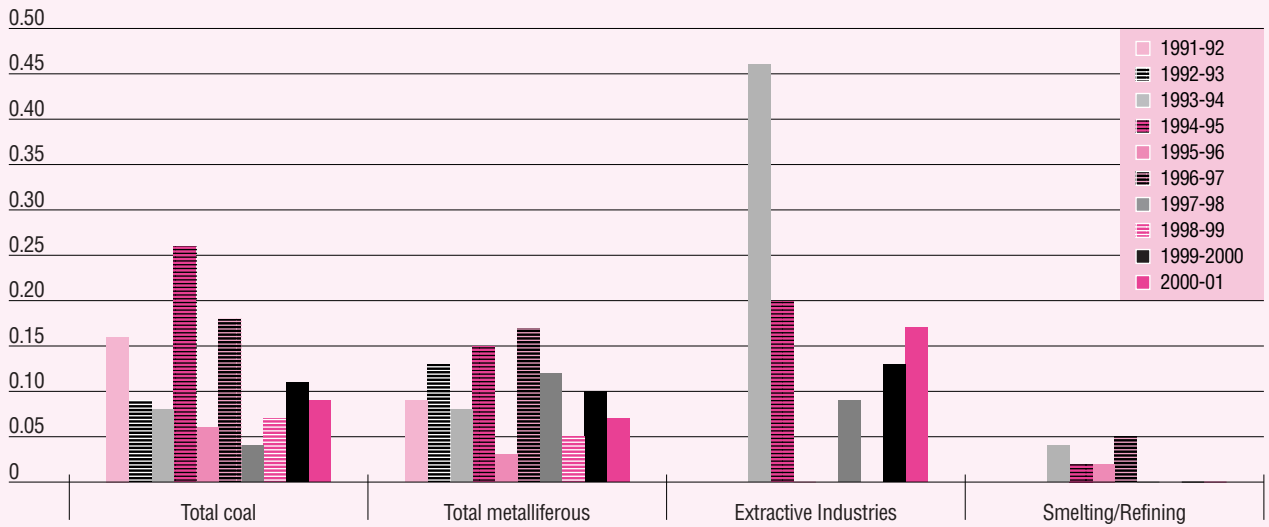
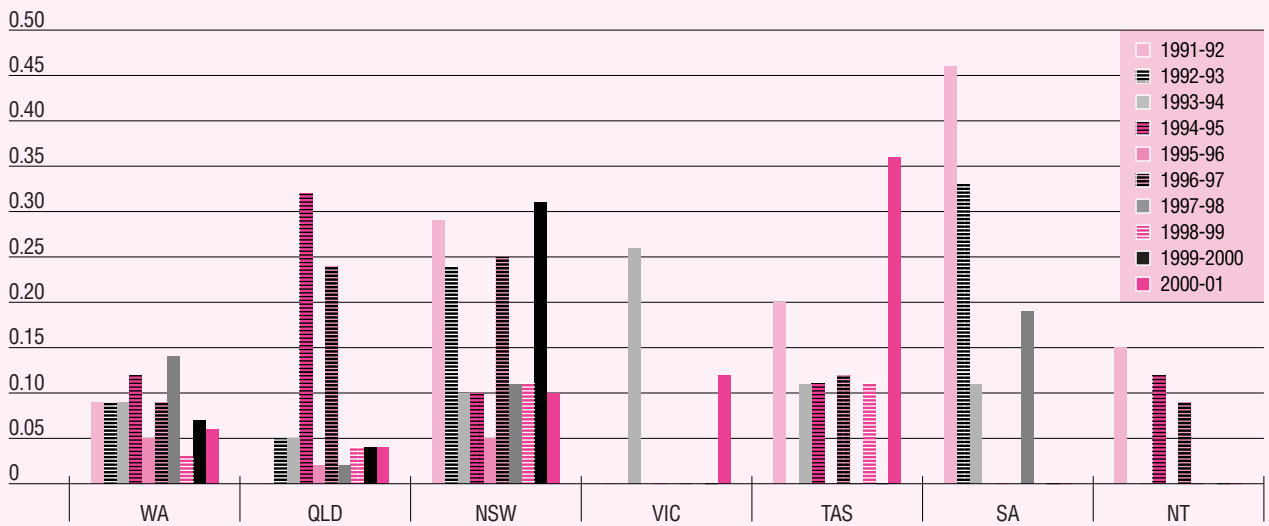


CHART 6 Fatal Injury Frequency Rates by State 1991-92 to 2000-01



Description of Fatalities

New South Wales

EXTRACTIVE INDUSTRIES

- Mr Anthony O'Malley Jones, a bulldozer operator, was fatally injured when he was struck by a front-end loader.

UNDERGROUND COAL

- Mr Greg Aspinall, a plant operator, was fatally injured when the roof of a mine shaft collapsed.
- Mr Robert John Davies, a driver, was fatally injured when a rib collapsed.

Western Australia

SURFACE METALLIFEROUS

- Mr Zbigniew (Zibi) Kosowski, an underground manager, suffered fatal injuries when he was struck by lightning. At the time he was inspecting a pond that collected overflow from the tailings dam.
- Mr Dean Porro, a fitter, died when the integrated tool carrier (IT) he was driving rolled on to its side, crushing him. The IT rolled when it drove over the load it was carrying, which had disengaged.
- Mr Phillip Steel, a bulldozer operator, suffered fatal injuries when his machine slipped over the edge of a pit and slid 90 to 100 metres down a steep rill of broken material. It appeared that he had been thrown from the cab.

UNDERGROUND METALLIFEROUS

- Mr Rodney Criddle, a drill jumbo operator, received fatal injuries in an extensive underground rockfall. He was reversing his jumbo towards a cross cut when a seismic event occurred.

EXTRACTIVE INDUSTRIES

- Mr Russell Griffiths, an electrical worker, died while upgrading a switchboard. He was discovered lying on the ground near the switchboard. It is believed that he may have come into contact with the conductors during the course of his work.

Victoria

UNDERGROUND METALLIFEROUS

- Mr Patrick Stevens, an underground maintenance labourer, suffered fatal injuries when he was crushed under the engine compartment cover of an underground truck.

Queensland

UNDERGROUND COAL

- Mr John Maher, a miner, received fatal injuries when he was struck by a rib fall whilst working alongside a continuous miner.

OPEN-CUT METALLIFEROUS

- Mr Peter Comerford, a rigger, died from crushing injuries sustained when he was struck by a bearing housing, which fell from an assembly that was being lifted by an overhead crane.

Tasmania

UNDERGROUND COAL

- Mr Adrian Hayes, a miner, was fatally injured when a large piece of mudstone fell, crushing him against a machine.

UNDERGROUND METALLIFEROUS

- Mr Jarrod Jones and Mr Mathew Lister, both miners, were fatally injured when a rock fall struck the machine on which they were working.

Notes:

Information regarding any serious or fatal accident occurring on any mining site in Queensland can be found at the Wardens Court of Queensland website: www.warden.qld.gov.au/fatals.htm. The findings for both Queensland fatalities (Messrs Maher and Comerford) are now available as well as for previous fatalities.

Mining Warden's Inquiries and Recommendations are also summarised annually in the *Queensland Mines & Quarries' Safety Performance & Health Report (1 July 2000 – 30 June 2001)* available from the Queensland Department of Natural Resources and Mines or from their website at www.nrm.qld.gov.au (click on Safety & Health).

Information regarding fatal accident reports from WA include Preliminary, Intermediate and Final Reports on fatalities from 1992. They can be found at <http://notesweb.dme.wa.gov.au/exis/FATAL.NSF?OpenDatabase>

Information regarding the Gretley Coal Mine accident in NSW (November 1996) and subsequent inquiry can be found at www.minerals.nsw.gov.au/safety/gretley.htm

Lost Time Injury Statistics

As with previous years, the declining trend in the number of Lost Time Injuries (LTIs) has continued. This year for the first time, however, the Lost Time Injury Frequency Rate (LTIFR) has failed to decline and has remained at last year's level of 11 lost time injuries per million hours worked. However, when taken to two decimal places, the LTIFR has improved from 11.33 (1999-2000) to 10.55 (2000-01).

Since 1991-1992, the number of reported lost time injuries has decreased from 7,190 injuries to 2,093 in 2000-2001. Over this same period the national average LTIFR has declined from 42 to 11.

Previously, improvement in LTIFR consistently remained at a rate between 7% and 21% per annum. This year there has been no significant improvement in LTIFR from the 1999-2000 period, despite reductions in the number of LTIs, from 2,294 to 2,093 in 2000-2001 (a reduction of 9%).

The 1993-1994 to 2000-2001 LTI statistics include the extractive industries and refinery sectors, which previously were only partially reported to the State/Territory mines inspectorates. As noted in previous years, the impact of this on the underground and open-cut metalliferous data is difficult to determine.

Sector performance

The number of LTIs in total coal showed a 4% reduction to 929 in 2000-2001 from 971 LTIs in 1999-2000. Coal sector LTIs mainly occurred in underground coal, which recorded 592 injuries. Open-cut coal recorded 319 lost time injuries and open-cut brown coal registered 18. By comparison to last year, open-cut coal LTIs increased by 13%, brown open-cut coal remained much the same, whilst underground coal saw a reduction of 12%. The LTIFR has remained similar across all sectors despite changes in injury numbers.

Across metalliferous sectors there were 158 fewer injuries than the previous year. The most significant reductions were made in the open-cut operations, with an improvement of 24% in total injuries. This equated to a reduced LTIFR from 8 to 6. The underground sector reported 6 less LTIs than the previous year, although this did not affect the LTIFR, which remained at 12. The total metalliferous sector lost time injury frequency rate decreased to eight.

Extractive industries recorded a reduced number of total injuries compared to the last period, although the LTIFR increased from 9 to 10.

Smelting/refining recorded a slight increase in numbers of lost time injuries and, as above, the LTIFR rose from five to six. During the same period exploration reported a rise in the number of LTIs but experienced a reduction in LTIFR.

CHART 7 Lost Time Injuries 1991-92 to 2000-01

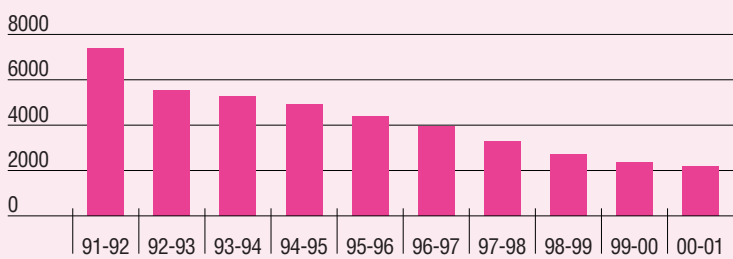


CHART 8 Australian Minerals Industry Lost Time Injuries by Sector 2000-01

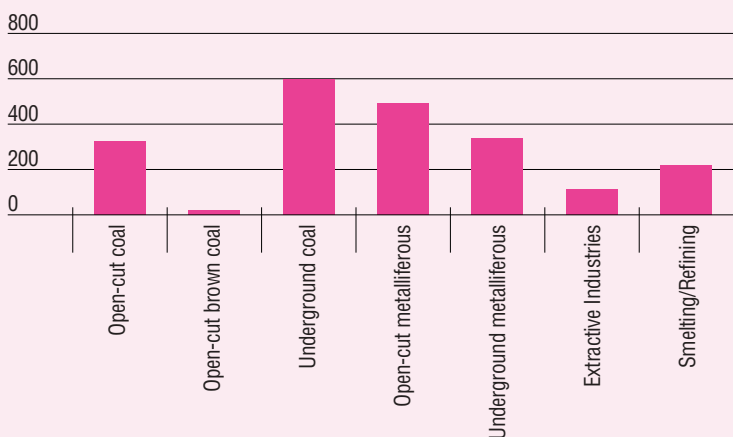


CHART 9 Lost Time Injury Frequency Rate 1991-92 to 2000-01

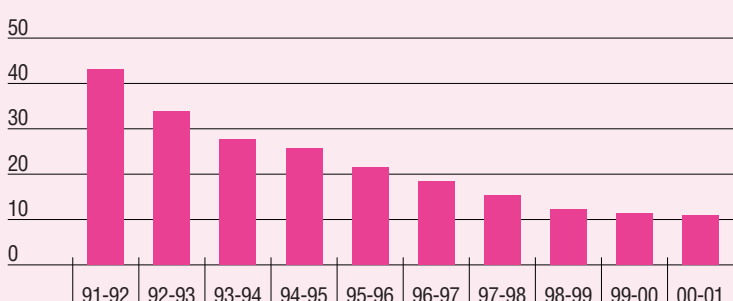


CHART 10 Lost Time Injury Frequency Rates by Sector 1991-92 to 2000-01

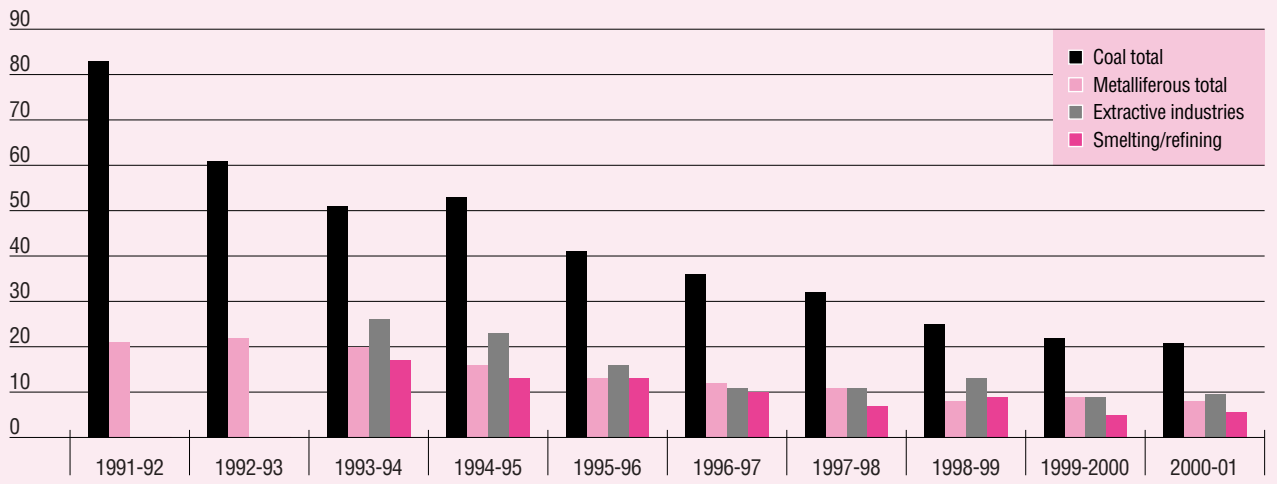
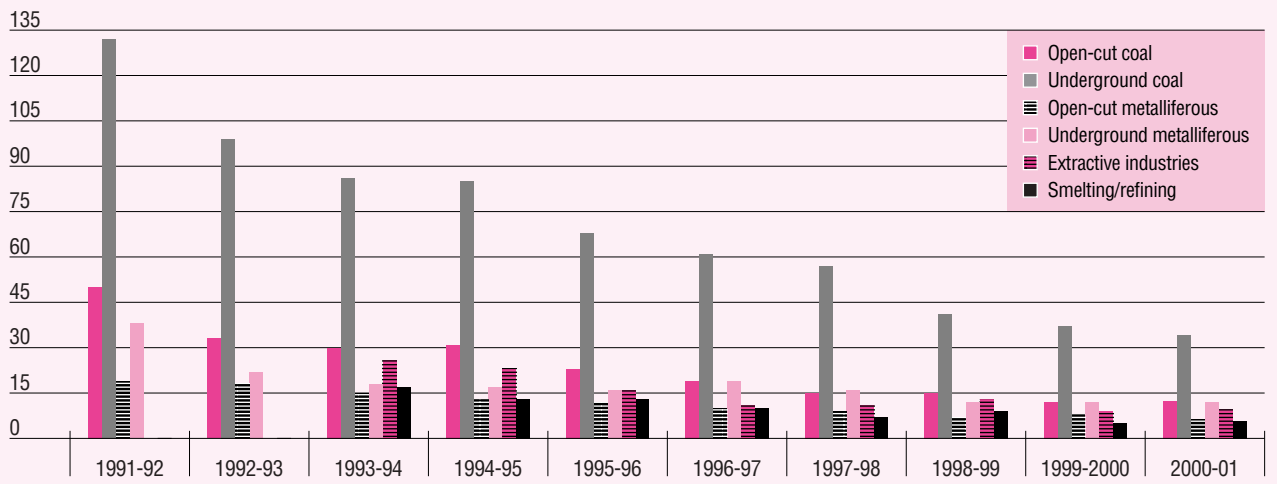


CHART 11 Lost Time Injury Frequency Rates by Sector 1991-92 to 2000-01



State/Territory performance

LTIs

The 2000-2001 period showed improvements in the number of LTIs across all States/Territories with the exception of Tasmania, which experienced a 33% increase in LTIs. Individual reductions were: New South Wales – 1%; Western Australia – 16%; Queensland – 18%; South Australia – 30%; Victoria – 20%; and the Northern Territory – 20%.

LTIFR

All States/Territories reported a decline in LTIFR with the exception of Tasmania and New South Wales.

This year, Tasmania recorded its highest LTIFR in five years with an increase of over 37% on last year (16 to 22).

New South Wales failed to continue its six-year trend of decreasing rates, recording an LTIFR of 25, 8% higher than last year's ten-year low of 23.

Queensland has reported a reduced LTIFR of 10 lost time injuries per million hours worked. The Northern Territory reduced its LTIFR from nine to eight this period. This was 13% above the Territory's lowest rate of seven recorded in 1998-1999. Western Australia continued its improvement trend again this period. A 14% reduction to an LTIFR of six represents the State's best result to date. South Australia has again reduced its LTIFR, from six in 1999-2000 to four in 2000-2001. This is the lowest LTIFR recorded in the mining industry across the country.

CHART 12 Number of Lost Time Injuries by State 1991-92 to 2000-01

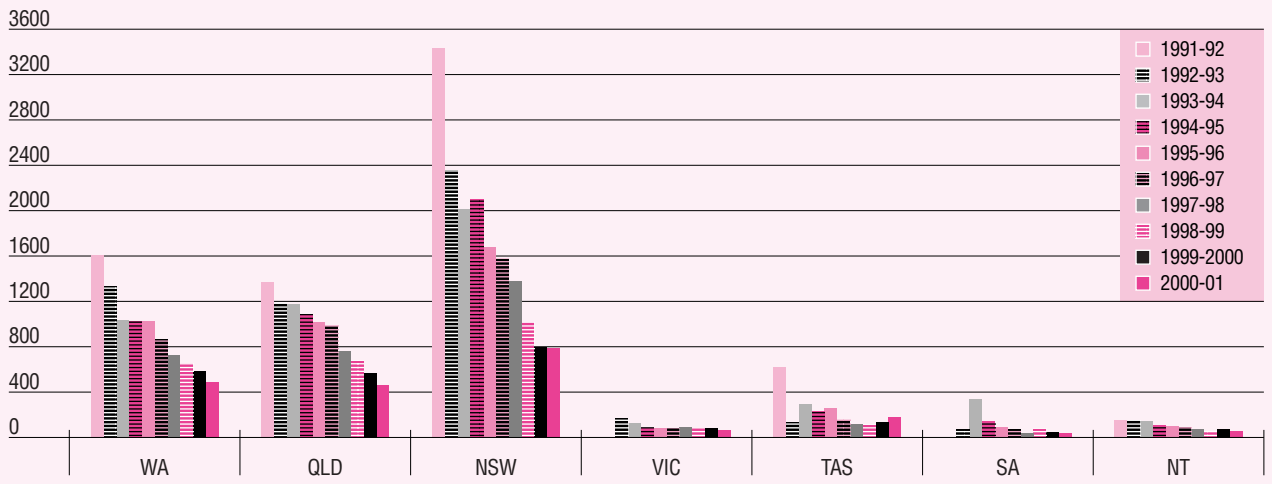


CHART 13 Lost Time Injury Frequency Rate by State 1991-92 to 2000-01



Sector by State/Territory

COAL

The underground and open-cut coal sectors remained relatively stable over the past year. LTIFR for underground coal reduced 8% from 37 to 34, whilst the open-cut sector remained at 12. Over the past ten years there has been a consistent decrease in the LTIFR across the underground sector, from 132 in 1992-1993 to 34 this year.

Of the three States involved in underground coal mining, New South Wales and Queensland have shown a steady but slight improvement trend, although Queensland has consistently outperformed New South Wales on this indicator. Tasmania, on the other hand, has shown significant variation in its rates due to the small size of the industry in that State.

The open-cut coal sector recorded an LTIFR of 12, which is slightly above the all-mining industry average of 11. Western Australia was the worst performer with an LTIFR of 28 – more than twice the sector average of 12. As for underground coal, Queensland outperformed New South Wales on LTIFR. Queensland improved slightly in 2000-2001 while New South Wales' performance has deteriorated.

METALLIFEROUS

Underground metalliferous recorded a sector average LTIFR of 12 this period, which is the same as the 1999-2000 result of 12.

Of the States, Tasmania was the worst performer with a frequency rate of 27. New South Wales experienced an LTIFR of 23, which represents a rise of 44% over the previous period. Western Australia reported no change in lost time injury frequency rates over this period, recording a rate of seven.

Victoria, Queensland and the Northern Territory were the only States/ Territories in the sector to report improvements in their frequency rates: Victoria by 19%, Queensland by 29% and the Northern Territory by 36%.

Open-cut metalliferous mines have shown a sector average LTIFR of six, 25% less than 1999-2000 and equal to that recorded in 1998-1999.

State/Territory performance in open-cut metalliferous is variable, with no consistent decline. Tasmania and the Northern Territory reported increases of 94% and 22%, respectively, whilst the remaining States reported reductions of between 8% and 700%.

The total metalliferous sector rate fell, compared to the previous period, from nine to eight. The largest variations were seen in New South Wales and Victoria. New South Wales showed a rise of 29% due primarily to its performance in the underground sector, whilst Victoria reported a decline of 20% with an injury-free open-cut sector.

EXTRACTIVES

The extractive industries had an LTIFR of 10 for this period, which is a 11% rise on the previous year. Six of the seven States/Territories recorded decreases: Western Australia (25%), Victoria (21%), Tasmania (400%), South Australia (17%), Queensland (33%) and the Northern Territory (1200%). Queensland and New South Wales reported increases of 8% and 100%, respectively.

The increased LTIFR for the sector nationally, despite reductions in five States, can be attributed to the high relative size of the east coast operations.

SMELTING/REFINING

Smelting and refining recorded an LTIFR of six this period, 16% more than last year. Western Australia and Tasmania reported increases in their LTIFR across smelting and refining operations. Tasmania had the most significant rise, doubling last year's result of nine to record 18 for this period. Reductions by State/Territory were: Queensland (75%), Victoria (57%), South Australia (75%) and the Northern Territory (17%).

TABLE 3: Australian Minerals Industry Lost Time Injuries by sector 2000-01

Sector	WA	QLD	NSW	SA	VIC	TAS	NT	AUST
Open-cut coal	35	103	176	1	3	1	—	319
Open-cut brown coal	—	—	—	—	18	—	—	18
Underground coal	—	136	452	—	—	4	—	592
Coal total	35	239	628	1	21	5	—	929
Open-cut metalliferous	295	123	8	6	0	22	29	483
Underground metalliferous	60	71	100	4	6	76	16	333
Metalliferous total	355	194	108	10	6	98	45	816
Mining total	390	433	736	11	27	103	45	1,745
Extractive industries	23	16	24	18	31	0	0	112
Smelting/Refining	62	17	28	6	10	80	13	216
Other*	17	—	—	—	—	—	3	20
ALL	475	466	788	35	68	183	58	2,073

* Not included in totals

TABLE 4: Lost Time Injury Frequency Rate by Sector 1991-92 to 2000-01

Mining Method	State	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	
Open-cut Metalliferous	WA	19	16	13	12	12	9	8	7	7	5	
	QLD		20	13	16	11	13	12	8	10	9	
	NSW	17	16	24	38	18	17	11	10	10	4	
	VIC		27	38	20	22	10	24	18	7	0	
	SA		59	42	17	4	19	6	6	12	11	
	TAS		100	104	68	68	57	18	16	17	33	
	NT		18	13	11	7	5	7	7	9	11	
Average		19	18	15	13	12	10	9	7	8	6	
Underground Metalliferous	WA	41	29	21	24	18	14	9	7	7	7	
	QLD		19	22	18	20	22	19	16	14	10	
	NSW	35	18	13	10	9	30	32	22	16	23	
	VIC		29	29	18	20	45	30	14	11	9	
	SA		16	9	11	4	4	2	3	2	3	
	TAS		28	14	16	20	17	18	19	27	27	
	NT		66	17	12	14	14	8	8	11	7	
Average		38	22	18	17	16	19	16	12	12	12	
All Metalliferous	WA	21	17	14	14	13	10	8	7	7	5	
	QLD	19	19	19	17	15	17	15	10	11	10	
	NSW	23	17	14	13	10	24	21	16	14	18	
	VIC		14	35	19	22	24	28	15	10	8	
	SA		23	17	13	4	10	15	4	4	5	
	TAS		39	26	23	24	19	18	19	25	28	
	NT		22	14	11	9	8	7	7	9	9	
Average		21	22	20	16	13	12	11	8	9	8	
Open-cut Coal	WA	85	88	65	91	61	41	32	29	16	28	
	QLD	34	32	26	22	17	13	8	7	7	7	
	NSW	45	30	33	43	31	29	31	27	21	22	
	(Brown Coal only)	VIC	0	19	16	7	4	3	5	8	9	11
	(Brown Coal only)	SA	0	28	23	24	14	11	0	4	—	8
	TAS	0	61	54	23	52	19	0	0	0	10	
	NT								—	—	—	
Average		50	33	30	31	23	19	15	15	12	12	
Underground Coal	WA	217	300	157							0	
	QLD	96	68	74	68	60	62	39	29	27	22	
	NSW	138	104	88	90	71	61	65	48	43	42	
	VIC											
	SA											
	TAS		33	0	34	9	0	0	0	8	35	
	NT											
Average		132	99	86	85	68	61	57	41	37	34	
All Coal	WA	108	130	78	91	61	41	32	29	16	28	
	QLD	46	40	34	31	26	24	16	13	12	11	
	NSW	108	78	68	73	56	48	52	39	34	33	
	VIC		19	16	7	4	3	5	8	9	9	
	SA		28	23	24	14	11	0	4	0	2	
	TAS		37	10	29	30	19	14	0	7	35	
	NT											
Average		83	61	51	53	41	36	32	25	22	21	

TABLE 4: Lost Time Injury Frequency Rate by Sector 1991-92 to 2000-01 (continued)

Mining Method	State	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01
Total Mining	WA			16	15	14	10	8	7	8	6
	QLD			28	25	22	21	16	12	12	10
	NSW			57	61	45	43	44	33	30	29
	VIC			22	13	12	15	13	11	9	9
	SA			19	17	7	10	6	4	4	7
	TAS			25	23	25	19	18	18	24	28
	NT			14	11	9	8	7	7	9	9
Average			29	29	23	20	17	12	13	13	12
Extractive Industries	WA			19	15	5	10	11	3	16	12
	QLD			24	20	11	10	14	15	12	8
	NSW			25	25	17	8	4	10	3	6
	VIC			24	18	16	21	17	18	19	15
	SA			33	38	27	11	20	20	18	15
	TAS			22	24	17	18	14	3	4	0
	NT			37	29	12	3	12	17	12	0
Average			26	23	16	11	11	13	9	9	10
Smelting/Refining	WA			8	8	8	7	6	4	3	4
	QLD			26	21	23	15	10	19	12	3
	NSW			21	14	14	9	8	16	9	—
	VIC			7	5	5	5	4	1	7	—
	SA			49	13	10	9	7	11	4	1
	TAS			39	29	31	19	8	9	9	18
	NT			15	14	15	10	10	4	6	5
Average			17	13	13	10	7	8	5	5	6
All Mining Industry	WA	23	20	14	13	12	10	8	7	7	6
	QLD	33	31	27	25	22	20	15	12	12	10
	NSW	82	58	52	52	39	36	36	29	22	25
	VIC		51	17	10	10	12	11	10	11	8
	SA		24	37	17	12	10	9	8	6	4
	TAS		39	33	27	28	19	13	13	16	22
	NT		22	14	12	11	8	8	7	9	8
Average	42	33	27	25	21	18	15	12	11	11	

Duration and Severity Rates

By definition, the Duration Rate (DR) measures the average time lost for every lost time injury. The Severity Rate (SR) is defined as the average number of days lost per million hours worked.

The average DR for the minerals industry over 2000-2001 was 20 days lost per injury, showing a rise over the previous five years and eclipsing the previously highest duration rate of 19, recorded in 1996-97.

Disappointingly, for the first time there has been an increase in the severity rate. In 2000-2001, the SR rose slightly from the previous two years to 213 days lost per million hours worked. This is 7% greater than last year and up 3% on 1998-1999.

Duration and Severity Rates by sector

DR and SR have varied more than last year across the mining sectors. Of most significance, open-cut coal showed its first reduction in duration rate over the previous period since data were first collected in 1995-1996.

COAL

The most significant change this period was the improvement in the open-cut sector – the first in six years. This DR improvement of four days on average from 27 to 22 is the sector's best result since 1997-1998.

Importantly, this result in DR was accompanied by an 14% improvement in SR (from 314 to 271 days lost per million hours worked), the only major improvement in SR across all sectors.

The underground coal sector experienced a rise in DR of seven days to 29 days lost per lost time injury after last year's small decline. This is the highest DR of any sector and the biggest increase (32%) over the previous year's rate. This deterioration in DR was accompanied by a 22% deterioration in SR, which increased from 816 to 996 days lost per million hours worked.

METALLIFEROUS

The metalliferous sector has continued to demonstrate the lowest duration rates. This year's rate of 15 in open-cut and 14 in underground was the lowest recorded across all sectors.

The open-cut metalliferous sector showed a 37% increase on the previous period's duration rate of 11 days to 15 for this period. This is the first rise in duration rate in four years in this sector. Open-cut metalliferous had the equal second lowest SR this period behind the underground metalliferous sector.

The open-cut result for the 2000-2001 period remains 12% lower than the sector's worst performance in 1996-1997.

Underground metalliferous recorded a 5% decrease in DR this period. At 14, it has the lowest duration rate across all sectors. The severity rate has remained remarkably consistent, with a variation of less than 9% on last year. The decline in duration rate and lack of change in this severity rate in the underground metalliferous sector may indicate an increase in the number of minor injuries.

EXTRACTIVES

Extractive industries demonstrated another significant rise in duration rate again this period (a 21% increase, from 15 days lost per lost time injury in 1999-2000 to 18 in 2000-2001). This follows a massive increase of 88% between 1998-1999 and 1999-2000.

As with DR, SR also increased markedly over the previous periods. The 2000-2001 result of 176 days lost per million hours worked represented a 81% rise and is the poorest result since 1996-97.

SMELTING/REFINING

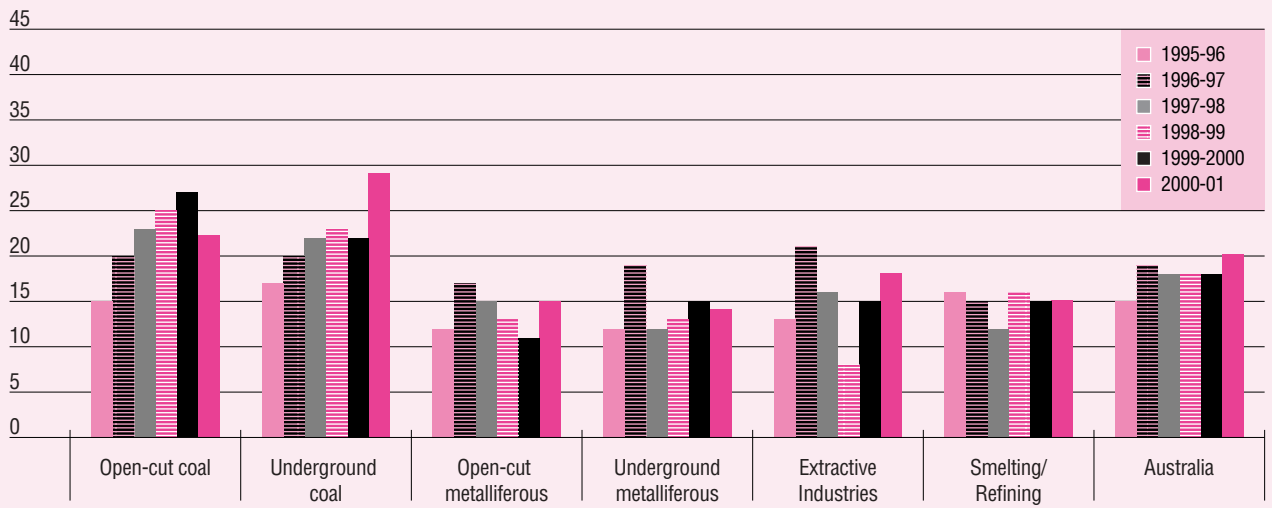
Smelting and refining recorded a DR equal to last year. Over the past six years, this sector's DR has maintained a fairly stable range between 12 and 16 days lost per lost time injury.

SR also remained fairly stable with a 4% increase (83 in 1999-2000 to 86 in 2000-2001), significantly less change than experienced between 1998-1999 and 1999-2000 (39%). This period's rate of 86 was the lowest of any sector.

TABLE 5: Duration Rate and Severity Rate By Sector 1996-97 to 2000-01

	1996-97		1997-98		1998-99		1999-2000		2000-01	
	Duration Rate	Severity Rate	Duration Rate	Severity Rate	Duration Rate	Severity Rate	Duration Rate	Severity Rate	Duration Rate	Severity Rate
O/C coal	20	374	23	344	25	355	27	314	22	271
U/G coal	20	1247	22	1288	23	929	22	816	29	996
O/C metalliferous	17	166	15	133	13	93	11	92	15	97
U/G metalliferous	19	365	12	195	13	160	15	189	14	173
Extractive industries	21	228	16	174	8	113	15	134	18	176
Smelting/refining	15	151	12	82	16	135	15	83	15	86
All minerals	19	334	18	274	18	206	18	200	20	213

CHART 14 Duration Rate by Sector 1995-96 to 2000-01



Duration and Severity Rate by State/Territory

DR again varied markedly between States/Territories this period. Rates ranged between eight in the Northern Territory to 27 in New South Wales. Over this period, the Australian average DR was 20, slightly higher than the previous three years' rate of 18 and equal to that of 1996-1997. New South Wales had the highest duration rate of all States, continuing a four-year trend.

New South Wales also reported the highest severity rate of 678 lost days per one million hours worked. This is almost twice as high as the closest State, Tasmania, with a rate of 352. The New South Wales SR rose by 19% over the previous year and, at 678, is almost three times greater than the Australian average of 220.

Victoria reported the second highest DR this period, a rise of 46% on 1999-2000, and the largest increase reported across all States/Territories. This year's rate of 19 is the highest duration rate recorded by Victoria since data were first recorded in 1997-1998. Victoria also reported a rise in severity rate, from 140 last period to 161 (15%). This is the highest rate since 1997-1998, but still below the Australian average.

Western Australia reported a rise in DR of 41% between 1999-2000 and this period. This is equal to Western Australia's worst performance, recorded in 1997-1998. Western Australia, like most of the other States, has also reported a rise in its severity rate (11% greater than last year). However, at 95, it is less than half that of the all-mining average.

South Australia recorded the same DR as last year: 17 days lost per lost time injury. This is 89% higher than its lowest rate of nine in 1998-1999. South Australia's severity rate declined to 73 this year, representing a 35% improvement on the previous period's rate of 113.

Queensland recorded a duration rate of 16 days lost per lost time injury. This was 7% greater than last year and 23% above its best performance of 13, achieved in 1998-1999. As with the duration rate, the severity rate in Queensland has remained relatively stable.

CHART 15 Duration Rate By State 2000-01



Tasmania's DR has increased to 16 this year, its second highest rate on record. At 352, Tasmania's severity rate is 74% greater than last year and 121% more than that recorded in 1998-1999. Compared to the all-mining Australian average, Tasmania performed poorly, with an SR 64% higher than the average.

The Northern Territory maintained the lowest duration rate of all States/Territories, reporting an average of eight days lost per lost time injury this period – 28% less than last period but 14% more than that recorded in 1998-1999. The Northern Territory also recorded the lowest severity rate, of 61 days lost per million hours worked. This represents a 35% reduction on last period's result of 96 days.

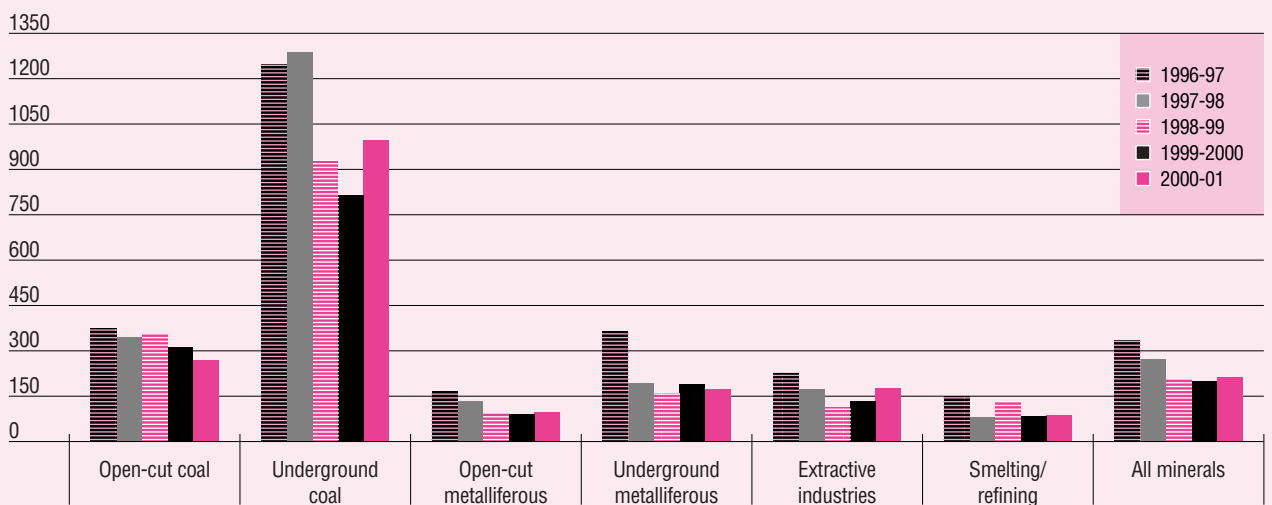
Across Australia there has been a disappointing increase in duration and severity rates. All States and Territories reported increases in DR and SR with the exception of the Northern Territory and South Australia. This trend may be due to all or some of the following explanations:

- injuries suffered by employees may have been more severe in the current year, requiring more recovery time;
- less severe injuries may be being managed better (eg they may not result in a lost time injury at all) thus increasing the DR and SR for remaining injuries;
- some types of injuries require longer periods of time off the job, eg fractures; and
- injury management may have deteriorated, resulting in longer delays in returning employees to pre-injury duties.

TABLE 6: Duration Rate and Severity Rate by State 1997-98 to 2000-01

	1997-98		1998-99		1999-2000		2000-01	
	Duration Rate	Severity Rate	Duration Rate	Severity Rate	Duration Rate	Severity Rate	Duration Rate	Severity Rate
WA	17	133	15	102	12	85	17	95
QLD	18	192	13	168	15	178	16	152
NSW	23	823	24	691	25	567	27	678
SA	23	93	9	68	17	113	17	73
VIC	14	150	12	119	13	140	19	161
TAS	17	216	13	159	13	202	16	352
NT	15	119	7	50	11	96	8	61
Australia	18	274	18	206	18	200	20	213

CHART 16 Severity Rate By Sector 1996-97 to 2000-01



Workers' Compensation Data

This section discusses National Occupational Health and Safety Commission (NOHSC) data for 1999-2000, the latest such figures available.

Fatalities in the mining industry

Table 7 shows that in 1999-2000, 11 injury/poisoning deaths (comprising 84.6%) and two disease deaths (15.4%) were recorded by the mining industry. This compares with 13 injury/poisoning deaths and four disease-related deaths in 1998-1999. As in previous years, confidentiality concerns mean no further information is available on disease deaths.

It is worthwhile comparing the workers' compensation figures with those collected by the mines inspectorates for the same period. This comparison uses only injury/poisoning NOHSC data for consistency, as disease figures are unlikely to be included in the mines inspectorate data. The difference in the numbers of fatalities identified by the two bodies may be explained by inconsistencies in data collection. For example, they have different definitions as to what constitutes the minerals industry. In 1999-2000, the NOHSC recorded lower figures than the mines inspectorate, unlike the previous year in which the NOHSC accounted for more fatalities than the inspectorate.

TABLE 7: Inspectorate/NOHSC data comparison

Year	Mines Inspectorate Recorded Fatalities	NOHSC Recorded Fatalities
1997-98	19	19
1998-99	10	17
1999-2000	19	13

Table 8 shows that in 1999-2000, the injury/poisoning fatalities included six deaths (55%) in the Metal Ore Mining sector and three fatalities in Other Mining activities, constituting (27%) of the fatalities recorded by the NOHSC. The other two fatalities (18%) occurred in the Coal Mining sector.

Fatal incidence and frequency rates are shown in Chart 17 for selected additional ANZSIC sub-divisions. Selected industry sub-divisions are those from the higher end of the spectrum traditionally used for comparison purposes.

In 1999-2000, the mining sectors performed poorly compared to other industries on the FIFR indicator. All mining sectors, except Services to Mining, reported a rate of 0.2 or above.

All other industries, except Forestry and Logging (0.9) and Road Transport (0.2), reported frequency rates at least half that of the mining industry. As in 1998-1999, the Other Mining sector reported an FIFR of 0.3, which was again the highest rate experienced in the mining industry. This is a substantial change from 1997-1998 in which Other Mining reported an FIFR almost half that of this year's rate of 0.3.

Across the cohort only two industries recorded FIFRs higher than 0.1 in 1998-1999, but 1999-2000 has seen this rise to five. Previous results reported Forestry and Logging and Other Mining with an FIFR above 0.1. Road Transport, Metal Ore Mining and Coal Mining join these sectors in 1999-2000. The only mining-related sector to report a decline in FIFR was Services to Mining, with an FIFR of zero in 1999-2000, a reduction of 0.1. As has been noted in the mines inspectorate data, fatality rates vary widely from year to year.

On the FIIR (Fatal Injury Incidence Rate) indicator in 1999-2000, all mining sectors recorded rates at or below 0.2. Compared with rates in other industries, the mining sectors are average performers. However, compared with the Forestry and Logging industry, which recorded a rate of 0.4, the mining sectors perform comparatively well. Historically, mining sectors have not compared as well. In 1998-1999, Other Mining recorded the highest FIIR (0.6) of all industries, while Coal Mining reported the third greatest rate behind Forestry and Logging.

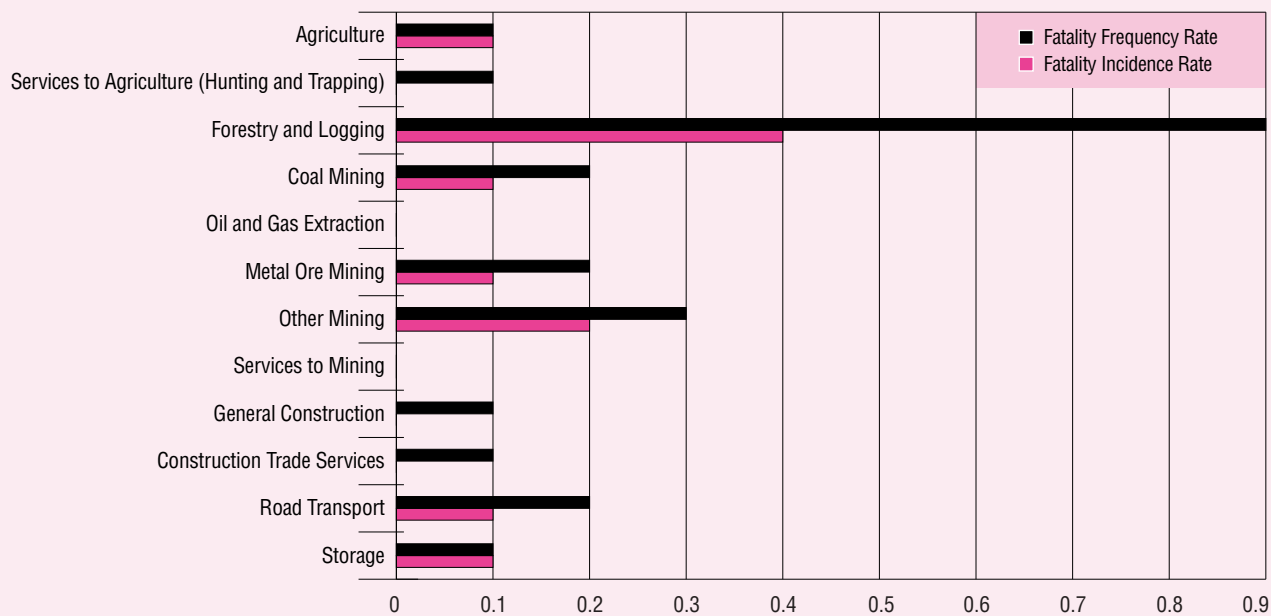
All FIIRs for the mining industry in 1999-2000 were equal to or lower than those recorded in 1998-1999. Coal and Other Mining demonstrated the greatest improvements with reductions of 0.2 and 0.4, respectively.

In 1997-98, it was noted that the fatality incidence rate recorded much greater variability between sectors. In 1998-99, this trend continued with six sectors recording rates over 0.1. In the 1999-2000 data, this trend ceased. Of the 12 industries represented, ten were reported to have FIIRs of 0.1 or below.

TABLE 8: Fatality data – injury/poisoning and disease 1999-2000

	Injury/Poisoning	Disease
Coal Mining	2	2
Metal Ore Mining	6	0
Other Mining	3	0
Services To Mining	0	0

CHART 17 **Fatal Incidence and Frequency Rates for Selected Industries 1999-2000**



Mining industry injury claims data

In 1998-1999, the incidence and frequency rates for new workers' compensation cases for injuries resulting in five or more days lost time for the mining division (excluding Victoria) were 31 and 14 respectively. In 1999-2000, these rates remained relatively stable at 33 and 14 respectively. This is the first time in three years that this data has not shown a decline.

Last year was the first in which the mining industry did *not* record the highest incidence and frequency rates of the industries selected for comparison. Unfortunately, this did not continue into 1999-2000, and mining again recorded the highest industry incidence rate. Frequency rates differed this year, however. The mining frequency rate was reported below Agriculture, Forestry and Fishing, Manufacturing, Construction and Transport and Storage.

Within all the selected sectors, the highest incidence and frequency rates were recorded in the Forestry and Logging industry (56 and 32, respectively), which was followed by Coal Mining (46 and 23, respectively). For the third consecutive year, Oil and Gas Extraction recorded the lowest incidence and frequency rates of 15 and 6 respectively.

Within the mining industry, Coal Mining recorded the highest incidence and frequency rates for the second consecutive year, but this year's incidence and frequency rates improved by 18% and 12%, respectively, over last year.

The only other sector to show improvement was Services to Mining, reporting improvements of 19% and 23% respectively in incidence and frequency rates.

In 1999-2000 six of the 12 sectors used in the comparison reported rates below the mining industry average incidence rate of 33. These were: Agriculture, Oil and Gas Extraction, Metal Ore Mining, Services to Mining, Construction Trade Services, and General Construction. Of these six, only four sectors – Agriculture, Oil and Gas Extraction, Metal Ore Mining, and Services to Mining – recorded frequency rates below the all-mining average frequency rate of 14.

Six sectors recorded substantial changes in their incidence rates between 1998-1999 and 1999-2000. Services to Agriculture fell from 44 to 37 (16%), Coal Mining from 56 to 46 (18%), Storage from 59 to 38 (36%), and Services to Mining from 31 to 25 (19%). Other Mining increased from 33 to 46 (39%) and Forestry and Logging rose from 33 to 56 (70%).

Two sectors recorded substantial changes in their frequency rate between 1998-1999 and 1999-2000. Forestry and Logging rose from 17 to 32 (88%) and Storage fell from 31 to 21 (32%).

TABLE 9: New workers' compensation claims, injury/poisoning cases by ANZIC sub-division 1999-2000 (included fatal and non-fatal) (excludes Victoria)

	Number of Cases	Frequency Rate	Incidence Rate	Average Weeks Lost	Average Cost	Total Weeks Lost
Agriculture	4471	14	28	13	8991	58123
Services to Agriculture	783	19	37	15	9436	11745
Forestry and Logging	385	32	56	14	12164	5390
Coal Mining	911	23	46	11	12983	10021
Oil and Gas Extraction	65	6	15	10	18047	650
Metal Ore Mining	762	11	27	11	13307	8382
Other Mining	397	20	46	14	12478	5558
Services to Mining	378	10	25	20	10901	7560
General Construction	5727	15	30	12	10683	68724
Construction Trade Services	8233	15	30	14	10782	115262
Road transport	5717	18	39	12	9960	68604
Storage	1210	21	38	10	6587	12100

Notably, even though Oil and Gas Extraction recorded the lowest incidence and frequency rates, it recorded the highest average cost (\$18,047) per injury. The Storage sector recorded the lowest average cost per injury for the third consecutive year. The average cost per injury in this industry was \$6587, 64% less than that of the Oil and Gas Extraction sector noted above. Interestingly, while recording the lowest average cost per injury over the preceding three years, the cost per injury in the Storage sector has risen 12% between 1997-1998 and 1999-2000.

The overall cost to the industry in 1999-2000 was \$31,041,791. This is an increase of 10% on the 1998-99 cost, but remains substantially lower than the \$40,416,958 recorded in 1996-97. Note, however, that these data are preliminary figures and will change over time.

Disease claims in the mining industry

NOHSC data for 1999-2000 shows that disease accounts for 5.6% of workers' compensation claims in all industries. This is considerably lower (57%) than the 12.9% recorded in 1998-1999.

In 1997-98, Services to Mining and Metal Ore Mining fell below the all-industry percentage. This trend continued in 1998-99 even though the all-industry percentage of disease claims had fallen by 24%. In 1999-2000, all mining sectors were considerably above the all-industries rate of 5.6%. Coal Mining was the highest above the all-industry average, reporting that 23.8% of its claims were disease related. Services to Mining followed closely, reporting that 23% of claims were due to disease. Metal Ore Mining and Other Mining reported disease claims of 14.3% and 12.9%, respectively.

The Coal Mining sector again showed a reduction in the proportion of disease-related claims. This year's proportion of 23.8% is 20% less than reported in the 1998-1999 data, the first decline in this sector since 1996-1997. Services to Mining reported the largest increase in the proportion of disease claims. In 1998-1999, Other Services reported that 8.4% of its claims were due to disease. In 1999-2000, it reported a rise of 188% to 23% of claims. Metal Ore Mining experienced a noteworthy increase in the proportion of disease-related claims, rising from 10.1 in 1998-1999 to 14.3. Other Mining experienced the only decline in the mining industry, moving from 19.7% in 1998-1999 to 14.3% in 1999-2000.

THE NATURE OF CLAIMS

Within each of the mining sectors at least 88% of total claims are made up of a combination of claims due to injury/poisoning and claims due to diseases of the nervous system and sense organs (ie noise-induced hearing loss), with the former being the major contributor.

Services to Mining recorded the highest percentage of claims due to injury/poisoning (91.2%), and the lowest percentage of claims due to diseases of the nervous system and sense organs (3.5%). In contrast, Coal Mining recorded a relatively low rate of claims due to injury/poisoning (75.6%) but the highest percentage of claims due to diseases of the nervous system and sense organs (20.2%).

Metal Ore Mining had the second-highest percentage of claims due to injury/disease (85.1%). The only other category contributing significantly to the claims in this sector were diseases of the nervous system and sense organs (7.5%), although this sector also reported that 2.6% of claims were due to disease of the musculoskeletal system and connective tissue. Other Mining claims due to injury/poisoning and diseases of the nervous system and sense organs comprised 76.1% and 15.2%, respectively, totalling over 90% of all claims in that sector. The remaining claims can be accounted for under diseases of the digestive system and diseases of the respiratory system (4.3% and 1.5%, respectively). Services to Mining recorded the highest percentage of diseases due to injury/poisoning at 91.2%, with all other claims types contributing only a small or negligible percentage.

TABLE 10: Mining injury proportion of injury/poisoning cases and disease cases 1999-2000

	% Injury/Poisoning	% Disease
Coal Mining	75.6	23.8
Metal Ore Mining	85.1	12.9
Other Mining	76.1	23.0
Services To Mining	91.2	5.6

International Comparisons

Fatalities

South Africa

The Australian minerals industry average FIFR over the past ten years is just over 0.10. The South African equivalent for all mines is 0.37, over three times that experienced in Australia. The most significant sector contributing to this high FIFR in South Africa is the gold mining sector. This sector has recorded a ten-year average FIFR almost five times that of the Australian average.

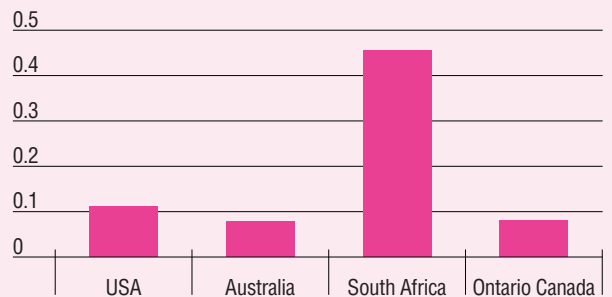
Raw data indicates that the South African mining industry suffered 218 fatalities in 2001, its best result to date.

The number of fatalities has declined steadily over the past 13 years (since data has been available), from 675 fatalities in 1989 to 218 this year. By comparison, Australia experienced 14 fatalities this year, 19 less than the highest annual number of fatalities (33) experienced in the past decade.

In a direct comparison of sectors, the South African total metalliferous sector experienced an FIFR of 0.45 compared to the Australian sector's FIFR of 0.08. South Africa's total coal sector reported its lowest rate in over ten years of 0.16, still 78% greater than that of the Australian total coal sector.

Comparisons could not be made to open-cut or underground sectors because the available South African data do not differentiate between these sectors.

CHART 19 International Metalliferous Mining Industry Fatality Rates



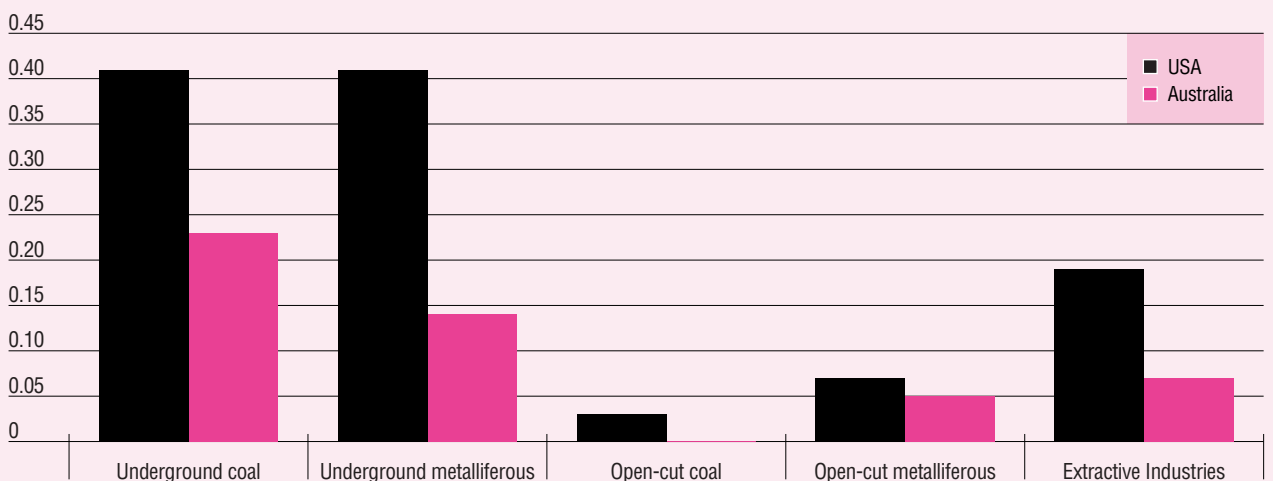
Australia: 2000-01
 USA: January to September 2001
 South Africa: 2001
 Ontario: 2001

CHART 20 International Coal Mining Industry Fatality Rates



Australia: 2000-01
 USA: January to September 2001
 South Africa: 2001
 Ontario does not have a coal mining industry

CHART 18 International Mining Industry Fatality Rates 2000-01



Australia: 2000-01 USA: January to September 2001

USA

The United States (US) reported an all-mining FIFR of 0.17 for 2000-2001, or 249% greater than Australia.

On a sector level, the US total metalliferous sector reported an FIFR of 0.12, or 51% above the Australian metalliferous sector's result of 0.08. The poorest performers in the US this year were the underground coal and metalliferous sectors, which reported FIFRs of 0.41 – substantially above those of the equivalent Australian sectors of 0.23 and 0.15, respectively.

Australia's total minerals ten-year average FIFR was 0.10, somewhat less than the US rate of 0.12 for the same period. Averaged over the decade, Australia's open-cut metalliferous sector reported rates one third that of the US. This year the Australian underground metalliferous sector reported an FIFR 63% less than the US.

The US ten-year average FIFRs for open-cut and underground coal were 0.12 and 0.24, respectively, compared with Australia's average rates of 0.04 and 0.21, respectively. As with the open-cut metalliferous rates, Australia's open-cut coal rate is substantially below the US rate.

Canada

FIFR data for Ontario, Canada, is available only for the past three years and for the metalliferous mining industry only. In 2001, Ontario had an FIFR of 0.08 across its metalliferous sector. Underground metalliferous mines reported an FIFR of 0.04, whilst open-cut sector reported an FIFR of 0.54.

By comparison, Australia's open-cut industry had an FIFR of 0.05 (91% less than that of Ontario). The apparently large rise in FIFR in the open-cut sector (0.54) was due to a single fatality in the relatively small operation.

During the same period, the Canadian underground sector performed considerably better, reporting an FIFR of 0.04, or 70% less than that in the Australian underground sector.

The underground sector in the Canadian mining industry made a dramatic improvement on last year's FIFR, falling by 82%, or four fewer fatalities than 2000.

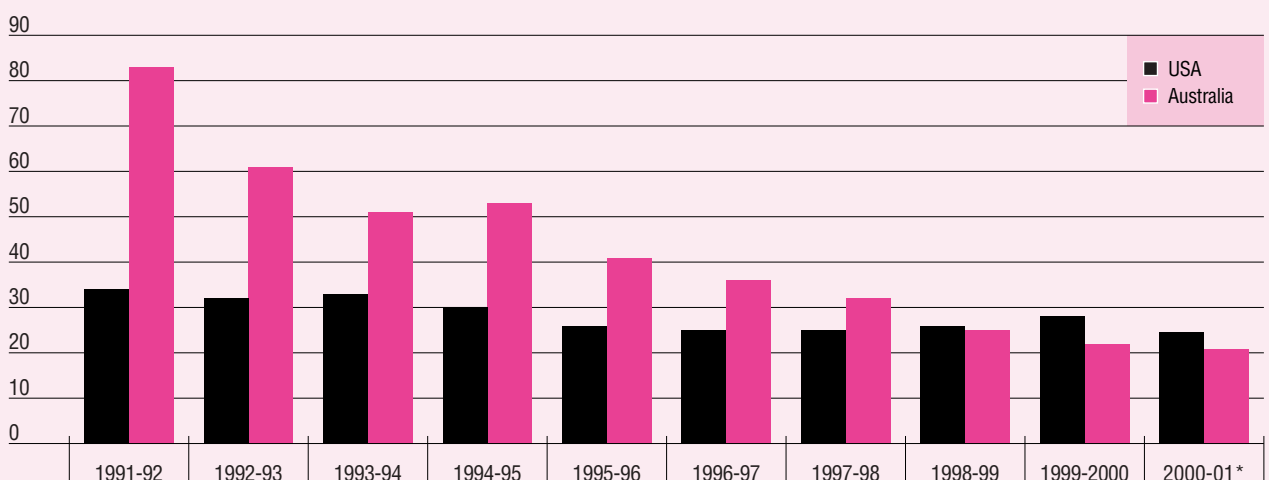
Lost Time Injury Comparisons

Coal

The US Non-Fatal Days Lost Frequency Rate (NFDL/FR) for coal was 25 per million hours worked. This remains below the sector's ten-year average of 29. By comparison, the Australian coal sector recorded its lowest rate in a decade of 21, about half the ten-year average of 43.

In South Africa, injuries are only reported if more than 14 days are lost. The figures are therefore not directly comparable with Australian data. However, it is worth noting that the South African LTIFR has fluctuated since 1989 and has shown no sustained improvement during that time.

CHART 21 International Coal Mining Lost Time Injury Rates 1991-92 to 2000-01



* The data for US represents January to September 2001

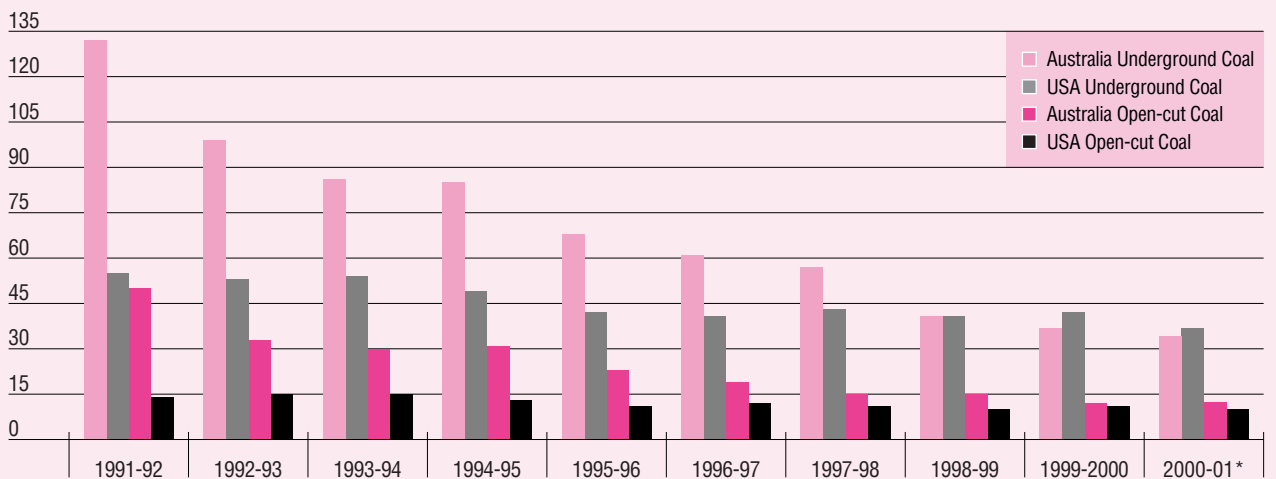
Metalliferous

Over the past decade the US's NFDL/FR has remained stable between 17 and 14, whilst the Australian data has shown a consistently decreasing trend, from 22 in 1992-93 to a low of eight in 1998-1999. This year, the US and Australian metalliferous sector injury rates remain stable, in line with last year's assessment of this data.

In South Africa, differences (see above) and reliability in data collection make it difficult to make useful comparisons, although the LTIFR for the metalliferous sector in South Africa has improved slightly over the past decade.

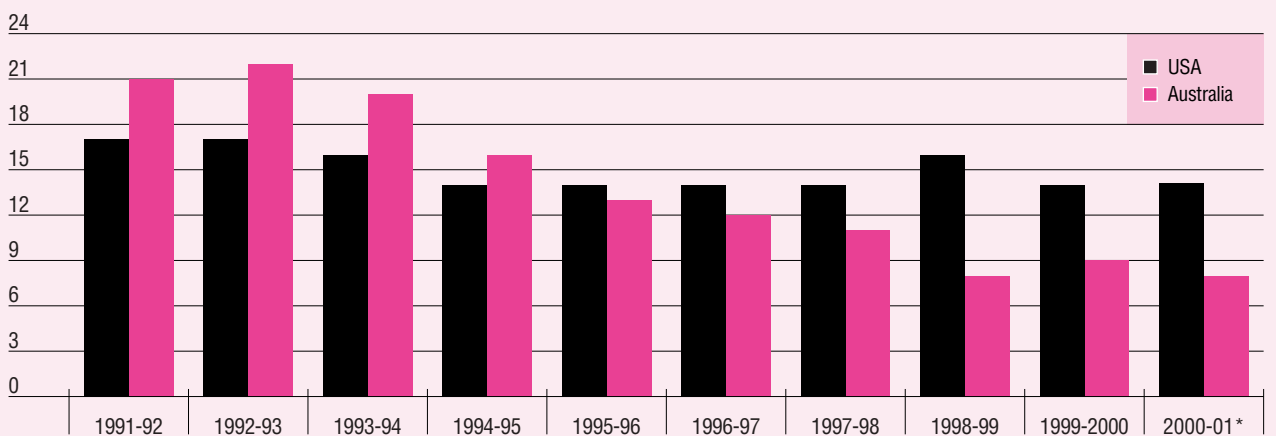
In Ontario, LTIFR in the metalliferous sector over the past three years has remained steady, with rates of six, seven and six in 1999, 2000 and 2001, respectively. Over the same period, Australia's LTIFR has fluctuated between nine and eight.

CHART 22 International Coal Mining Lost Time Injury Rates 1991-92 to 2000-01



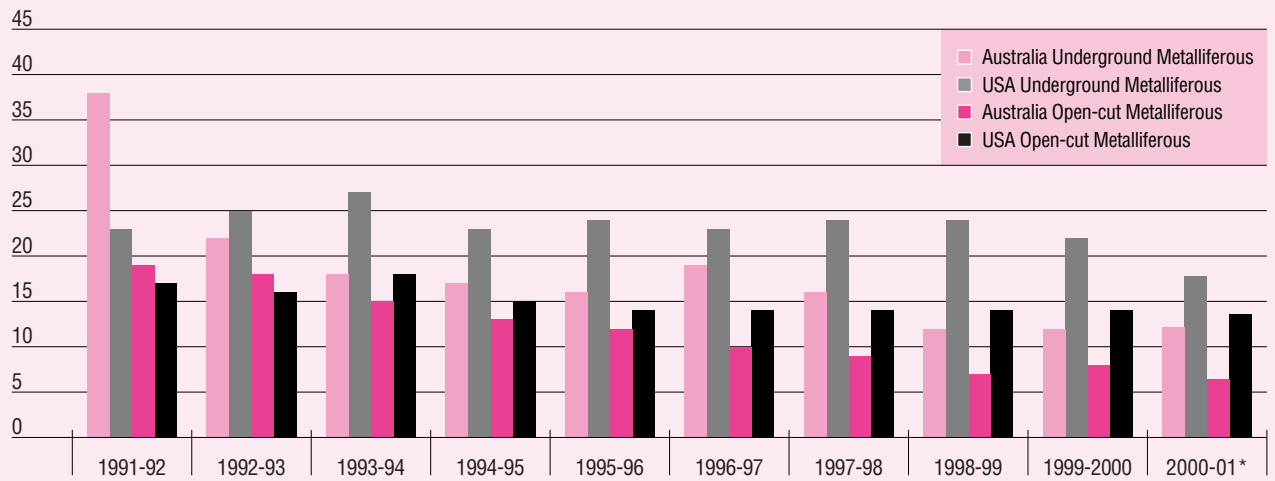
* The data for US represents January to September 2001

CHART 23 International Metalliferous Mining Lost Time Injury Rates 1991-92 to 2000-01



* The data for US represents January to September 2001

CHART 24 International Metalliferous Mining Lost Time Injury Rates 1991-92 to 2000-01



* US data for 2000 represents January to September

Conclusion

Despite improvements in fatality rates in the Australian minerals industry this year, there is little evidence of a sustained improvement trend over the decade. This emphasises the need for minerals companies and governments to maintain an ongoing focus on fatality prevention.

Injury frequency data continue to “bottom out” at or around single-digit levels. Of the major mining sectors, only the New South Wales coal sector (with an LTIFR of about 30) has substantial scope for improvement. Smaller mining sectors in Tasmania, South Australia and Victoria are likely to continue to fluctuate from year to year. At a company level this highlights the need for a continued and increasing focus on other positive lead indicators to continue to drive performance improvement.

Duration and severity rates have increased in most sectors over the previous two years, although it is not possible to deduce the exact cause. It is important that companies ensure through effective risk management that an adequate focus is given to the potential for high-severity permanently disabling injuries, as is the case with the current focus on fatality prevention.

To the extent that valid international comparisons can be made, the Australian minerals industry appears to be performing well on these benchmarks.

The total direct cost of injuries and disease to the mining industry in 1999-2000 was \$31,041,791, or 10% greater than the previous year. Although this dollar cost to the industry is significant, the tragic cost in terms of human life and pain and suffering is immeasurable.

Reference Tables

TABLE 11: Nature of disease claims in the mining sectors 1999-2000

	Percentage				
	Coal mining	Oil and gas extraction	Metal ore mining	Other mining	Services to mining
Injury and Poisoning	75.6	74.6	85.1	76.1	91.2
Diseases of the Nervous System & Sense Organs	20.2	14.3	7.5	15.2	3.5
Diseases of the Musculoskeletal System & Connective Tissue	1.0	np	2.6	2.0	np
Diseases of the Skin & Subcutaneous Tissue	np	0.0	np	np	np
Diseases of the Digestive System	1.8	0.0	1.6	4.3	2.1
Infectious and Parasitic Diseases	0.0	0.0	np	0.0	0.0
Diseases of the Respiratory System	0.0	0.0	np	1.5	0.0
Diseases of the Circulatory System	np	0.0	np	0.0	0.0
Neoplasms (Cancers & Benign Tumors)	0.0	0.0	0.0	np	0.0
Mental Disorders	0.8	np	1.2	0.0	np
Other Diseases	np	0.0	0.0	np	0.0

TABLE 12: Average cost of disease claims by mining sub-divisions and selected industry sub-divisions 1999-2000

	Average Cost of Disease Claims
Agriculture	7950
Services to Agriculture	9585
Forestry and Logging	6664
Coal Mining	6160
Oil and Gas Extraction	8772
Metal Ore Mining	12230
Other Mining	10016
Services to Mining	11490
General Construction	10242
Construction Trade Services	11616
Road transport	10515
Storage	7815

TABLE 13: Number of Fatalities by State 1991-92 to 2000-01

State	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01
WA	6	6	7	9	4	8	13	3	6	5
QLD	0	2	4	17	1	12	1	2	2	2
NSW	12	10	5	4	2	11	4	4	11	3
VIC	0	0	2	0	0	0	0	0	0	1
TAS	2	0	1	1	0	1	0	1	0	3
SA	4	1	1	0	0	0	1	0	0	0
NT	1	0	0	1	0	1	0	0	0	0
ALL	25	19	20	32	7	33	19	10	19	14

TABLE 14: Number of Fatal Injuries By Sector 2000-01

Mine Type	WA	QLD	NSW	VIC	SA	TAS	NT	AUSTRALIA
O/C Coal	0	0	0	0	0	0	0	0
U/G Coal		1	2			1		4
Total Coal	0	1	2	0	0	1		4
O/C Metalliferous	3	1	0	0	0	0	0	4
U/G Metalliferous	1	0	0	1	0	2	0	4
Total Metalliferous	4	1	0	1	0	2	0	8
Extractive Industries	1	0	1	0	0	0	0	2
Smelting/Refining	0	0	0	0	0	0	0	0
Exploration	0						0	0
ALL	5	2	3	1	0	3	0	14

TABLE 15: Fatal Injury Frequency Rates by State 1991-92 to 2000-01

State	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01	Average
WA	0.09	0.09	0.09	0.12	0.05	0.09	0.14	0.03	0.07	0.06	0.08
QLD	0.00	0.05	0.05	0.32	0.02	0.24	0.02	0.04	0.04	0.04	0.08
NSW	0.29	0.24	0.10	0.10	0.05	0.25	0.11	0.11	0.31	0.10	0.17
VIC	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.04
TAS	0.20	0.00	0.11	0.11	0.00	0.12	0.00	0.11	0.00	0.36	0.10
SA	0.46	0.33	0.11	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.11
NT	0.15	0.00	0.00	0.12	0.00	0.09	0.00	0.00	0.00	0.00	0.04
ALL	0.13	0.12	0.09	0.15	0.03	0.15	0.09	0.05	0.09	0.07	0.10

TABLE 16: Australian Minerals Industry Fatal Injury Frequency Rate 2000-01

Mine Type	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01	Average
Open-cut coal	0.07	0.07	0.07	0.03	0.06	0.03	0.03	0.04	0.04	0.00	0.04
Underground coal	0.25	0.13	0.10	0.58	0.05	0.41	0.05	0.11	0.22	0.23	0.21
Open-cut metalliferous	0.05	0.06	0.05	0.12	0.00	0.07	0.02	0.02	0.03	0.05	0.05
Underground metalliferous	0.36	0.30	0.15	0.23	0.10	0.46	0.39	0.14	0.37	0.15	0.26
Extractive Industries	—	—	0.46	0.20	0.00	0.00	0.09	0.00	0.13	0.17	0.13
Smelting/Refining	—	—	0.04	0.02	0.02	0.05	0.00	0.00	0.00	0.00	0.02
Total Industry	0.13	0.12	0.09	0.15	0.03	0.15	0.09	0.05	0.09	0.07	0.10

NB: Includes Brown Coal

TABLE 17: Fatality Injury Frequency Rate By State and Sector 2000-01

Mine Type	WA	QLD	NSW	SA	VIC	TAS	NT	AUST
Open-cut coal	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Underground coal		0.16	0.18				8.64	0.23
Total coal	0.00	0.05	0.11	0.00	0.00	6.95		0.09
Open-cut metalliferous	0.05	0.08	0.00	0.00	0.00	0.00	0.00	0.05
Underground metalliferous	0.11	0.00	0.00	0.00	1.42	0.71	0.00	0.15
Total metalliferous	0.06	0.05	0.00	0.00	1.27	0.57	0.00	0.08
Extractive Industries	0.54	0.00	0.26	0.00	0.00	0.00	0.00	0.17
Smelting/Refining	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Industry	0.06	0.04	0.10	0.00	0.12	0.36	0.00	0.07

TABLE 18: Number of Lost Time Injuries by State 1991-92 to 2000-01

State	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01
WA	1,611	1,337	1,033	1,025	1,031	863	726	652	583	492
QLD	1,367	1,186	1,174	1,088	1,014	983	761	676	568	466
NSW	3,432	2,357	2,016	2,098	1,679	1,576	1,383	1,018	795	788
VIC	—	171	129	85	79	82	95	83	85	68
TAS	624	133	293	236	261	158	121	111	137	183
SA	—	73	340	142	93	72	43	76	50	35
NT	156	151	143	106	105	91	78	60	76	61
Australia	7,190	5,408	5,128	4,780	4,262	3,825	3,207	2,676	2,294	2,093

TABLE 19: Lost Time Injury Frequency Rates by Sector 1991-92 to 2000-01

Mine Type	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01
O/C Coal	50	33	30	31	23	19	15	15	12	12
U/G Coal	132	99	86	85	68	61	57	41	37	34
O/C Metalliferous	19	18	15	13	12	10	9	7	8	6
U/G Metalliferous	38	22	18	17	16	19	16	12	12	12
Extractive Industries	—	—	26	23	16	11	11	13	9	10
Smelting/Refining	—	—	17	13	13	10	7	8	5	6
All Mining	42	33	27	25	21	18	15	12	11	11

TABLE 20: Lost Time Injury Frequency Rate by State 1991-92 to 2000-01

State	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01
WA	23	20	14	13	12	10	8	7	7	6
QLD	33	31	27	25	22	20	15	12	12	10
NSW	82	58	42	52	39	36	36	29	23	25
TAS	62	51	33	27	28	19	13	13	16	22
VIC	0	24	17	10	10	12	11	10	11	8
SA	0	39	37	17	12	10	7	8	6	4
NT	23	22	14	13	11	8	8	7	9	8
Australia	42	33	27	25	21	18	15	12	11	11

TABLE 21: Severity Rate By Sector 2000-01

Mine Type	WA	QLD	NSW	SA	VIC	TAS	NT	AUST
Open-cut coal	187	87	691	2	125	531		271
Underground coal		364	1369			372		996
Total coal	187	168	1083	2	125	403		554
Open-cut metalliferous	91	132	26	56	0	284	132	97
Underground metalliferous	129	214	83	36	395	435	214	173
Total metalliferous	96	160	66	41	352	406	160	117
Extractive Industries	423	79	32	303	282	0	0	86
Smelting/Refining	38	79	154	31	61	329	33	213
Total Industry	92	152	678	73	161	352	55	213

* Does not include Exploration

TABLE 22: Employment and hours worked by State and sector 2000-01

State	Sector	No. of employees	No. of hours worked incl O/T
WA	Metalliferous Surface	26,442	56,180,000
	Metalliferous Underground	3,444	8,970,000
	Metalliferous Total	29,886	65,150,000
	Coal Surface	696	1,240,000
	Brown Coal Surface		
	Total Coal Surface	696	1,240,000
	Coal Underground		
	Coal Total	696	1,240,000
	Mining Total	30,582	66,390,000
	Extractive Industries	963	1,860,000
	Smelting/Refining	8,487	16,130,000
	Exploration	713	1,410,000
	ALL MINING	40,745	85,790,000
	QLD	Metalliferous Surface	5,666
Metalliferous Underground		2,636	6,837,000
Metalliferous Total		8,302	20,026,000
Coal Surface		6,128	15,220,000
Brown Coal Surface			
Total Coal Surface		6,128	15,220,000
Coal Underground		2,329	6,316,000
Coal Total		8,457	21,536,000
Mining Total		16,759	41,562,000
Extractive Industries		877	1,970,000
Smelting/Refining			
Exploration			
ALL MINING		20,149	48,451,935
NSW		Metalliferous Surface	786
	Metalliferous Underground	1,840	4,294,554
	Metalliferous Total	2,626	6,129,075
	Coal Surface	3,925	7,977,576
	Brown Coal Surface		
	Total Coal Surface	3,925	7,977,576
	Coal Underground	5,681	10,890,924
	Coal Total	9,606	18,868,500
	Mining Total	12,232	24,997,575
	Extractive Industries	1,948	3,829,184
	Smelting/Refining		
	Exploration		
	ALL MINING	16,206	31,497,989
	SA	Metalliferous Open Cut	259
Metalliferous Underground		601	1,591,784
Metalliferous Total		860	2,129,286
Coal open cut		220	439,173
Brown Coal open-cut		0	0
Total Coal open cut		220	439,173
Coal Underground		0	0
Coal Total		220	439,173
Other (minerals o-c)		641	1,235,192
Other (minerals u/g)		2,007	4,377,023
In-situ Leach			
Extractive Industries		641	1,235,192
Smelting/Refining		2,007	4,377,023
Exploration			
ALL MINING	3,728	8,180,674	

TABLE 22: **Employment and hours worked by State and sector 2000-01** (continued)

State	Sector	No. of employees	No. of hours worked incl O/T
VIC	Metalliferous Surface	300	85,334
	Metalliferous Underground	848	704,678
	Metalliferous Total	1,148	790,012
	Nonmetalliferous	131	133,666
	Brown Coal Surface	1,033	2,078,822
	Total Coal Surface	1,033	2,078,822
	Coal Underground		
	Coal Total	1,033	2,078,822
	Mining Total	2,312	3,002,500
	Extractive Industries	1,736	2,120,240
	Smelting/Refining		
	Exploration		
	ALL MINING	5,478	8,174,035
TAS	Metalliferous Surface	378	672,060
	Metalliferous Underground	1,382	2,834,294
	Metalliferous Total	1,760	3,506,354
	Nonmetalliferous	15	28,239
	Brown Coal Surface		
	Total Coal Surface	15	28,239
	Coal Underground	72	115,727
	Coal Total	87	143,966
	Mining Total	1,847	3,650,320
	Extractive Industries	157	267,810
	Smelting/Refining	2,783	4,446,555
	Exploration		
	ALL MINING	4,787	8,364,685
NT	Metalliferous Surface	1,273	2,662,654
	Metalliferous Underground	868	2,138,659
	Metalliferous Total	2,141	4,801,313
	Nonmetalliferous		
	Brown Coal Surface		
	Total Coal Surface		
	Coal Underground		
	Coal Total		
	Mining Total	2,141	4,801,313
	Extractive Industries	165	299,110
	Smelting/Refining	1,082	2,529,213
	Exploration	146	261,347
	ALL MINING	3,388	7,629,636
NATIONAL	Metalliferous Surface	35,104	75,161,071
	Metalliferous Underground	11,619	27,370,969
	Metalliferous Total	46,723	102,532,040
	Nonmetalliferous	11,115	25,038,654
	Brown Coal Surface	1,033	2,078,822
	Total Coal Surface	12,148	27,117,476
	Coal Underground	8,082	17,322,651
	Coal Total	20,230	44,440,127
	Mining Total	66,953	146,972,167
	Extractive Industries	6,487	11,581,536
	Smelting/Refining	20,328	38,125,251
	Exploration	859	1,671,347
	ALL MINING	94,627	198,350,301

TABLE 22: South African Fatality and Injury Rates for all mines 1989–2001

Gold Mines	Labour	Hours	Fatalities	Injuries	FIR	LTIIR	FIFR	SIFR
1989	520,023	1,144,050,600	549	8,561	1.06	16.5	0.48	7.5
1990	484,738	1,066,423,600	526	8,195	1.09	16.9	0.49	7.7
1991	426,830	939,026,000	461	7,571	1.08	17.7	0.49	8.1
1992	362,196	796,831,200	407	7,585	1.12	20.9	0.51	9.5
1993	343,147	754,923,400	398	7,230	1.16	21.1	0.53	9.6
1994	346,648	762,625,600	350	6,743	1.01	19.5	0.46	8.8
1995	333,257	733,165,400	401	6,100	1.20	18.3	0.55	8.3
1996	317,363	698,198,600	308	5,822	0.97	18.3	0.44	8.3
1997	293,995	646,789,000	265	5,579	0.90	19.0	0.41	8.6
1998	223,498	491,695,600	239	4,543	1.07	20.3	0.49	9.2
1999	211,156	464,542,714	207	4,202	0.98	19.9	0.45	9.0
2000	190,645	419,419,355	175	3,546	0.98	19.9	0.45	9.0
2001	183,254	403,159,206	192	3,370	0.92	18.6	0.42	8.5
Average							0.48	
Other Mines								
1989	117,716	258,975,200	132	1,175	1.12	10.0	0.51	4.5
1990	127,128	279,681,600	99	1,259	0.78	9.9	0.35	4.5
1991	169,927	373,839,400	101	1,171	0.59	6.9	0.27	3.1
1992	111,944	246,276,800	99	857	0.88	7.7	0.40	3.5
1993	100,530	221,166,000	58	1,212	0.58	12.1	0.26	5.5
1994	101,693	223,724,600	46	1,148	0.45	11.3	0.21	5.1
1995	100,598	221,315,600	46	943	0.46	9.4	0.21	4.3
1996	111,335	244,937,000	52	932	0.47	8.4	0.21	3.8
1997	111,755	245,861,000	59	783	0.53	7.0	0.24	3.2
1998	111,254	244,758,800	45	815	0.40	7.3	0.18	3.3
1999	19,332	42,529,833	8	81	0.41	4.2	0.19	1.9
2000	18,105	39,831,579	8	86	0.41	4.2	0.19	1.9
2001	18,765	41,283,537	9	77	0.44	4.8	0.20	2.2
Average							0.28	
Total Metalliferous								
1989	637,739	1,403,025,800	681	9,736	1.07	15.3	0.49	6.9
1990	611,866	1,346,105,200	625	9,454	1.02	15.5	0.46	7.0
1991	596,757	1,312,865,400	562	8,742	0.94	14.6	0.43	6.7
1992	474,140	1,043,108,000	506	8,442	1.07	17.8	0.49	8.1
1993	443,677	976,089,400	456	8,442	1.03	19.0	0.47	8.6
1994	448,341	986,350,200	396	7,891	0.88	17.6	0.40	8.0
1995	433,855	954,481,000	447	7,043	1.03	16.2	0.47	7.4
1996	428,698	943,135,600	360	6,754	0.84	15.8	0.38	7.2
1997	405,750	892,650,000	324	6,362	0.80	15.7	0.36	7.1
1998	334,752	736,454,400	284	5,358	0.85	16.0	0.39	7.3
1999	230,488	507,072,547	215	4,283	0.93	18.6	0.42	8.4
2000	208,750	459,250,934	183	3,632	0.88	17.4	0.40	7.9
2001	202,019	444,442,743	201	3,447	0.99	17.1	0.45	7.8
Average							0.44	

TABLE 23: South African Fatality and Injury Rates for all mines 1989–2001 (continued)

Coal Mines	Labour	Hours	Fatalities	Injuries	FIR	LTIIR	FIFR	SIFR
1989	103,065	226,743,000	54	361	0.52	3.5	0.24	1.6
1990	103,304	227,268,800	50	404	0.48	3.9	0.22	1.8
1991	82,790	182,138,000	42	361	0.51	4.4	0.23	2.0
1992	69,489	152,875,800	46	359	0.66	5.2	0.30	2.3
1993	40,599	89,317,800	25	191	0.62	4.7	0.28	2.1
1994	54,251	119,352,200	44	202	0.81	3.7	0.37	1.7
1995	55,667	122,467,400	25	212	0.45	3.8	0.20	1.7
1996	56,770	124,894,000	30	256	0.53	4.5	0.24	2.0
1997	58,246	128,141,200	33	213	0.57	3.7	0.26	1.7
1998	55,218	121,479,600	35	218	0.63	3.9	0.29	1.8
1999	54,762	120,476,190	28	207	0.51	3.8	0.23	1.7
2000	57,568	126,648,649	30	213	0.52	3.7	0.24	1.7
2001	49,783	109,521,739	17	171	0.34	3.4	0.16	1.6
Average							0.25	
All Mines*								
1989	740,804	1,629,768,800	675	9,858	0.91	13.3	0.41	6.0
1990	715,170	1,573,374,000	604	9,103	0.84	12.7	0.38	5.8
1991	679,547	1,495,003,400	552	8,801	0.81	13.0	0.37	5.9
1992	543,629	1,195,983,800	481	8,633	0.88	15.9	0.40	7.2
1993	484,276	1,065,407,200	440	8,093	0.91	16.7	0.41	7.6
1994	502,592	1,105,702,400	472	7,255	0.94	14.4	0.43	6.6
1995	489,522	1,076,948,400	390	7,010	0.80	14.3	0.36	6.5
1996	485,468	1,068,029,600	357	6,575	0.74	13.5	0.33	6.2
1997	463,996	1,020,791,200	319	5,576	0.69	12.0	0.31	5.5
1998	389,970	857,934,000	243	4,490	0.62	11.5	0.28	5.2
1999	408,942	899,672,131	309	5,488	0.76	13.4	0.34	6.1
2000	396,644	872,617,450	285	4,728	0.72	11.9	0.33	5.4
2001	251,802	553,964,482	218	3,618	0.87	14.4	0.39	6.5
Average							0.37	
All Other Metalliferous								
2001	194,939	428,865,363	107	1,415	0.55	7.3	0.25	3.3

* South African frequency rates are calculated based upon 2200 hours worked per employee per year

* This data does not include mines that are in the Independent States

* Includes mines besides those listed above

TABLE 24: US injury and fatality data 1992–2001

Sector	Year	Fatals	NFDL	Hours	FIFR	NFDL/FR
O/C Minerals	1992	20	2,008	115,878,200	0.17	17
	1993	10	1,929	117,043,787	0.09	16
	1994	22	3,224	183,033,715	0.12	18
	1995	27	1,934	131,751,905	0.20	15
	1996	18	1,842	130,660,530	0.14	14
	1997	26	1,907	131,909,654	0.20	14
	1998	18	1,779	128,869,555	0.14	14
	1999	19	1,768	129,909,709	0.15	14
	2000	29	2,844	195,245,813	0.15	15
	2001	11	1,932	142,000,712	0.08	14
	Average 1992-2001					0.15
U/G Minerals	1992	7	665	29,338,003	0.24	23
	1993	18	665	27,052,879	0.67	25
	1994	9	753	27,743,947	0.32	27
	1995	7	676	29,148,687	0.24	23
	1996	7	720	30,422,891	0.23	24
	1997	10	698	29,967,186	0.33	23
	1998	7	661	28,079,505	0.25	24
	1999	13	642	26,382,396	0.49	24
	2000	9	604	26,089,189	0.34	23
	2001	8	345	19,407,762	0.41	18
	Average 1992-2001					0.34
Total Minerals	1992	34	5,646	337,168,630	0.10	17
	1993	38	5,524	330,287,519	0.12	17
	1994	35	5,545	340,084,916	0.10	16
	1995	43	5,113	353,688,787	0.12	14
	1996	36	5,047	358,323,521	0.10	14
	1997	44	5,255	363,107,344	0.12	14
	1998	39	4,852	354,793,004	0.11	14
	1999	40	4,977	312,702,223	0.13	16
	2000	38	3,448	221,335,002	0.17	16
	2001	19	2,277	161,408,474	0.12	14
	Average 1992-2001					0.12
Sand & Gravel*	1992	9	1,124	55,109,784	0.16	20
	1993	13	1,087	55,890,610	0.23	19
	1994	5	1,178	58,447,335	0.09	20
	1995	8	1,043	59,068,034	0.14	18
	1996	10	966	68,375,116	0.15	14
	1997	17	1,012	62,095,958	0.27	16
	1998	12	1,080	64,520,916	0.19	17
	1999	15	1,217	68,723,367	0.22	18
	2000	11	1,006	78,095,566	0.14	13
	2001	11	1,025	57,245,962	0.19	18
	Average 1992-2001					0.18
O/C Coal	1992	12	1,351	93,547,344	0.13	14
	1993	12	1,289	87,478,629	0.14	15
	1994	17	1,299	89,351,326	0.19	15
	1995	16	1,031	81,825,127	0.20	13
	1996	5	866	79,883,063	0.06	11
	1997	6	971	82,302,239	0.07	12
	1998	4	859	80,276,812	0.05	11
	1999	9	786	76,346,498	0.12	10
	2000	10	801	71,886,169	0.14	11
	2001	2	590	57,728,518	0.03	10
	Average 1992-2001					0.12

TABLE 24: US injury and fatality data 1992–2001 (continued)

Sector	Year	Fatals	NFDL	Hours	FIFR	NFDL/FR
U/G Coal	1992	40	7,160	131,193,747	0.30	55
	1993	26	5,932	111,758,604	0.23	53
	1994	24	6,224	114,741,933	0.21	54
	1995	26	5,449	110,124,939	0.24	49
	1996	32	4,522	106,712,083	0.30	42
	1997	22	4,376	105,752,094	0.21	41
	1998	22	4,303	100,653,162	0.22	43
	1999	20	3,765	92,283,677	0.22	41
	2000	20	3,592	86,160,480	0.23	42
	2001	28	2,478	67,491,058	0.41	37
	Average 1992-2001					0.24
Total Coal	1992	54	9,275	273,896,405	0.20	34
	1993	47	7,901	243,534,975	0.19	32
	1994	44	8,225	253,005,354	0.17	33
	1995	38	7,044	235,164,382	0.16	30
	1996	38	5,858	228,061,776	0.17	26
	1997	30	5,805	228,579,672	0.13	25
	1998	29	5,608	221,017,170	0.13	25
	1999	35	4,983	195,265,625	0.18	26
	2000	30	4,393	158,046,649	0.19	28
	2001	30	3,068	125,219,576	0.24	25
	Average 1992-2001					0.17

Note: 2001 Figures represent January to September 2001 and includes data reported for operators and contractors

* Includes officer workers but excludes contractors (less than 2% of workers in this category)

TABLE 25: Ontario, Canada Fatality and Injury Rates for all mines 1999–2001

Sector	Year	Hours	Labour	Lost Time Injuries	Fatalities	LTIFR	FIFR
O/C Minerals	1999	2479875	1413	19	0	8	0.00
	2000	1721229	848	14	0	8	0.00
	2001	1866919	869	8	1	4	0.54
	Average						
U/G Minerals	1999	19862460	12112	121	2	6	0.10
	2000	22710747	11850	158	5	7	0.22
	2001	22550343	11674	149	1	7	0.04
	Average						
Total Metalliferous	1999	22342335	13525	140	2	6	0.09
	2000	24431976	12698	172	5	7	0.20
	2001	24417262	12543	157	2	6	0.08
	Average						

* Data does not include contract drillers or miners

* O/C Minerals does not include sand and gravel

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Data from websites (refer Links page 16) for the following organisations also used:

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