SAFETY PERFORMANCE

IN THE WESTERN AUSTRALIAN MINERAL INDUSTRY

ACCIDENT AND INJURY STATISTICS 2012-2013

Government of **Western Australia**
Department of **Mines and Petroleum**
Resources Safety

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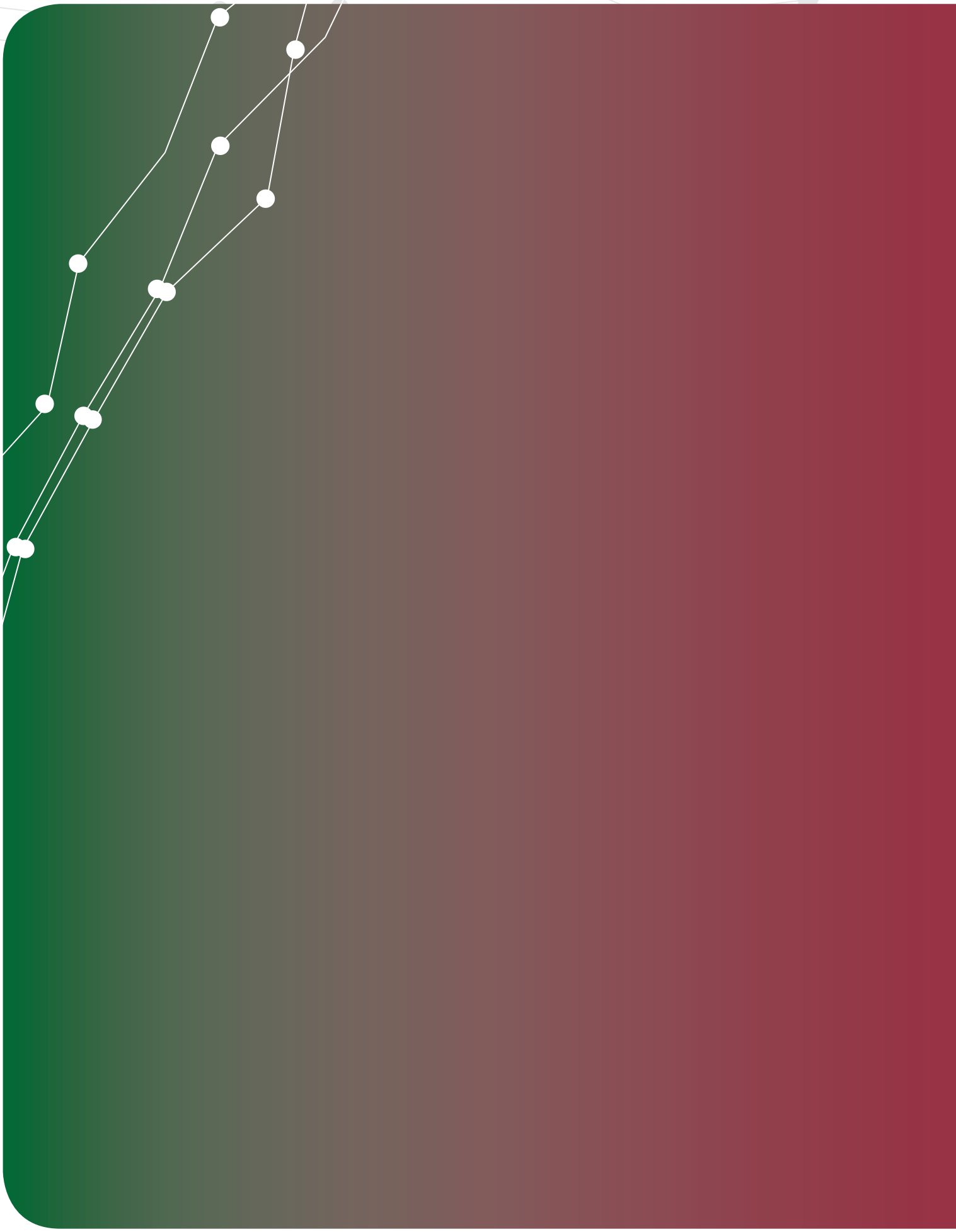


INTRODUCTION

The 2012-13 financial year is the first since records began in 1896 that the minerals sector of Western Australia has not recorded a fatal accident. This is an achievement worth celebrating and industry should be congratulated. This must, however, be tempered against a lack of any statistical improvement in the other lag indicators detailed within this report. On a more sobering note, the number of serious injuries and near misses is still very high, and many of them could have resulted in a fatal accident had the circumstances been slightly different.

There is no doubt that significant improvements in safety outcomes have been achieved over the past decade or so against a backdrop of a rapidly expanding industry. For the first time, the mining industry achieved an average employment level above 100,000. Thus the steady performance in many of the indicators has been achieved with a less experienced and more transient workforce, often working on very large construction projects that are transitioning to full production. This has exposed workers to changing risk profiles, placing significant demands on the management of safety as workplaces adjust.

The minerals sector, as a whole, is still over-reliant on administrative controls, exposing individuals every time an error in judgement occurs. The pathway forward to the aspirational goal of "zero harm" will require a determined move up the hierarchy of control using elimination, substitution and engineering to limit the potential effect of energy exchange mechanisms.

Simon Ridge
State Mining Engineer

DEFINITIONS

LOST TIME INJURY (LTI)

Work injury that results in an absence from work for at least one full day or shift any time after the day or shift on which the injury occurred

SERIOUS INJURY

Work injury that results in the injured person being disabled for a period of two weeks or more

DAYS LOST

Rostered days absent from work due to work injury

MINOR INJURY

Work injury that results in the injured person being disabled for a period of less than two weeks

DISABLING INJURY (DI)

Work injury (not LTI) that results in the injured person being unable to fully perform his or her ordinary occupation (regular job) any time after the day or shift on which the injury occurred, regardless of whether or not the person is rostered to work, and where alternative or light duties may be performed or hours restricted

INCIDENCE RATE

Number of lost time injuries per 1,000 employees for a 12 month period

FATAL INJURY INCIDENCE RATE

Number of fatal injuries per 1,000 employees for a 12 month period

LOST TIME INJURY FREQUENCY RATE (LTIFR)

Number of lost time injuries per million hours worked

SERIOUS INJURY FREQUENCY RATE

Number of serious injuries per million hours worked

DISABLING INJURY FREQUENCY RATE

Number of disabling injuries per million hours worked

DURATION RATE

Average number of workdays lost per injury

INJURY INDEX

Number of workdays lost per million hours worked

METALLIFEROUS MINES

All mines other than coal mines are classed as metalliferous mines

DAYS OFF

Total calendar days, whether rostered or not, absent from work or on alternative duties, restricted duties or restricted hours due to work injury

EXPLORATION

Exploration activities not under the control of a Registered Mine Manager; usually associated with exploration leases

ABBREVIATIONS

C/BY BETWEEN	caught by or between moving or stationary objects or both
C/BY MACHINE	caught by or between operating machine
CHEM/FUMES	chemicals or fumes
COMP	compressed
C/W	contact with
DETON	detonation
DI	disabling injury
ENV	environment
EXP	exposure
FR	frequency rate
HI PRESS FLUID	high pressure fluid
JOLT/JAR	jolting or jarring
LTI	lost time injury
LTIFR	lost time injury frequency rate
NOC	not otherwise classified
ON/OFF	on or off
PRESS	pressure
OVER/STREN MOV	over-exertion or strenuous movements
S/AGAINST	struck against
S/BY	struck by
SLIP/TRIP	slip or trip
U/G	underground
U/G ACCESS/HAUL	underground access, travelling or haulage ways
U/G PROD/DEV	underground production or development areas
VEH/MOB	vehicle or mobile equipment

EXPLANATORY NOTES

Introduction

The statistics published in this annual compilation mainly relate to accidents between 1 July 2012 and 30 June 2013 (2012-13) involving time lost from work of one day or more (lost time injuries) on mines in Western Australia. The day on which the accident occurred is not counted as a day lost. The total number of working days lost through injury in 2012-13 has three components:

i) Initial injuries — days lost in 2012-13 from injuries that occurred in 2012-13

ii) Recurrent injuries — days lost in 2012-13 through recurrences of injuries that occurred in 2012-13 and previous years

iii) Carry-over injuries — days lost in 2012-13 by persons continuously off work from injuries that occurred before 1 July 2012.

Scope

Injuries to all company and contractor employees who worked at mining operations are included in these statistics. The definition of "mining operation" is stated in section 4 of the *Mines Safety and Inspection Act 1994* and includes mining company treatment plants, port facilities and railways.

Mineral exploration is not covered by this report, apart from Tables 4, 8 and 10, and Appendix N.

Disabling injuries are only covered in the "Disabling injuries" section and Appendices L and M.

Injuries that occurred in journey accidents not on mine sites (i.e. travelling to or from work) have not been included in calculations of incidence, frequency or duration rates.

Fatal accidents

Work days lost have not been allocated to fatal accidents, nor have fatalities been included in injury incidence, frequency or duration rate calculations except in Tables 8 and 9, which are in accordance with Australian Standard AS 1885.1:1990 *Measurement of occupational health and safety performance – Describing and reporting occupational injuries and disease* (known as the National Standard for Workplace Injury and Disease Recording). This Standard treats fatalities as lost time injuries with a penalty of 220 work days lost for each.

Collection of information

Accident and injury details are reported monthly to Resources Safety by mine managers and exploration managers, as are the number of persons employed (including contractor employees) and hours worked during the month.

During the twelve months covered in this compilation, an average of 347 mines or groups of mines and 249 exploration companies reported to Resources Safety's Safety Regulation System (SRS).

Some of the terms most commonly used to describe the accident type in incident reports are listed in Appendix O.

Charts

For clarity, most bar charts in this publication are restricted to 15 or fewer categories.

The term "other" is used for a grouping of accident types that individually contain a smaller proportion of injuries than the smallest individual type shown on the chart (typically less than 2%).

STATISTICAL SUMMARY

MINING

- There were no fatal accidents during 2012-13.
- There were 497 LTIs during 2012-13, 40 more than the previous year (457 injuries in 2011-12). Table 5 and Appendix A show a breakdown of the number of injuries by commodity mined.
- There was an average workforce of 100,170 workers in 2012-13, an increase of approximately 7% over the previous year's average of 94,012. Table 5 and Appendix A show a breakdown of the number of workers by commodity mined.
- The overall LTI duration rate deteriorated by 4% during 2012-13, rising from 22.7 to 23.5.
- The overall LTI frequency rate for 2012-13 remained unchanged at 2.5.
- The overall injury index deteriorated, by 3.6%, rising from 56 in 2011-12 to 58 in 2012-13.
- Serious LTIs in the mining industry during 2012-13 totalled 411, which is 41 more than for 2011-12. However, the rise in the hours worked in the same period resulted in the overall serious LTIFR remaining unchanged, at 2.0.
- The iron ore sector LTIFR deteriorated by 33% during 2012-13, rising from 1.2 to 1.6.
- The bauxite and alumina sector LTIFR deteriorated by 55% during 2012-13, rising from 2.9 to 4.5.
- The gold sector LTIFR improved by 17% during 2012-13, falling from 3.0 to 2.5
- The nickel sector LTIFR deteriorated by 30% during 2012-13, rising from 2.3 to 3.0.
- There were 921 DIs during 2012-13, 64 more than the previous year (857 DIs reported in 2011-12). Table 11 shows the breakdown of the number of injuries by commodity mined.
- The overall DI frequency rate for 2012-13 remained unchanged from 2011-12 at 4.6.
- The overall DI incidence rate rose slightly during 2012-13, by 1%, from 9.1 to 9.2.

EXPLORATION

- There were no exploration fatalities in 2012-13.
- There were 29 LTIs reported during 2012-13, 14 less than the previous year.
- There was an average workforce of 2,771 workers, a decrease of 24% from the previous year's average.
- The overall LTIFR improved by 6% during 2012-13, falling from 5.4 to 5.1
- There were 33 exploration disabling injuries reported during 2012-13, resulting in a DI frequency rate of 5.8, an improvement of 13%, and a DI incidence rate of 11.9, an improvement of approximately 18%.

FATAL ACCIDENTS

Fatal accidents during 2012-13

There were no fatal accidents in the Western Australian mineral industry during 2012-13. The most recent fatal injury before 2012-13 occurred in August 2011.

Fatal injury incidence rate by mineral mined 2008-09 to 2012-13

Table 1 lists fatal injury incidence rates by mineral mined for the past five years, as well as the grouped information for all surface and underground mines.

The underground fatal injury incidence rate is 2.3 times higher than the fatal injury incidence rate for surface operations.

TABLE 1 FATAL INJURY INCIDENCE RATE BY MINERAL MINED 2008-09 TO 2012-13

Category		Fatalities per thousand employees
Mineral	Iron ore	0.06
	Gold	0.03
	Nickel	0.02
	Bauxite and alumina	0.02
Underground		0.07
Surface		0.03
Exploration		0.07

FATAL ACCIDENTS CONTINUED

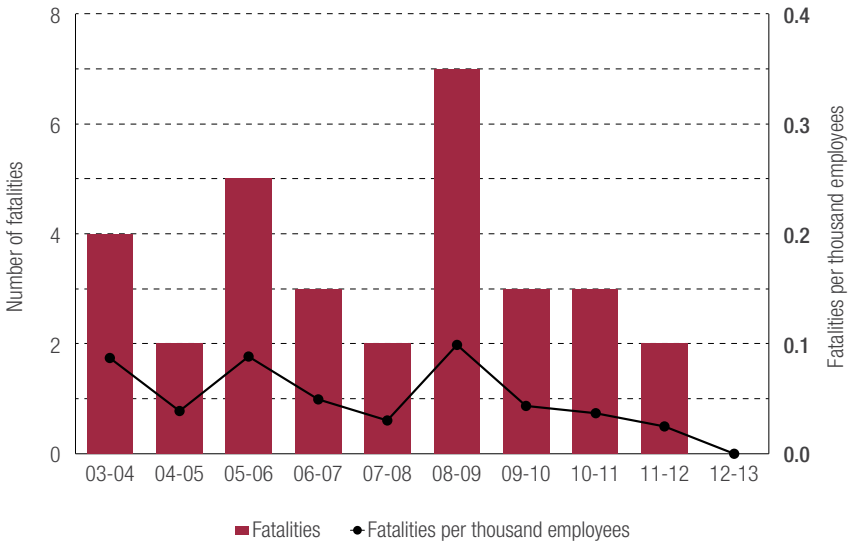
Fatal injury incidence rate 2003-04 to 2012-13

As there were no fatal injuries in 2012-13, the fatal injury incidence rate was 0.0. The rate for the previous year, 2011-12, was 0.021.

Although the overall trend continues to decline, as shown in Figure 1, there is a year-by-year scatter of the incidence rate because of the low number of occurrences.

Resources Safety maintains the view that no fatal accident is acceptable, and a fatal injury incidence rate of zero is achievable and sustainable. The zero fatal incidence rate achieved for 2012-13 supports this view.

FIGURE 1 FATAL INJURY INCIDENCE RATE 2003-04 TO 2012-13



Fatal accidents by type of accident 2008-09 to 2012-13

Table 2 indicates the type of accidents for the 16 fatalities in the mining industry (including exploration) over the past five years, with three underground, 12 at surface operations and one in exploration.

The two types of underground fatal accident which occurred during the past five years were fall from height (two fatalities) and vehicle or mobile equipment driving over the edge (one fatality).

The most common types of surface fatal accident in the past five years were fall from height and struck by object (four fatalities each).

The exploration fatality was due to exposure to environmental heat.

TABLE 2 NUMBER OF FATALITIES BY TYPE OF ACCIDENT 2008-09 TO 2012-13

Category		Number of fatalities
Underground	Fall from height	2
	Veh/mob over edge	1
Surface	Fall from height	4
	S/by object	4
	S/by veh/mob	2
	Veh/mob collision	1
	C/by between	1
Exploration	Exposure to env heat	1
Total		**16**

SERIOUS INJURIES

Review of serious injuries during 2012-13

There were 411 serious injuries reported by the mining industry during 2012-13 (370 in 2011-12). Of these, 397 were in metalliferous mines and 14 were in coal mines.

Typical serious LTIs are described below:

A boilermaker slipped and fell about 2 metres from an access ladder in a crushing plant to the concrete floor, resulting in multiple fractures to his foot and suspected ligament damage to his shoulder.

The operator of a front-end loader fell about a metre and suffered chest fractures after stepping back from the second rung of the loader's ladder, believing himself to be on the bottom rung.

A worker using a shovel to remove weeds from around an explosives magazine fence line jarred her wrist when the shovel struck hard ground.

A worker suffered crush injuries while cleaning a slat conveyor roller. His arm was pulled in between the roller and conveyor as far as his upper arm.

An integrated tool carrier (IT) being used to install a secondary ventilation fan in the main decline overbalanced and tipped forward, striking the ground and causing one of the two operators to fall from the basket. The operator's fall-arrest lanyard caused him to land on his feet, resulting in a fractured ankle.

A truck driver moving boxes to the rear of the vehicle for unloading lost her footing on the corner of the step. She slipped and fell backwards, striking her head on the ground.

A camp cook injured his shoulder while pulling open the door of a sea-container freezer. He experienced pain as well as numbness and noticeable swelling of the hand and fingers.

A fitter performing a maintenance task was struck by product falling 16 metres from a stacker tripper chute. He fell backwards and hit his head on the ground.

A boilermaker sustained five broken bones when the bucket of a skid-steer loader fell onto his foot. He was attempting to free the bucket locking pins on the loader for the operator. The bucket detached when tilted by the operator.

A worker replacing picks on the milling drum of a surface miner sustained fractures to his forearm and a dislocated wrist when his arm became trapped after the drum was accidentally rotated by the remote control.

A worker rolled his ankle while assisting in laying a surface-stabilising covering over broken rock in a drainage area. He stepped on hidden uneven ground while walking on the covering.

An exploration field assistant sustained a lower back injury when he attempted to lift a drill core from the far side of a core tray on racks in the shed.

A worker carrying two heavy buckets experienced a jolt that resulted in a dislocation of one shoulder when he rolled his ankle and lost balance after stepping on uneven ground in a drill rig's track marks.

A storeman strained his lower back while lifting a coiled 8 m by 20 mm steel sling weighing about 20 kg from a hand-operated forklift onto a shoulder-high pallet on a storage rack.

SERIOUS INJURIES CONTINUED

A worker was scalded by hot water from a dewatering pump in the pit, sustaining second degree burns to about 12-14% of his body and first degree burns to an estimated 35%. The pump had earlier lost its prime and had continued to run, heating the water remaining in the pump. The hot water escaped when the suction coupling was disengaged.

A fitter working in the heavy vehicle workshop was splashed with sulphuric acid when a 24 volt battery on a charge trolley exploded after a steel tool was accidentally dropped onto it.

The operator of a haul truck driving down the pit ramp jarred his neck when the truck hit a pot hole while he was reaching for the two-way radio after hearing a call.

A warehouse storeperson received crush injuries to his foot while instructing a trainee on the use of an electric forklift. The forklift was reversed onto his foot, which was trapped beneath the machine.

A dump truck operator suffered a suspected whiplash injury to the neck when her truck was struck by a face shovel slewing to load it. The shovel lost power due to a swing fault and the holding brakes were unable to stop it in time.

An electrician sustained jarring to his elbow, resulting in a fracture, when a door that he was unlocking was suddenly swung toward him by a worker on the other side opening it outwards.

The operator of a service truck descending the pit ramp received multiple serious injuries when the truck, which gained speed despite attempts slow it, breached a windrow on a sharp bend, travelled out of control down a ravine and rolled over before coming to rest on its left side.

While filling the oil tank on a service truck, an apprentice fitter climbed onto the top of the service truck and released the latch to a cam lock. The tank had been pressurised by the filling operation and the cam lock blew off under pressure, striking the apprentice in the face.

A troop carrier and another light vehicle approaching one another on a recently watered ramp collided when the vehicle travelling up the ramp locked up and lost control at a corner, striking the troop carrier on its right rear side. Two passengers were injured, with one receiving lower back injuries.

Serious injury incidence rate by mineral mined 2008-09 to 2012-13

Figure 2 is a chart of incidence rates for serious injuries for the past five years. The top of the chart shows the serious injury incidence rates for surface and underground operations. The lower part shows serious injury incidence rates by mineral mined.

The serious injury incidence rate for underground mining (5.7) was 39% higher than that for surface operations (4.1).

Of the major mining sectors, coal had the highest five-year average serious injury incidence rate (14.2) , followed by base metals at 7.2, whereas salt and iron ore had the lowest (at 2.9 and 2.8 respectively). The mining sector referred to as “other”, with a five-year average serious injury incidence rate of 7.2, contained 3% of the total number of employees spread over 16 commodity groups.

Serious injury frequency rate 2008-09 to 2012-13

Figure 3 shows that the serious injury frequency rate deteriorated slightly for surface metalliferous operations while improving for both underground metalliferous and coal operations, resulting in no overall change during 2012-13.

FIGURE 2 SERIOUS INJURY INCIDENCE RATE 2008-09 TO 2012-13

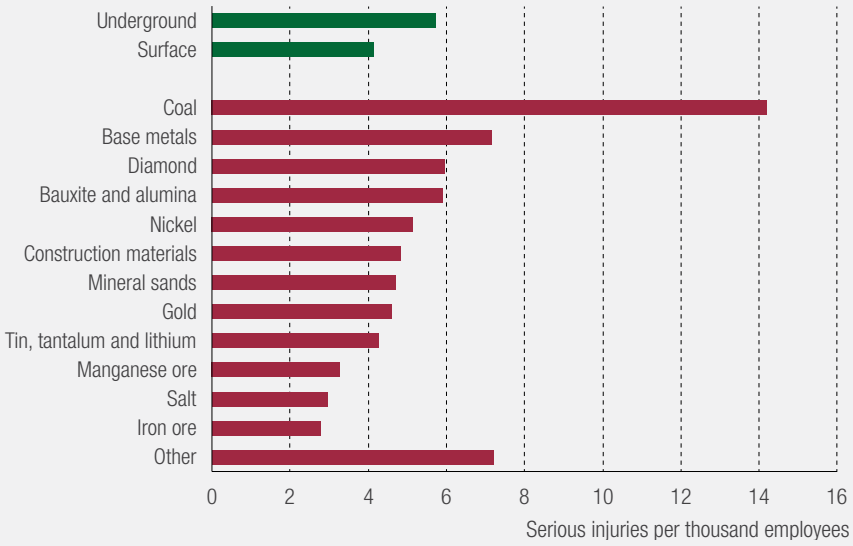
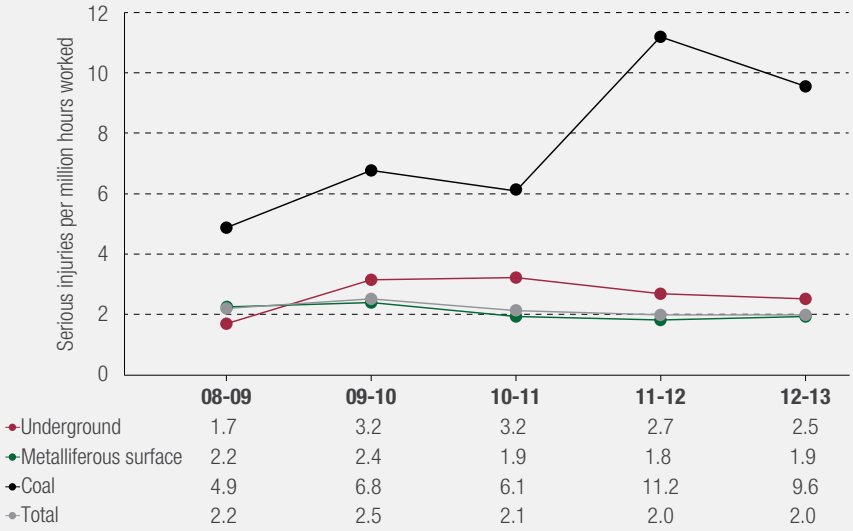


FIGURE 3 SERIOUS INJURY FREQUENCY RATE 2008-09 TO 2012-13



	08-09	09-10	10-11	11-12	12-13
Underground	1.7	3.2	3.2	2.7	2.5
Metalliferous surface	2.2	2.4	1.9	1.8	1.9
Coal	4.9	6.8	6.1	11.2	9.6
Total	2.2	2.5	2.1	2.0	2.0

Serious injury percentage breakdown for 2012-13

Appendices B and C provide a percentage breakdown of the number of serious injuries by part of body, nature of injury, location of accident, and type of accident for underground and surface operations, respectively.

Underground

- Injuries to legs accounted for the largest proportion of serious injuries at 26%, followed by hand injuries at 14%, shoulder injuries at 12%, then back injuries and trunk injuries, both at 10%. Of the serious leg injuries, 54% were to knees and 23% were to ankles.
- Consistent with the high proportion of knee, ankle, shoulder and back injuries, sprain or strain represented the highest proportion by nature of injury (48%), followed by fracture at 30%, then laceration at 10%.
- The largest proportion of serious injuries underground was in production and development areas (68%), followed by access and haulage ways at 18%.
- The most common accident type associated with serious injuries underground was over-exertion or strenuous movements at 22%, followed by struck by object and slipping or tripping, both at 12%, then rockfall and vehicle or mobile plant jolting or jarring, both at 10%.

Surface

- Injuries to arms accounted for the largest proportion of serious injuries at 24%, followed by leg injuries at 21%, back injuries at 18% and hand injuries at 17%. Of the serious arm injuries, 62% were to shoulders while 16% were to wrists. Injuries to knees and to ankles accounted for 49% and 36% of serious leg injuries respectively.
- Consistent with the high proportion of knee, ankle, back and shoulder injuries, sprain or strain represented the highest proportion by nature of injury (53%). Fracture was the next highest (17%), followed by crushing at 8%.
- The largest proportion of serious injuries on the surface occurred in open pits areas (29%), followed by treatment plants at 27% then surface general at 16%.
- The most common accident types associated with serious injuries on the surface were over-exertion or strenuous movements (30%) followed by caught by or between objects (11%), stepping (10%) and then slip or trip (9%).

LOST TIME INJURIES

Review of lost time injuries during 2012-13

In 2012-13 in Western Australia, 22,093 days were lost through occupational injuries on mines. This figure is made up of the number of days lost from injuries occurring in 2012-13 (11,677), recurrences of injuries sustained before 2012-13 and in 2012-13 (1,648), and LTIs and recurrences carried over into 2012-13 from accidents before July 2012 (8,768). A breakdown of work days lost in coal and metalliferous mining is given in Table 3.

During 2012-13, there were 497 LTIs in the State's mining industry. Of those, 479 were in metalliferous mines and 18 in coal mines. A breakdown of these data with performance indicators is given in Tables 4 and 5.

In addition to the initial injuries, there were 40 recurrences of previous injuries, resulting in 1204 work days lost during 2012-13. A breakdown of recurrent injuries by calendar year of initial injury is given in Table 6.

One hundred and thirty-four people who were still off work from injuries received before July 2012 lost 8,768 work days in 2012-13. A breakdown of these carry-over injuries is given in Table 7.

TABLE 3 TIME LOST THROUGH INJURY DURING 2012-13

Mines	Initial injuries	Recurrent injuries	Carry-over injuries	Total
	Days lost			
Metalliferous	11,488	1,204	8,458	21,150
Coal	189	444	310	943
Total mining	**11,677**	**1,648**	**8,768**	**22,093**

TABLE 4 INITIAL LOST TIME INJURIES DURING 2012-13

Sector	No. of employees	No. of LTIs	Incidence	Frequency	Duration	Injury index	Days lost
Metalliferous surface	90,077	417	4.6	2.3	23.2	54	9,694
Metalliferous underground	9675	62	6.4	3.1	28.9	89	1,794
Metalliferous total	**99,752**	**479**	**4.8**	**2.4**	**24.0**	**57**	**11,488**
Coal	**418**	**18**	**43.1**	**12.4**	**10.5**	**130**	**189**
Total mining	**10,0170**	**497**	**5.0**	**2.5**	**23.5**	**58**	**11,677**
Exploration	**2,771**	**29**	**10.5**	**5.1**	**21.1**	**108**	**612**

TABLE 5 INJURIES BY MINERAL MINED DURING 2012-13

Mineral mined	No. of employees	No. of LTIs	Incidence	Frequency	Duration	Injury index	Days lost
Iron ore	48,580	162	3.3	1.6	23.9	38	3,866
Gold	22,417	108	4.8	2.5	28.7	71	3,101
Bauxite and alumina	7,397	70	9.5	4.5	16.9	75	1,181
Nickel	7,638	46	6.0	3.0	20.0	60	919
Base metals	2,920	15	5.1	2.9	33.1	96	496
Diamonds	2,435	18	7.4	3.5	25.6	90	460
Mineral sands	2,322	10	4.3	3.0	30.7	92	307
Salt	1,137	7	6.2	3.9	28.0	108	196
Construction materials	919	5	5.4	2.8	17.0	48	85
Manganese ore	619	2	3.2	1.8	3.0	5	6
Tin, tantalum and lithium	435	2	4.6	2.0	111.0	223	222
Coal	418	18	43.1	12.4	10.5	130	189
Other	2,933	34	11.6	7.9	19.1	151	649
Total mining	**100,170**	**497**	**5.0**	**2.5**	**23.5**	**58**	**11,677**

Note: Duration in Tables 4 and 5 does not take into consideration time lost after 30 June 2013 by persons still off work at the end of the fiscal year, time lost from recurrent injuries, or time lost by persons with carry-over injuries from before July 2012.

TABLE 6 RECURRENT INJURIES DURING 2012-13

Calendar year	Metalliferous mines		Coal mines		Total mining	
	No. of injuries	Days lost	No. of injuries	Days lost	No. of injuries	Days lost
2013*	5	129			5	129
2012	25	658	6	324	31	982
2011	5	252			5	252
2010	1	9	1	53	2	62
2009						
2008	1	6			1	6
2007			1	67	1	67
2006	2	129			2	129
2005	1	21			1	21
Total	**40**	**1,204**	**8**	**444**	**48**	**1,648**

Note: Apart from the information shown in Tables 3, 6 and 7, analysis of recurrent and carry-over injuries has not been presented in this publication.

** Covers period from 1 January to 30 June 2013*

LOST TIME INJURIES CONTINUED

TABLE 7 CARRY-OVER INJURIES DURING 2012-13

Calendar year	Metalliferous mines		Coal mines		Total mining	
	No. of injuries	Days lost	No. of injuries	Days lost	No. of injuries	Days lost
2012*	82	4,239	6	199	88	4,438
2011	31	2,831	2	7	33	2,838
2010	7	762	1	104	8	866
2009	1	43			1	43
2008	2	172			2	172
2007						
2006	1	252			1	252
2005	1	159			1	159
Total	**125**	**8,458**	**9**	**310**	**134**	**8,768**

** Covers period from 1 January to 30 June 2012*

Review of lost time injuries during 2012-13 in accordance with Australian Standard AS 1885.1:1990

The National Standard for Workplace Injury and Disease Recording is designed to be used by individual workplaces. Tables 8 and 9 provide statistical information in accordance with AS 1885.1:1990.

There are two major differences between reporting for AS 1885.1:1990 and Resources Safety's SRS database.

The Australian Standard treats fatalities as LTIs with a penalty of 220 workdays lost for each, whereas fatalities are reported separately from other injury data in the SRS database.

The incidence rate reported in accordance with the Australian Standard definition is injuries per hundred employees, rather than injuries per thousand employees.

TABLE 8 INITIAL LOST TIME INJURIES DURING 2012-13 (AS 1885.1:1990)

Sector	No. of employees	No. of LTIs	Injuries per hundred	Frequency rate	Duration rate	Days lost
Metalliferous surface	90,077	417	0.46	2.3	23.2	9,694
Metalliferous underground	9,675	62	0.64	3.1	28.9	1,794
Metalliferous total	**99,752**	**479**	**0.48**	**2.4**	**24.0**	**11,488**
Coal	**418**	**18**	**4.31**	**12.4**	**10.5**	**189**
Total mining	**100,170**	**497**	**0.50**	**2.5**	**23.5**	**11,677**
Exploration	**2,771**	**29**	**1.05**	**5.1**	**21.1**	**612**

Note: Duration in Tables 8 and 9 does not take into consideration time lost after 30 June 2013 by persons still off work at the end of the fiscal year, time lost from recurrent injuries, or time lost by persons with carry-over injuries from before July 2012.

TABLE 9 INJURIES BY MINERAL MINED DURING 2012-13 (AS 1885.1:1990)

Mineral mined	No. of employees	No. of LTIs	Injuries per hundred	Frequency rate	Duration rate	Days lost
Iron ore	48,580	162	0.33	1.6	23.9	3,866
Gold	22,417	108	0.48	2.5	28.7	3,101
Bauxite and alumina	7,397	70	0.95	4.6	16.9	1,181
Nickel	7,638	46	0.60	2.9	20.0	919
Base metals	2,920	15	0.51	2.9	33.1	496
Diamonds	2,435	18	0.74	3.5	25.6	460
Mineral sands	2,322	10	0.43	3.0	30.7	307
Salt	1,137	7	0.62	3.9	28.0	196
Construction materials	919	5	0.54	2.8	17.0	85
Manganese ore	619	2	0.32	1.8	3.0	6
Tin, tantalum and lithium	435	2	0.46	2.0	111.0	222
Coal	418	18	4.31	12.4	10.5	189
Other	2,933	34	1.16	7.9	19.1	649
Total mining	**100,170**	**497**	**0.50**	**2.5**	**23.5**	**11,677**

WORKERS' COMPENSATION

Premium rates for the Western Australian mineral industry

The workers' compensation recommended premium rates determined by the Premium Rates Committee are published in a dedicated Western Australian Government Gazette, and are effective from 30 June in the year of issue.

Figure 4 indicates trends in workers' compensation costs for selected mineral groups for the ten-year period from 2004-2005 to 2013-14.

Over this period, the coal mining compensation rate decreased, by 3%, to 2.51% of payroll. The compensation rate for surface gold operations decreased, by 63%, to 0.99% of payroll, and that for iron ore operations decreased, by 9%, to 0.84% of payroll. The rate for underground gold operations increased, by 34%, to 5.08% of payroll.

Figure 5 shows premium rates recommended in 2011-12 for the following year for a variety of mineral groups and other industries. Although premium rates in isolation are not necessarily reliable indicators of risk, they do represent a cost to industry and, in part, reflect past safety performance.

The average premium rate recommended in 2012-13 for the Western Australian mining industry for 2013-14 was 2.13% of payroll, a 10% increase on the rate recommended in 2011-12 for 2012-13 (1.94% of payroll).

In 2012-13, apart from underground gold mining, premium rates recommended for mining industry groups compared favourably with other industry groups such as structural steel fabrication and sheet metal product manufacturing, which had premium rates of 3.83% and 2.88% of payroll, respectively.

FIGURE 4 MINE WORKERS' COMPENSATION RATE TRENDS 2004-05 TO 2013-14

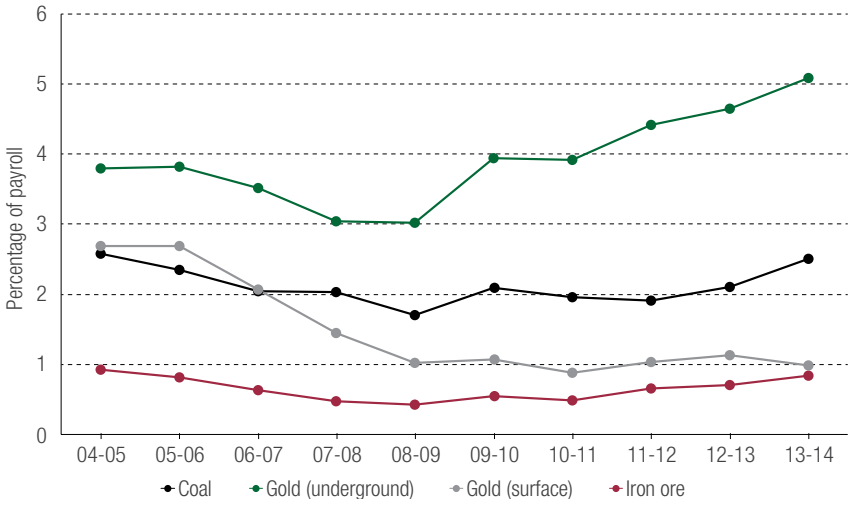
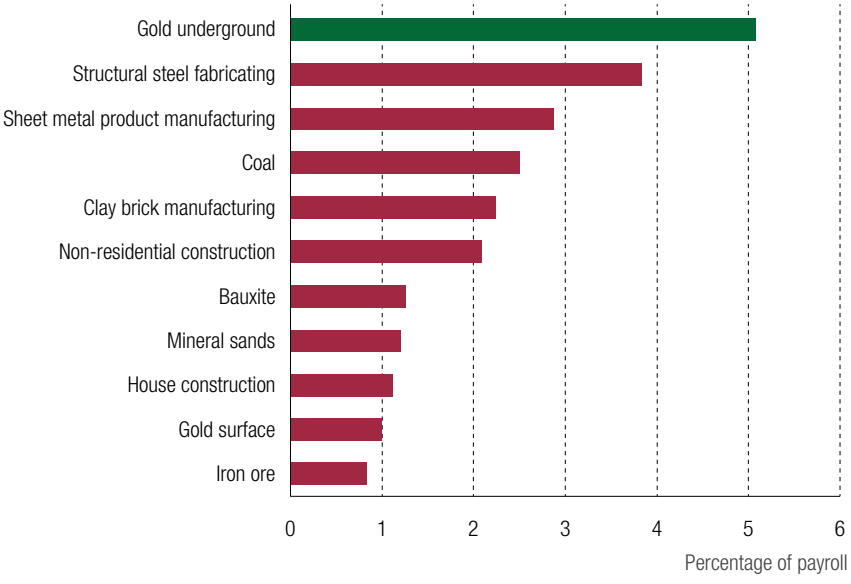


FIGURE 5 RECOMMENDED PREMIUM RATES 2013-14



INJURIES BY COMMODITIES

Metalliferous performance indicators

The performance indicators for the metalliferous mining sector show predominantly deteriorating results for 2012-13. Figures 6 to 9 depict the performance indicators of incidence, frequency, duration rates and injury index (see page 2 for definitions).

Performance indicator trends for metalliferous mining in 2012-13 are summarised below.

- The overall incidence rate deteriorated by 7%, rising from 4.5 to 4.8. The surface incidence rate deteriorated by 7% (from 4.3 to 4.6), while the underground incidence rate improved by 2% (from 6.5 to 6.4).
- The overall frequency rate deteriorated by 4%, rising from 2.3 to 2.4. The surface frequency rate deteriorated by 10% (from 2.1 to 2.3), while the underground frequency rate improved by 3% (from 3.2 to 3.1).
- The overall duration rate deteriorated by 4%, rising from 23.0 to 24.0. The surface duration rate improved slightly, by 1% (from 23.5 to 23.2) whereas the underground duration rate deteriorated significantly by 42% (from 20 3 to 28.9).
- The rise in both frequency rate and duration rate resulted in an overall deterioration of 10% to the injury index, rising from 52 to 57. The surface injury index deteriorated by 6% (from 51 to 54), and the underground injury index deteriorated significantly by 39% (from 64 to 89).

Metalliferous injury percentage breakdown for 2012-13

Appendices D and E provide a percentage breakdown of the number of injuries for part of body, nature of injury, location of accident, and type of accident for underground and surface operations, respectively.

Injuries by part of body

- Underground: Leg injuries, at 23%, accounted for the largest proportion of underground injuries. Arm injuries and back injuries, each at 13%, accounted for the next largest proportion. Shoulder injuries accounted for 88% of arm injuries, while injuries to knees and ankles contributed 50% and 21% of leg injuries respectively.
- Surface: Leg injuries, at 22%, accounted for the largest proportion of surface injuries, followed by arm injuries, back injuries and hand injuries, at 21%, 18% and 16% respectively. Of the leg injuries, 37% were to ankles, and 44% were to knees.

Injuries by nature

- Underground: Sprain or strain was the highest ranking nature of injury for underground injuries at 47%, followed by fracture at 26% and foreign body at 10%.
- Surface: Sprain or strain was the highest ranking nature of injury for surface injuries at 47%, followed by fracture at 15% then laceration and crushing, both at 7%.

Injuries by location

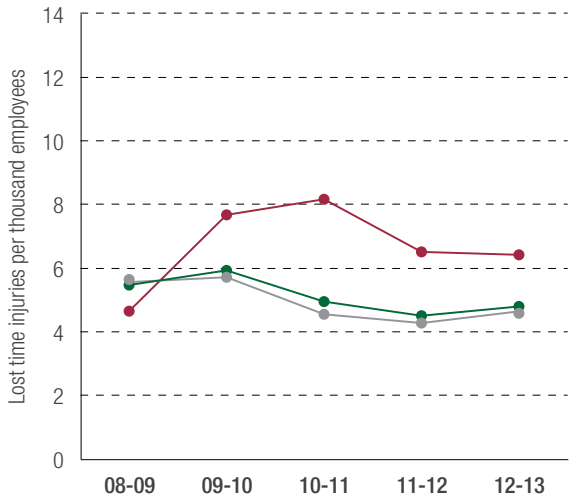
- Underground: The largest proportion of underground injuries occurred in production and development areas (61%), followed by access and haulage ways at 19%.
- Surface: The largest proportion of surface injuries occurred in treatment plants (27%), followed by open pits at 25% then general surface areas and workshops, each at 18%.

Injuries by type of accident

- Underground: Over-exertion or strenuous movements was the most common accident type for underground injuries at 21%, followed by struck by object and slip or trip, both at 13%.
- Surface: The most common accident type for surface injuries was over-exertion or strenuous movements at 28%, followed equally by caught by or between, stepping and slip or trip, all at 10%.

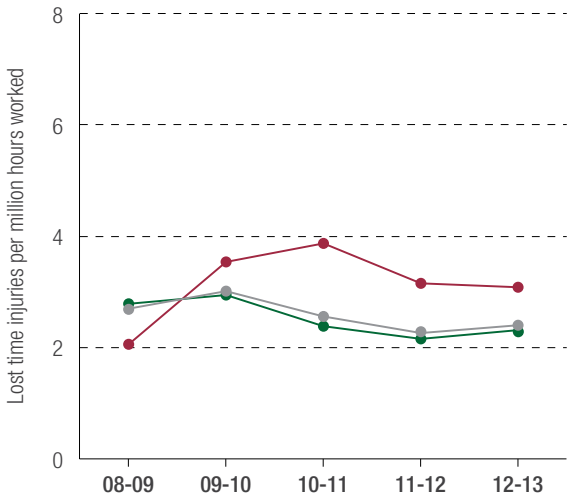
Metalliferous performance indicators 2008-09 to 2012-13

FIGURE 6 INCIDENCE RATE



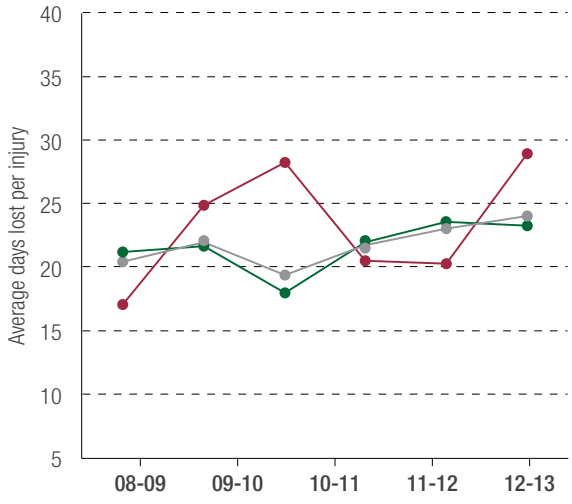
	08-09	09-10	10-11	11-12	12-13
Underground	4.6	7.7	8.2	6.5	6.4
Surface	5.6	5.7	4.6	4.3	4.6
Total	5.5	5.9	4.9	4.5	4.8

FIGURE 7 FREQUENCY RATE



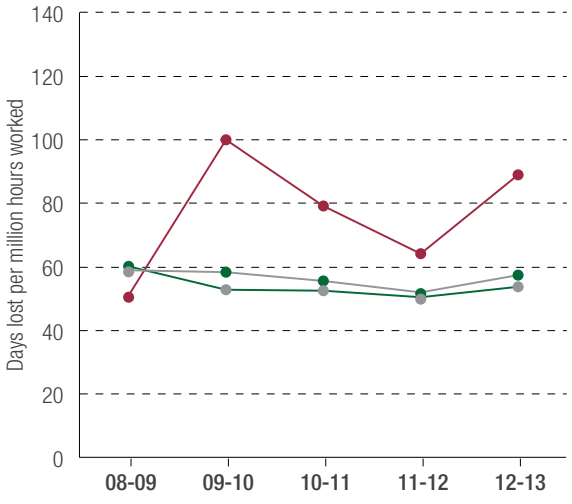
	08-09	09-10	10-11	11-12	12-13
Underground	2.1	3.5	3.9	3.2	3.1
Surface	2.8	2.9	2.4	2.1	2.3
Total	2.7	3.0	2.6	2.3	2.4

FIGURE 8 DURATION RATE



	08-09	09-10	10-11	11-12	12-13
Underground	24.8	28.2	20.5	20.3	28.9
Surface	21.6	18.0	22.0	23.5	23.2
Total	21.9	19.4	21.7	23.0	24.0

FIGURE 9 INJURY INDEX



	08-09	09-10	10-11	11-12	12-13
Underground	51	100	79	64	89
Surface	60	53	53	51	54
Total	59	58	56	52	57

INJURIES BY COMMODITIES CONTINUED

Gold performance indicators

The performance indicators for the gold sector improved during 2012-13. Figures 10 to 13 depict the performance indicators of incidence, frequency and duration rates, and injury index.

Performance indicator trends for the gold sector in 2012-13 are summarised below.

- The overall incidence rate improved by 13%, falling from 5.5 to 4.8. The surface incidence rate improved by 19% (from 5.8 to 4.7), although the underground incidence rate deteriorated by 4% (from 5.0 to 5.2).
- The overall frequency rate improved by 17%, falling from 3.0 to 2.5. The surface frequency rate improved by 25% (from 3.2 to 2.4), while the underground frequency rate remained unchanged at 2.5.
- The overall duration rate deteriorated by 16%, rising from 24.8 to 28.7. The surface duration rate remained almost unchanged, falling from 25.5 to 25.4, whereas the underground duration rate deteriorated significantly, by 62% (from 22.7 to 36.7).
- The fall in the frequency rate was slightly greater than the rise in duration rate, resulting in a 4% overall improvement in the injury index, falling from 74 to 71. The surface injury index improved by 23% (from 81 to 62), while the underground injury index deteriorated significantly by 60% (from 58 to 93).

Gold injury percentage breakdown for 2012-13

Appendices F and G provide a percentage breakdown of the number of injuries for part of body, nature of injury, location of accident and type of accident for the underground and surface sectors, respectively.

Injuries by part of body

- Underground: Leg injuries, at 22%, accounted for the largest proportion of underground injuries, followed by arm injuries, at 16%, then back and hand injuries, each of which accounted for approximately 12% of injuries. 43% of leg injuries were to knees, while 80% of arm injuries were to shoulders.
- Surface: Back injuries made up the largest proportion of injuries underground at 28%, followed by leg injuries at almost 20%, then arm injuries at 17%. Most leg injuries were to knees and ankles, with each contributing 47%.

Injuries by nature

- Underground: Sprain or strain was the highest ranking nature of injury for underground injuries at 47%, followed by fracture at 28%, then foreign body and laceration, both at 9%.
- Surface: Sprain or strain was the highest ranking nature of injury for surface injuries at 49%, followed by fracture at 16%.

Injuries by location

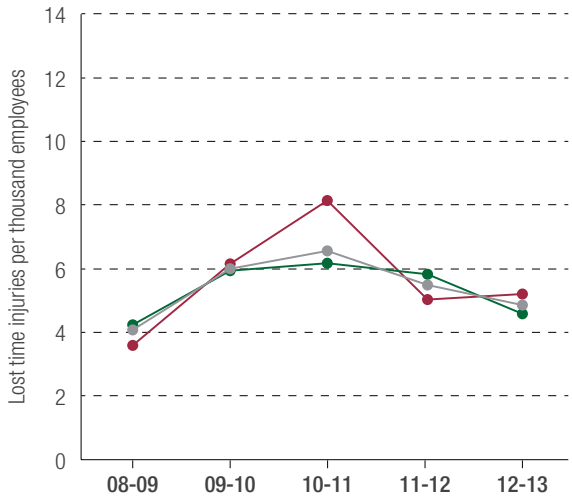
- Underground: The largest proportion of underground injuries occurred in production and development (62%), followed by access and haulage ways at 19% then underground storage and underground workshop, both at 6%.
- Surface: The largest proportion of surface injuries occurred in open pits (36%), followed by general surface areas at 18%, treatment plant at 17% and workshop at 16%.

Injuries by type of accident

- Underground: Over-exertion or strenuous movements was the most common accident type for underground injuries at 19%, followed by struck by object at 16% and then caught by or between objects, and vehicle or mobile equipment jolting or jarring, at 9% each.
- Surface: The most common accident type for surface injuries was over-exertion or strenuous movements at 24%, followed by slip or trip at 14% then vehicle or mobile equipment jolting or jarring at 12%.

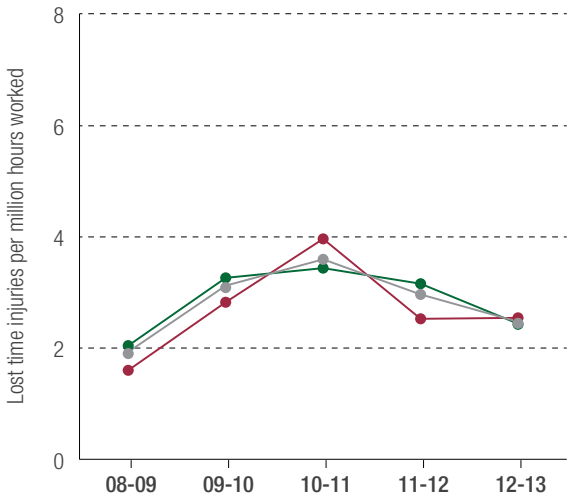
Gold performance indicators 2008-09 to 2012-13

FIGURE 10 INCIDENCE RATE



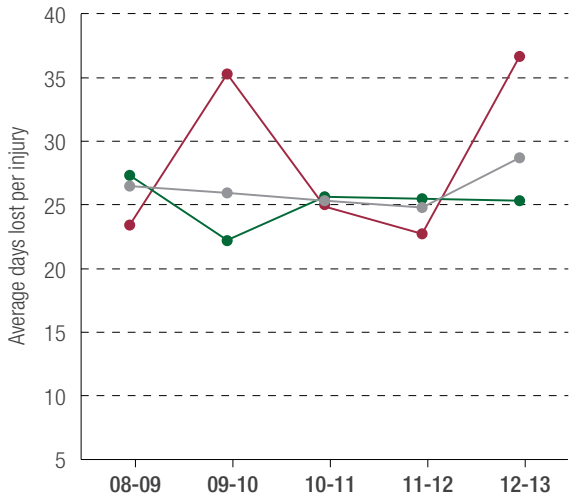
	08-09	09-10	10-11	11-12	12-13
Underground	3.6	6.2	8.2	5.0	5.2
Surface	4.3	6.0	6.1	5.8	4.7
Total	4.1	6.0	6.7	5.5	4.8

FIGURE 11 FREQUENCY RATE



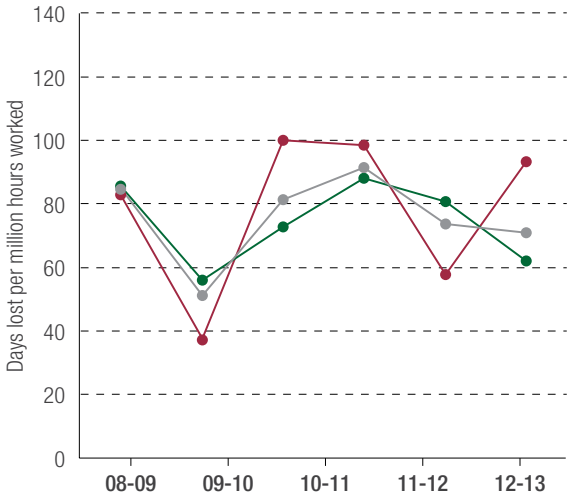
	08-09	09-10	10-11	11-12	12-13
Underground	1.6	2.8	4.0	2.5	2.5
Surface	2.0	3.3	3.4	3.2	2.4
Total	1.9	3.1	3.6	3.0	2.5

FIGURE 12 DURATION RATE



	08-09	09-10	10-11	11-12	12-13
Underground	23.4	35.3	24.8	22.7	36.7
Surface	27.3	22.2	25.6	25.5	25.4
Total	26.5	25.9	25.4	24.8	28.7

FIGURE 13 INJURY INDEX



	08-09	09-10	10-11	11-12	12-13
Underground	38	100	98	58	93
Surface	56	73	88	81	62
Total	51	81	91	74	71

INJURIES BY COMMODITIES CONTINUED

Iron ore performance indicators

The performance indicators for the iron ore sector showed mixed results during 2012-13. Figures 14 to 17 depict the performance indicators of incidence, frequency and duration rates, and injury index.

Performance indicator trends for the iron ore sector in 2012-13 are summarised below.

- The incidence rate deteriorated by 38%, rising from 2.4 to 3.3.
- The frequency rate deteriorated by 33%, rising from 1.2 to 1.6.
- The duration rate improved by 14%, falling from 27.9 to 23.9.
- The rise in the frequency rate was greater than the fall in the duration rate, resulting in a deterioration of 15% in the injury index (from 33 to 38).

Iron ore injury percentage breakdown for 2012-13

Appendix H provides a percentage breakdown of the number of injuries for part of body, nature of injury, location of accident, and type of accident.

Injuries by part of body

- Arm injuries, at 22%, accounted for the largest proportion of injuries, closely followed by leg injuries at 21%, then hand injuries at 19% and back injuries at 15%.
- Of the leg injuries, 50% were to knees and 35% were to ankles. 51% of arm injuries were to shoulders.

Injuries by nature

- Sprain or strain was the highest ranking nature of injury at 46%.
- Fracture was the second highest ranking nature of injury at 18%, followed by crushing at 9% and laceration at 7%.

Injuries by location

- The largest proportion of injuries occurred in open pits, which accounted for 33%.
- The second largest proportion occurred in general surface areas at 22%, followed by workshops at 18%.

Injuries by type of accident

- Over-exertion or strenuous movement was the most common type of accident resulting in injury at 22%.
- Struck by object and stepping followed, accounting for 13% and 12% of injuries respectively.

Iron ore performance indicators 2008-09 to 2012-13

FIGURE 14 INCIDENCE RATE

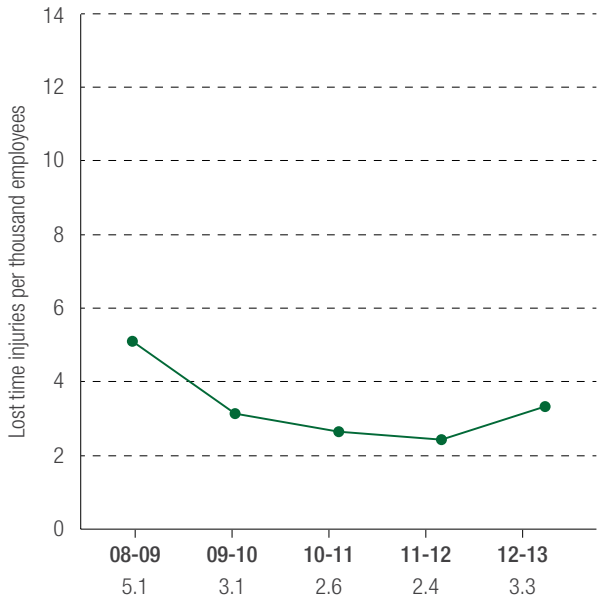


FIGURE 15 FREQUENCY RATE

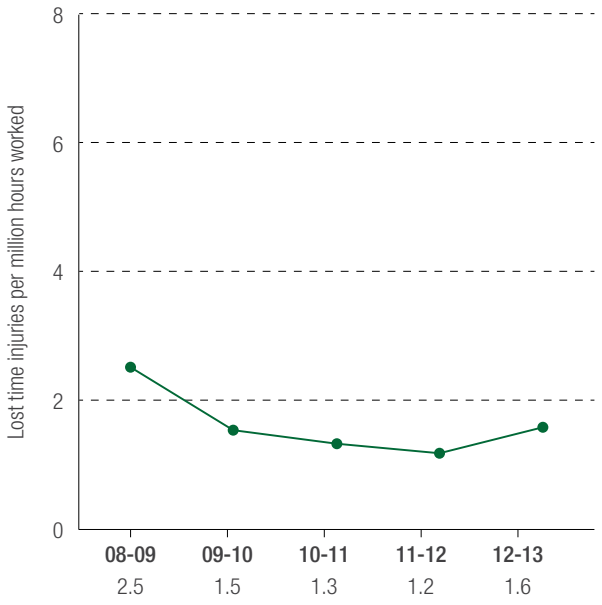


FIGURE 16 DURATION RATE

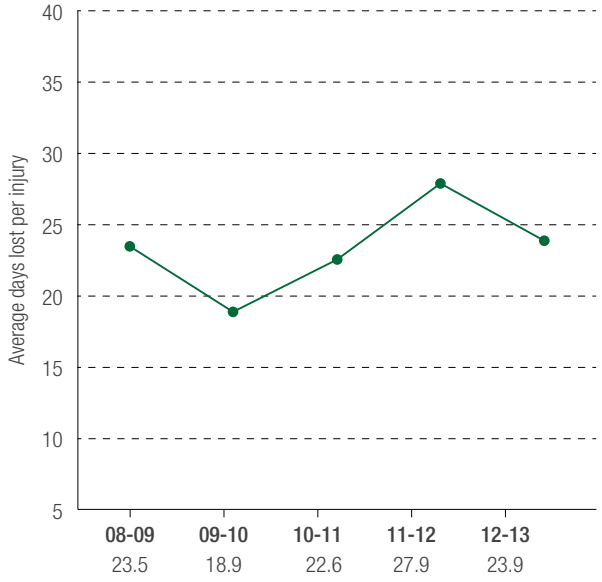
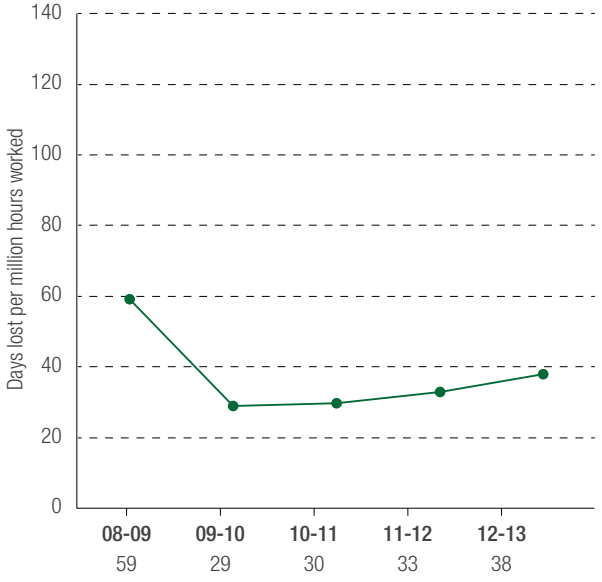


FIGURE 17 INJURY INDEX



INJURIES BY COMMODITIES CONTINUED

Bauxite and alumina performance indicators

The performance indicators for the bauxite and alumina sector deteriorated in 2012-13. Figures 18 to 21 depict the performance indicators of incidence, frequency and duration rates, and injury index.

Performance indicator trends for the bauxite and alumina sector in 2012-13 are summarised below.

- The incidence rate deteriorated significantly by 58%, rising from 6.0 to 9.5.
- The frequency rate deteriorated significantly by 55%, rising from 2.9 to 4.5.
- The duration rate improved by 5%, falling from 17.7 to 16.9.
- The rise in frequency rate was far more than the fall in the duration rate, resulting in a significant deterioration of 47% for the injury index, from 51 to 75.

Bauxite and alumina injury percentage breakdown for 2012-13

Appendix I provides a percentage breakdown of the number of injuries for part of body, nature of injury, location of accident, and type of accident.

Injuries by part of body

- Arm injuries accounted for the largest proportion of injuries at 39%. Of these arm injuries, 74% were to shoulders.
- Leg injuries and back injuries, at 20% and 16% respectively, accounted for the next largest proportions of injuries.

Injuries by nature

- Sprain or strain was the highest ranking nature of injury at 71%.
- Laceration was the second highest ranking nature of injury at 9%, followed by pain at 6%.

Injuries by location

- The largest proportion of injuries occurred in treatment plants, which accounted for 54%.
- The second largest proportion occurred in general surface areas, at 19%, followed by workshops at 13%.

Injuries by type of accident

- Over-exertion or strenuous movements was the most common type of accident resulting in injury (54%).
- Stepping and slip or trip, both at 10%, contributed the next highest proportions of injury.

Bauxite and alumina performance indicators 2008-09 to 2012-13

FIGURE 18 INCIDENCE RATE

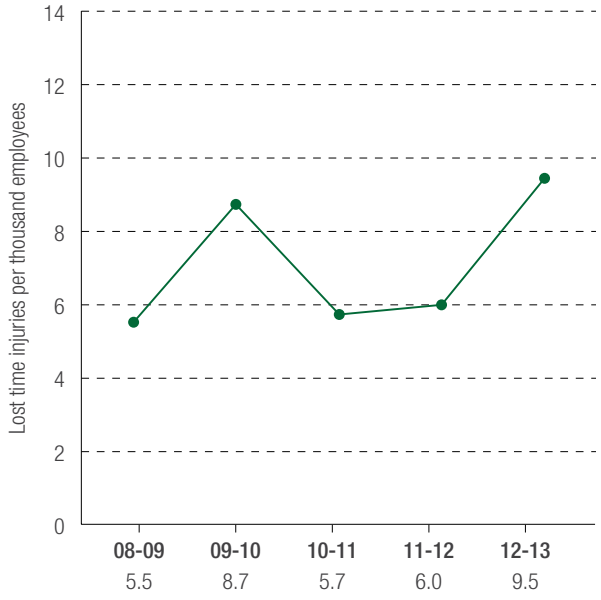


FIGURE 19 FREQUENCY RATE

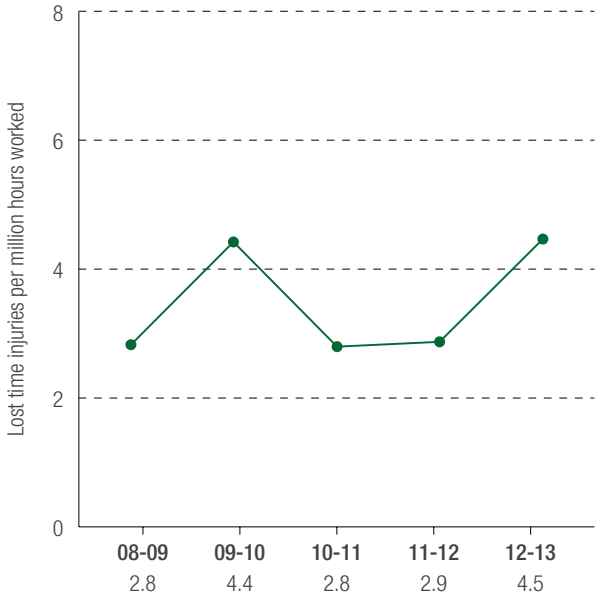


FIGURE 20 DURATION RATE

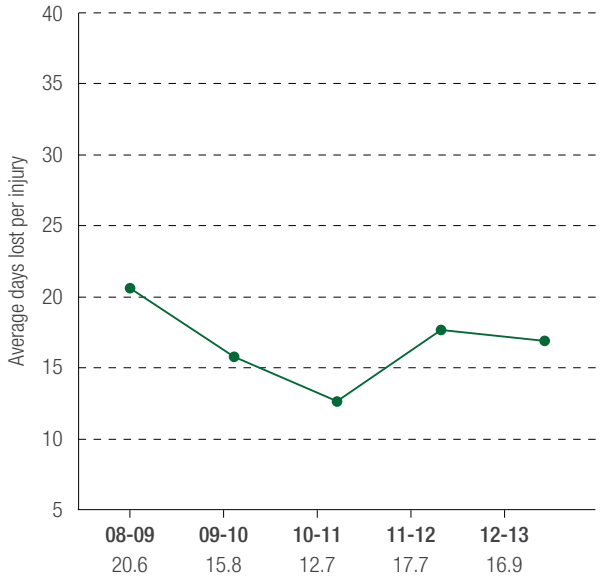
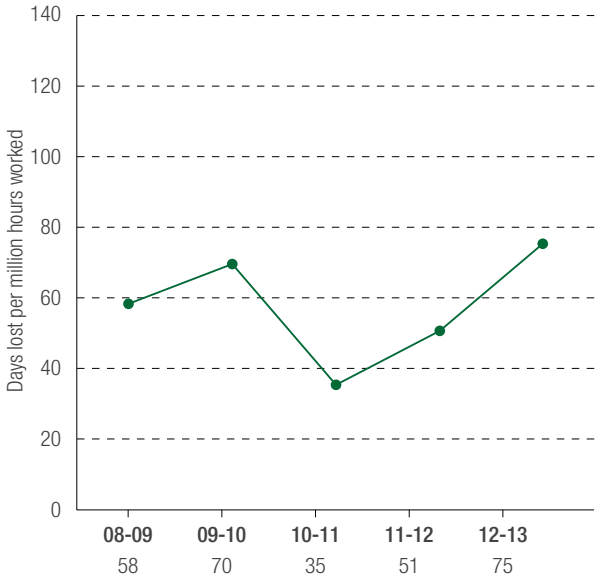


FIGURE 21 INJURY INDEX



INJURIES BY COMMODITIES CONTINUED

Nickel performance indicators

The performance indicators for the nickel sector showed improvement for 2012-13. Figures 22 to 25 depict the performance indicators of incidence, frequency and duration rates, and injury index.

Performance indicator trends for the nickel sector in 2012-13 are summarised below

- The overall incidence rate deteriorated by 28%, rising from 4.7 to 6.0. The surface incidence rate deteriorated by 8%, (from 3.7 to 4.0) and the underground incidence rate deteriorated by 59%, (from 8.7 to 13.8).
- The overall frequency rate deteriorated by 30% (from 2.3 to 3.0). The surface frequency rate deteriorated by 5% (from 1.9 to 2.0) and the underground frequency rate deteriorated by 73% (from 3.7 to 6.4).
- The overall duration rate improved by 15%, falling from 23.6 to 20.0. The surface duration rate improved by 34% (from 30.2 to 19.8), however the underground duration rate deteriorated by 66% (from 12.1 to 20.1).
- The fall in duration rate was less than the rise in frequency rate, resulting in a deterioration of 9% in the injury index, rising from 55 to 60. The surface injury index improved by 31% (from 58 to 40), however there was a significant deterioration in the underground injury index of 184% (from 45 to 128).

Nickel injury percentage breakdown for 2012-13

Appendices J and K provide a percentage breakdown of the number of injuries for part of body, nature of injury, location of accident, and type of accident for the underground and surface sectors, respectively.

Injuries by part of body

- Underground: Leg injuries accounted for the largest proportion of underground injuries at 23%, followed by trunk (not otherwise coded) injuries, at 18%, and back injuries at 14%. Of the leg injuries sustained underground, 80% were to knees.
- Surface: Leg injuries, at 42%, accounted for the largest proportion of surface injuries, followed by hand injuries at 29%, then back and head injuries, both at 8%. Of the leg injuries, knees and ankles accounted for 40% and 30% of injuries respectively.

Injuries by nature

- Underground: Sprain or strain was the highest ranking nature of injury for underground injuries at 55%, followed by fracture at 23% and foreign body at 9%.
- Surface: Sprain or strain was the highest ranking nature of injury for surface injuries at 42%, followed by crushing and laceration, both at 12%.

Injuries by location

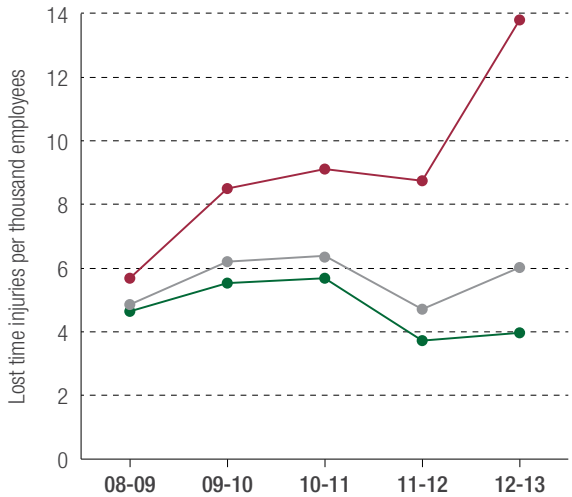
- Underground: The largest proportion of underground injuries occurred in production and development areas (68%), followed by access and haulage ways at 23%.
- Surface: The largest proportion of surface injuries occurred in treatment plants (42%), followed by open pit, surface general areas and workshop, all at 17%.

Injuries by type of accident

- Underground: Over-exertion or strenuous movements was the most common accident type for underground injuries at 27%, followed by slip or trip at 18% and rockfall at 14%.
- Surface: The most common accident type for surface injuries was caught by or between objects at 21%, followed by slip or trip at 17% and stepping at 12%.

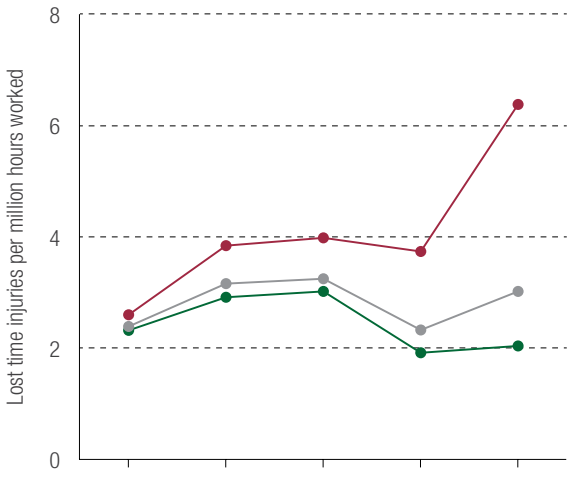
Nickel performance indicators 2008-09 to 2012-13

FIGURE 22 INCIDENCE RATE



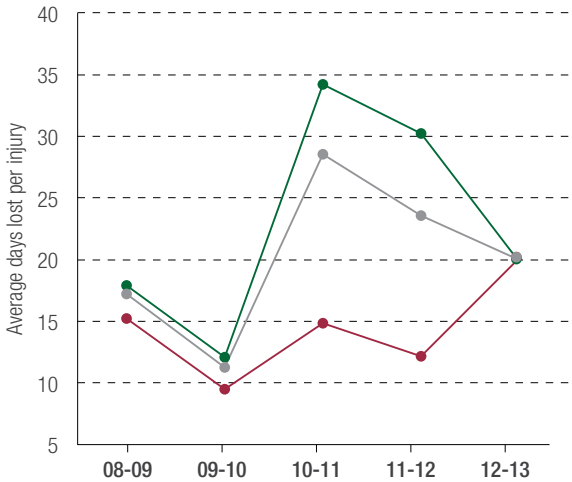
	08-09	09-10	10-11	11-12	12-13
Underground	5.7	8.5	9.1	8.7	13.8
Surface	4.6	5.5	5.7	3.7	4.0
Total	4.9	6.2	6.4	4.7	6.0

FIGURE 23 FREQUENCY RATE



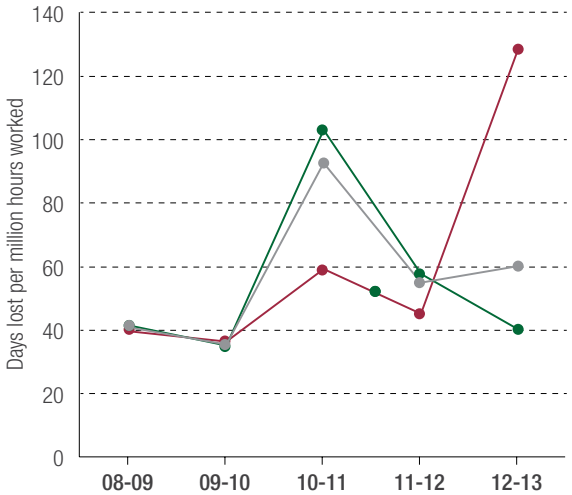
	08-09	09-10	10-11	11-12	12-13
Underground	2.6	3.8	4.0	3.7	6.4
Surface	2.3	2.9	3.0	1.9	2.0
Total	2.4	3.2	3.2	2.3	2.0

FIGURE 24 DURATION RATE



	08-09	09-10	10-11	11-12	12-13
Underground	15.3	9.5	14.9	12.1	20.1
Surface	17.9	12.1	34.2	30.2	19.8
Total	17.2	11.3	28.5	23.6	20.0

FIGURE 25 INJURY INDEX



	08-09	09-10	10-11	11-12	12-13
Underground	40	36	59	45	128
Surface	41	35	103	58	40
Total	41	36	93	55	60

DISABLING INJURIES

Review of disabling injuries during 2012-13

In addition to the 497 mining LTIs in 2012-13, there were 920 disabling injuries (DIs) reported (893 in metalliferous mines and 27 in coal mines), bringing the total number of reportable injuries to 1,417. A breakdown of these data with performance indicators is shown in Tables 10 and 11.

Of the disabling injuries, 626 resulted in the injured person being disabled for two weeks or more.

Note: Disabling injury includes circumstances where the injured person:

- *is placed in a different occupation or job, whether on full or restricted work hours*
- *remains in his or her normal occupation or job, but is not able to perform the full range of work duties*
- *remains in his or her normal occupation or job, but on restricted hours.*

TABLE 10 DISABLING INJURIES 2012-13

Sector	No. of employees	Disabling injuries			Reportable injuries (DIs and LTIs)		
		No. of injuries	Incidence	Frequency	No. of injuries	Incidence	Frequency
Metalliferous surface	90,077	740	8.2	4.1	1157	12.8	6.4
Metalliferous underground	9,675	153	15.8	7.6	215	22.2	10.7
Metalliferous total	**99,752**	**893**	**9.0**	**4.5**	**1372**	**13.8**	**6.9**
Coal	**418**	**27**	**64.6**	**18.5**	**45**	**107.7**	**30.8**
Total mining	**100,170**	**920**	**9.2**	**4.6**	**1417**	**14.1**	**7.0**
Exploration	**2,771**	**33**	**11.9**	**5.9**	**62**	**22.4**	**11.0**

TABLE 11 DISABLING INJURIES BY MINERAL MINED 2012-13

Mineral mined	No. of employees	Disabling injuries			Reportable injuries (DIs and LTIs)		
		No. of injuries	Incidence	Frequency	No. of injuries	Incidence	Frequency
Iron ore	48,580	364	7.5	3.6	526	10.8	5.2
Gold	22,417	205	9.1	4.7	313	14.0	7.2
Bauxite and alumina	7,397	135	18.3	8.6	205	27.7	13.1
Nickel	7,638	125	16.4	8.2	171	22.4	11.2
Base metals	2,920	7	2.4	1.4	22	7.5	4.3
Diamonds	2,435	26	10.7	5.1	44	18.1	8.6
Mineral sands	2,322	8	3.4	2.4	18	7.8	5.4
Salt	1,137	1	0.9	0.6	8	7.0	4.4
Construction materials	919	1	1.1	0.6	6	6.5	3.4
Manganese ore	619	7	11.3	6.3	9	14.5	8.1
Tin, tantalum and lithium	435	3	6.9	3.0	5	11.5	5.0
Coal	418	27	64.6	18.5	45	107.7	30.8
Other	2,933	12	4.1	2.8	46	15.7	10.7
Total mining	**100,170**	**921**	**9.2**	**4.6**	**1418**	**14.2**	**7.0**

DISABLING INJURIES CONTINUED

Disabling injury performance indicators

The disabling injury performance indicators for the mining sector deteriorated slightly during 2012-13. Figures 26 to 29 depict the performance indicators of incidence rate, frequency rate, days off per injury and days off per million hours worked.

- The overall incidence rate deteriorated slightly, by 1%, rising from 9.1 to 9.2. The surface incidence rate deteriorated by 9% (from 7.8 to 8.5), and the underground incidence rate improved by 21% (from 20.0 to 15.9).
- The overall frequency rate remained unchanged at 4.6. The surface frequency rate deteriorated by 5%, rising from 4.0 to 4.2, while the underground frequency rate improved by 22%, falling from 9.7 to 7.6.
- The average days off per disabling injury improved by 13%, falling from 42.9 to 37.4. The days off per surface disabling injury improved by 18% (from 46.0 to 37.8), and the days off per underground disabling injury deteriorated by 8% (from 32.8 to 35.4).
- The unchanged frequency rate and the fall in days off per disabling injury, resulting in an improvement of 13% to the overall days off per million hours worked, down from 197 to 171. The days off per surface million hours worked improved by 12% (from 182 to 160), and the days off per underground million hours worked improved by 15% (from 318 to 271).

Disabling injury percentage breakdown for 2012-13

Appendices L and M provide a percentage breakdown of the number of injuries for part of body, nature of injury, location of accident and type of accident for the underground and surface sectors, respectively.

Injuries by part of body

- Underground: Back injuries accounted for the largest proportion of underground injuries, at 25%, followed by hand injuries at 20%, arm injuries at slightly less than 20% and leg injuries at 19%. The largest proportion of arm injuries were to shoulders (43%), while injuries to ankles contributed the largest proportion of leg injuries (at 41%).
- Surface: Arm injuries accounted for the largest proportion of surface disabling injuries at 25%, followed by back injuries at 21%, then hand injuries and leg injuries, both at approximately 20%. Of the arm injuries, 40% were to shoulders. Of the leg injuries, 49% were to knees.

Injuries by nature

- Underground: Sprain or strain was the highest ranking nature of injury for underground disabling injuries at 60%, followed by laceration at 12% and bruise or contusion at 8%.
- Surface: Sprain or strain was the highest ranking nature of injury for surface disabling injuries at 63%, followed by laceration at 8% and fracture at 7%.

Injuries by location

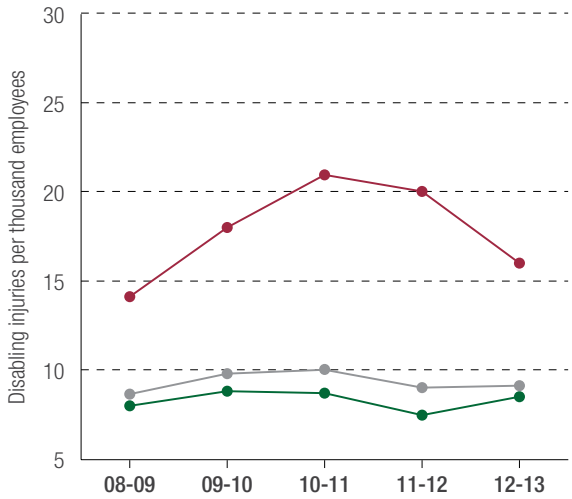
- Underground: The largest proportion of underground injuries occurred in production and development areas (70%), followed by access and haulage ways at 12% then underground pump chambers and workshops, each at 4%.
- Surface: The largest proportion of surface injuries occurred in treatment plants followed closely by open pits, at 27% and 26% respectively. Injuries in workshops accounted for a further 17% of injuries, followed by general surface areas and administration, both at 12%.

Injuries by type

- Underground: Over-exertion or strenuous movements at 38% was the most common accident type for underground injuries, followed by slip or trip at 10%, stepping at 9% and caught by or between objects at 8%.
- Surface: The most common accident type for surface injuries was over-exertion or strenuous movements at 40%, stepping at 13%, and caught by or between moving objects, at 9%.

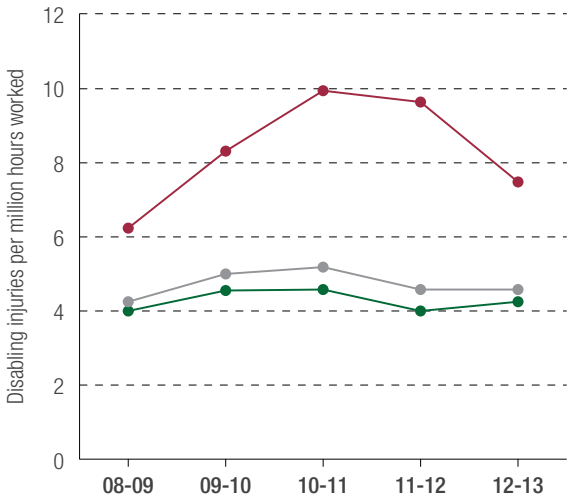
Disabling injury performance indicators 2008-09 to 2012-13

FIGURE 26 INCIDENCE RATE



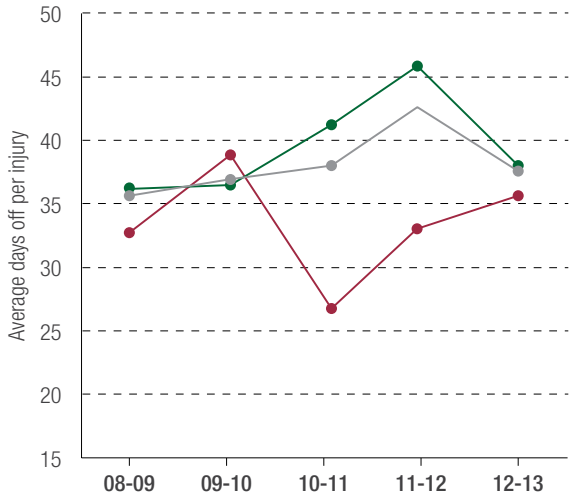
	08-09	09-10	10-11	11-12	12-13
Underground	14.1	18.0	20.9	20.0	15.9
Surface	8.0	8.8	8.7	7.8	8.5
Total	8.6	9.8	10.0	9.1	9.2

FIGURE 27 FREQUENCY RATE



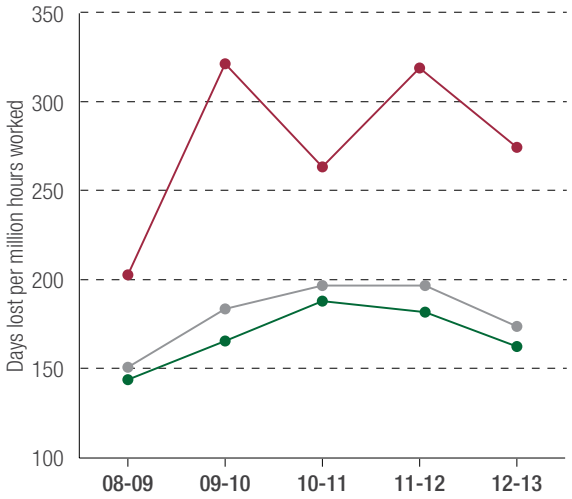
	08-09	09-10	10-11	11-12	12-13
Underground	6.2	8.3	9.9	9.7	7.6
Surface	4.0	4.6	4.6	4.0	4.2
Total	4.3	5.0	5.2	4.6	4.6

FIGURE 28 AVERAGE DAYS OFF PER INJURY



	08-09	09-10	10-11	11-12	12-13
Underground	32.5	38.6	26.5	32.8	35.4
Surface	36.0	36.2	41.0	46.0	37.8
Total	35.4	36.7	37.8	42.9	37.4

FIGURE 29 DAYS OFF PER MILLION HOURS WORKED



	08-09	09-10	10-11	11-12	12-13
Underground	203	321	263	318	271
Surface	144	165	188	182	160
Total	150	183	196	197	171

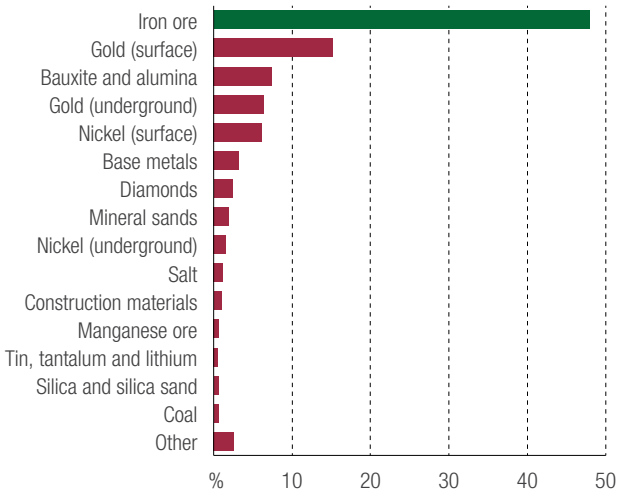
APPENDICES

APPENDIX A

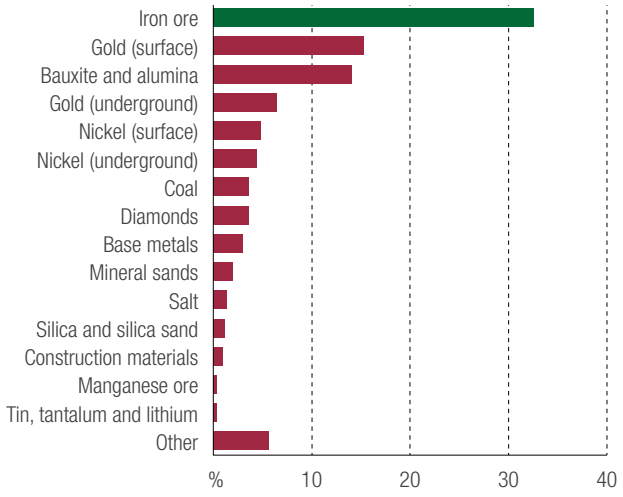
WESTERN AUSTRALIAN MINES 2012-13

497 lost time injuries

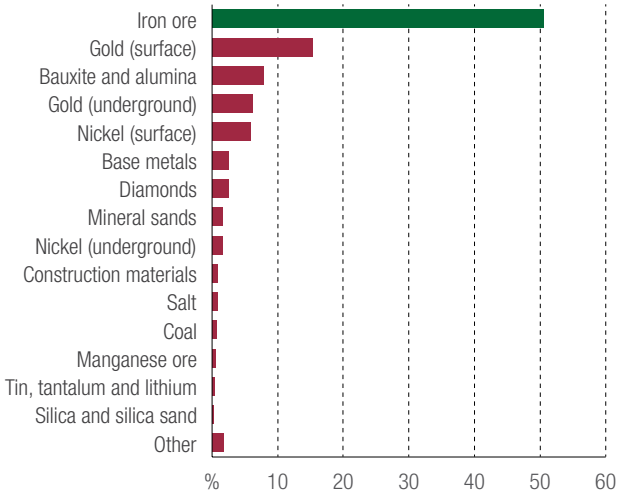
PERCENTAGE OF EMPLOYEES



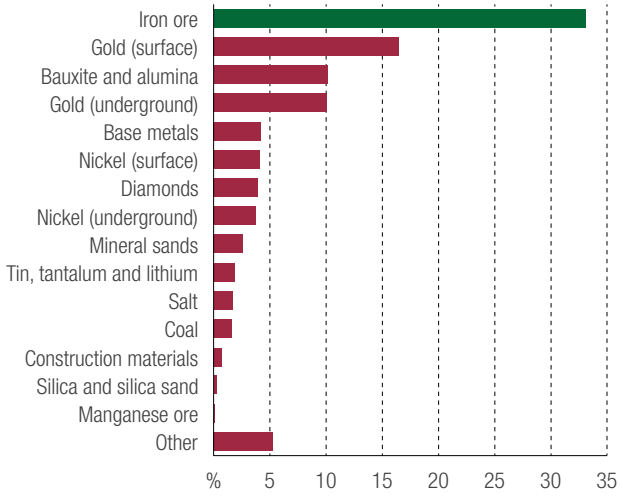
PERCENTAGE OF INJURIES



PERCENTAGE OF MILLION HOURS WORKED



PERCENTAGE OF WORK DAYS LOST

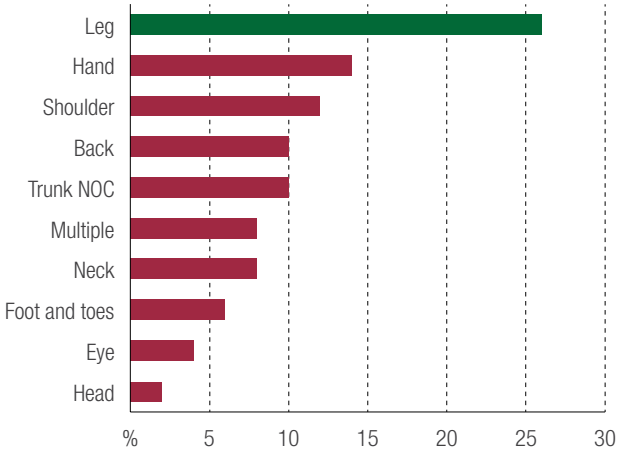


APPENDIX B

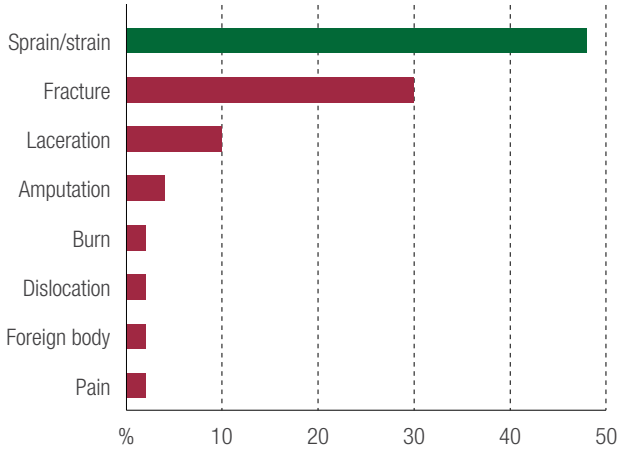
SERIOUS INJURIES UNDERGROUND 2012-13

50 lost time injuries

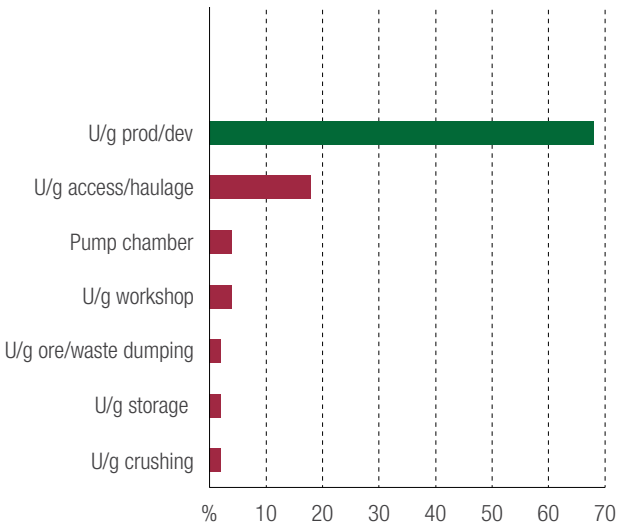
PART OF BODY



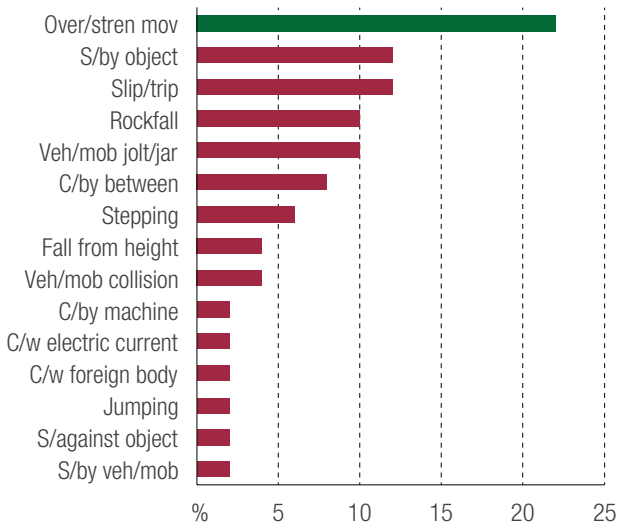
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

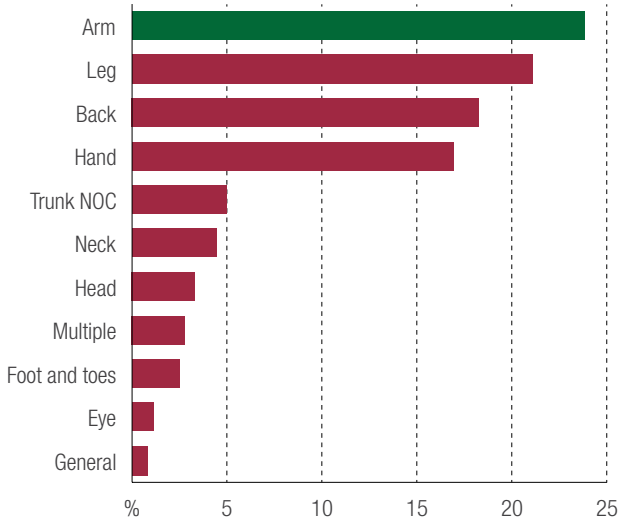


APPENDIX C

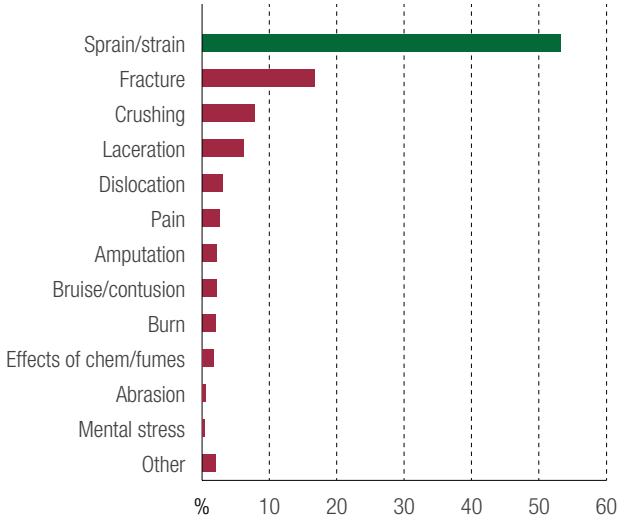
SERIOUS INJURIES SURFACE 2012-13

361 lost time injuries

PART OF BODY



NATURE OF INJURY



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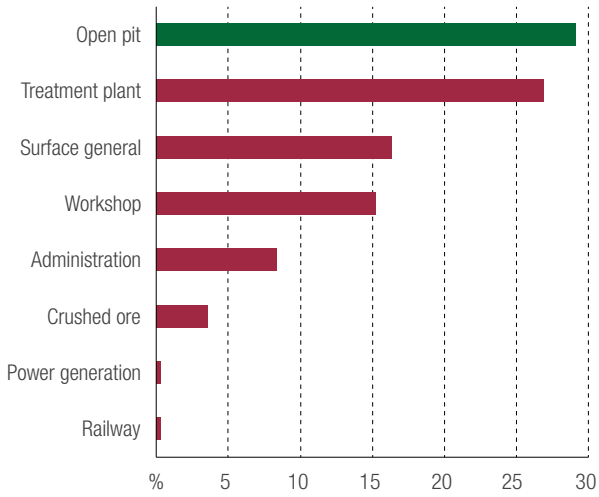
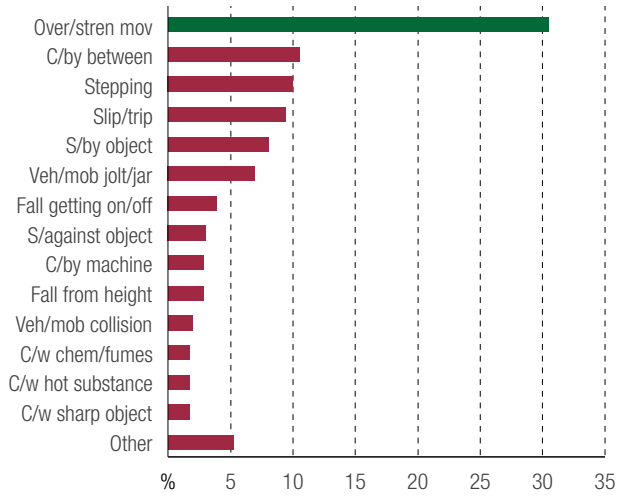


TYPE OF ACCIDENT

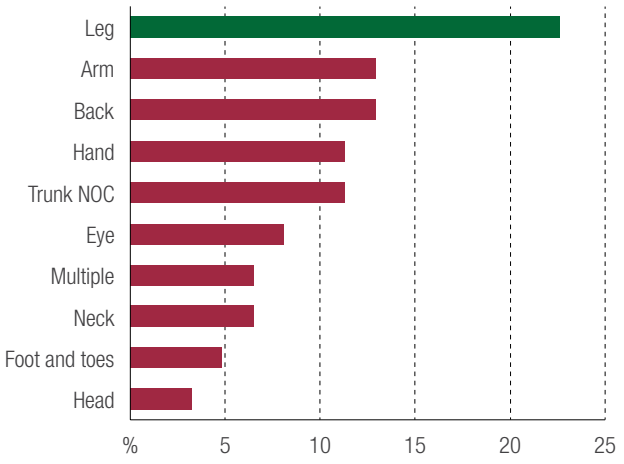


APPENDIX D

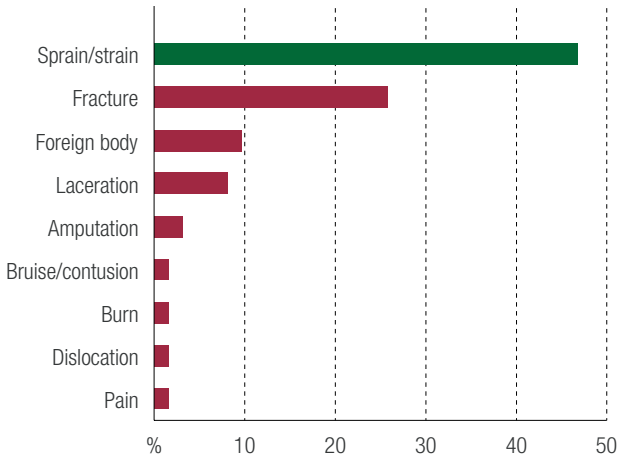
METALLIFEROUS UNDERGROUND INJURIES 2012-13

62 lost time injuries

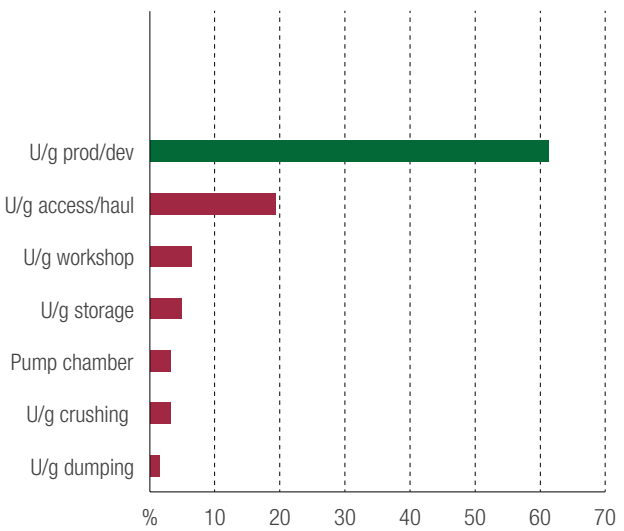
PART OF BODY



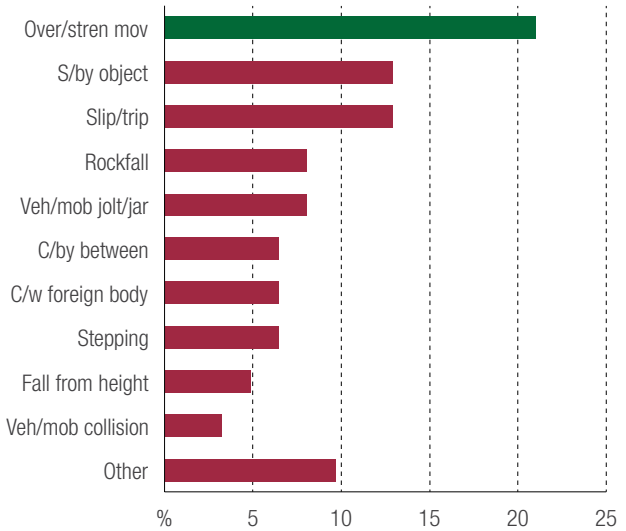
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

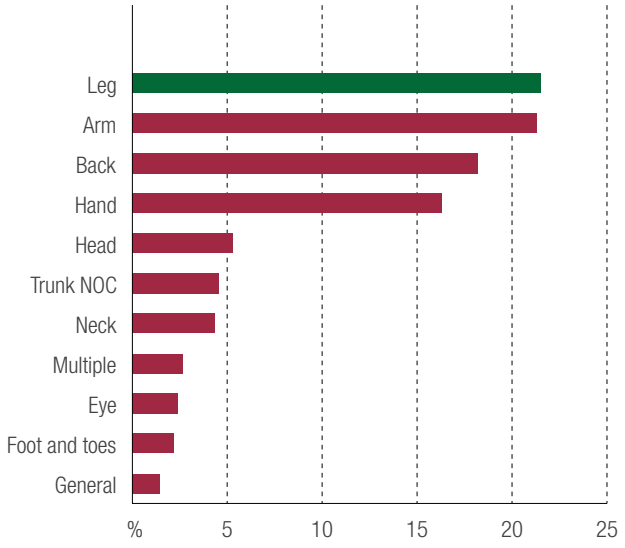


APPENDIX E

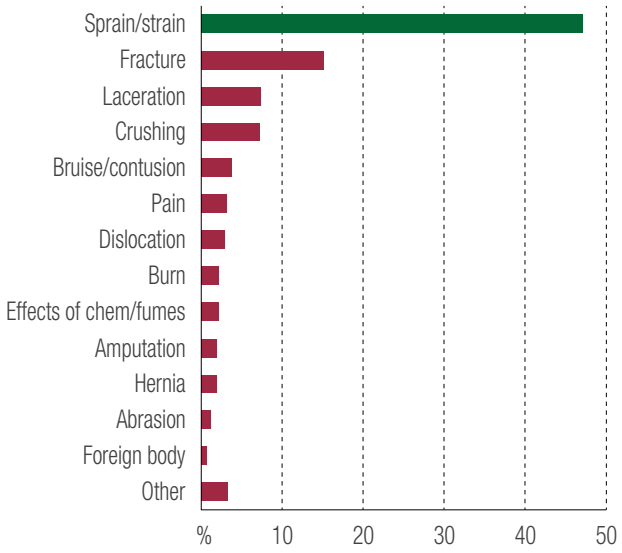
METALLIFEROUS SURFACE INJURIES 2012-13

418 lost time injuries

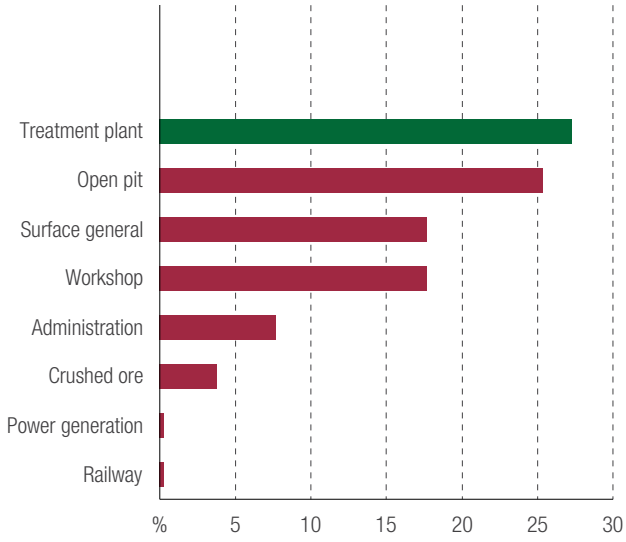
PART OF BODY



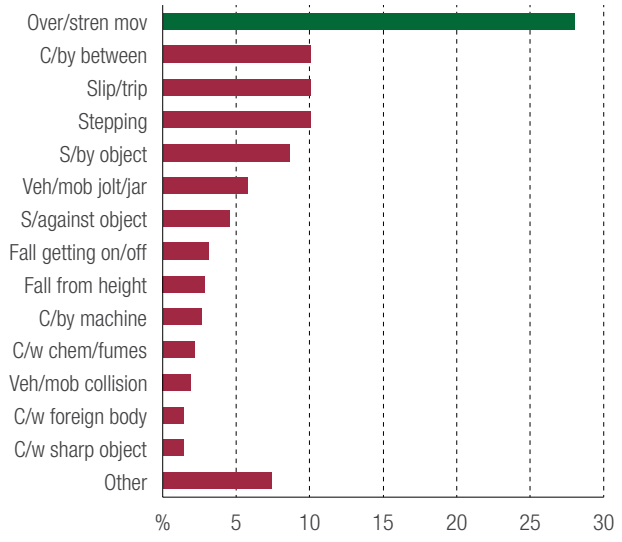
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

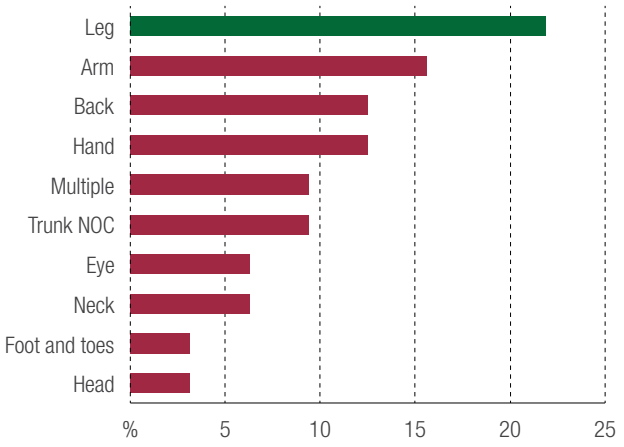


APPENDIX F

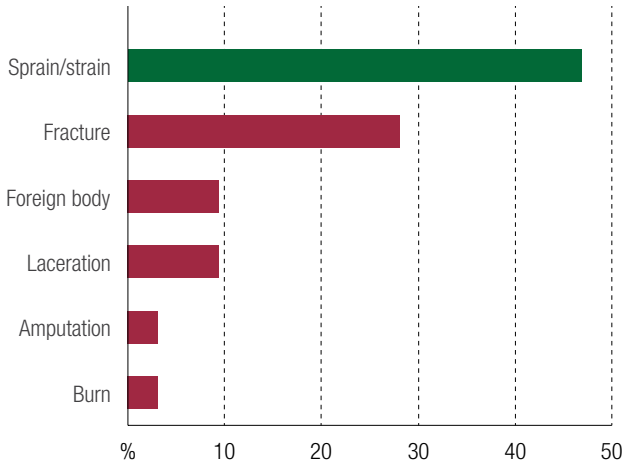
GOLD UNDERGROUND INJURIES 2012-13

32 lost time injuries

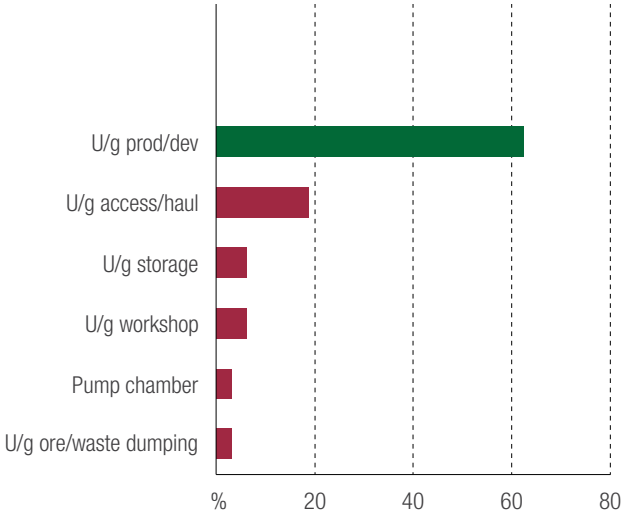
PART OF BODY



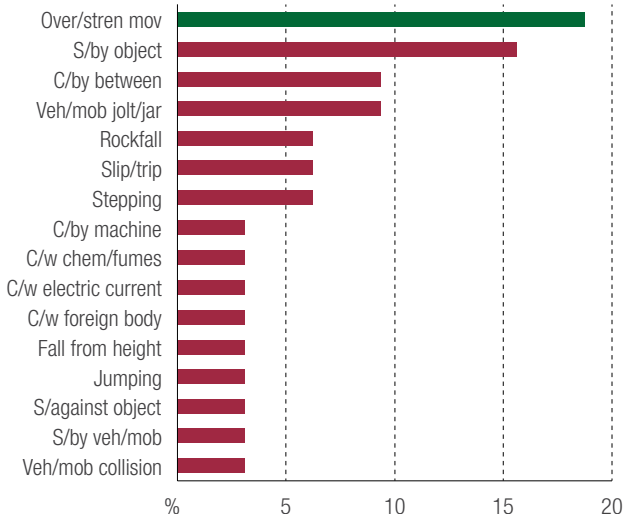
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

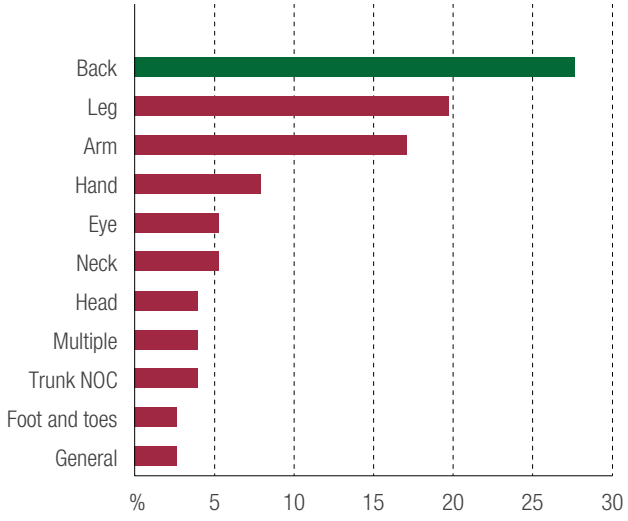


APPENDIX G

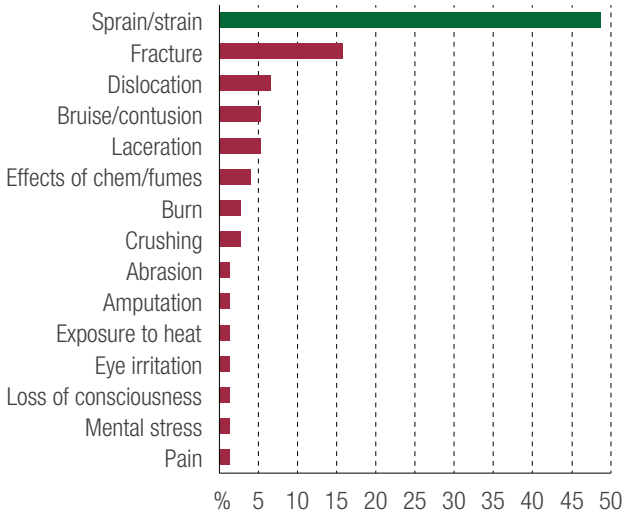
GOLD SURFACE INJURIES 2012-13

76 lost time injuries

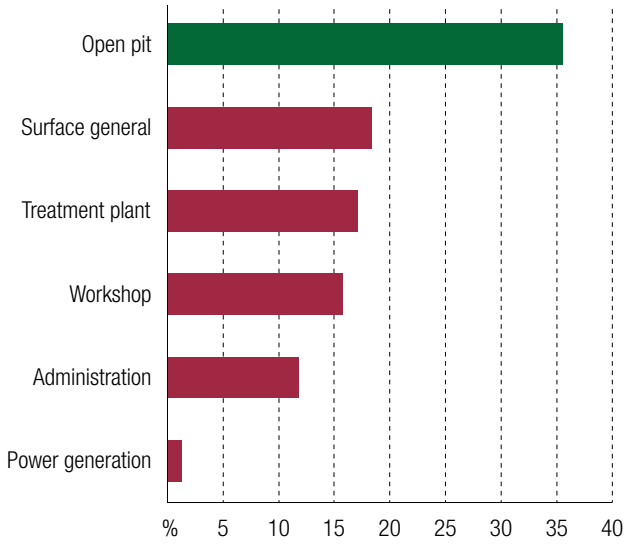
PART OF BODY



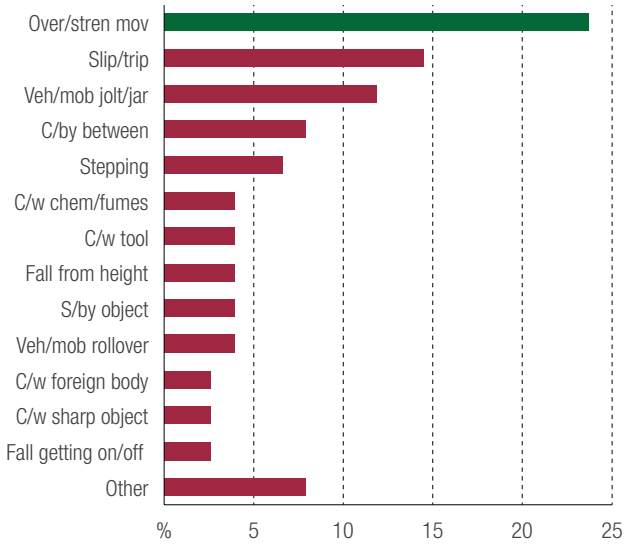
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

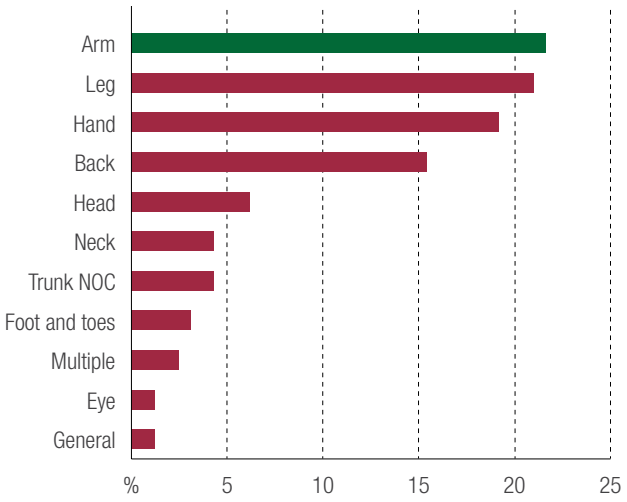


APPENDIX H

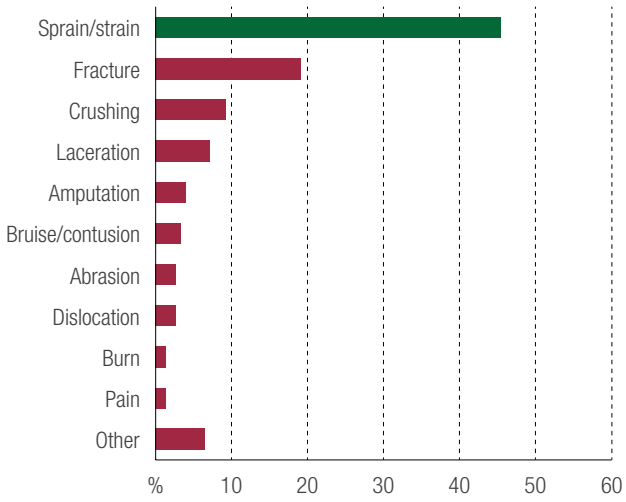
IRON ORE INJURIES 2012-13

162 lost time injuries

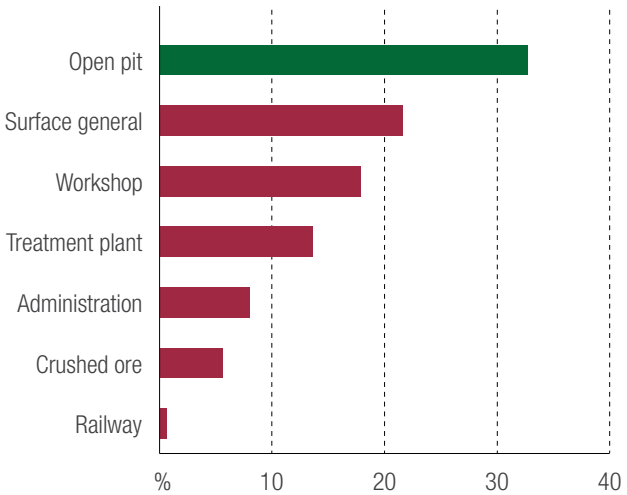
PART OF BODY



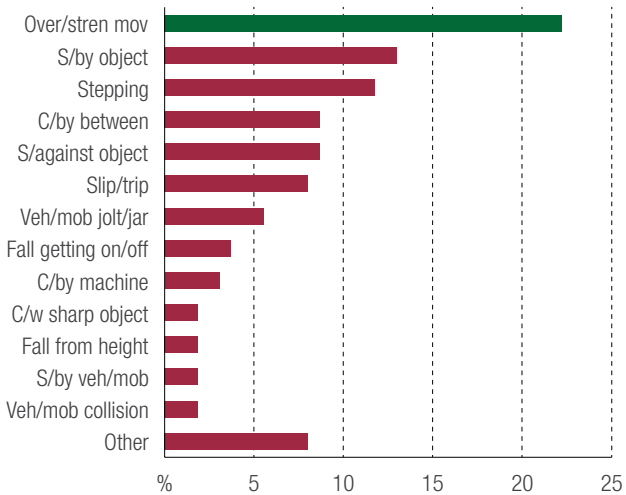
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

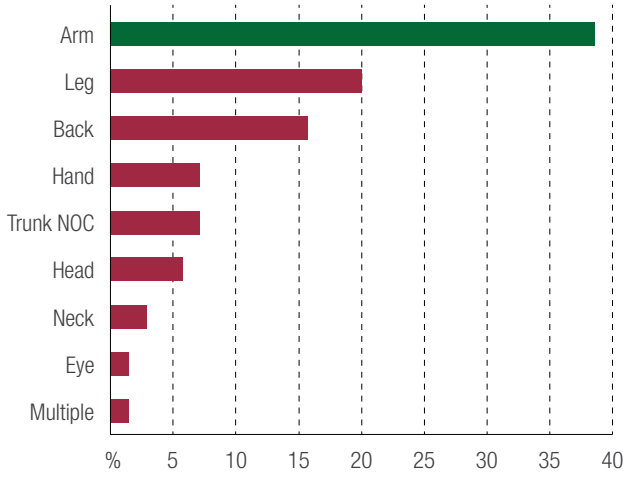


APPENDIX I

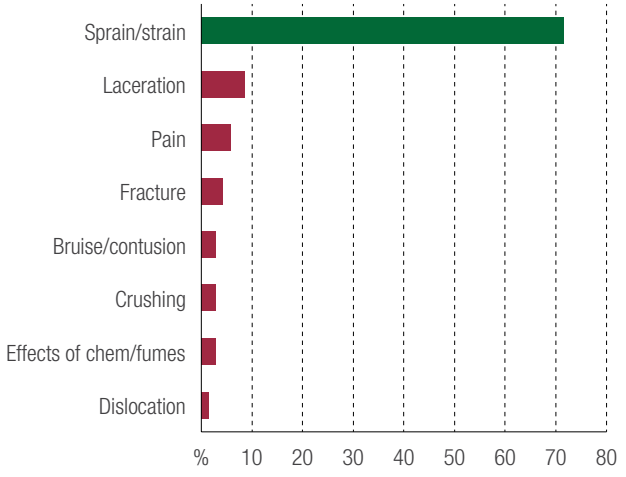
BAUXITE AND ALUMINA INJURIES 2012-13

70 lost time injuries

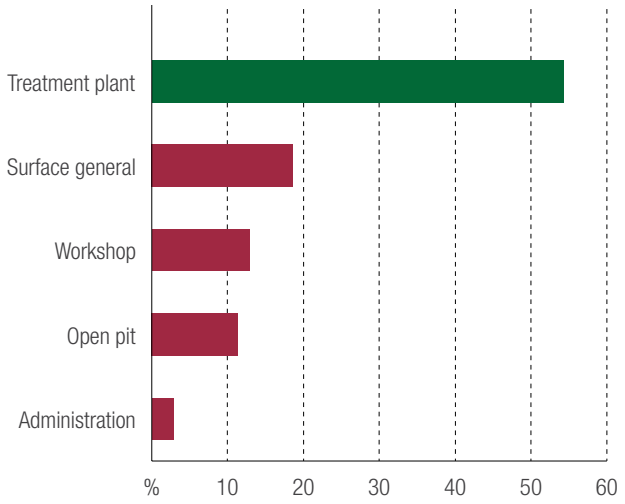
PART OF BODY



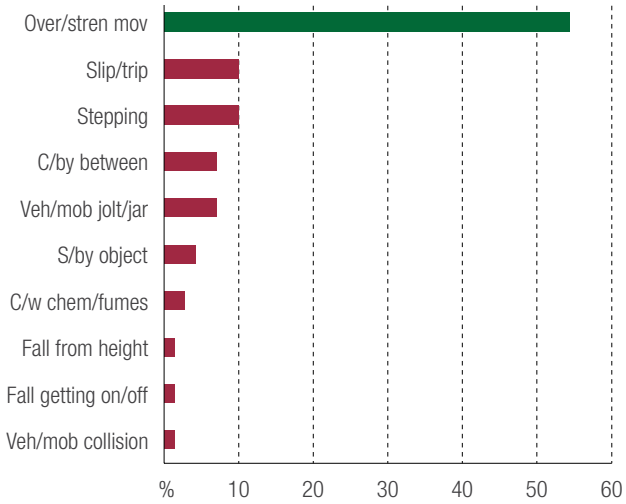
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

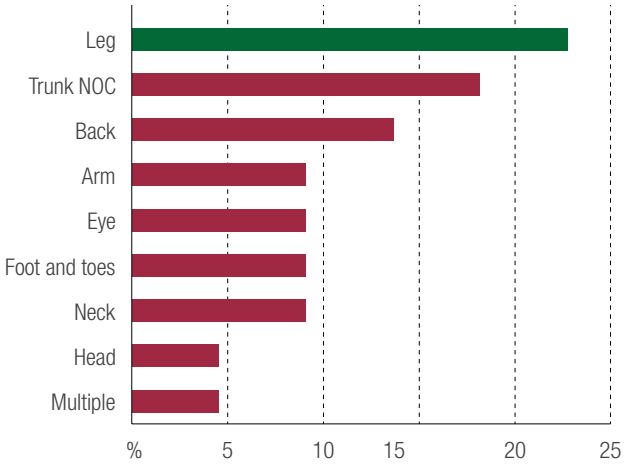


APPENDIX J

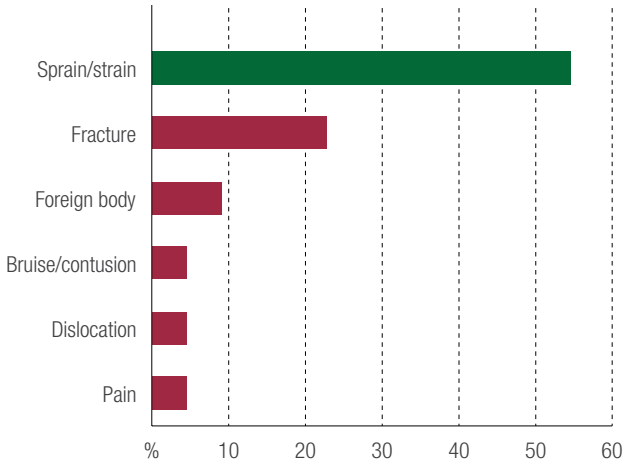
NICKEL UNDERGROUND INJURIES 2012-13

22 lost time injuries

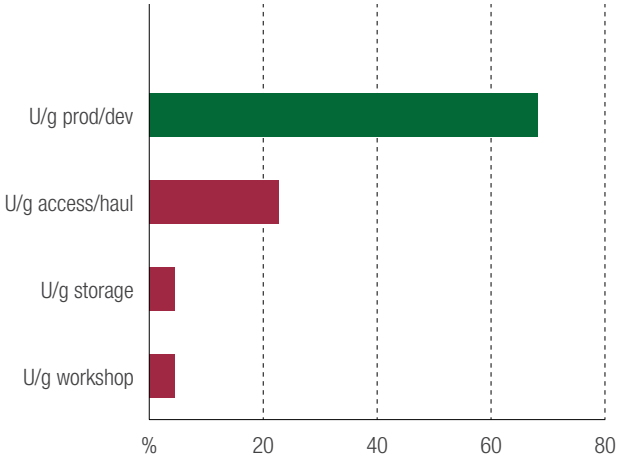
PART OF BODY



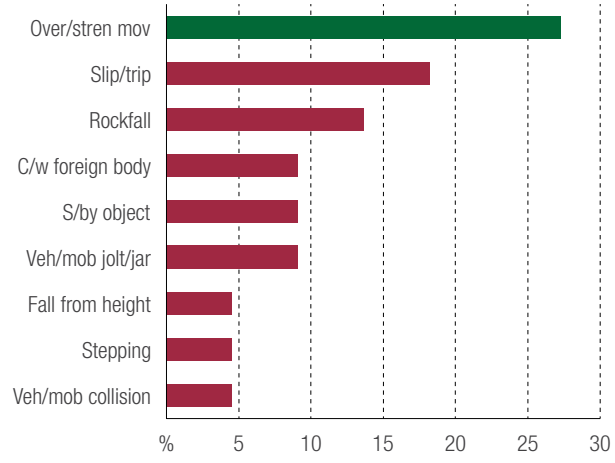
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

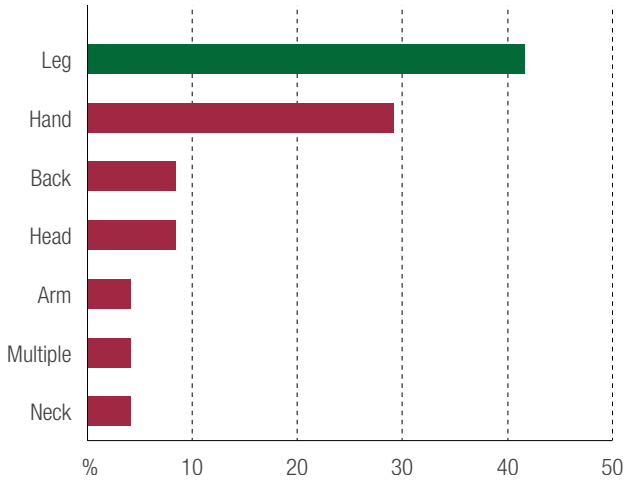


APPENDIX K

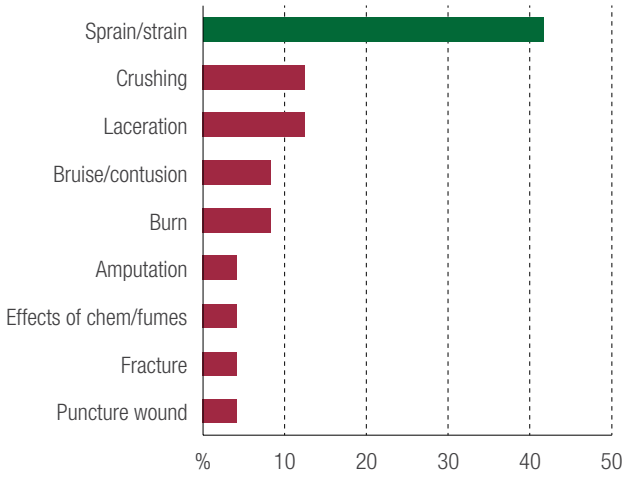
NICKEL SURFACE INJURIES 2012-13

24 lost time injuries

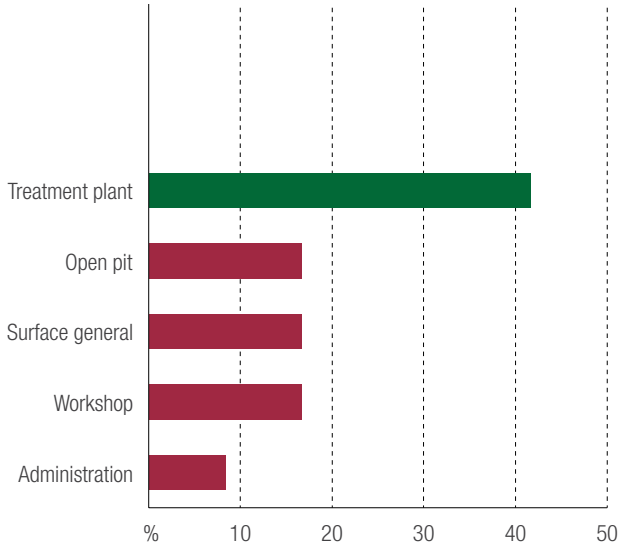
PART OF BODY



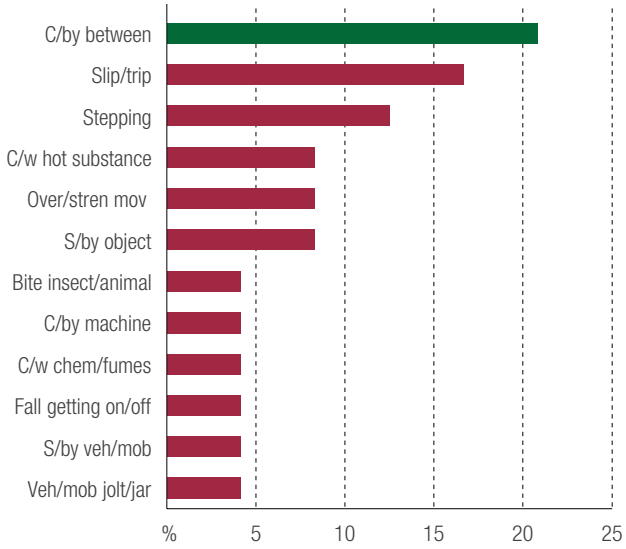
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

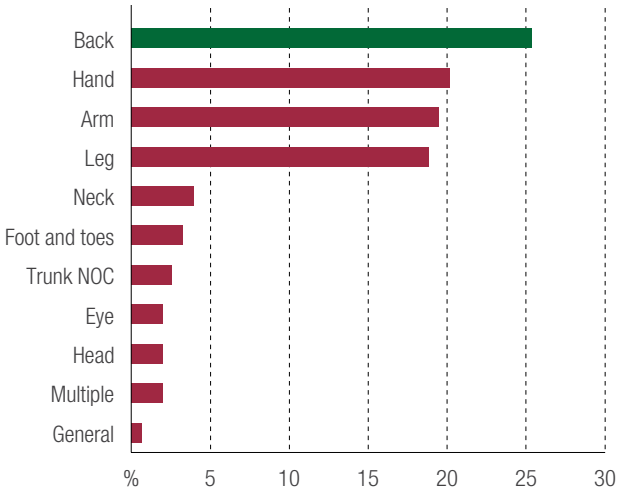


APPENDIX L

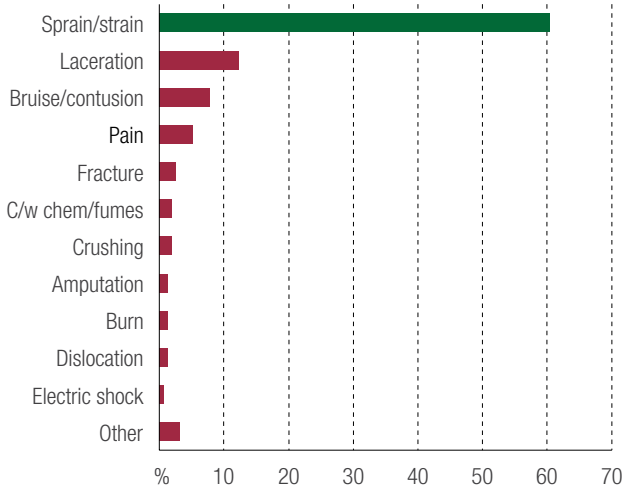
DISABLING INJURIES UNDERGROUND 2012-13

154 disabling injuries

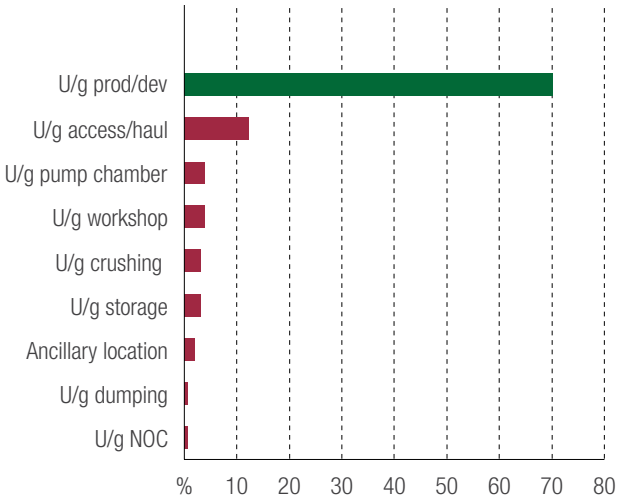
PART OF BODY



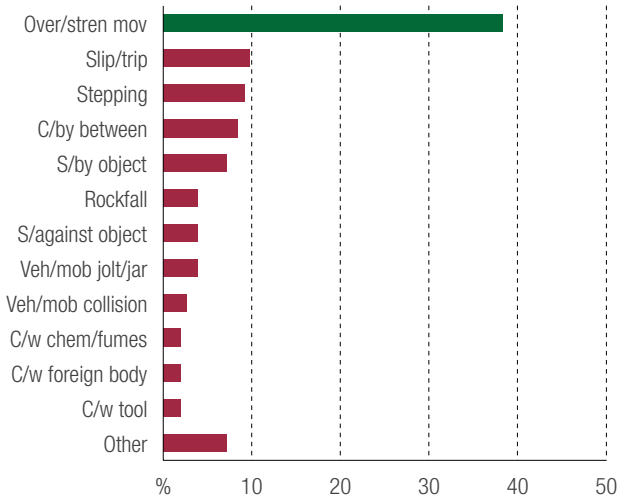
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

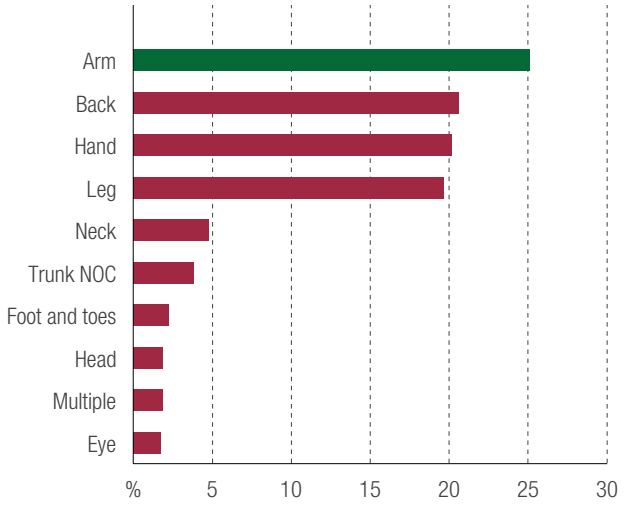


APPENDIX M

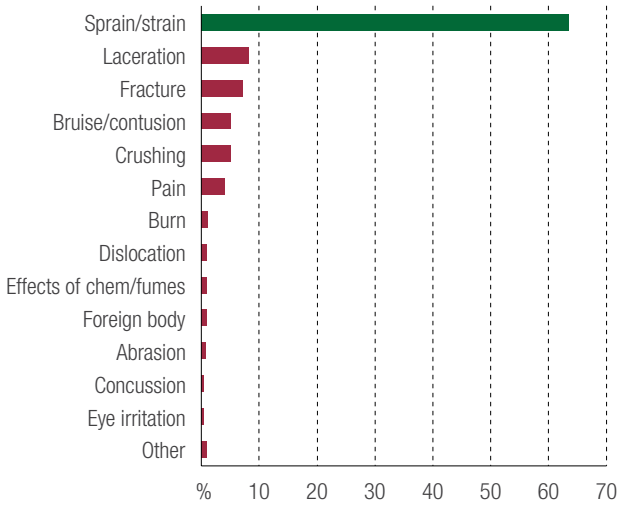
DISABLING INJURIES SURFACE 2012-13

767 disabling injuries

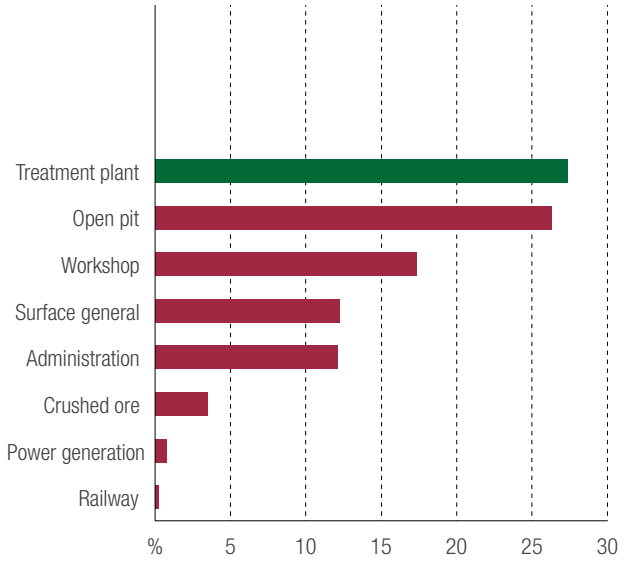
PART OF BODY



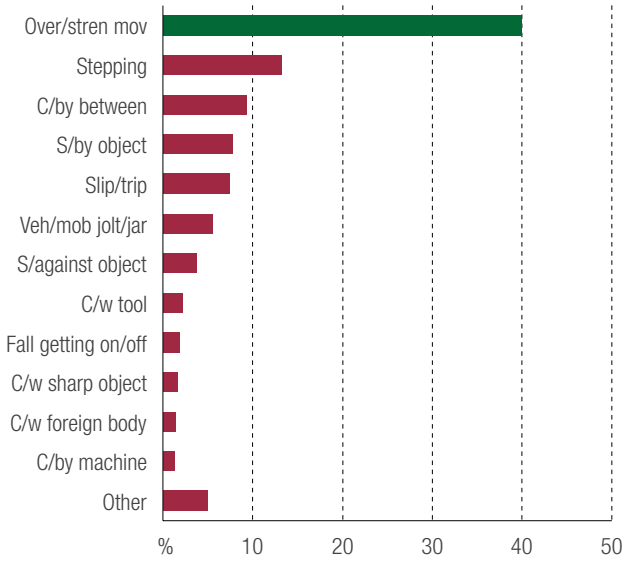
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT

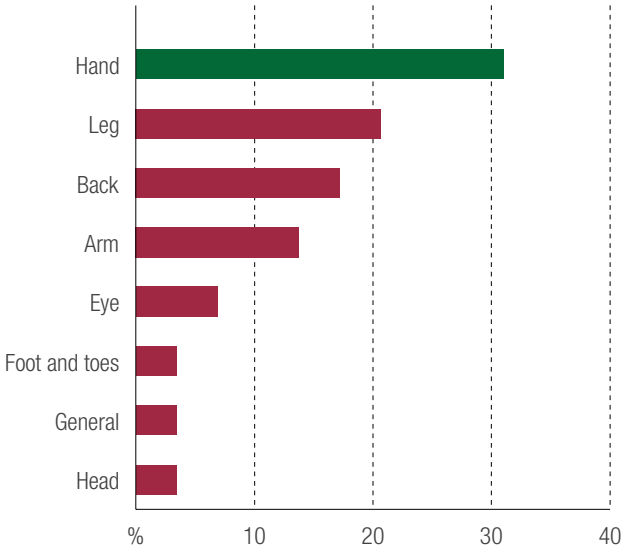


APPENDIX N

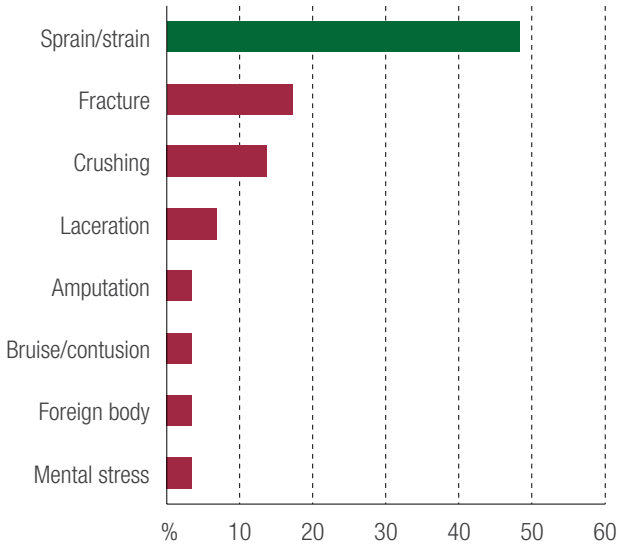
EXPLORATION INJURIES 2012-13

29 lost time injuries

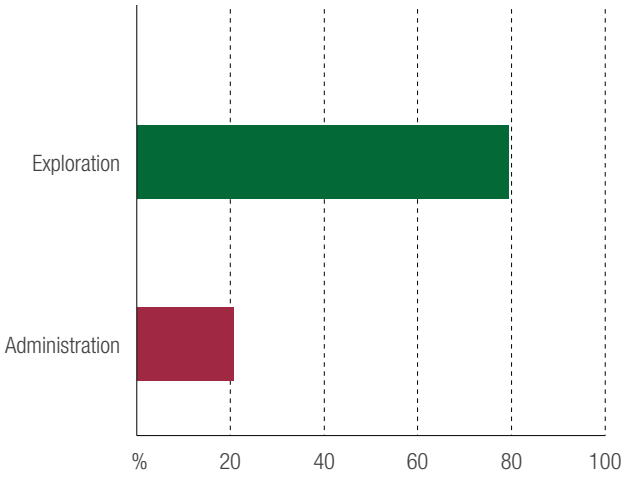
PART OF BODY



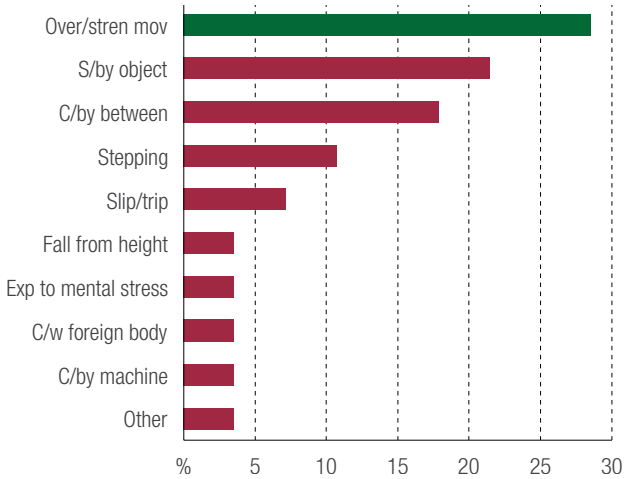
NATURE OF INJURY



LOCATION OF ACCIDENT



TYPE OF ACCIDENT



APPENDIX 0

DESCRIPTIONS OF COMMONLY USED TERMS FOR TYPE OF ACCIDENT

Bite insect/animal – bites or stings from insects, spiders, snakes and other animals

C/by between – caught by or between still or moving objects (e.g. finger caught between two pipes while attempting to move one of them) but does not include getting caught between parts of an operating machine

C/by machine – caught between parts of an operating machine

C/w chem/fumes – inhalation, absorption or ingestion of chemicals or fumes; includes smoke, blast fumes, acids, caustic substances and industrial solvents

C/w electric current – contact with electric current; includes electric shock, electrocution, burning from electric current and static electricity discharge

C/w foreign body – contact with foreign body; includes entry into the skin, eyes, nose, ears, mouth or other part of the body by an object, but does not include sharp objects such as metal splinters

C/w friction/rubbing – blistering or abrasion due to rubbing by footwear, clothing or personal equipment

C/w hi press fluid – contact with high pressure fluid, including hydraulic fluid

C/w hot substance – contact with hot solid, liquid, gas or steam, molten metal or naked flame; usually results in burns

C/w sharp object – contact with sharp object (e.g. metal splinter) but does not include objects such as sharp tools or operating machines

C/w tool – contact with a handheld manual or power tool

Exp to heat – exposure to environmental heat; usually results in injuries related to heat stress

Exp to mental stress – stress-related conditions; includes post-traumatic stress and effects of workplace harassment

Explosion NOC – gas ignition

Fall from height – fall from height equal to or greater than 0.5 metres; includes falls from vehicles or mobile equipment but does not include falls while getting on or off the vehicle or mobile equipment

Fall getting on/off – falls getting on or off vehicles or mobile equipment but does not include falls stepping on uneven ground while disembarking from a vehicle or mobile equipment

Jumping – jumping by a person; includes jumping to a higher or lower level or from a moving object

Over/stren mov – over-exertion or strenuous movements; usually associated with lifting, carrying, pulling, pushing and moving objects; also includes strenuous movements, repetitive movements with no specific event, and working in a confined area or while in an awkward posture

Rockfall – falls of rock usually from the face, walls and backs of underground excavations or from the face and walls of surface excavations

S/against object – struck against stationary or moving objects (e.g. hitting head on low structure while walking)

S/by object – stuck by falling, flying, sliding or moving objects but does not include rockfalls or being struck by persons, vehicles or mobile equipment

S/by veh/mob – struck by a vehicle or mobile equipment

Slip/trip – other falls not from height or while getting on or off vehicles or mobile equipment; includes falls on stairs, falls on slippery or uneven ground, falls over loose or fixed objects and falls while handling equipment

Stepping – stepping on object, loose rock, uneven surface or to a higher or lower level; includes stepping on uneven ground while disembarking from a vehicle or mobile equipment; usually results in a sprain or strain to the ankle or knee

Veh/mob collision – vehicle or mobile equipment collision; includes colliding with stationary objects or walls

Veh/mob jolt/jar – vehicle or mobile equipment jolting or jarring (e.g. jolting or jarring while driving over an uneven surface, sitting in a truck being loaded with large material, bogging a face, ripping with a bulldozer)

Veh/mob rollover – vehicle or mobile equipment rollovers; includes partial rollovers

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