Queensland Mines and Quarries

Safety Performance and Health Report

1 July 2012–30 June 2013

Great state. Great opportunity.

Queensland Government

Photography

The Department of Natural Resources and Mines wishes to thank the following individuals and companies who have assisted with the provision of images for this publication:

Cover image – *Launch of tunnel boring machine, Grosvenor Project, Queensland. From (L) Brent Waldron - Chief Financial Officer, Andrew Clough – Chief Inspector of Coal Mines, Glenn Tonkin – Grosvenor Project Director and Dieter Haage – Head of Underground Excellence. Photo: Nicolette Martens, Anglo American.*
Internal images – *DNRM.*

Disclaimer

The data in this report are derived from the Department of Natural Resources and Mines (DNRM) Queensland mining industry Lost Time Accident Database and Safety and Health Industry Employment Levy Database, in addition to information provided by the Office of Economic and Statistical Research.

Some data have been summarised or consolidated in order to present a standardised format in this report. Although DNRM makes every effort to verify supplied data, it accepts no responsibility for data that was incorrect when supplied. The data in this report may not be fully representative of the industry or any component of it.

Please note: *The figures reported in this document are collected from mine sites on an ongoing basis. The figures are not finalised until the following year. For this reason there may be variations in the figures reported for the previous period of 2011–12.*

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Abbreviations

CABA	compressed air breathing apparatus
CMSHAC	Coal Mining Safety and Health Advisory Committee
CMWHS	coal mine workers' health scheme
DI	disabling injury
DNRM	Department of Natural Resources and Mines
DPM	diesel particulate matter
HIAC	Health Improvement and Awareness Committee
HPI	high potential incident
HSU	Health Surveillance Unit
IMT	Incident Management Team
LTI	lost time injury/disease
LTIFR	lost time injury frequency rate
MSHAC	Mining Safety and Health Advisory Committee
MTI	medical treatment injury
NMSF	national mine safety framework
NMA	nominated medical advisor
OESR	Office of Economic and Statistical Research
PED	personal emergency device
RIS	regulatory impact statement
SHMS	safety and health management system
SIMTARS	safety in mines testing and research station
UMIC	Uranium Mining Implementation Committee
UVR	ultra-violet radiation
WBV	whole-body vibration

Definitions*

Coal mines	Mines subject to the *Coal Mining Safety and Health Act 1999* and associated Regulations.
Days on alternative duties	The number of days a worker is unable to perform his/her regular job and has been assigned other temporary or modified duties. Alternative duties include a changed work environment, roster or shift pattern.
Days lost	All rostered shifts that a worker is unable to work because of injury, not including the day of the injury. This also includes days lost because of recurrences of injuries from previous periods and days on alternative duties after returning to work. A fatal injury is treated as 220 days lost (as per Australian Standard AS1885.1–1990, Clause 6.17).
Disabling injury	A work-related injury or disease resulting in a worker being unable to fully perform his/her regular job. Either light or alternative duties are performed.
Duration rate	The average time (days) lost and the time (days) on alternative duties for each lost time injury/disease (LTI) or disabling injury (DI). In this report, time lost includes all time lost for an incident to date.
High potential incident	An event, or series of events, that causes or has the potential to cause a significant adverse effect on the safety or health of a person.
Lost time injury/ disease	An incident resulting in a fatality, permanent disability or time lost from work of one shift or more. The shift on which the incident occurred is not counted as a shift lost.
Lost time injury frequency rate	The number of lost time injuries/diseases per million hours worked.
Lost time and disabling injury frequency rate	The number of lost time injuries/diseases and disabling injuries per million hours worked.
Medical treatment injuries	Those incidents, which were not lost time injuries or disabling injuries, for which first aid and/or medical treatment was required by a doctor, nurse or person qualified to give first aid.
Metalliferous mines	Mines subject to the *Mining and Quarrying Safety and Health Act 1999* and associated Regulations.
Quarries	Excavations of hard rock for use in construction; covered by the *Mining and Quarrying Safety and Health Act 1999* and associated Regulations.
Severity rate	The time (days) lost and time (days) on alternative duties per million hours worked.
Total recordable injury	Includes the number of fatalities, lost time injuries/diseases, medical treatment injuries and disabling injuries.
Total recordable injury frequency rate	The number of total recordable injuries/diseases per million hours worked.

* The definitions in the report for bodily location, breakdown agency, lost time injury/disease, mechanism of injury, nature of injury, incidence rate and frequency rate generally conform to the workplace injury and disease recording standard (AS 1885.1–1990). The Standard's 'average lost time rate' (number of days lost per lost time injury) is called duration rate. The Standard's 'no lost time injuries/diseases' (those occurrences that were not lost time injuries and for which first aid or medical treatment was administered) are called *medical treatment injuries or disabling injuries* (the injured person cannot return to their normal job and is put on alternative duties). When calculating duration rate (number of days per lost time injury) and severity rate (days lost per million hours worked) for a lost time injury, the days lost include the days away from work and the days on alternative duties. The Australian Standard is not clear on whether days lost should include days on alternative duties. It is common practice in other Australian jurisdictions to only include days away from work in duration and severity calculations. However, as the number of days required to be spent on alternative duties is a reflection of the severity of the injury, it is considered that including these days presents a more accurate picture of the industry with respect to the severity of an injury or illness.

Message from the Commissioner for Mine Safety and Health

I am pleased to present the *Queensland Mines and Quarries Safety Performance and Health Report* for the year 1 July 2012 to 30 June 2013.

The responsibility for the regulation of mine safety and health lies with the Mine Safety and Health Group of the Department of Natural Resources and Mines (DNRM). The primary role of Mine Safety and Health is to focus the attention of mine management and mineworkers on safety and health priorities and to help the mining industry improve safety and health performance on the aspirational journey to Zero Harm.

While the Queensland mining industry continues to be one of the safest in the world, there are still areas of concern with respect to the safety and health of mine workers and safety statistics generally have plateaued.

Sadly we have had two mining fatalities this financial year. Both fatalities occurred in metalliferous mines and I extend my deepest sympathy to the family and friends of the men involved in these accidents. This brings the total number of mining fatalities since the year 1900 to 1141. During this time most of the fatalities have occurred in metalliferous mines with 756 deaths recorded. Coal mines have recorded 385 fatalities, with 127 of those deaths being associated with five mining disasters. Safety improvements in coal mines tend to occur after the recommendations of mining warden enquiries into coal mining disasters have been handed down. In the case of the Moura No. 2 disaster in 1994, the risk based changes to the mining regulations in 2000 are linked directly to the inquiry into this disaster.

Workers in the metalliferous mining industry tend to lose their lives in accidents involving one or two people, which do not result in significant inquiries and wide ranging recommendations for improvements in safety and health.

Fatality statistics over the last 10 years reveal 9 out of 10 people who died in the coal mining industry and 10 out of 20 people in the metalliferous mining industry were contractors. In my experience, contractors are often engaged to perform non-standard or specialist tasks that in some cases require a higher level of risk management than would normally be needed during steady-state operations. I am concerned that the over-representation of contractors in the fatality statistics is because the risks faced by contractors are considered by some mines as the contractor's problem. It is my view that before contract work commences the contractor's processes and procedures to manage non-standard or specialist tasks should be reviewed, approved and integrated into the site's safety and health management system by those persons with obligations to manage risk under the mining legislation.

However, we should recognise that surface coal mines have remained fatality-free for two years and underground coal mines for six years. This does not mean we can lower our vigilance; on the contrary, our first and foremost thoughts and practices should always centre on having the safest and healthiest workplaces possible. The protection of workers from the hazards associated with the mining industry is always paramount.

Encouragingly there have been significant improvements in the underground metalliferous and quarry sectors with a reduction in combined lost time injuries and disabling injuries across the board. For example, the data tells us the combined number of lost time injuries and disabling injuries experienced by workers fell from 1182 in 2011–12 to 947 in 2012–13. At the same time the severity rate for these injuries dropped from 302 per million hours to 222 over the 12 month period. The only notable increase is the lost time injury frequency rate for surface coal mines which increased from 3.1 to 3.5. Across all sectors, the rate fell from 4.0 to 3.5 injuries over the same period.

This past year we have been preparing for the release of the regulatory impact statement for amendments to Queensland's mine safety and health legislation. These amendments have been derived, in part, from the work carried out under the National Mine Safety Framework. Over 90 per cent of the Queensland legislation will remain unchanged. Many proposed changes will align Queensland more closely with New South Wales and Western Australia. This will mean that personnel working in those states will have transferable qualifications, making it easier for mining companies to transfer staff from state to state. Among a range of other proposed changes there are also propositions to change the powers of union safety officials.

I would like to take this opportunity to thank Gavin Taylor who retired from the position of Chief Inspector of Coal Mines in June 2013. Gavin was the Chief Inspector for five years and during that time brought a high standard of integrity and professionalism to the role. As Chief Inspector, Gavin was widely respected and known for his forthright and honest assessment of mining safety issues. Mines were never in doubt about where they stood when it came to a matter of safety or compliance with safety legislation. I would like to wish Gavin and his wife Dorothy a long and healthy retirement.

We have been fortunate to secure the services of Andrew Clough as our new Chief Inspector of Coal Mines and I am sure Andrew will continue our drive to have a fatality and injury free Queensland mining industry.

With respect to Pike River, the final report, containing 16 recommendations, was presented to the New Zealand Governor–General in October 2012. I am happy to say that the New Zealand Government has adopted all of the recommendations and implementation is currently underway.

In closing I would like to reiterate that we should all focus on the task of getting every mine worker home safe and healthy to their families every day. Nothing else should be a higher priority.

Stewart Bell

Stewart Bell
Commissioner for Mine Safety and Health

Summary from the chief inspectors of mines

Tragically again this year two workers in the Queensland mining industry lost their lives at work. We extend our heartfelt sympathies to the parents, families and friends of the two men.

The first of the fatal accidents occurred in August 2012 at a metalliferous open cut mine when a supervisor who was walking across the run of mine stockpile area was run over by a front end loader that was leaving the area. The nature and cause investigation by the Mines Inspectorate into this fatality has finished.

The second fatal accident occurred in March 2013 at a metalliferous process plant. A worker who was engaged in activities adjacent to where a pump was being lifted by a mobile crane from a sump sustained fatal injuries when one of the slings supporting the pump slipped off the hook and the pump toppled forward striking the worker on the head. The nature and cause investigation by the Mines Inspectorate into this fatality is still progressing.

The coal sector was fatality free over the year. This is good news for the coal sector although the nature of some of the high potential incidents that occurred, particularly in underground coal, are a reminder that we must be ever vigilant.

In terms of the statistics we collect we still measure and report on lagging indicators due to the difficulties in measuring leading indicators. This is a bit like looking back to where we have come from rather than looking forward to where we are going; driving down the road while looking in the rear vision mirror. Nevertheless there are trends we can identify by looking at the lagging indicators.

In summary if we compare 2012–13 to the previous 2011–12 period we observe the following:

- lost time injuries (LTIs) down from 473 to 406 injuries
- lost time injury frequency rate (LTIFR) down from 4.0 to 3.5 injuries per million hours worked
- days lost to injury down from 19 128 to 14 231
- lost time injury severity rate down from 163 to 123 days
- days on alternative duties down from 16 413 to 11 488 days
- medical treatment injuries down from 1 194 to 819 injuries
- permanent incapacities down from 32 to 28 notifications.

Overall there has been an improvement in lagging indicator numbers across the industry.

The challenge is how to achieve a fatality free industry and drive the lagging indicator statistics down further.

The inspectorate encourages the reporting of high potential incidents as this provides safety improvement opportunities. High potential incidents are also a warning of failures in our management of safety.

The circumstances behind high potential incidents are varied but many have a common thread in the choices that people have made. In some cases the choices were wilful breaches of known safety standards. In other cases the choices were poor decisions related to lack of knowledge or competency.

Safety management theory would suggest that where a human decision can result in a serious accident, engineering controls should be implemented to remove the risks associated with human error. Although we should always be on the lookout for ways in which we can engineer out human error from the mining industry the fact remains that people are an intrinsic part of the mining process.

In terms of managing risk we cannot afford to have a 'set and forget' approach. It is imperative that once the controls are put in place to manage the risk of a particular hazard, the effectiveness of the controls are reviewed at appropriate intervals to ensure they are still effective. We set and forget at our peril and that of the people who work for us.

We would like to outline the inspectorate's perspective on ways in which our industry can make the next step in improving safety performance. To a large extent, we believe it can be brought about by getting back to the underlying principles behind our legislation.

The primary principle is to identify the hazards and manage the risks within the workplace. The management of risk has two aspects in that it involves both systems and people. We shall discuss the people aspect a little further on but concentrate on the systems first.

Systems include the documentation around how tasks are performed safely and the methods to cope with changing circumstances or new tasks. A good risk management system should provide easy to use tools for the mine worker but also have an escalation mechanism that allows upward reporting and assistance from more senior supervisors as the level of risk increases. The supporting documentation on methods of work should be up to date and easily accessible to every mine worker. These documents should be concise and easy to use so that they form part of the manner in which work is conducted at the mine. If the purpose of these documents at mine sites is only to provide legal compliance then the system will not deliver the results.

A good system has dedicated resources in terms of document control and ownership, and it is alive. It should be ever changing according to the circumstances at the mine and be embraced by the mine workers as the minimum standard to which the mine will operate.

Unfortunately the safety and health management systems at many of our mines are outdated and irrelevant in some aspects. This does not engender management credibility in the eyes of our mineworkers.

The secondary principle is in regard to obligations.

Management has an obligation to provide safety leadership and develop systems that are effective. Supervisors have an obligation to implement those systems and ensure compliance. All mine workers have an obligation to work to the systems and report where the systems are deficient. It is totally unacceptable for a supervisor to allow work to progress in an unsafe manner because he believes getting the job done quickly is the overriding priority.

With obligation comes accountability and to that end the inspectorate will hold to account any person who is found to wilfully or recklessly put their own safety and/or the safety of others at risk.

The next principle is in relation to the competency of the management team at the mine.

It has been the observation from the inspectorate that over the last few years fewer senior people are holding statutory competencies. An examination of the management structure at many mines also reveals that little effort has been put into identifying what competencies are required to hold senior positions in the structure let alone providing training in those identified competencies.

An effective management team should also be supported by succession planning.

The inspectorate is supporting current proposals to increase the number of statutory competencies required at mines. Industry can play their part by identifying future leaders and assisting them to obtain statutory qualifications so they will be better placed to manage the complex issues associated with mining.

The last principle is in relation to worker involvement.

Our legislation requires mine worker involvement in identifying the hazards in the workplace and having input into the manner in which the hazards can be managed. No one is better placed in understanding the risks associated with the various mining tasks than those who actually perform the work. Worker involvement also encourages the industry to adopt safety as a value rather than simply a deliverable like production or unit cost.

The industry is entering challenging times.

Falling commodity prices have resulted in contractions in some areas. This contraction leads to uncertainty in relation to security of employment. There may also be heightened industrial relations issues associated with tough economic times. Tighter budgets could tempt some operators to reduce resources in the management of safety.

It is not only the current economic climate that is providing challenges to our industry.

Underground mines are becoming deeper, resulting in greater technical challenges in terms of strata control, ventilation and in the case of underground coal, gas management. Open cuts are also becoming deeper requiring higher levels of expertise in slope stability, mine dewatering and operations management.

Employers, employees and the inspectorate have a shared purpose in ensuring each and every one of us can go home safely at the end of each day. In particular, the inspectorate has a vision of an industry free of safety and health incidents. It is through us working together that we will achieve that vision.

We wish to thank the contributors to this report for their assistance. We look forward to this document being used to assist industry to identify safety and health priorities for 2013–14 and beyond. We encourage industry to continue to work with the Mines Inspectorate to ensure Queensland maintains its place as a best practice example of mining safety and health performance and to strive vigilantly for our common goal of an industry free of safety and health incidents.

Andrew Clough
Chief Inspector of Coal Mines

Phil Goode
Chief Inspector of Mines
(Metalliferous and Quarries)

1

Industry safety and health performance

Crushing plant, Mount Moss Mine, Queensland
Photo: DNRM

1. Industry safety and health performance

This report summarises the accident and incident data collected from Queensland mines and quarries subject to the provisions of the *Coal Mining Safety and Health Act 1999* and the Mining and *Quarrying Safety and Health Act 1999*. It relates to accidents and incidents that occurred at mine sites from 1 July 2012 to 30 June 2013. Accidents that occurred while workers were travelling to or from work are not included in the analysis.

The data reported is collected from mine sites on an ongoing basis and via monthly and quarterly summaries.

Fatalities, permanent incapacities, lost time injuries, disabling injuries, medical treatment injuries and high potential incidents are required to be reported. The dataset is usually not complete until well into the following financial year because some mines and quarries often take considerable time to supply the data. An arbitrary cut-off, in order to begin data analysis, takes place in September each year when most of the data has been received. For this reason there may be minor differences in data reported for last year in this report, if data was supplied after the September cut-off.

Table 1.1 shows a comparison of key performance indicators for 2011–13, in each sector of the mining industry. Performance measures for individual mines in each sector are no longer published in this report, instead this data can be found on the DNRM website at www.dnrm.qld.gov.au.

1.1 Fatal injuries

Figure 1.1 shows the declining trend in mine fatalities since 1900, with major fatality events noted on the graph.

Figure 1.2 shows that while there was an increase in fatalities in 2012–13 compared with 2011–12, there is a downward trend in fatalities over the last 10 years. It also records that after a steady increase over the last decade, total employment numbers in the mining industry decreased by 3486 workers in 2012–13.

Coal mines

There were no fatal accidents in coal mines in 2012–13.

Metalliferous mines and quarries

There were two fatal accidents in the metalliferous mines and quarries sector in 2012–13 and one in 2011–12. The first fatality occurred on 26 August 2012 when a mining supervisor was run-over by a front-end loader. The second fatality occurred on 6 March 2013 when a labourer was struck by a pump being lifted out of a sump by a mobile crane.

1.2 Permanent incapacities

There were 32 permanent incapacities reported for 2012–13, compared to 28 permanent incapacities in 2011–12.

Table 1.2 details the permanent incapacities reported by mines in 2012–13.

Commonly reported permanent incapacities by mines included back injury and traumatic amputation of the fingers or thumb.

1.3 Lost time injuries and disabling injuries

Figures 1.3–1.5 show statistics for the LTIFR, severity rate and duration rate over a 10-year period from 2003–13; they are produced as statistical process control charts to emphasise changes in trend over time. The charts show that industry averages for LTIFR, severity rate and duration rate have slowly decreased over the last decade.

Figures 1.6 and 1.7 show downward trends in LTI and DI duration and severity rates from 2003–13.

Figure 1.8 shows in recent years, the number DIs in coal mines had increased in line with the steady increase in employment numbers. In 2012–13, although the number of LTIs remained steady, the number of DIs decreased significantly. This coincided with a decrease in coal mine employment numbers for the same period.

Figure 1.9 shows while the employment numbers continue to increase at metalliferous mines and quarries, the number of LTIs and DIs has decreased in the 2012–13 period.

1.4 High potential incidents

Figure 1.10 shows an upwards trend in the reporting of high potential incidents (HPI) from 2003–13. HPI reporting has remained steady even though employment numbers have decreased in the 2012–13 period.

A number of HPIs that occurred in 2012–13 were of particular concern. These included:

Coal mines

- A spontaneous combustion event occurred at an underground coal mine resulting in mine evacuation and suspension of operations for a number of months.
- A tradesman was severely burnt when an atmosphere of oil vapour ignited around a drill compressor.
- A haul truck operator exited the cabin of his truck whilst the truck was descending a ramp to wave to another passing truck driver. The truck was in motion at the time of the incident.
- A number of incidents have occurred involving truck drivers sending and receiving text messages on personal phones whilst operating the equipment.
- A dozer operator was attempting to traverse down the incline of a spoil pile when the machine became lodged on some material. The dozer had become stuck on a disused

Table 1.1: Comparison of key performance indicators 2011–13

	Number of lost time injuries (LTI)		Number of disabling injuries (DI)		Number of medical treatments (MTI)		Number of high potential incidents (HPI)		LTI – days lost†		Number of DI days		LTI frequency rate (LTIFR)*		LTI severity rate#†		LTI Duration rate*†		LTI + DI severity rate#		LTI + DI duration rate*		Million hours worked*		Number of permanent incapacities		Number of fatalities	
	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13	11–12	12–13
Coal surface	200	212	356	266	463	367	1 380	1 397	9 594	7 964	8 955	5 129	3.1	3.5	150	132	48.0	37.6	290	217	33.4	27.4	63.9	60.5	16	16	0	0
Coal underground	122	104	192	143	350	198	398	428	5 453	3 797	2 711	2 349	7.1	5.7	315	208	44.7	36.5	472	337	26.0	24.9	17.3	18.3	3	7	0	0
All Coal	**322**	**316**	**548**	**409**	**813**	**565**	**1 778**	**1 825**	**15 047**	**11 761**	**11 666**	**7 478**	**4.0**	**4.0**	**185**	**149**	**46.7**	**37.2**	**329**	**244**	**30.7**	**26.5**	**81.2**	**78.7**	**19**	**23**	**0**	**0**
Metalliferous surface	75	60	59	61	197	132	302	238	1 896	1 569	1 565	1 672	3.7	3.0	94	78	25.3	26.2	172	161	25.8	26.8	20.1	20.1	3	6	0	2
Metalliferous underground	50	18	92	70	149	79	216	210	1 451	689	2 951	2 321	3.5	1.2	102	46	29.0	38.3	310	201	31.0	34.2	14.2	15.0	3	1	0	0
All Metalliferous	**125**	**78**	**151**	**131**	**346**	**211**	**518**	**448**	**3 347**	**2 258**	**4 516**	**3 993**	**3.6**	**2.2**	**98**	**64**	**26.8**	**28.9**	**229**	**178**	**28.5**	**29.9**	**34.3**	**35.1**	**6**	**7**	**0**	**2**
Quarries	26	12	10	1	35	43	94	71	734	212	231	17	11.8	5.7	332	100	28.2	17.7	437	108	26.8	17.6	2.2	2.1	3	2	1	0
All Sectors	**473**	**406**	**709**	**541**	**1 194**	**819**	**2 390**	**2 344**	**19 128**	**14 231**	**16 413**	**11 488**	**4.0**	**3.5**	**163**	**123**	**40.4**	**35.1**	**302**	**222**	**30.1**	**27.2**	**117.7**	**116.0**	**28**	**32**	**1**	**2**

#Rounded to whole numbers.
*Rounded to 1 decimal place
†Days lost to LTIs include lost time days and days on alternate duties

Figure 1.1: Fatalities in Queensland mines, 1900–2013

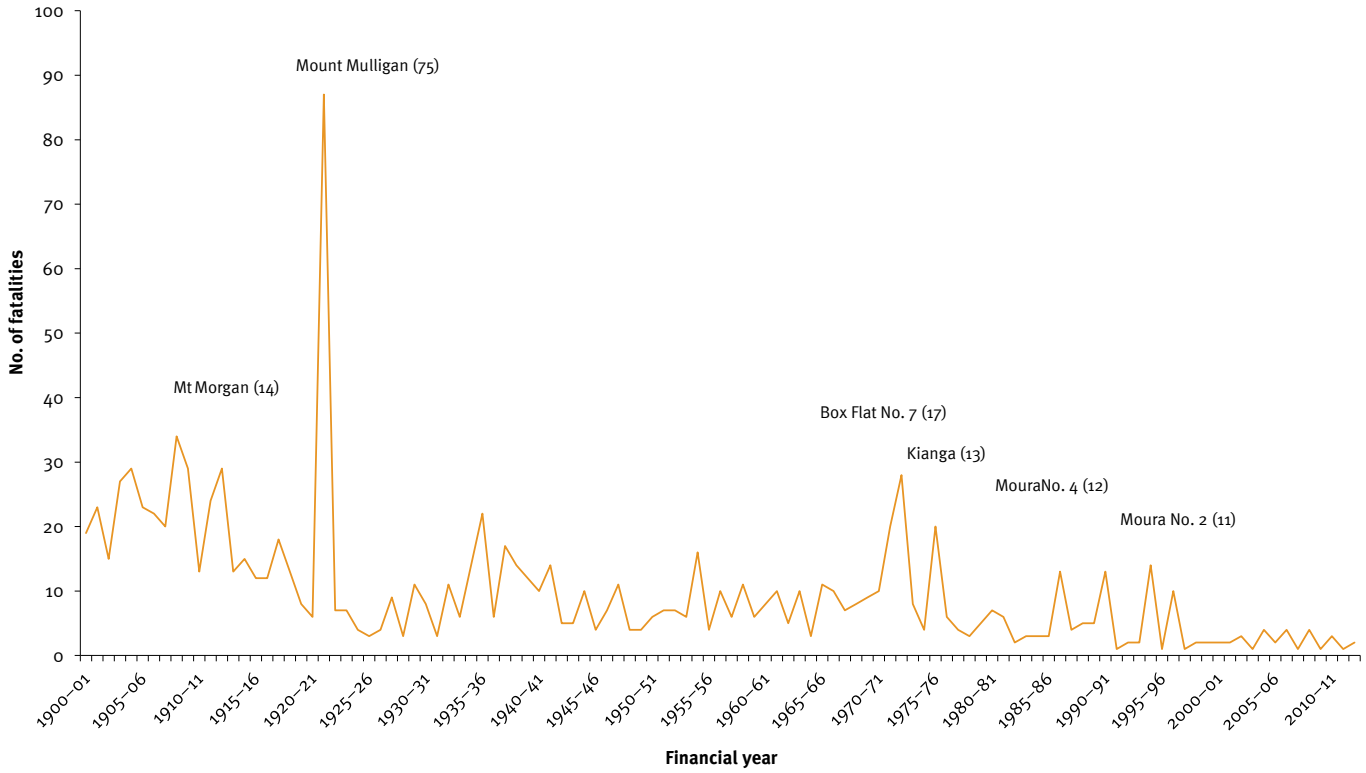
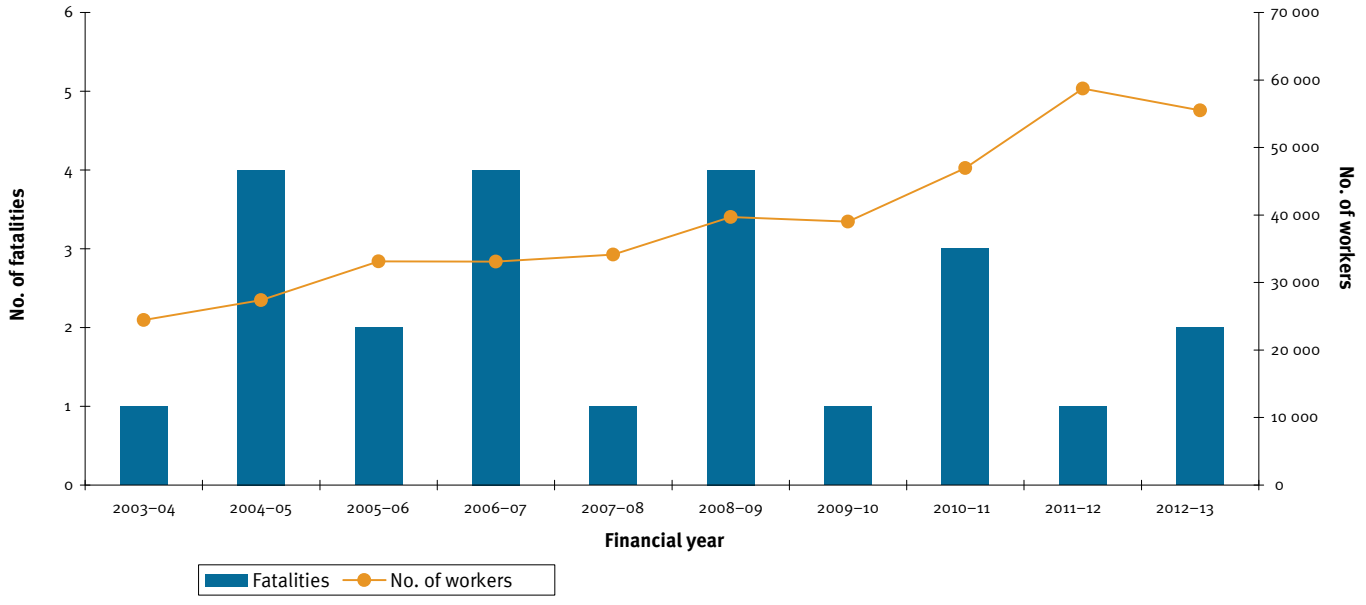


Figure 1.2: Fatalities versus employment numbers (all sectors), 2003–13



bench. There was a drop off from the bench that the operator had not seen from his assessment from above.

- A haul truck was returning from in pit when a recently watered stretch of road was encountered. The haul truck slid approximately 150 m down the ramp.
  The operator tried to pull the haul truck up and it came to a rest approx 140 degrees from the original path facing back up the ramp.
- An ERZ controller on a longwall face observed a drill string break through the roof strata and strike a longwall shield.
- An electrician repowered a section of the underground before it was inspected and found to be safe by an ERZ controller.
- There have been numerous incidents of methane protection circuits being left in bypass on both underground mobile plant and underground auxiliary fans.
- A plastic bag was found placed over a methane sensor head on a piece of underground mobile plant.
- An ERZ controller continued to operate a drift runner in an atmosphere that was greater than 1% methane. This occurred even though both his personal monitor and the machine monitor were alarming.
- A concentration of methane exceeding 3.5% was inadvertently drawn through the mine fans after a ventilation change occurred underground.
- A development crew was in the process of conducting a panel advance when there was a fall of supported ground in the overdrive by the last completed cut through.

Metalliferous mines and quarries

- A worker fell 8m into an orepass beneath an underground crusher when the platform he was standing on failed. He sustained a fractured vertebra.
- A worker fell 2.8 m from a conveyor while changing a return idler. He sustained minor bruising.
- A worker fell partway through a hole in a conveyor walkway after a section of gridmesh he was standing on dislodged and fell 3.5 m to the floor below. He managed to grab hold of the conveyor structure to stop him falling to the floor.
- A miner was charging a development face from the basket of a charge car when the basket dropped forward throwing him against the front of the basket. He sustained a cut to his forehead, and injuries to his shoulder, ribs and ankle.
- During sag mill relining a travelling trolley on a monorail slid off the rail when the end-stop fastening bolts failed. The trolley with the attached air winch and liner removal tool fell to the ground striking a worker's arm.
- A loader mucking at the bottom of an open ore pass was struck by rocks tipped into the same pass from a level 50 m above. The rocks broke the loader's windscreen and entered the cab.
- Two operators were charging a large rock at a choked stope drawpoint when the material in the drawpoint moved due to the stope being bogged on the lift below. About 100 tonnes rilled from the drawpoint burying the rock and the explosives.
- After drilling out a development face, a jumbo drill rig operator was using a pelican pick to expose the lifter tubes when a 500kg rock fall occurred. Rocks struck him causing contusions to his head and abrasions on his back.
- The floor of a drive collapsed unexpectedly into a stope when a section of the hanging wall of an empty open stope failed.
- While preparing to install a communications cable in a shaft a deployed outrigger platform attached to a maintenance conveyance was caught against the underside of a shaft steelwork platform located above the shaft collar doors when the conveyance was raised rather than lowered.
- The guards on a conveyor gravity take-up pulley system were removed for maintenance and left lying on the walkway when the conveyor was put back into operation.
- A conveyor operator was clearing built-up material from a jammed return roller using a hammer while the conveyor was still running. When he miss-hit the roller and slipped, his arm was pulled in between the roller and the conveyor structure. He sustained an abrasion to his wrist.
- A fitter was removing the steering locking pin on an articulated dump truck when his hand was trapped between the valve block and the pin as the truck was articulated to ease the load from the pin.
- A drill jumbo was turning onto a level from a decline when a drill rod dislodged from the drill rod rack and pushed through the inspection plate in the floor of the operator's cabin.

Table 1.3 shows the number of HPIs reported per 1000 workers across all sectors remained steady in 2012–13 compared with 2011–12.

Figure 1.11 illustrates the number of incidents per type of HPI. The five most common categories of HPIs, according to the number of reported incidents in 2012–13, are listed below:

1. fire
2. loss of control/unplanned movement
3. electrical
4. mobile plant
5. use of explosives.

DNRM has issued safety alerts and bulletins in response to these HPIs (see Table 1.4). Further information on these and other HPIs is available from the DNRM website at www.dnrm.qld.gov.au.

Figures 1.12–1.16 illustrate each reported HPI type as a percentage of the total HPIs in each mining sector.

Table 1.2: Permanent incapacities reported by mines, 2012–13

Nature of injury	Body part injured	Injury description	Qty
Coal surface			
Sprain/strain	Trunk–back (upper/lower)	Lower back injury	1
	Trunk–back (upper/lower)	Back injury	3
	Trunk–back (upper/lower)	Lower back injury–required surgical intervention	2
Traumatic amputation	Upper limbs–hand/finger/thumb	Finger amputation	1
	Upper limbs–hand/finger/thumb	Partial amputation of top knuckle of second finger left hand	1
	Upper limbs–hand/finger/thumb	Partial amputation of right ring finger	1
Unspecified injury	Other/unspecified injury	Neck, back and knee	6
	Other/unspecified injury	Neck injury while operating excavator	1
Coal underground			
Fracture (not vertebral column)	Upper limbs–elbow	Multiple fractures to left humerus and elbow area	1
Traumatic amputation	Multiple fractures to left humerus and elbow area	Laceration to tip of left thumb, requiring surgical amputation	1
Unspecified injury	Other/unspecified injury	Work related injury–unknown	5
Metalliferous surface			
Sprain/strain	Trunk–back (upper/lower)	Back injury in processing plant	1
Unspecified Injury	Other/unspecified injury	Ceased employment	5
Metalliferous underground			
Traumatic amputation	Upper limbs–hand/finger/thumb	Amputation to the tip of left index finger	1
Quarries			
Traumatic amputation	Upper limbs–hand/finger/thumb	Tip of finger severed	1
Unspecified Injury	Other/unspecified injury	Neck, back and knee	1
Total			**32**

Figure 1.3: Lost time injury frequency rate per month (all sectors), 2003–13

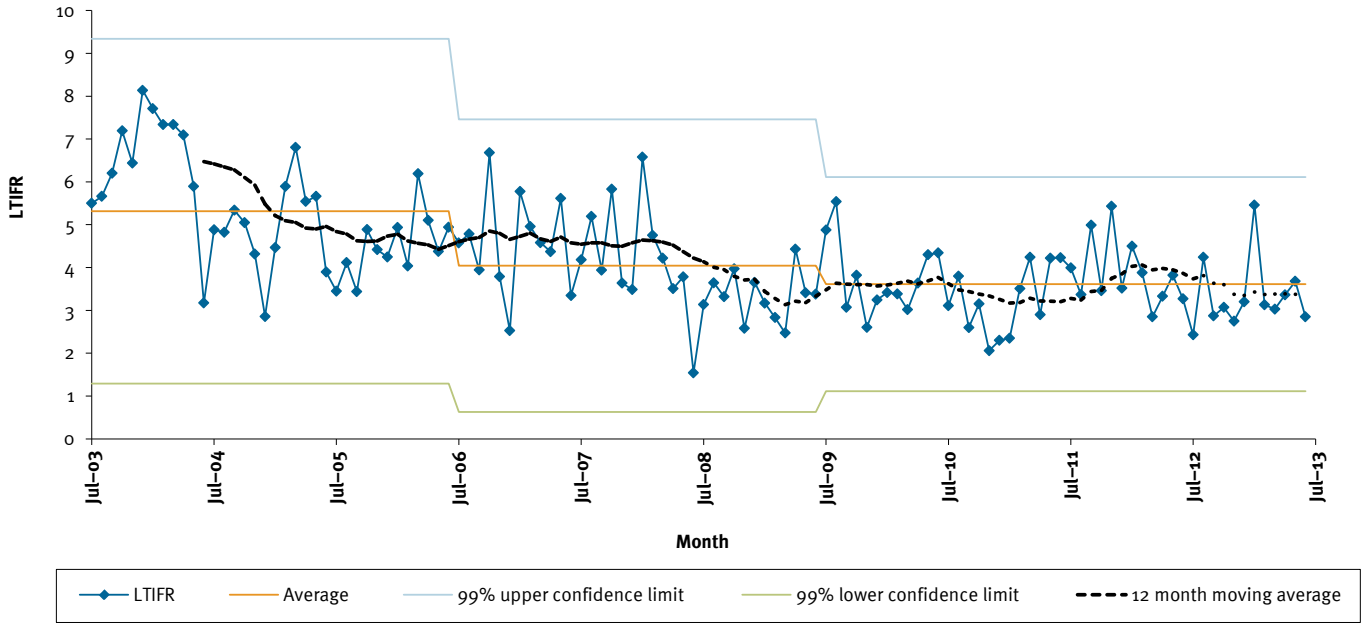


Figure 1.4: Severity rate per month (all sectors), 2003–13

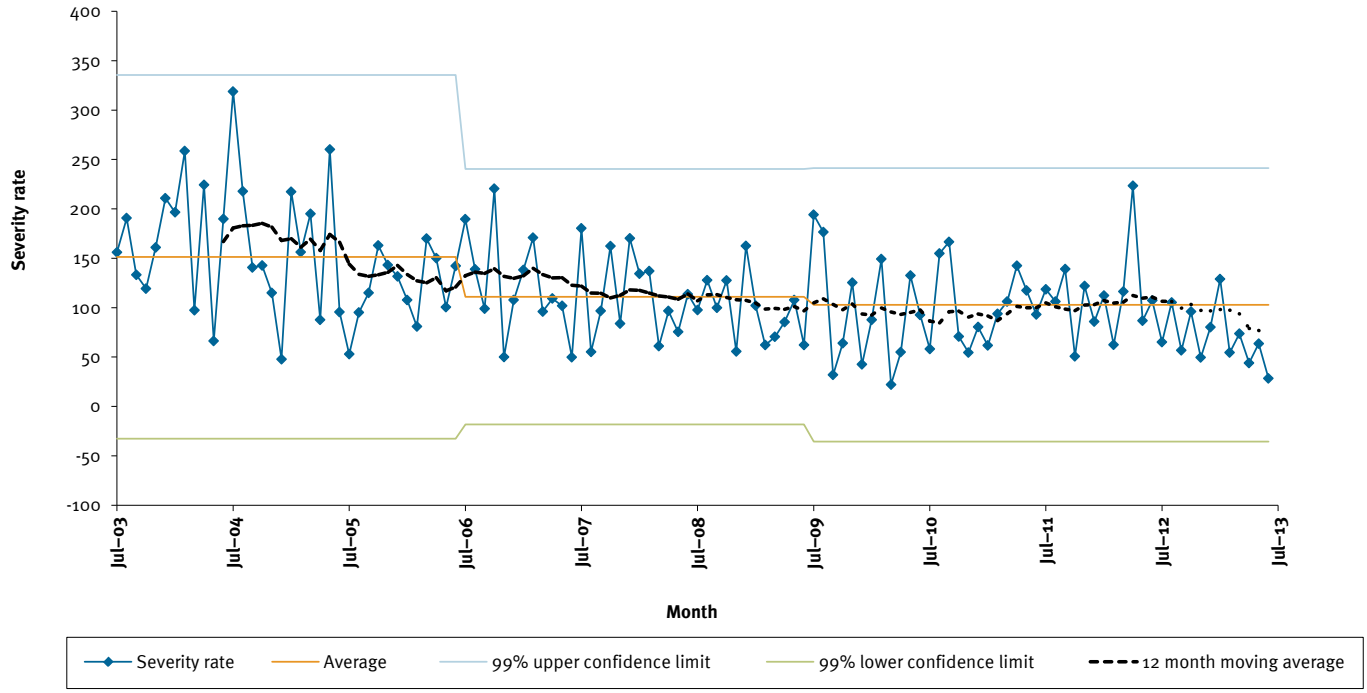


Figure 1.5: Duration rate per month (all sectors), 2003–13

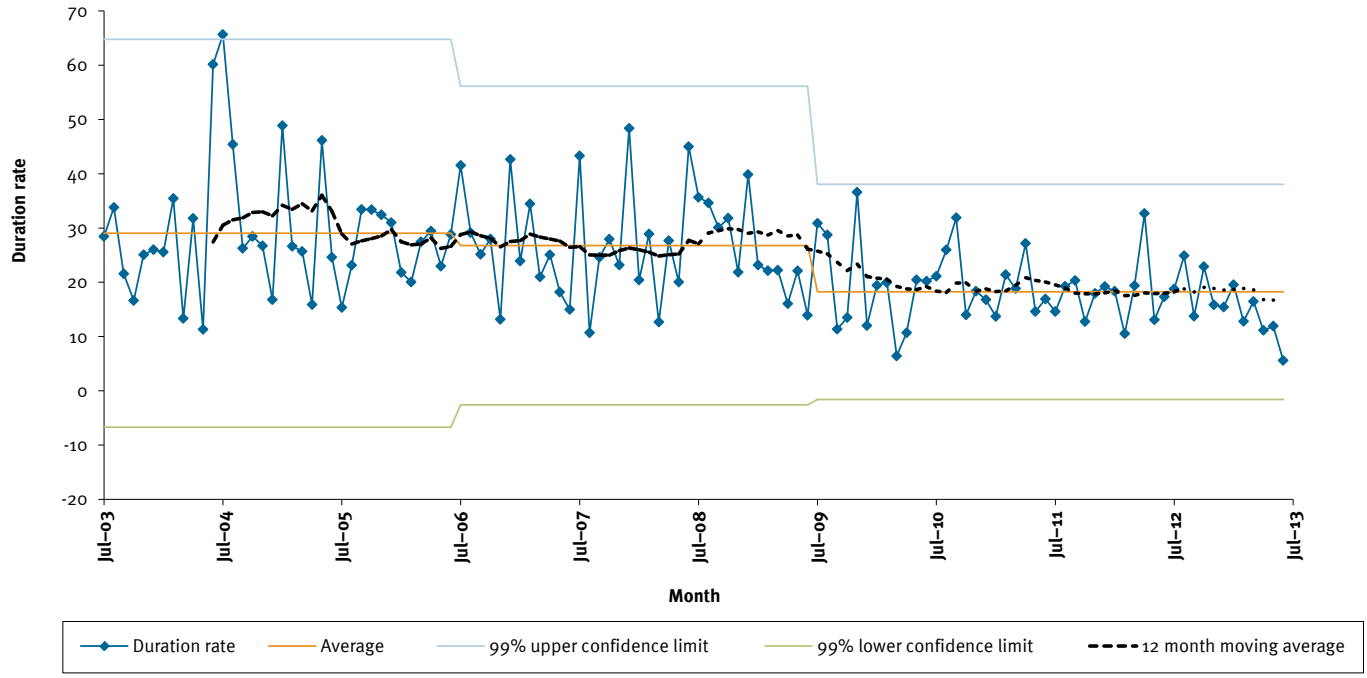


Figure 1.6: Lost time and disabling injury severity rate versus employment numbers (all sectors), 2003–13

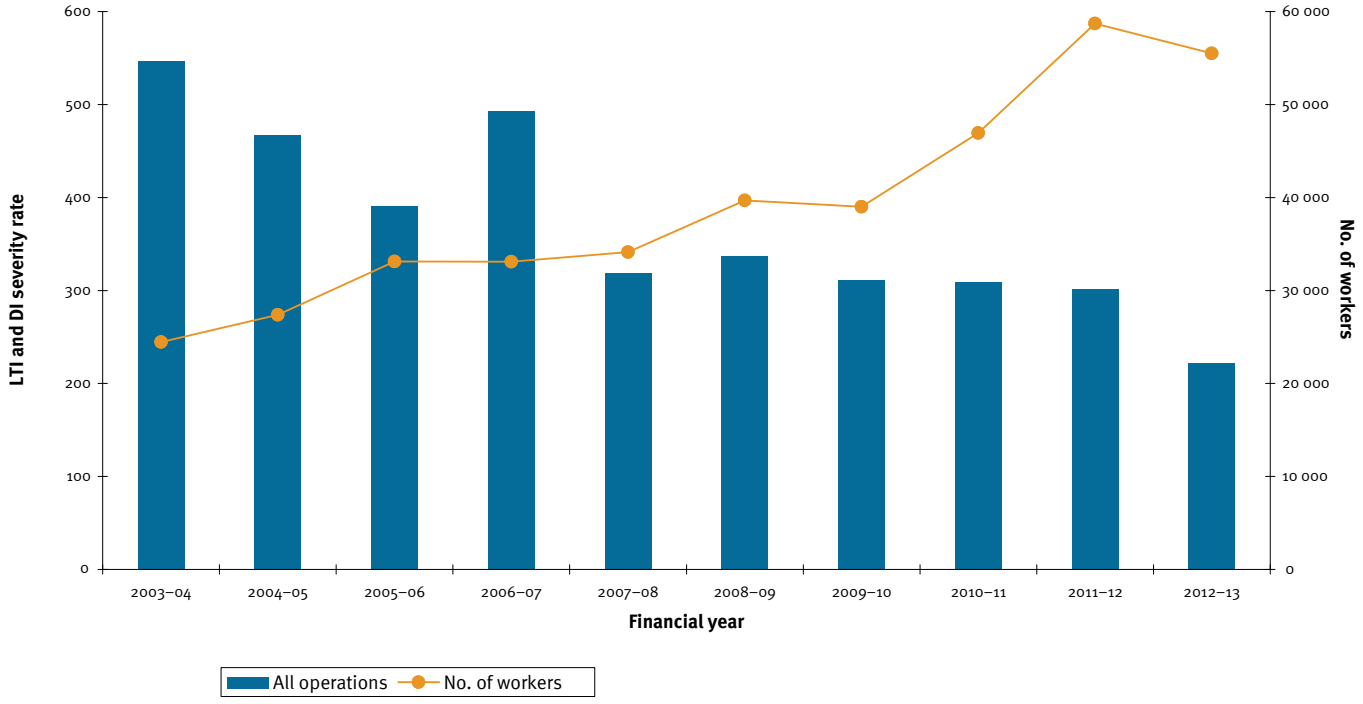


Figure 1.7: Lost time and disabling injury duration rate versus employment numbers (all sectors), 2003–13

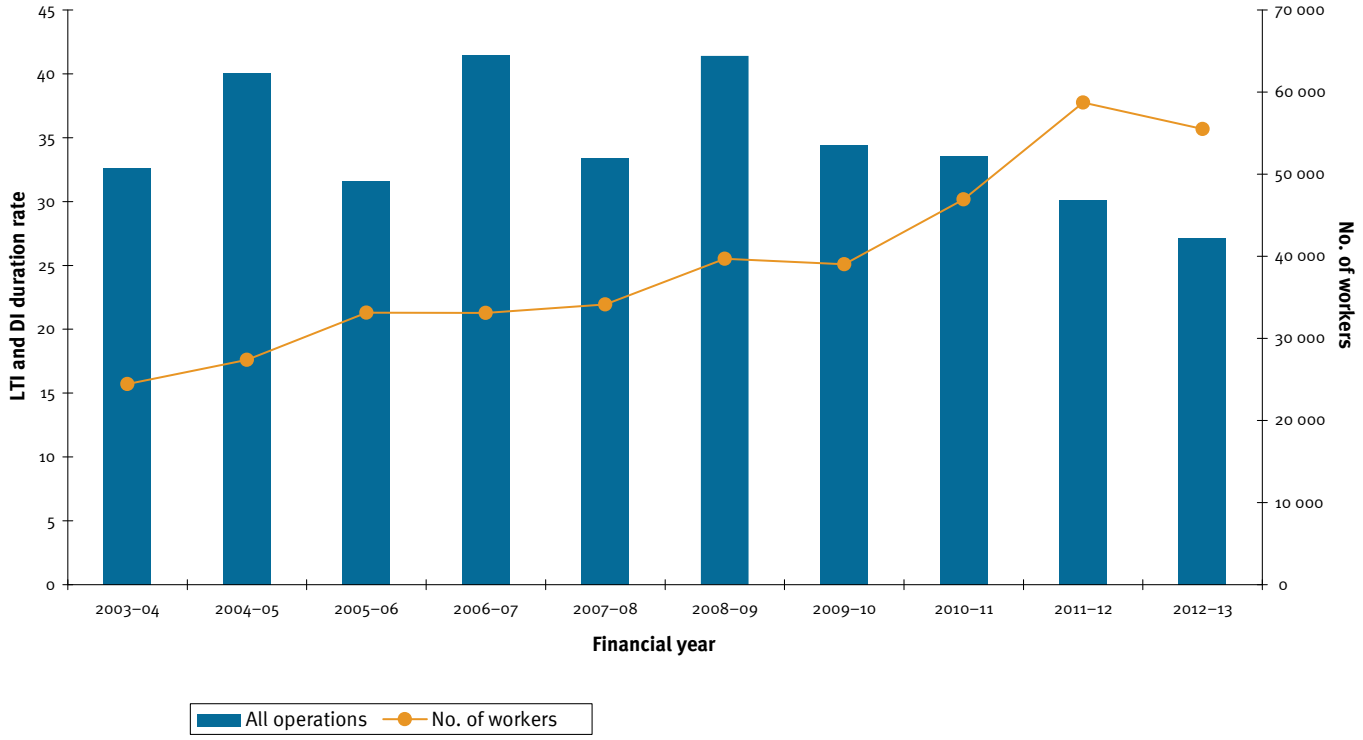


Figure 1.8: Lost time and disabling injuries versus employment numbers for coal mines, 2003–13

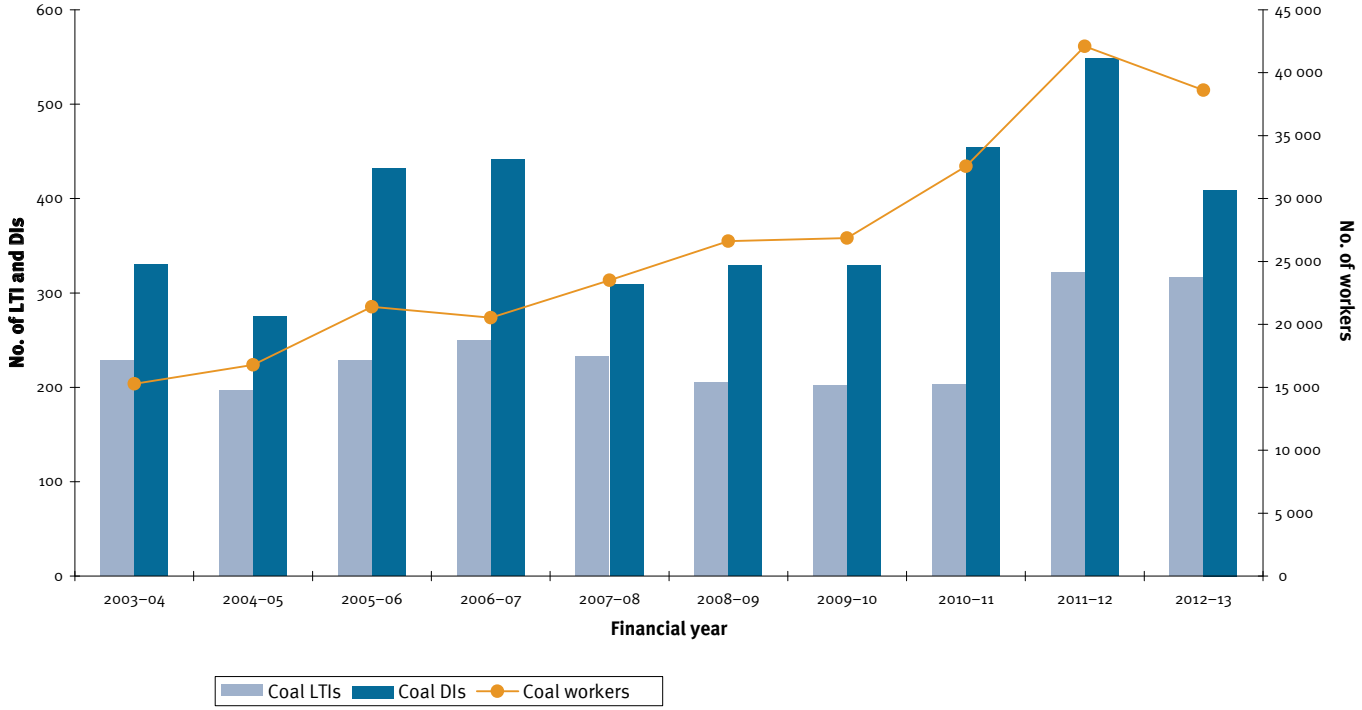


Figure 1.9: Lost time and disabling injuries versus employment numbers for metalliferous mines and quarries, 2003–13

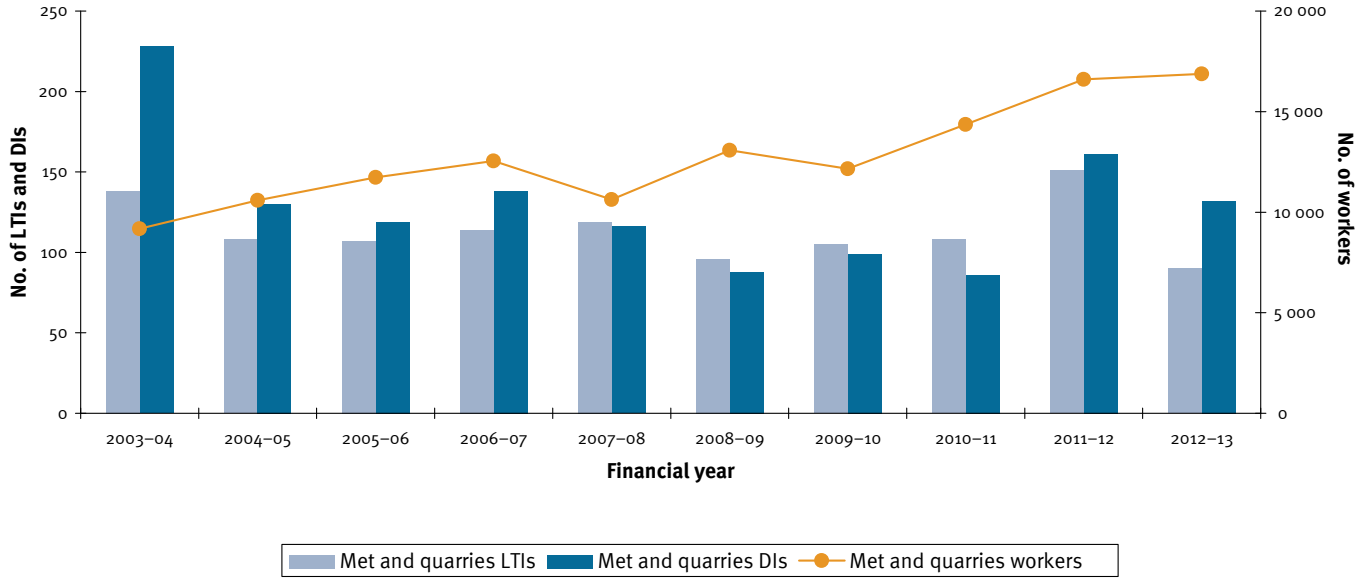


Figure 1.10: High potential incidents versus employment numbers (all sectors), 2003–13

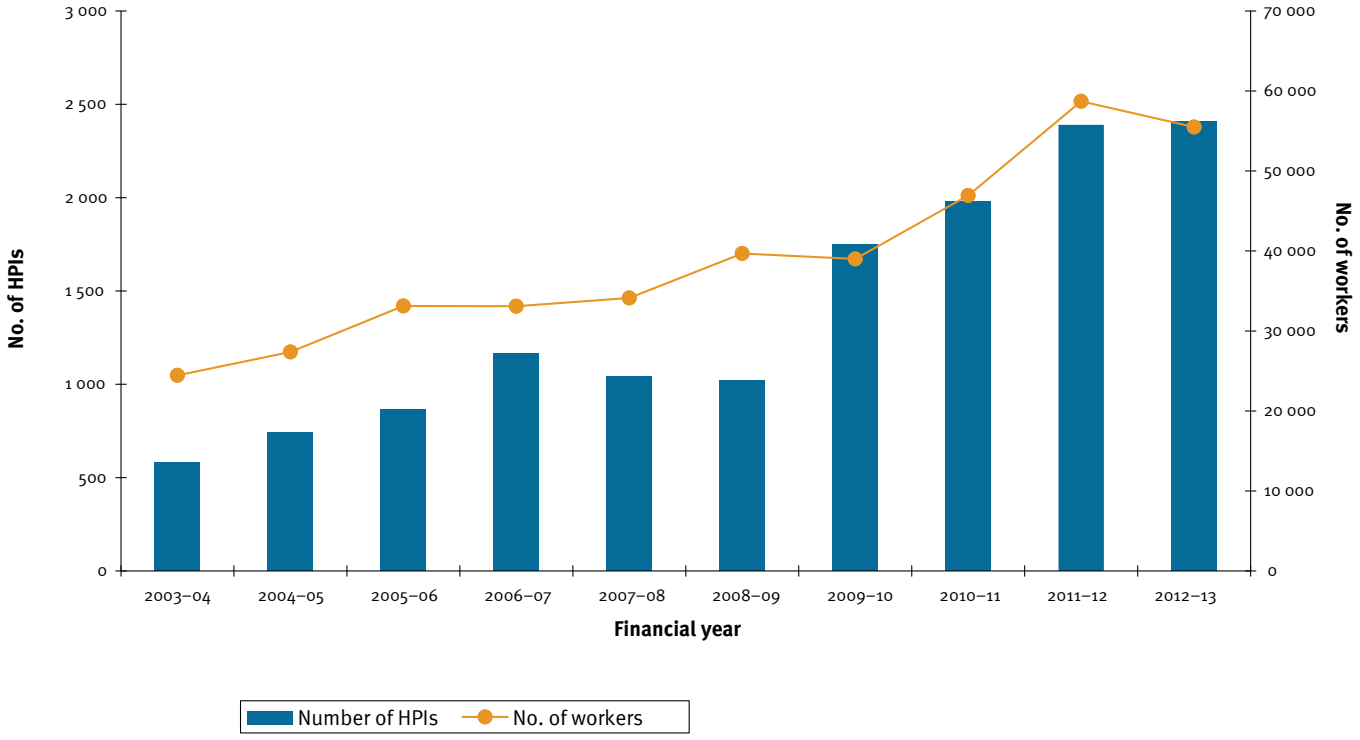


Table 1.3: Comparison of high potential incident-reporting across sectors, 2009–13

	High potential incidents per 1000 workers			
	2009–10	**2010–11**	**2011–12**	**2012–13**
Coal–surface	44	47	41	44
Coal–underground	79	54	52	60
All coal	**50**	**48**	**43**	**47**
Metalliferous–surface	32	24	36	28
Metalliferous–underground	29	31	35	32
All metalliferous	**31**	**27**	**36**	**29**
Quarries	55	50	55	43
All sectors	**45**	**42**	**42**	**42**

• = Surface and underground break-up not available

Figure 1.11: High potential incidents in the Queensland mining industry 2010–13

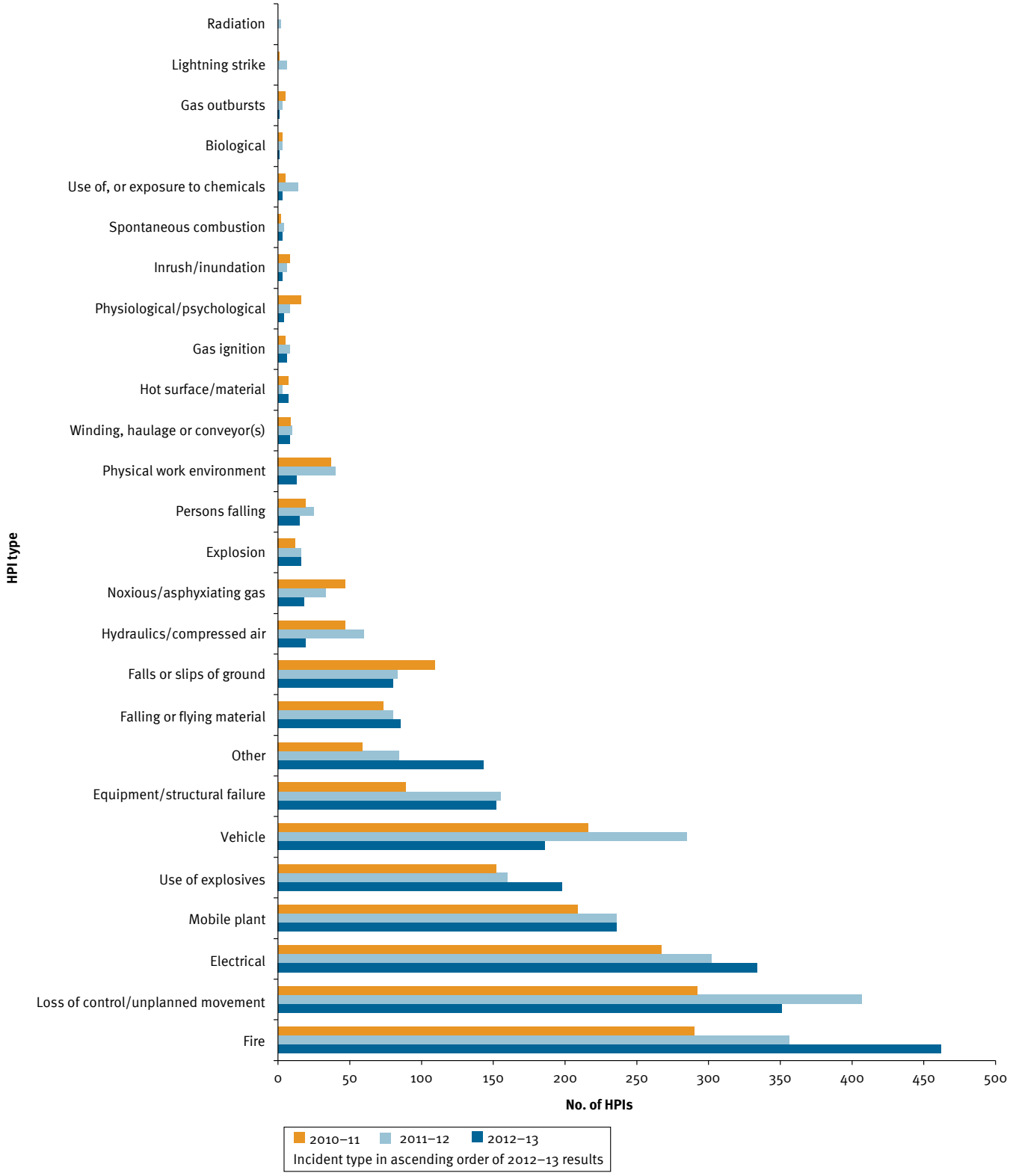


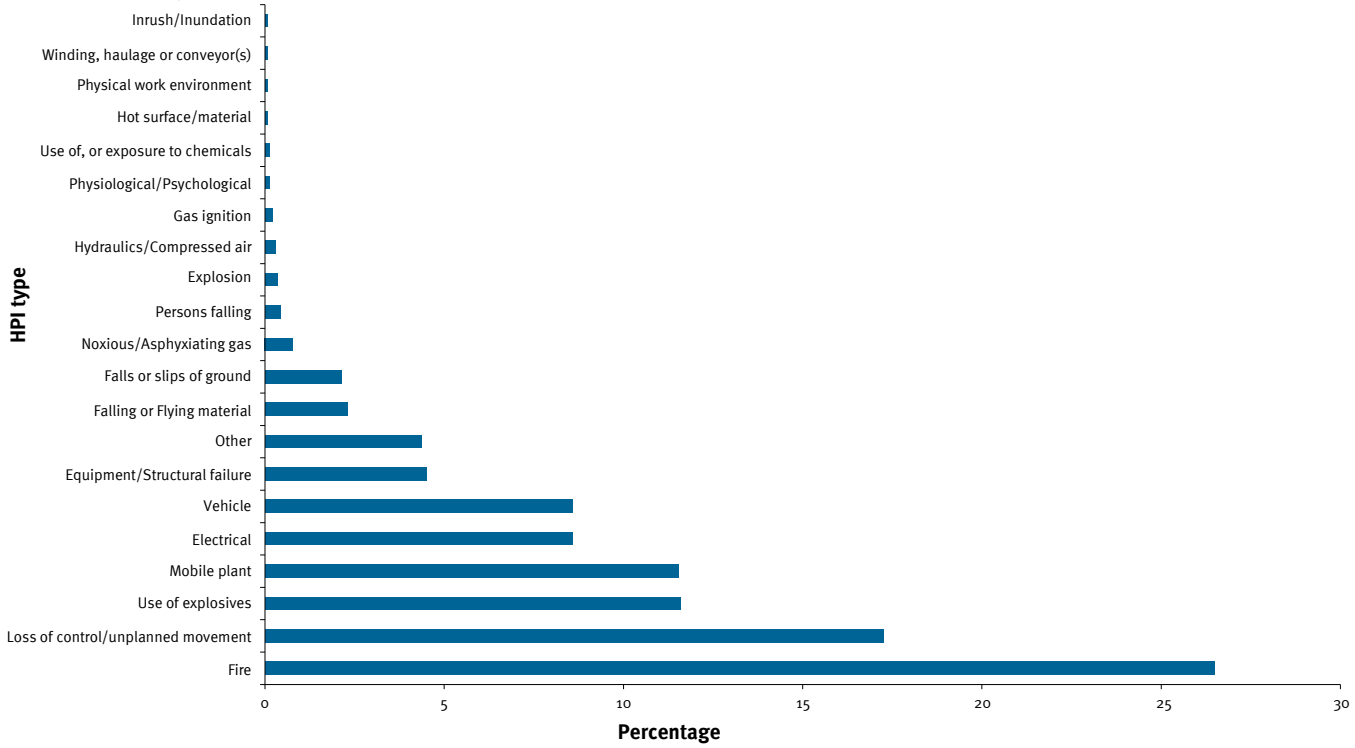
Table 1.4: Safety alerts and bulletins relating to high potential incidents, 2012–13

Loss of control/unplanned movement	
Safety Alert No. 297	Unplanned movement of material in ROM hopper
Safety Alert No. 292	Rear dump truck collision and fatigue
Safety Alert No. 295	Heavy rigid truck runaways on the increase
Explosion	
Safety Alert No. 298	Explosion in an industrial vacuum truck
Safety Alert No. 293	Failure to implement controls: blast exclusion zone
Biological	
Safety Bulletin No. 126	Storm season is coming—be prepared
Gas ignition	
Safety Alert No. 296	Aerosol propellant ignition
Vehicle	
Safety Bulletin No. 130	Distraction and inattention due to using mobile devices
Safety Alert No. 294	Fatality involving front end loader
Chemical (use of, or exposure to)	
Safety Bulletin No. 127	Shift adjustment of the guideline limit for diesel particulate matter
Safety Bulletin No. 132	Xanthates in mining
Physical work environment	
Safety Alert No. 4	Occupational noise
Safety Bulletin No. 133	Preventing serious hand injuries
Safety Bulletin No. 122	Drowning hazards at mines
Equipment/structural failure	
Safety Alert No. 299	Load falls from crane hook causing fatal head injury
Safety Bulletin No. 131	Fatigue failure of drill mast bolts
Spontaneous Combustion	
Safety Bulletin No. 120	Exposure to toxic gases associated with spontaneous combustion at surface coal mines

High potential incidents—surface coal mines

The total number of surface coal mine HPIs reported increased from 1380 in 2011–12 to 1397 in 2012–13. Fire was once again the highest contributing HPI type for surface coal at 26.5% in 2012–13 compared to 19.9% in 2011–12. Loss of control/unplanned movement was the second most-reported incident and remained the same in 2012–13 as in 2011–12 at 17.3%. Vehicle incidents reduced significantly from 14.7% in 2011–12 to 8.6% in 2012–13. (See Figure 1.12.)

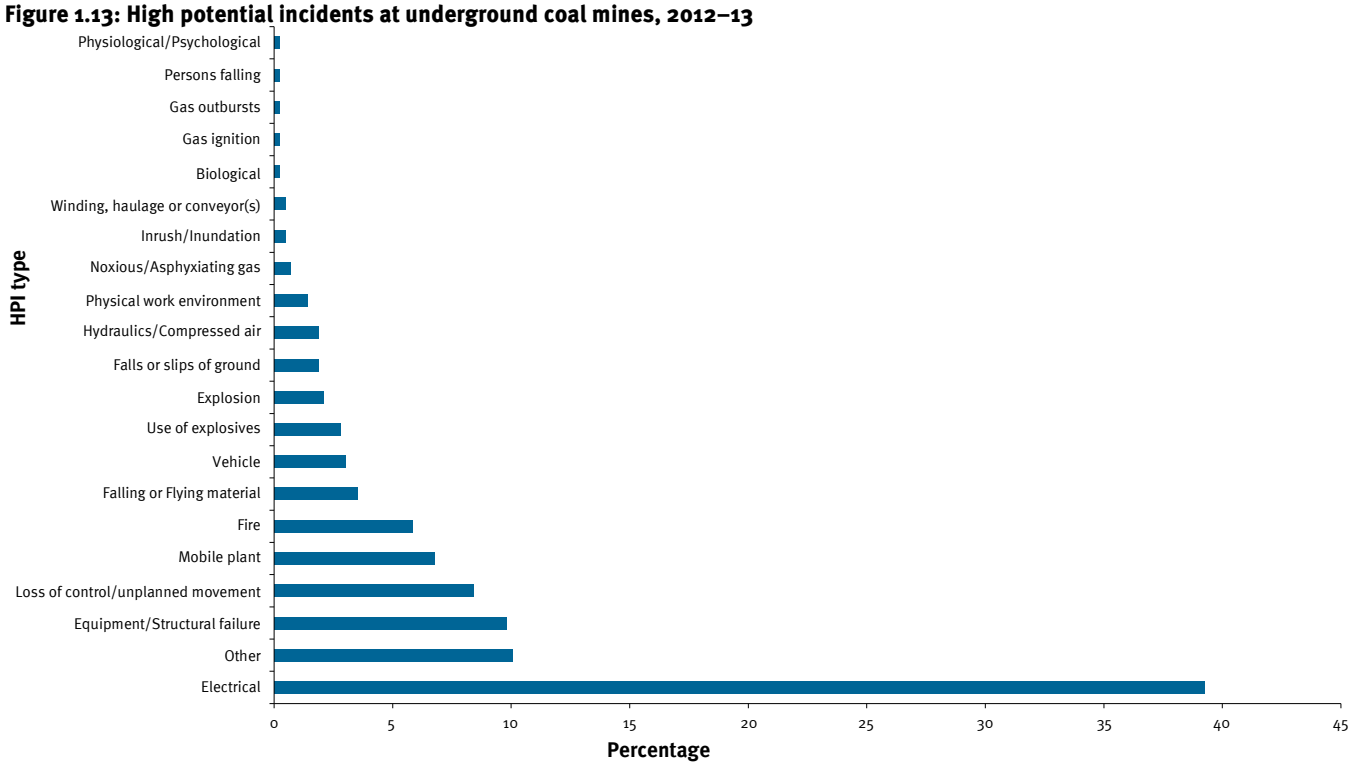
Figure 1.12: High potential incidents at surface coal mines, 2012–13



High potential incidents—underground coal mines

The total number of underground coal mine HPIs reported increased from 398 in 2011–12 to 428 in 2012–13. The percentage of electrical incidents increased from 32.4% in 2011–12 to 39.3% in 2012–13 and remained the most commonly reported HPI in underground coal mines. Equipment/structural failure incidents decreased from 12.4% in 2011–12 to 9.8% in 2012–13 but remained the third most-reported HPI. Vehicle related incidents reduced from 6.1% in 2011–12 to 3.0% in 2012–13. (See Figure 1.13.)

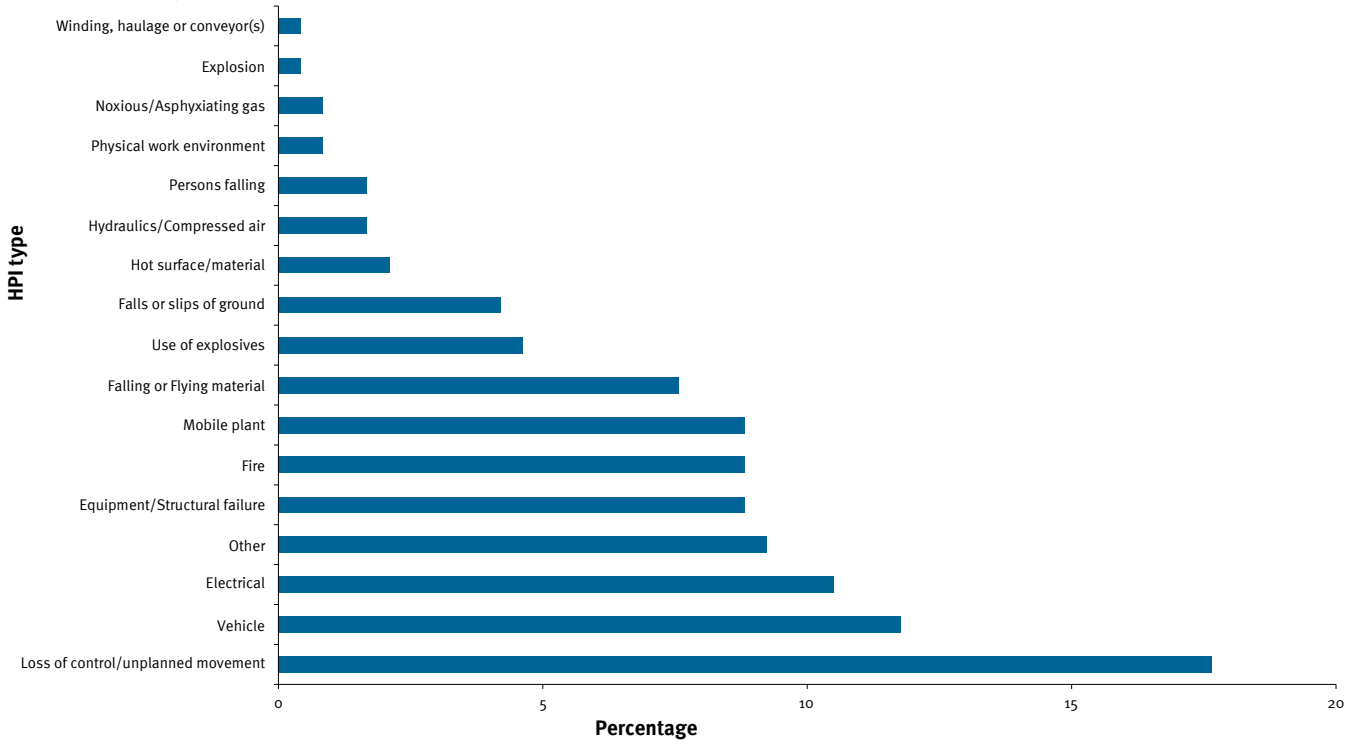
Figure 1.13: High potential incidents at underground coal mines, 2012–13



High potential incidents—surface metalliferous mines

The total number of surface metalliferous mine HPIs reported decreased from 302 in 2011–12 to 238 in 2012–13. Loss of control/unplanned movement was the most commonly reported HPI in metalliferous surface mines but decreased substantially from 32.3% in 2011–12 to 17.6% in 2012–13. Electrical incidents increased from 7.5% in 2011–12 to 10.5% in 2012–13 and were the third most commonly reported HPI. Fire related incidents rose from 4.1% in 2011–12 to 8.8% in 2012–13. (See Figure 1.14.)

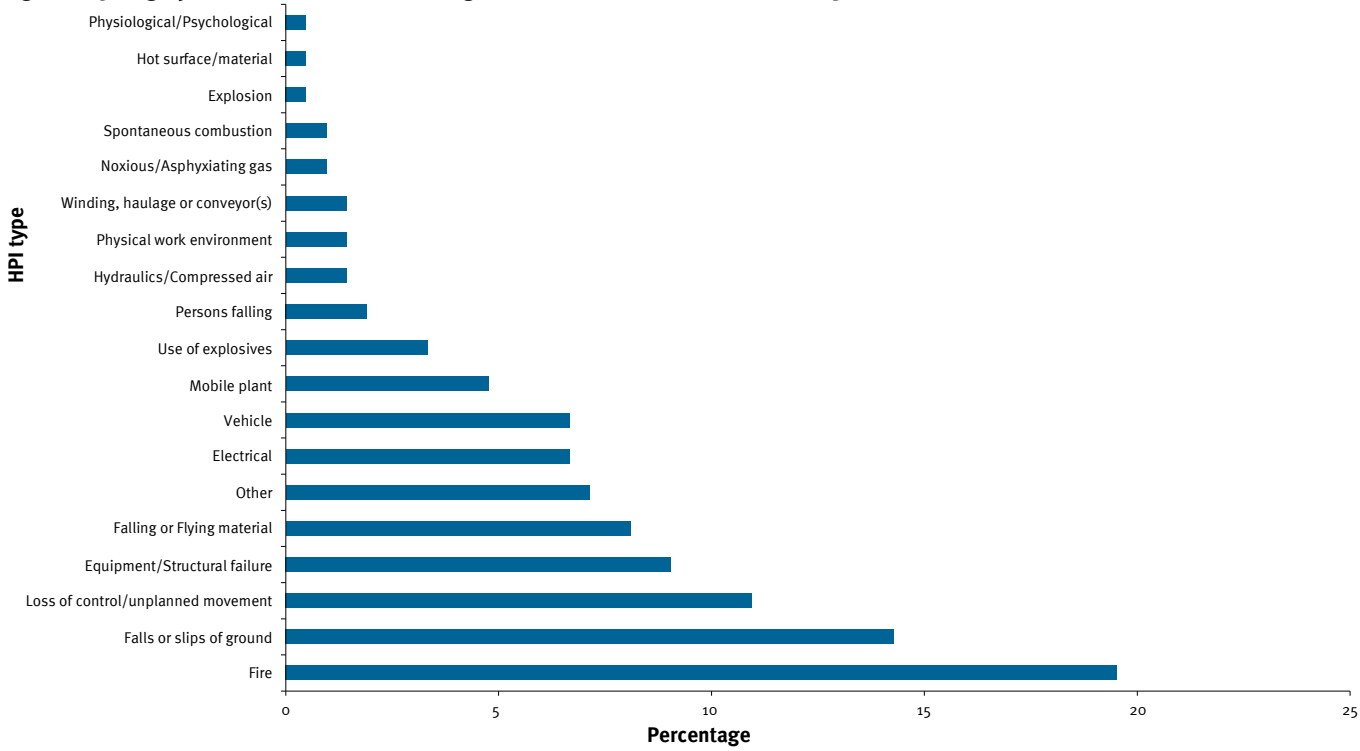
Figure 1.14: High potential incidents at surface metalliferous mines, 2012–13



High potential incidents—underground metalliferous mines

The total number of underground metalliferous mine HPIs reported decreased slightly from 216 in 2011–12 to 210 in 2012–13. Incidents involving fire rose from 15.6% in 2011–12 to 19.5% in 2012–13 and became the most reported incident. The second highest reported incident was falls or slips of ground, increasing from 8.0% in 2011–12 to 14.3% in 2012–13. Loss of control/unplanned movement decreased significantly from 20.1% in 2011–12 to 11.0% in 2012–13. Incidents involving falling or flying material increased from 4.5% in 2011–12 to 8.1% in 2012–13. (See Figure 1.15.)

Figure 1.15: High potential incidents at underground metalliferous mines, 2012–13



High potential incidents—quarries

The total number of quarrying HPIs reported decreased from 94 in 2011–12 to 71 in 2012–13. Mobile plant incidents remained the most reported HPI in 2012–13 at 21.1%, up slightly from 18.4% in 2011–12. Vehicle incidents remained common in 2012–13 on 15.5%. Other notable incident percentage changes from 2011–12 to 2012–13 were: loss of control/unplanned movement (8.2% up to 12.7%), electrical (16.3% down to 9.9%), equipment/structural failure (3.1% up to 9.9%) and use of explosives (3.1% up to 8.5%). (See Figure 1.16.)

Figure 1.16: High potential incidents at quarries, 2012–13

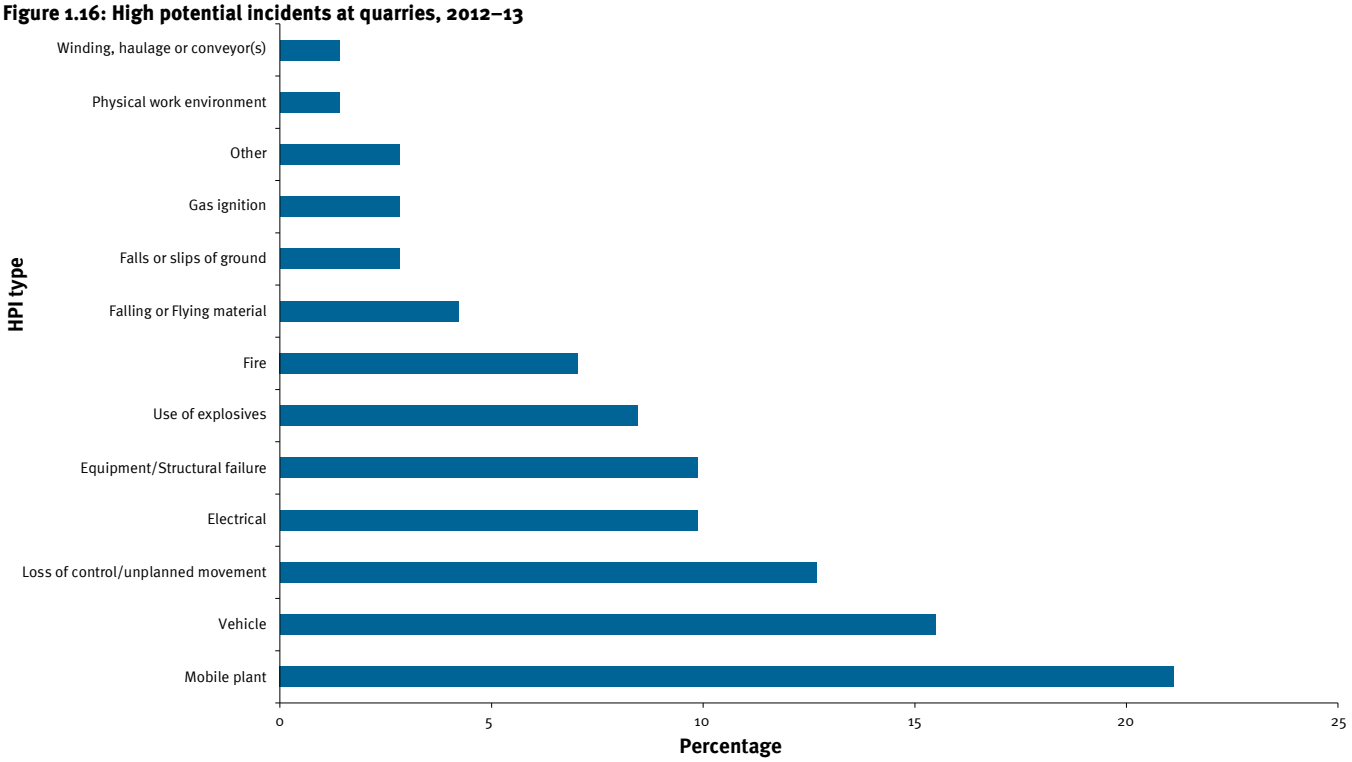


Photo: DNRM

2

The mines inspectorate

Mines Inspector Neville Atkinson, Enterprise Mine, Queensland
Photo: DNRM

2. The Mines Inspectorate

2.1 Miners Memorial Day

In 2012 the Miners Memorial Day was held at the Redbank Collingwood Park Sports Complex. Each year the service is held on 19 September to commemorate the worst disaster that has occurred in Queensland's mining history, when 75 coal miners lost their lives at Mount Mulligan in 1921. More than 1100 miners have died in mining tragedies in Queensland since 1900. The service was well attended by members of the local mining community as well as the Minister for Natural Resources and Mines – Andrew Cripps, the Commissioner for Safety and Health – Stewart Bell and representatives from the Mines Inspectorate and Simtars.

2.2 Initiatives and activities

Preparation for the recommencement of uranium mining

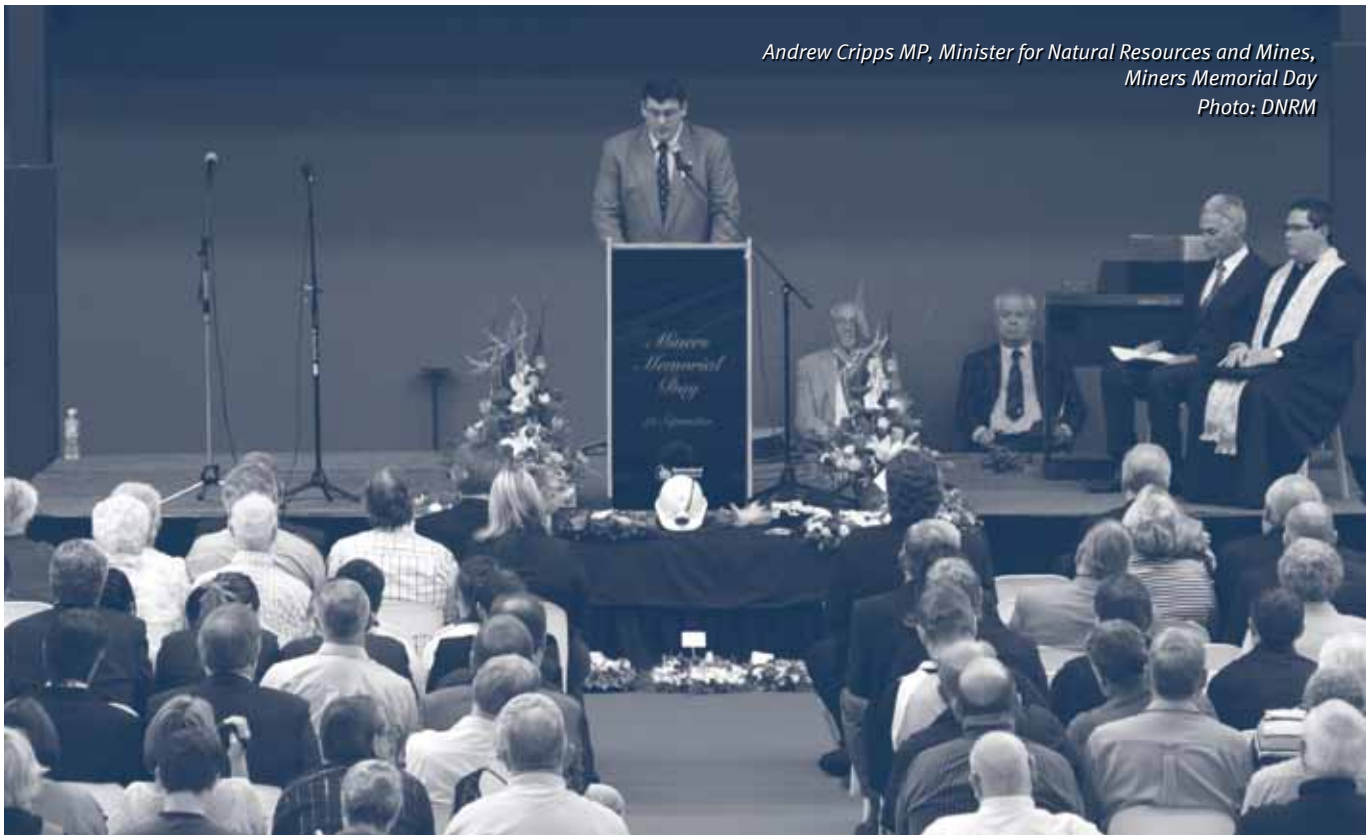
In October 2012, the Queensland Government announced support for the recommencement of uranium mining and processing in the state, reversing a long-held 'policy ban', but complimenting the existing uranium exploration activities. The Uranium Mining Implementation Committee (UMIC) was established to recommend a best practice policy framework for the orderly development and operation of this industry.

Dr Ian Ellison, Inspector of Mines (Chemical/ Metallurgical/ Radiological), was recruited by the Mines Inspectorate to support the establishment and delivery of an effective, resilient and world-leading safety and health regulatory regime for uranium mining in Queensland.

Dr Ellison has significant experience in regulating uranium mining and processing in South Australia where he previously worked as an Inspector for SafeWork South Australia.

In March 2013 the UMIC published *Recommencement of uranium mining in Queensland: A best practice framework*. The following five recommendations regarding safety and health were made, four of which have been completed:

- a legal review has concluded that the existing law and governmental structure is suitable to regulate future uranium mining and processing
- a specialist inspector has been recruited to oversee and coordinate state-wide radiological operations, including a 'virtual team' of inspectors, whose radiation skills have been updated
- a formalised arrangement (a Memorandum of Understanding) with the Radiation Safety Unit of QHealth has been established to coordinate future joint on-site radiation auditing and off-site incident response
- a commitment has been made to support the Australian National Radiation Dose Register set up by the federal government, aimed at collating and analysing all personal radiation exposure data obtained in uranium exploration, mining and processing.



Andrew Cripps MP, Minister for Natural Resources and Mines, Miners Memorial Day
Photo: DNRM

The remaining recommendation was to develop three new guidelines on radiation protection from naturally-occurring radioactive materials (including uranium) in exploration activities ('QGL1'), mining activities ('QGL 2') and processing activities ('QGL 3'). The recommendation is currently in progress with the Mining Safety and Health Advisory Committee (MSHAC) and industry stakeholders, and is expected to meet the delivery milestones of January 2014 (for QGL1) and July 2014 (for QGL2 & QGL3), including mandatory competencies for workers. It is intended that these three documents will be the basis of future national codes of practice on these subjects. Negotiations with other jurisdictions on these matters are well advanced.

A copy of the UMIC report and recommendations can be found on the DNRM website at www.dnrm.qld.gov.au.

Whole-body vibration

The whole-body vibration (WBV) initiative has been in progress for the last four years. During this time Trudy Tilbury, Inspector of Mines (Occupational Health), has been working with the Health Improvement and Awareness Committee (HIAC) as well as other industry representatives and researchers to develop and distribute information sheets, toolbox talks and 'train the trainer' packages within the coal mining industry. In 2012–13 surface coal mines and construction sites on coal mining leases were sent a WBV self assessment questionnaire to determine WBV management systems on site.

Overall, the response rate to the survey was very high. The survey results indicated that a number of surface coal mines had not yet established baseline monitoring for WBV. Where this was identified, DNRM requested the mines to undertake WBV monitoring. A review of incidents involving injuries to operators while operating 'bladed' earth-moving equipment is currently underway. In addition, developments are being monitored for appropriate WBV controls for 'bladed' equipment that can be passed on to industry.

Polymeric chemicals

The polymeric chemical initiative has been in progress for the last three years. Fritz Djukic, Inspector of Mines (Occupational Hygiene), has been monitoring the increasing trend of underground coal mines using polymeric chemical products for strata control, void filling and sealing. To date the initiative has resulted in an industry survey, produced a report on *The use of polymeric chemicals in Queensland coal mines* and assessed the merits of personal exposure monitoring. In 2012–13, the project focused on the practicalities and opportunities presented by biological monitoring techniques used to assess the significance of exposure to these chemicals through the skin.

Diesel particulate matter

The diesel particulate matter (DPM) initiative has been running for over six years. DPM exposure has been identified as a health hazard in underground coal mining for many years. In June 2012, the International Agency for Research on Cancer re-classified diesel engine exhaust to a confirmed human carcinogen.

A significant amount of activity has been undertaken by the Coal Mining Safety and Health Advisory Committee (CMSHAC) DPM subcommittee to support the mining industry to tackle this issue.

The DPM subcommittee provides a forum for mine operators and experts to discuss risks and issues, identify best practice controls and develop guidance materials for underground coal mines. The subcommittee prepared a draft *Code of practice for the management of diesel engine exhaust pollutants in underground environments* as part of the national mine safety framework (NMSF).

Fritz Djukic, conducted a review of personal exposure monitoring for DPM during the 2011–12 period. The results of this review have been presented to the DPM subcommittee and reported back to the individual mines to assist with risk management.

MSHAC has also been working with Jack Farry, Senior Inspector of Mines (Occupational Hygiene), to prepare a guidance note for the management of diesel engine exhaust in metalliferous mines. It is expected that the guidance note will be released in late 2013.

Opal and gemstone miners' campaign

The opal and gemstone campaign has been progressively implemented over the last three years to assist opal and gemstone miners meet anticipated future obligations in developing and implementing a safety and health management system (SHMS) to comply with proposed changes to the *Mining and Quarrying Safety and Health Act 1999*. In that time, the Mines Inspectorate has developed an SHMS template to suit smaller sized and less complex mining operations and completed training of this segment of the industry. New national regulatory information for both opal and gemstone mining is being developed in conjunction with the New South Wales and Western Australia regulators and industry associations as part of the NMSF. It is anticipated that this process will deliver a suitable code of practice and other guidance materials for the opal and gemstone sector in 2014.

Safety publications for small mines and quarries

The Mines Inspectorate, with assistance from the quarrying industry and the Institute of Quarrying Australia, has continued its involvement with the publication of practical safety guides for the quarrying industry. The *Working safely with electricity*

field book is in the final stages of being published and development of a new field book, *Guarding of conveyors*, commenced in 2012–13. These resources have been popular amongst operators due to the practical content and guidance on safety within the quarrying industry.

Queensland Police Service Drug Seminars

During 2012–13, the Queensland Police Service State Drug Investigation Unit collaborated with the Mines Inspectorate, Queensland Resources Council (QRC) and unions to present a series of seminars on contemporary drug issues relevant to the safety and health of mine workers. The theme of the seminar series was *Don't undermine your workmates' safety*. Topics included: Emerging drugs (such as synthetic cannabis); trends in drug use; police intelligence on drug seizures and arrests; legality of synthetic drugs; the health effects of these drugs; case studies and a panel discussion. Eight seminars were held in mining centres throughout Queensland to which site senior executives, safety and health managers, health advisers, occupational physicians, nominated medical advisors, union executives and site safety and health representatives were invited to attend. Over 540 people attended the seminars. The Queensland Police Service has been recognised with two awards for the seminar – *2013 National Drug & Alcohol Awards – Excellence in Law Enforcement and 2013 Award for Excellence in Crime Prevention – State Crime Operations Award*.

Queensland Mining Industry Health and Safety Conference

The 23rd annual conference was held in Townsville from 19 – 22 August 2012. With the theme of *A new era in health and safety* presentations, delivered by DNRM officers included:

- *A legislation journey*, presented by Rob O'Sullivan, Chief Inspector of Mines
- *Opportunity for re-entry into a coal mine immediately following an explosion*, presented by Darren Brady, Director – Mine Safety Technology, Simtars
- *The case for quantitative risk analysis in the mining industry*, presented by Tilman Rasche, Senior Inspector of Mines
- *Where Does Health Fit in Fatigue Risk Management?* presented by Trudy Tilbury, Inspector of Mines (Occupational Health).

The conference proceedings were opened and closed by Stewart Bell, Commissioner for Safety and Health.

Quarrying and Small Mines Safety and Health Seminar

The 8th annual Quarrying and Small Mines Safety and Health Seminar, *Challenging our ways*, was held in Townsville on 23 April 2013. Phil Goode, Acting Chief Inspector of Mines (Metalliferous) delivered a presentation titled *DNRM philosophy update and strategic plan*.

Quarrying Safety and Health Seminar

The 11th Annual Quarrying Safety and Health Seminar was held at the Brisbane Convention and Exhibition Centre on 12 June 2013. The event was co-hosted by the Institute of Quarrying Australia, Cement Concrete and Aggregates Australia and the Mines Inspectorate, with a focus on the theme *Leadership and Support—you are not alone*. More than 320 delegates attended the seminar which was officially opened by The Honourable Andrew Cripps MP, Minister for Natural Resources and Mines.

Presentations delivered by DNRM officers included:

- *What is focus going forward?* presented by Phil Goode, Acting Chief Inspector of Mines (Metalliferous)
- *Good practice and experiences in safety and health* by Wayne Scott, Inspector of Mines

Mining Electrical Safety Association Conference

The 24th annual Mining Electrical Safety Association Conference was held in Brisbane from 26–28 June 2013. The conference was well attended by 350 electrical professionals associated with the mining industry in Queensland, New South Wales and Western Australia. This year the conference was opened by Paul Harrison, Deputy Director-General. Papers presented included going back to basics with earthing systems, hazards associated with welding machines and how one company has reduced electric shock incidents to virtually zero, innovations to reduce or eliminate issues associated with the use of electricity in mining and the ever popular case studies presented by people from industry. The conference was well supported by a trade exhibition.

2.3 Diesel Particulate Matter Subcommittee

The DPM subcommittee was formed to oversee health and safety issues relating to use of diesel equipment in the coal mining industry in Queensland, particularly in underground coal mines. The subcommittee has been running in its current format since 2007 and meets approximately quarterly. It includes representatives from industry, the Mines Inspectorate and industry consultants.

The subcommittee met three times in 2012–13. These meetings were held on 29 August 2012, 12 November 2012 and 13 March 2013. There continues to be strong support from the industry to control diesel emissions. This is demonstrated by the high number of attendees at each meeting.

The dissemination of information last year, on training modules for diesel fitters, covering maintenance and overhaul of explosion protected engines, has seen a great many fitters this year gaining those competencies. The CMSHAC recently agreed to list the competencies as mandatory requirements.

In 2012–2013 as a result of committee activities, the following observations were made:

- A major change in mindset has occurred amongst industry attendees. Previously the control of diesel particulates was seen as a purely mechanical problem but now there is recognition that a more co-ordinated approach from mechanical, ventilation and health personnel at a mine is needed to manage the hazard successfully.
- Diesel particulate monitoring has become a routine practice in underground coal mines. The industry is reporting that exposure limits are being adjusted to cater for longer shift lengths. This change appears to coincide with the release of Safety Bulletin 127 – *Shift adjustment of the guideline limit for diesel particulate matter* by the Mines Inspectorate.
- The industry is also reporting the ventilation quantities are being adjusted to reduce the concentration of diesel engine emissions.
- After considerable discussion throughout the year about where to locate testing probes when assessing 'tail pipe' and 'after treatment' engine emission levels, the committee now has an agreed protocol. This is a significant breakthrough. Tail pipe and 'after treatment' testing of engine exhaust is performed to measure the amount of pollution entering the atmosphere. Knowing this information is key to scheduling preventative and corrective engine maintenance and also to calculating ventilation quantities to reduce diesel engine emission concentrations in a mine's atmosphere.

2.4 Health Improvement and Awareness Committee

The Queensland mining HIAC was established to assist industry to anticipate, identify, evaluate and control health hazards in the mining environment. It is a tripartite committee with representatives from the Australian Workers Union, the Construction, Forestry, Mining and Energy Union, coal and metalliferous industries, quarrying and cement industries, the Queensland Resources Council and DNRM's Mine Safety and Health Group.

The HIAC met three times during the year on 6 December 2012, 6 March 2013 and 13 June 2013.

At the December meeting the committee set the health priorities for 2013–2015 using qualitative risk prioritisation. The Petroleum and Gas Inspectorate were invited to participate in this process.

The HIAC priorities for 2013 to 2015 includes:

1. Noise

Noise is a physical hazard that affects mine workers in all mining sectors in Queensland. DNRM continues to receive a very high number of notifications annually of permanent disability due to noise induced hearing loss. Some key areas in mining and quarrying where excess noise exposure occurs are:

- use of handheld power tools, including grinders, compressed air, pneumatic tools particularly in a confined space
- work with or near compressors
- work with or near mobile plant and fixed plant
- garnet or water blasting
- drilling, particularly when not in an enclosed cabin
- underground equipment and ancillary plant such as fans.

2. Airborne dust

Airborne dust is generated by many activities in mining and quarrying. The most prevalent dust exposure for mine workers in the quarrying and metal mining sectors is respirable crystalline silica, as well as exposure to toxic heavy metal dusts such as lead, cadmium and arsenic in some operations. Exposure to respirable coal dust is also a potential hazard for coal mine workers. Significant work by DNRM has resulted in a number of dust surveys and analysis of exposure, as well as monitoring being undertaken for respirable crystalline silica exposure in a number of Queensland quarries.

3. Mental health

Two HIAC meetings in 2013 included presentations and discussions with speakers with background and experience in mental health or psychosocial risk management. The goal of these meetings was to assist with identifying the role of HIAC in coordinating information for the mining industry. As a result of the meetings and discussions, HIAC has formed a working party to review the value of mining specific communication in psychosocial hazards and mental health issues for the mining sector in Queensland.

4. Health effects of shiftwork

Research in other industries has shown that long term exposure to shift work can have ill effects on health such as cardio-vascular disorders, gastro-intestinal disorders, endocrine disorders like insulin resistance and diabetes, and more recently a link to possible occupational cancers with very long term exposure. DNRM is monitoring the research and providing information to HIAC.

5. Musculoskeletal disorders

Musculoskeletal disorders as a whole (including soft tissue injuries, nerve or neurological conditions such as carpal tunnel syndrome, degenerative conditions of the joints and spine, and sprains/strains) from the majority of LTIs reported. A number of initiatives between DNRM and the mining sector have occurred over time, and HIAC has recently formed relationships with Q-Comp and WorkCover Queensland to promote good practice.

6. Heat

Heat stress/excessive heat exposure is a hazard primarily for underground metalliferous mines, underground coal mines under certain conditions, and surface mines and exploration sites. HIAC ran a successful heat risk management meeting and seminar in 2011, with the presentations available on the DNRM website at www.dnrm.qld.gov.au. DNRM has previously published Safety Bulletin 91 on *Heat Stress* and Safety Bulletin 115 on *Risk Management of Heat Exposure in Mining* to assist in risk management of heat exposure.

7. Ultra-Violet Radiation

Ultra-violet radiation (UVR) exposure in mining is a key concern for those mine workers, quarry and exploration workers in outdoor environments. HIAC had a presentation from Professor Adèle Green, Deputy Director of the Queensland Institute of Medical Research and leading expert in skin cancer and melanoma in 2011, as well as other speakers from industry. DNRM has previously published Safety Bulletin 93 on *Sunlight and UV Radiation* and continues to monitor the research and effective risk management of UVR.

8. Diesel Particulate Matter (currently managed by the DPM subcommittee for coal mines)

DPM exposure has been identified as a potential health hazard in underground mining for many years. Significant work has been undertaken in Queensland underground coal, where a DPM subcommittee of CMSHAC meets on a regular basis as mentioned previously in this report. HIAC updates the mining industry on the key points from each meeting with correspondence sent to site senior executives and health contacts. There is now also a formal liaison between CMSHAC and the HIAC Chair.

HIAC continues to maintain its charter to promote an evidence-based approach to the management of health hazards and to raise the profile of health-related issues in the mining industry.

2.5 Queensland Level 1 Mine Emergency Exercise 2012

Each year a *Level 1 – State Level Exercise* is required to be conducted at a coal mine as required by Recognised Standard 08 – *Conduct of mine emergency exercises*. The objectives of the exercise are to:

- test the mine's emergency management system
- test the ability of external services to render assistance
- provide a focal point for emergency preparedness in the state.

The design, organisation and implementation of the exercise is undertaken by the State Emergency Exercise Executive Management Committee convened by the Chief Inspector of Coal Mines.

Performance of the exercise is audited by a team comprising members of the organising committee and other invited personnel. A brief summary from the Level 1 Emergency Exercise Report –2012 Oaky North Mine is given below. The full report is available on the DNRM website at www.dnrm.qld.gov.au.

Summary

The 2012 *Level 1 Mine Emergency Exercise* was held at Oaky North underground coal mine on Sunday 7 October 2012 between 11 am and 10 pm. Oaky North Mine is located between Tieri and Middlemount, in Central Queensland.

Scenario

The scenario used for the exercise was a frictional ignition of methane gas on the longwall face. The resulting explosion killed and/or injured three workers on the longwall face; opened and damaged the doors in the tailgate and blew out the pressure release panels at the upcast shaft.

Two mine workers in the maingate were also knocked over by the explosion, but remained conscious. The explosion also destroyed ventilation structures, telephone communications and gas monitoring in the working sections of the mine. Another complicating feature of the scenario was that it occurred on a Sunday, a time when many of the senior members of the management team and technical experts were not at the mine.

Outcomes

The emergency exercise tested and assessed:

Activation

- the recognition of an emergency by mine workers and control room staff
- the activation of the emergency response
- the use of the surface emergency siren
- the communication with off-site management, expertise and responders
- the use of telephones in the Control Room

Evacuation

- the triggers for, and the effectiveness of the mine evacuation system
- the use of mine escapeways, including walking out of the mine
- the selection of evacuation muster points
- the competencies of workers to self-escape using compressed air breathing apparatus (CABA) and change-over from self-rescuers to CABA in smoke obscured conditions
- the use of personal emergency devices (PED) to communicate with workers underground

Response

- the response time of the Queensland Mines Rescue Service to activate rescue teams
- the effectiveness of the mine's mutual assistance scheme
- the competency of the mines rescue team to enter the mine and undertake rescue and recovery activities
- the occurrence of rescue team debriefing

Incident management

- the formation of the Incident Management Team (IMT)
- the use of duty cards by the IMT
- the performance and decision making of the Incident Controller and IMT
- the interaction between technical experts and IMT to plan and control emergency response
- the use of telephones and mobile phones
- the fatigue management of IMT members

Gas monitoring

- the competency of technical personnel using the gas monitoring and ventilation modelling systems.

Recommendations

One of the objectives of the annual emergency exercise is to share the outcomes and lessons from the host mine to facilitate the overall improvement of mine and industry emergency preparedness. This year's report makes 11 recommendations for further improvement:

- It is important not to overload staff, free-up telephone lines and reduce the amount of activity occurring in the Control Room during an emergency.

Recommendation 1: Activities such as contacting off-site mine officials and emergency response teams should be given to another person through the duty card system and carried out in another location.

- The surface siren was activated at the commencement of the emergency and from time to time during the emergency and then switched-off for long periods to reduce the level of noise. This resulted in some workers not being aware an emergency was in progress and not offering assistance in the early stages of the emergency.

Recommendation 2: Devise an unobtrusive alert system that tells people at the mine and those arriving after the emergency starts that an emergency is in progress.

- The Control Room handled most of the telephone calls during the exercise. It is normal operational practice for the Control Room to be the communication centre but during an emergency there was so much activity going on it would have been better to handle these calls in a separate office nearby.

Recommendation 3: Emergency planning must recognise administration staff members need to take and receive phone calls.

- Two workers decided to walk 12 km from the face to the surface. There was no way of rehydrating while wearing CABA. As a result, one worker was dehydrated when he reached the surface.

Recommendation 4: Evaluate the distances that people will be required to travel to evacuate on foot.

Recommendation 5: Establish a means of rehydrating while wearing CABA as an industry research priority.

- Each person who goes underground carries a cap lamp that has a digital screen PED which allows messages of up to 32 characters to be sent to workers. Messages can be sent from most computers at the mine. During the exercise an abbreviated message was sent to PEDs regarding evacuation. However, this abbreviation created confusion and may have resulted in some workers electing to self-evacuate through the conveyor portal rather than the intended message which was to communicate that an evacuation trigger level had been reached.

Recommendation 6: Mines should review any jargon or shorthand messages to check if they might cause confusion.

- The exercise commenced in the early afternoon and concluded at 10pm. Most of the IMT had been awake for several hours prior to the emergency activation. Alternates and delegates for senior IMT members did not leave the mine to rest during the exercise.

Recommendation 7: Nominate an alternate for each of the senior team members and plan for that person to rest in preparation for a handover in about eight hours.

Recommendation 8: The teams carry out a handover and the primary teams disengage, but monitor the performance of their delegates.

- The exercise highlighted the three hour lag between tube bundle sampling and analysis for the working panels. It was also noted that relocating analysers, pumps and telemetry equipment closer to shafts puts them at risk of damage if an explosion reaches the surface.

Recommendation 9: Evaluate methods to reduce the lag with tube bundle readings so that the information can be obtained while it is still meaningful.

- The IMT planning group used ventilation modelling to assess various scenarios during the exercise. This put a significant extra workload on the Ventilation Officer who was most knowledgeable about the modelling software but was also required to attend to other activities at times when modelling was being conducted by the IMT.

Recommendation 10: Arrange emergency mutual assistance between mines to address the analysis of the large volume of technical data by appropriately qualified people.

- The exercise identified that debriefing reports from workers who had evacuated from the mine were not used in planning and decision making by the IMT. It was also noted that a large volume of data from personal gas monitors could also have been downloaded to provide information about the atmosphere that workers had travelled through when evacuating.

Recommendation 11: Develop improved debriefing techniques. This has application in incident investigations as well as operational activities.

2.6 Legislative changes

On 6 June 2012, DNRM released a consultation paper 'Nationally consistent mine safety legislation: Queensland's proposal for a nationally consistent legislative framework' for public comment. The consultation paper considered four options to improve mining safety and health and develop greater regulatory consistency with other states. Twenty-eight responses to the consultation paper were received with twenty-two favouring Option 1, which is to retain Queensland's current mine safety and health Acts and add amendments based on the Model Act and other core and non-core NMSF provisions that improves both consistency and safety and health.

The Consultation Regulatory Impact Statement (RIS) is to be released in early 2013–14. The RIS has been developed based on the analysis of submissions received in response to the 2012 consultation paper; with oversight by the Queensland Competition Authority's Office of Best Practice Regulation. A 60 day consultation period will be provided to allow public submissions to be made. DNRM will conduct information sessions in Brisbane and various regional mining centres during the consultation period. The information sessions will provide the opportunity for mine workers, companies, unions and others to gain information and speak with the Mines Inspectorate about the proposed amendments. Public submissions will be used to draft the amendments to the legislation. The Decision Regulatory Impact Statement will be subject to scrutiny by Queensland Competition Authority's Office of Best Practice Regulation.

Furthermore, consultation with industry will still be possible even after the draft Bill for the proposed amendments is tabled in Parliament. The draft Bill will most probably be referred to a parliamentary committee for further examination. Parliamentary committees frequently call for submissions and are able to conduct consultative forums with stakeholders.

2.7 Prosecutions and other enforcement actions

Coal mines

On 6 March 2007, an accident occurred at Broadlea Coal Mine when a service truck, driven by a serviceman working at the mine, overturned whilst travelling down a ramp into one of the pits at the mine site. The Site Senior Executive was prosecuted for failing to discharge safety and health obligations, contrary to section 34 of the *Coal Mining Safety and Health Act 1999*. The contravention involved various failures relating to brake testing, pre-start checks on the vehicle and providing rollover protection. The Site Senior Executive, who pleaded guilty, received a $2000 fine and was required to pay $2500 in investigation costs. The prosecution was finalised in November 2012.

On 27 April 2012 at North Goonyella Coal Mine, a coal mine worker failed to discharge safety and health obligations, contrary to section 34 of the *Coal Mining Safety and Health Act 1999*. The contravention involved the worker taking contraband items into an underground mine and using a cigarette lighter to light a cigarette and then smoke the cigarette. The coal mine worker, who pleaded guilty, received an $11 000 fine and was required to pay $10 841.75 in investigation costs and professional fees. The prosecution was finalised in April 2013.

On 28 September 2011 at Grasstree Mine, a coal mine worker failed to discharge safety and heath obligations, contrary to section 34 of the *Coal Mining Safety and Health Act 1999*. The contravention involved the coal mine worker, who was a qualified electrician, failing to employ proper isolation procedures. The coal mine worker, who pleaded guilty, received a $9000 fine and was required to pay $5000 in investigation costs and professional fees. The prosecution was finalised in March 2013.

Metalliferous mines and quarries

No prosecutions were finalised in 2012–13.

2.8 Coronial inquests into mining-related fatalities

Coronial inquests were held into the mining-related deaths of Michael Earle Auld which occurred on 17 January 2008 at Cannington Mine and of Pekka Tuppurainen which occurred on 19 May 2009 at George Fisher Mine. Hearings for the inquests concluded in November and December 2012 respectively. The findings were delivered by the Cairns Coroners Court in August 2013.

The coroner found Mr Auld was fatally injured when he was crushed between the rear of a light vehicle utility and the basket attachment of a loader being positioned at the rear of the utility to assist with the transfer of tools and equipment. Mr Tuppurainen was fatally injured when the loader he was operating to backfill a stope, went over the edge and fell into the stope.

In both cases the coroner was satisfied with the remedial action taken by the companies involved and the Mines Inspectorate to prevent the risk of future fatalities, and no further recommendations were made.

The full findings of the Coroners Court can be found on the Queensland Courts website at www.courts.qld.gov.au/courts/coroners-court.

2.9 Complaints about safety and health at mines

Queensland mine safety and health legislation, section 254 of the *Mining and Quarrying Safety and Health Act 1999* and section 275 of the *Coal Mining Safety and Health Act 1999*, allows mine workers or 'workers' representatives to make confidential complaints about safety and health matters to the Mines Inspectorate.

The Mines Inspectorate received 123 complaints about safety and health matters during 2012–13, of which 112 were from mine workers or workers' representatives.

Figure 2.1 shows the type and number of complaints made in 2012–13.

2.10 Inspections and audits conducted by the Mines Inspectorate

Inspectors and inspection officers have the power to enter and inspect or audit mines and quarries under Part 9, Division 5 of the *Coal Mining Safety and Health Act 1999*, and the *Mining and Quarrying Safety and Health Act 1999*.

Table 2.1 shows details of mines inspectorate activities in 2012–13. There were 1602 inspections and 33 audits completed in 2012–13.

2.11 Directives issued by the Mines Inspectorate

Inspectors and inspection officers have the power to issue directives under Part 9, Division 5 of the *Coal Mining Safety and Health Act 1999*, and the Mining and *Quarrying Safety and Health Act 1999*.

During 2012–13, the Mines Inspectorate issued 265 directives, a decrease from the 375 directives issued in 2011–12.

The directives issued included:

- 156 in the Central Region
- 66 in the Northern Region
- 43 in the Southern Region.

Of these directives, 107 were issued under the *Coal Mining Safety and Health Act 1999*, and 158 were issued under the *Mining and Quarrying Safety and Health Act 1999*. The types of directives issued are listed below:

- ensure coal mine worker competent
- reduce risk
- suspend operations for unacceptable level of risk
- review safety and health management system and principal hazard management plans
- review safety and health management system
- suspend operations for ineffective safety and health management system
- provide an independent engineering study

Figure 2.1: Complaint type and number received across all sectors, 2012–13 (compared with 2011–12)

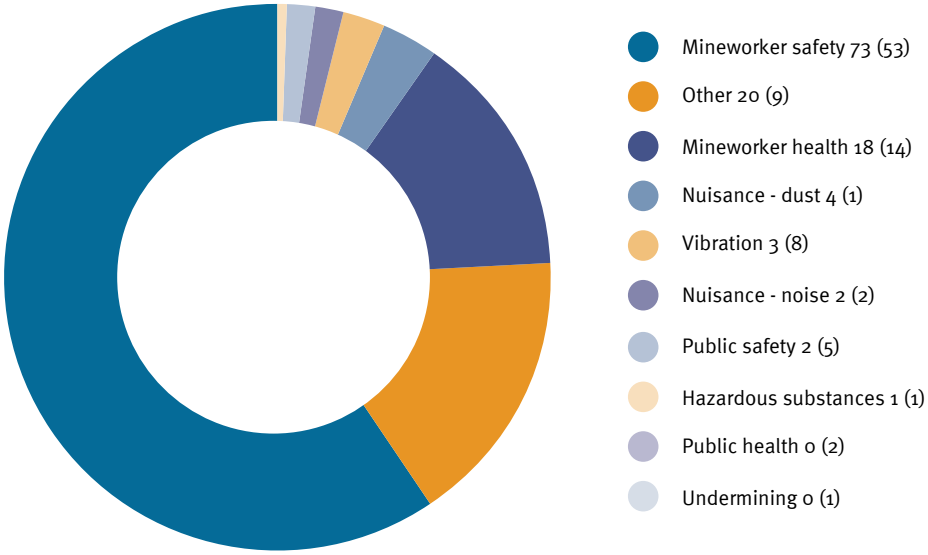


Table 2.1: Mines Inspectorate activity 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Inspections	1 115	1 197	1 321	1 387	1 451
Inspections–unannounced	337	288	161	136	127
Inspections–weekend or backshift	27	18	18	8	13
Inspections–unannounced weekend or backshift	29	32	12	12	11
Audits–subject or system specific	41	135	135	48	14
Audits–compliance audits	24	108	44	7	19

3

Lag performance indicators: incident numbers

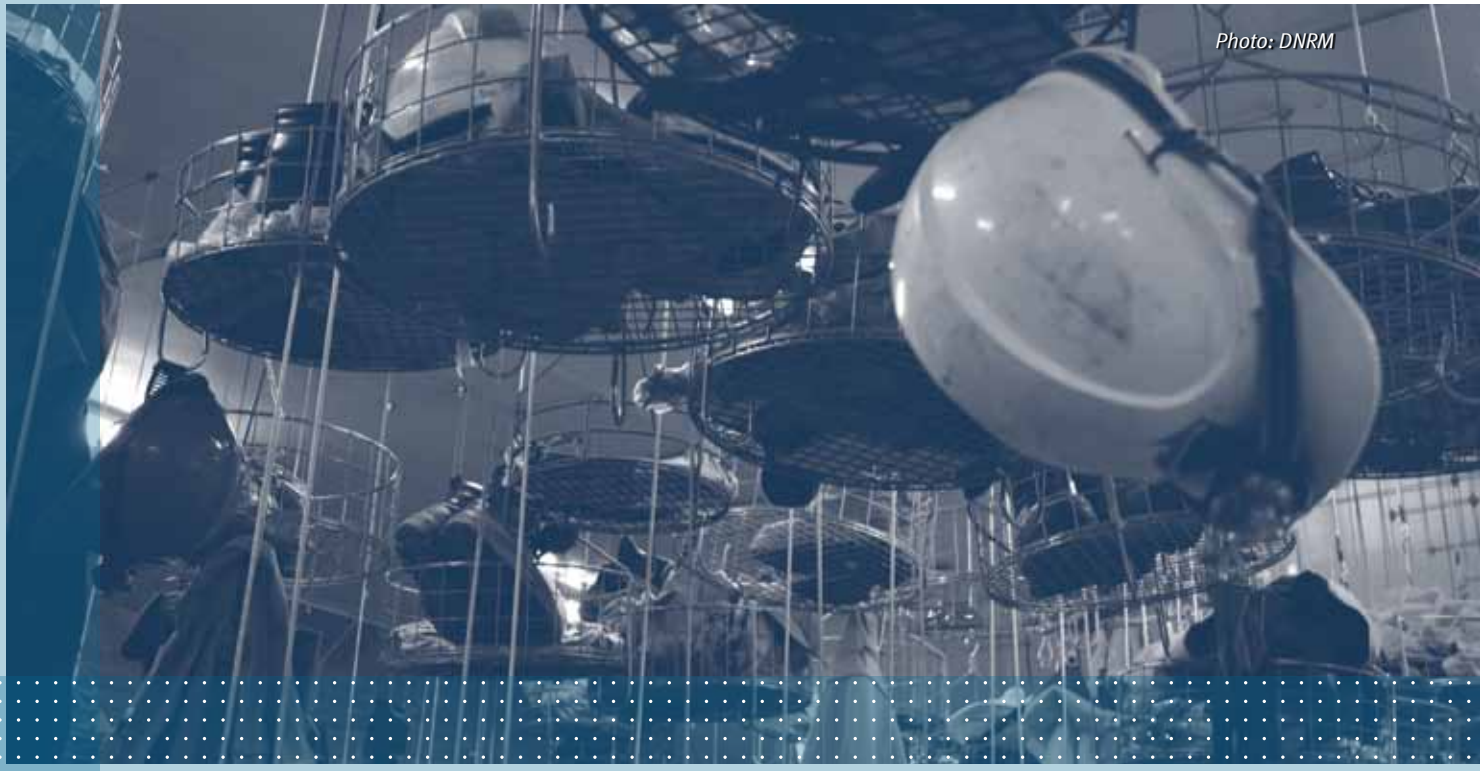


Photo: DNRM

3. Lag performance indicators: incident numbers

The following graphs and accompanying tables show five-year trends in a number of indicators used to assess safety and health performance across the industry. These are the raw number of incidents and are provided for information. Comparison of these numbers across sectors is not valid because they are not normalised. Normalised data and rates are presented in Chapter 4 of this report.

The performance indicators plotted are:

- Table 3.1: Number of lost time injuries, 2008–13
- Table 3.2: Number of lost time injury days (days away from work only), 2008–13
- Table 3.3: Number of lost time injury days (days away from work and days on alternative duties), 2008–13
- Table 3.4: Number of disabling injuries (injuries where the worker is given alternative duties), 2008–13
- Table 3.5: Number of disabling injury days (days on alternative duties), 2008–13
- Table 3.6: Number of lost time injuries and disabling injuries, 2008–13
- Table 3.7: Number of lost time injury and disabling injury days (days away from work and days on alternative duties), 2008–13
- Table 3.8: Number of permanent incapacities, 2008–13
- Table 3.9: Number of fatalities, 2008–13
- Table 3.10: Number of medical treatment injuries, 2008–13
- Table 3.11: Total recordable injuries, 2008–13
- Table 3.12: Number of reported high-potential incidents, 2008–13
- Table 3.13: Number of employees at 30 June, 2008–13
- Table 3.14: Total hours worked (millions), 2008–13

These indicators are all lag indicators—they are a measure of performance after the event. It is better to measure and trend lead indicators so that incidents can be predicted; however, appropriate lead indicators are much more difficult to define and measure. A suite of lead indicators has been measured and these are detailed in Chapter 6 of this report.

Table 3.3 shows the number of days lost from work and the number of days on alternative duties for LTIs. Most jurisdictions in Australia do not include the number of days on alternative duties but only count the days lost from work (see Table 3.2).

Table 3.1: Number of lost time injuries, 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	125	138	150	200	212
Coal–underground	80	64	53	122	104
Coal subtotal	**205**	**202**	**203**	**322**	**316**
Metalliferous–surface	54	47	53	75	60
Metalliferous–underground	26	30	27	50	18
Metalliferous subtotal	**80**	**77**	**80**	**125**	**78**
Quarries	16	28	28	26	12
All operations	**301**	**307**	**311**	**473**	**406**

Table 3.2: Number of lost time injury days (days away from work only), 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	4 234	3 184	4 988	5 212	4 507
Coal–underground	2 105	2 010	1 287	3 129	2 003
Coal subtotal	**6 339**	**5 194**	**6 275**	**8 341**	**6 510**
Metalliferous–surface	918	1 110	994	1 521	1 214
Metalliferous–underground	1 135	639	621	1 023	385
Metalliferous subtotal	**2 053**	**1 749**	**1 615**	**2 544**	**1 599**
Quarries	328	462	1 023	571	187
All operations	**8 720**	**7 405**	**8 913**	**11 456**	**8 296**

Table 3.3: Number of lost time injury days (days away from work and days on alternative duties), 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	7 669	6 461	10 297	9 594	7 964
Coal–underground	5 925	3 884	2 463	5 453	3 797
Coal subtotal	**13 594**	**10 345**	**12 760**	**15 047**	**11 761**
Metalliferous–surface	1 596	1 785	1 375	1 896	1 569
Metalliferous–underground	1 819	1 560	1 132	1 451	689
Metalliferous subtotal	**3 415**	**3 345**	**2 507**	**3 347**	**2 258**
Quarries	378	635	1 605	734	212
All operations	**17 387**	**14 325**	**16 872**	**19 128**	**14 231**

Table 3.4: Number of disabling injuries (injuries where the worker is given alternative duties), 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	208	214	270	356	266
Coal–underground	121	115	184	192	143
Coal subtotal	**329**	**329**	**454**	**548**	**409**
Metalliferous–surface	31	28	35	59	61
Metalliferous–underground	57	70	51	92	70
Metalliferous subtotal	**88**	**98**	**86**	**151**	**131**
Quarries	0	1	0	10	1
All operations	**417**	**428**	**540**	**709**	**541**

Table 3.5: Number of disabling injury days (days on alternative duties), 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	6 295	4 234	6 010	8 955	5 129
Coal–underground	3 028	2 828	3 836	2 711	2 349
Coal subtotal	**9 323**	**7 062**	**9 846**	**11 666**	**7 478**
Metalliferous–surface	828	1 264	876	1 565	1 672
Metalliferous–underground	2 195	2 610	955	2 951	2 321
Metalliferous subtotal	**3 023**	**3 874**	**1 831**	**4 516**	**3 993**
Quarries	0	41	0	231	17
All operations	**12 346**	**10 977**	**11 677**	**16 413**	**11 488**

Table 3.6: Number of lost time injuries and disabling injuries, 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	333	352	420	556	478
Coal–underground	201	179	237	314	247
Coal subtotal	**534**	**531**	**657**	**870**	**725**
Metalliferous–surface	85	75	88	134	121
Metalliferous–underground	83	100	78	142	88
Metalliferous subtotal	**168**	**175**	**166**	**276**	**209**
Quarries	16	29	28	36	13
All operations	**718**	**735**	**851**	**1 182**	**947**

Table 3.7: Number of lost time injury and disabling injury days (days away from work and days on alternative duties), 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	13 964	10 695	16 307	18 549	13 093
Coal–underground	8 953	6 712	6 299	8 164	6 146
Coal subtotal	**22 917**	**17 407**	**22 606**	**26 713**	**19 239**
Metalliferous–surface	2 424	3 049	2 251	3 461	3 241
Metalliferous–underground	4 014	4 170	2 087	4 402	3 010
Metalliferous subtotal	**6 438**	**7 219**	**4 338**	**7 863**	**6 251**
Quarries	378	676	1 605	965	229
All operations	**29 733**	**25 302**	**28 549**	**35 541**	**25 719**

Table 3.8: Number of permanent incapacities, 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	23	36	40	16	16
Coal–underground	8	5	10	3	7
Coal subtotal	**31**	**41**	**50**	**19**	**23**
Metalliferous–surface	0	3	1	3	6
Metalliferous–underground	3	2	1	3	1
Metalliferous subtotal	**3**	**5**	**2**	**6**	**7**
Quarries	5	1	5	3	2
All operations	**39**	**47**	**57**	**28**	**32**

Table 3.9: Number of fatalities, 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	1	0	2	0	0
Coal–underground	0	0	0	0	0
Coal subtotal	**1**	**0**	**2**	**0**	**0**
Metalliferous–surface	0	0	0	0	2
Metalliferous–underground	1	0	1	0	0
Metalliferous subtotal	**1**	**0**	**1**	**0**	**2**
Quarries	1	1	0	1	0
Exploration	1	0	0	0	0
All operations	**4**	**1**	**3**	**1**	**2**

Table 3.10: Number of medical treatment injuries, 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	446	264	403	463	367
Coal–underground	478	138	271	350	198
Coal subtotal	**924**	**402**	**674**	**813**	**565**
Metalliferous–surface	n/a	n/a	88	197	132
Metalliferous–underground	n/a	n/a	60	149	79
Metalliferous subtotal	**n/a**	**n/a**	**148**	**346**	**211**
Quarries	n/a	n/a	31	35	43
All operations	**924**	**402**	**853**	**1 194**	**819**

n/a = data was not collected at this time

Table 3.11: Total recordable injuries, 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	779	616	823	1 019	845
Coal–underground	679	317	508	664	445
Coal subtotal	**1 458**	**933**	**1 331**	**1 683**	**1 290**
Metalliferous–surface	n/a	n/a	176	331	253
Metalliferous–underground	n/a	n/a	138	291	167
Metalliferous subtotal	**n/a**	**n/a**	**314**	**622**	**420**
Quarries	n/a	n/a	59	71	56
All operations	**1 458**	**933**	**1 704**	**2 376**	**1 766**

n/a = data was not collected at this time

Table 3.12: Number of reported high potential incidents, 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	641	988	1 228	1 380	1 397
Coal–underground	82	356	338	398	428
Coal subtotal	**723**	**1 344**	**1 566**	**1 778**	**1 825**
Metalliferous–surface	128	214	183	302	238
Metalliferous–underground	137	121	162	216	210
Metalliferous subtotal	**265**	**335**	**345**	**518**	**448**
Quarries	34	72	68	94	71
All operations	**1 022**	**1 751**	**1 979**	**2 390**	**2 344**

Table 3.13: Number of employees at 30 June, 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	21 582	22 339	26 346	34 516	31 499
Coal–underground	5 029	4 516	6 222	7 592	7 123
Coal subtotal	**26 611**	**26 855**	**32 568**	**42 108**	**38 622**
Metalliferous–surface	6 943	6 653	7 776	8 664	8 607
Metalliferous–underground	4 654	4 195	5 219	6 168	6 617
Metalliferous subtotal	**11 597**	**10 848**	**12 995**	**14 832**	**15 224**
Quarries	1 483	1 310	1 373	1 773	1 653
All operations	**39 691**	**39 013**	**46 936**	**58 713**	**55 499**

Table 3.14: Total hours worked (millions), 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	45.6	44.8	50.3	63.9	60.5
Coal–underground	10.1	10.3	12.0	17.3	18.3
Coal subtotal	**55.7**	**55.1**	**62.3**	**81.2**	**78.7**
Metalliferous–surface	17.5	15.0	18.0	20.1	20.1
Metalliferous–underground	12.3	9.0	10.2	14.2	15.0
Metalliferous subtotal	**29.8**	**24.0**	**28.2**	**34.3**	**35.1**
Quarries	2.9	2.3	2.0	2.2	2.1
All operations	**88.3**	**81.4**	**92.5**	**117.7**	**116.0**

Photo: DNRM

4

Lag performance indicators: incident rates

Processing plant, Mount Rawdon Mine, Queensland
Photo: DNRM

4. Lag performance indicators: incident rates

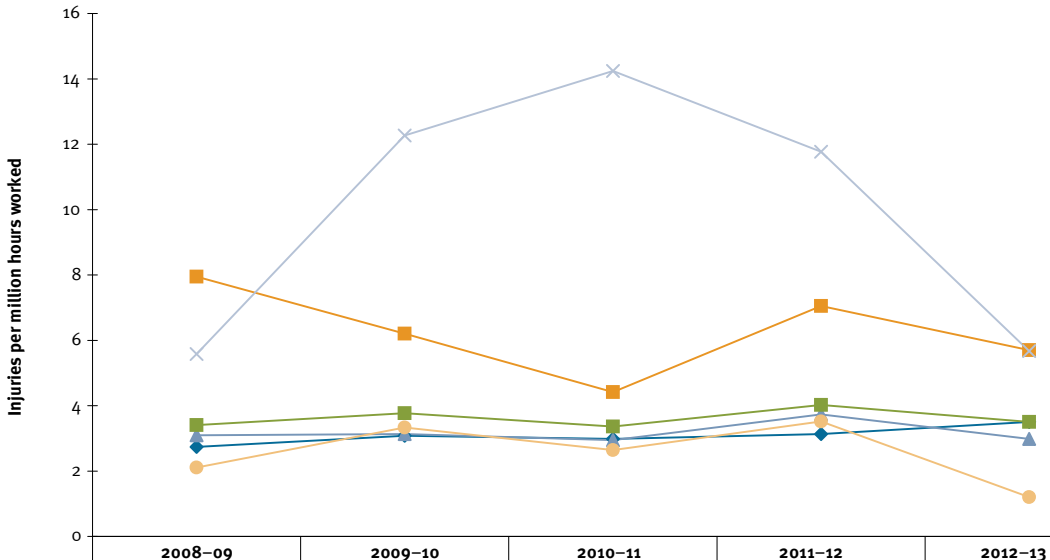
The graphs in this chapter and accompanying tables show five-year trends across a number of indicators used to assess safety and health performance across the industry. The data presented here are normalised either in terms of the number of hours worked or the average days lost per injury. These normalised values can be used to make comparisons across different sectors.

The performance indicators plotted are:

- Figure 4.1: Lost time injury frequency rate, 2008–13
- Figure 4.2: Lost time injury severity rate (days away from work only), 2008–13
- Figure 4.3: Lost time injury duration rate (days away from work only), 2008–13
- Figure 4.4: Lost time injury severity rate (days away from work and on alternative duties), 2008–13
- Figure 4.5: Lost time injury duration rate (days away from work and on alternative duties), 2008–13
- Figure 4.6: Disabling injury frequency rate, 2008–13
- Figure 4.7: Disabling injury severity rate, 2008–13
- Figure 4.8: Disabling injury duration rate, 2008–13
- Figure 4.9: Lost time injury and disabling injury frequency rate, 2008–13
- Figure 4.10: Lost time injury and disabling injury severity rate, 2008–13
- Figure 4.11: Lost time injury and disabling injury duration rate, 2008–13
- Figure 4.12: Permanent incapacity frequency rate, 2008–13
- Figure 4.13: Fatality frequency rate, 2008–13
- Figure 4.14: Total recordable injury frequency rate for coal mines, 2008–13

Figures 4.10 and 4.11 indicate the combined LTI and DI severity rate and duration rate respectively. These performance indicators are the best measure of safety performance and are primarily referred to when assessing industry performance.

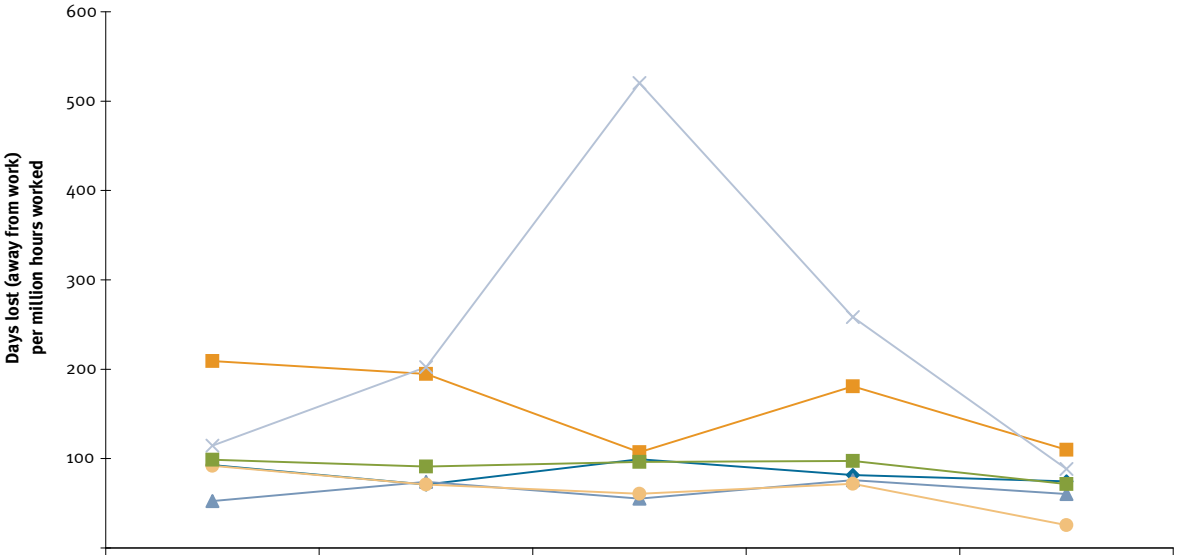
Figure 4.1: Lost time injury frequency rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	2.7	3.1	3.0	3.1	3.5
Coal–underground	7.9	6.2	4.4	7.1	5.7
Metalliferous–surface	3.1	3.1	2.9	3.7	3.0
Metalliferous–underground	2.1	3.3	2.6	3.5	1.2
Quarries	5.6	12.3	14.2	11.8	5.7
All operations	3.4	3.8	3.4	4.0	3.5

Financial year

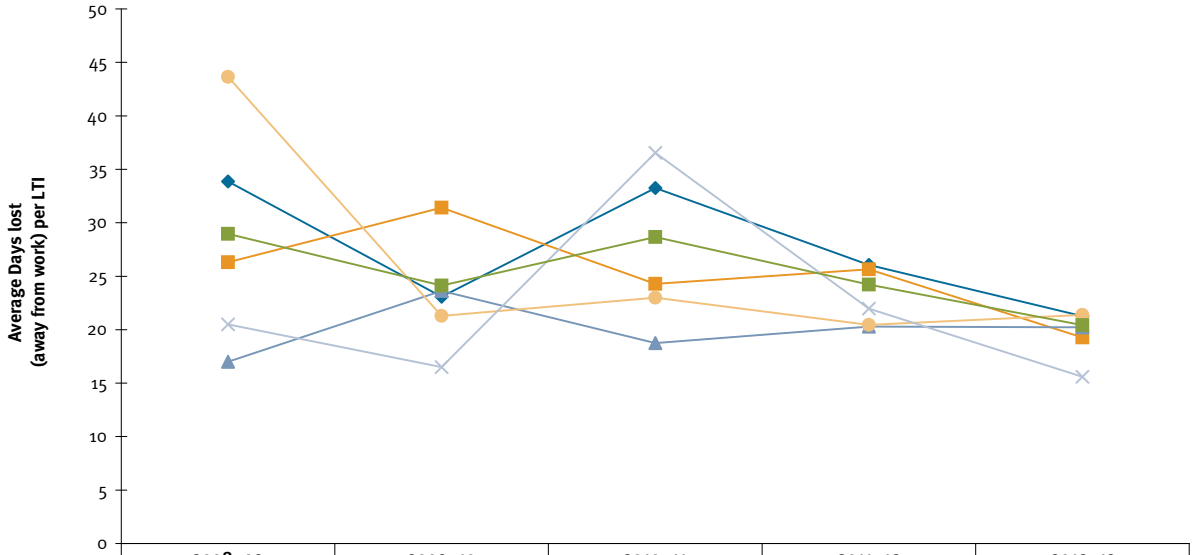
Figure 4.2: Lost time injury severity rate (days away from work only), 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	93	71	99	82	75
Coal–underground	209	195	107	181	110
Metalliferous–surface	53	74	55	76	60
Metalliferous–underground	92	71	61	72	26
Quarries	114	202	520	259	88
All operations	99	91	96	97	72

Financial year

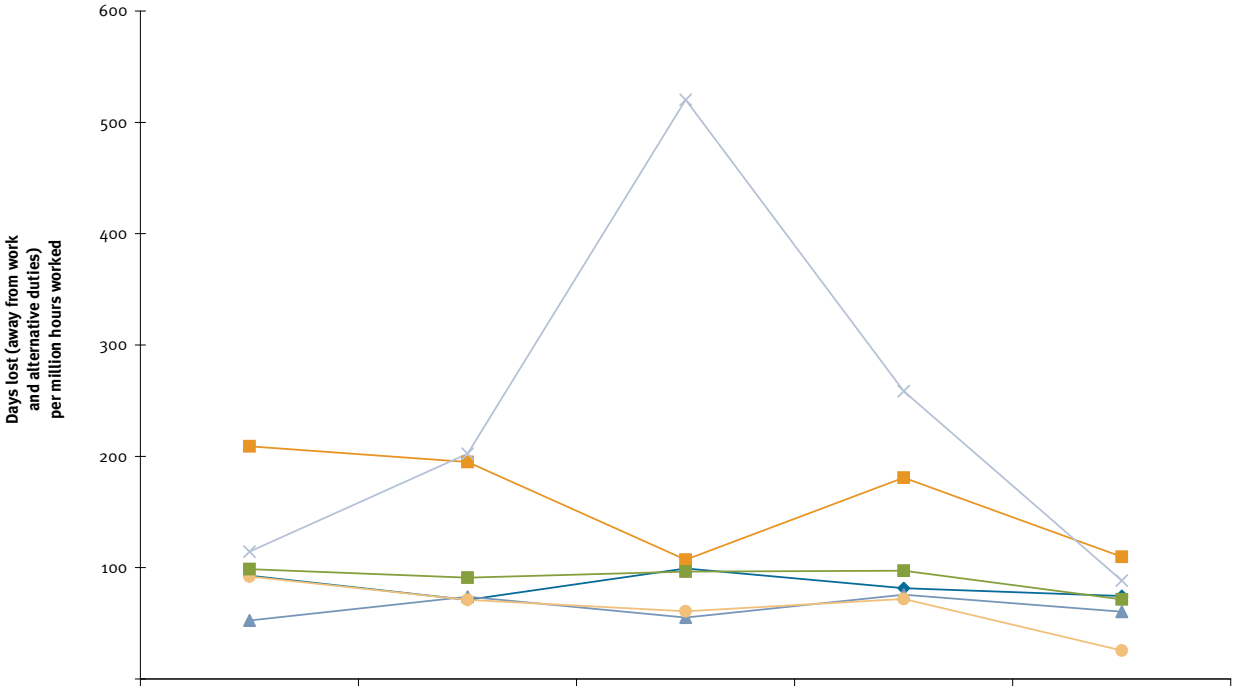
Figure 4.3: Lost time injury duration rate (days away from work only), 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	33.9	23.1	33.3	26.1	21.3
Coal–underground	26.3	31.4	24.3	25.6	19.3
Metalliferous–surface	17.0	23.6	18.8	20.3	20.2
Metalliferous–underground	43.7	21.3	23.0	20.5	21.4
Quarries	20.5	16.5	36.5	22.0	15.6
All operations	29.0	24.1	28.7	24.2	20.4

Financial year

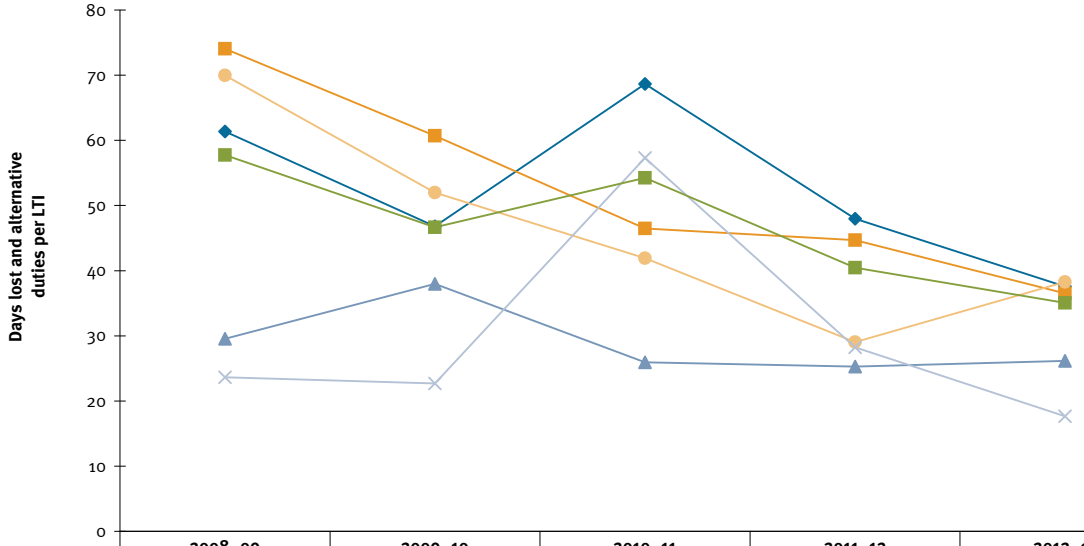
Figure 4.4: Lost time injury severity rate (days away from work and on alternative duties), 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	93	71	99	82	75
Coal–underground	209	195	107	181	110
Metalliferous–surface	53	74	55	76	60
Metalliferous–underground	92	71	61	72	26
Quarries	114	202	520	259	88
All operations	99	91	96	97	72

Financial year

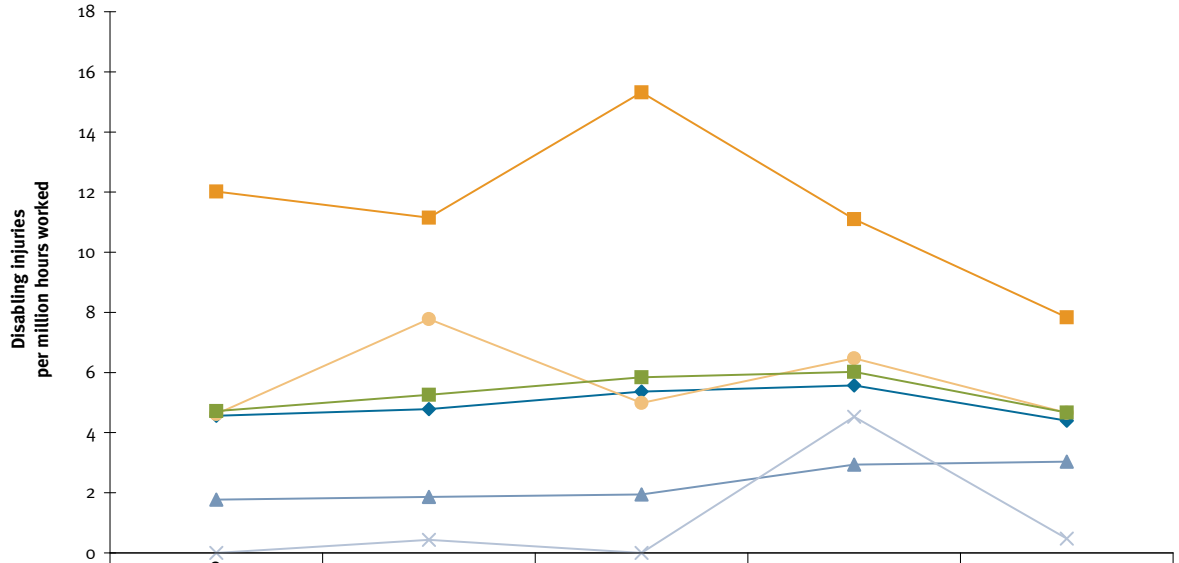
Figure 4.5: Lost time injury duration rate (days away from work and on alternative duties), 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	61.4	46.8	68.6	48.0	37.6
Coal–underground	74.1	60.7	46.5	44.7	36.5
Metalliferous–surface	29.6	38.0	25.9	25.3	26.2
Metalliferous–underground	70.0	52.0	41.9	29.0	38.3
Quarries	23.6	22.7	57.3	28.2	17.7
All operations	57.8	46.7	54.3	40.4	35.1

Financial year

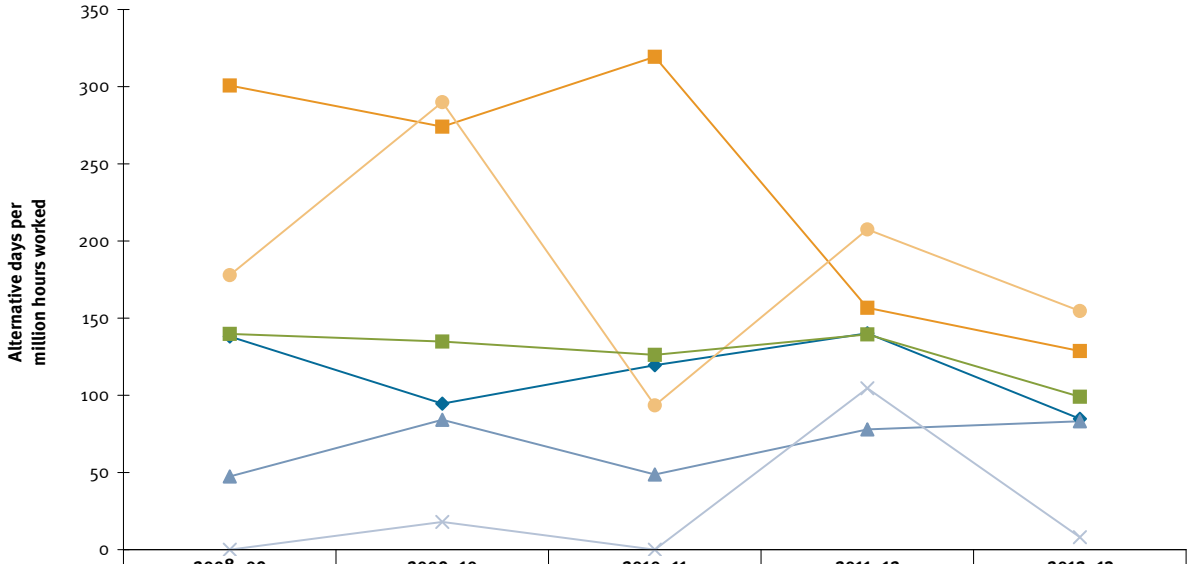
Figure 4.6: Disabling injury frequency rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	4.6	4.8	5.4	5.6	4.4
Coal–underground	12.0	11.1	15.3	11.1	7.8
Metalliferous–surface	1.8	1.9	1.9	2.9	3.0
Metalliferous–underground	4.6	7.8	5.0	6.5	4.7
Quarries	0.0	0.4	0.0	4.5	0.5
All operations	4.7	5.3	5.8	6.0	4.7

Financial year

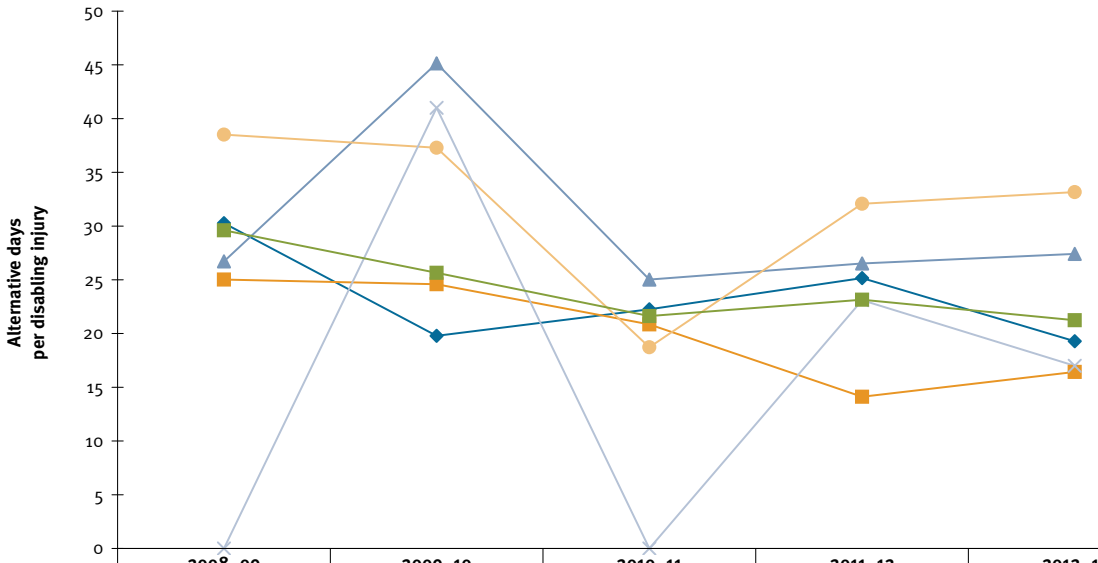
Figure 4.7: Disabling injury severity rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	138	95	119	140	85
Coal–underground	301	274	319	157	129
Metalliferous–surface	47	84	49	78	83
Metalliferous–underground	178	290	93	208	155
Quarries	0	18	0	105	8
All operations	140	135	126	139	99

Financial year

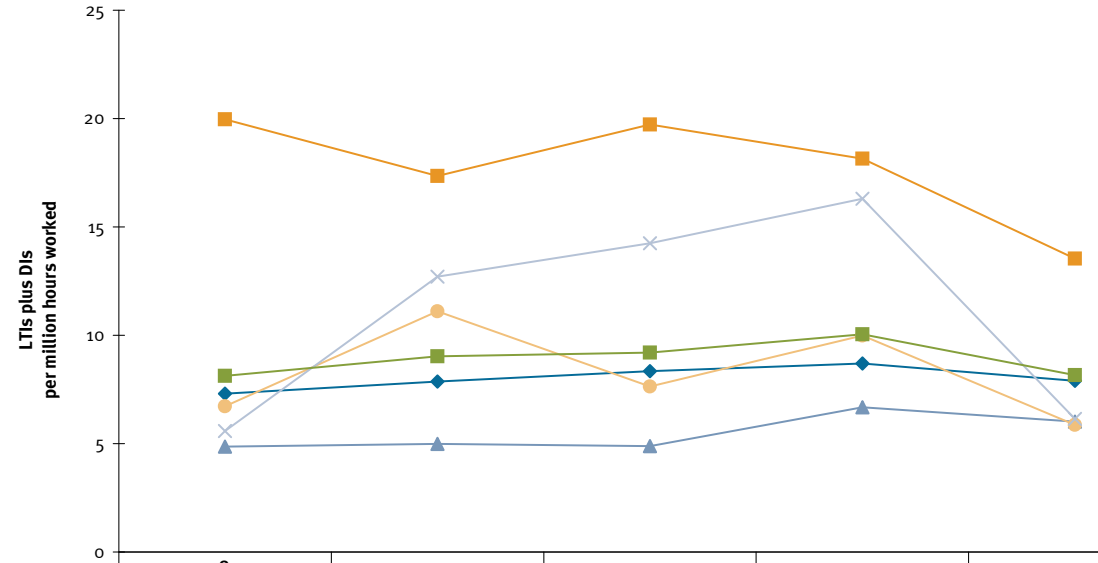
Figure 4.8: Disabling injury duration rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	30.3	19.8	22.3	25.2	19.3
Coal–underground	25.0	24.6	20.8	14.1	16.4
Metalliferous–surface	26.7	45.1	25.0	26.5	27.4
Metalliferous–underground	38.5	37.3	18.7	32.1	33.2
Quarries	0.0	41.0	0.0	23.1	17.0
All operations	29.6	25.6	21.6	23.1	21.2

Financial year

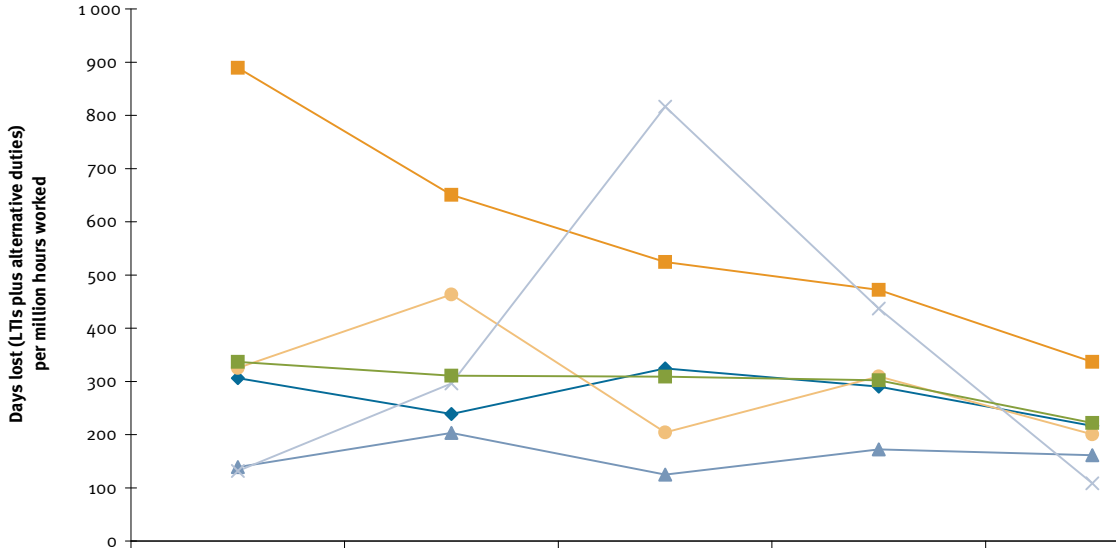
Figure 4.9: Lost time injury and disabling injury frequency rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	7.3	7.9	8.3	8.7	7.9
Coal–underground	20.0	17.3	19.7	18.1	13.5
Metalliferous–surface	4.9	5.0	4.9	6.7	6.0
Metalliferous–underground	6.7	11.1	7.6	10.0	5.9
Quarries	5.6	12.7	14.2	16.3	6.1
All operations	8.1	9.0	9.2	10.0	8.2

Financial year

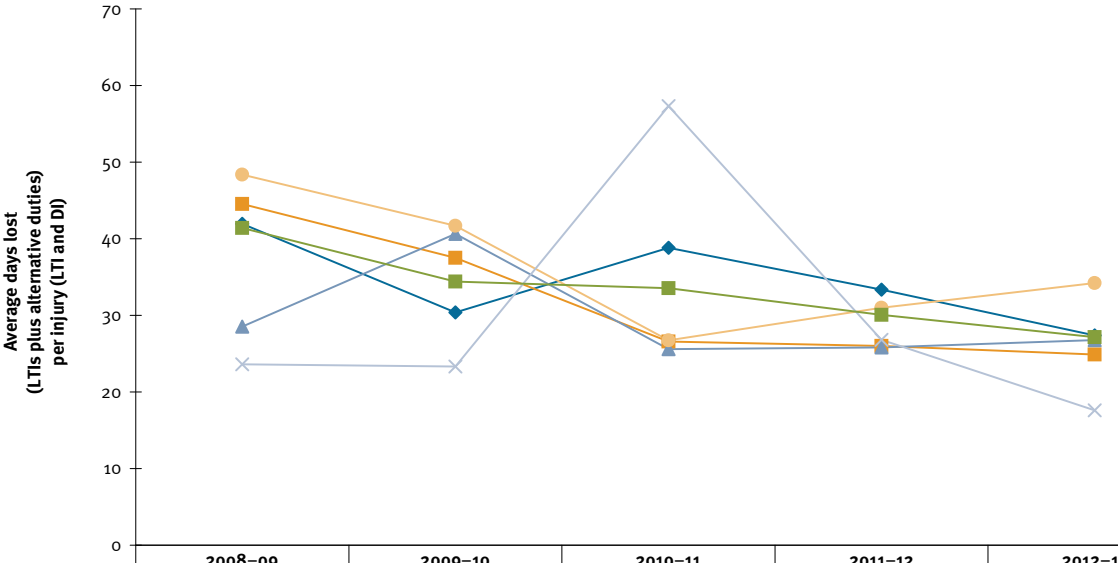
Figure 4.10: Lost time injury and disabling injury severity rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	306	239	324	290	217
Coal–underground	889	651	524	472	337
Metalliferous–surface	139	203	125	172	161
Metalliferous–underground	325	463	204	310	201
Quarries	132	296	816	437	108
All operations	337	311	309	302	222

Financial year

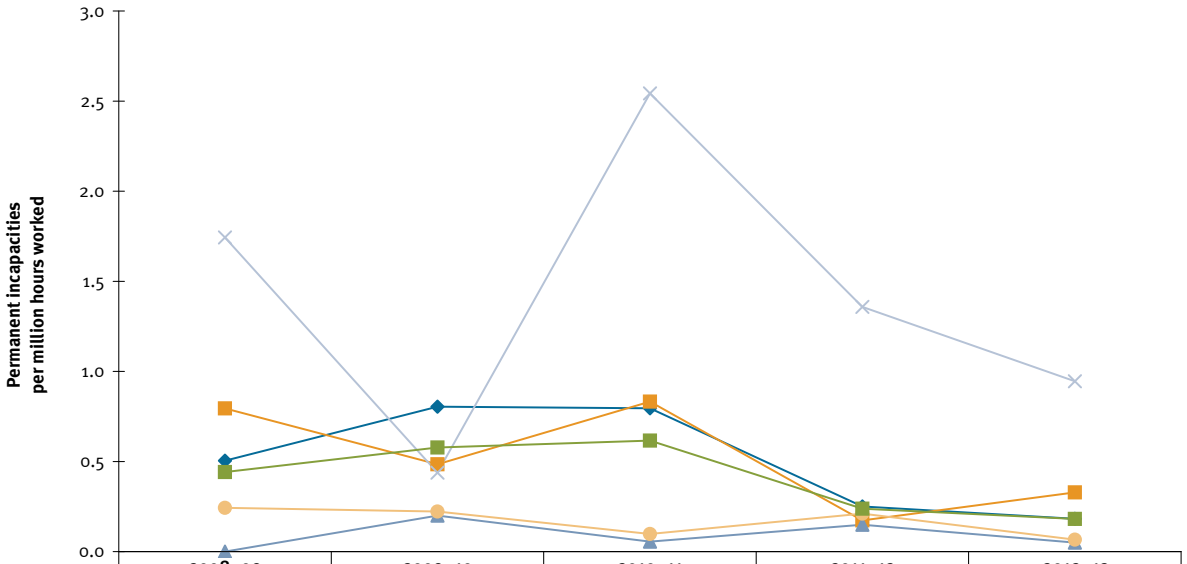
Figure 4.11: Lost time injury and disabling injury duration rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	41.9	30.4	38.8	33.4	27.4
Coal–underground	44.5	37.5	26.6	26.0	24.9
Metalliferous–surface	28.5	40.7	25.6	25.8	26.8
Metalliferous–underground	48.4	41.7	26.8	31.0	34.2
Quarries	23.6	23.3	57.3	26.8	17.6
All operations	41.4	34.4	33.5	30.1	27.2

Financial year

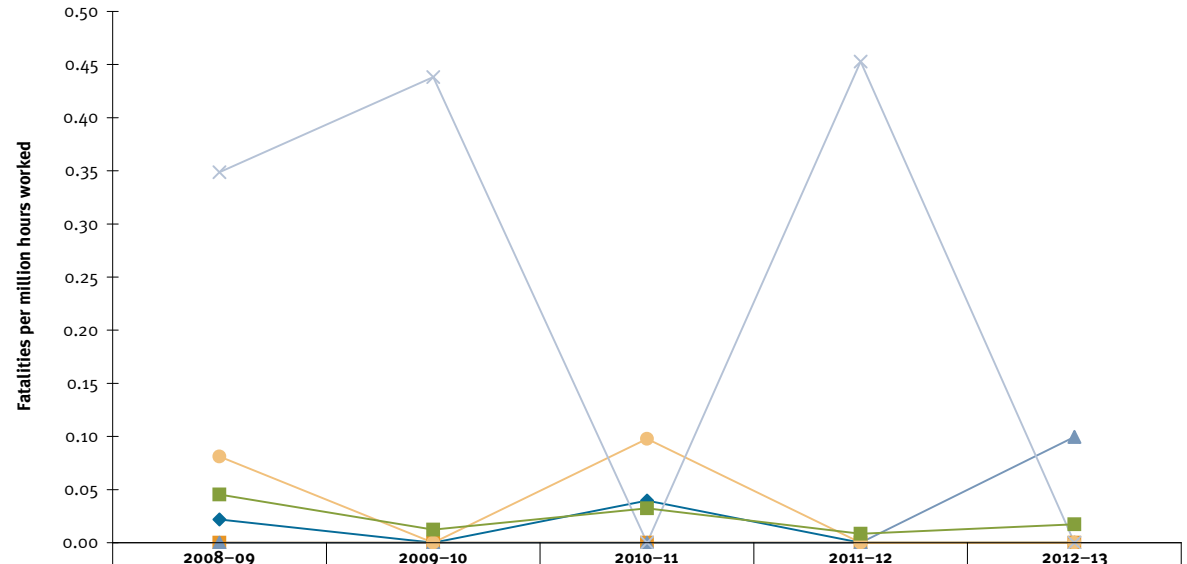
Figure 4.12: Permanent incapacity frequency rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	0.50	0.80	0.80	0.25	0.18
Coal–underground	0.79	0.48	0.83	0.17	0.33
Metalliferous–surface	0.00	0.20	0.06	0.15	0.05
Metalliferous–underground	0.24	0.22	0.10	0.21	0.07
Quarries	1.74	0.44	2.54	1.36	0.95
All operations	0.44	0.58	0.62	0.24	0.18

Financial year

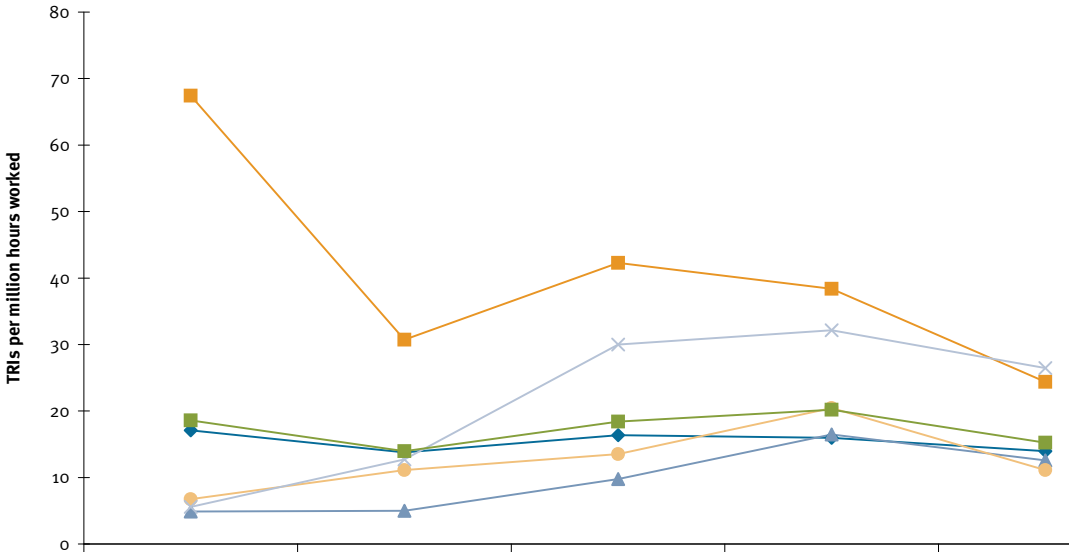
Figure 4.13: Fatality frequency rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	0.02	0.00	0.04	0.00	0.00
Coal–underground	0.00	0.00	0.00	0.00	0.00
Metalliferous–surface	0.00	0.00	0.00	0.00	0.10
Metalliferous–underground	0.08	0.00	0.10	0.00	0.00
Quarries	0.35	0.44	0.00	0.45	0.00
All operations	0.05	0.01	0.03	0.01	0.02

Financial year

Figure 4.14: Total recordable injury frequency rate, 2008–13



	2008–09	2009–10	2010–11	2011–12	2012–13
Coal–surface	17.1	13.8	16.4	15.9	14.0
Coal–underground	67.4	30.7	42.3	38.4	24.4
Metalliferous–surface	4.9	5.0	9.8	16.5	12.6
Metalliferous–underground	6.7	11.1	13.5	20.5	11.1
Quarries	5.6	12.7	30.0	32.1	26.5
All operations	18.6	14.0	18.4	20.2	15.2

Financial year

Head frame, George Fisher Mine, Queensland
Photo: DNRM

5

Injury classification data

Photo: DNRM

5. Injury classification data

The LTI data collected over the last three years has been statistically analysed using various classifications to identify potential trends across the industry. These LTI trends are illustrated in the following figures:

- Figure 5.1: Body parts injured, 2010–13
- Figure 5.2: Nature of injury, 2010–13
- Figure 5.3: Mechanism of injury (the action, exposure or event that was the direct cause of the most serious injury), 2010–13
- Figure 5.4: Breakdown agency—equipment (the equipment that was principally involved in, or most closely associated with the injury), 2010–13
- Figure 5.5: Occurrence class of injuries—activity (the activity that was principally involved in, or most closely associated with the injury), 2010–13.

Significant results from this classification are summarised below.

- Back and hand injuries account for almost 40% of injuries (Figure 5.1).
- Sprains and strains account for almost 50% of injuries (Figure 5.2).
- Muscular stress accounts for 30% of injuries (Figure 5.3).
- Earthmoving equipment was involved in 16% of injuries (Figure 5.4).
- Manual handling of equipment/material accounts for over 40% of injuries (Figure 5.5).

5.1 Age analysis of injury classification data

The breakdown of age across the coal industry, based on data collected for the Coal Mine Workers' Health Scheme (CMWHS), is shown in Figure 5.6. Note that the average age from 1998 to 2013 was 37 years old. The number of days lost per injury in relation to age is shown in Figure 5.7.

Figure 5.1: Body parts injured, 2010–13

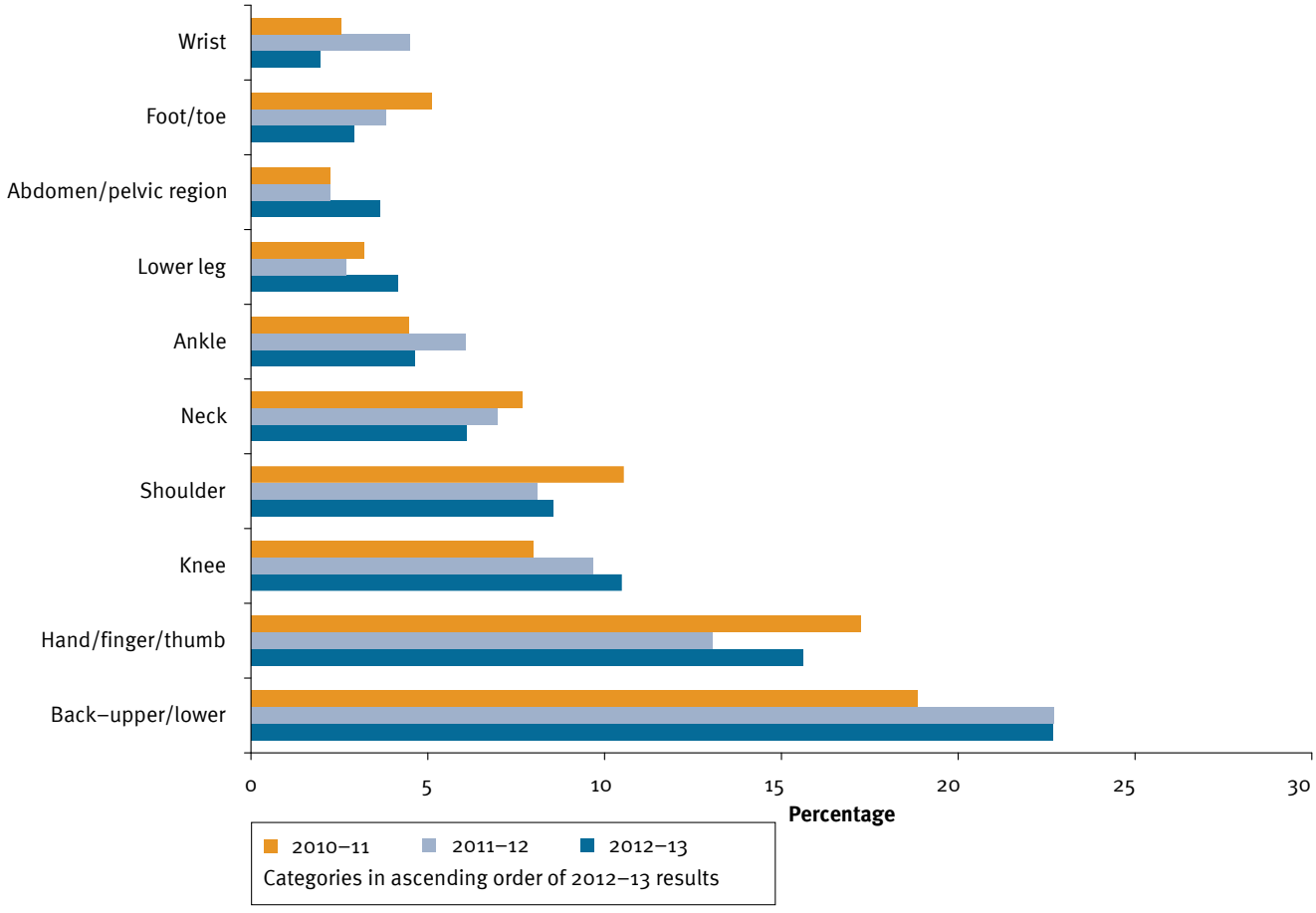


Figure 5.2: Nature of injury, 2010–13

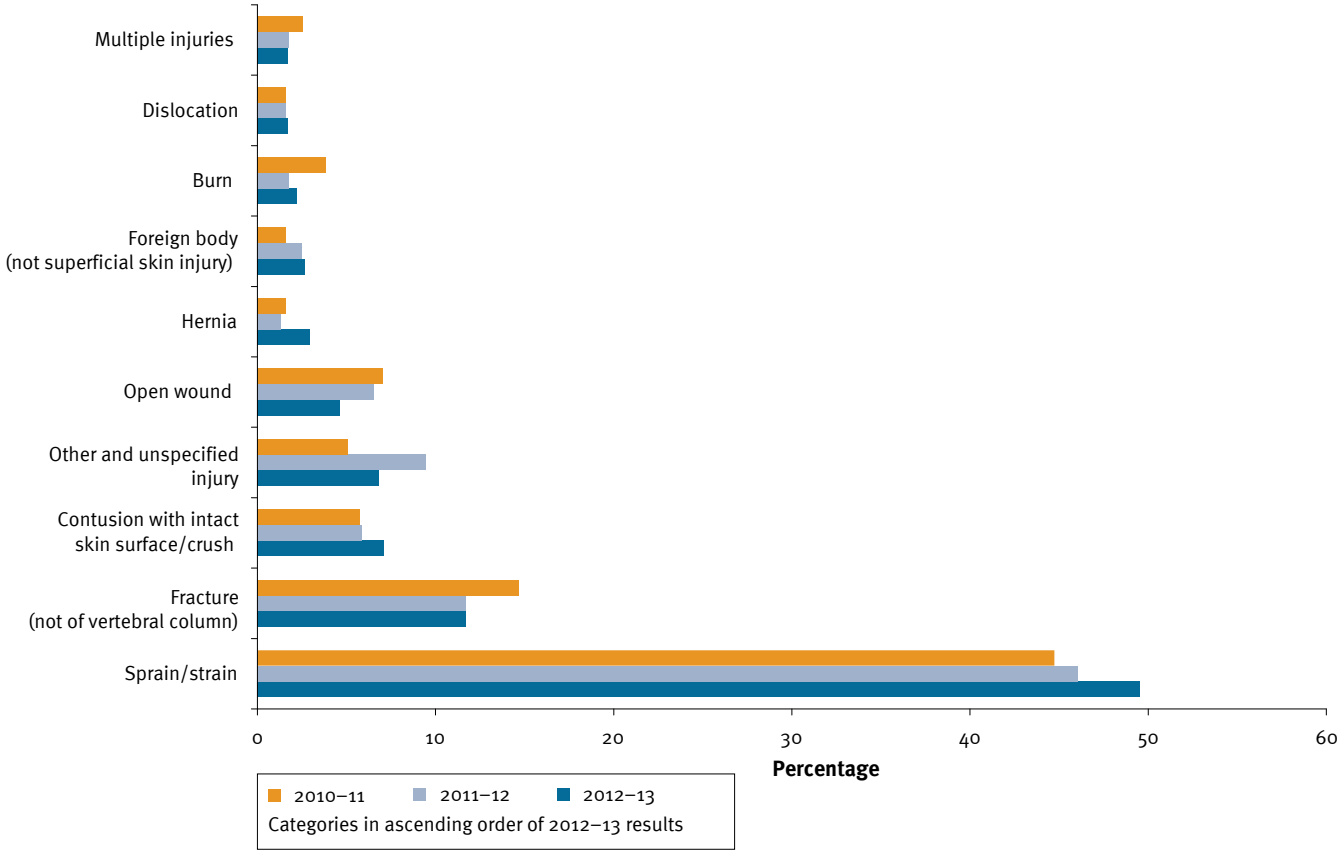


Figure 5.3: Mechanism of injury (the action, exposure or event that is the direct cause of the most serious injury), 2010–13

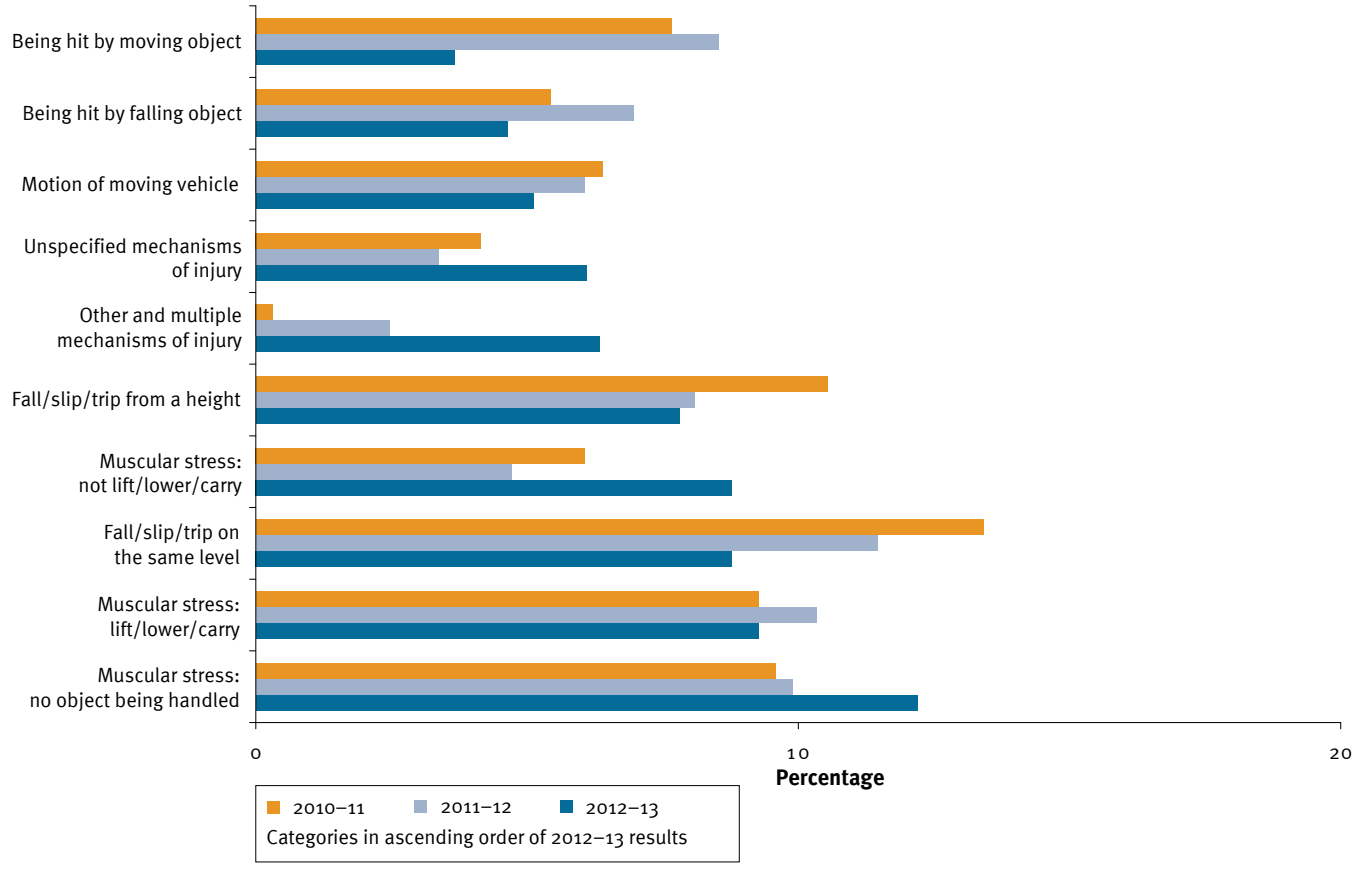


Figure 5.4: Breakdown agency: equipment (the equipment that was principally involved in, or most closely associated with the injury), 2010–13

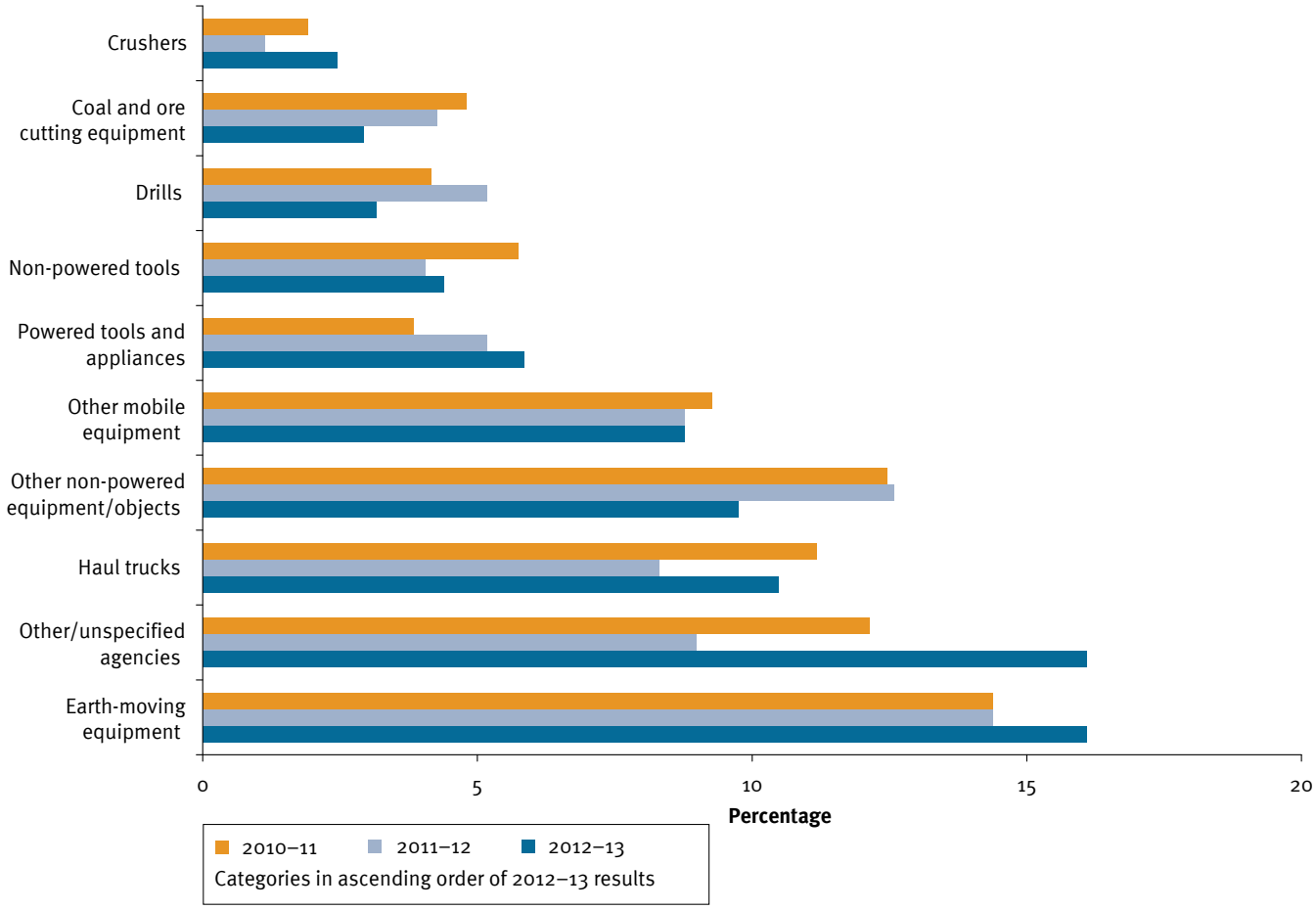


Figure 5.5: Occurrence class of injuries: activity (the activity that was principally involved in, or most closely associated with the injury), 2010–13

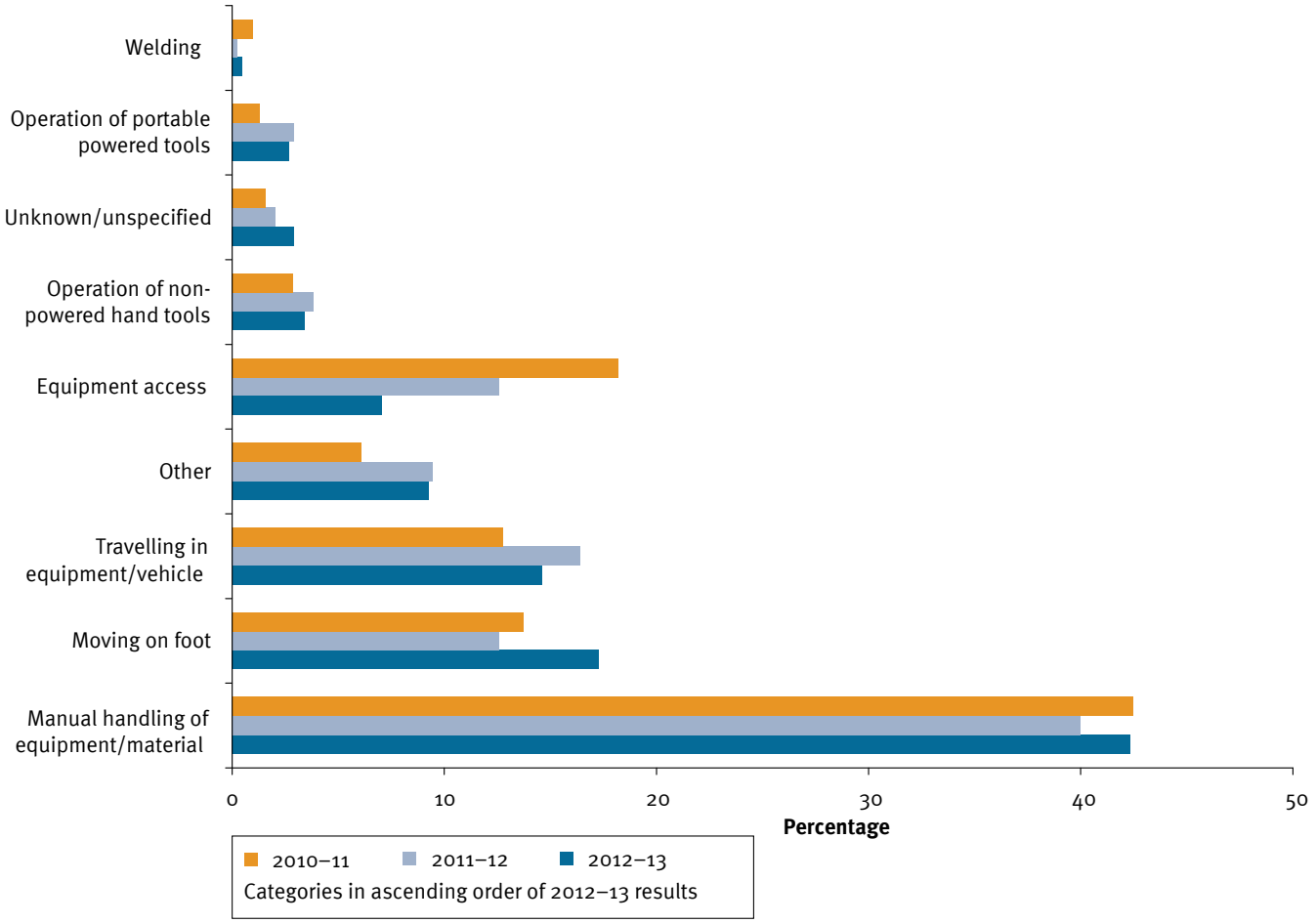


Table 5.1 provides a breakdown of Queensland mining LTIs (2004–13) across 10-year age groupings (20s, 30s, 40s and 50+).

The age-related injury profile is presented by a comparison of three classifications of injury data:

- nature of injury
- mechanism of injury
- occurrence class of injury.

The analysis identifies the highest classifications for each age group and gives an indication of which age group had the highest proportion of a single type of LTI.

Figure 5.6: Age distribution (coal industry), 1998–2013

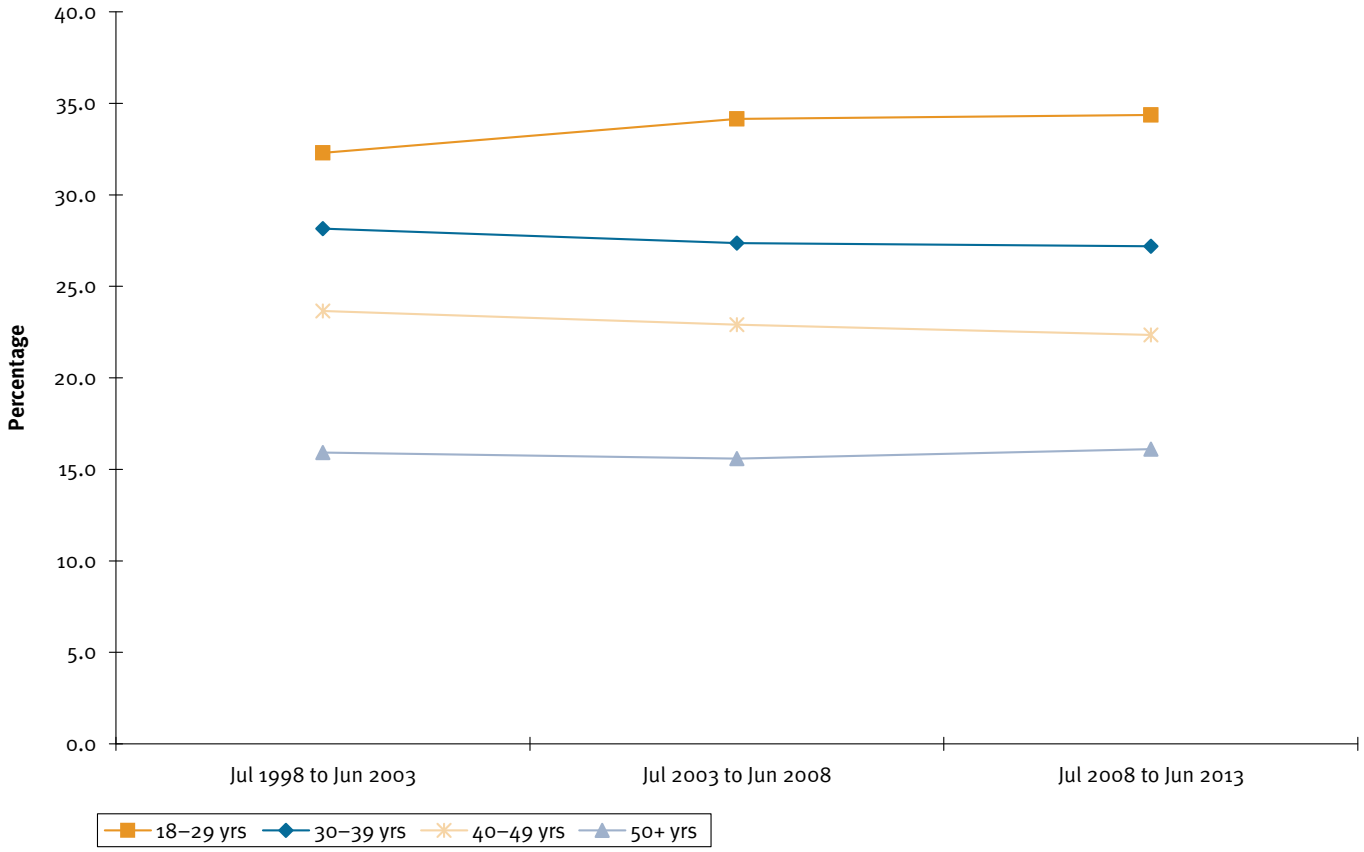


Figure 5.7: Average number of days lost per age group for lost time injuries, 2013

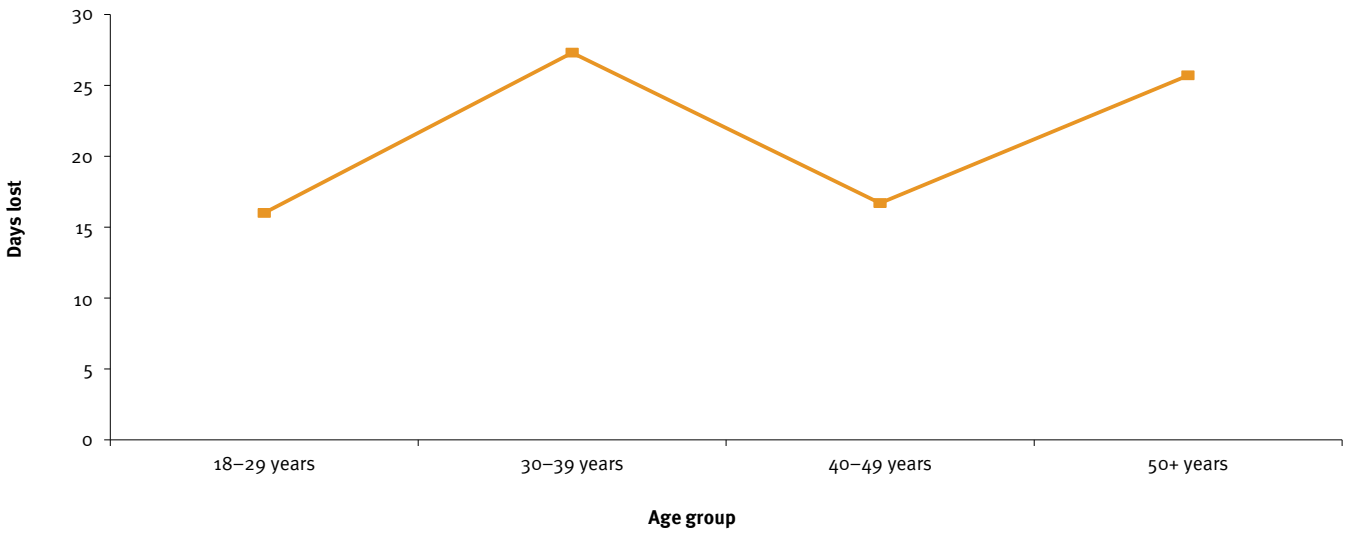


Table 5.1: Lost time injuries in all sectors—percentage of type across all groups, 2004–13

		18–29 yrs old (20s) 23.1% of all LTIs		30–39 yrs old (30s) 29.7% of all LTIs		40–49 yrs old (40s) 25.2% of all LTIs		50+ yrs old (50s) 22% of all LTIs	
		% in age group	% of all LTIs	% in age group	% of all LTIs	% in age group	% of all LTIs	% in age group	% of all LTIs
Nature of injury *	Sprain/strain	35.1	8.1	46.8	13.9	46.3	11.7	48.7	10.7
	Fracture (not of vertebral column)	14.5	3.4	13.3	4.0	14.9	3.8	11.7	2.6
	Other and unspecified injury	6.6	1.5	6.6	1.9	7.6	1.9	8.7	1.9
	Open wound	9.5	2.2	5.4	1.6	5.5	1.4	6.7	1.5
	Contusion with intact skin surface/crush	8.0	1.9	7.2	2.1	6.6	1.7	5.6	1.2
	Burn	5.0	1.2	3.6	1.1	2.1	0.5	1.7	0.4
	Foreign body (not superficial skin injury)	3.7	0.8	2.5	0.8	2.2	0.6	1.1	0.3
	Disorder of muscles/tendons/other soft tissue	1.9	0.4	2.0	0.6	2.6	0.7	2.4	0.5
	Traumatic amputation	2.6	0.6	1.0	0.3	1.9	0.5	1.9	0.4
	Multiple injuries	2.3	0.5	1.4	0.4	1.0	0.3	2.3	0.5
Mechanism of injury *	Fall/slip/trip on the same level	11.9	2.8	10.9	3.2	14.8	3.7	13.4	3.0
	Muscular stress–lift/lower/carry object	8.0	1.9	11.1	3.3	9.6	2.4	11.0	2.4
	Fall/slip/trip from a height	6.2	1.4	7.6	2.3	11.2	2.8	11.6	2.5
	Being hit by moving object	10.2	2.4	7.3	2.2	6.7	1.7	6.1	1.3
	Being hit by falling object	9.2	2.1	6.5	1.9	5.4	1.3	6.7	1.5
	Muscular stress–no object being handled	6.5	1.5	6.9	2.0	7.6	1.9	7.6	1.7
	Motion of moving vehicle	4.1	0.9	6.3	1.9	5.9	1.5	6.6	1.4
	Trapped between stationary and moving object	7.7	1.8	5.8	1.7	3.4	0.8	3.7	0.8
	Muscular stress–handling object not lift/lower/carry	4.1	0.9	5.6	1.7	5.5	1.4	7.1	1.6
	Hitting stationary object	2.3	0.5	3.4	1.0	4.5	1.1	4.0	0.9
Occurrence class of injury *	Working on equipment	24.4	5.6	18.7	5.6	15.2	3.8	16.3	3.6
	Moving on foot	15.2	3.5	13.4	4.0	17.3	4.4	18.8	4.1
	Travelling in equipment/vehicle	9.6	2.2	13.5	4.0	13.3	3.4	14.8	3.3
	Other manual handling	11.5	2.7	12.4	3.7	13.4	3.4	14.0	3.1
	Other	8.7	2.0	10.4	3.1	8.6	2.2	6.0	1.3
	Other equipment access e.g. moving about	3.5	0.8	3.6	1.1	5.9	1.5	4.4	1.0
	Operation of non-powered hand tools	5.6	1.3	3.9	1.2	4.4	1.1	3.4	0.8
	Descending–ground/floor involved	2.7	0.6	3.4	1.0	4.5	1.1	3.4	0.8
	Loading/unloading from vehicles	3.1	0.7	3.9	1.2	3.5	0.9	3.4	0.8
	Operation of portable powered tools	2.8	0.7	3.3	1.0	2.4	0.6	3.1	0.7

* Only the top 10 occurring categories have been used for each injury classification

6

Lead performance indicators

Proximity detection system, Meandu Mine, Queensland
Photo: DNRM

6. Lead performance indicators

Lead performance indicators or positive performance indicators are measures of actions or initiatives that assist in preventing workplace injury and disease. This is considered a more proactive approach than the use of lag indicators, such as the LTI measures which record the event or its impact after it has occurred.

Questions in relation to lead performance indicators have been included in the Queensland Mining and Quarrying Industry Census since 2007–08. The questions cover areas of risk management, audits, reviews and HPIs and are designed to collect data on safety and health issues concerning both employees and contractors.

The data are presented in the graphs listed below:

- Figure 6.1: Sites with a register of key hazards on site, 2010–13
- Figure 6.2: Sites where key hazards on site are identified using a formal system, 2010–13
- Figures 6.3.1–6.3.3: Sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2010–13
- Figure 6.4.1–6.4.3: Workers and contractors routinely involved in conducting formal risk assessments, 2010–13
- Figure 6.5.1–6.5.3: Audits (internal and external) conducted in the previous 12 months, 2010–13
- Figure 6.6: Sites with no outstanding improvement actions that came out of audits, 2010–13
- Figure 6.7.1–6.7.3: Workers involved as auditors in internal audits during the previous 12 months, 2010–13
- Figure 6.8: Sites with a formal reporting system for capturing and reporting high potential incidents, 2010–13
- Figure 6.9: Improvement actions resulting from investigations into high potential incidents, 2010–13
- Figure 6.10: Number of high potential incidents, 2010–13

Photo: DNRM

Figure 6.1: Sites with a register of key hazards on site, 2010–13

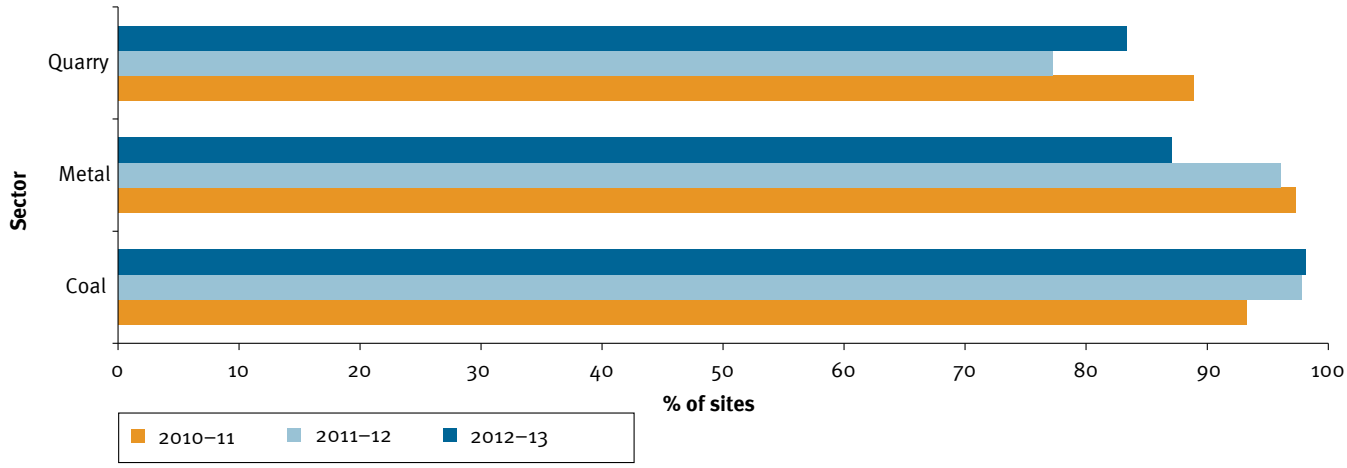


Figure 6.2: Sites where key hazards on site are identified using a formal system, 2010–13

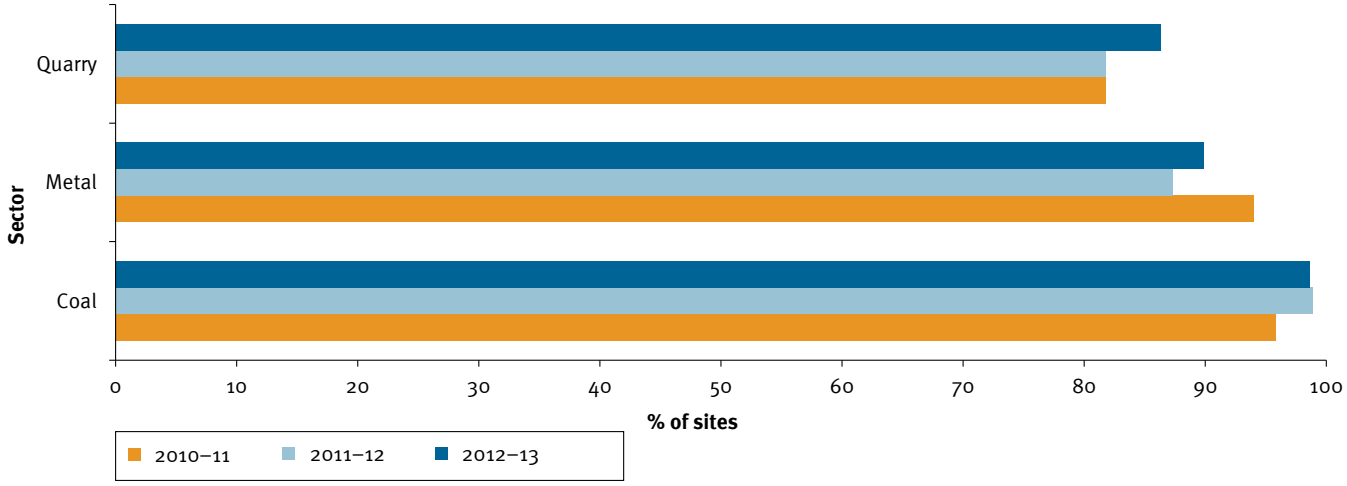


Figure 6.3.1: Coal sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2010–13

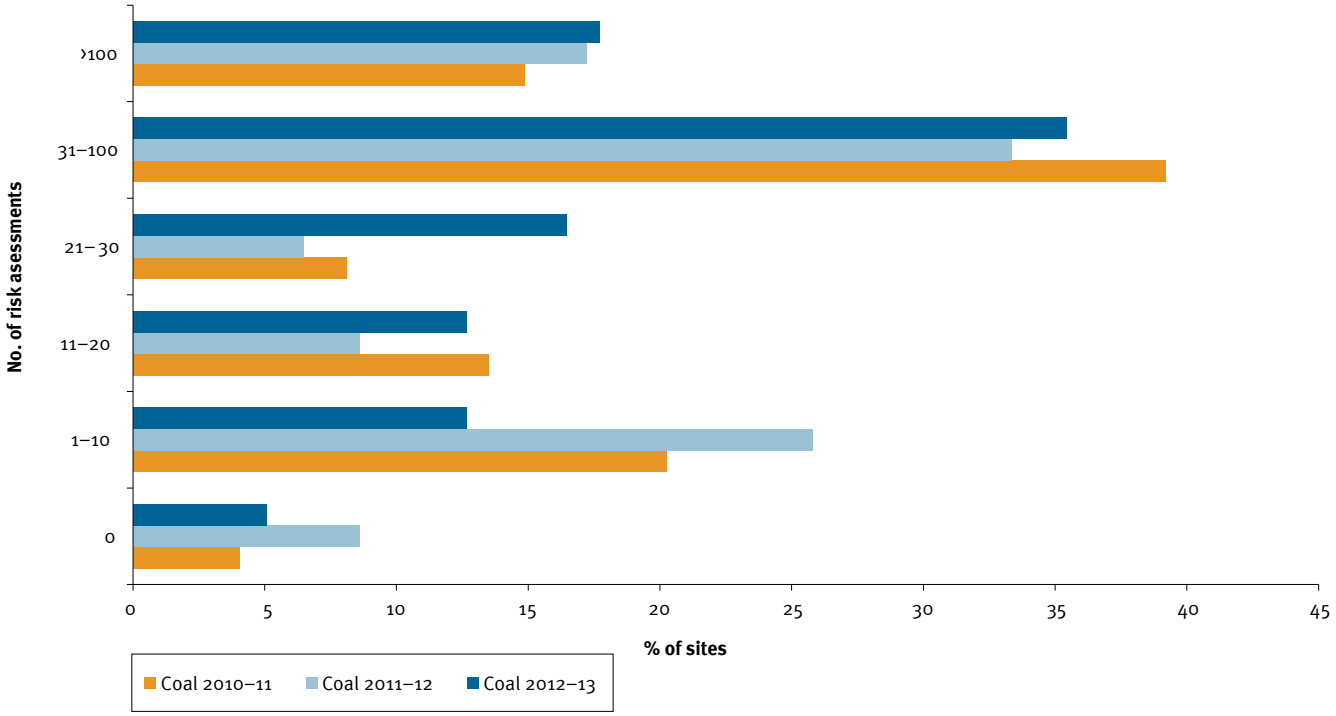


Figure 6.3.2: Metalliferous sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2010–13

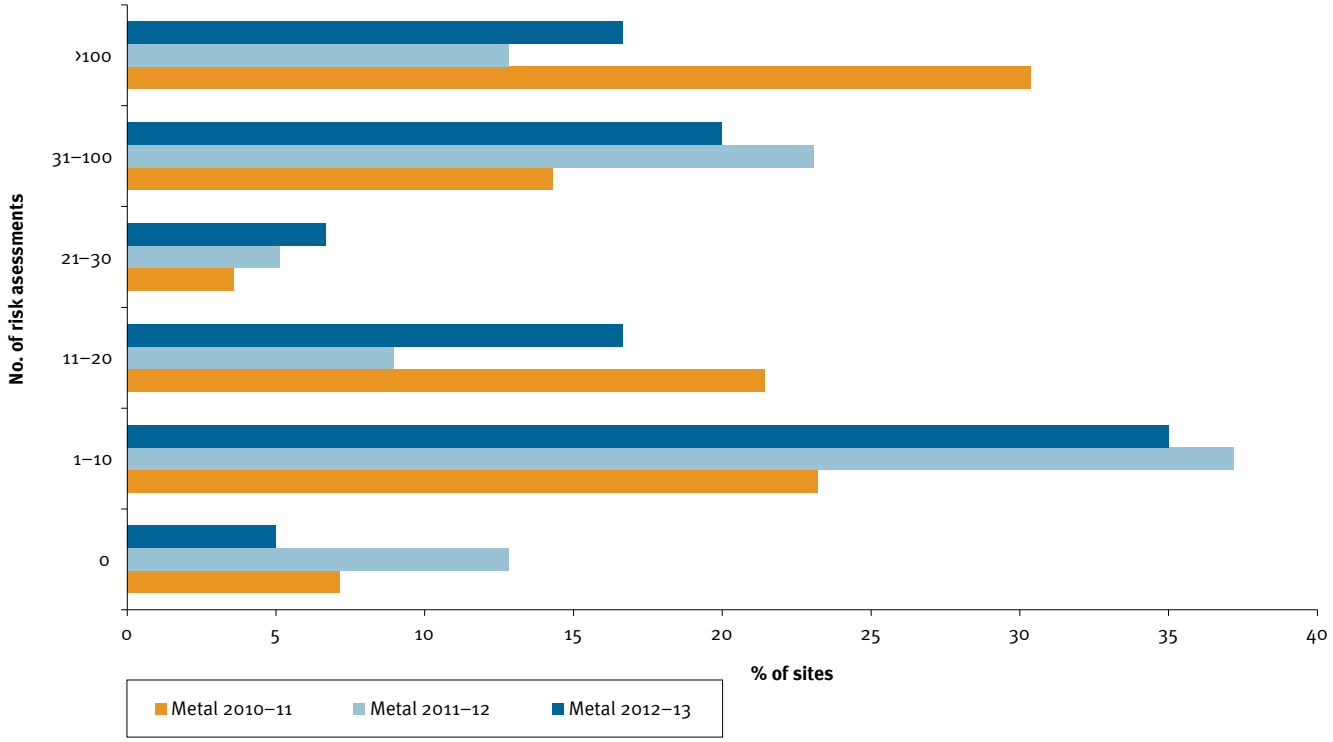


Figure 6.3.3: Quarry sites that have undertaken formal risk assessments within the previous 12 months and the number of risk assessments performed, 2010–13

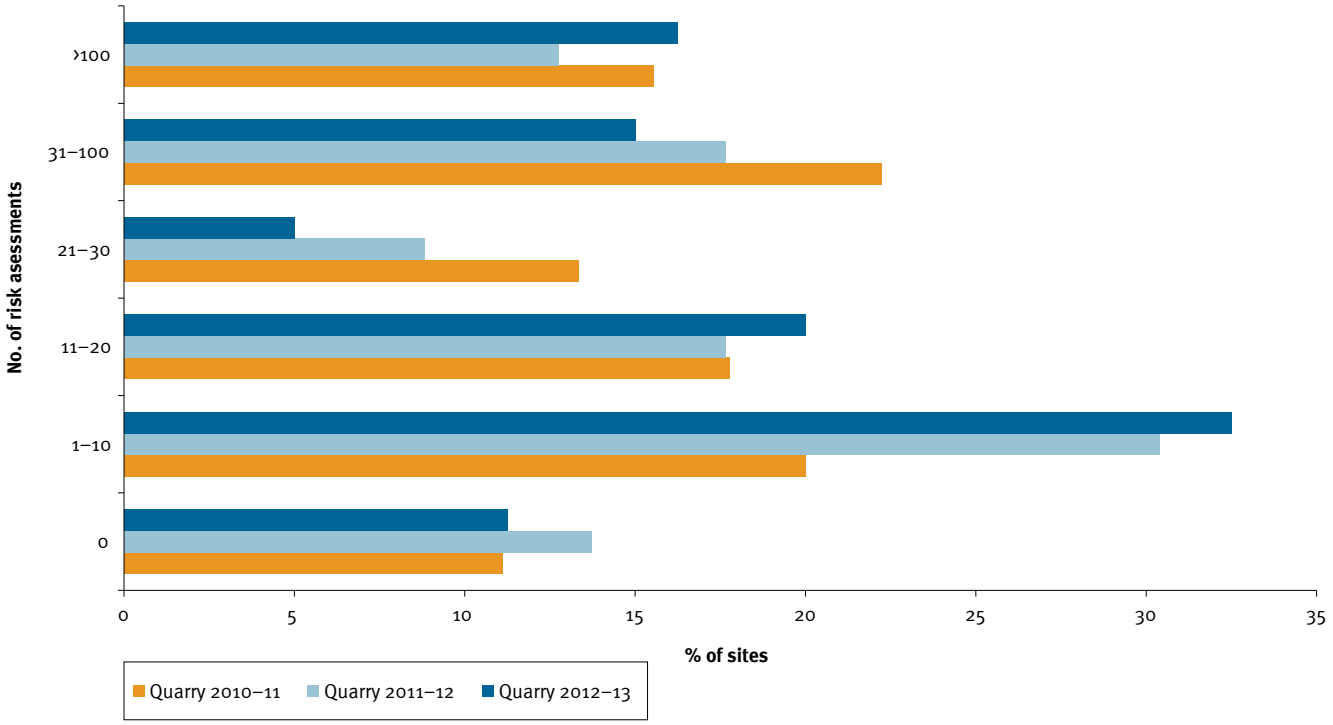


Figure 6.4.1: Coal sector workers and contractors routinely involved in conducting formal risk assessments, 2010–13

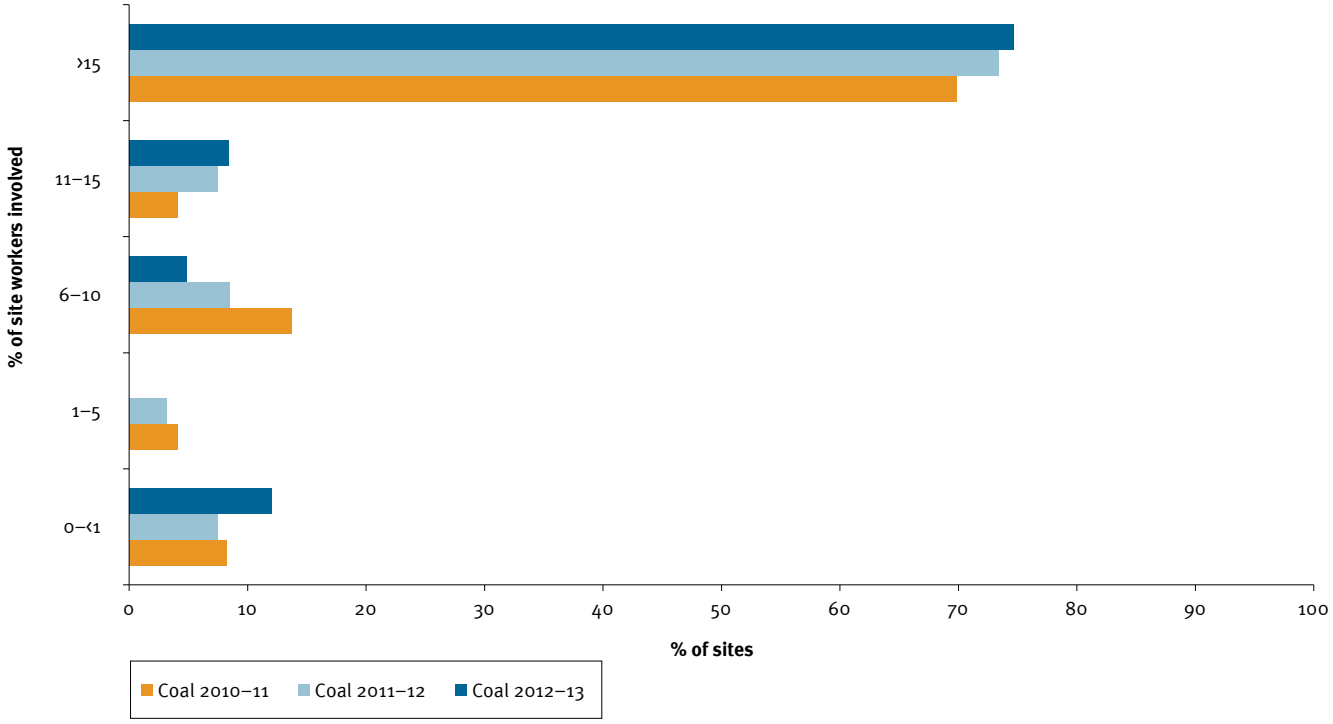


Figure 6.4.2: Metalliferous sector workers and contractors routinely involved in conducting formal risk assessments, 2010–13

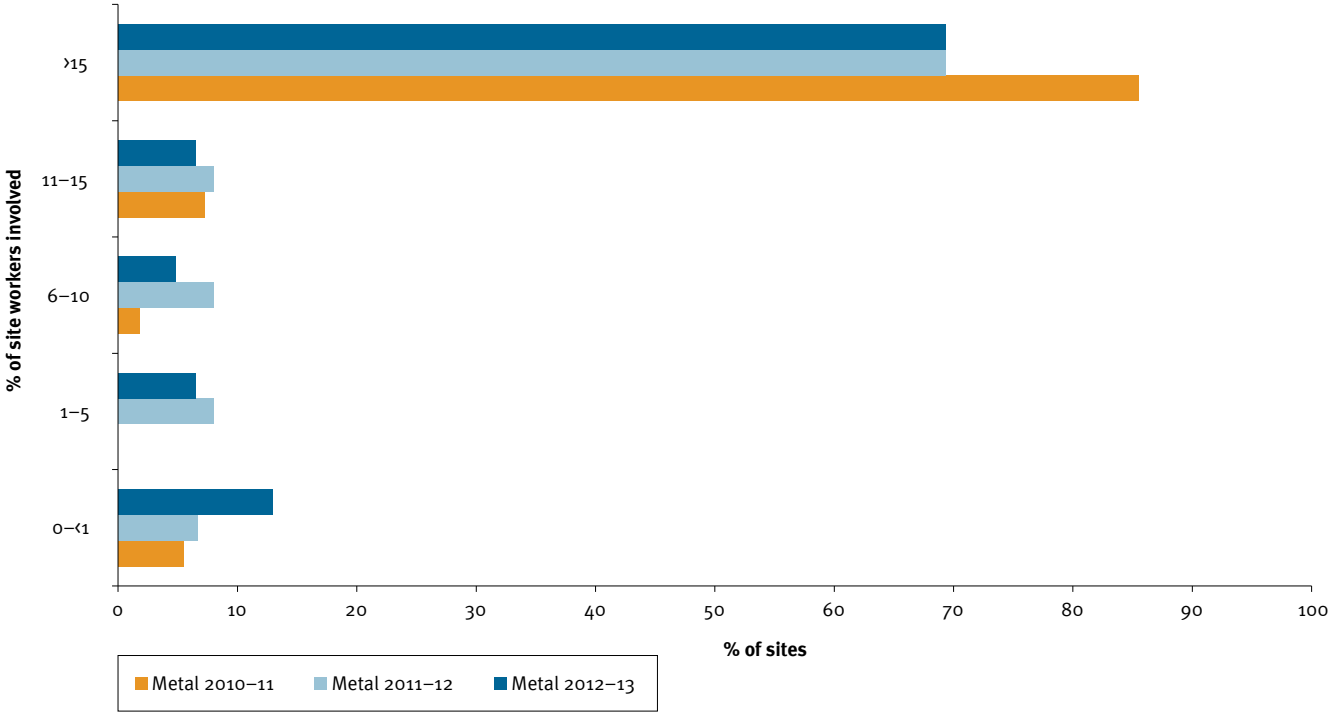


Figure 6.4.3: Quarry sector workers and contractors routinely involved in conducting formal risk assessments, 2010–13

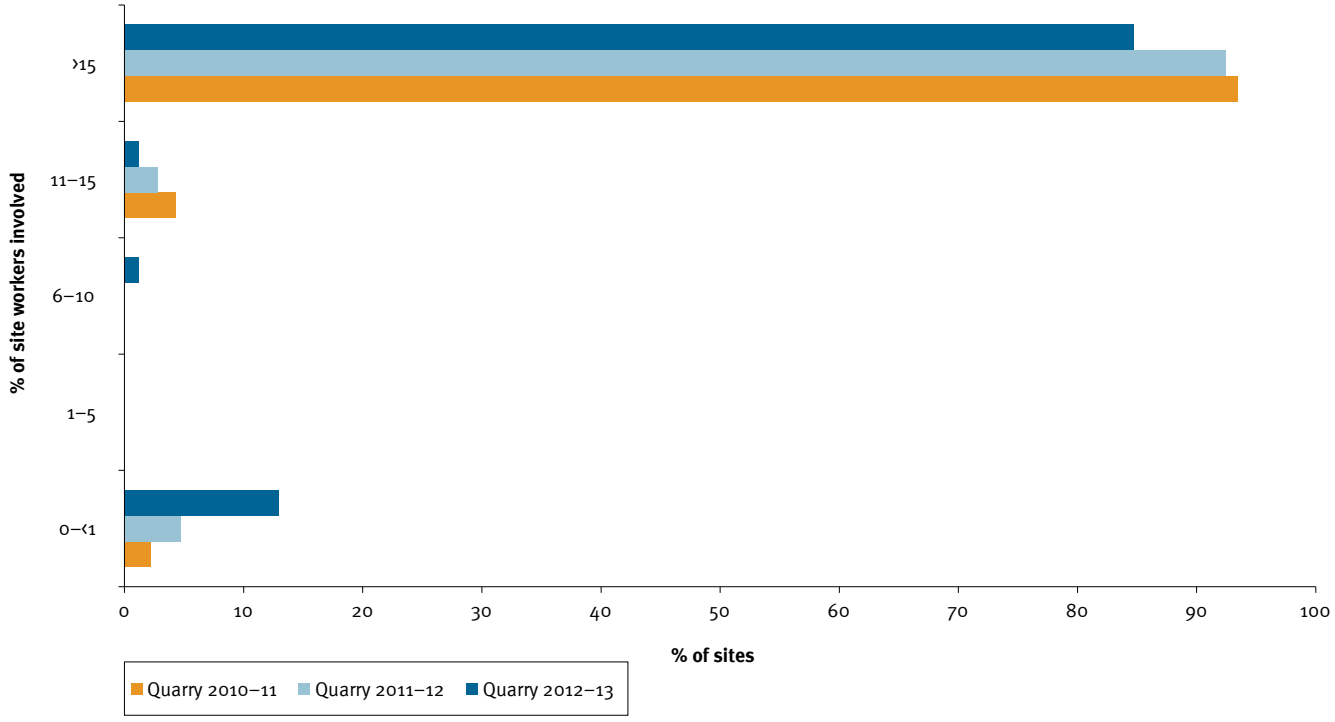


Figure 6.5.1: Coal sector audits (internal and external) conducted in the previous 12 months, 2010–13

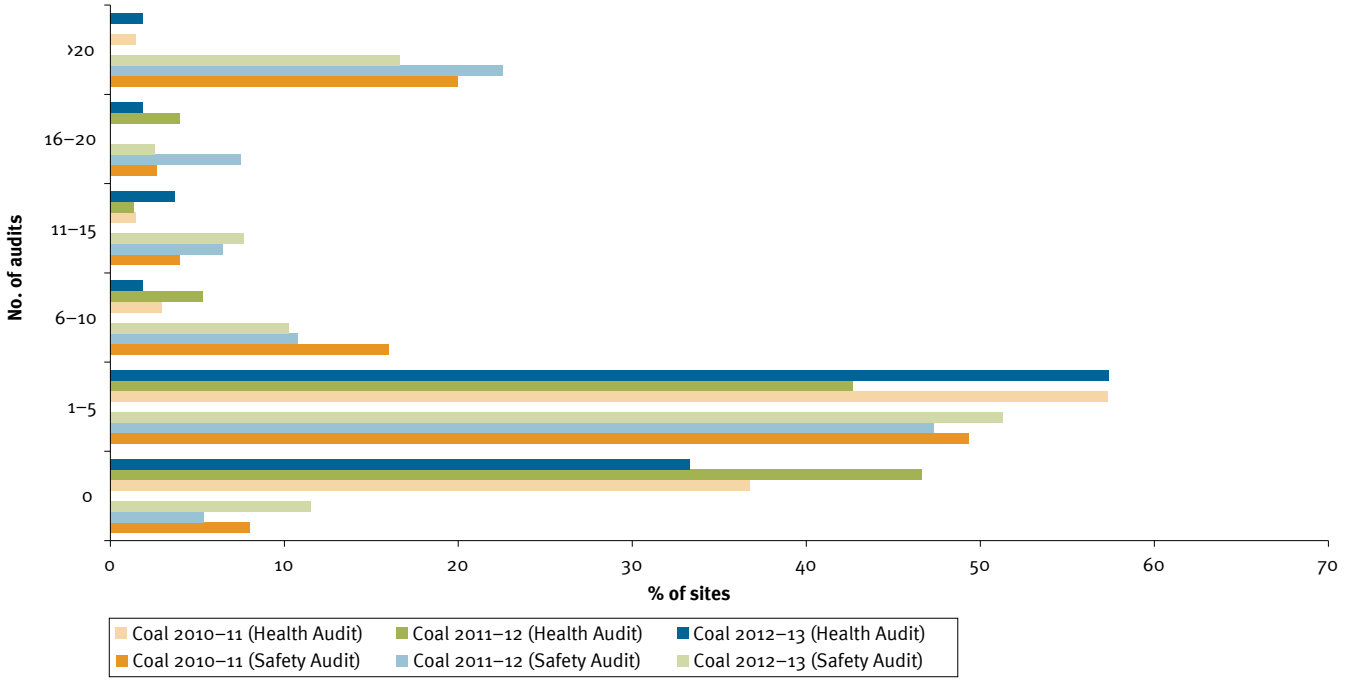


Figure 6.5.2: Metalliferous sector audits (internal and external) conducted in the previous 12 months, 2010–13

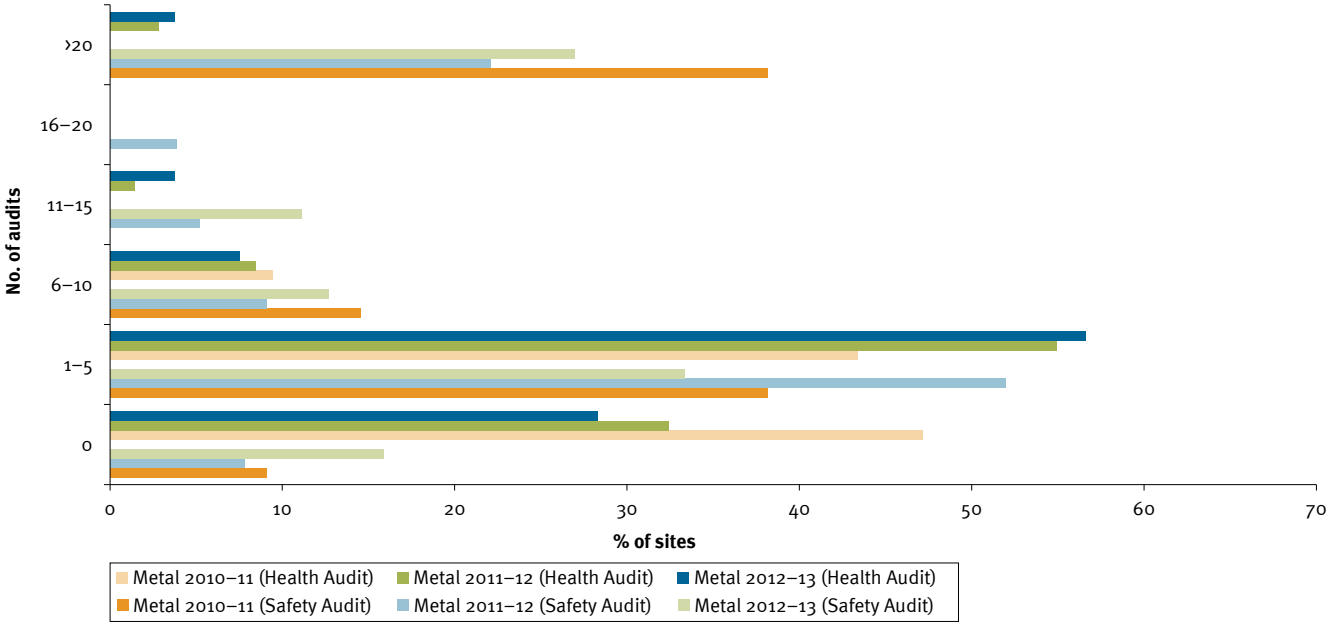


Figure 6.5.3: Quarry sector audits (internal and external) conducted in the previous 12 months, 2010–13

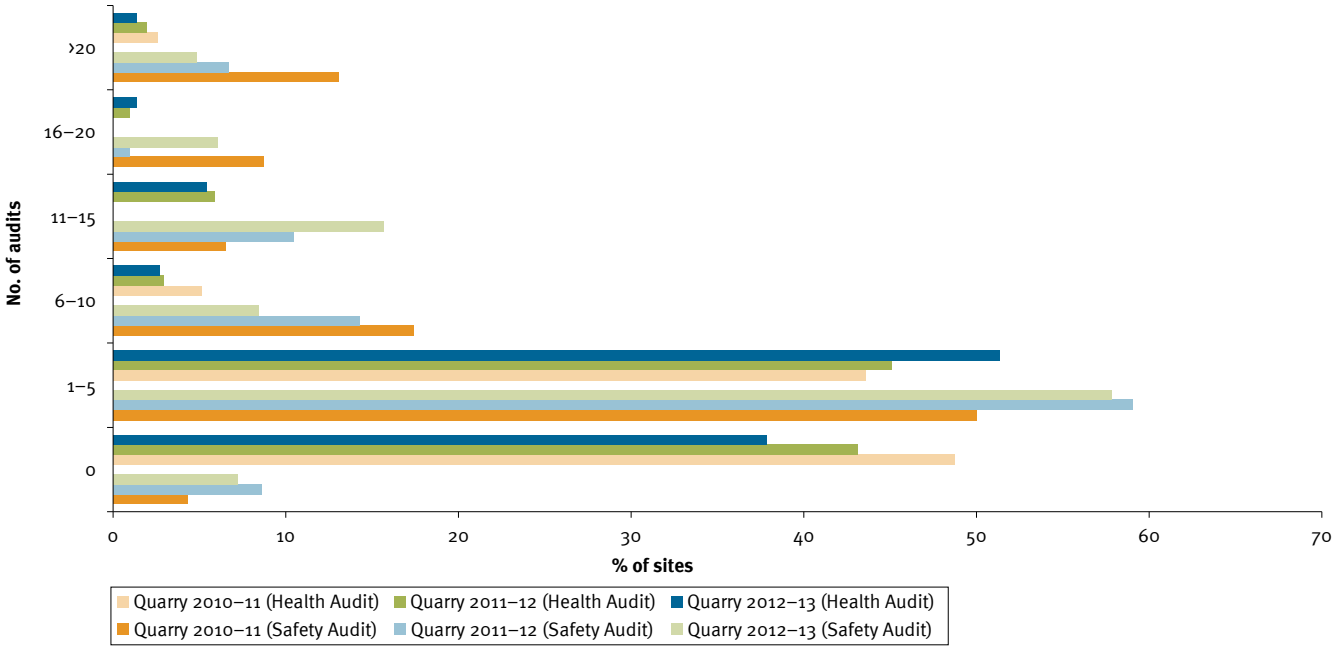


Figure 6.6: Sites with no outstanding improvement actions that came out of audits, 2010–13

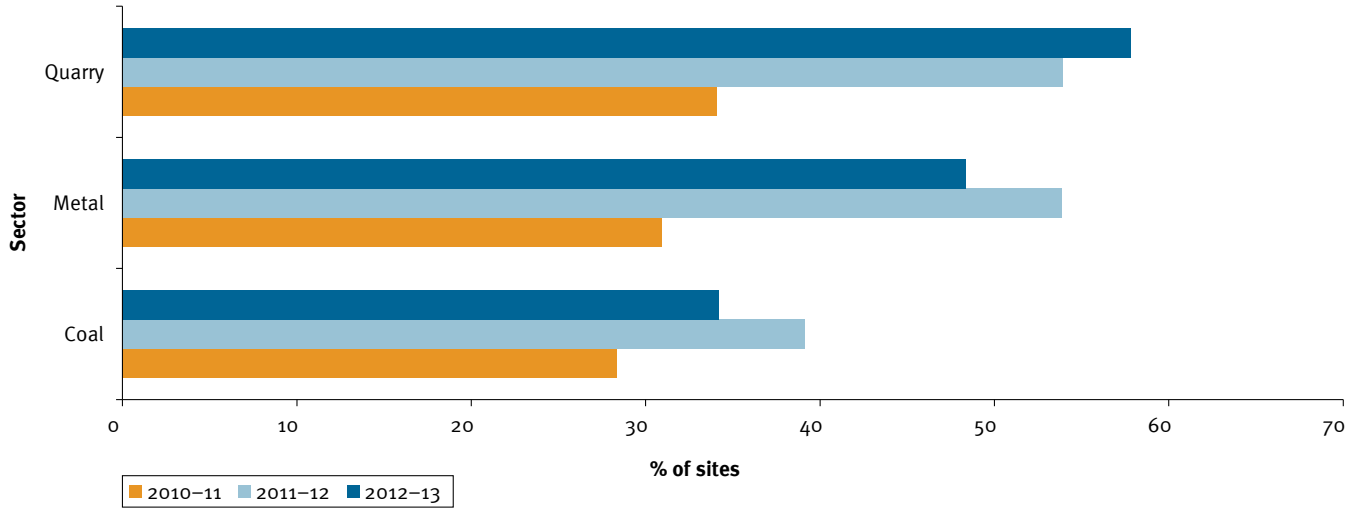


Figure 6.7.1: Coal sector workers involved as auditors in internal audits during the previous 12 months, 2010–13

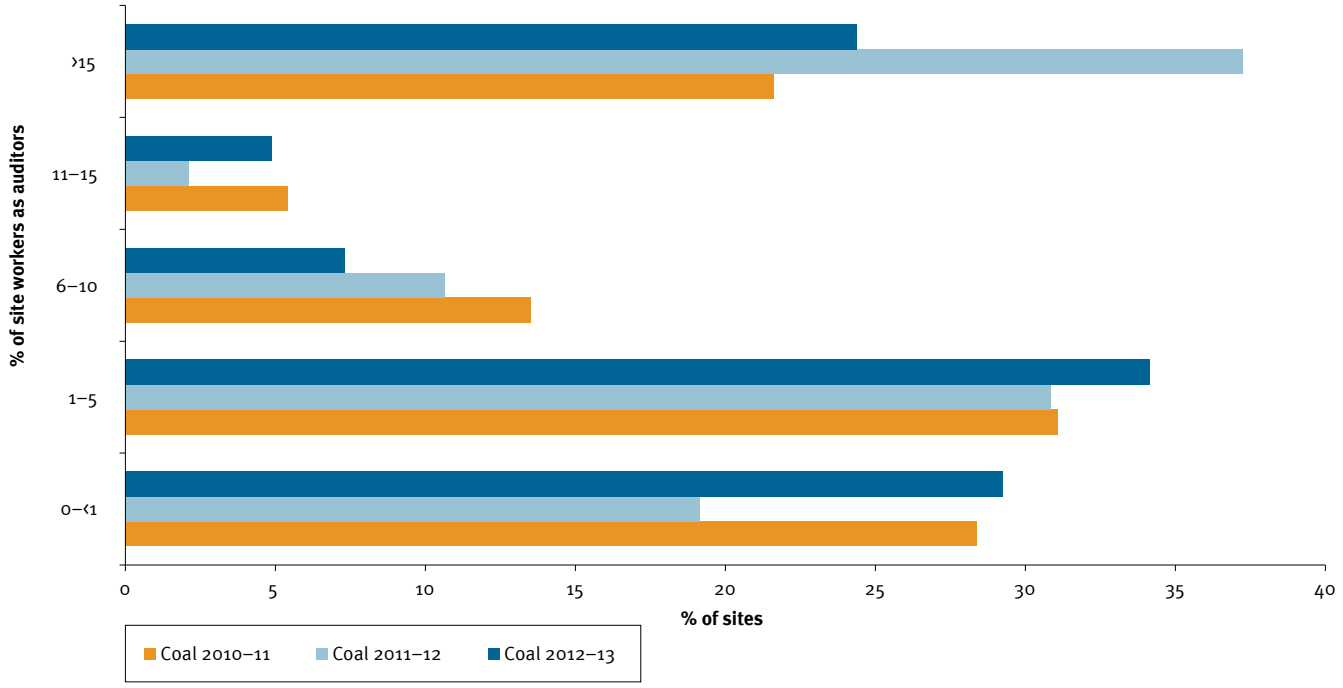


Figure 6.7.2: Metalliferous sector workers involved as auditors in internal audits during the previous 12 months, 2010–13

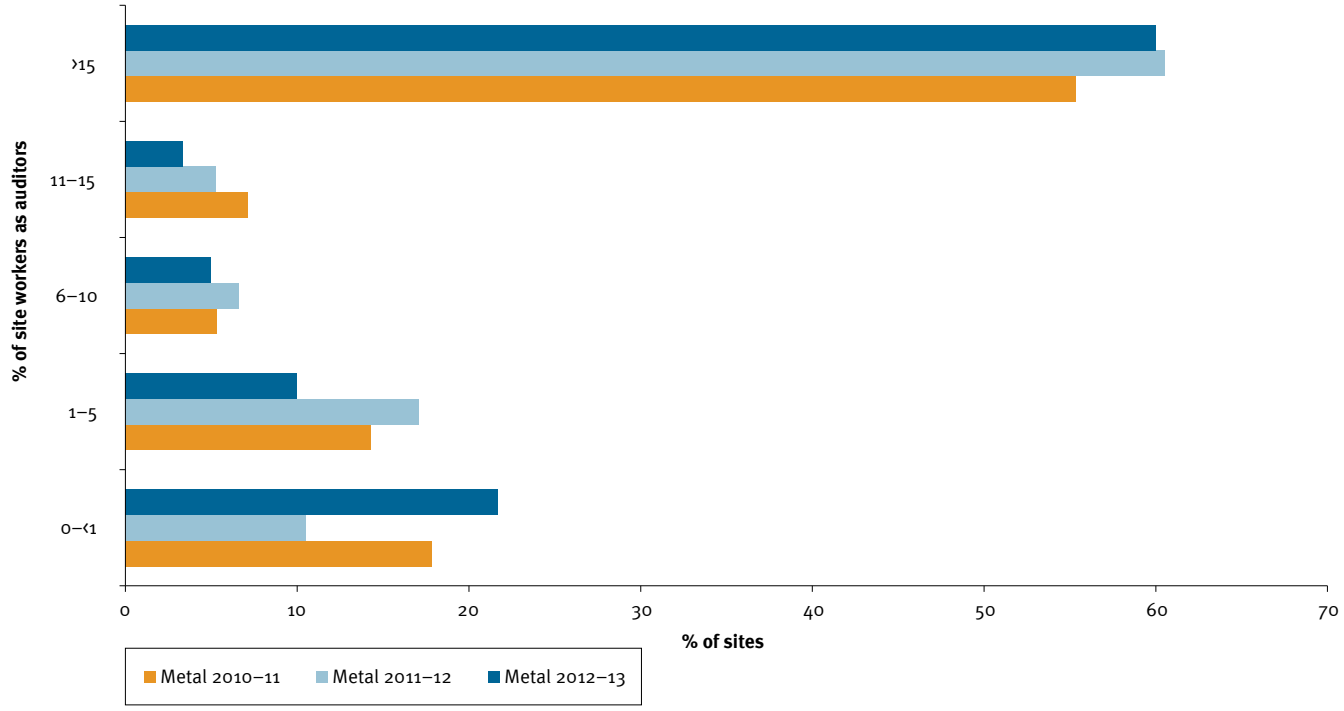


Figure 6.7.3: Quarry sector workers involved as auditors in internal audits during the previous 12 months, 2010–13

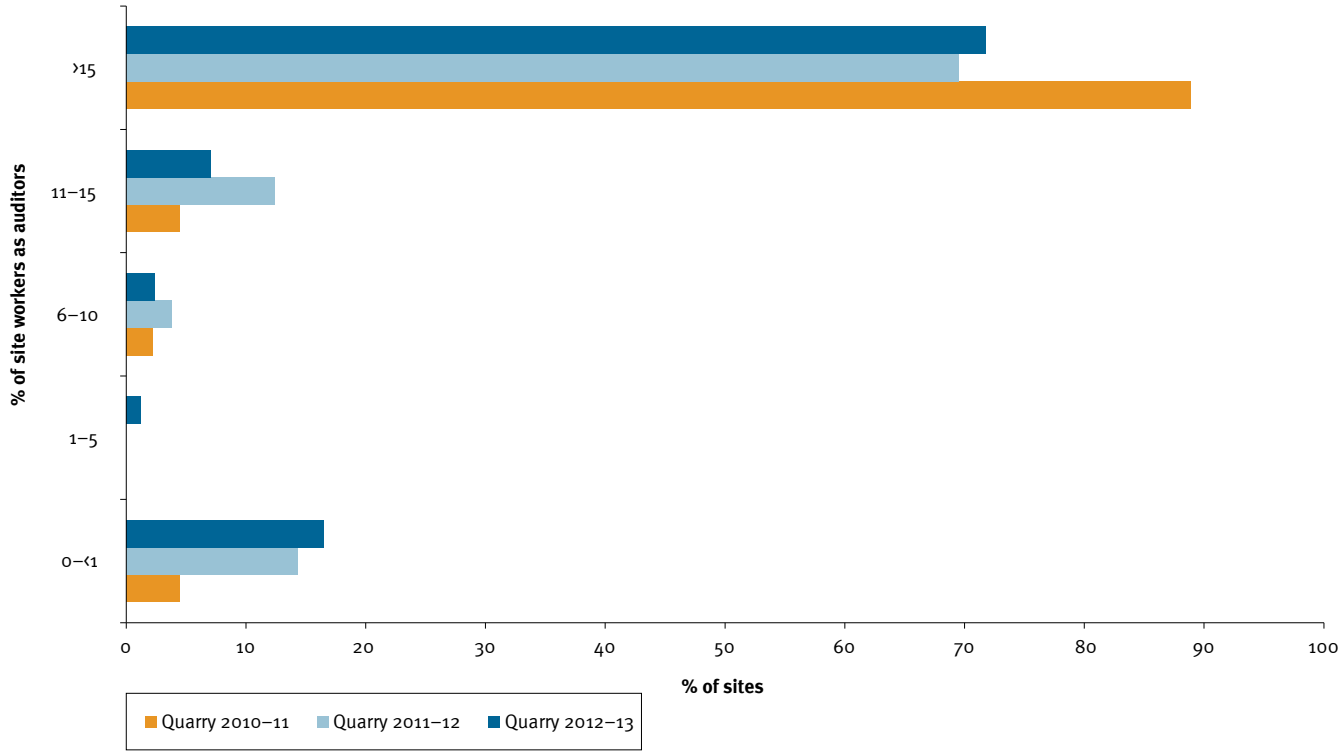


Figure 6.8: Sites with a formal reporting system for capturing and reporting high potential incidents, 2010–13

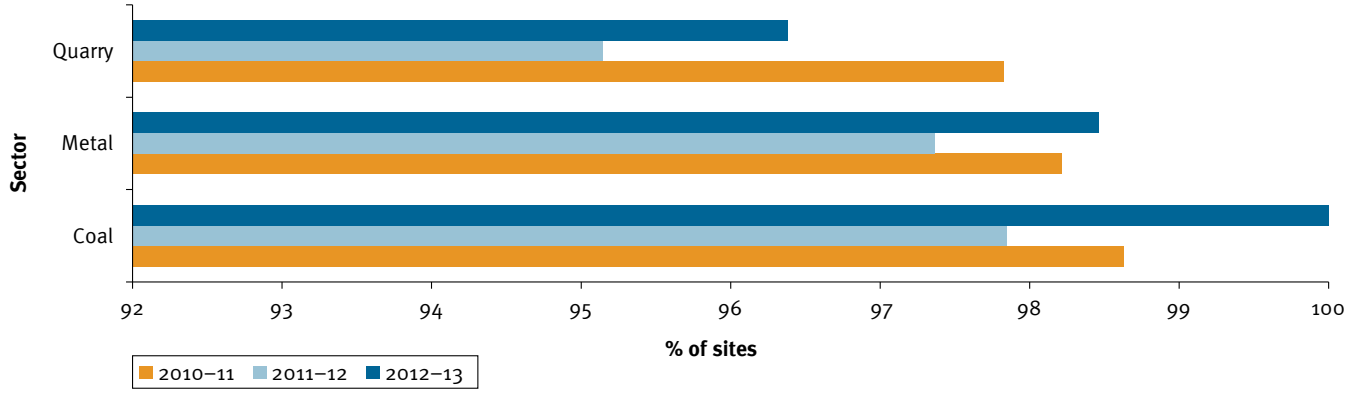


Figure 6.9: Improvement actions resulting from investigations into high potential incidents, 2010–13

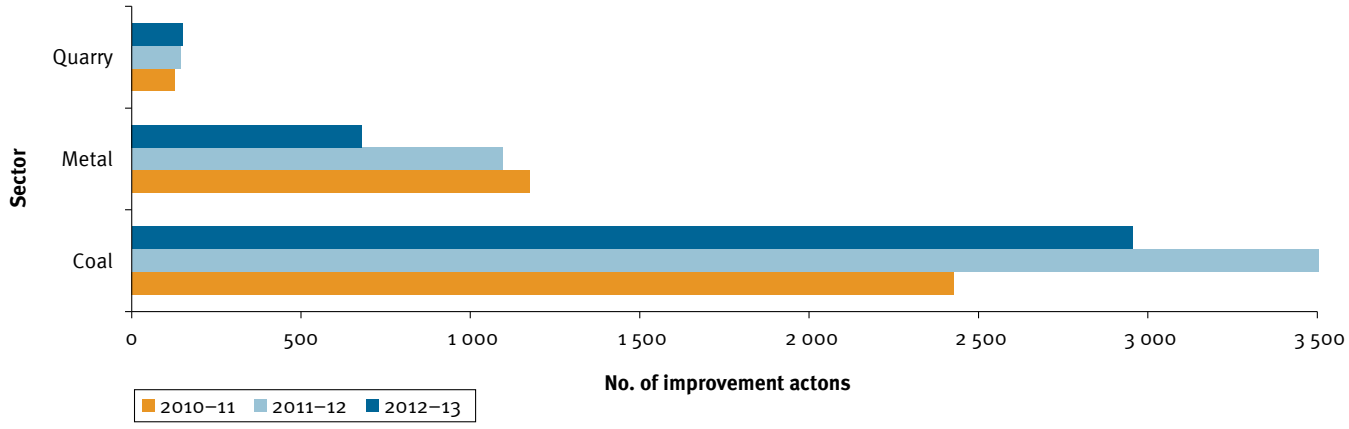
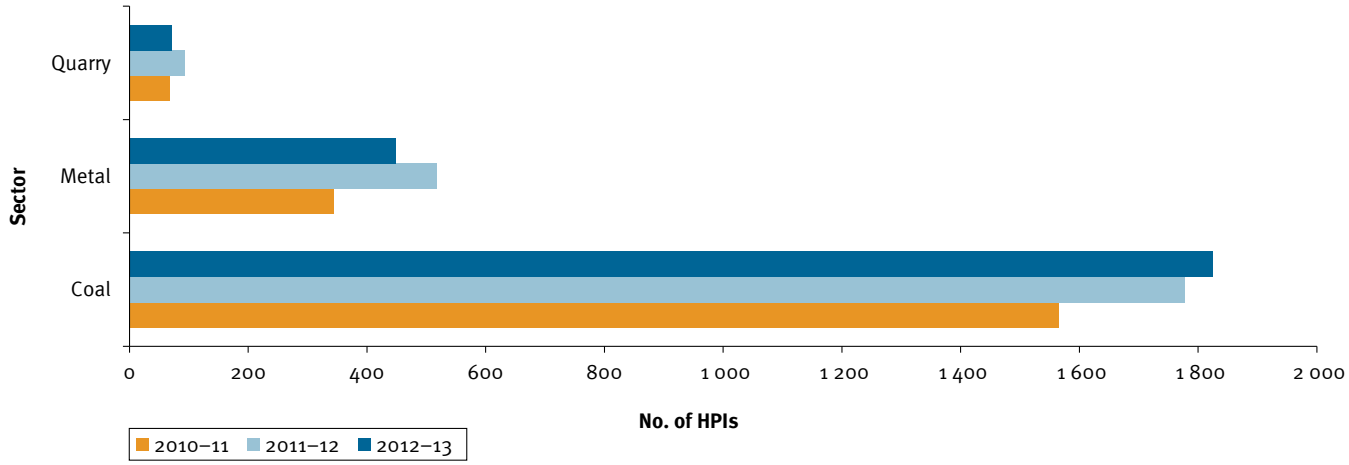
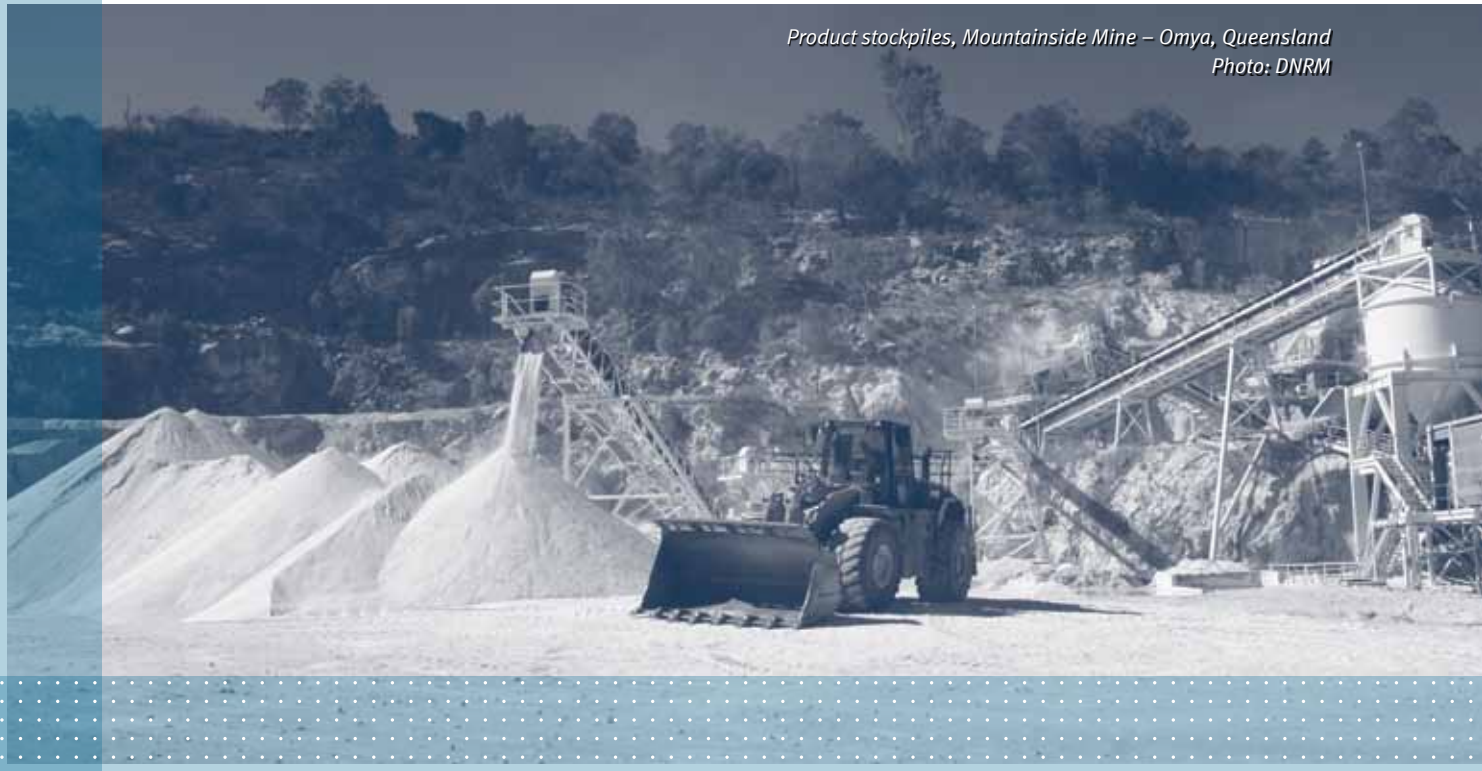


Figure 6.10: Number of high potential incidents, 2010–13



7

Health report



Product stockpiles, Mountainside Mine – Omya, Queensland
Photo: DNRM

7. Health report

7.1 Coal mine workers' health scheme

The CMWHS requires that an employer must ensure a health assessment is carried out for each person who is to be employed, or is employed as a coal mine worker. The assessment is carried out by a nominated medical advisor (NMA) in accordance with the requirements of the scheme. The assessment must be carried out before the person commences work as a coal mine worker and periodically as decided by the NMA, but at least once every five years. There are currently over 100000 health assessments recorded on the scheme's database. The earliest of these health assessments dates back to 1983 under the previous legislation's coal board medical scheme. While the metalliferous and quarrying sectors are required to undertake health assessments and health surveillance, these sectors are not required to submit the health assessments to DNRM.

The most recent data regarding the scheme is provided in Table 7.1.

In 2012–13, DNRM's Health Surveillance Unit (HSU) received 34 483 health assessments from NMAs. Over 1000 of the assessments received were returned to NMAs because of omissions or incomplete information. The HSU entered a further 2113 health assessments into the scheme's database. Of note during the period was the commencement of high-speed scanning and electronic storage of health assessments in July 2012. Over 23 000 health assessments were scanned in 2012–13. The scanning of health assessments has enabled the HSU to reduce both the physical space required to store hard-copies of health assessments and the time taken to find and retrieve health assessment records.

Queensland's mine safety framework regulatory impact statement has proposed changes to the current scheme. These changes include simplification of the health assessment so the data collected focuses on the impacts of coal mining on a worker's health. Furthermore, the RIS is also proposing to change the timing of health assessments. As previously reported DNRM believes some employers or employment agencies are insisting that prospective job applicants obtain CMWHS health assessments prior to applying for employment in the industry and at the applicant's own financial expense. To remedy this practice the RIS proposes that health assessments only be conducted after employment has commenced as a coal mine worker.

Table 7.1: Coal Mine Workers Health Scheme, 2008–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Total health assessments received from NMAs	27 512	23 873	36 422	54 030	34 483
Total health assessments returned to NMAs [1]	11 194	1 056	1 666	1 698	1 089
New industry entrant health assessments entered into Database	589	9 668	9 572	8 849	866
Existing worker periodic health assessments entered into Database	290	6 807	5 947	5 689	1 247
Total health assessments entered into Database	**879***	**16 475**	**15 519**	**14 538**	**2 113*****
Total health assessments awaiting Database entry	26 633	58 545	60 617	91 320	123 690
Total health assessments sent for scanning	•	•	•	•	38 000
Total health assessments scanned [2]	•	•	•	•	23 477
Total appointed NMAs [3]	82	103	130	182	208

[1] Incomplete health assessments returned to NMAs to request further information.

[2] To reduce the physical amount of secure storage required for over 100 000 health assessments, high-speed scanning to convert the hard-copy health assessments awaiting database entry to electronic pdf copies was commenced in 12 July 2012. In future, a pdf copy of the health assessment will be held with each database record.

[3] At least one NMA must be appointed by an employer for each Queensland coal mine. There are currently 79 operating coal mines in Queensland.

* Low number of health assessments entered in 2008–09 was due to commissioning of a new health scheme database.

** Low number of health assessments entered in 2012–13 was due to a combination of slow database server response times; staff turn-over and leave; and the integration of the high speed scanning process. (Note: Server response time has been resolved by SQL upgrade and staffing levels restored to budgeted levels during 2012–13.

7.2 Obtaining copies of health assessments

Completed health assessments are the property of DNRM. The confidentiality of reports is protected by law and reports can only be released to the worker, or a representative appointed in writing by the worker.

Workers can obtain additional copies of a completed health assessment from the NMA. The NMA may charge for this service.

DNRM can also supply copies of reports to workers. The request must be made in writing. A template for making requests is available on the DNRM website at www.dnrm.qld.gov.au.

Send the request to:

Health Surveillance Unit
Department of Natural Resources and Mines
PO Box 15216
City East QLD 4002
Telephone: 07 3199 8051
Fax: 07 3237 1242
HSU@dnrm.qld.gov.au

There is no charge for this service and DNRM normally provides copies within 5 working days.

7.3 Coal mine absenteeism statistics

DNRM compiles statistics about the reasons for absenteeism at coal mines based on monthly coal production reports. The reasons for absenteeism include: work related and non-work related injury or illness; unauthorised absence and other causes such as annual or bereavement leave. (See Table 7.2)

Table 7.2: Causes for absenteeism in coal mines, 2011–13

	Open-cut				Underground			
	2011–12		2012–13		2011–12		2012–13	
	Hours	%	Hours	%	Hours	%	Hours	%
Injury/compensation	49 208	2.4	46 574	3.2	8 192	3.4	12 119	6.0
Sickness and medical	711 521	34.2	665 646	45.9	127 108	52.1	148 875	73.8
Unauthorised absence	60 172	2.9	50 422	3.5	1 989	0.8	2 719	1.3
Other	1 260 426	60.6	686 345	47.4	106 657	43.7	38 059	18.9
Total	**2 081 327**	**100**	**1 448 987**	**100**	**243 946**	**100**	**201 772**	**100**
Hours lost per worker	**62**		**46**		**32**		**28**	

Work on dragline bucket, Queensland
Photo: DNRM

8

Workers compensation data

Bajool marble pit, Queensland
Photo: DNRM

8. Workers compensation data

The mining industry injury compensation data for 2012–13 is sourced from the Office of Economic and Statistical Research (OESR). The data includes compensation information provided by WorkCover Queensland and mining industry self-insurers through Q-Comp.

There were 1995 workers compensation claims reported by the mining industry for 2012–13, compared with 1611 claims reported in 2011–12.

The 2012–13 workers compensation claims and associated average cost per claim by nature of injury can be found in Table 8.1. This data does not capture smelting operations conducted on Queensland mine sites as these operations are not categorised as mining by the OESR.

Trauma to muscles and tendons remains the most common nature of injury with a total of 473 claims recorded in 2012–13 but the highest cost per claim in 2012–13 was for anxiety/stress disorder costing $50 329. The breakdown of average cost per claim by mining sector in 2012–13 was:

- coal mining costing $11 345
- metalliferous mining costing $10 445
- quarrying costing $4181.

Additional data relating to workers compensation claims over the five-year comparison period 2008–13 are shown in Figures 8.1 and 8.2.

Crushing plant, Mount Rawdon Mine, Queensland
Photo: DNRM

Table 8.1: Workers compensation data – claims and associated costs, 2012–13

Nature of Injury		Coal mining	Metalliferous mining	Quarrying	All	Cost per claim
Anxiety/Stress disorder	Payment $	587 469	66 809	0	654 279	50 329
	No. of claims	10	3	0	13	
Back pain,Lumbago and Sciatica	Payment $	173 758	56 052	1 376	231 186	12 168
	No. of claims	10	7	2	19	
Contusion, bruising and superficial crushing	Payment $	327 413	540 092	23 644	891 149	5 712
	No. of claims	59	85	12	156	
Deafness	Payment $	670 123	305 706	35 867	1 011 696	9 282
	No. of claims	87	20	2	109	
Disk displacement, prolapse and superficial crushing	Payment $	394 037	417 961	27 769	839 767	34 990
	No. of claims	10	11	3	24	
Dislocation	Payment $	466 215	145 790	0	612 005	23 539
	No. of claims	18	8	0	26	
Hernias	Payment $	405 436	375 656	0	781 092	26 036
	No. of claims	16	14	0	30	
Hot burn	Payment $	12 612	238 394	31 211	282 217	14 111
	No. of claims	6	11	3	20	
Laceration or open wound not involving truamatic amputation	Payment $	109 553	91 492	17 725	218 770	1 609
	No. of claims	73	39	24	136	
Other fractures, not elsewhere classified	Payment $	964 030	744 743	165 144	1 873 917	21 790
	No. of claims	42	36	8	86	
Soft tissue injuries due to trauma or unknown mechanisms with insufficient information to code elsewhere	Payment $	473 900	348 388	31 502	853 791	8 055
	No. of claims	53	36	17	106	
Tendonitis	Payment $	141 282	100 999	0	242 281	12 752
	No. of claims	13	6	0	19	
Trauma to joints and ligaments, not elsewhere classified	Payment $	1 108 414	357 678	57 866	1 523 958	12 390
	No. of claims	76	32	15	123	
Truama to joints and ligaments, unspecified	Payment $	578 333	206 387	81 667	866 386	8 412
	No. of claims	71	24	8	103	
Trauma to muscles	Payment $	499 492	207 305	5 917	712 714	8 587
	No. of claims	56	23	4	83	
Truama to muscles and tendons, not elsewhere classified	Payment $	1 015 100	262 399	53 117	1 330 616	12 097
	No. of claims	77	29	4	110	
Trauma to muscles and tendons, unspecified	Payment $	1 995 118	1 992 947	112 730	4 100 795	8 670
	No. of claims	197	239	37	473	
Traumatic amputation	Payment $	146 556	64 356	21 944	232 855	23 286
	No. of claims	5	4	1	10	
Traumatic tearing away part of the muscle/tendon structure, avulsion	Payment $	322 637	279 925	16 249	618 811	32 569
	No. of claims	9	8	2	19	
Unspecified injuries	Payment $	207 890	199 441	532	407 863	14 567
	No. of claims	14	11	3	28	
Other	Payment $	1 471 512	893 745	47 409	2 412 666	7 989
	No. of claims	162	110	30	302	
Total	**Payment $**	**12 070 882**	**7 896 265**	**731 669**	**20 698 815**	**10 375**
	No. of claims	**1 064**	**756**	**175**	**1 995**	

Figure 8.1: Workers compensation claims–major injury/illness types, 2008–13

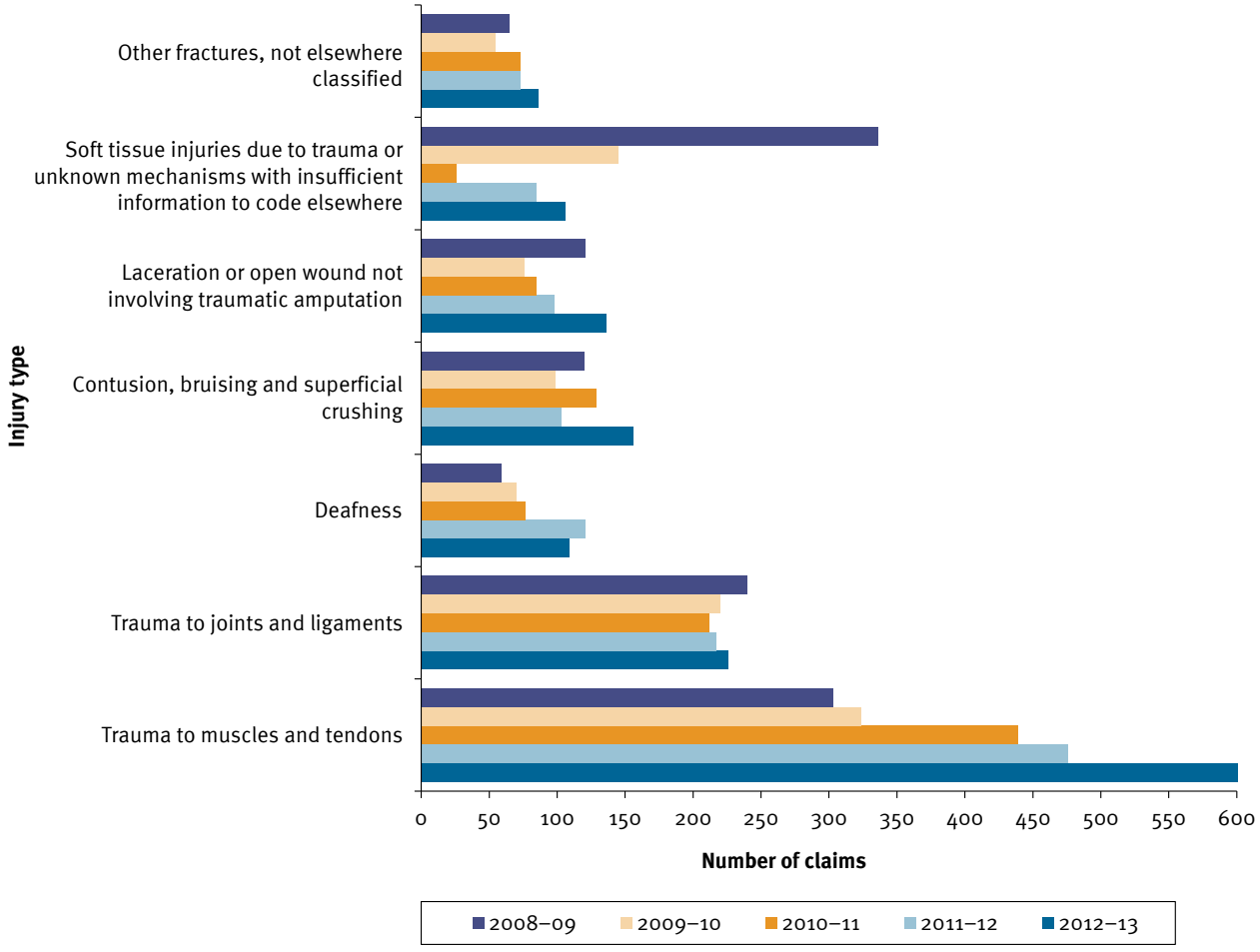
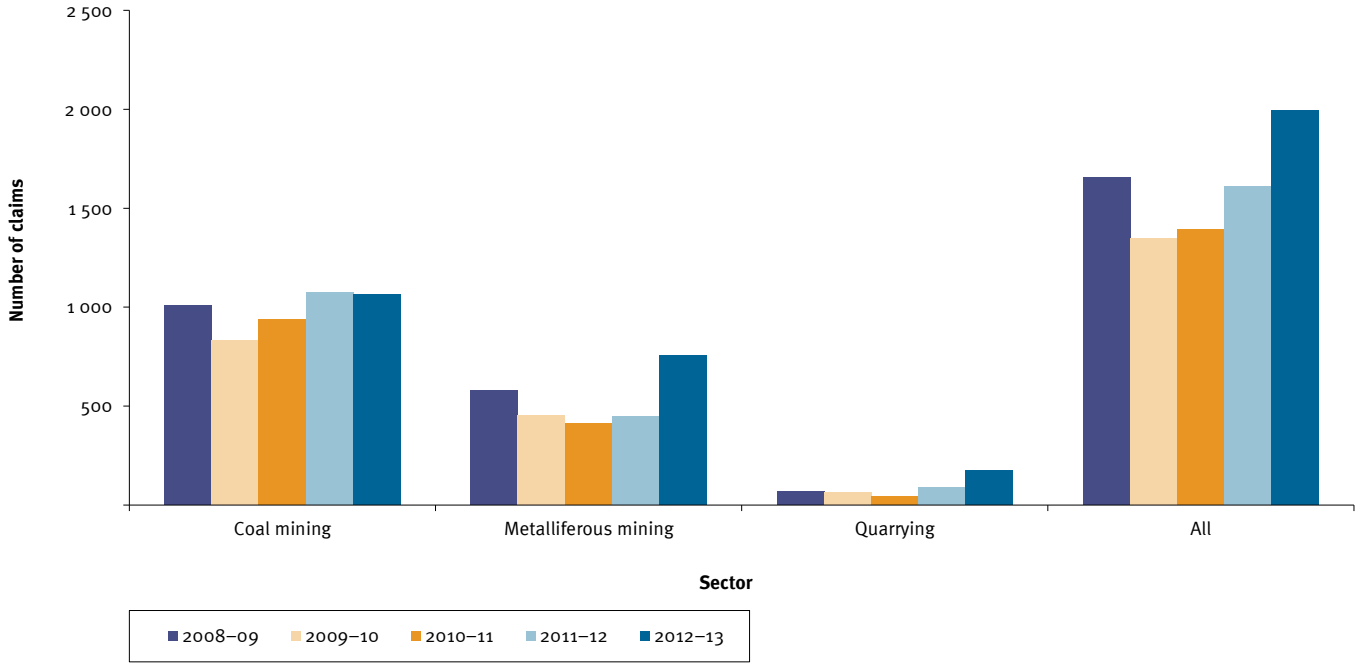


Figure 8.2: Five-year comparison of workers compensation claims per sector, 2008–13



9

Collection of information

Photo: DNRM

9. Collection of information

When an LTI or HPI occurs, the mine or quarry operator must notify an Inspector and submit a Queensland Mining Incident Report Form to DNRM.

Large mines and quarries (with 10 or more employees) must also provide a monthly summary of new and carry-over LTIs and DIs, re-opened injuries, days lost and/or on alternative duties, and hours worked during the period. Data on the number of workers in the industry is sourced through the quarterly safety and health levy submissions from industry. The levy data is used to validate the hours of work data submitted and is given preference if there is a significant difference. Nineteen consecutive years of injury/disease data for coal and metalliferous mines is now available for analysis.

Copies of this report are available on the DNRM website at www.dnrm.qld.gov.au.

More detailed analysis of injuries in the mining and quarrying industry is available from:

Mine Safety and Health
Department of Natural Resources and Mines
PO Box 15216
City East Qld 4002
Telephone +61 7 3199 8031
minesafetystats@dnrm.qld.gov.au

Examples of requests for information received during 2012–13 are listed below:

- A mines inspector requested statistical information relating to hand injury statistics over the last five years. This information was used to prepare a safety bulletin on preventing serious hand injuries.
- A safety information co-ordinator from the Chamber of Mines, South Africa, requested information on the fatalities and employment statistics over the last ten years.
- Information on truck related fires over the last 10 years was provided to a mining company. This information was used to assist with fire analysis.
- Information was provided on the number of mining employees per region. The information provided to North Queensland Airports was used to assist with strategic planning on how to continue supporting the mining industry and communities in central Queensland.
- A mining company requested information on brake related incident statistics in open cut coal mines from 2002–12.
- An exploration site manager requested information on drilling rig incidents over a financial year. This information was to be used for research.
- Information was provided on accidents on roads, paths and collisions over the last three years. This information was used to assist in the marketing of haulage road delineators.
- A mine safety and health officer requested information on fatalities by causation from 1984–2013.
- Information on LTIs and HPIs since 2007 was provided to a professor of occupational health and safety in mining. This information was used to assist with RiskGate analysis.
- Information on employment figures over the last five years was provided to Cardiac Rehabilitation, Rockhampton Hospital. This information was used to assist the hospital in planning for future services.

Access to the lost time accident database

Industry can be provided with data upon request to DNRM, including information used in the compilation of this report. Individual mine operators can obtain site-specific data as well as the statistical sector–wide data. Mine operators can also use this data as a benchmark in the preparation of safety management systems. The Mines Inspectorate uses the data when planning audit programs.

To request data, contact your regional Mines Inspectorate office:

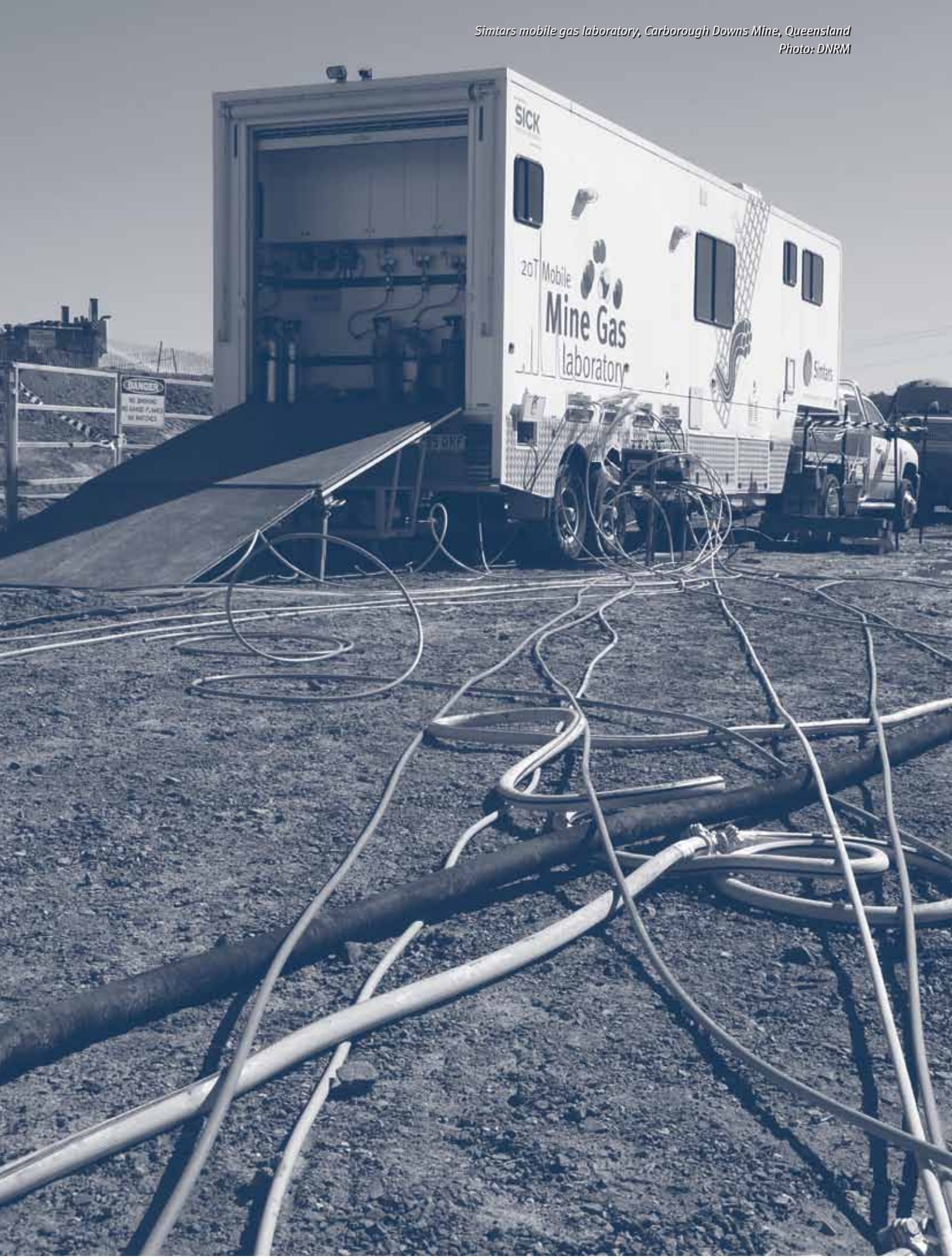
Brisbane (Head Office): 07 3199 8031 or 07 3199 8032
Woolloongabba (South Region): 07 3238 3722
Rockhampton (Central Region): 07 4938 4340
Mackay (Central Region): 07 4967 1444
Townsville (North Region): 07 4760 7404
Mount Isa (North Region): 07 4747 2158

This report is delivered with the intention of providing useful information to industry organisations to build better safety and health management systems and processes across operations.

The Mines Inspectorate welcomes suggestions for improvement and feedback on the report. Please call the DNRM Customer Service Centre 13 25 23 (within Australia) or +61 7 3199 8031 (outside Australia) with your comments.

Thanks are extended to the mining industry in Queensland for providing the data required to assemble this report.

Simtars mobile gas laboratory, Carborough Downs Mine, Queensland
Photo: DNRM



Notes

Notes

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Queensland
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