ANNUAL REPORT





2016/17

MINE HEALTH AND SAFETY INSPECTORATE

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

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Mine Health and Safety Inspectorate

Contents

PREFACE

This document is a report by the Chief Inspector of Mines (CIOM) on health and safety at mines and the activities of the Mine Health and Safety Inspectorate (MHSI), compiled as required by section 49(1)(j) of the Mine Health and Safety Act, 1996 (Act 29 of 1996), as amended (MHSA).

The MHSI, established in terms of the MHSA, as amended, has the responsibility of protecting the health and safety of persons working at mines or those who are affected by mining activities.

The CIOM also has the responsibility of leading the tripartite structures formed in terms of the MHSA as the Chairperson of the Mine Health and Safety Council (MHSC) and the Mining Qualifications Authority (MQA).

The MHSC consists of representatives of the state, as well as employee and employer organisations. The Council was established to advise the Minister of Mineral Resources on health and safety issues and to promote a healthier and safer culture in the mining industry.

The MQA is an education and training authority for the minerals and mining sector and is responsible for the education and training needs of the mining industry.

The activities of the above-mentioned two bodies are intricately linked with those of the MHSI and their accounts are captured in their respective annual reports.





GENERAL INFORMATION

1. GENERAL INFORMATION

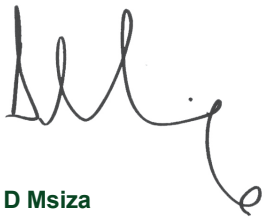
1.1 Submission of the Annual Report to the Executing Authority

The Honourable Mr. Mosebenzi J. Zwane, MP
Minister of Mineral Resources
Republic of South Africa

Dear Minister

I am pleased to present to you the Annual Report of the Mine Health and Safety Inspectorate for the 2016/17 period under review. This report is in accordance with the requirements of section 49(1)(j) of the Mine Health and Safety Act, 1996 (Act 29 of 1996), as amended.

Yours sincerely



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Chief Inspector of Mines
Mine Health and Safety Inspectorate

1.2 Mission statement

The MHSI strives towards a safe and healthy mining industry. This is to be achieved by reducing mining-related deaths, injuries and ill-health through the formulation of national policy and legislation, the provision of advice and the application of systems that monitor and enforce compliance with the law in the mining sector.

1.3 Legislative mandate

The MHSI was established in terms of the MHSA, as amended, for the purpose of executing the statutory mandate of the MHSI in safeguarding the health and safety of mine employees and communities affected by mining operations.

1.4 Executive summary: Chief Inspector of Mines

It is with great honour and pleasure that I present this report on the state of health and safety in the South African mining industry and the activities of the MHSI for the 2016/17 financial year.

Staffing

The establishment of the Inspectorate provides for 303 posts, of which 288 are currently filled and 15 posts are vacant. The demographics of the Inspectorate as on 31 March 2017 was as follows:

Gender	African	White	Asian	Coloured	Total
Male	136	31	0	0	167
Female	110	7	0	4	121

Implemented training

During the 2016/17 reporting period, the MHSI developed the skills and knowledge base of its staff as follows:

- A total of 46 officials attended technical and non-technical training courses, and 26 officials attended conferences.
- Three managers attended the Advanced Management Development Programme (AMDP). One manager was found competent, while the others are attending to remedial work for re-assessment.

Training interventions

Assistant Inspector Programme

Two Assistant Inspectors with an electrical or a mechanical engineering tertiary qualification were recruited to undergo inspector training at various regional offices. The Department of Mineral Resources (DMR) also placed an additional 45 Assistant Inspectors for inspector training at various regional offices specialising in the fields of electrical engineering, mechanical engineering, mining engineering, mine surveying and occupational hygiene. Ten individuals obtained their respective Government Certificate of Competency (GCC) during the year under review, and one obtained a Bachelor of Technology (B Tech) degree at the University of Johannesburg during the 2016 academic year.

Bursary scheme

The MHSI had, through its Human Resource Development (HRD) initiative, invested in 17 bursary holders during the period under review for the following mining-related qualifications at different tertiary institutions:

- Electrical Engineering (heavy current);
- Mechanical Engineering;
- Mine Engineering; and
- Mine Surveying.

Current health and safety performance

The health and safety of mine workers remain crucial for the sustainability of the mining sector. The DMR will continue to enforce applicable laws to protect mine workers from health and safety hazards in their respective workplaces.

Occupational health

An improvement was noted with regard to the submission of statutory reports, as well as Annual Medical Reports (AMRs). An overall reduction in over-exposure to occupational health stressors was noted and thermal stress/cold continues to maintain zero over-exposures year-on-year.

The Department, in collaboration with stakeholders, will continue to implement measures to ensure that there is significant improvement, mainly in the gold and platinum sectors.

HIV/AIDS and TB

Mines have been reporting on human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) since 2013 following summit commitments that were endorsed by the principal stakeholders. The summit commitments were informed by a survey conducted by the Department on tuberculosis (TB) and HIV/AIDS in the mining industry. Mines were required to report cases using the departmental TB and HIV/AIDS reporting form.

There is generally an increase in the number of mines that have submitted DMR 164 forms, hence compliance

in terms of HIV/AIDS and TB policies and programmes have improved. There is, however, a concern that there are still mining companies that do not dedicate a budget to HIV/AIDS and TB, as shown by the data collected for the period under review.

When compared with national TB initiatives, TB screening and co-infection rates have improved. Employees are screened at every opportunity. The total number of employees diagnosed with TB has decreased.

Occupational safety

The number of fatalities reported by all mines in 2016 is the lowest ever reported since the dawn of mining in South Africa. Safety in the South African mining industry remains a challenge, although the downward trend is continuing with regard to the reported mine accidents year-on-year. Despite this downward trend, one death is still one too many.

A total of 73 fatalities were reported in 2016 when compared to 77 fatalities reported during the previous period. This translates to an improvement of 5% year-on-year. Statistics show that there were 30 fatalities in the gold mining sector, 28 fatalities in the platinum sector, four fatalities in coal mines and 11 fatalities in the other mines' sector. This indicates that the gold and platinum mines are the main contributors to fatal accidents.

The overall number of injuries reported decreased by 9% during 2016 when compared with statistics of 2015. The provisional figure of injuries reported during 2016 is 2 846 as opposed to a finalised total of 3 139 injuries reported during 2015.

Disaster-type accidents

Impala Platinum 14 Shaft accident

On 23 January 2016, a disaster-type accident occurred at Impala Platinum 14 Shaft in Rustenburg, North West, where four employees were fatally injured when a conveyor belt burnt underground in the trackless mining section.

Lily Mine Accident

It was reported that, on Friday 5 February 2016, a container that was situated on the surface and used as a lamp-room sunk into the underground workings at the mine. There were three employees inside the container at the time of the accident. This accident occurred as a result of a crown pillar that failed and collapsed into the underground workings at this mine. A total of 75 employees who were working underground at the time of the collapse were immediately evacuated through the mine's ventilation shaft, which was used as secondary outlet.

Illegal mining

The incidence of illegal mining continues to spread within most of the regions. Inspectors continue to face a threat of violence from perpetrators. Licensed operators have been requested to report illegal operations to their nearest South African Police Service (SAPS) station for further attention.

Illegal mining activities, especially of gold and chrome, continue to be a major problem. The Department, in conjunction with the land developers, affected municipalities and mining companies, have rehabilitated or cleaned up several areas that were previously infested by illegal mining activities.

The Department will continue to collaborate with law enforcement agencies and other stakeholders to ensure the implementation of strategies to combat illegal mining activities.

Women in mining

One female employee was fatally injured in 2016. When compared to 2015, this translates to an increase of 100% year-on-year. It should be noted that there has been a reduction in the number of fatalities involving women in mining since 2012.

There was an increase in the number of injuries involving women in mining. The injuries that were reported relating to women were mainly in the general classification (66%) linked to slipping and falling, material handling and struck by an object.

Mine Health and Safety Summit

The 2016 Mine Health and Safety Tripartite Summit, hosted by the Department and the MHSC, took place on 17 and 18 November 2016 at the Gallagher Convention Centre in Midrand. The event was attended by almost 500 delegates. It achieved its objectives, with the delegates recommitting to achieving the goal of zero harm in the mining sector.





PROGRAMME PERFORMANCE

2. PROGRAMME PERFORMANCE

2.1 Aim of the programme

The MHSI was established in terms of the MHSA, as amended. The aim of the programme is to carry out the constitutional mandate of the DMR to protect the health and safety of persons working at mines and people residing in nearby communities that are directly affected by mining activities. This is done by performing statutory inspections and audits, the enforcement of the MHSA and its regulations, as well as conducting investigations and inquiries at South African mines.

The programme also administers the GCC for the mining sector. It consists of two sub-programmes: Governance, Policy and Oversight, and Mine Health and Safety (Regions).

2.2 Purpose of the programme

To execute the statutory mandate of the DMR to protect the health and safety of mine employees and people affected by mining activities.

2.3 Service delivery objectives and indicators

The MHSI's strategic plan and achievements during the period under review are outlined in the Table 2.3. This is an account of progress achieved in the period under review against the annual targets set for achieving the strategic objectives of the MHSI.

Table 2.3: Progress achieved against annual targets

Measures	Status	Performance analysis	Recommendations	Current actual	Current target
Percentage implementation of the Certificate of Competency Model to improve the pass rate	G	**Achieved** All the five steps for the Certificate of Competency Model have been implemented. These consist of the following steps: 1. Set paper; 2. Write the examination; 3. Mark the examination; 4. Moderate the results; and 5. Release the results. **Calculation** 5/5*100 = 100%		100%	100%
Mine Health and Safety Inspectorate Annual Report submitted	G	**Achieved** The report was submitted. **Verification source** The memorandum from Parliament, the cover page of the report and CIOM signatory page		1	1
Number of audits conducted (cumulative, individual audits included)	G	**Achieved** The over-achievement was due to extra audits carried out to reduce fall of ground accidents **Calculation** Total for: • First quarter is 135 audits • Second quarter is 135 audits • Third quarter is 120 audits • Fourth quarter is 116 audits • 135 + 135 + 120 + 116 = 506 **Verification source** Summary of audit report		506	396

Measures	Status	Performance analysis	Recommendations	Current actual	Current target
Number of inspections conducted (cumulative)	G	**Achieved** The reason for the over-achievement was due to the extra inspections that were conducted in an attempt to reduce accidents. **Calculation** Total of: • First quarter is 2 106 inspections • Second quarter is 2 647 inspections • Third quarter is 2 143 • Fourth quarter is 2 483 • 2 106 + 2 647 + 2 143 + 2 483 = 9 379 **Verification source** Summary of inspection report		9 363	8 000
Number of tripartite workshops conducted	G	**Achieved** **Calculation** A total of 17 workshops were conducted in the first quarter, 17 workshops in the second quarter, 17 workshops in the third quarter and 16 workshops in the fourth quarter. The reason for over-achievement is due to the requests from stakeholders (unions and employers). **Verification source** Summary of tripartite workshops conducted		67	40
Percentage of inquiries completed (initiated vs completed)	R	**Not achieved** The number of inquiries initiated was 41 and completed was 32. The reason for under-achievement is unavailability of witnesses. **Calculation** (32/41)*100 = 78% **Verification source** Summary of inquiries	The Department will engage with the mining companies to ensure that witnesses are available during accident investigations.	78%	80%

Measures	Status	Performance analysis	Recommendations	Current actual	Current target
Percentage of investigations completed (initiated vs completed)	G	**Achieved** The number of investigations initiated was 992 and the number completed was 841. The reason for over-achievement is the improvement in the availability of witnesses. **Calculation** (841/992)*100 = 85% **Verification source** Summary of investigation reports		85%	80%
Percentage reduction in occupational diseases (including TB)	G	**Achieved** There was a significant improvement in TB and silicosis cases reported during April 2015 until March 2016. A total of 4 696 cases were reported when compared with April 2016 to March 2017 where 3 531 cases were reported. The reason for over-achievement is due to Inspectors utilising comprehensive standardised tools to conduct targeted inspections and audits. **Calculation** (3 531-4 696)/4 696*100 = -25% **Verification source** Summary of reports for January to April 2015/16 and the same period in 2016/17		-25%	10%
Percentage reduction in occupational fatalities	R	**Not achieved** There were 79 fatalities recorded between April 2015 and March 2016 and 77 between April 2016 and March 2017. The reason for the increase in fatalities was due to machinery and transportation system accidents. **Calculation** (77–79)/79*100 = 1% **Verification source** Summary of fatalities	The Department will continue to monitor compliance and ensure that effective health and safety management systems are implemented in the sector. Engagements will also be held with the CEOs of mining companies to ensure that appropriate measures are implemented to prevent harm to the mine workers.	1%	20%

Measures	Status	Performance analysis	Recommendations	Current actual	Current target
Percentage reduction in occupational injuries	R	**Not achieved** There was a decrease in injuries between 2015 and 2016. There were 3 046 injuries reported between April 2015 and March 2016 and 2 865 in April 2016 to March 2017. **Calculation** (2 865 – 3 046) / 3 046 = 6% **Verification source** Summary of injuries		6%	20%
Percentage of identified internal processes developed, reviewed and implemented	G	**Achieved** One internal instruction on the Annual Report was issued. **Calculation** (1/1)*100 = 100% **Verification source** Copy of the instruction		100%	100%
Percentage adherence to existing service level agreements (SLAs)	G	**Achieved** The SLA with Mines Rescue Services was used and honoured **Calculation** (1/1)*100 = 100% **Verification sources** Copies of invoices and payments		100%	100%
Percentage adherence to prescribed time frames for administrative tasks	G	**Achieved** The average percentage completed is 80%. There were 396 applications received and 318 were completed. **Calculation** (318/396)*100 = 80% **Verification source** Summary of administration register		80%	80%
Percentage adherence to prescribed time frames for CIOM appeals	G	**Achieved** Two CIOM appeals were received and finalised. **Calculation** 2/2*100 = 100% **Verification source** Appeal reports		100%	100%

Measures	Status	Performance analysis	Recommendations	Current actual	Current target
Percentage adherence to prescribed time frames for medical appeals	G	**Achieved** A total of 34 appeals were completed from the 42 appeals that were received. The reason for over-achievement was that files were finalised faster as there were interns to assist officials. **Calculation** (34/42) = 81% **Verification source** Summary of medical appeals		81	80
Percentage adherence to prescribed time frames for Mineral and Petroleum Resources Development Act (MPRDA) applications	R	**Not achieved** There were 2 167 applications processed within prescribed time frame versus 3 030 of all applications processed. The reason for under-achievement was the unavailability of applicants for inspections, especially land use and closure. **Calculation** (2 167/3 030) = 72% **Verification source** Summary of administration register	The Department will conduct MPRDA site inspections with or without the applicant being present.	72%	100%
Percentage adherence to compliance framework	G	**Achieved** All identified items on the compliance checklist have been achieved. **Calculation** (5/5)*100 = 100%		100%	100%
Percentage implementation of Management Action Plan (External audit)	G	**Achieved** There were no findings against the MHSI.		100%	100%

Measures	Status	Performance analysis	Recommendations	Current actual	Current target
Percentage implementation of Management Action Plan (Internal audit)	Y	**Partially achieved** There were 11 findings, six findings were implemented and five findings were not implemented. The reason for the partial achievement was due to regions that did not implement audit findings on time. **Calculation** (6/11)*100 = 55% **Verification source** Internal audit report	Principal Inspectors will have to implement the findings identified in the audit reports timeously.	55%	100%
Percentage implementation of risk management plans	Y	**Partially achieved** There were four items, of which three items were implemented and one item was not implemented. The reason for the partial achievement was due to candidates that did not meet the requirements for the rock engineers training. Training requirements for rock engineers could not be carried out as no candidate met the requirements for the training. **Calculation** (3/4)*100 = 75%	The Department will ensure that the dates provided to risk management in terms of targets to be achieved gives the Training Unit of the Inspectorate sufficient time to prepare the candidates that will attend training.	75%	100%

2.4 Service Delivery Improvement Plan

Key service	Service beneficiary	Desired standard (2015/16)		Progress as at 31 March 2017
Address health and safety risks in mining through: • Number of audits conducted • Number of inspections conducted • Number of investigations conducted • Number of inquiries completed	Mining operations	Quantity	100% of planned audits as per capacity 100% of planned inspections as per capacity 100% of planned investigations as per capacity 100% of planned inquiries as per capacity	117% of planned audits as per capacity 118% of planned inspections as per capacity 92% of planned investigations as per capacity 100% of planned inquiries as per capacity
		Quality	Implementation and compliance to standardised policies and procedures	Achieved
		Consultation	Monthly consultation with mining operations	Achieved
		Open and transparent	Policies and procedures is public documents	Achieved
		Information	Information is shared monthly with mines and an electronic management system would improve the availability of information	Achieved
		Value for money	Ensure the optimum utilisation of voted funds	Achieved





STATE OF SAFETY IN THE SOUTH AFRICAN MINING INDUSTRY

3. STATE OF SAFETY IN THE SOUTH AFRICAN MINING INDUSTRY

3.1 Accident statistics

The accident statistics indicate that fatalities and injuries still remain a challenge for the South African mining industry. A slight decrease of 5% in the number of fatalities reported is below the Mining Industry Summit milestones of a 20% reduction. The Summit targets were agreed to by all the tripartite stakeholders. A total of 73 fatalities was reported during 2016 compared to 77 fatalities during 2015. The number of mine injuries reported decreased by 9% from 3 139 in 2015 to 2 846 in 2016.

3.1.1 The number of employees at work

There has been a decrease of 5% in the number of employees at work in the mining industry during 2016 when compared with the same period during 2015. Table 3.1.1 shows an increase in the number of employees at work in the gold and diamond mining sectors and a decrease in the platinum, coal, copper, chrome, iron ore, manganese and other mining sectors.

Table 3.1.1: Number of employees at work (2015 compared with 2016)

	2015	2016	Percentage change
Total	**458 174**	**433 980**	**-5**
Gold	107 795	109 518	2
Platinum	167 613	155 524	-7
Coal	74 542	69 223	-7
Diamonds	17 836	19 308	8
Copper	3 103	3 087	-0.5
Chrome	18 199	15 277	-16
Iron ore	20 291	16 146	-20
Manganese	8 688	7 234	-16
Other mines	41 107	38 663	-6

** provisional*

3.2 Analysis of accident rate trends

The fatality and injury rate per million man hours worked is a number calculated using a rounded off figure conversion factor of 2 200, as the mines do not report the actual hours worked. The assumption is that each person works for an average of 48.9 weeks in a calendar year, when discounting weekends, public holidays and annual leave days. The Basic Conditions of Employment Act, 1997 (Act 75 of 1997), requires a person not to work more than 45 hours per week. Therefore, the conversion factor is rounded off to 2 200 hours per person per year.

The rate is annualised; therefore, it must be for a full year:

$$\text{Fatality/injury rate} = \left\{\frac{\text{Number of fatalities/injuries for calendar year}}{(\text{Number of persons at work} \times 2\,200)}\right\} \times 10^6 \text{ hours}$$

3.2.1 Fatality and injury rates per million hours worked

In terms of section 47(2) of the MHSA, the Minister has, by notice in the *Government Gazette*, established regions of the country for the purpose of administering this Act. Table 3.2.2 shows the number of fatalities reported in each of the regions of the Inspectorate, as well as the fatality rates during the calendar years 2015 and 2016.

There was a reduction in the number of fatalities reported to the regions year-on-year and a decrease in the number of employees at work. The fatality rate remained the same at 0.08 in 2015 and 2016.

Table 3.2.1: Fatality rates per commodity

	2015	Fatality rates	2016	Fatality rates	Percentage change in rates
All mines	**77**	**0.08**	**73**	**0.08**	**0.00**
Gold	33	0.14	30	0.12	-14
Platinum	21	0.06	28	0.08	33
Coal	5	0.03	4	0.03	0
Diamonds	10	0.25	3	0.07	-72
Copper	1	0.15	0	0.00	-100
Chrome	1	0.02	1	0.03	50
Iron ore	2	0.04	3	0.08	100
Manganese	0	0.00	1	0.06	100
Other mines	4	0.04	3	0.03	-25

** provisional*

3.2.2 Fatality rates per region

The fatality rates for the Free State and Gauteng regions during 2016 were the highest at 0.17 and 0.13 respectively. These numbers show how, with an increase in the number of employees at work and an increase in the number of fatalities, there was a large change in the fatality rate.

The Eastern Cape region had the least number of employees at work among all the regions. This region recorded only one fatality in 2015 and zero during 2016,

which resulted in the fatality rate changing from 0.24 to 0.00. The North West: Klerksdorp region reported seven fatalities in 2015 and two fatalities in 2016, which resulted in a decrease from 0.18 to 0.05.

Table 3.2.2: Fatality rates per region

	2015	Fatality rates	2016	Fatality rates	Percentage change in rates
All mines	**77**	**0.08**	**73**	**0.08**	**0.00**
Western Cape	1	0.08	0	0.00	-100
Northern Cape	10	0.12	7	0.09	-25
Free State	10	0.14	12	0.17	21
Eastern Cape	1	0.24	0	0.00	-100
KwaZulu-Natal	2	0.06	0	0.00	-100
Mpumalanga	6	0.04	3	0.02	-50
Limpopo	4	0.03	4	0.04	33
Gauteng	17	0.11	19	0.13	18
North West: Klerksdorp	7	0.18	2	0.05	-72
North West: Rustenburg	19	0.06	26	0.09	50

** provisional*

3.2.3 Injury rates per region

The overall injury rate decreased by 4% during 2016 when compared to 2015. The provisional figure of injuries reported for 2016 was 2 846 as opposed to a finalised total of 3 139 injuries reported in 2015. Table 3.2.3 indicates the number of injuries reported in each region and the injury rates during 2015 and 2016.

Table 3.2.3: Injury rates per region

	2015	Injury rates	2016	Injury rates	Percentage change in rates
All mines	**3 139**	**3.11**	**2 846**	**2.98**	**-4**
Western Cape	19	1.49	16	1.32	-11
Northern Cape	131	1.56	130	1.68	8
Free State	274	3.93	273	3.75	-5
Eastern Cape	2	0.48	6	1.53	219
KwaZulu-Natal	34	1.08	47	1.69	56
Mpumalanga	221	1.29	193	1.20	-7
Limpopo	214	1.81	135	1.30	-28
Gauteng	718	4.85	680	4.51	-7
North West: Klerksdorp	259	6.44	252	6.43	-0.2
North West: Rustenburg	1 267	3.85	1 114	3.65	-5

** provisional*

The injury rates for the Northern Cape, Eastern Cape and KwaZulu-Natal regions for 2016 regressed. The injury rates for six regions showed an improvement in 2016 when compared to 2015. These regions are Western Cape, Free State, Mpumalanga, Limpopo, Gauteng and North West: Rustenburg.

3.2.4 Fatality rates per commodity

The fatality rates for the mining industry remained the same, even though the number of employees at work decreased by 5%. The fatality rates at the platinum, chrome, iron ore and manganese mines regressed during 2016 when compared to 2015, while those at mines for the other commodities improved, as shown in Table 3.2.4.

Table 3.2.4: Fatality rates per commodity

	2015	Fatality rates	2016	Fatality rates	Percentage change in rates
All mines	**77**	**0.08**	**73**	**0.08**	**0.0**
Gold	33	0.14	30	0.12	-14
Platinum	21	0.06	28	0.08	33
Coal	5	0.03	4	0.03	0
Diamonds	10	0.25	3	0.07	-72
Copper	1	0.15	0	0.00	-100
Chrome	1	0.02	1	0.03	50
Iron ore	2	0.04	3	0.08	100
Manganese	0	0.00	1	0.06	100
Other mines	4	0.04	3	0.03	-25

** provisional*

3.2.5 Injury rates per commodity

The injury rates per commodity decreased by 4%. For the other commodities, the injury rates reveal that there has been an increase in diamonds (10%), iron ore (39%) and other mines (24%). The other commodities revealed decreased injury rates for gold (6%), platinum (8%), coal (2%), copper (33%) and chrome (24%), as shown in Table 3.2.5.

Table 3.2.5: Injury rates per commodity

	2015	Injury rates	2016	Injury rates	Percentage change in rates
All mines	**3 139**	**3.11**	**2 846**	**2.98**	**-4**
Gold	1 250	5.27	1 200	4.98	-6
Platinum	1 329	3.61	1 140	3.33	-8
Coal	206	1.26	189	1.24	-2
Diamonds	45	1.14	53	1.25	10
Copper	15	2.20	10	1.47	-33
Chrome	91	2.28	58	1.73	-24
Iron ore	37	0.83	41	1.15	39
Manganese	51	2.67	20	1.26	-53
Other	115	1.28	135	1.59	24

** provisional*

3.2.6 Fatalities: Women in mining

One woman employee was fatally injured in 2016, compared to no fatalities reported in 2015. This translates to an increase of 100% year-on-year. However, there has been a reduction in the number of fatalities involving women since 2012.

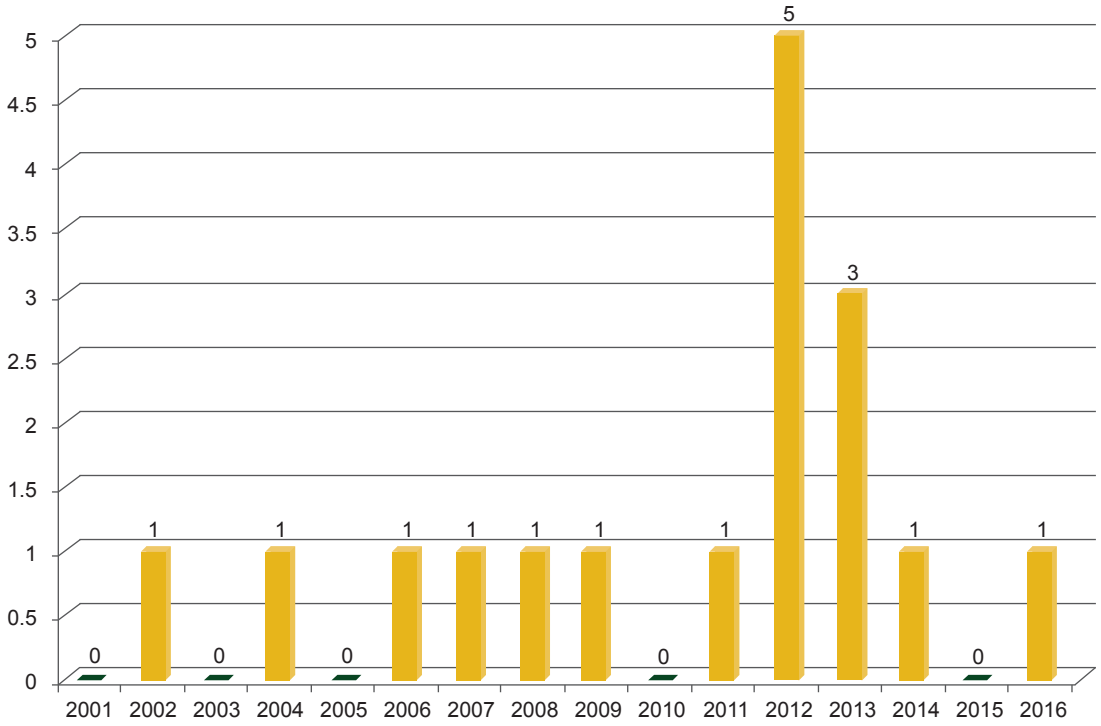


Figure 3.2.6: Actual fatalities - women in mining from 2001 to 2016

3.2.7 Injuries: Women in mining

There has been an increase in the number of injuries involving women in mining. The injuries that were reported relating to women were mainly in the general classification (66%). These accidents were linked to slipping and falling, material handling and struck by.

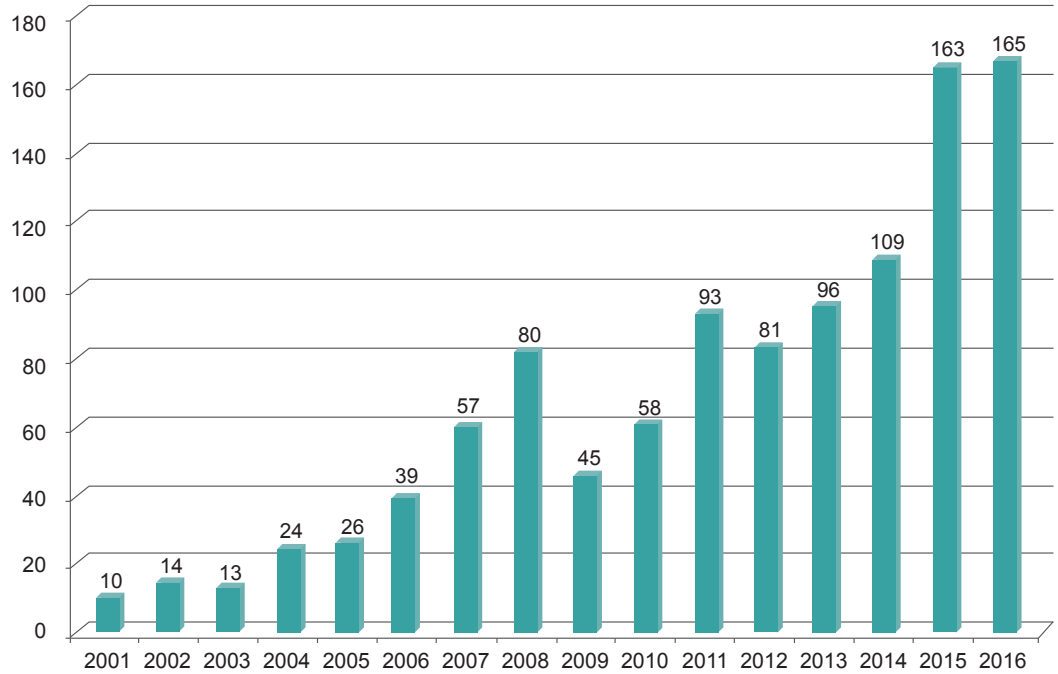


Figure 3.2.7(a): Injuries to women in mining from 2001 to 2016

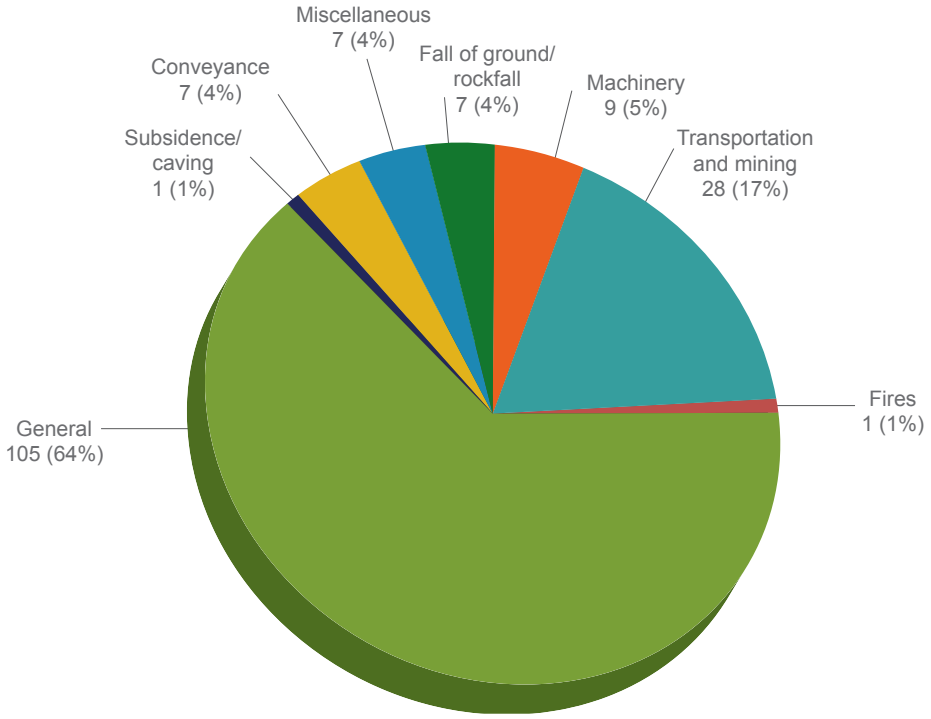


Figure 3.2.7(b): Injuries to women in mining from 2001 to 2016

3.2.8 Fatalities classified by casualty classification

The 73 fatalities that were reported in 2016, as indicated in Table 3.2.1 and Table 3.2.2, are further classified in Figure 3.2.8. The classification of fatalities during 2016 was as a result of fall of ground (FOG), transportation and mining (T&M), as well as general accidents at 33%, 32% and 22% respectively.

This analysis of the reported fatalities can assist employers at all mines to ensure that work carried out in these areas are addressed in accordance with the precautionary measures laid down in the relevant legislation. In addressing these areas, it would prevent such types of accidents being repeated.

Table 3.2.8: Fatalities classified by casualty classification

	1 January to 31 December 2015	1 January to 31 December 2016	Percentage change
FOG	**23**	**24**	**4**
Rockburst	7	9	29
Gravity	16	15	-6
Machinery	**10**	**4**	**-60**
Conveyor belts	7	4	-43
Drives, belts, chains	2	0	-100
Other	1	0	-100
Transportation and mining			
Track-bound transport	**4**	**9**	**125**
Locomotive	2	2	0
Locomotive-drawn vehicle	1	4	300
Rerailing	0	1	100
Coupling/uncoupling	1	2	100
Winches	**4**	**6**	**50**
Scraper winch installation	4	4	0
Winch installation	0	1	100
Double drum winch	0	1	100

	1 January to 31 December 2015	1 January to 31 December 2016	Percentage change
Trackless mobile machines (TMM)	**14**	**8**	**-43**
Mechanical loaders	1	1	0
Coal-mining machines	0	2	100
Transporters	9	5	-44
Motor vehicles	2	0	-100
T&M lifting machines	2	0	-100
General	**16**	**16**	**0**
Fall of material/rolling rock	2	4	100
Manual handling of material	0	1	100
Manual handling of mineral	1	0	-100
Falling in/from	3	1	-67
Slipping and falling	0	1	100
Burning and scalding	2	1	-50
Dust, gas and fumes	4	5	25
Inundation/drowning	1	3	200
Struck by – manual handling	3	0	-100
Conveyance accidents (s/w)	**0**	**2**	**100**
Electricity (not causing fires)	**2**	**1**	**-50**
Fires	**1**	**1**	**0**
Explosives	**1**	**0**	**-100**
Diving Sickness	**0**	**1**	**100**
Miscellaneous	**2**	**1**	**-50**
Total	**77**	**73**	**-5**

** provisional*

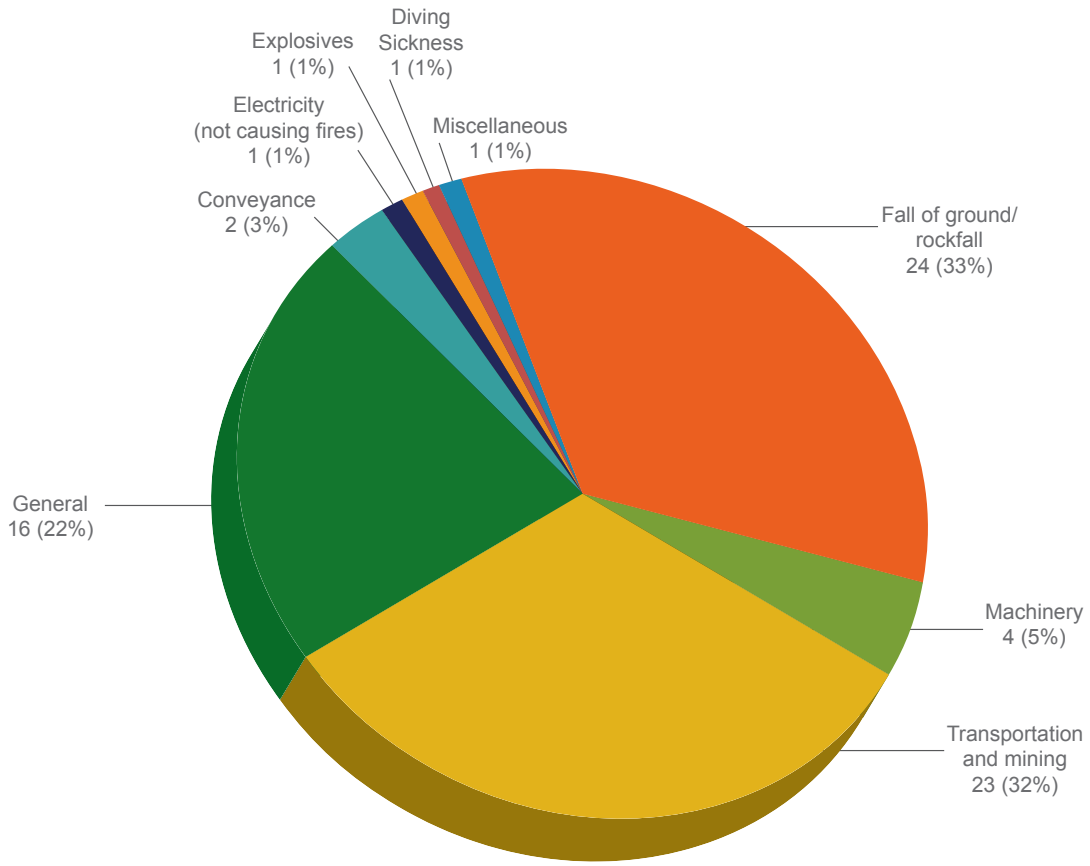


Figure 3.2.8: Fatalities classified by casualty classification

3.2.8.1 Breakdown of fatalities classified as general-type of accidents

The classification of general accidents (22%) has increased. These are accidents that are fatalities related to fall of material/rolling rock, manual handling of material, falling in/from, slipping and falling, contact with, splinters, exposure to dust/ gas/fumes inhalation (gassing), inundation/drowning and struck by. This classification is further broken down in Figure 3.2.8.1.

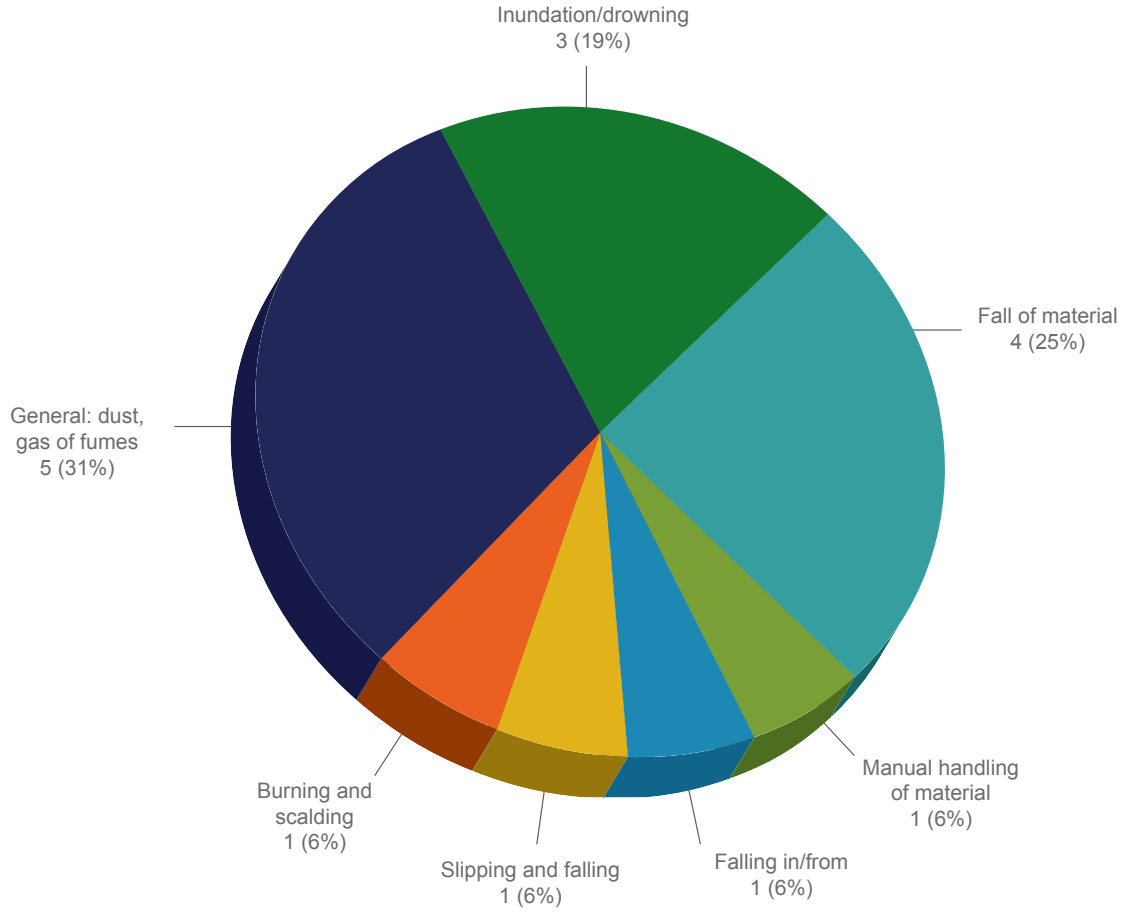


Figure 3.2.8.1: Breakdown of fatalities classified as general

3.2.8.2 Breakdown of fatalities classified as FOG

The FOG (33%) classification is one of the classifications that resulted in the most fatalities reported in 2016. Nine of the FOG fatalities reported in 2016 were seismic-related, while 15 were gravity-related.

During 2015, 23 FOG fatalities were reported, of which seven accidents were classified as rockburst and 16 were classified as gravity-related accidents. This classification accounted for 30% of fatalities during 2015.

3.2.8.3 Breakdown of fatalities classified as transportation and mining

The T&M classification accounted for 32% of the fatalities reported in 2016. Two fatalities were locomotive related, one fatality was related to a locomotive-drawn vehicle, one fatality was related to coupling, four fatalities were related to a scraper winch installation, one fatality was related to a mechanical loader, nine fatalities were related to motor vehicles, two fatalities were related to lifting machines, one fatality was related to a utility vehicle and one fatality was related to a mobile crane.

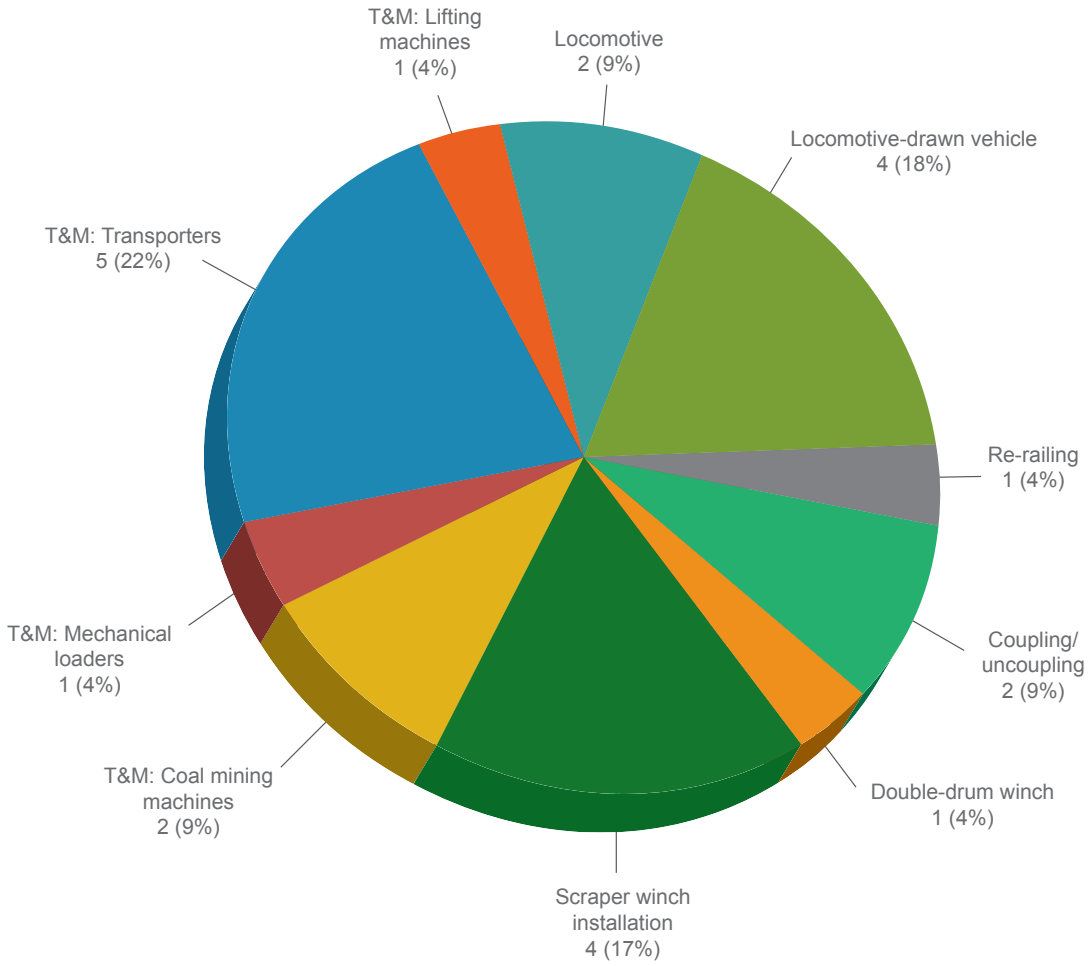


Figure 3.2.8.3: Breakdown of fatalities classified as transportation and mining

3.2.8.4 Breakdown of fatalities classified as machinery

The classification of machinery classified fatalities accounted for 6% of the fatalities. This relates to conveyor-type accidents.

3.2.8.5 Breakdown of fatalities classified as miscellaneous

One fatality (1%) was classified as a miscellaneous-type accident. The fatality occurred when a Site Manager was found midway down the highwall in an open-cast mine.

3.2.8.6 Breakdown of fatalities classified as electricity

Two accidents were classified as electrical. In the first accident, a winch driver was electrocuted at a gold mine. The second fatality occurred when an artisan was burnt while doing switching in a substation.

3.2.8.7 Breakdown of fatalities classified as explosives

Two fatalities were related to explosives. The explosives were initiated before the area had been declared safe. Both incidents occurred at gold mines.

3.2.9 Injuries classified by casualty classification

The Injury-type accidents decreased in the following areas: FOG (7%), machinery (15%), track-bound transport (4%), winches (6%), TMM (16%) and general (9%), as seen in Table 3.2.9. The decrease in these classifications is related to an increase in enforcement and the new TMM legislation and Code of Practice (COP) that have been implemented.

Table 3.2.9: Injuries classified by casualty classification

	1 January to 31 December 2015	1 January to 31 December 2016	Percentage change
FOG	**508**	**471**	**-7**
Rockburst	95	88	-7
Strainburst	67	49	-27
Gravity	346	334	-3
Machinery	**248**	**211**	**-15**
Conveyor belts	68	53	-22
Drives, belts, chains	23	27	17
Portable power tools	128	101	-21
Other	29	30	3
Transportation and mining			
Track-bound transport	**215**	**206**	**-4**
Locomotive	42	47	12
Locomotive-drawn vehicle	55	54	-2
Re-railing	23	9	-61
Coupling/uncoupling	39	37	-5
Rocker arm shovel	12	19	58
Personal transport	16	19	19
Hand trammed	17	13	-24
Other (transport)	11	8	-27
Winches	**131**	**123**	**-6**
Scraper winch installation	84	89	6
Winch installation	0	12	100
Single drum winch	21	1	-95
Double drum winch	10	11	10
Mono rope/rail	16	10	-38
TMM	**183**	**153**	**-16**
Mechanical loaders	22	14	-36
Tractor/trailer	4	3	-25
Coal-mining machines	8	6	-25
Transporters	43	44	2
Motor vehicles	16	11	-31
T&M lifting machines	33	26	-21
T&M mobile drilling machines	44	41	-7
Other TMM	13	8	-38
General	**1 668**	**1 516**	**-9**
Fall of material/rolling rock	272	237	-13
Manual handling of material	420	446	6
Manual handling of mineral	80	76	-5
Falling in/from	51	49	-4

	1 January to 31 December 2015	1 January to 31 December 2016	Percentage change
Slipping and falling	477	459	-4
Burning and scalding	43	31	-28
Splinters	42	30	-29
Dust, gas and fumes	41	17	-59
Inundation/drowning	3	0	-100
Struck by ventilation door	26	16	-38
Struck by – manual handling	213	155	-27
Conveyance accidents (s/w)	**34**	**40**	**18**
Electricity (not causing fires)	**16**	**15**	**-6**
Fires	**8**	**6**	**-25**
Explosives	**26**	**7**	**-73**
Subsidence/caving	**2**	**1**	**-50**
Occupational diseases	**0**	**1**	**100**
Heat sickness	**2**	**1**	**-50**
Miscellaneous	**98**	**95**	**-3**
Total	**3 139**	**2 846**	**-9**

** provisional*

3.2.10 Accidents classified by time of occurrence

From the statistics, the accidents that occurred during 2016, when classified by time of occurrence, mainly occurred between 07:00 and 15:00. This is mainly because there are more people at work and therefore at risk. Most accidents occur between 10:00 and 10:59, which has been the trend over the past few years. Most of the underground workers' shifts start at 06:00, so the peak would be in the middle of their shifts.

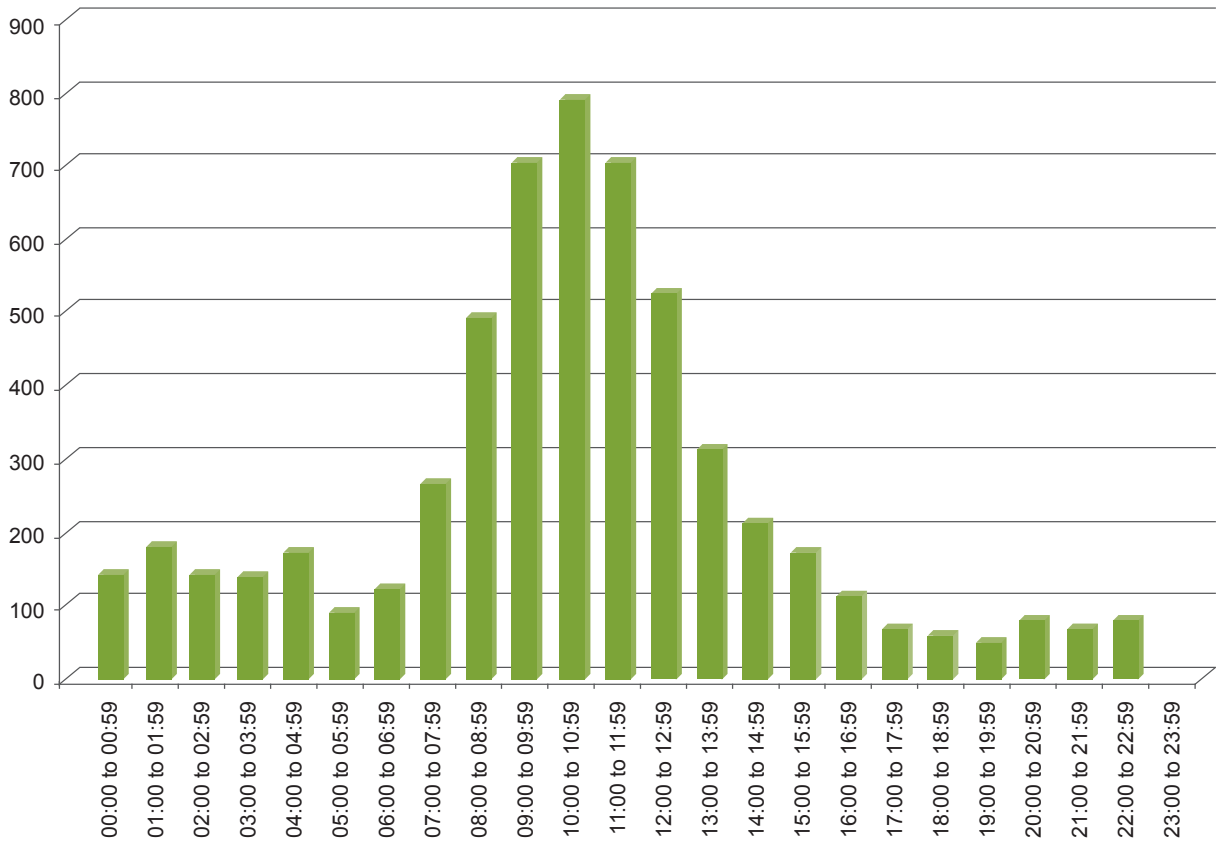


Figure 3.2.10: Accidents classified by time of occurrence

3.2.11 Accidents classified by location

When considering the location of accidents, it is noted that these accidents occur at the stope working place, crosscut and draw point crosscut and haulage. These are areas in which there is excessive production pressures as the mineral must be broken and transported to the main shaft.

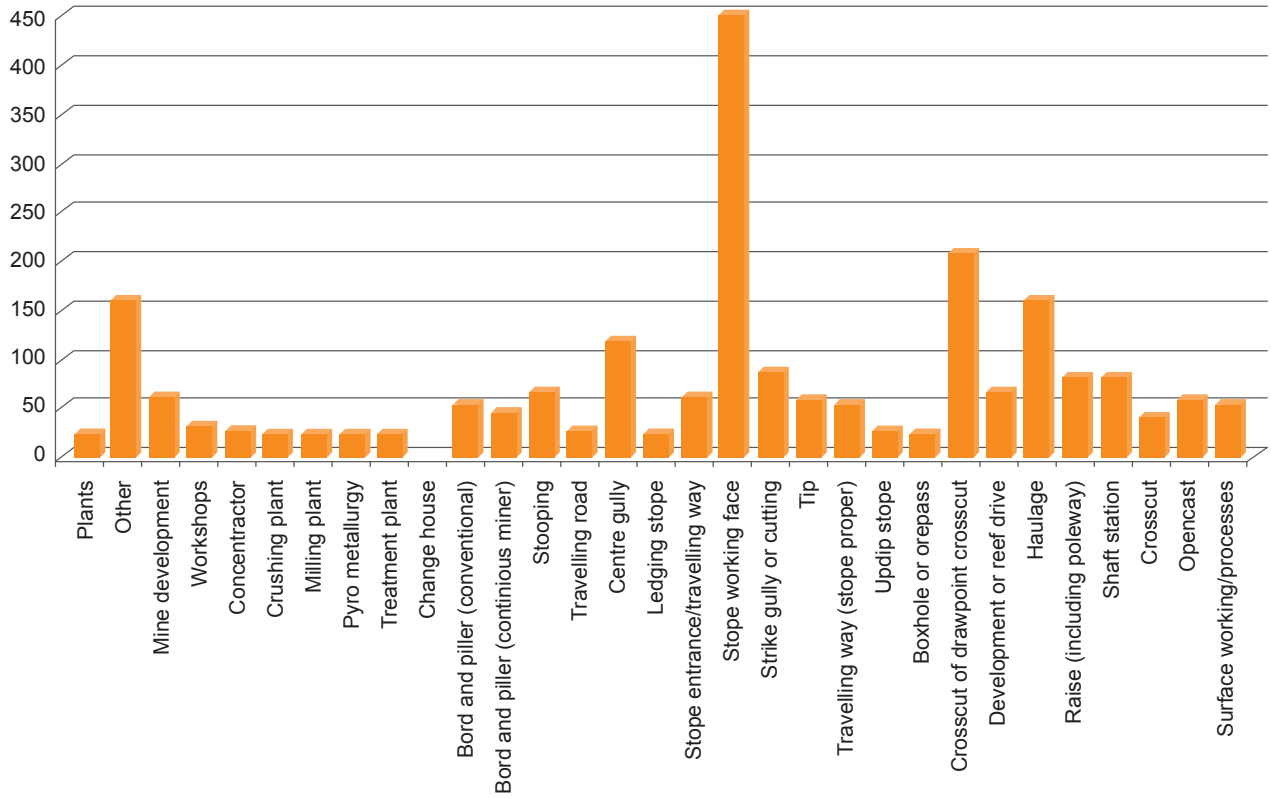


Figure 3.2.11: Accidents classified by location

3.3 Enforcement

3.3.1 Section 54 instructions

Section 54 instructions of the MHSA are issued if an Inspector of Mines (IOM) has a reason to believe that any occurrence, practice or condition at a mine endangers, or may endanger, the health and safety of any person at a mine. The IOM may give any instruction necessary to protect the health and safety of persons at that mine. An IOM's instruction may result in the following scenarios:

- Halt the operations at the mine or part of a mine.
- Halt any act or practice at the mine or part of a mine.

The employer must then take steps, as set out in the instruction, or rectify the occurrence, practice or condition. Figure 3.1.3.1(a) depicts the percentage of section 54 instructions resulting in partial closure or total closure during the period January to December 2016.

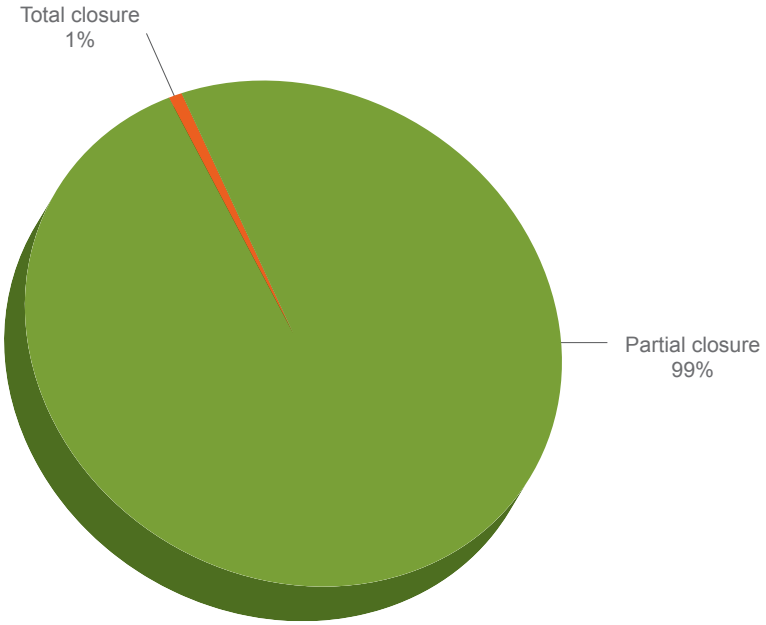


Figure 3.3.1 (a): Section 54 instructions issued

During 2016, the number of section 54 instructions issued can be classified as follows: 1% was total stoppages of mines and the remaining 99% were issued to halt specific parts of working places, practices or conditions at a mine or part of a mine. Most of the stoppages were for small, privately run mines, where blasting was carried out within 500 m from residential areas and electrical pylons where there were no legal appointments, no medical files, no training for employees, no medical surveillance and no mandatory COPs in place.

The main areas that were covered by the instructions issued are shown in Figure 3.3.1(b). For 2016, general (23%) accounted for most of the instructions issued, followed by poor supervision (20%), TMM (10%), conveyors (8%) and support (8%) in the top five.

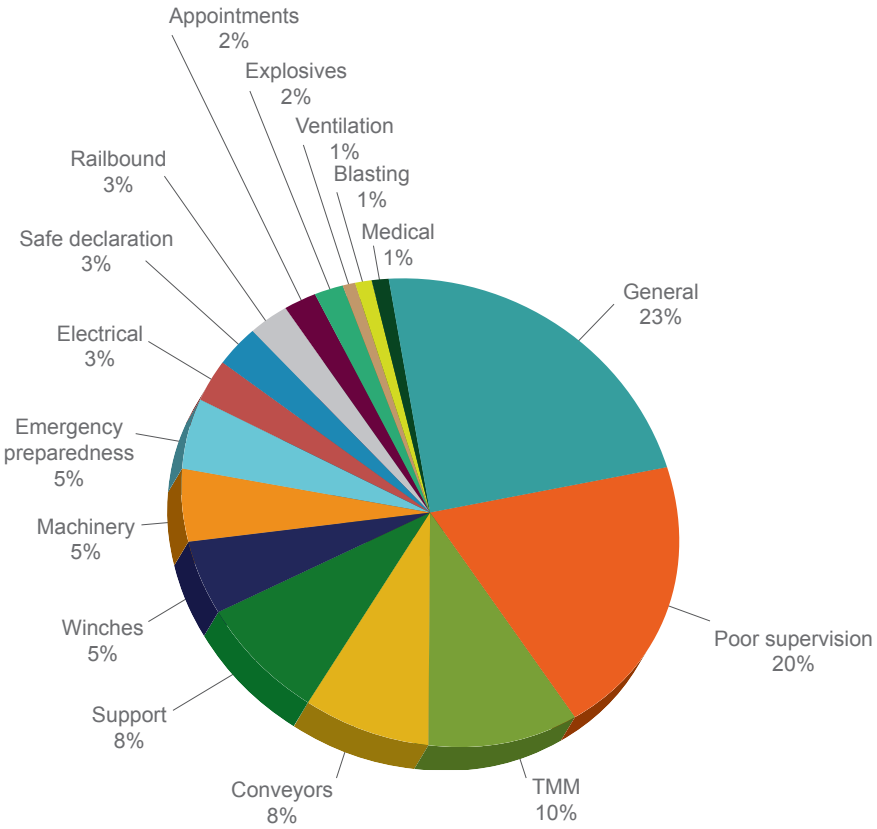


Figure 3.3.1 (b): Section 54 transgressions

3.3.1.1 General (23%)

This category of transgressions accounted for most of the section 54 instructions issued in 2016. Some of the areas covered were as follows:

- Poor stacking of material in the cross-cut was observed.
- There was spillage accumulation in water drains.
- Excess ore in the travelling way was not cleaned out.
- Material was stacked in the traveling way.
- Poor barring was observed.
- Eye wash water pressure at the battery bay was not regulated/controlled, as the securing pin was broken.
- Some pinch bars were less than 1.2 m, and without gaskets used along the haulage.
- Old fans on the centre gully were not secured to prevent them from rolling down.
- Roadways were slippery, there was water and mud accumulation, and unused material was incorrectly stacked along the travelling way.

3.3.1.2 Poor supervision (20%)

Some of the areas covered were as follows:

- Rock Engineer's report was not updated.
- Poor supervision was observed.
- No mandatory reports were displayed at the waiting places.
- Working panels had not been visited within 21 days as per instruction.
- Non-compliance with the legal provisions in the reporting of accidents.
- There was no Standard Operating Procedure for all activities relating to the repair or stacking of wooden pallets.
- The contractor's employees did not receive any training or assessment.
- An employee fell from a height of about 10 m, where he was tasked to remove cables from overhead power lines.

3.3.1.3 TMM (10%)

Some of the areas covered were as follows:

- There were no pre-use checklists for TMMs.
- A dozer was operating with a cracked window.
- An articulated dump truck was operating with the top lights not working.
- An excavator was found operating with bent handrails and a bent catwalk.
- An excavator was found with bent hand rails, bent catwalk, reverse light not working, side blind spot light not working and a cracked mirror.
- A rear dump truck was found operating with no brake lights operational, front indicators not bright enough and a bent step ladder.
- There was no control over the issuing of keys for the TMMs.
- A Front End Loader (FEL) Operator was not in possession of a TMM licence.
- A FEL was operated without air conditioning and a safety belt.
- A FEL was operated with a malfunctioning park brake.

3.3.1.4 Conveyors (8%)

Some of the areas covered were as follows:

- Conveyor belt installation was being operated without pulley guarding.
- Guards of head and tail pulleys were observed with openings at the sides and protruding shafts.
- There was no nip point guarding in place.
- The conveyor belt sequence inter-locking, trip wire, audible alarm and 10-second delay was not functional.
- Employees were observed working on the tail pulley while the conveyor belt installation was not locked out.
- There was no proper isolation of the main conveyor belt system in case of a fire.

3.3.1.5 Support (8%)

Some of the areas covered were as follows:

- Support was measured to be 5 m from the face to the last line of support.
- The dyke was not supported as per the support rule.
- A rock had fallen from the roof and struck an employee on the right clavicle.
- A temporary support (cam-lock jack) lever was not secured.
- The operating mechanism of a temporary support (cam-lock jack) was not functional.
- Two roof bolts were found missing at Road 2 Split 23.
- The roof was supported more than 1.5 m from the rib-side in many instances against a mine standard of 1 m mostly due to scaling.
- There was no additional support where the accident had occurred.
- Five pillar holings were not properly supported as per mine standards.
- Broken sticks were not replaced.

Most section 54 instructions issued resulted in working places, activities or equipment being stopped until remedial measures were put in place and presented to the Principal Inspector of Mines (PI).

3.3.2 Section 55 instructions

Section 55 instructions were issued on issues relating to the following:

- Waiting place procedures were not adhered to.
- Demarcation of crests of highwalls.
- Old areas were not barricaded off.
- Safety Officers' reports were disregarded/no action plan.
- Shiftbosses taking over gangs.
- Systems of medical surveillance were not fully implemented.
- Provision of latrines and change-house facilities.
- Poor housekeeping.

3.4 Mine surveying

3.4.1 Activities of the Directorate: Mine Surveying

The Directorate continues to monitor mine surveying standards and practices in order to promote a culture of safety and health at mines, gives guidance on the safe utilisation of undermined land for surface development purposes, and renders mapping and draughting services. The Directorate also promotes the mine surveying profession by giving talks aimed at attracting more young people into the profession at meetings of the Institute of Mine Surveyors of South Africa.

3.4.2 Surveying matters

The Directorate works closely with the regional offices in maintaining surveying and mapping standards, monitoring compliance by mines to the relevant Mine Health and Safety regulations, and administration of departmental copies of the statutory mine plans that the mines deposit at the regional offices. The Directorate regularly comments and makes recommendations regarding the safe utilisation of land for township development and processing applications for permissions and exemptions from the provisions of the MHSA.

This Directorate also performs underground check measurements in restricted mining areas where surface structures require protection, and does check measurements of underground workings to determine the accurate representation on plans of such workings. During underground visits, refuge bays are inspected to determine whether they comply with safety standards as set by the mine.

Table 3.4.2: Completed tasks for the financial year as compared with the previous financial year

Activities	Planned	Completed	Performance analysis
Mine surveying inspections (underground and surface mines)	156	240	The planned target was exceeded to improve on the health and safety at mines.
Underground inspections (control measurements)	132	150	The Learner Inspectors who were working under the supervision of a Senior Inspector started conducting inspections on their own, thereby increasing the number of inspections completed.
	Received	**Completed**	
Permissions and exemptions	122	123	All applications for permissions and exemptions for the financial year were completed, including one application that was carried over from the previous financial year.
Surface utilisation applications			
	Received	**Completed**	**Performance analysis**
	166	166	All surface utilisation applications received during the financial year were completed.
Mine Surveyors' Certificate of Competency Examinations (MSCC)			
	Number of MSCCs issued	14	

3.4.3 Special surveys

The Directorate: Mine Surveying was involved in the following practical surveying projects:

- Assist in boundary disputes.
- Verify the accuracy of survey data and plans submitted by candidates undertaking the trial survey project as part of their MSCC examination.
- Assist Principal Inspectors in ensuring that no mining operations are conducted within a horizontal distance of 100 m from buildings/structures that require protection, unless a lesser distance has been determined safe by risk assessment.

3.4.4 Mapping services

The Sub-directorate GIS and Mapping Services administers the archiving, retrieval and safekeeping of prescribed mine plans, departmental copies and survey records of mines that have closed down. It also serves clients who require information on the undermining status of land for township development and other purposes, as well as making available the mine plans of closed-down mines to mine owners or their representatives. The Sub-directorate is in the process of replacing hard copy topographical plans with electronic topographical plans, which will reduce the turnaround time for comments and recommendations on proposed township developments.

3.5 MHSI training and examinations

3.5.1 Implemented training

During the period under review, the MHSI developed the skills and knowledge base of its staff as follows:

- A total of 46 MHSI officials attended technical and non-technical training courses, while 26 attended conferences.
- Three managers attended the AMDP; one manager was found to be competent, while the others are attending to remedial work for re-assessment.

3.5.2 Training interventions

3.5.2.1 Assistant Inspector Programme

Two Assistant Inspectors with electrical/mechanical engineering tertiary qualifications were recruited and are undergoing inspector training at various regional offices of the Department. These individuals have not yet attained their GCC. The DMR furthermore added 45 Assistant Inspectors, of which 40% are female, for inspector training at various regional offices during the financial year. Their disciplines were as follows:

- Electrical Engineering 9
- Mechanical Engineering 9
- Mining Engineering 12
- Mine Surveying 5
- Occupational Hygiene 10

Of the 45 Assistant Inspectors, 38 were expected to register, attempt and pass the GCC in their respective disciplines during the inspector training. Ten Assistant Inspectors passed their respective GCCs during the period under review. This brings to 12 the total number of Assistant Inspectors in possession of a GCC. Three of the Assistant Inspectors resigned during the period under review pursuing better financial prospects within the industry. All but one of the seven Assistant Inspectors who had been attempting a Bachelor of Technology (B Tech) degree in their respective disciplines at the University of Johannesburg during the 2016 academic year obtained their qualifications. All but one was placed within the various regional offices of the Inspectorate at the beginning of 2017. This includes one individual who was finalising the mine experiential training at Sibanye Gold Academy (SGA) during the previous reporting period.

3.5.2.2 Bursary scheme

The MHSI, through its HRD initiative, invested in 17 bursary holders during the period under review. The bursary holders were funded by the MQA. The students are pursuing the following mining-related qualifications at various tertiary institutions:

- Electrical Engineering (heavy current)
- Mechanical Engineering
- Mine Engineering
- Mine Surveying

Fifteen of the 17 bursary holders completed their qualifications during the financial year.

3.5.3 Examinations

Table 3.5.3 depicts the GCC examinations that were recorded during the current reporting period:

Table 3.5.3: Number of written candidates vs certificates issued per examination category

Type of certificate	Number of candidates writing examinations	Certificates issued
Mine Engineer's (Electrical and Mechanical) Certificate	437	70
Mine Manager's Certificate	397	29
Mine Overseer's Certificate	891	77
Mine Surveyor's Certificate	67	15
Winding Engine Driver's Certificate	62	30
Total	**2 349**	**177**





STATE OF HEALTH IN THE SOUTH AFRICAN MINING INDUSTRY

4. STATE OF HEALTH IN THE SOUTH AFRICAN MINING INDUSTRY

An improvement was noted with regard to the submission of statutory reports. The number of occupational hygiene reports increased as follows: airborne pollutants by 5% from 820 to 863, noise by 1% from 757 to 765, thermal stress/heat by 16% from 562 to 650, and thermal stress/cold by 61% from 293 to 472.

An overall reduction in over-exposure to occupational hygiene stressors was noted and cold continues to maintain zero over-exposures year-on-year since 2013.

An improvement was noted in the submission of AMRs. During 2016, the mining industry submitted 902 AMRs, which is an increase of 2% when compared with 881 reports that were submitted during the previous reporting year.

Medical surveillance examinations varied. Initial examinations increased by 1%, periodic examinations decreased by 3% and exit examinations decreased by 15% when compared with the previous reporting year.

There was a decrease of 29% in the number of occupational diseases reported nationally when compared with the previous reporting year. The occupational diseases reported in the gold, platinum, coal, diamond, manganese, iron ore and other mines' sectors decreased by 11%, 46%, 22%, 23%, 42%, 89% and 49% respectively. There was an increase in the copper and chrome sectors of 133% and 1% respectively when compared with the previous reporting year.

For the year under review, the Medical Inspector received 129 section 20 appeals. A total of 663 mines submitted the DMR 164 Reporting form on TB and HIV during 2016, compared with 600 during 2015.

4.1 Occupational hygiene

Compliance to occupational hygiene statutory reporting has improved. The overall number of reports submitted for airborne pollutants, noise, thermal stress/heat and thermal stress/cold increased by 5%, 1%, 16% and 61% respectively.

Regulation 9.2.7 of the MHSA requires mines to submit statutory reports on personal exposure monitoring to occupational hygiene stressors. The analysis of occupational hygiene measurements is based on the reports submitted to the MHSI as indicated in Table 4.1(a).

Table 4.1(a): Compliance reporting

Region	Airborne		Noise		Heat		Cold	
	2015	2016	2015	2016	2015	2016	2015	2016
Western Cape	69	83	61	67	73	79	19	29
Northern Cape	59	89	56	85	43	74	27	51
Free State	42	61	38	49	31	38	19	23
Eastern Cape	36	32	33	32	18	27	25	21
KwaZulu-Natal	64	71	59	69	41	56	21	39
Mpumalanga	140	116	135	110	75	60	55	64
Limpopo	64	57	59	54	36	40	13	31
Gauteng	97	114	92	97	67	92	35	73
North West: Klerksdorp	122	126	99	88	71	90	31	78
North West: Rustenburg	127	114	125	114	107	94	48	63
Total	**820**	**863**	**757**	**765**	**562**	**650**	**293**	**472**

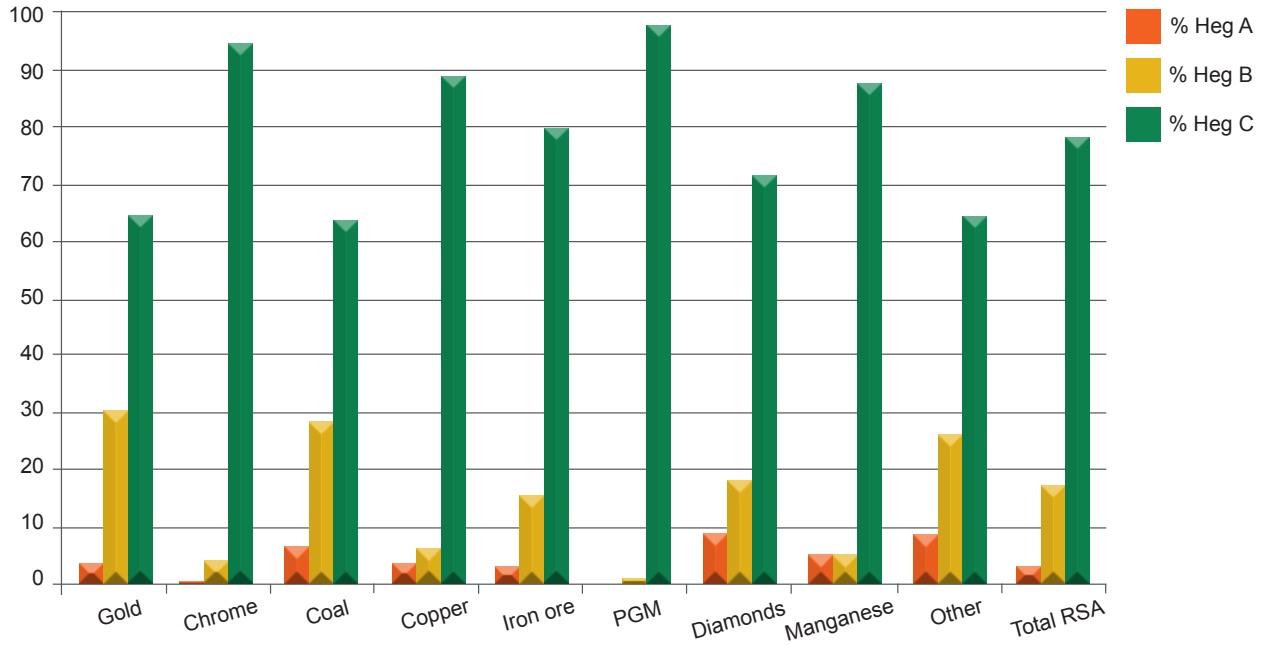
4.1.1 Airborne pollutant exposures

Note:

The exposure classifications are based on the Air Quality Index (AQI) due to exposure to multiple pollutants in the mining environment.

The AQI of multiple pollutants is determined by dividing the dust concentration of each pollutant in the mixture by its occupational exposure limit (OEL) and adding the results together. The sum should not be greater than a unit.

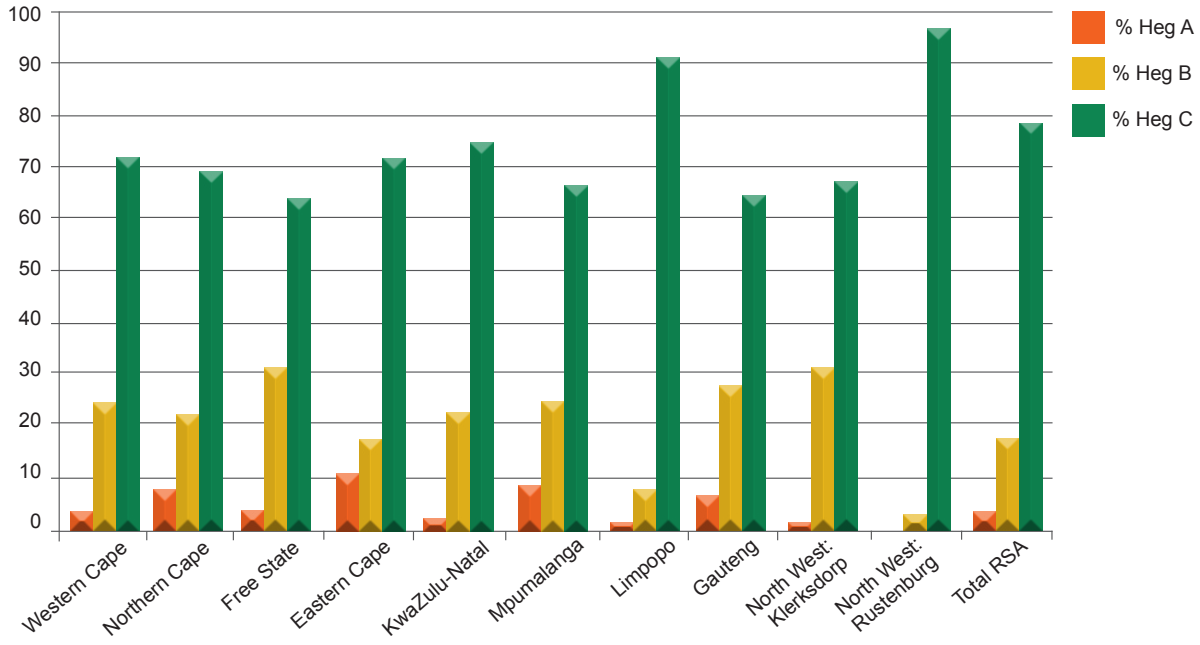
The percentage of exposures depicted in Figure 4.1.1(a) represents the percentage of exposures within a homogeneous group from which samples were collected and does not reflect the total percentage of exposed employees in the mining industry.



Exposure classification bands
A = Exposures ≥ the OEL or mixture of exposures ≥ 1
B = 50% of the OEL ≤ exposures < OEL or 0.5 ≤ mixtures of exposures < 1
C = 10% of the OEL ≤ exposures < 50% of the OEL or 0.1 ≤ mixtures of exposures < 0.5

Figure 4.1.1(a): Percentage exposure to airborne pollutants per classification band per commodity in 2016

There was a decrease of exposures above the OEL in the A classification band from 4.73% in 2015 to 3.66% in 2016. This could be attributed to the significant decrease in over-exposures in the following commodities: gold (8% in 2015 to 4% in 2016), chrome (2% in 2015 to 1% in 2016), coal (8% in 2015 to 7% in 2016), copper (4.3% in 2015 to 4% in 2016), iron ore (7% in 2015 to 4% in 2016) and Platinum Group Metals (PGM) (0.3% in 2015 to 0.2% in 2016). An increase in over-expoxures is noted in the diamonds (6% in 2015 to 9% in 2016) and other mines (8% in 2015 to 9% in 2016) sectors. More joined effort is continuously required to ensure the achievement and maintenance of zero exposures above the OEL, with special focus on the diamond and other mines' sectors. The industry should continuously re-assess and monitor the risks to include the sharing of best practices.



Exposure classification bands
A = Exposures ≥ the OEL or mixture of exposures ≥ 1
B = 50% of the OEL ≤ exposures < OEL or 0.5 ≤ mixtures of exposures < 1
C = 10% of the OEL ≤ exposures < 50% of the OEL or 0.1 ≤ mixtures of exposures < 0.5

Figure 4.1.1(b): Percentage exposure to airborne pollutants per classification band per region in 2016

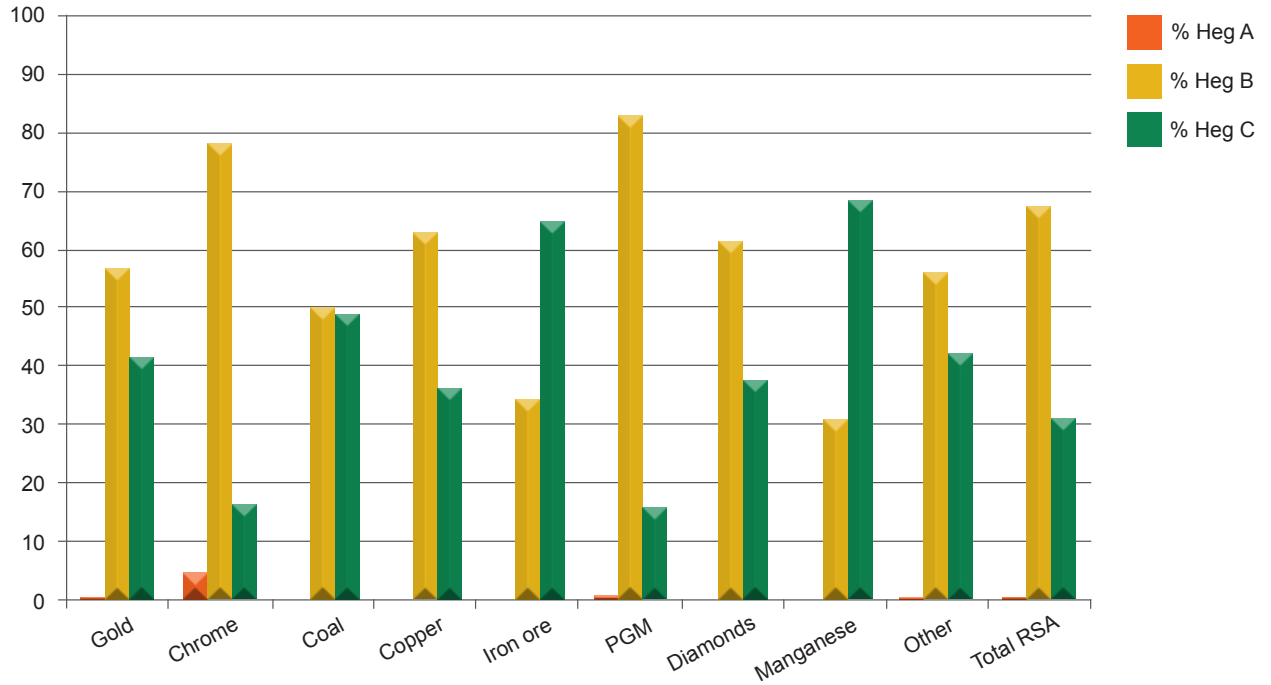
There was a significant improvement in airborne pollutant exposures in the Free State (11% in 2015 to 4% in 2016), KwaZulu-Natal (13% in 2015 to 3% in 2016) and the Western Cape (9% in 2015 to 4% in 2016). Limpopo, Gauteng, the Eastern Cape and North West: Rustenburg had an improvement when compared with the above regions. The regions that had an increase in exposures above the OEL were Mpumalanga, North West: Klerksdorp and the Eastern Cape. This could be attributed to the inadequate monitoring of the effectiveness of controls and supervision.

4.1.2 Noise exposure

Note:

The OEL for Noise is 85 dB (A), based on an eight-hour exposure shift.

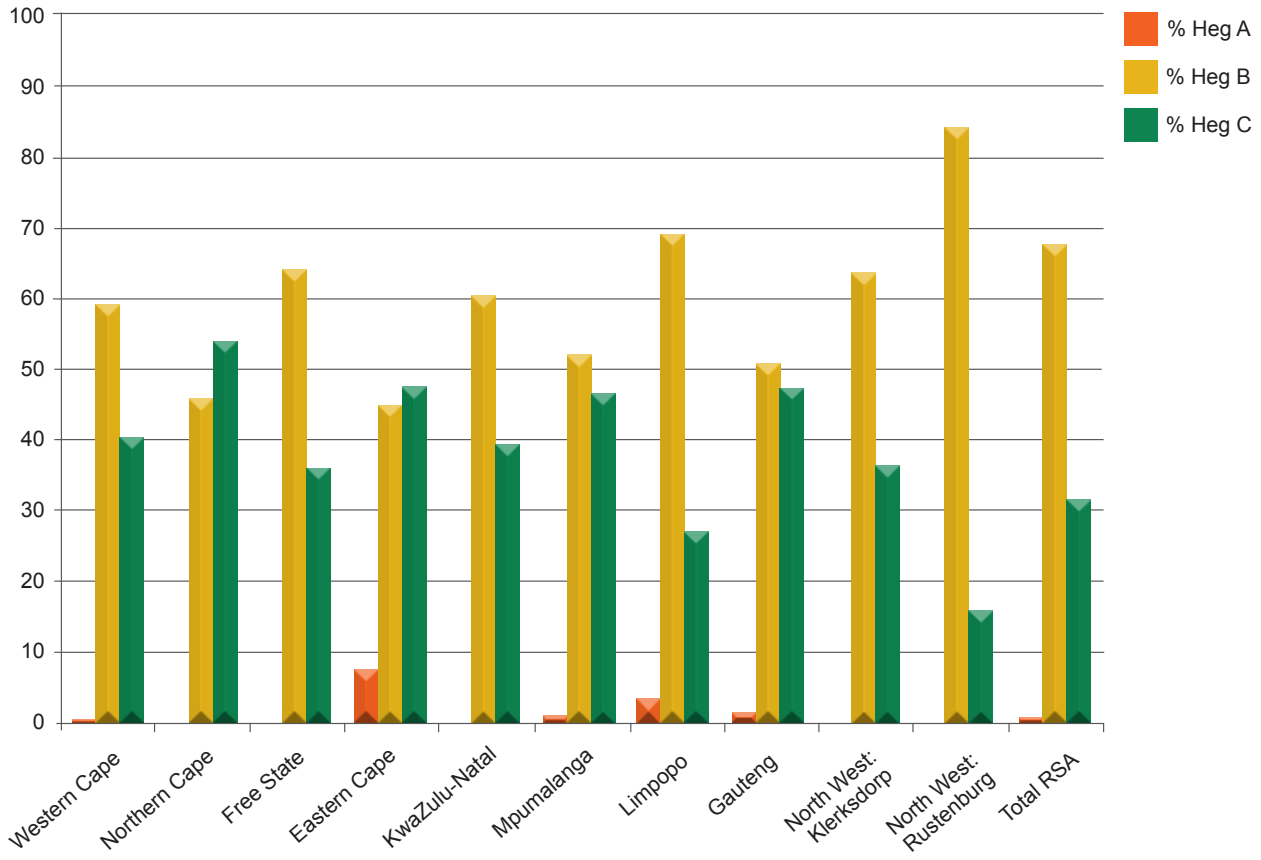
1. No special precautions except monitoring are required for the C band.
2. The implementation of the hearing conservation programme is required for the A and B bands.
3. Persons in the A and B bands are over-exposed.



Exposure classification band:
A = Exposures ≥ 105 dB $L_{Aeq, 8h}$
B = 85 dB $L_{Aeq, 8h}$ ≤ exposures < 105 dB $L_{Aeq, 8h}$
C = 82 dB $L_{Aeq, 8h}$ ≤ exposures < 85 dB $L_{Aeq, 8h}$

Figure 4.1.2(a): Percentage exposure to noise per classification band per commodity in 2016

Noise exposure analysis indicates an overall decrease from 0.96% in 2015 to 0.89% in 2016 in the A classification band, and from 72.15% in 2015 to 67.49 in 2016 in the B classification band. The coal, PGM, diamonds and manganese sectors reduced their over-exposures and the copper and iron ore sectors continued to maintain zero exposures in the A classification band. The gold and other mines' sectors showed an increase in over-exposures in the A classification band, while the chrome sector showed an increase from zero in 2015 to 4.89% in 2016. A concerted effort is still required to engineer noise at source, implement the buy-quiet policies by mining companies, and the continuous maintenance and monitoring of equipment.



Exposure classification band:
A = Exposures ≥ 105 dB $L_{Aeq, 8h}$
B = 85 dB $L_{Aeq, 8h}$ ≤ exposures < 105 dB $L_{Aeq, 8h}$
C = 82 dB $L_{Aeq, 8h}$ ≤ exposures < 85 dB $L_{Aeq, 8h}$

Figure 4.1.2(b): Percentage exposure to noise per classification band per region in 2016

The following regions reduced exposures in the A classification band: Free State, KwaZulu-Natal, North West: Rustenburg and Mpumalanga. The North West: Klerksdorp region maintained zero exposures in the A classification band. Despite the overall reduction, there was an increase in exposure in the following regions: Eastern Cape (1.64% in 2015 to 14% in 2016), Western Cape (0% in 2015 to 0.62% in 2016), Northern Cape (0% in 2015 to 0.5% in 2016), Limpopo (0.25% in 2015 to 3.66% in 2016) and Gauteng (0.66% in 2015 to 1.77% in 2016). There is a need to revisit noise control strategies, the sharing of best practices and the implementation of strategies that will assist in reducing, and eventually eliminating, over-exposure to noise.

4.1.3 Thermal stress

Monitoring is conducted on an annual cycle period in compliance with Regulation 9.2(7) of the MHSA. Accurate and meaningful results are to be representative of all full working shifts for that thermal environment, as obtained from the monitoring.

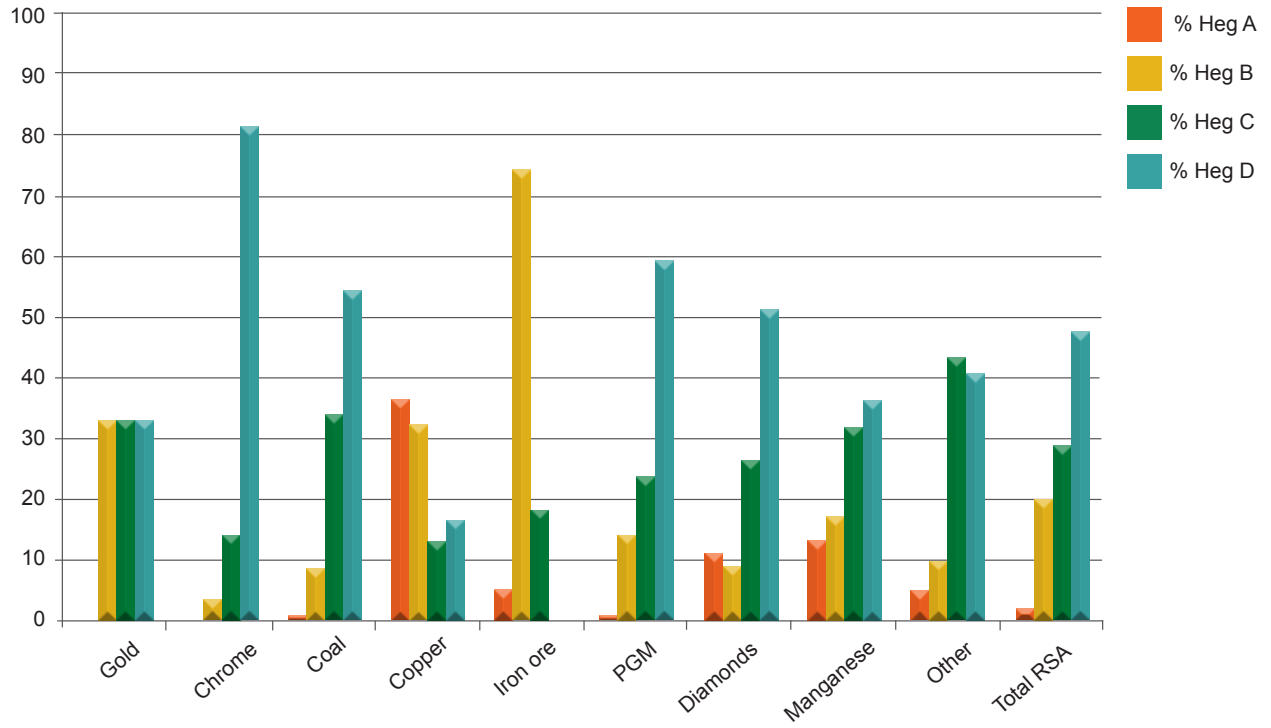
The employer must ensure that, in defining any particular thermal environment, the precautions listed below are heeded.

- Care should be exercised to detect trends where the thermal environment changes, especially from “cool” to “hot”, or from “hot” to “abnormally hot”. This is clearly indicated by regular monitoring, even if only on a random basis, and “cool” environments should not be excluded, especially when it is marginal. The specific protocol would be dictated by prevailing circumstances and, therefore, it cannot be stipulated or prescribed.
- Seasonal drifts could be crucial, and relying on winter temperatures may lead to an underestimation of the risk and vice versa. Environmental monitoring should take this into account.

4.1.3.1 Heat stress

Note:

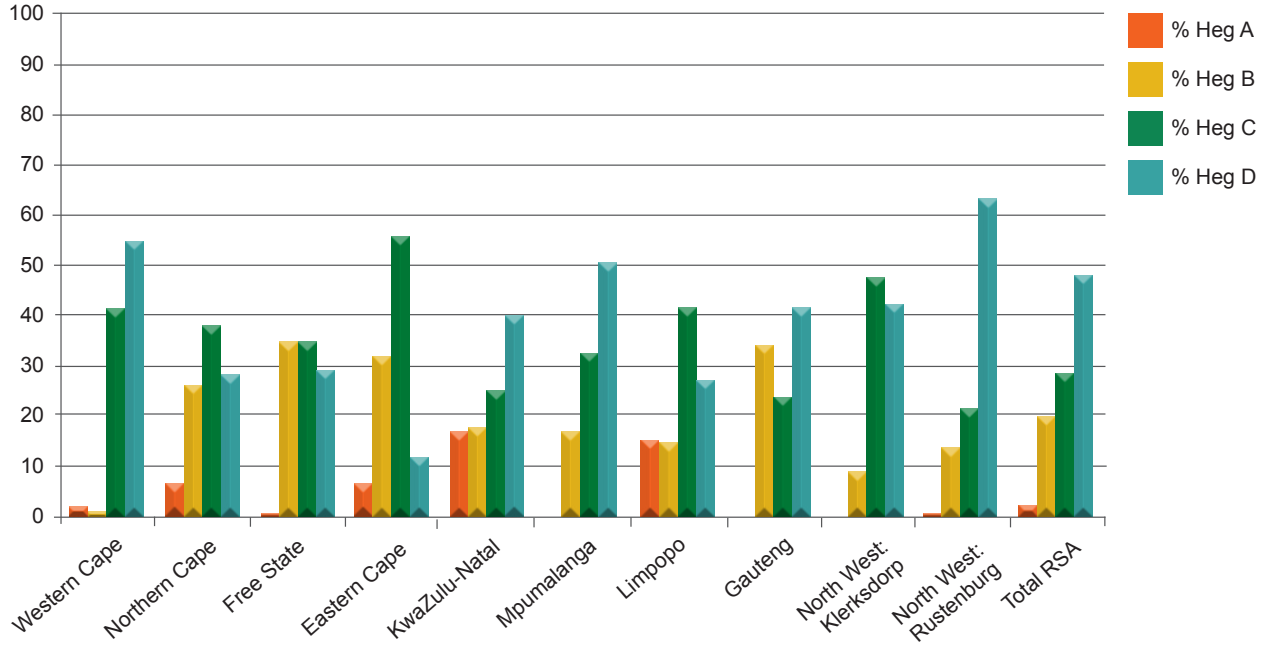
For defining the thermal environment from a heat stress management point of view, dry-bulb (DB) and wet-bulb (WB) globe temperatures, whirling hygrometers or any other suitable instrumentation may be used. This information may be extracted from existing databases that are continually updated. Regular monitoring, even daily, is recommended under certain circumstances.



A = WB > 32.5 ^{O}C or DB > 37 ^{O}C or globe temperature > 37 ^{O}C
B = 29.0 ^{O}C < WB ≤ 32.5 ^{O}C and DB ≤ 37 ^{O}C globe temperature as for dry bulb
C = 27.5 ^{O}C < WB ≤ 29.0 ^{O}C and DB ≤ 37 ^{O}C globe temperature as for dry bulb
D = WB ≤ 27.5 ^{O}C and DB ≤ 32.5 ^{O}C globe temperature as for dry bulb

Figure 4.1.3.1(a): Percentage exposure to thermal stress/heat per classification band per commodity in 2016

There is an overall decrease in over-exposures from 2.62% in 2015 to 2.47% in 2016. A significant decrease was noted in iron ore from 39% in 2015 to 6% in 2016, with chrome moving from 0.39% in 2015 to 0% in 2016. A slight decrease was also noted in coal. There was an increase in over-exposures in the following commodities: gold, copper, PGM, diamonds and other mines. These increases are mainly due to refinery plants. Consideration should be made to ensure adherence to heat stress management.



Heat stress exposure classification band:
A = WB > 32.5 ^{O}C or DB > 37 ^{O}C or globe temperature > 37 ^{O}C
B = 29.0 ^{O}C < WB ≤ 32.5 ^{O}C and DB ≤ 37 ^{O}C globe temperature as for dry bulb
C = 27.5 ^{O}C < WB ≤ 29.0 ^{O}C and DB ≤ 37 ^{O}C globe temperature as for dry bulb
D = WB ≤ 27.5 ^{O}C and DB ≤ 32.5 ^{O}C globe temperatures as for dry bulb

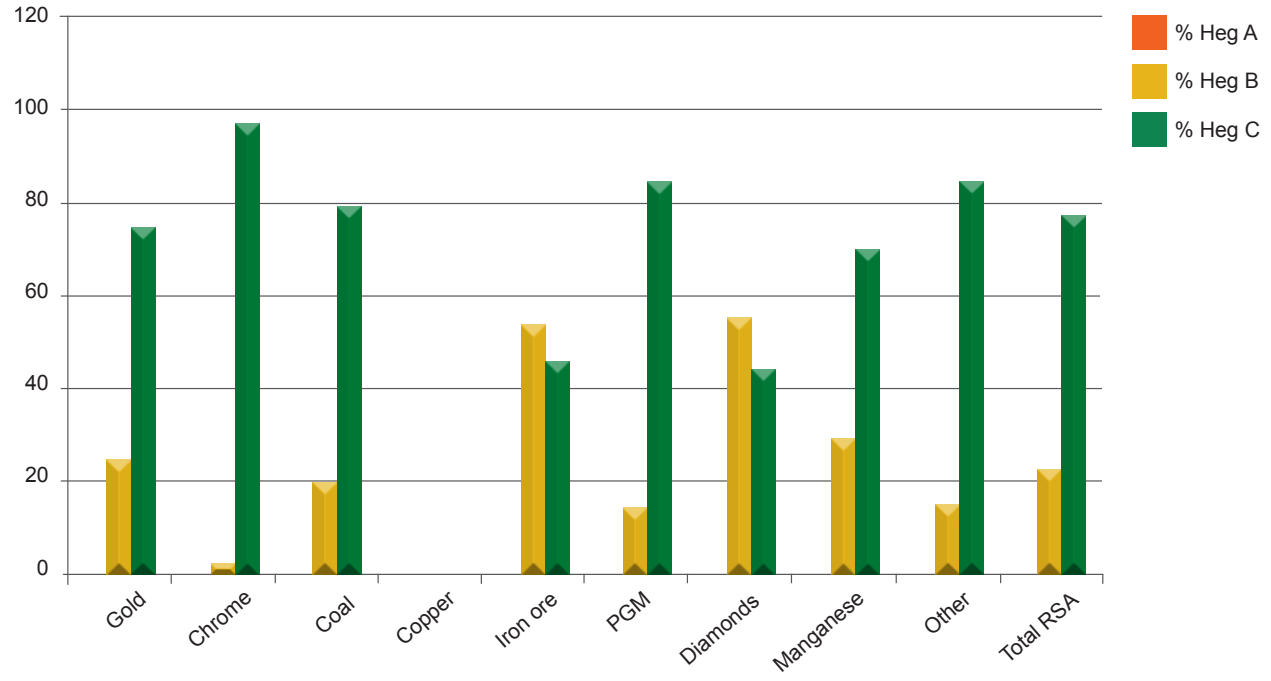
Figure 4.1.3.1(b): Percentage exposure to thermal stress/heat per classification band per region in 2016

The decrease in over-exposures regionally is as follows: Northern Cape from 5.31% in 2015 to 7% in 2016, Eastern Cape from 4% in 2015 to 0% in 2016, North West: Klerksdorp from 4.31% in 2015 to 0% in 2016, with Mpumalanga maintaining zero exposures in both years under comparison. The regions that have experienced an increase in over-exposures are KwaZulu-Natal, Free State, Western Cape, Limpopo, Gauteng and North West: Rustenburg.

4.1.3.2 Cold stress

Note:

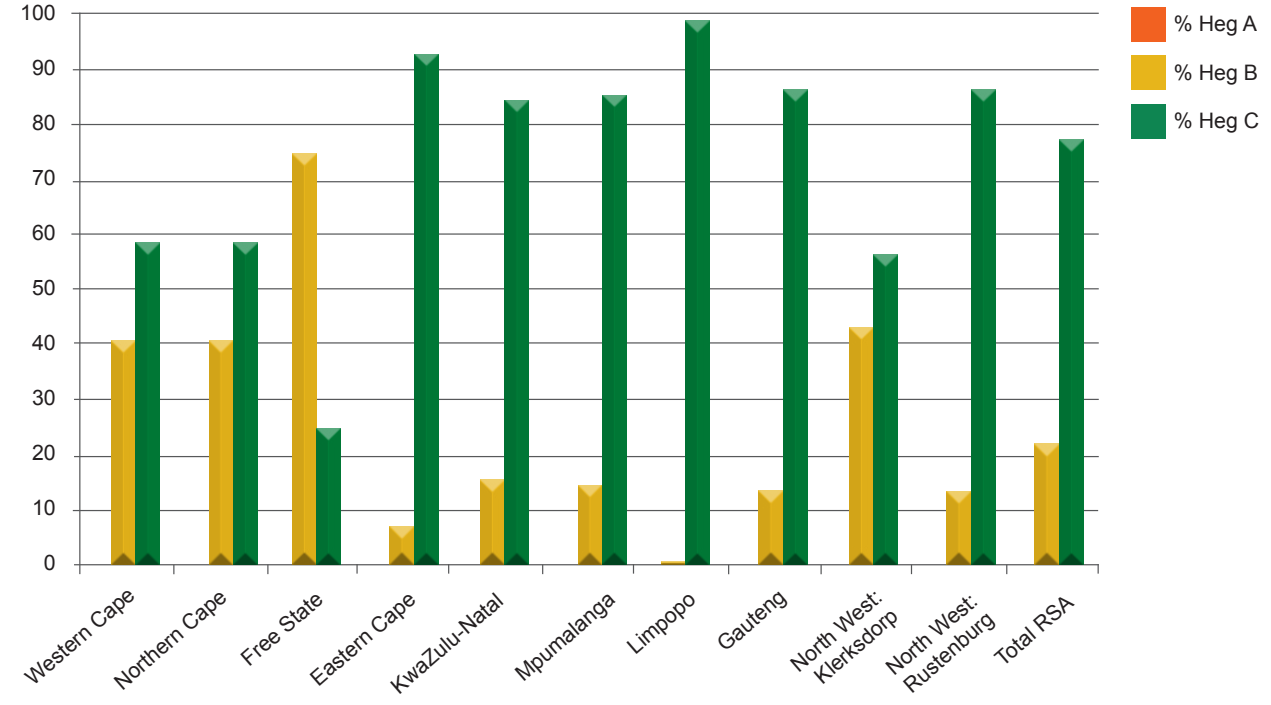
- Temperature ranges are given in terms of equivalent chill temperature.
- Cold stress management (CSM).
- Thermal monitoring for cold stress should be conducted during the coldest quarter (June to August), as determined by risk assessment.
- For defining the thermal environment from a CSM point of view, DB temperatures and velocity, using any suitable instrumentation, may be used. This information may be extracted from existing databases that are continually updated. Regular monitoring, even on a daily basis, is recommended under certain circumstances.



Cold stress exposure classification band:
A = Temperature ≥ -30.0 °C
B = 5.0 °C ≤ temperature < -30.0 °C
C = Temperature > 5.0 °C

Figure 4.1.3.2(a): Percentage exposure to thermal stress/cold per classification band per commodity in 2015

There were an overall commendable zero exposures above the OEL, which have been maintained year-on-year since 2013. No exposures were recorded in the copper sector. A collective effort is required to put appropriate controls in place to also reduce the exposure of persons in the B classification band.



Cold stress exposure classification band:
A = Temperature ≥ -30.0 °C
B = 5.0 °C ≤ temperature < -30.0 °C
C = Temperature > 5.0 °C

Figure 4.1.3.2(b): Percentage exposure to thermal stress/cold per classification band per region in 2016

Regionally, exposures above the OEL have been maintained at zero. All regions are encouraged to continue maintaining the status quo and to increase efforts to reduce the B classification band, including adherence to CSM.

4.1.4 General

A reduction in over-exposures is noted in all occupational hygiene stressors with thermal stress/cold maintaining zero over-exposures. This improvement can be attributed to focused inspections and audits of prioritised mines through the enforcement of the MHSA, and occupational health focus groups where challenges are addressed, including the sharing of best practices at forums such as the Occupational Health Dialogue. It was noted that zero-over-exposures in cold stress have been maintained. However, care should be taken to ensure that CSM is adhered to in managing exposures in the B classification band.

The commodities and regions that are still experiencing over-exposures above the OEL should review and tighten controls that are in place. Improving the management of systems, maintenance, supervision and continuous monitoring should be given precedence.

The dissemination and sharing of occupational hygiene technical information, through tripartite forums, remains key in keeping abreast of new developments and the adoption of best practices. The involvement of original equipment manufacturers (OEMs) is critical in research projects, more especially in the initial planning or pioneering of strategies to reduce, and eventually eliminate, occupational hygiene risks in the industry.

4.2 Occupational medicine

Every Occupational Medical Practitioner (OMP) at a mine is required to compile an AMR for the purpose of reporting on the employees' results with regard to medical surveillance conducted during the calendar year (section 16 of the MHSA, as amended).

4.2.1 Annual Medical Reports

4.2.1.1 Annual Medical Reports received per region

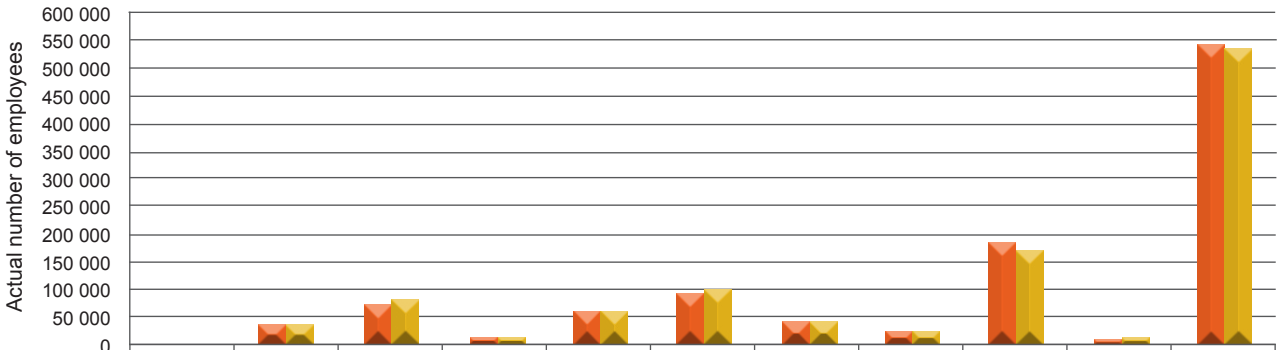
The employer has a legislative obligation to deliver, to the Medical Inspector, a copy of the AMR before the end of February of each year as per the CIOM's Instruction. The AMRs submitted by mines increased from 881 during 2015 to 902 during 2016, which is an increase of 2%. AMRs submitted by the following regions decreased as follows: KwaZulu-Natal by 2%, North West: Klerksdorp by 2% and North West: Rustenburg by 5%. All other regions submitted more AMRs compared with the previous year.

Table 4.2.1(a): Annual medical reports per region: 2015 and 2016

	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	Percentage change
	Chrome		Copper		Coal		Diamond		Gold		Iron ore		Manganese		Platinum		All other		Total		
Eastern Cape	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	64	62	64	3
Free State	0	0	0	0	2	2	4	4	18	20	0	0	0	0	0	0	21	22	45	48	7
Gauteng	0	0	0	0	0	0	1	1	21	21	0	0	0	0	0	0	69	73	91	95	4
KwaZulu-Natal	0	0	0	0	13	12	0	0	0	0	0	0	0	0	0	0	48	48	61	60	-2
Limpopo	13	14	1	1	4	4	2	2	1	1	2	1	0	0	12	12	45	45	79	80	2
Mpumalanga	0	0	0	0	100	109	0	0	7	6	0	0	1	1	1	2	29	27	138	145	5
Northern Cape	0	0	0	0	0	0	45	51	0	0	6	6	13	14	0	0	21	18	85	89	5
North West: Klerksdorp	0	0	0	0	0	0	82	79	7	10	0	0	2	2	0	0	31	29	122	120	-2
North West: Rustenburg	22	21	0	0	0	0	1	1	0	0	1	1	0	0	69	65	24	23	117	111	-5
Western Cape	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	80	89	81	90	11
Total	**35**	**35**	**1**	**1**	**119**	**127**	**136**	**139**	**54**	**58**	**9**	**8**	**16**	**17**	**82**	**79**	**430**	**438**	**881**	**902**	**2**

4.2.1.2 Total employees covered in Annual Medical Reports

The number of employees covered in AMRs decreased from 542 725 during 2015 to 541 519 during 2016. An increase in the total number of employees reported is noted in the Western Cape, followed by the Gauteng, Mpumalanga, Eastern Cape, Free State and Northern Cape regions. A decrease is noted in the North West: Rustenburg, KwaZulu-Natal and Limpopo regions.

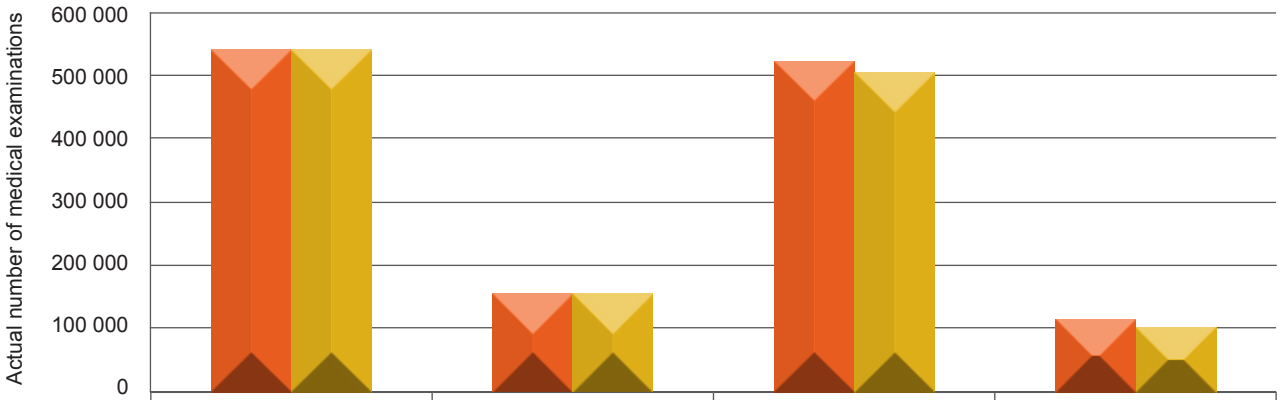


	Eastern Cape	Free State	Gauteng	KwaZulu-Natal	Limpopo	Mpumalanga	Northern Cape	North West: Klerksdorp	North West: Rustenburg	Western Cape	Total
2015	1 942	37 522	71 642	15 154	60 443	96 587	32 289	26 967	185 820	7 359	542 725
2016	2 039	38 790	76 277	14 668	59 748	101 358	39 914	27 025	171 343	10 357	541 519

Figure 4.2.1.2(a): Total employees reported from AMRs per region: 2015 and 2016

4.2.1.3 Medical surveillance conducted

In terms of section 13 of the MHSA, the employer is required to establish and maintain a system of medical surveillance of employees exposed to health hazards. The system must consist of an initial medical examination and other medical examinations at appropriate intervals. The initial examinations reported on AMRs during 2016 increased by 1%, periodic examinations decreased by 3% and exit examinations decreased by 15% when compared with the previous year.



	Total employees	Initial medical examinations	Periodic medical examinations	Exit medical examinations
2015	542 725	155 419	523 131	118 143
2016	541 519	156 419	505 434	100 624

Figure 4.2.1.2(a): Total employees and medical surveillance reported: 2015 and 2016

Table 4.2.1.2: Occupational diseases reported from the Annual Medical Reports per region: 2015 and 2016

	Silicosis		Pulmonary tuberculosis (PTB)		Silico-tuberculosis (Sil+TB)		Noise-induced hearing loss (NIHL)		Coal workers' pneumoconiosis (CWP)		Asbestosis		Other		Total		Percentage change
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	
Eastern Cape	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**
Free State	295	311	499	502	28	19	116	118	0	0	2	0	10	71	**950**	**1 021**	**7**
Gauteng	204	112	999	735	17	2	176	184	0	0	1	0	87	54	**1 484**	**1 087**	**-27**
KwaZulu-Natal	5	2	43	21	0	0	16	5	1	0	0	0	0	0	**65**	**28**	**-57**
Limpopo	1	1	94	75	0	0	148	87	4	1	4	8	1	7	**252**	**179**	**-29**
Mpumalanga	48	30	275	254	3	5	187	139	48	57	3	2	70	53	**634**	**540**	**-15**
Northern Cape	3	0	114	56	0	4	274	29	0	0	4	5	10	14	**405**	**108**	**-73**
North West: Klerksdorp	97	103	133	156	19	8	110	37	0	0	0	0	108	113	**467**	**417**	**-11**
North West: Rustenburg	178	73	1 607	769	0	0	452	355	0	0	0	2	17	25	**2 254**	**1 224**	**-46**
Western Cape	4	3	9	12	2	0	14	12	0	0	0	0	0	1	**29**	**28**	**-3**
Total	**835**	**635**	**3 773**	**2 580**	**69**	**38**	**1 493**	**966**	**53**	**58**	**14**	**17**	**303**	**338**	**6 540**	**4 632**	**-29**

4.2.2 Occupational diseases reported on the Annual Medical Reports

A downward trend of 29% was noted in the number of occupational diseases, from 6 540 cases during 2015 to 4 632 during 2016.

4.2.2.1 Analysis of medical surveillance trends

4.2.3.1.1 Occupational disease trends by region

The decrease in occupational diseases in the nine regions was as follows: Northern Cape (73%), KwaZulu-Natal (57%), North West: Rustenburg (46%), Limpopo (29%), Gauteng (27%), Mpumalanga (15%), North West: Klerksdorp (11%) and Western Cape (3%). Free State is the only region that had an increase of 7% in reported occupational diseases when compared with the previous year. The Eastern Cape region did not report any occupational diseases during either 2016 or 2015.

4.2.3.1.2 Occupational diseases per commodity

There is a downward trend of 29% in the number of occupational diseases reported. The reduction is notable considering that there was a 2% increase in submitted AMRs and a decrease in the number of employees reported on the AMRs when compared with the previous year.

Table 4.2.3.1.2: Occupational diseases as reported on Annual Medical Reports per commodity: 2015 and 2016

	Silicosis		PTB		Sil+TB		NIHL		CWP		Asbestosis		Other		Total		Percentage change
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	
Gold	619	543	1 666	1 436	67	30	349	332	0	0	2	0	200	231	**2 903**	**2 572**	**-11**
Platinum	171	68	1 597	778	0	0	480	347	0	0	0	1	15	24	**2 263**	**1 218**	**-46**
Coal	26	3	213	182	0	4	177	119	53	58	3	1	64	53	**536**	**420**	**-22**
Diamond	0	3	20	34	0	0	70	30	0	0	0	0	6	7	**96**	**74**	**-23**
Copper	0	0	0	2	0	0	3	5	0	0	0	0	0	0	**3**	**7**	**133**
Chrome	7	3	76	60	0	0	59	72	0	0	3	8	2	6	**147**	**149**	**1**
Manganese	0	0	36	20	0	0	17	7	0	0	0	1	0	3	**53**	**31**	**-42**
Iron ore	2	0	70	8	0	4	204	9	0	0	4	4	9	8	**289**	**33**	**-89**
All other	10	15	95	60	2	0	134	45	0	0	2	2	7	6	**250**	**128**	**-49**
Total	**835**	**635**	**3 773**	**2 580**	**69**	**38**	**1 493**	**966**	**53**	**58**	**14**	**17**	**303**	**338**	**6 540**	**4 632**	**-2**

Gold mines

A downward trend of 11% was noted in the occupational diseases reported. Silicosis decreased by 12%, PTB decreased by 14%, Sil+TB decreased by 55%, NIHL decreased by 5%, while other occupational diseases increased by 16% when compared with the previous year.

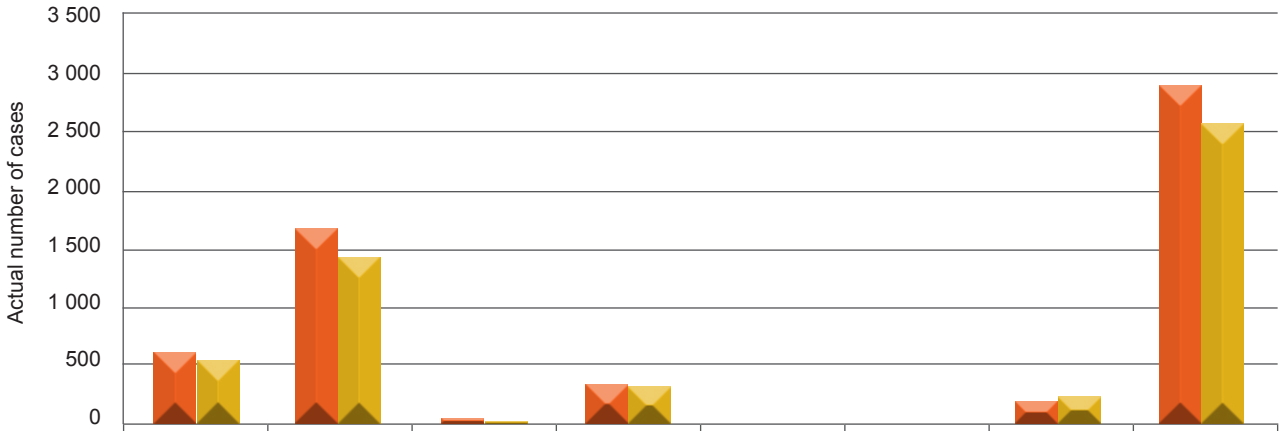
An upsurge in the number of reported silicosis cases was attributed to new X-ray technology, which has improved the diagnostic quality of images. The X-ray modification initiative is undertaken by an off-site radiologist, who reviews at least 10% of chest X-rays (CXR) each month for quality control purposes. This new initiative has added an extra caution element in diagnosing diseases. Employees diagnosed with silicosis are moved to less dusty areas.

A decrease in PTB and NIHL cases was due to ongoing campaigns and training as far as control measures to mitigate the risks is concerned. Engineering (winch covers and sprays), administrative measures (education and training not to spend more time in risky areas) and control measures to mitigate risks are implemented. Employees are trained on the correct and effective use of personal protective equipment (PPE) and the replacement of damaged PPE. The implementation of the World Health Organisation (WHO) 90/90/90 National TB Strategy and the use of the cough questionnaire to screen employees for TB led to the early detection and treatment of TB. The Policy of TB Isoniazid Prophylaxis was reviewed to include silicosis, which helps to prevent TB in employees with silicosis. Sputum-positive employees are admitted to hospital until they are smear-negative. The TB Directly Observed Treatment Strategy (DOTS) programme and contact tracing are implemented to ensure a high TB cure rate.

The increase in chronic obstructive airways disease (COAD) was reportedly due to intensified case findings and improved diagnostic technology, as well as dust control measures to limit exposure.

A decline in NIHL was due to the robust hearing conservation programme, which includes a maintained effort to improve hygiene measures, engineering and administrative controls, and the early effects of customised hearing protection

devices (HPDs), as well as intensive education and coaching provided to employees. The barotrauma incidence showed a decline, supposedly due to efficient education programmes through induction and green area meetings.



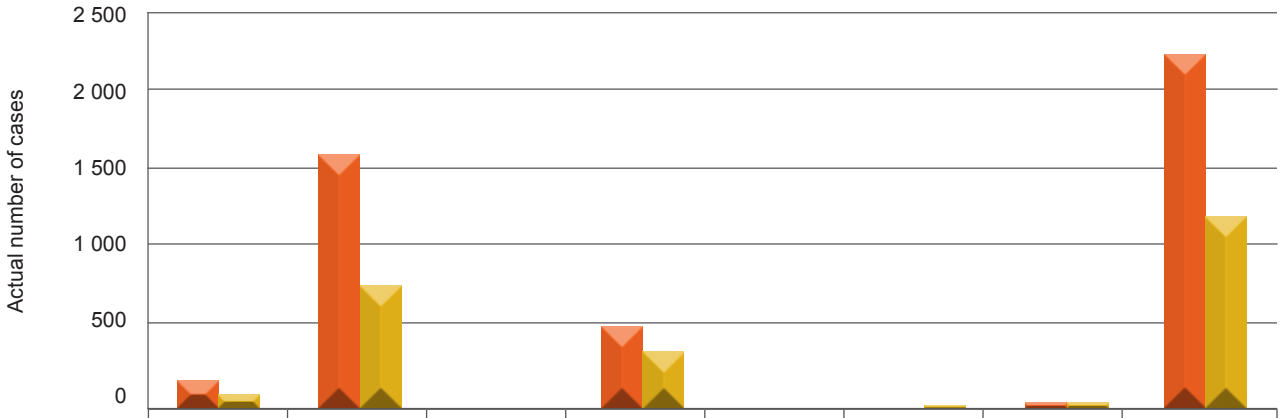
	Silicosis	PTB	Sil + TB	NIHL	CWP	Asbestosis	Other	Total
2015	619	1 666	67	349	0	2	200	2 903
2016	543	1 436	30	332	0	0	231	2 572

Figure 4.2.3.1.2(a): Occupational diseases reported from gold mines: 2015 and 2016

Platinum mines

In the platinum mines, a 46% decrease was noted in occupational diseases reported. Silicosis, PTB and NIHL decreased by 60%, 51% and 28% respectively, while the other occupational diseases increased by 60% when compared with the previous year.

Most silicosis cases have a history of previous gold mine exposure. Decreased PTB is due to increased awareness and counselling, including the vigilant screening of employees. Employees working in noise zones are issued with custom-made HPDs and counselling is done with regard to noise exposure.

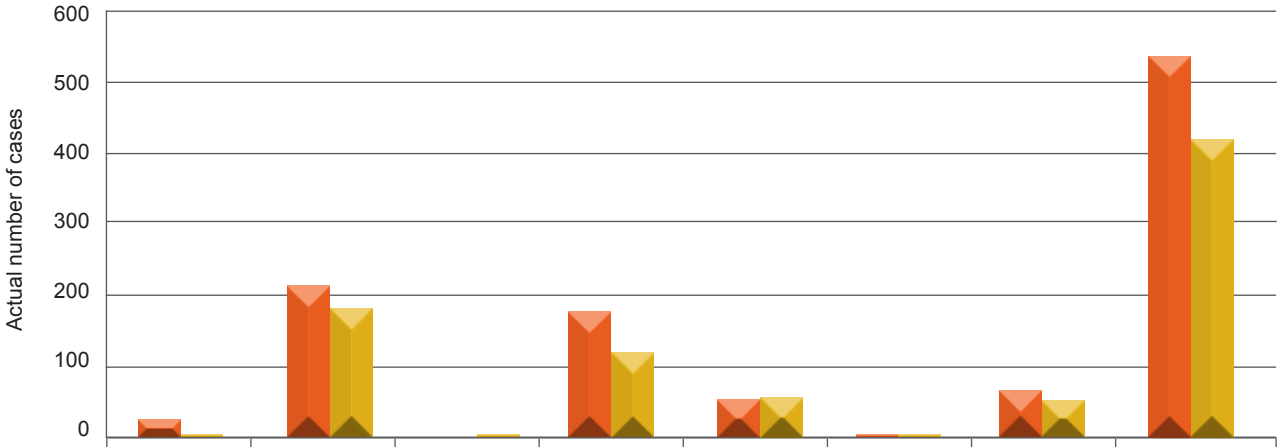


	Silicosis	PTB	Sil + TB	NIHL	CWP	Asbestosis	Other	Total
2015	171	1 597	0	480	0	0	15	2 263
2016	68	778	0	347	0	1	24	1 218

Figure 4.2.3.1.2(b): Occupational diseases reported from platinum mines: 2015 and 2016

Coal mines

There is a 22% decrease in the occupational diseases reported. Silicosis decreased by 88%, PTB decreased by 15%, Sil+TB increased by 100%, NIHL decreased by 33%, asbestosis decreased by 67% and other occupational diseases decreased by 17% when compared with the previous year.



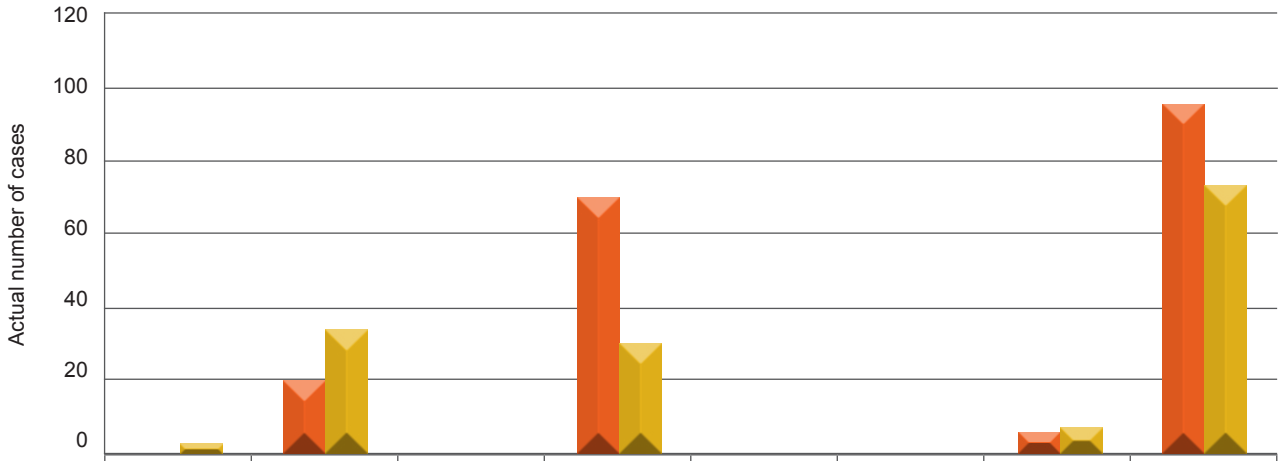
	Silicosis	PTB	Sil + TB	NIHL	CWP	Asbestosis	Other	Total
2015	26	213	0	177	53	3	64	536
2016	3	182	4	119	58	1	53	420

Figure 4.2.3.1.2(c): Occupational diseases reported from coal mines: 2015 and 2016

Diamond mines

A 23% decrease was noted in the occupational diseases reported. Silicosis increased by 100%, PTB increased by 70%, NIHL decreased by 57% and other occupational disease increased by 17% when compared with the previous year.

A significant increase in PTB cases was due to the marked influx of new employees and some employees who were co-infected.

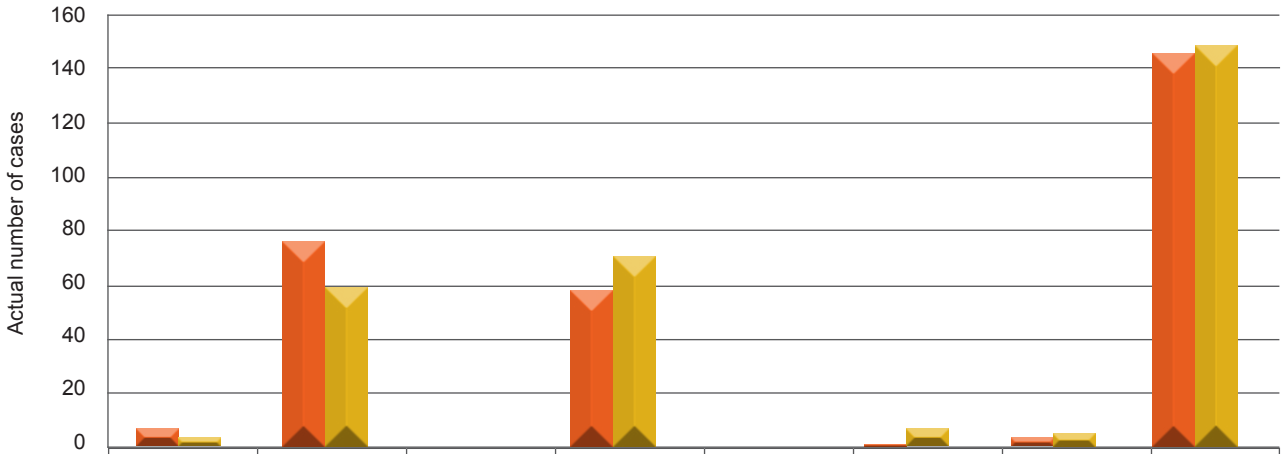


	Silicosis	PTB	Sil + TB	NIHL	CWP	Asbestosis	Other	Total
2015	0	20	0	70	0	0	6	96
2016	3	34	0	30	0	0	7	74

Figure 4.2.3.1.2(d): Occupational diseases reported from diamond mines: 2015 and 2016

Chrome mines

The occupational diseases reported showed a decrease of 1%. Silicosis and PTB decreased by 57% and 21% respectively, while NIHL increased by 22%. Other occupational diseases increased by 200% when compared with the previous year.

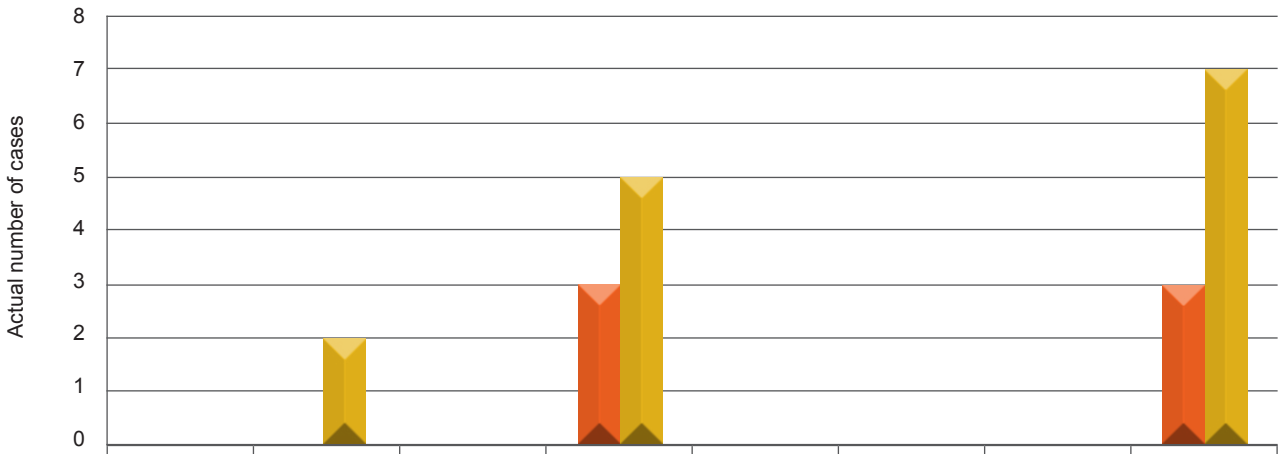


	Silicosis	PTB	Sil + TB	NIHL	CWP	Asbestosis	Other	Total
2015	7	76	0	59	0	3	2	147
2016	3	60	0	72	0	8	6	149

Figure 4.2.3.1.2(e): Occupational diseases reported from chrome mines: 2015 and 2016

Copper mines

Occupational diseases increased by four cases. Two PTB cases were reported, while no cases were reported during the previous year. NIHL increased by two cases when compared with the previous year.



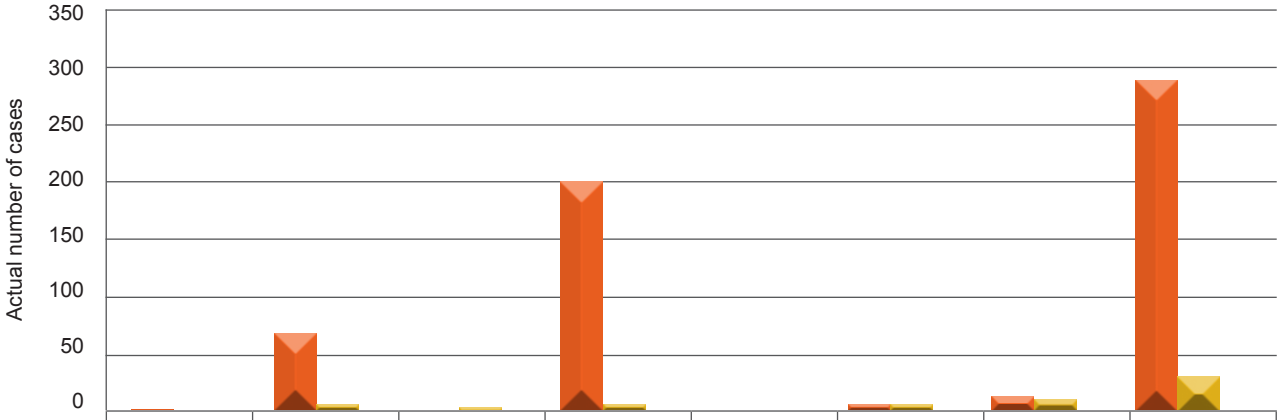
	Silicosis	PTB	Sil + TB	NIHL	CWP	Asbestosis	Other	Total
2015	0	0	0	3	0	0	0	3
2016	0	2	0	5	0	0	0	7

Figure 4.2.3.1.2(f): Occupational diseases reported from copper mines: 2015 and 2016

Iron ore mines

There was an 86% decrease in the number of occupational diseases. Silicosis decreased by 100%, PTB decreased by 89%, NIHL decreased by 96% and other occupational diseases decreased by 11% when compared with the previous year.

The noise reduction was supposedly due to a huge drive to issue all employees, including contractors working in noise zones, with customised HPDs for maximum hearing protection. With regard to occupational diseases, mines installed dust suppression systems and optimised the operation of existing systems. Some mines established a dust management committee and plans are underway to erect real-time dust monitors in problem areas such as the plant. Occupational Medicine and Hygiene Inspectors are also involved in inspecting areas that produce a lot of dust, and employees working in dusty areas are issued with dust masks to reduce dust exposure.

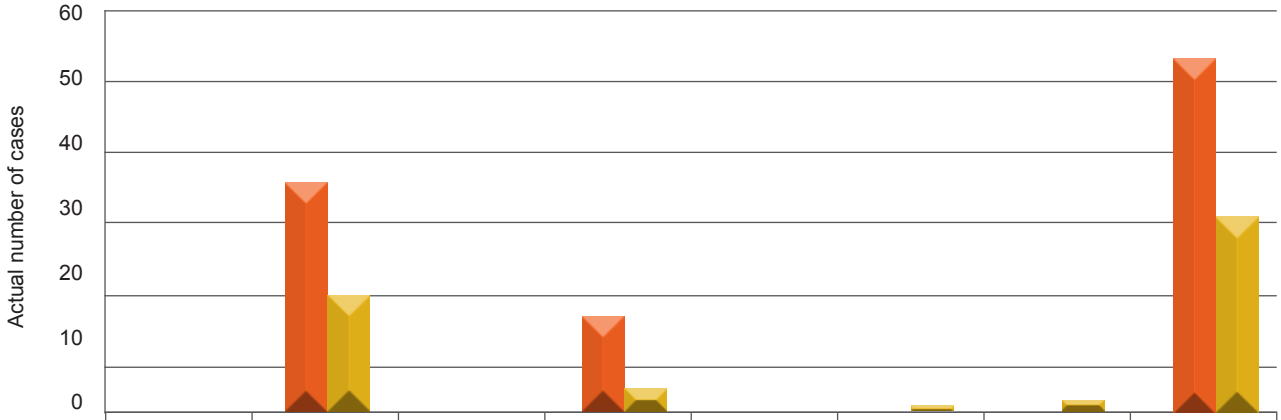


	Silicosis	PTB	Sil + TB	NIHL	CWP	Asbestosis	Other	Total
2015	2	70	0	204	0	4	9	289
2016	0	8	4	9	0	4	8	33

Figure 4.2.3.1.2(g): Occupational diseases reported from iron ore mines: 2015 and 2016

Manganese mines

A downward trend of 42% was noted in the occupational diseases reported. PTB decreased by 44% and NIHL decreased by 59%, while other occupational diseases increased by 100% when compared with the previous year.

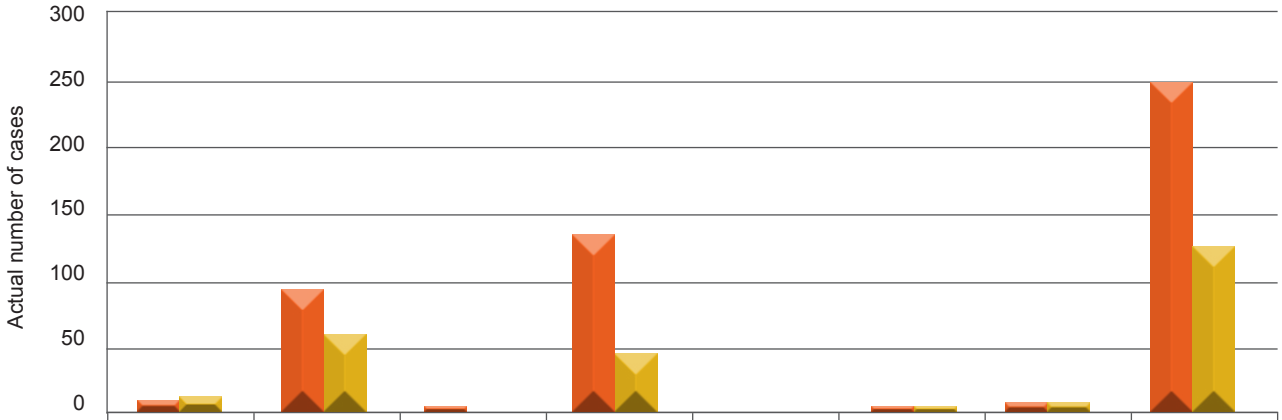


	Silicosis	PTB	Sil + TB	NIHL	CWP	Asbestosis	Other	Total
2015	0	36	0	17	0	0	0	53
2016	0	20	0	7	0	1	3	31

Figure 4.2.3.1.2(h): Occupational diseases reported from manganese mines: 2015 and 2016

All other mines

There was a 49% decrease in the occupational diseases reported. Silicosis increased by 50%, while PTB decreased by 37%, NIHL decreased by 66% and other occupational diseases decreased by 14%.



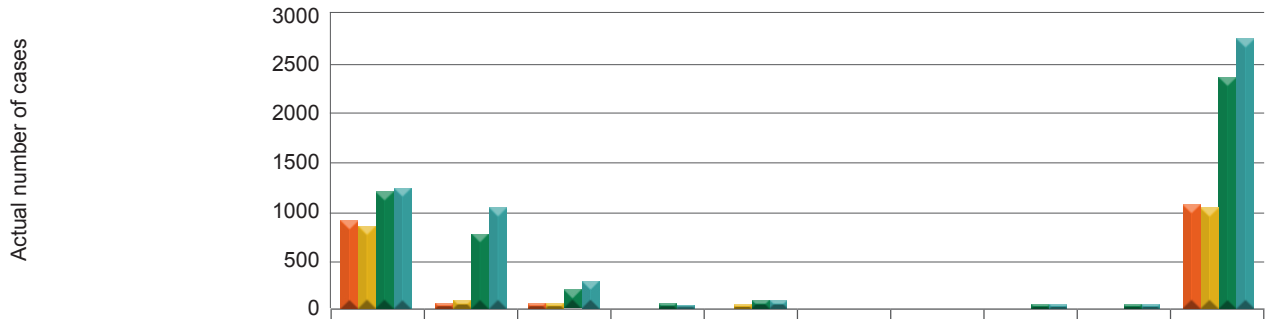
	Silicosis	PTB	Sil + TB	NIHL	CWP	Asbestosis	Other	Total
2015	10	95	2	134	0	2	7	250
2016	15	60	0	45	0	2	6	128

Figure 4.2.3.1.2(i): Occupational diseases reported from all other mines: 2015 and 2016

4.2.3.1.3 Medical incapacity due to occupational and non-occupational diseases

A 4% decrease was noted in medical incapacity cases reported due to occupational diseases. The gold, diamond and iron ore mines showed a decrease of 8%, 100% and 67% respectively, while the platinum, coal and chrome mines showed an increase of 11%, 22% and 300% respectively. All other mines had an increase of 250%.

Medical incapacity cases reported due to non-occupational diseases showed an increase of 17%. There was an increase of 1% in the gold mines, 60% in the coal mines, 117% in the manganese mines and 137% in the iron ore mines, while the diamond, chrome, copper and all other mines showed a decrease of 23%, 11%, 38% and 17% respectively when compared with the previous year.

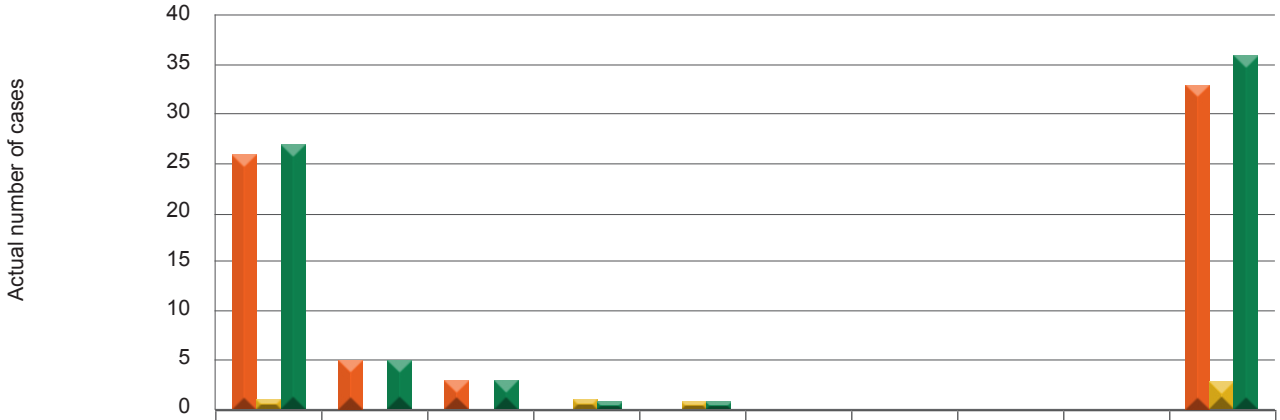


	Gold	Platinum	Coal	Diamond	Chrome	Copper	Manganese	Iron ore	All other	Total
Medical incapacity: Occupational diseases 2015	902	56	50	3	8	0	0	12	2	1 033
Medical incapacity: Occupational diseases 2016	828	62	61	0	32	0	1	4	7	995
Medical incapacity: Non-occupational diseases 2015	1 194	763	177	44	100	8	6	15	42	2 349
Medical incapacity: Non-occupational diseases 2016	1 209	1 035	284	34	89	5	13	37	35	2 741

Figure 4.2.3.1.3: Medical incapacity cases reported by commodity: 2015 and 2016

4.2.3.1.4 Fatalities due to occupational diseases

The gold mines reported the majority of cases, followed by the platinum, coal, diamond and chrome mines.



	Gold	Platinum	Coal	Diamond	Chrome	Copper	Iron ore	Maganese	All other	Total
Mine employees	26	5	2	0	0	0	0	0	0	33
Contractor employees	1	0	0	1	1	0	0	0	0	3
Total	27	5	2	1	1	0	0	0	0	36

Figure 4.2.3.1.4: Fatalities due to occupational diseases reported by commodity: 2016

4.3 Medical Inspector's report

For the year under review, the Medical Inspector received 129 appeals in terms of section 20 of the MHSA.

4.3.1 Medical appeals

During 2016, 129 appeals were received and 108 cases were completed. This translates into 83.7% of appeals finalised. Only appeals meeting the requirements for section 20 are processed to finality.

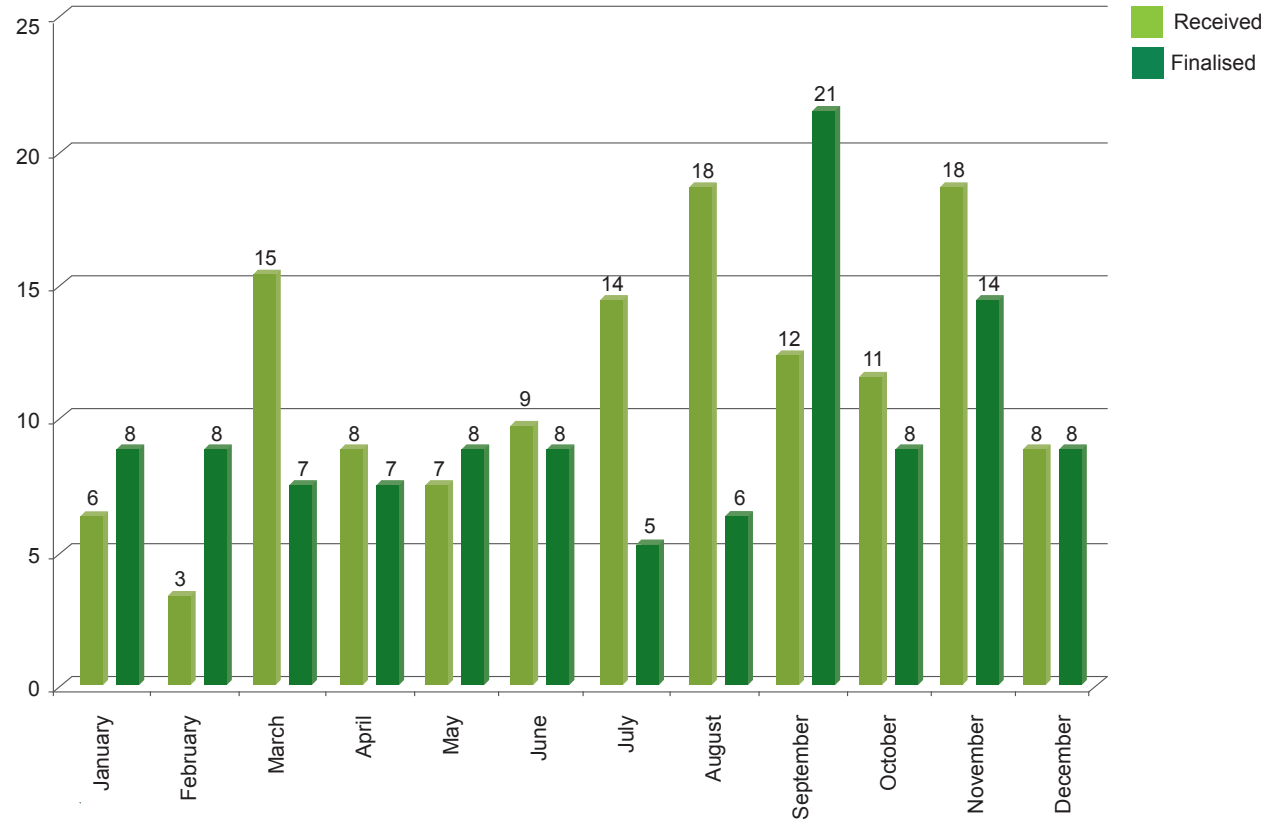
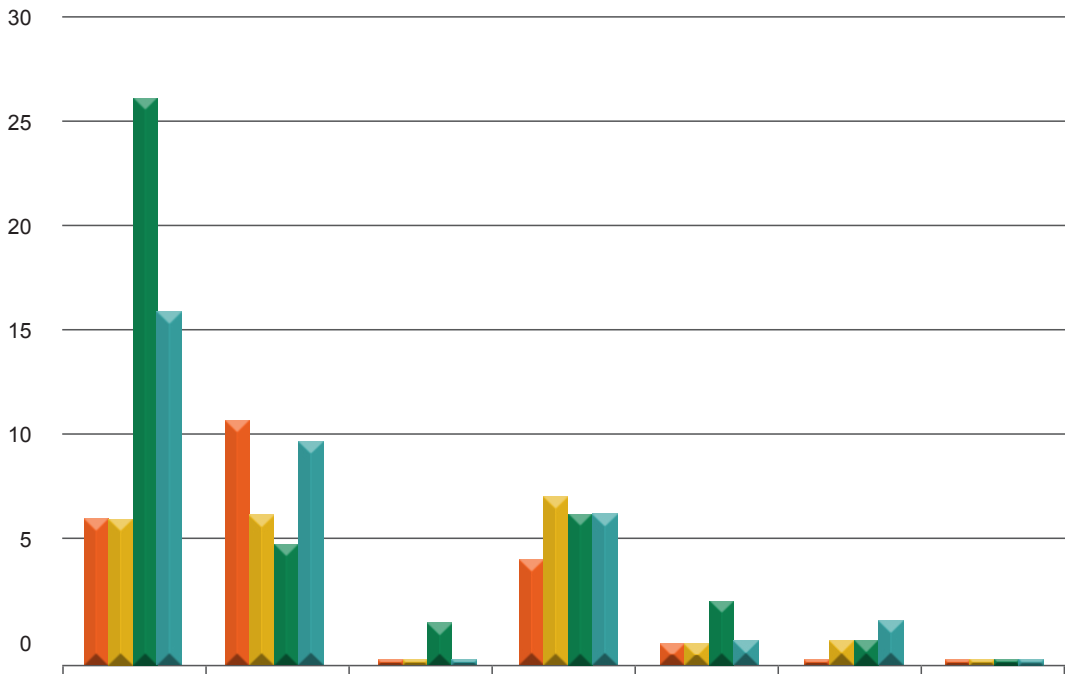


Figure 4.3.1: Appeals received and finalised: January to December 2016

The number of appeals received versus those completed varies from month to month, as shown in Figure 4.3.1. Most of the appeals were received during March, August and November.

4.3.2 Appeals received per region

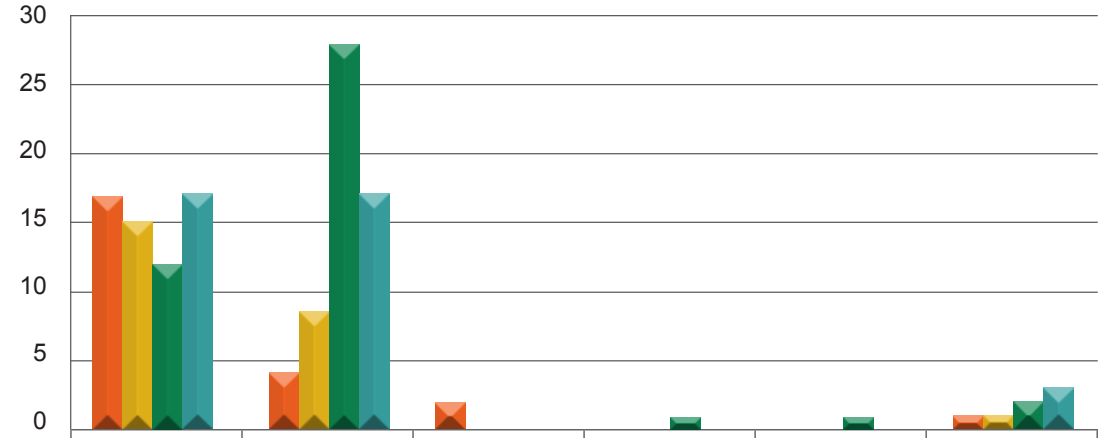


	North West	Free State	Mpumalanga	Gauteng	Northern Cape	Limpopo	KwaZulu-Natal
January - March	7	11	0	5	1	0	0
April - June	7	7	0	8	1	1	0
July - September	26	5	2	7	3	1	0
October - December	17	10	0	7	1	2	0

Figure 4.3.2(b): Number of appeals per region: January to December 2016

The majority of appeals received in 2016 were from North West, Free State and Gauteng. No appeals were received from Western Cape, KwaZulu-Natal and Eastern Cape regions in 2016. However, compensation complaints were received from the Western Cape. The complaints were investigated and finalised by the Medical Inspector and the Occupational Medicine Inspector from the Western Cape region.

4.3.3 Appeals received per commodity



	Gold	Platinum	Chrome	Coal	Diamond	Others
January–March	17	4	2	0	0	1
April–June	15	8	0	0	0	1
July–September	12	28	0	1	1	2
October–December	17	17	0	0	0	3

Figure 4.3.3: Appeals per commodity: January to December 2016

Most of the appeals received in 2016 were from the platinum and gold mines. This corresponds to the regions that contributed the high numbers of appeals as shown in Figure 4.3.3. These regions are North West: Rustenburg, where platinum is mined, and the Free State and Gauteng, where gold is mined.

4.3.4 Diseases handled in the appeals received for 2016

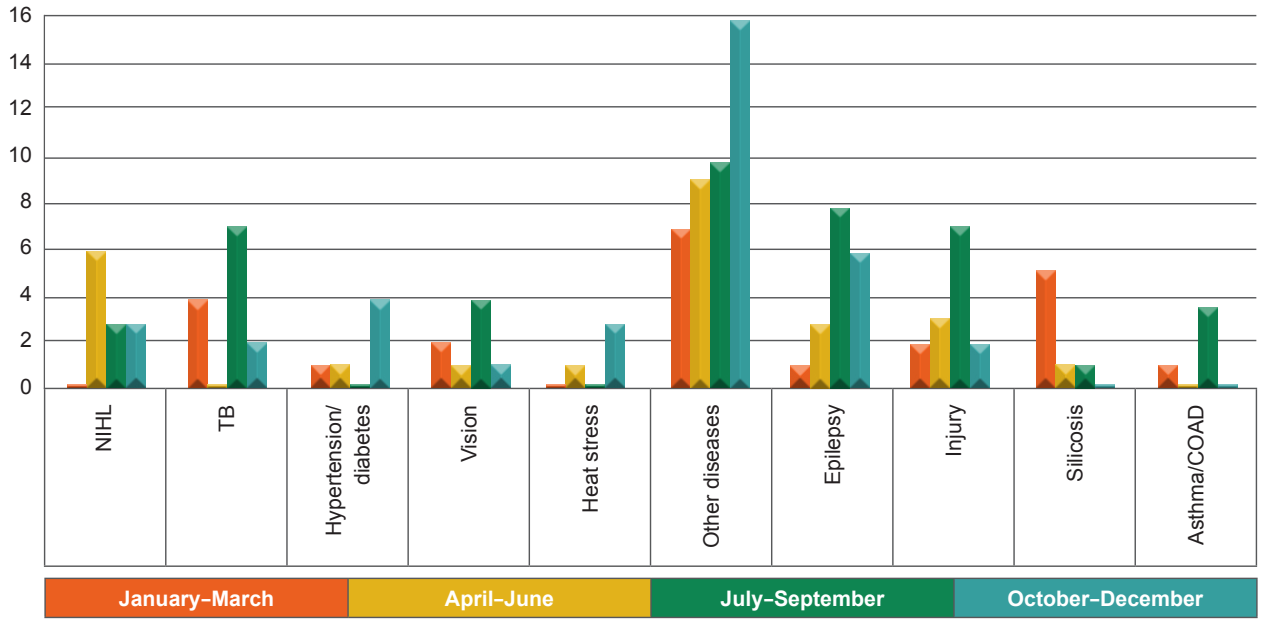


Figure 4.3.4: Diseases: January to December 2016

The bulk of the cases handled constituted a number of different diseases, indicated as “other diseases” in Figure 4.3.4. For 2016, these diseases ranged from musculoskeletal problems, psychiatric conditions, renal failure, cardiac problems, other lung diseases and lymphoma.

4.3.5 Appeal findings

According to section 20 of the MHSA, the Medical Inspector has a right to vary, confirm or set aside the decision of the OMP. Accordingly, the appeal findings below were established after a holistic approach to gather all the necessary facts. Approximately 13% of appellants were found to be fit, thus the decision of the OMP was set aside. Some 40% were found to be unfit, thus the decision of the OMP was confirmed. The rest of the cases (47%) were varied as they did not require a decision on the fitness status of employees, but were investigated and finalised.

4.3.6 Challenges to the appeal process

Challenges related to different stakeholders (employees, employers and service providers) were noted in 2016:

Employees:

- Appealing against unfair labour processes, which should be sent to the Commission for Conciliation, Mediation and Arbitration (CCMA)
- Withdrawing CCMA cases and lodging section 20 appeals afterwards
- Harassment of officials of the Inspectorate

Employers (OMP):

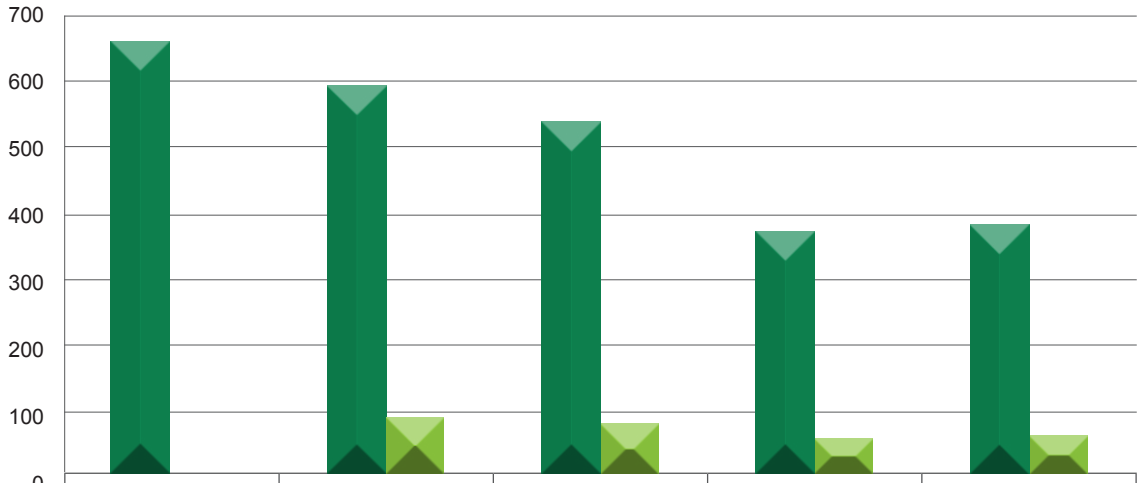
- Failure to employ a holistic approach in determining the fitness status of employees
- Failure to provide adequate reasons for declaring employees unfit
- Referring employees for section 20 by OMPs to avoid using their discretion
- Delay in responding to requests for medical information
- Playing multiple roles as employee representative, second-opinion doctor and final decision-maker regarding the fitness of employees
- Using the appeal process to complain about OMPs or the mine

Service providers:

- No early dates were available for second-opinion assessments
- Delays in sending reports after assessing employees

4.3.7 Reporting on HIV and TB

During the period under review, 663 mines with 455 681 employees complied with the reporting requirements, compared with 600 mines, representing 476 625 employees, in 2015. Although more mines have used DMR 164 Reporting forms for reporting TB and HIV, there was a decrease in the labour force, possibly due to the downsizing of mining companies.



	Total mines	Integrated TB/HIV policy	Integrated TB/HIV programme	HIV/TB programme budget	Manage its own employees including contractors
Total mines	663	595	536	373	382
% compliance		89.7	80.8	56.3	57.6

Figure 4.3.7: Compliance for all mines

There was generally an increase in the number of mines that submitted DMR 164 forms; hence, compliance in terms of TB/HIV policies and programmes improved.

Of concern was mining companies that still do not dedicate a budget for HIV and TB programmes, as shown by the 2016 data compliance, which was at 56.3%. Compliance with managing their own employees was at 57.6%, indicating that some contractors are not catered for in the management of HIV and TB.

Table 4.3.7(a): Compliance for all mines per commodity: 2016

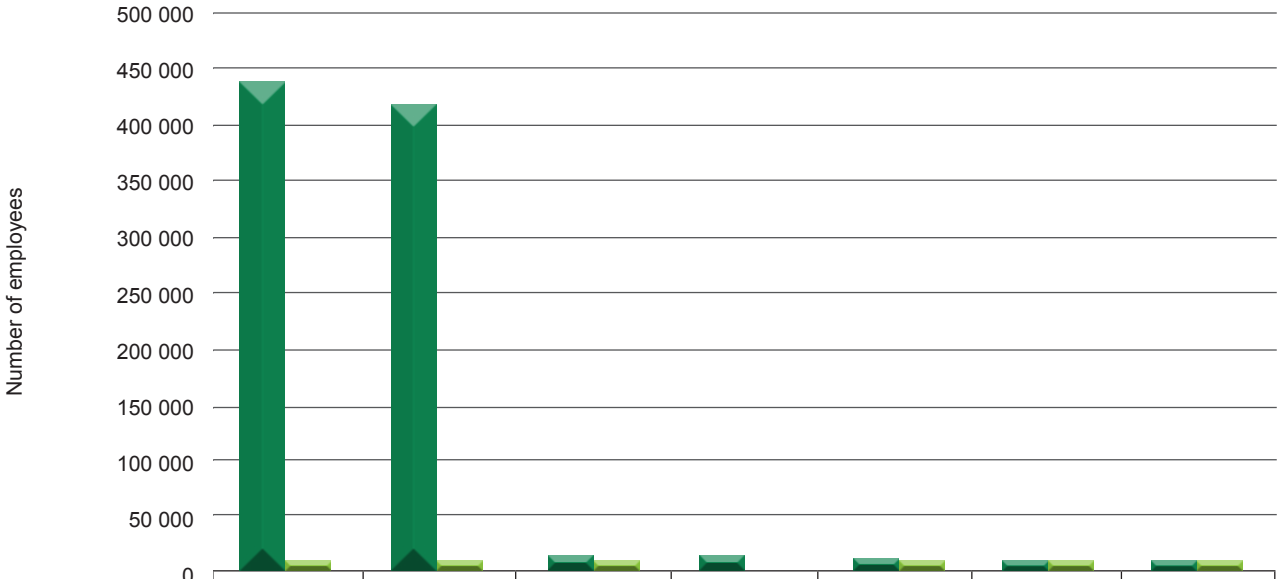
Measure	Coal Number of mines: 102 Employees: 60 620	Diamonds Number of mines: 97 Employees: 17 365	Gold Number of mines: 54 Employees: 124 953	Platinum Number of mines: 71 Employees: 166 517	Other commodities Number of mines: 339 Employees: 86 226	Total Total mines: 663 Employees: 455 681
Integrated HIV and TB policy	101 99.0%	95 97.9%	42 77.8%	54 76.0%	303 89.4%	595 89.7%
Integrated HIV and TB programme	96 94.0%	74 76.3%	52 96.3%	56 78.9%	258 76.1%	536 80.8%
HIV and TB programme budget	72 70.6%	39 40.2%	43 79.6%	55 77.5%	164 48.4%	373 56.3%
Manage its own employees, including contractors	54 52.9%	85 87.6%	43 79.6%	31 43.7%	169 49.9%	382 57.6%

The diamond and other mines' sectors contributed to the low compliance in terms of the HIV/TB budget. The coal, platinum and other mines' sectors contributed to reduced compliance for managing employees, including contractors.

Table 4.3.7(b): HIV counselling and testing (HCT) services and TB programme data elements for all commodities in 2016

Data elements	Coal Labour force (mines): 60 620 (102)	Diamonds Labour force (mines): 17 365 (97)	Gold Labour force (mines): 124 953 (54)	Platinum Labour force (mines): 166 517 (71)	Other commodities Labour force (mines): 86 226 (339)	Total Labour force (mines): 455 681 (663)
Counselled for HIV	25 173 (41.5%)	8 577 (49.4%)	78 629 (62.9%)	144 521 (86.8%)	42 544 (49.3%)	299 444 (65.7%)
Tested for HIV	20 063 (75.3%)	6 858 (80.0%)	55 903 (71.1%)	81 401 (56.3%)	29 390 (69.1%)	192 517 (64.3%)
HIV-positive	1403 (7.0%)	111 (1.6%)	5 622 (10.1%)	7 722 (9.5%)	1 385 (4.7%)	16 243 (8.4%)
Co-infected with TB and HIV	158 (87.2%)	20 (58.8%)	1 098 (70.0%)	960 (63.2%)	123 (55.9%)	2 359 (59.8%)
Living with HIV and on antiretrovirals (ARVs)	2 649	430	15 597	18 155	1 973	38 804
Screened for TB	555 170 (91.0%)	15 622 (90.0%)	124 502 (99.6%)	160 050 (96.1%)	82 092 (95.2%)	437 436 (96.0%)
Diagnosed with TB	181 (0.3%)	34 (0.2%)	1 844 (1.5%)	1 520 (0.9%)	220 (0.3%)	3 799 (0.9%)
On TB treatment	214	31	1 686	1 529	227	3 687
Diagnosed with multi-drug-resistant TB (MDR-TB)	16 (8.8%)	0 (0.00%)	63 (3.4%)	38 (2.5%)	6 (2.7%)	123 (3.2%)
On MDR-TB treatment	18	0	68	41	6	133
Diagnosed with Extremely drug-resistant TB (XDR-TB)	3 (1.7%)	1 (2.9%)	4 (0.2%)	2 (0.1%)	3 (1.4%)	13 (0.3%)
On XDR-TB treatment	3	0	4	5	1	14

4.3.8 TB programme and TB/HIV co-infection in all mines



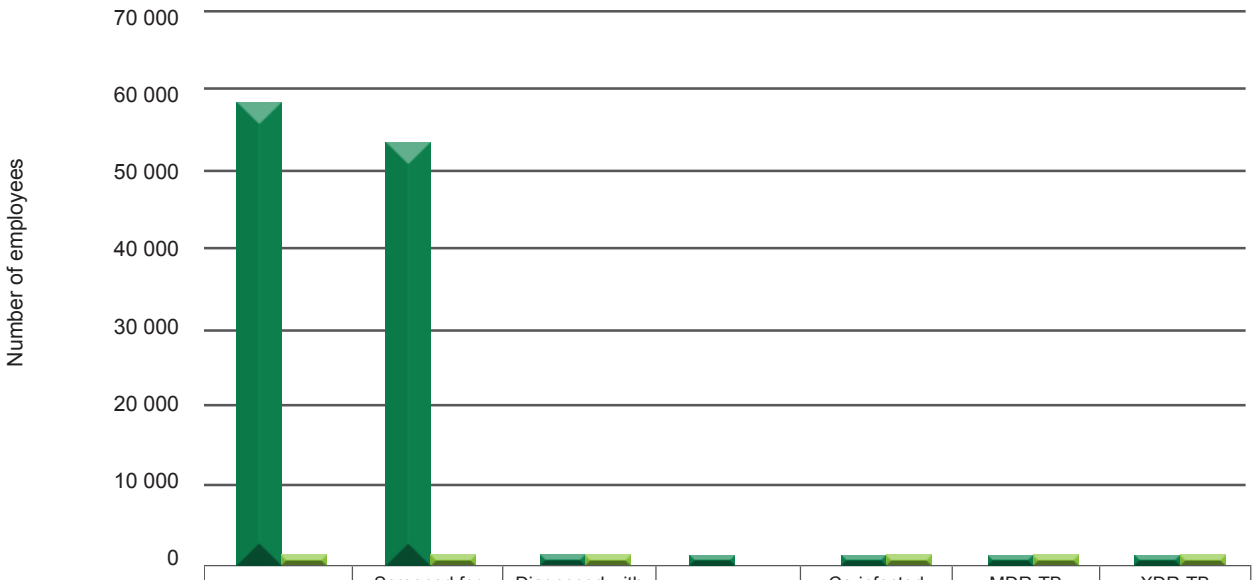
	Sample size	Screened for TB	Diagnosed with TB	On treatment	Co-infected with HIV	MDR-TB diagnosed	XDR-TB diagnosed
Employees	455 681	437 436	3 799	3687	2 357	123	13
Percentage	100	96.0	0.9		62.0	3.2	0.3

Figure 4.3.8: TB programme and TB/HIV co-infection all mines

When compared with the national TB initiatives, the TB screening has improved from 88.7% to 96%. Employees are screened at every opportunity, e.g. at the Occupational Health Centre (OHC), Primary Health Care (PHC) centre and at every encounter with health care personnel.

The total number of employees diagnosed with TB decreased from 4 211 in 2015, to 3 799 in 2016. As indicated above, the overall number of employees has decreased due to retrenchments and due to other reasons. MDR-TB cases increased from 112 to 123, and one of the mines has diagnosed an increase in the number of people with MDR-TB.

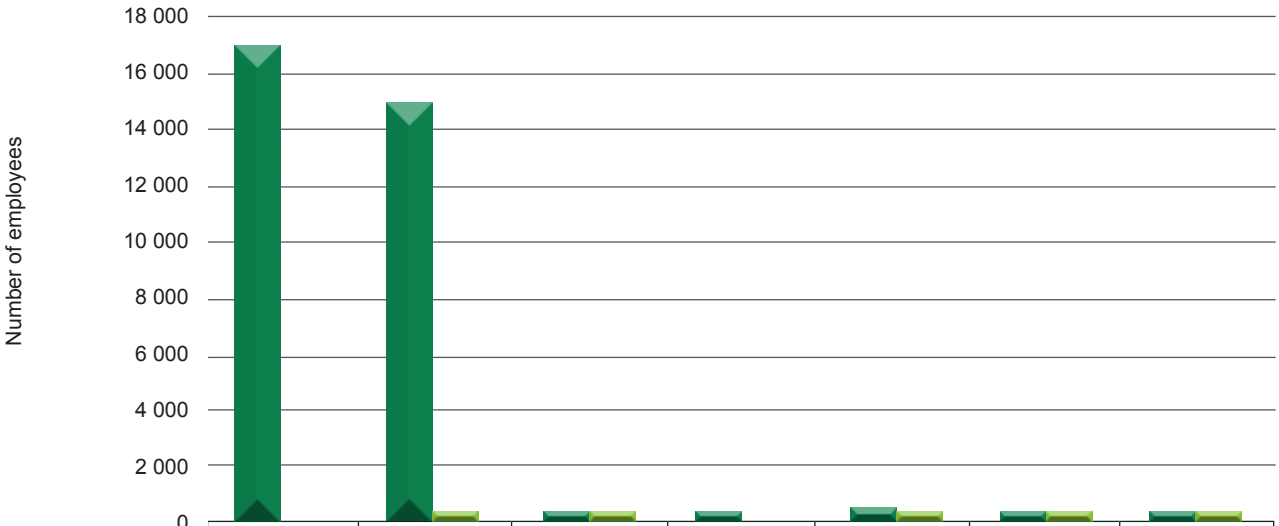
4.3.9 TB programme and TB/HIV co-infection per commodity



	Sample size	Screened for TB	Diagnosed with TB	On treatment	Co-infected with HIV	MDR-TB diagnosed	XDR-TB diagnosed
Employees	60 620	55 170	181	214	158	16	3
Percentage	100	91.0	0.3		87.2	8.8	1.7

Figure 4.3.9(a): Coal

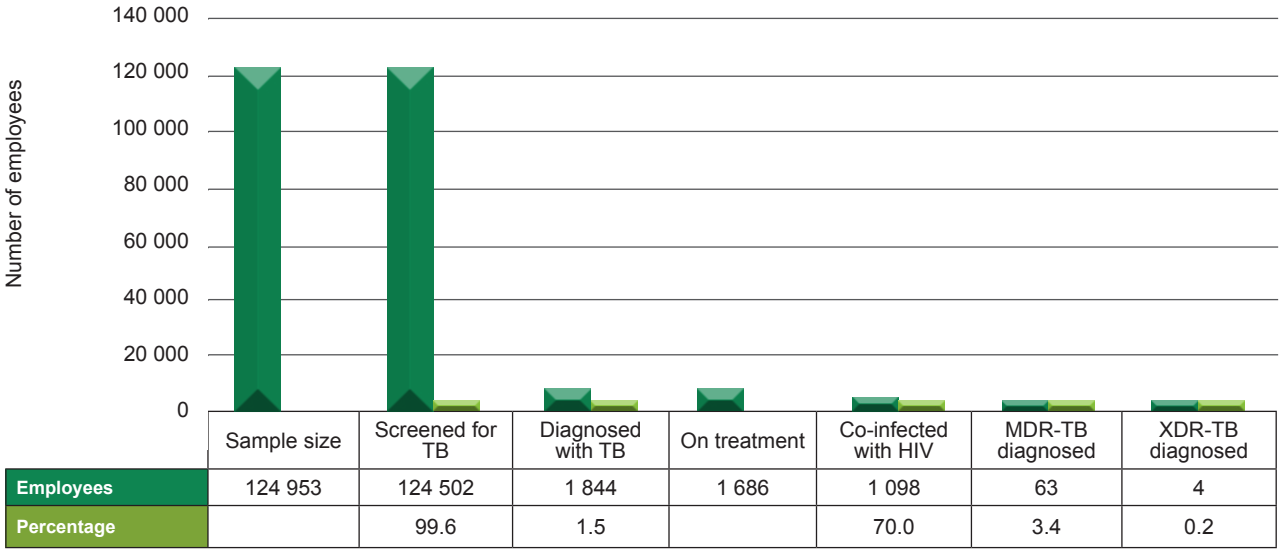
TB screening for the coal sector was 91% and there was a marked improvement from 79% in 2015. Only 0.3% of employees were diagnosed with TB and the co-infection rate increased to 87.2%. Some employees in this sector belong to medical aid schemes, and are thus treated privately. Their TB status might not be known and is thus not recorded.



	Sample size	Screened for TB	Diagnosed with TB	On treatment	Co-infected with HIV	MDR-TB diagnosed	XDR-TB diagnosed
Employees	17 365	15 622	34	31	139	1	1
Percentage		90.0	0.3		46.3	2.9	2.9

Figure 4.3.9(b): Diamonds

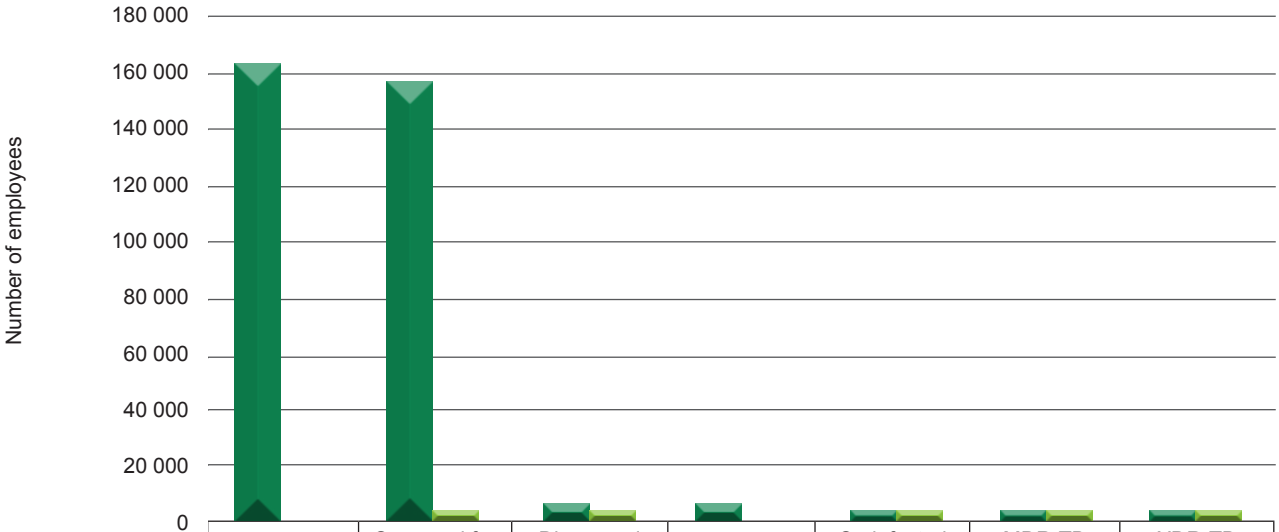
Approximately 90% of employees in the diamond sector were screened for TB, which increased from 85% in 2015. The co-infection rate was reduced from 80% to 58.8%. This percentage is in line with the results for the national co-infection rate in the South African mining industry.



	Sample size	Screened for TB	Diagnosed with TB	On treatment	Co-infected with HIV	MDR-TB diagnosed	XDR-TB diagnosed
Employees	124 953	124 502	1 844	1 686	1 098	63	4
Percentage		99.6	1.5		70.0	3.4	0.2

Figure 4.3.9(c): Gold

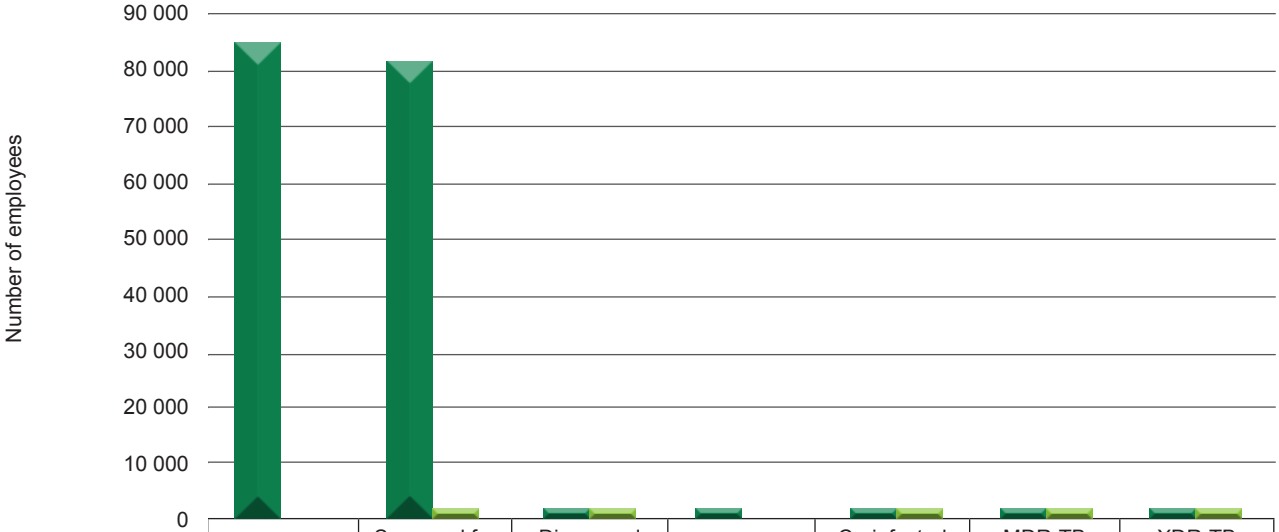
TB screening in the gold sector is almost at 100%, showing an impressive improvement from 92.4% in 2015. There was a decrease in employees diagnosed with TB from 2% to 1.5% in the gold sector. The increase in TB screening has contributed to the further reduction of diagnosed TB in the gold sector. The co-infection rate remains high at 70%, although it was 86.0% in 2016. Although silica exposure plays an important role in acquiring TB in the gold sector, HIV is a contributing factor in the risk of acquiring a TB infection in this sector.



	Sample size	Screened for TB	Diagnosed with TB	On treatment	Co-infected with HIV	MDR-TB diagnosed	XDR-TB diagnosed
Employees	166 517	160 050	1 520	1 529	960	38	2
Percentage		96.1	0.3		63.5	2.5	0.1

Figure 4.3.9(d): Platinum

TB screening increased from 96.1% to 97.9%, but is still in line with the WHO 90/90/90 strategy. Employees diagnosed with TB decreased from 1.0% to 0.3%. The co-infection rate remained constant at 63.2% in the platinum sector.

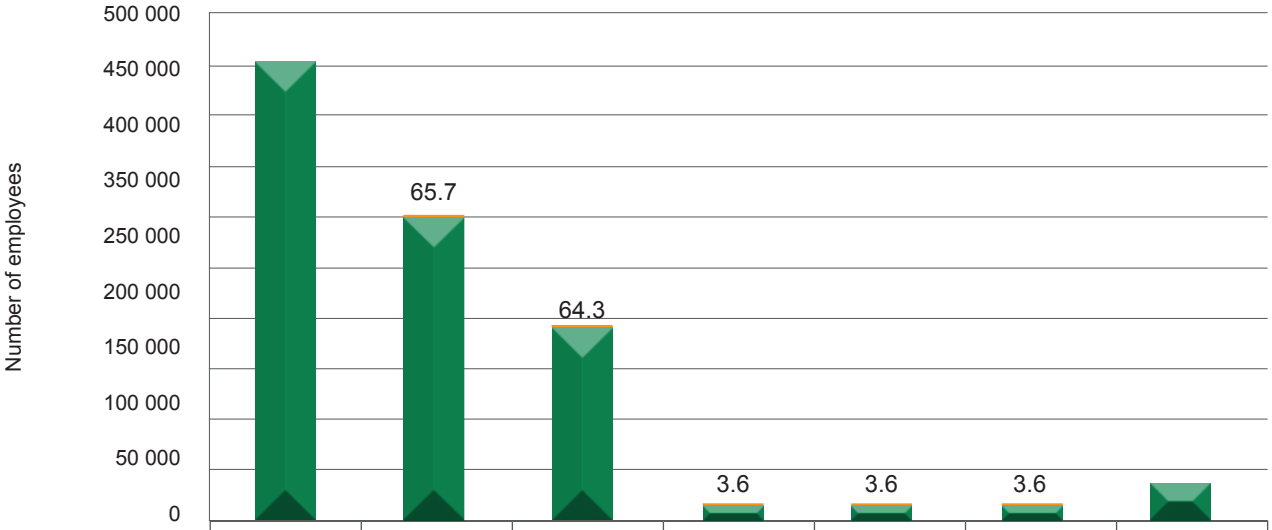


	Sample size	Screened for TB	Diagnosed with TB	On treatment	Co-infected with HIV	MDR-TB diagnosed	XDR-TB diagnosed
Employees	86 226	82 092	220	227	123	6	3
Percentage		95.2	0.2		55.9	2.7	1.4

Figure 4.3.9(e): Other mines

Other commodities mostly consist of small mines that do not provide their own health services and usually refer employees to public hospitals or to outsourced health care services. Information reported is mostly limited or inadequate due to poor coordination of data between the service providers and mines or the lack of feedback from referral institutions. Approximately 95% of employees were screened for TB. This is a marked improvement from 73% in 2015. Mines have been made aware that using the cough questionnaire for TB screening does not require a mine to have health services.

4.3.10 HCT services in all mines for 2016

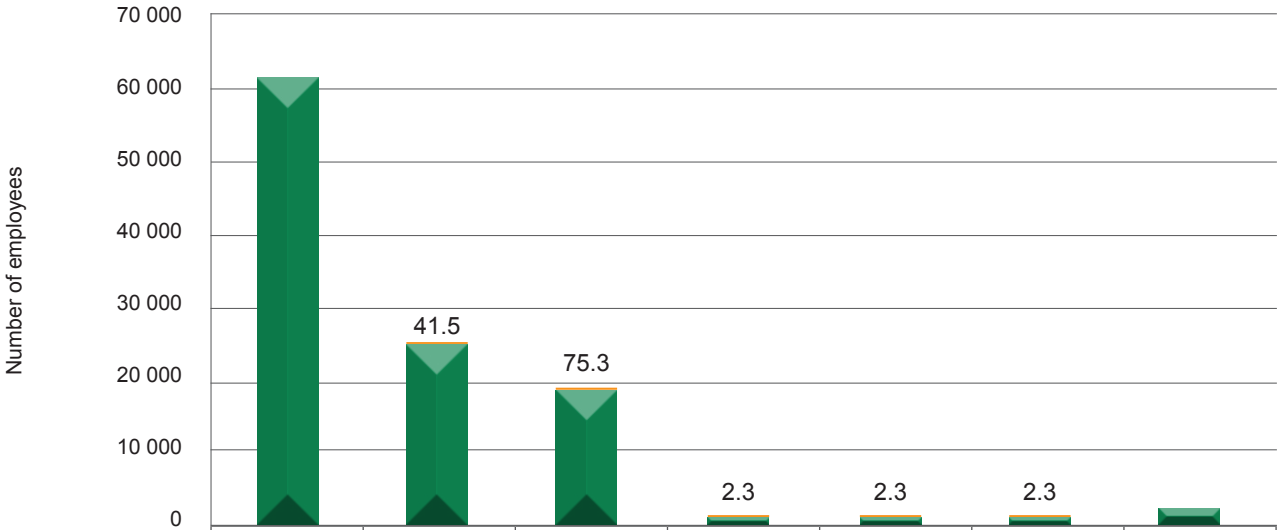


	Sample size	Counselled for HIV	Tested for HIV	HIV-positive	As a % of those counselled	As a % of total population	On ARVs
Percentage		65.7	64.3	3.6	3.6	3.6	
Number of employees	455 681	299 444	192	517	16 243	16 243	38 804

Figure 4.3.10: HCT services in all mines

It was noted that 65.7% of employees were counselled for HIV. Of those, 64.3% were tested for HIV. Of those who were tested, 8.4% were HIV-positive. HCT uptake is still low in terms of the national co-infection rate of the South African mining industry. Although the services are initiated by providers, a lot of effort is required to ultimately meet the WHO's 90/90/90 strategy for HIV.

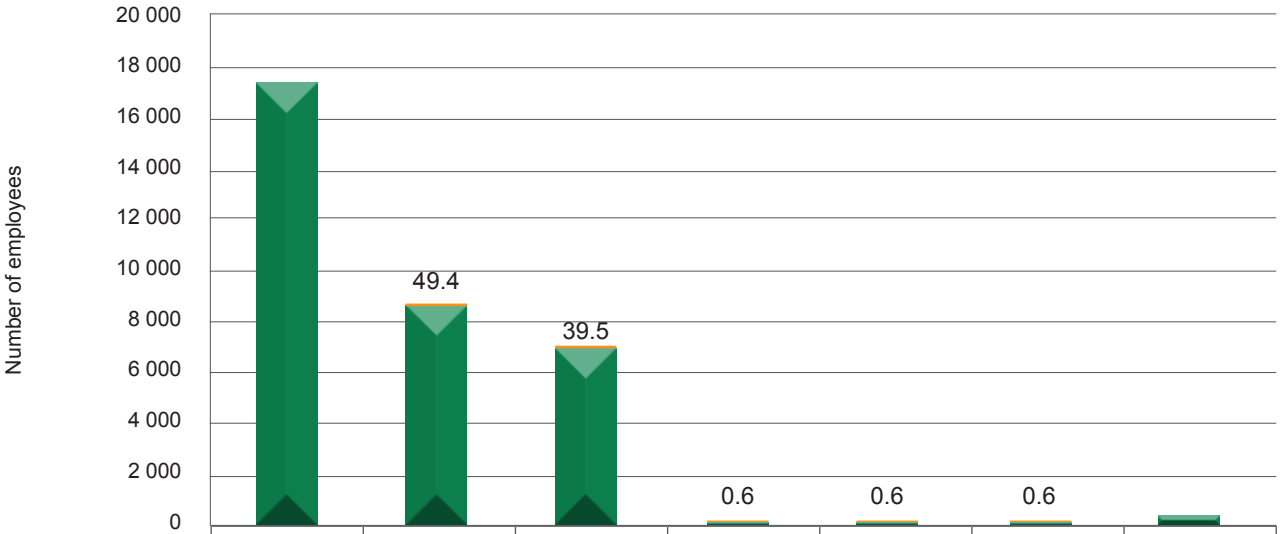
4.3.11 HCT services per commodity



	Sample size	Counselled for HIV	Tested for HIV	HIV-positive	As a % of those counselled	As a % of total population	On ARVs
Percentage		41.5	75.3	2.3	2.3	2.3	
Number of employees	60 620	25 173	18 965	1 403	1 403	1 403	2 649

Figure 4.3.11(a): Coal

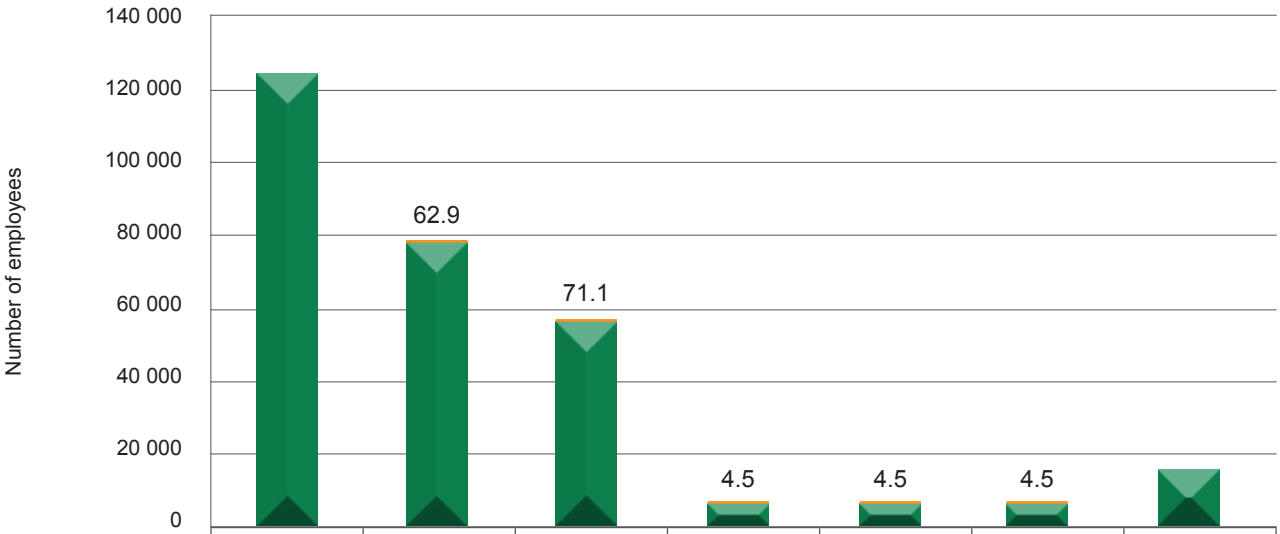
It was noted that 75.3% of employees in the coal sector were tested for HIV, compared with 57.8% in the previous year. Those who tested positive amounted to 7.4%, which is an increase from 6.4% in 2015.



	Sample size	Counselled for HIV	Tested for HIV	HIV-positive	As a % of those counselled	As a % of total population	On ARVs
Percentage		49.4	39.5	0.6	0.6	0.6	
Number of employees	17 365	8 577	6 858	111	111	111	430

Figure 4.3.11(b): Diamonds

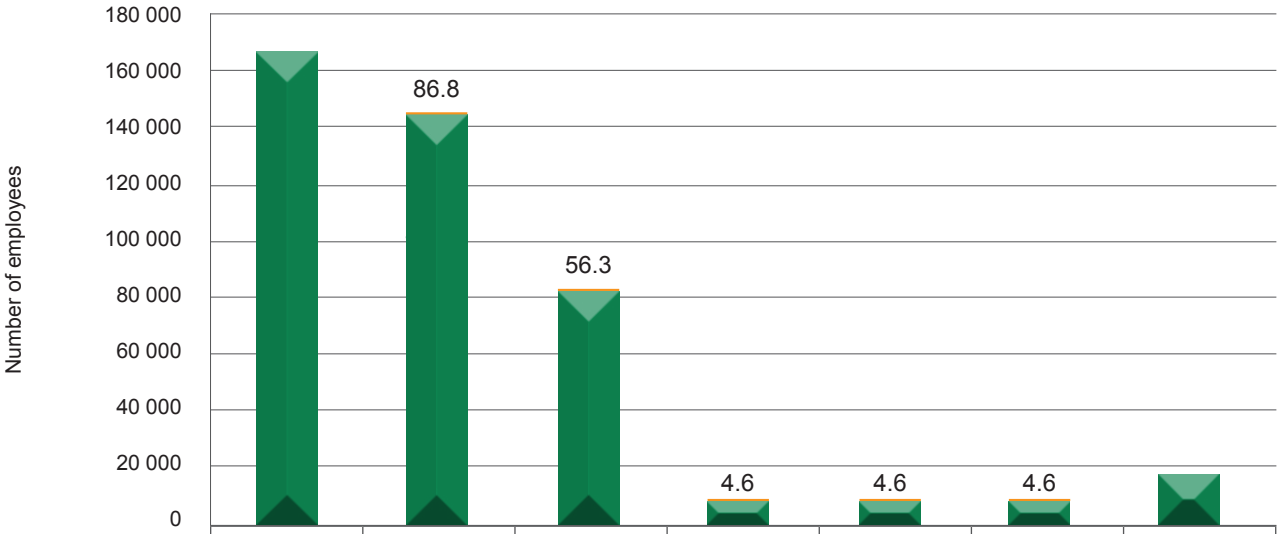
More employees agreed to be tested for HIV, as indicated by the figure of 80% in Figure 4.3.11(c), which is higher than 55.9% of those tested in 2015. More employees know their status and only 1.6% were found to be HIV-positive, which is a decline from 23.3% in 2015. HCT services in the diamond mines showed an improvement, and the rate of HIV infection decreased significantly.



	Sample size	Counselled for HIV	Tested for HIV	HIV-positive	As a % of those counselled	As a % of total population	On ARVs
Percentage		62.9	71.1	4.5	4.5	4.5	
Number of employees	124 953	78 629	55 903	5 622	5 622	5 622	15 597

Figure 4.3.11(c): Gold

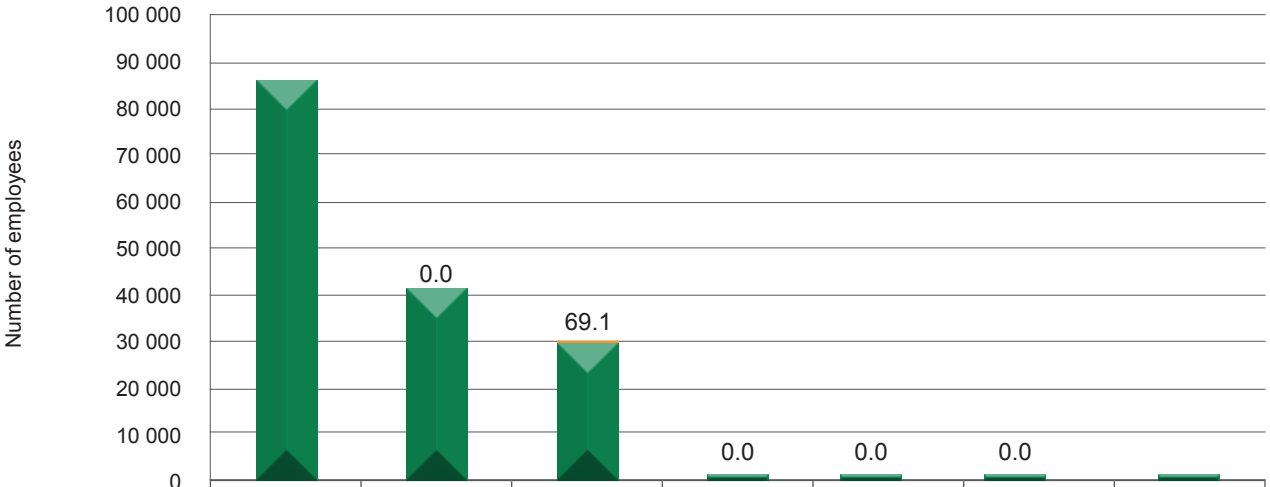
Out of 78 629 employees who were counselled, 71.1% agreed to undergo HIV testing and 10.1% tested HIV-positive. Many employees are using their medical aids because of the closure of mine hospitals, and thus consult privately with their own doctors. For ethical reasons, and constitutional right to privacy, no feedback regarding the outcome of the employees' test results was given to the mines.



	Sample size	Counselled for HIV	Tested for HIV	HIV-positive	As a % of those counselled	As a % of total population	On ARVs
Percentage		86.8	56.3	4.6	4.6	4.6	
Number of employees	166 517	144 521	81 401	7 722	7 722	7 722	17 366

Figure 4.3.11(d): Platinum

Although most employees in the platinum industry have undergone counselling (86%), only 56.3% agreed to be tested for HIV. Counselling increased from 83.3% in 2015. Of those who were tested, 9.5% tested HIV-positive, compared with 11.4% in 2015. The platinum sector has maintained the highest percentage in HIV counselling compared with other commodities.



	Sample size	Counselled for HIV	Tested for HIV	HIV-positive	As a % of those counselled	As a % of total population	On ARVs
Percentage		0.0	69.1	0.0	0.0	0.0	
Number of employees	86 226	42 544	29 390	1 385	1 385	1 385	1 973

Figure 4.3.11(e): Other commodities

Other commodities counselled 49.3% of their employees, and 69.1% were tested for HIV. Other commodities tend to refer their employees to state facilities or outsource wellness services. Feedback from referral facilities should always be sought and service providers to the mines should submit reports indicating their employees' TB and HIV status.

Table 4.3.11: Data comparison – trends from 2013 to 2016

Data elements	Total labour force: 2013 (423 032)	Total labour force: 2014 (465 923)	Total labour force: 2015 (476 625)	Total labour force: 2016 (455 681)
Counselled for HIV	**229 151** (54.2%)	**259 297** (55.7%)	**299 566** (62.9%)	**299 444** (65.7%)
Tested for HIV	**192 557** (84%)	**183 202** (70.7%)	**191 333** (64.1%)	**192 517** (64.3%)
HIV-positive	**17 384** (9.0%)	**19 084** (10.4%)	**21 913** (11.3%)	**16243** (8.4%)
Co-infected with TB and HIV	**2 905** (80.8%)	**2 820** (63.2%)	**3 063** (72.7%)	**2 359** (45.1%)
Living with HIV and on ARVs	**28 887**	**24 740**	**27 272**	**38 804**
Screened for TB	**308 403** (72.9%)	**376 718** (80.8%)	**422 670** (88.7%)	**437 436** (96.0%)
Diagnosed with TB	**3 593** (1.2%)	**4 461** (1.2%)	**4 211** (1.0%)	**3 799** (0.9%)
On TB treatment	**3 483**	**3 999**	**4 367**	**3 687**
Diagnosed with MDR-TB	**149** (4.1%)	**190** (4.3%)	**112** (2.7%)	**123** (3.2%)
On MDR-TB treatment	**172**	**197**	**131**	**133**

TB screening increased to above 90% in all commodities. This indicates that the WHO 90/90/90 strategy for TB might be achievable. If more employees are screened for TB, more will be diagnosed and treated early, thus reducing the spread of TB infection.





ACTIVITIES OF THE INSPECTORATE

5. ACTIVITIES OF THE INSPECTORATE

5.1 Regional Operations: Central and Coastal Regions

The Chief Directorate consists of the Eastern Cape, Gauteng, KwaZulu-Natal and Northern Cape regions. The major commodities mined are gold, iron ore, coal, manganese and industrial minerals. Numerous base minerals are also mined and there are large numbers of crushers, quarries and borrow pits.

The total number of employees in the Central and Coastal Regions in 2016 was 118 836. There was a 2% decrease in labour figures compared to 2015.

Occupational safety performance

Regrettably, the Central and Coastal Regions reported 26 fatalities in 2016 compared with 30 in 2015. This corresponds to a 13% reduction year-on-year. The Eastern Cape region did not report any fatalities in 2016, which translates into a 100% improvement, compared to 2015, when one fatality was reported. The KwaZulu-Natal region did not report any fatalities either, compared to two fatalities reported in 2015, which translates into a 200% reduction. The Northern Cape region reported seven fatalities compared with 10 fatalities in 2015. This translates into a reduction in fatalities of 30%. The Gauteng region reported 19 fatalities in 2016 compared with 17 fatalities in 2015, which translates into a 12% regression. The accident analysis showed that FOG and T&M accidents contributed to 38% of the accidents reported. General accidents contributed to 28%.

The number of people injured in 2016 was 863 compared to 885 injuries in 2015. This corresponded to an increase of 2%. The major accident contributors were general accidents, FOG and T&M at 49%, 22% and 18% respectively. The general accidents classification includes accidents related to the manual handling of material, inundation/drowning, followed by ore, slipping and falling

In the four regions, the Occupational Health and Safety (OHS) Improvement Strategy Action Plan was successfully implemented. As a result, there were improvements in health and safety attitudes. The strategy addresses the issue of unacceptable loss of life, injuries and occupational diseases.

Strategies for improving the status quo

The Central and Coastal Regions will continue to embark on an approach of zero tolerance of non-compliance through the implementation of the OHS Improvement Strategy Action Plan. This will be achieved by doing the following:

- Convene meetings with company CEOs and various stakeholder leadership structures to ensure that health and safety strategies are implemented.
- Continue to promote the use of Proximity Detection Systems (PDS).
- Focus on strategies to reduce noise levels and exposure levels to respirable crystalline silica by implementing effective engineering controls.
- Focus on the mines that have employees in the homogenous exposure group (HEG) A to help develop engineering controls that can reduce the occupational exposure levels of those employees. This will lead to the withdrawal of employees who are over-exposed to noise and silica dust.
- Ensure that mines improve the process of declaring working places to be safe before work commences.
- Improve TB case findings by encouraging and monitoring employees until the completion of their treatment.
- Promote efforts and initiatives to combat TB and HIV/AIDS.
- Implement the COP on emergency preparedness, the safe use of self-contained self-rescuers, safety of persons in refuge bays and the availability of mine rescue services.

5.1.1 Eastern Cape

The Eastern Cape region is situated in the south-eastern part of South Africa. It is surrounded by the following regions: Western Cape, Northern Cape, Free State and KwaZulu-Natal. The region is the second largest of South Africa's nine provinces in terms of area (approximately 169 580 km^2) and third largest in terms of population. The province includes the former homelands of Transkei and Ciskei, and is inhabited by almost seven million people who speak mainly isiXhosa, Afrikaans and English.

There are approximately 400 registered mines in the Eastern Cape. There are approximately 2 300 people in the medium- and high-risk operations. Operational mining takes place in approximately 50 hard rock quarries and many gravel and clay quarries to provide the necessary materials for the construction industry. There continues to be much activity in the region regarding the repair and upgrading of roads with materials mined from many borrow pits. The underground coal-mining operation near Indwe remained unproductive during the period under review due to matters pertaining to change of ownership.

AMRs submitted totalled 68 in 2014, 62 in 2015 and 64 in 2016. All employees at the mines are involved in awareness programmes of the Department of Health regarding HIV and TB, as well as the promotion of health issues from the OMP and the Health Practitioner. In three mining houses, voluntary HCT is provided.

With reference to occupational safety, one fatal accident was recorded in 2015, while none were recorded in 2016. This office recorded two reportable injuries in 2015, while six injuries were reported in 2016.

5.1.1.1 Topical issues and matters of interest

The incidence of illegal sand mining continues to spread within the region, particularly in the former Transkei area. Inspectors continue to face a threat of violence from perpetrators. Licensed operators have been requested to report illegal operations to their nearest SAPS station for further attention.

5.1.1.2 Inspections and audits

Inspections were performed in accordance with the annual planning.

Category	Inspections	Audits
Planned	374	44
Actual	396	45
Percentage compliance	106	102

5.1.1.3 Total accidents reported

No fatal accidents occurred in the Eastern Cape during 2016.

Fatal accidents	0
> 14 day accidents	6
1 to 13 day accidents	11

5.1.1.4 Investigations and inquiries

	Investigations	Inquiries	Total
Initiated	8	0	8
Completed	9	0	9
Percentage compliance	113	100	113

5.1.1.5 Disaster-type accidents and outcomes of inquiries and investigations

No disaster-type accidents were reported.

5.1.1.6 Statutory notices

During the year under review, Inspectors of the region issued 12 section 54 instructions to stop dangerous conditions, occurrences or practices, and 136 instructions for non-compliance with the provisions of the MHSA, as amended.

Section 54 notices	Section 55 notices
12	136

5.1.1.7 Administrative fines

Number of fines recommended by Inspectors	4
Value recommended	N/A
Number set aside by the Principal Inspector	Two set aside and two pending
Value set aside	N/A
Number imposed by the Principal Inspector	Two pending
Value of fines imposed	N/A
Appeals	0
Value of fines paid	0

5.1.1.8 Examinations

No examinations were conducted.

5.1.1.9 Land-use applications and complaints

	Received	Completed	Percentage
Township developments	7	7	100
Mining and prospecting rights	15	15	100
Mining permits	163	163	100
Closure certificates	22	22	100
Environmental management	64	64	100
Complaints	2	2	100

5.1.1.10 Strategy adopted to improve the status quo

Regional tripartite forums are held quarterly where mine employers, unions and safety personnel meet at different locations to discuss matters of mutual interest. Newsletters are also circulated quarterly.

Audits conducted through the year continue to identify areas where employers need to focus their attention, and inspections are geared to follow up on problems identified during group audits. To improve the health and safety performance at mines, the following aspects will continue to receive more attention:

- Milestone target
- New legislation and COP
- Statutory appointments
- Guarding of machinery
- Safety berms at quarry crests
- Medical surveillance and AMRs
- Updating of mine plans
- Investigation of occupational diseases
- Compliance with quarterly reporting on hygiene measurements
- Implementation of integrated HIV and TB programmes

5.1.2 KwaZulu-Natal

The KwaZulu-Natal region is situated on South Africa's east coast. It is surrounded by the Eastern Cape, Free State and Mpumalanga, and borders Lesotho, Swaziland and Mozambique.

There is a wide range of mines, including heavy minerals from dunes, underground and open-cast coal mines, quarries and sand mines. The power generation project for Eskom, the Ingula Pumped Storage Scheme near Ladysmith, was completed in June 2017. It is currently operating fully and South Africa's energy generation has improved.

The coal sector in KwaZulu-Natal mines high-quality coal, but this is generally low in seam height with numerous geological intrusions. The mines are also labour-intensive and the machinery used is outdated when compared with the modern equipment used in the coal-mining sector. The closing down of the Springlake Colliery, situated in the south of KwaZulu-Natal, had an impact on the number of employees being retrenched or losing their jobs.

The quarries believe that the application of the MHSA should only be applicable to large operations. A low level of operational skills in mining-related issues and a limited understanding of the application of the MHSA further increase the risks within the sector. A programme for increasing safety and health awareness through mine visits, tripartite meetings and best practice is increasing the standards at these operations.

The only gold mine in the region, which has been under care and maintenance, is preparing to start operating.

5.1.2.1 Topical issues and matters of interest

Illegal mining continues to increase, especially in the sand-mining sector. This ranges from small single-manned operations that sell their mined sand to building contractors, to large well-organised operations that mine sensitive areas along the rivers in the province. The illegal gold-mining activities appear to have ceased with no new reports from the mines.

Other illegal mining activities range from theft on discarded dumps, the sale of stockpiled minerals from road projects, small foxhole mining for calcium, and illegal borrow pits from the Roads Department. Several coal mines and quarries appear to have started with mining activities without adhering to the requirements or instructions in terms of mine health and safety as set out in the mining permits or rights issued by the Mineral Regulations Branch of the DMR.

There are still quarries that do not adhere to the requirements of the new mining regulations regarding the condition that blasting within 500 m of public structures may not commence without submitting the necessary documents to the PI.

5.1.2.2 Inspections and audits

Inspections were performed in accordance with the annual planning.

Category	Inspections	Audits
Planned	396	44
Actual	466	48
Percentage compliance	118	109

5.1.2.3 Total accidents reported

No fatalities occurred during 2016 compared to two fatalities during 2015.

Fatal accidents	0
> 14 day accidents	47
1 to 13 day accidents	8

5.1.2.4 Investigations and inquiries

	Investigations	Inquiries	Total
Initiated	38	2	40
Completed	42	1	43
Percentage compliance	111	50	108

5.1.2.5 Disaster-type accidents and outcomes of inquiries and investigations

No disaster-type accidents were reported.

5.1.2.6 Statutory notices

A total of 132 section 55 notices were issued to mines.

Section 54 notices	Section 55 notices
81	132

5.1.2.7 Administrative fines

Number of fines recommended by Inspector	7
Value recommended	R340 000
Number set aside by the Principal Inspector	One suspended and three pending
Value set aside	R300 000
Number imposed by the Principal Inspector	3
Value of fines imposed	R340 000
Appeals	0
Value of fines paid	R20 000

5.1.2.8 Examinations

No examinations were conducted.

5.1.2.9 Land-use applications and complaints

	Received	Completed	Percentage
Township developments	13	18	139
Mining and prospecting rights	60	64	107
Mining permits	54	71	131
Closure certificates	29	40	138
Environmental management	5	12	240
Complaints	6	4	67

5.1.2.10 Strategy adopted to improve the status quo

More effective use of the administrative fines process will be applied to ensure compliance. The administrative fines and recommendation to withdraw certificates of competency will be part of the enforcement strategy in the region.

The cooperation of mine employers, mine employees, communities affected by mining operations and the Inspectorate will continue to be encouraged to ensure that there are effective and efficient strategies in place for dealing with health and safety relating to mining operations in the region.

5.1.3 Gauteng

The major commodity mined in the region is gold, which is mined in the large, deep underground mines in the West and far-West Rand. Gold mining is also carried out underground at New Kleinfontein Gold Mine, at the Modder East operation owned by Gold One, and at Gravelotte Mine owned by Manhattan Corporation in the East Rand.

Gravelotte Mine, Central Rand Gold and Mogale Gold conduct open-cast gold mining operations. Ergo Mining and Mogale Gold conduct mining operations on mine tailings dumps. Diamond mining is carried out at the underground operations at the Cullinan Diamond Mine owned by Petra Diamonds, as well as numerous, small surface operations. Open-cast coal mining is carried out in the Bronkhorstspruit district.

In addition to the operations detailed above, there are many hard rock quarries, clay quarries and sand mines in the region. The number of persons employed in the mines in the region is 70 043.

A total of 1 087 cases of occupational diseases were reported in 2016, compared to 1 484 cases reported in 2015. This translates into a 27% improvement. PTB remained a challenge and contributed to 68% of the occupational diseases reported during the current period.

Nineteen persons were fatally injured in the mines in the region in 2016, compared to 17 persons who were fatally injured in 2015. This translates into a 12% regression. FOG remained a challenge and contributed to 53% of the fatalities reported during the current period.

A total of 680 persons were injured in accidents reported by the mines in the region in 2016, compared with 718 persons injured during 2015. This translates into a 5% regression.

5.1.3.1 Topical issues and matters of interest

5.1.3.1.1 Rising water in the Witwatersrand compartments

The pumping of water from the mine voids in the Central Basin, which extends from Roodepoort to Boksburg, continued from June 2014. The water level at the South West Vertical Shaft, where acid mine water is being

pumped, is now 100 m below the surface. Two submersible pumps operate at the shaft, pumping at a rate of 72 Mℓ per day. The water level drop rate is 10 cm per day. The water treatment plant on the old Randfontein Estates Gold Mine is currently treating approximately 30 Mℓ of mine water per day from the Western Basin. The pumping of the increased volume to the treatment plant had the desired effect of lowering the water table in the mine void.

The water level in the Eastern Basin continues to rise at approximately 20 cm per day. A pumping facility and water treatment plant, similar to the plant at South West Vertical Shaft, was constructed for the Eastern Basin at the Grootvlei No 3 Shaft. The above-mentioned water treatment plant was completed in November 2016.

5.1.3.1.2 Illegal mining issues

Illegal gold mining activities continue to be a major problem for the region, particularly in the East and West Rand, where the reef outcrop or sub-outcrop is close to the surface. Since 2009, 178 open shafts were sealed by the Council for Geoscience on behalf of the DMR and 60 open shafts and open holes have been sealed by the mining companies.

The Department, in conjunction with the land developers, affected municipalities and the mining companies, have rehabilitated or cleaned up several areas (East, Central and West Rand) that were previously infested by illegal mining activities. The Department previously issued, and will continue to issue, mining permits in the areas where it is safe to do so to legitimate mining companies to conduct open-cast mining operations on the reef outcrops and mine tailings dumps.

The above-mentioned activities conducted by the Inspectorate, in collaboration with the stakeholders, created employment opportunities in the local communities. The Gauteng Illegal Mining Stakeholder Forum, chaired by the Department, continues to meet monthly to implement strategies to combat illegal mining activities. The Department will continue to collaborate with law enforcement agencies and other stakeholders to ensure the implementation of strategies to combat illegal mining activities.

5.1.3.2 Inspections and audits

During the year under review, officers of the region conducted 1 249 inspections and 50 group audits. The inspections and audits revealed shortcomings at some mines.

Category	Inspections	Audits
Planned	1 149	44
Actual	1 249	50
Percentage compliance	109	114

5.1.3.3 Total accidents reported

Nineteen persons were fatally injured in the mines in the region in 2016 compared with 17 fatalities reported in 2015. This translates into a 12% regression. A total of 680 persons were injured in accidents reported by the mines in the region in 2016 compared with 718 persons injured in 2015. This translates into a 5% regression.

Fatal accidents	19
> 14 day accidents	680
1 to 13 day accidents	288

5.1.3.4 Investigations and inquiries

When accidents occur, mines report the accidents and incidents to the responsible Inspectors daily. This allows for such occurrences to be investigated soon after the event. The risk levels of working areas have been determined so that inspections and audits can focus on “high-risk” areas identified. Fatal and serious accidents are being investigated to improve health and safety at the mines.

	Investigations	Inquiries	Total
Initiated	31	3	34
Completed	31	6	37
Percentage completed	100	200	109

5.1.3.5 Disaster-type accidents and outcomes of inquiries and investigations

No disaster-type accidents were reported.

5.1.3.6 Statutory notices

During the period under review, Inspectors issued 262 section 54 instructions to protect persons from dangerous occurrences, practices and conditions at the mines and 191 section 55 instructions for non-compliance with the provisions of the MHSA.

Section 54 notices	Section 55 notices
262	191

5.1.3.7 Administrative fines

No administrative penalties were imposed.

5.1.3.8 Examinations

Certificates	Examination boards	Number of candidates	Certificates issued
Mine Overseers	23	171	12
Lampsman	7	8	8

5.1.3.9 Land-use applications and complaints

The Inspectors spend much time on processing applications for townships and new mining and prospecting activities. An increasing number of complaints have emanated from townships that are encroaching on established mining activities.

	Received	Completed	Percentage
Township developments	67	65	97
Mining and prospecting rights	85	77	91
Mining permits	4	5	125
Closure certificates	12	12	100
Environmental management	52	49	94
Complaints	8	8	100

5.1.3.10 Strategies adopted for improving the status quo

The following are some of the strategies that have been adopted to improve health and safety in the region:

a) Focus on certain areas or disciplines that have been identified as high risks:
   - Seismically active areas
   - FOG-active areas
   - Occupational hygiene-related issues, including over-exposure to airborne pollutants and noise
   - Occupational medicine-related issues, including TB, silicosis, NIHL and HIV
   - Engineering and shaft-related issues, including rail-bound equipment (RBE), TMM and conveyor belts
   - Underground fires

b) Ensure that mines plan safely and maintain daily planning
c) Encourage mine management to be more proactive in the prevention of dangerous situations and initiate their own corrective measures following an accident or incident
d) Increase the systems and practical audits by Inspectors with follow-up underground inspections
e) Increase the interaction between Inspectors, mine management and the unions
f) Monitor emergency preparedness and response at the mines
g) Withdraw employees exposed to high levels of noise and airborne pollutants at a particular working place from such working place
h) Train workplace health and safety representatives
i) Introduce a license to blast (checklist to be completed by the miner before the blast is initiated)

5.1.4 Northern Cape

The Northern Cape is the largest province in terms of surface area, with different mining activities, ranging from small-scale mining to large-scale mining. This region also has a history of asbestos mining in the Kuruman area. The furthest mine is approximately 1 300 km away from the office in Kimberley. Many of the mines are open-cast mines and very few are underground operations. The types of minerals mined in the region are clay, copper, diamonds, dolerite, dolomite, gravel, granite, gypsum, lime, lead, iron ore, manganese, salt, sand, stone, rose quartz, Nama quartz and zinc.

In 2016, seven fatalities were reported, compared with 10 fatalities reported in 2015. This translates into a 30% reduction in fatalities. The region, however, took note of the fact that, in 2015, seven accidents resulted in 10 cases of loss of life, and, in 2016, seven accidents resulted in the same number of fatalities.

Most of the big operations were affected by retrenchments. The investigations into the upsurge of incidents in those operations led to a finding on the poor execution of the retrenchments. One major finding was that the services sections (including safety, hygiene, rock engineering and maintenance) were the first to be released, resulting in poor systems on mines. The CEOs were then engaged in this matter. The rest of the incidents happened in small operations and the employees involved had less than a month of experience. What is of interest was that the incidents occurred across the different operational activities: one FOG, one conveyor, one equipment, one TMM, one gassing, one fall from heights and one electrocution, from semi-skilled to skilled employees.

The region then embarked on self-assessment and the evaluation of strategies that were implemented. One of the decisions taken was to invite CEOs from different groups to present group strategies and discuss challenges with the regional offices. One of the major challenges in the small operations was the lack of knowledge of legislation, as well as the lack of skills in terms of risk management. The operations rely on consultants who are not always based at the operations, which results in inadequate risk assessments and interventions.

The regional office has since established forums to discuss the trends and the inspection findings as part of education and information sharing. During the inquiries, Inspectors from different designations identified failures in different fields.

5.1.4.1 Topical issues and matters of interest

Due to commodity prices falling, mining found itself under pressure to increase production and reduce the number of employees. This placed a lot of stress on employers and employees as many tried to increase production as a means of trying to save jobs. This led to many taking short cuts that resulted in the loss of life. Seven incidents occurred that resulted in seven fatalities. However, there was an improvement in disaster-type accidents.

5.1.4.2 Inspections and audits

Category	Inspections	Audits
Planned	682	48
Actual	683	48
Percentage compliance	100	100

The planned number of inspections and audits was achieved. An initiative of maintaining monthly audits to five and six was adopted.

5.1.4.3 Total accidents reported

Fatal accidents	7
> 14 day accidents	130
1 to 13 day accidents	184

5.1.4.4 Investigations and inquiries

	Investigations	Inquiries	Total
Initiated	98	5	103
Completed	15	2	17
Percentage completed	15	40	17

All investigations and inquiries initiated were completed in time.

5.1.4.5 Disaster-type accidents and outcomes of inquiries and investigations

No disaster-type accidents were reported.

5.1.4.6 Statutory notices

Section 54 notices	Section 55 notices
31	11

Most of the mines issued with section 54 instructions were due to systems not being in place and the exposure of employees to high risks. Issues of concern were guarding, high walls, inadequate training, inadequate risk assessment, no safety devices, high silica content, poor support, no communication as well as conditions of TMMs.

Section 55 instructions were issued, especially for health issues, where procedure and records were not available. These included incorrect appointments, unsafe working conditions, illegal mining activities, the reporting of occupational health issues, incorrect recordkeeping and no codes of practices.

5.1.4.7 Administrative fines

No administrative penalties were imposed.

5.1.4.8 Examinations

Certificates	Examination boards	Number of candidates	Certificates issued
Mine Overseers	4	21	2

5.1.4.9 Land-use applications and complaints

	Received	Completed	Percentage
Township developments	0	0	0
Mining and prospecting rights	121	122	101
Mining permits	71	72	101
Closure certificates	20	17	85
Environmental management	13	14	108
Complaints	16	14	88

5.1.4.10 Strategies adopted for improving the status quo

Many incidents still occurred during the commencement of new operations, sections or equipment. Hence, the focus will be on skills, as well risk assessment and training. All new operations will also be targeted. Each discipline identified serious issues to be addressed and to focus on during inspections and audits. The initiatives to address areas of concern included the following:

a) CEOs are encouraged to present risk management plans during change management.
b) CEOs are also encouraged to present their health and safety management systems to their respective mine health and safety committees at the office.
c) Workshops will continue to be held with all the mines to discuss health and safety matters. The first one this year was called “The Year of Implementation” and was

based on the realisation that the implementation of systems is being overlooked.

d) The focus will be on the quality of investigations, safe operating procedures, specific training, as well as supervision.
e) Compliance with the legal provisions of occupational health is a priority.
f) Equipment safety, inclusive of ergonomics, is prioritised.
g) Contributions by consultants to mines' inadequate risk management are still prioritised.
h) The focus is more on the implementation of the codes of practices.
i) Fines will be issued in the case of those offences where section 54 notices had been issued before, but no action took place.

5.2 Regional Operations: Central and North-Eastern Regions

The Chief Directorate consists of the Free State, Limpopo and Mpumalanga regions. The major commodities mined are coal, platinum, gold, copper and industrial minerals. Numerous base minerals are also mined and there are many crushers, quarries and borrow pits.

The total number of employees in the Central and North-Eastern Regions was 153 337 employees in 2016. There was a 6% increase when compared with the labour figures of 2015.

Topical issues and matters of interest

Lily Mine accident

The accident that occurred at Lily Mine in the Barberton area in Mpumalanga on 5 February 2016 was unprecedented. To date, the three employees, Yvonne Mnisi, Pretty Nkambule and Solomon Nyerenda, are still unrecovered. The container in which the three employees were working was sucked in when the crown pillar failed on that fateful morning. The container was used as a lamp-room and was situated close to the portal to the adit.

The rescue operations had to be suspended as accessing the underground workings became unsafe owing to further collapses and the loss of the adit as a secondary outlet.

Illegal mining

The Mpumalanga and Free State regions have established illegal mining stakeholder forums comprising the DMR, the Department of Home Affairs and Immigration, the Department of Justice and Constitutional Development, SAPS, the Directorate: Priority Crime Investigation (Hawks), Crime Intelligence, the State Security Agency, the local municipalities and mining companies. Owing to the large-scale illegal mining of chrome in the Burgersfort area in Limpopo, the National Coordinating Strategy Management Team (NCSMT) held a meeting in Limpopo and visited some sites where this illegal mining is occurring. The NCSMT's plan is to visit sites in all the provinces where illegal mining is occurring.

The level of illegal mining has been significantly reduced in the Barberton area due to the great efforts and action taken by all the stakeholders at provincial and national level. The collective effort of all stakeholders is highly commendable. This is because more employees are being apprehended for the possession of gold-bearing material compared to illegal miners. This is also clear evidence of the improvement in the security measures that are being implemented by mining companies.

Occupational safety performance

It is regrettable that 19 persons lost their lives in the mines in the three regions in this Chief Directorate in 2016, compared with 20 fatalities in 2015. This corresponds to a 5% decrease year-on-year. The decrease in the number of fatalities reported in Mpumalanga was 50%. Regrettably, the Free State region registered a regression of 20%. The analysis of accident statistics for these regions indicated that FOG, T&M and general accidents contributed 25%.

In 2016, there were 600 injuries, compared with the 709 injuries reported in 2015. This corresponded to a decrease of 15%. The major accident contributors were general accidents, T&M and FOG, which contributed 47%, 20% and 15%, respectively. General accidents include manual handling of material, inundation/drowning, following ore, slipping and falling.

The successful implementation of the OHS Improvement Strategy Action Plan resulted in a change in health and safety attitude to encourage compliance with health and safety measures. The strategy addresses the issue of unacceptable loss of life and injuries at mines by putting more emphasis on roof fall accidents, T&M-related accidents, investigations and inquiries. Health and safety roadshows were embarked on prior to the last quarter of the year. At the time, the safety performance of the industry was a major cause of concern, as the statistics indicated that more than 50 persons had already lost their lives by August 2016. This called for vigilance to curb the rate at which persons were losing their lives at mines.

Strategies for improving the status quo

The Central and North-Eastern Regions will continue to embark on a zero-tolerance approach to non-compliance

through the implementation of the OHS Improvement Strategy Action Plan. This will be achieved through the following initiatives:

- Convene meetings with company CEOs and various stakeholder leadership structures to ensure that health and safety strategies are implemented.
- Continue to promote and ensure compliance to the use of PDS.
- Focus on strategies to reduce noise and exposure levels to respirable crystalline silica by implementing effective engineering controls.
- Focus on the mines that have employees working in the HEG A areas and develop engineering controls to reduce the exposure levels of those employees. This will lead to the withdrawal of employees who are over-exposed to noise and silica dust.
- Ensure that mines improve the process of declaring working places safe before work commences.
- Improve TB case findings, and encourage and monitor employees to complete their treatment courses.
- Promote HCT and continuous support on efforts and initiatives to combat TB and HIV/AIDS.
- Implement guidelines.

5.2.1 Limpopo

The safety track record in the region continues to be a matter of great concern to the MHSI. The number of fatalities remained the same, while a remarkable reduction in the number of reportable injuries was noted.

Occupational health impacts, on the other hand, are also not immediate and hence difficult to quantify. Silicosis continues to be seen as a major cause of premature retirement and death, followed by TB, which is exacerbated by HIV/AIDS. NIHL is also a significant health hazard because of exposure to high noise levels in the workplace. The effectiveness of efforts to control or eliminate exposure at the source remains a cause of concern.

5.2.1.1 Topical issues and matters of interest

During 2016, the region experienced several protests in which major roads leading to the mines and around the mines were blocked. The protests were a result of communities living near mining areas being unhappy with employment issues and business opportunities. This impacted negatively on the activities of the Inspectorate in the region as some mines could not be accessed for extended periods of time.

Illegal mining escalated to include the mining of chrome from old mine dumps and outcrops in the Jachslust, Driekop, Mandaagshoek and Steelpoort areas. Inspectors also had to face the threat of violence from these perpetrators.

The development of Ivanplats' Platreef Project is well underway. Shaft 1, with an internal diameter of 7.25 m and lined with concrete, will be used for initial underground development and will ultimately become the primary ventilation intake shaft during the mine's first phase, which will be a 4 million tonne per annum (Mtpa) production case. The permanent sinking phase reached a depth of approximately 333 m below the surface in March 2017. It is projected to intersect the Platreef deposit at a depth of 777 m below the surface in late 2017. Shaft 1 is planned to reach its final depth of 980 m, which will include four station developments at different depths in 2018.

Shaft 2 will be located approximately 100 m north-east of Shaft 1. Shaft 2, with an internal diameter of 10 m, will be lined with concrete and sunk to a planned final depth of more than 1 100 m below the surface. It will be equipped with two 40-tonne rock-hoisting skips with a capacity to hoist a total of 6 million tonnes of ore a year. The early works for Shaft 2 will include the excavation of a surface box cut to a depth of approximately 29 m below the surface and the construction of a concrete hitch (foundation) for the 103 m-tall concrete headgear (headframe) that will house the shaft's permanent hoisting facilities and support the shaft collar. The early works are planned to commence in the second quarter of 2017 and will take approximately 12 months to complete.

Grootegeluk Mine is a surface coal-mine operation situated in the Waterberg coalfield near Lephalale. The run of the mine, from the different layers of the coal deposit, is delivered to nine different beneficiation plants, which produce a range of products such as thermal, metallurgical and semi-soft coking coal. The mine has the largest coal beneficiation complex in the world, which is being supplied from a single pit. The overburden material is hauled to adjacent dumps where it is stockpiled for later use. To ensure sustainability, plant discard and inter-burden material are backfilled into the void to limit the impact on the environment. The mine embarked on the Grootegeluk Medupi Expansion Project to supply Eskom's Medupi Power Station with >14 Mtpa coal when the power station is fully ramped up. The mine is already supplying Eskom's Matimba Power Station under a long-term supply contract. The addition of the Medupi long-term supply contract means that the mine more than doubled its capacity to produce coal for the power

station, while increasing its capacity to produce other coal products. Grootegeluk also has a reductants plant where metallurgical coal is converted in retorts to high-quality semi-coke for use in the local ferro-alloy industry. The semi-coke process generates by-products such as tar, which is sold to generate additional revenue.

The Palabora Copper Mine is situated in Phalaborwa where the general weather conditions are warm. During the hot summer days, the temperatures regularly peak at 24 °C Wb/42 °C Db. The mine is currently executing the Lift II project, which is one of the world's deepest block cave mechanised mines. Heat load has become a challenge for the mine with two fridge plant installations, situated on the surface and underground, with a capacity of 18 000 kW and 7 000 kW respectively. The underground fridge plant capacity will be increased to 14 000 kW (one unit on standby) in the future. The virgin rock temperature is 58 °C at a depth of 1 750 m. The distance from the shaft is more than 1 500 m. However, heat stress management is in place to mitigate the extreme temperatures.

5.2.1.2 Inspections and audits

Category	Inspections	Audits
Planned	1 137	49
Actual	1 198	49
Percentage compliance	105	100

The frequency of inspections and audits is determined from the analysis of accident statistics at specific mines and statutory instructions issued over the period. The figures displayed are also based on the strength of the total staff complement.

5.2.1.3 Total accidents reported

Fatal accidents	4
> 14 day accidents	135
1 to 13 day accidents	166

Four fatalities were reported during 2016, which is the same as during 2015. There was a remarkable improvement of 37% on reportable injuries, where 135 injuries were reported in 2016 compared to 214 in 2015. Mines were requested to send a "nil" return on the forms when there was no injury during that period.

There has been an improvement in the reporting of occupational diseases. The most common occupational diseases reported on the AMRs during 2016 were NIHL, PTB and COAD.

5.2.1.4 Investigations and inquiries

	Investigations	Inquiries	Total
Initiated	106	5	111
Completed	106	3	109
Percentage completed	100	60	98

There is concern regarding the quality of some mine investigations. Some section 11.5 reports are submitted without including any findings and recommendations. The completion of the South African Mines Reportable Accidents Statistical System (SAMRASS) forms is also becoming cause for concern as some forms are not checked and signed by the managers. Mines are encouraged to ensure that these forms are duly completed as required by the regulations.

5.2.1.5 Disaster-type accidents and outcomes of inquiries and investigations

No disaster-type accidents were reported.

5.2.1.6 Statutory notices

Section 54 notices	Section 55 notices
433	565

The majority of instructions issued were as a result of poor application of mine standards and procedures. This remains a serious concern as it reflects on the level of discipline in the working place. Of the 114 section 54 notices issued, 433 were instructions, while of the 210 section 55 notices issued, 565 were instructions. The challenge ahead is to revive a safe working culture among employees.

5.2.1.7 Administrative fines

Even though no administrative fines were imposed during the period under review, there has been a noticeable improvement in the stopping of activity at working places. Although there have been several instances relating to repeat transgressions, administrative fines could have been appropriate. The administrative fine case 2012G0014 was finally settled by paying the total outstanding amount of R250 000 during the period under review.

5.2.1.8 Examinations

Certificates	Examination boards	Number of candidates	Certificates issued
Mine Overseers	21	290	13
Lampsman	2	34	13

Examinations conducted for industry qualifications are indicated in the table above, reflecting the number of certificates issued during the period under review. High absenteeism rates remain a major cause of concern.

5.2.1.9 Land-use applications and complaints

	Received	Completed	Percentage
Township development	31	22	71
Mining and prospecting rights	70	57	81
Mining permits	114	107	94
Closure certificates	64	50	78
Environmental management	22	21	95
Complaints	15	14	93

There has been a reduction in the number of complaints submitted from communities living in close proximity to mining operations and mine employees. During 2015, 26 complaints were registered, compared to 15 in 2016.

5.2.1.10 Strategies adopted for improving the status quo

The strategy is to conduct purposeful inspections that reveal any failure in the mine's health and safety systems, and taking the appropriate action where necessary. The region believes that the visibility of Inspectors, through regular inspections and audits, is a proactive way of ensuring that the mines comply with health and safety standards to achieve zero harm.

The Inspectorate will continue to engage with and support mines on their respective health and safety strategies and initiatives. The Inspectorate will strive for cooperation with mine employers, mine employees and communities that are affected by mining operations to ensure that effective and efficient strategies are in place to deal with health and safety relating to mining operations in the region.

The Inspectorate will continue to convene meetings with company CEOs and other stakeholder leadership structures where there is little or no improvement with regard to safety and health, to ensure that appropriate measures are put in place to enhance health and safety.

Mines are encouraged to continue developing and implementing strategies to deal with occupational diseases. The Inspectorate continues to support efforts and initiatives to combat TB and HIV/AIDS through various interventions.

5.2.2 Mpumalanga

5.2.2.1 Topical issues

A wide variety of minerals is mined in the Mpumalanga region, with coal being the main commodity. Gold, platinum and other base minerals are mined and there are large numbers of crushers and quarries in the region.

In terms of the number of employees at mines, Mpumalanga is the second-biggest region. The number of employees on all the mines and works in the region is 73 331. Some mines, especially new mines, are not reporting labour figures to the regional office, but all efforts are being made to rectify this.

There has been a significant increase in the number of small to medium coal-mining operations in the region over the past few years following the promulgation of the MRPDA. These operations are generally operated by contractors, some of which have no mining experience or background, and led to an increase in accidents reported by these small to medium operators. The majority, if not all, of these mines are open-cast or surface mines that operate near human settlements and led to an increase in the number of complaints lodged by communities regarding blasting activities.

The number of fatalities decreased from six in 2015 to three in 2016.

Exposure to high levels of noise and airborne pollutants is still of great concern to the MHSI, particularly by employees in HEG A and HEG B. In 2015, 1.4% of the employees in the region were in HEG A and 4.9% were in HEG B in terms of noise exposure levels, while 9% were in HEG A and 28% were in HEG B in terms of airborne pollutants.

5.2.2.2 Inspections and audits

The following inspections and audits were conducted:

Category	Inspections	Audits
Planned	1 323	48
Actual	1 278	72
Percentage compliance	97	150

The number of inspections and audits indicated in the table above is based on the actual number of inspections.

5.2.2.3 Total accidents reported

Fatal accidents	3
> 14 day accidents	193
1 to 13 day accidents	38

The majority of the accidents reported by the mines are mainly general accidents, such as slip and fall, caught between, pulling and pushing, and handling of material, followed by transportation accidents. There is an increase in FOG accidents in the coal mines.

5.2.2.4 Investigations and inquiries

	Investigations	Inquiries	Total
Initiated	197	0	197
Completed	219	0	219
Percentage completed	111	0	111

5.2.2.5 Disaster-type accidents and outcomes of inquiries and investigations

No disaster-type accidents were reported.

5.2.2.6 Statutory notices

Section 55 notices	Section 54 notices
12	149

5.2.2.7 Administrative fines

No administrative penalties were imposed.

5.2.2.8 Examinations

Certificates	Examination boards	Number of candidates	Certificates issued
Mine Overseers	8	31	7
Lampsman	9	8	8

5.2.2.9 Land-use applications and complaints

	Received	Completed	Percentage
Township developments	0	0	100
Mining and prospecting rights	216	189	88
Mining permits	203	212	104
Closure applications	8	5	63
Environmental management	0	0	100
Complaints	13	3	23

Most of the complaints received were from communities living near surface or open-cast mining operations. Most of the complaints relate to blasting practices at mines, i.e. communities allege that, as a result of blasting, their houses are cracking, while farmers complain about groundwater disturbances, noise and dust created by TMMs and some incidences related to non-compliance to the Pregnancy and Breastfeeding Policy of the Department of Labour.

5.2.2.10 Strategies adopted for improving the status quo

Compliance information, regional challenges and areas of excellence are shared at the three-quarterly regional tripartite forums. The region identified that general accidents are still a major contributor of reportable accidents, followed by T&M accidents. There is also an increase in FOG accidents, especially at underground coal mines.

The Inspectorate will increase visibility at the mines as a proactive way of enforcing compliance at the mines. Focused inspections, audits and investigations will be conducted with the aim of revealing system failures in terms of mine health and safety. Appropriate enforcement action will be taken if necessary.

The activities of the regional Inspectorate will focus on the prevention of FOG and slope failures, T&M and machinery-related accidents, with the emphasis on the enforcement of the new regulations and the implementation of new COPs, housekeeping and material handling.

It has been noted with concern that some mines do not have integrated TB and HIV/AIDS programmes. Mines will be encouraged to have such programmes in place. The on-site wellness programmes remain a challenge to the other mines' sector. These mines are encouraged to use the local municipal clinic where possible. Occupational diseases are still reported in high numbers, but most of these employees reported having been working in the mining industry for the past 20 years or more. Mines are encouraged, as per the milestones, to improve the current preventive measures.

All mines will be audited on the implementation of COPs. Employees working without having undergone initial and periodic medical surveillance will be withdrawn from workings and appropriate action will be taken against employers. The Inspectorate will endeavour to ensure that mines put strategies in place to curb the increasing number of cases of TB among employees in the region.

In terms of exposure to airborne pollutants and noise, employees are still exposed to HEG A and HEG B, and will be withdrawn from such areas. Mines are encouraged

to implement strategies to reduce over-exposure to noise and airborne pollutants.

5.2.3 Free State

For the period under review, the Free State region had two major gold-mining companies, Harmony Gold and Sibanye (Beatrix Mines). There are two coal mines and four diamond mines. The rest are small-scale mines. Commodities are therefore gold, coal, diamonds, aggregates, sand and bentonite. Gold is still the major commodity mined. The gold sector also accounts for the largest labour force in the region; 30 854 in total. Harmony Gold has 21 655 employees and Sibanye Gold has 9 199 employees, including contractors. The rest of the labour force comes from the other mines, at 5 500 employees. The total number of employees in the region is 36 354.

There are 13 production underground shafts combined. These shafts are in the Koffiefontein, Sasolburg, Welkom, Odendaalsrus, Virginia and Theunissen areas.

In 2016, there were 12 fatalities. This represents a 20% increase compared with 10 fatalities in 2015. A 1% decrease in reportable accidents was reported. This figure was 272 in 2016, compared with 274 in 2015. Most of the accidents resulted from FOG, rolling rock and machinery accidents.

The submission of occupational hygiene returns and the AMR improved when 48 out of 49 operations complied. High numbers of medical separations are still being experienced in the region due to silicosis. Although there has been an overall improvement by 7% in occupational diseases reported, silica, TB and NIHL indicated a regression.

TB and HIV/AIDS policies have been implemented by all the bigger mines. There was a marked reduction in medical deaths known as “collapse and die”.

5.2.3.1 Topical issues and matters of interest

HIV and TB days in Welkom

World AIDS Day festivities were held at mines from both Harmony Gold and Sibanye during December 2016. The awareness campaigns were well attended by communities and other stakeholders. On-site counselling and testing were conducted. TB, HIV, silicosis and other health problems remain a serious challenge in the region. Programmes have been put in place by the mines, with medical hubs and campaigns, for HCT and TB treatment.

Illegal mining activities

There is an increase in illegal mining activities in the region due to unemployment in the Welkom, Odendaalsrus and Virginia areas. Operations were disrupted by police and security personnel who were conducting regular inspections and audits, and arrested the perpetrators. A stakeholder forum was held regularly at regional and national level to combat these activities.

The open mine shafts and mine dumps are used by illegal miners to gain access to and transport food and water to the underground workings. The biggest challenge is that access for the illegal miners and their material is often through the assistance of the mine employees themselves.

The rehabilitation and sealing of the shafts is in progress. However, the other shafts cannot be closed or sealed as they serve as ventilation and water pumping facilities for existing production shafts.

5.2.3.2 Inspections and audits

Category	Inspections	Audits
Planned	1 300	48
Actual	1 650	54
Percentage compliance	127	113

Non-adherence to ventilation standards resulted in an increase in heat exhaustion and heat cramps reported in the region.

5.2.3.3 Total accidents reported

Fatal accidents	12
> 14 day accidents	273
1 to 13 day accidents	40

5.2.3.4 Investigations and inquiries

	Investigations	Inquiries	Total
Initiated	237	15	252
Completed	145	9	154
Percentage completed	61	60	61

The turnaround times for investigations and inquiries improved as the reporting and conducting of internal investigations by mines improved.

5.2.3.5 Disaster-type accidents and outcomes of enquiries and investigations

No disaster-type accidents were reported.

5.2.3.6 Statutory notices

Section 54 notices	Section 55 notices
632	1 010

Most enforcement instructions were issued for non-conformances to COPs and standards in the mining, mining machinery, occupational hygiene and occupational medicine spheres.

5.2.3.7 Administrative fines

No administrative penalties were imposed.

5.2.3.8 Examinations

Certificates	Examination boards	Number of candidates	Certificates issued
Mine Overseers	24	141	12
Onsetters	7	12	7
Lampsman	4	5	1

5.2.3.9 Land-use applications and complaints

	Received	Completed	Percentage
Township developments	9	9	100
Mining and prospecting rights	60	61	102
Mining permits	38	43	113
Closure certificates	11	14	127
Environmental management	58	58	100
Complaints	69	69	100

The demand for land-use and township development is minimal from applications received. Twenty-nine administrative permissions and approvals were handled, consisting of exemption, Sunday labour permissions and others.

5.2.3.10 Strategies adopted for improving the status quo

- Regional stakeholder forums are held monthly (tripartite forum).
- There is robust engagement by all stakeholders in tripartite meetings and sub-committee meetings.
- Mine Occupational Safety and Health (MOSH) – continuation of in-stope roof bolting and netting.
- MOSH initiative – use of winch covers for dust.
- Continued intensified inspections and audits by Inspectors.
- Enforcement and monitoring of the mines' respective occupational hygiene and medicine programmes, through auditing and inspections.
- Participation in working groups to monitor and mitigate occupational diseases.
- Close partnerships with other government departments, trade unions and other key stakeholders.
- Audits or inspections of safety management systems and their implementation.
- Quarterly workshops on health and safety with key stakeholders.
- Stoppages of unsafe practices and workplaces.

5.3 Regional Operations: Western Regions

This section consists of North West: Klerksdorp, North West: Rustenburg and the Western Cape regions. The commodities mined are PGM, chrome, gold, diamonds, dimension stones and aggregates. This Chief Directorate has underground mines and surface mines, including quarries and offshore mines.

Challenges

- TB, HIV/AIDS and NIHL still remain the main occupational health challenges. There has been an alarming increase in the number of employees who collapse and pass away at their place of work due to medical reasons. An increased number of cases of medical incapacity has also been observed from the mining companies.
- FOG and machinery-related accidents were the main contributors to the serious injuries and fatalities. Most of the mining companies are running short of ground for mining as they are approaching their mining boundaries and are resorting to mining back areas, which were left as stability pillars or remnants.

Achievements

The Chief Directorate is delighted to report that occupational medical services are available in all the mining houses in the region. These services are available to all employees, including contractors. Most of the mining companies have well-established wellness programmes due to the intervention of the regional office. Health-related issues were incorporated into training manuals for the purpose of creating an awareness of health-related challenges. Statutory reporting on matters relating to health and safety has improved.

There is a strong willingness by mine owners and managers of the small mines to comply with the requirements of the MHSA. Prospecting for uranium in the Beaufort-West area was completed and mining rights were issued for the

underground mining of uranium. Activities are expected to start in the next financial year.

A committee consisting of stakeholders was formed to drive the implementation of the requirements of the Chapter 8 regulations of the MHSA. These regulations require that employers install pedestrian and vehicle detection systems (PDS and VDS) on all TMM. The North West: Klerksdorp region achieved 11 months of fatality-free shifts during the period under review.

Strategy to improve health and safety

Mines will be encouraged to arrange courses and coaching for supervisors to improve their competency levels since a mindset change towards zero harm is needed. The regions will regularly provide continuous support to all the forums that have been established with the intention of improving the health and safety of all employees.

Various workshops will be held with all stakeholders in the regions to improve working relations. The promotion of behaviour-based safety campaigns will continue during the next period. Inspectors will continue to encourage owners and managers of mines to comply with legislation and to establish a health and safety culture at the mines.

5.3.1 North West: Klerksdorp

The North-West: Klerksdorp region is surrounded by the Free State, Gauteng and Northern Cape provinces. Gold is predominantly mined in underground mines, which is labour intensive. Most of the mines in the region are surface diamond diggings around the Wolmaransstad, Bloemhof and Christiana areas.

During the period under review, more than 99% of the mines did not report fatalities in 12 months. Therefore, they reported 11 months that were were fatality-free. The region noted the improvement on reporting of occupational hygiene measurements and the submission of AMRs.

During the period under review, the following challenges were experienced:

- Two underground gold mines reported one fatality each.
- The mines continued to suffer from the effects of the drought, which caused many local municipalities to implement water restrictions. Some mines were directly affected because dust suppression became a challenge at these mines.

5.3.1.1 Topical issues and matters of interest

Buffelsfontein Gold Mine is still busy with the mine closure process.

5.3.1.2 Inspections and audits

Category	Inspections	Audits
Planned	729	48
Actual	804	50
Percentage compliance	110	104

5.3.1.3 Total accidents reported

Fatal accidents	2
> 14 day accidents	252
1 to 13 day accidents	245

5.3.1.4 Investigations and inquiries

	Investigations	Inquiries	Total
Initiated	238	11	249
Completed	238	11	249
Percentage completed	100	100	100

5.3.1.5 Disaster-type accidents and outcomes of inquiries and investigations

No disaster-type accidents were reported.

5.3.1.6 Statutory notices

Section 54 notices	Section 55 notices
152	375

5.3.1.7 Administrative fines

Number of fines recommended by Inspector	8
Value of fines recommended by Inspector	0
Number of fines set aside by Principal Inspector	8
Value of fines set aside by Principal Inspector	0
Number of fines imposed by Principal Inspector	0
Value of fines imposed by Principal Inspector	0
Appeals	0
Value of fines paid	0

5.3.1.8 Examinations

Certificates	Examination boards	Number of candidates	Certificates issued
Mine Overseers	9	47	5
Onsetters	7	27	26
Lampsman	2	14	6

5.3.1.9 Land-use applications and complaints

	Received	Completed	Percentage
Township developments	22	22	100
Mining and prospecting rights	89	89	100
Mining permits	31	31	100
Closure certificates	52	52	100
Environmental management	120	120	100
Complaints	28	27	96

5.3.1.10 Strategies adopted for improving the status quo

The following strategies were adopted to improve performance:

- Stoppage statutory instructions are issued to mines where repeat deviations are identified and verification inspections are sometimes conducted prior to the upliftment of the instructions.
- Inspectors conduct follow-up audits and inspections to monitor the progress of action plans presented to the regional office.
- Mines are encouraged to have wellness programmes to address healthy lifestyles and non-occupational diseases, including HIV.
- The mines (large and medium operations) conduct wellness campaigns in accordance with the South African Health Awareness Calendar.
- Mines are encouraged to deal with lifestyle conditions at the mine hospitals or medical stations for employees who are not on a medical aid.
- At some mines, employees are questioned and tested on the signs and symptoms of TB whenever they visit the health facility i.e. medical stations, hospitals and during health campaigns at different mines.
- During these awareness campaigns, mine employees are counselled and, with their consent, HIV testing is done. It should be noted that this is managed at the primary health care centre and not at the occupational health centre.
- At the small-scale mines, the Department of Health uses its mobile clinics to conduct wellness campaigns that include counselling and testing for TB, HIV and non-occupational diseases.

5.3.2 North West: Rustenburg

A wide variety of minerals is mined in the North West: Rustenburg region, PGMs and chrome are the main commodities. The region is made up of labour-intensive underground mining operations with numerous slate and granite quarries. The North West: Rustenburg region accounts for most of the mine employees in the country.

Occupational medical services are available at all the mining houses in the region. These services are available to all employees, including contractors. Most of the mining companies have well-established wellness programmes due to the intervention of the regional office. Health-related issues were incorporated into training manuals to create an awareness of health-related challenges.

Statutory reporting of all stressors (accuracy of data and timeous submission) has also improved. Currently, all identified trackless operations in the region have appointed qualified occupational hygienists on a full-time basis. A committee, comprising all stakeholders, was formed to drive the implementation of the requirements of Chapter 8 of the MHSA. These regulations require employers to install PDSs and VDSs on all TMMs.

All the mines are complying with this requirement, including small-scale mines. Numerous meetings were held with the established regional committee members from the South African National Institute of Rock Engineers (SANIRE) to find the best possible solution to decrease the high number of FOG accidents in the region. Best practices and design strategies were discussed at these meetings. The achievements can be attributed to the well-functioning Tripartite Forum that works efficiently to address health and safety challenges in the region.

For the period under review, TB, HIV/AIDS and NIHL remain the main occupational health challenges facing the region. There has been an alarming increase in the number of employees who collapse and pass away at their place of work due to medical reasons. An increased number of cases of medical incapacity has also been observed from the mining companies. The ratio of employees to appointed OMPs at the mines is not proportional, and this is a cause of concern. The OMPs are not involved in risk assessment processes, such as workplace surveys.

The fire incidents that are reported in the region are a cause of concern, especially after the region experienced a disaster-type accident where four employees were fatally injured early in January 2016 due to a fire. All the mining companies in the region were instructed to train control room personnel pertaining to early warning and fire detection systems.

The safety performance showed an undesirable upward trend in 2016. The region experienced 26 fatal accidents in 2016, compared with 19 in 2015. FOG and winch-related accidents were the main contributors to the serious injuries

and fatalities experienced in the region. Most of the mining companies are running short of ground for mining as they are approaching their boundaries and are resorting to areas that had been left before, either due to bad ground or as support pillars.

Mine employees are still fatally injured by being pulled by scraper winches due to the lack of maintenance of signalling systems. The lack of supervisory skills currently experienced also leaves much to be desired.

5.3.2.1 Topical issues and matters of interest

During the period under review, some of the shafts stopped mining and were put on care and maintenance due to the declining commodity prices. A few people were retrenched and others opted for voluntary packages. Most of the mines are not mining at a profit and run the risk of closing.

5.3.2.2 Inspections and audits

Category	Inspections	Audits
Planned	911	46
Actual	951	50
Percentage compliance	104	109

5.3.2.3 Total accidents reported

Fatal accidents	26
> 14 day accidents	1 114
1 to 13 day accidents	487

5.3.2.4 Investigations and inquiries

	Investigations	Inquiries	Total
Initiated	718	18	736
Completed	581	15	596
Percentage completed	81	83	81

5.3.2.5 Disaster-type accidents and outcomes of inquiries and investigations

On 23 January 2016, a disaster-type accident occurred at Impala Platinum 14 Shaft, where four employees were fatally injured when a conveyor belt burnt underground in the trackless section.

5.3.2.6 Statutory notices

Section 54 notices	Section 55 notices
267	255

5.3.2.7 Administrative fines

No administrative penalties were imposed.

5.3.2.8 Examinations

Certificates	Examination boards	Number of candidates	Certificates issued
Mine Overseers	33	293	22
Onsetters	8	66	42
Lampsman	8	64	12

Generally, a low percentage of certificates was issued as most candidates were not adequately prepared for the above examinations.

5.3.2.9 Land-use applications and complaints

	Received	Completed	Percentage
Township developments	0	0	0
Mining and prospecting rights	0	0	0
Mining permits	0	0	0
Closure certificates	0	0	0
Environmental management	0	0	0
Complaints	240	182	76

5.3.2.10 Strategies adopted for improving the status quo

The following strategies were adopted to improve performance:

- Withdrawal and referral of non-performing supervisors to training centres for further training and assessment.
- Adoption of ground-penetrating radar (GPR) for all mines to reduce risks of FOG accidents.
- Meetings with employer representatives (section 4.1 appointees) and the appointment of full-time health and safety representatives once a quarter.
- Reviewing planning sessions conducted by mine personnel.
- Issuing of newsflashes for every serious and fatal accident.
- Engagement with non-performing mines in terms of safety by the PI.
- An integrated approach in dealing with the common challenges facing other departments, such as occupational diseases, including HIV and TB.
- The promotion of behaviour-based safety campaigns.

5.3.3 Western Cape

The Western Cape region has predominantly small surface mines and quarries. The other mines include one offshore platform that produces gas at Mossel Bay, and mines for sea diamonds on the West Coast, limestone for cement and other purposes, and sand, stone and clay for the construction industry. The region also has one small underground mine, Steenkampskraal, which has been dormant for a very long time, but may be re-opened depending on international markets for monozite and other rare earth metals.

Prospecting for uranium in the Beaufort-West area was completed and mining rights were issued for the underground mining of uranium. Activities are expected to start during the next financial year.

The construction of the plant for the phosphate mine in the Langebaan area was completed. Mining can commence subject to permission from the Department of Water Affairs and Sanitation. The Western Cape region has 6 806 employees and contractors working at all the mines.

5.3.3.1 Topical issues and matters of interest

Although many of the mines in the Western Cape region are small mines, there is a strong willingness by mine owners and managers in the region to comply with the requirements of the MHSA. However, the current legislation is mostly directed at large mines and makes compliance very expensive for the small mines. Inspectors are mindful of the National Development Plan and endeavour to assist small mines wherever possible.

Inspectors contributed to encouraging owners and managers of mines not just to comply with legislation, but also to establish a health and safety culture on the mines. Tripartite meetings were held and attended by employers, employee representatives and Inspectors.

5.3.3.2 Inspections and audits

Category	Inspections	Audits
Planned	528	96
Actual	688	40
Percentage compliance	130	42

5.3.3.3 Total accidents reported

A total of 49 accidents were reported during 2016. The region had no fatal accidents during 2016 compared with one fatal accident in 2015. The region had 15 reportable injuries in which people were injured to the extent that they could not return to work within 14 days. Ten accidents were reported where the injured persons returned to work before 14 days. Twenty-four non-casualty accidents were reported, which were mainly fires and runaway vehicles. The breakdown is illustrated below.

Fatal accidents	0
> 14 day accidents	16
1 to 13 day accidents	10

5.3.3.4 Investigations and inquiries

The injuries sustained in the accidents that caused persons to be off work for more than 14 days were investigated in collaboration with the mines.

	Investigations	Inquiries	Total
Initiated	39	0	39
Completed	36	0	36
Percentage completed	92	100	100

5.3.3.5 Disaster-type accidents and outcomes of inquiries and investigations

No disaster-type accidents were reported.

5.3.3.6 Statutory notices

Most of the statutory notices were issued for inadequate guarding of machinery, absence of medical surveillance, training and risk management issues.

Section 54 notices	Section 55 notices
8	27

5.3.3.7 Administrative fines

No administrative penalties were imposed.

5.3.3.8 Examinations

Since there are no operating underground mines in this region yet, no Mine Overseer, Onsetter and Lampsman examinations took place in this region. There were no examination boards for underground and open-cast blasting certificates during the year under review as this was still part of the MQA's processes.

5.3.3.9 Land-use applications and complaints

The past year has seen an increase in applications for mining rights, mining permits and prospecting rights (from

59 in 2013 to 35 in 2014, 19 in 2015 and 31 in 2016). The number of applications for the approval of environmental management plans decreased to three in 2016 (from 55 in 2013 to 35 in 2014 and 19 in 2015). The number of closure applications increased to 38 in 2016 (from eight in 2013 to 22 in 2014 and 12 in 2015). Applications for alternative land use decreased to 27 in 2016 (from 42 in 2014 to 51 in 2015).

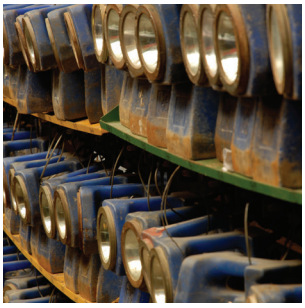
The MHSI investigated one complaint during the year. The Municipal Manager of George complained about the local community being exposed to mining hazards. It was established that the exposure was as a result of informal housing illegally being established within 100 m of the mine, the community illegally entering the mining area and the undermining of old piles of broken bricks.

	Received	Completed	Percentage
Township developments	27	27	100
Mining and prospecting rights	22	22	100
Mining permits	13	13	100
Closure certificates	38	38	100
Environmental management	3	3	100
Complaints	1	1	100

5.3.3.10 Strategies adopted for improving the status quo

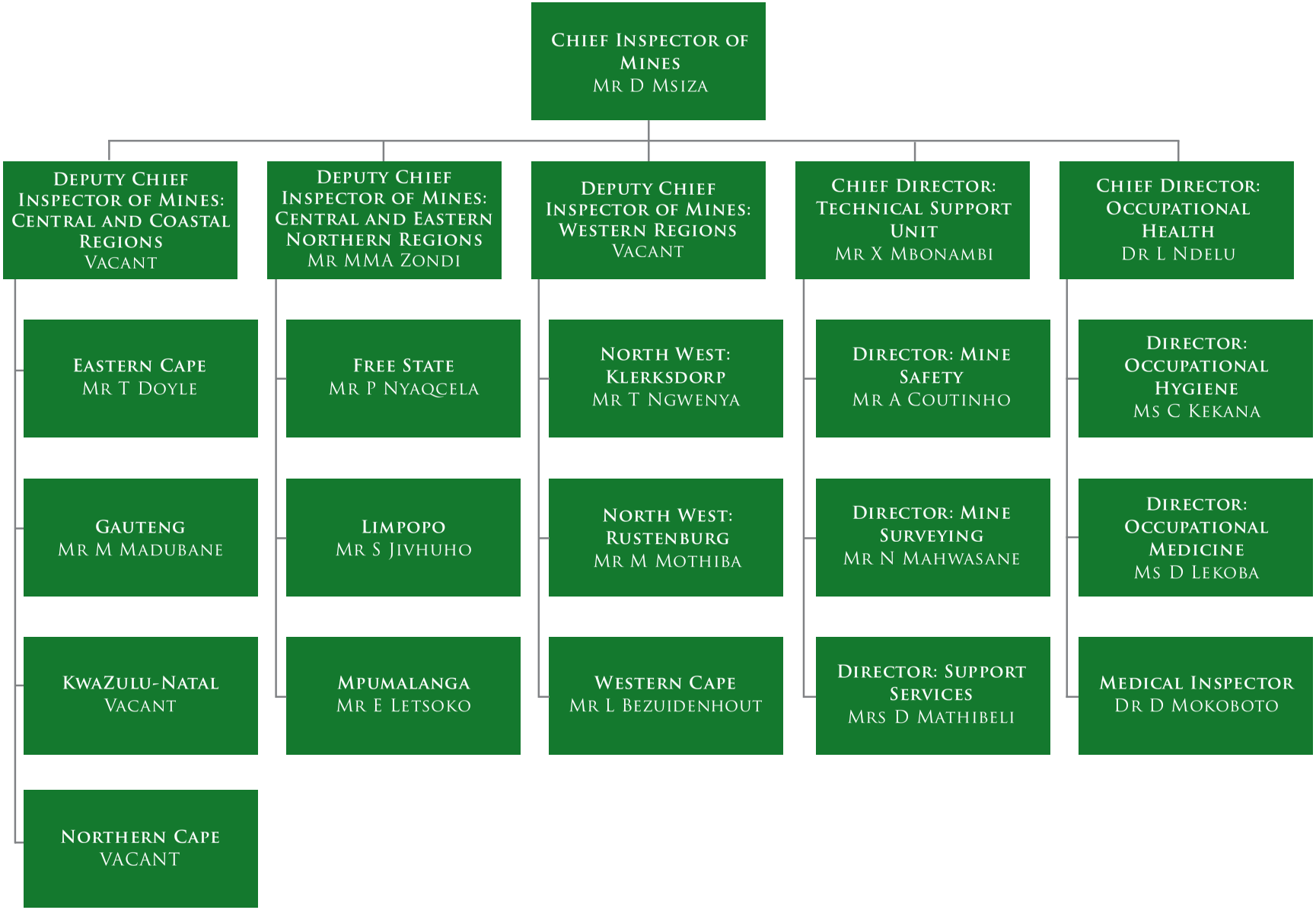
The Inspectors are continuously motivated to influence the mines to improve the quality and effectiveness of risk management, training and behaviour-based safety. To ensure more visibility, the inspection strategy will be changed to prioritise specific problem mines and the larger mines. The audit strategy was changed to do individual audits. Group audits will be done as required on the larger mines and deserving problem mines.




ANNEXURES

ANNEXURE A: Organogram of the MHSI for the period 1 April 2016 to 31 March 2017



ANNEXURE B: Contact List

POSITION	OFFICIAL	WORK TEL	E-MAIL
Chief Inspector of Mines	Mr D Msiza	012 444 3639	phumudzo.rambau@dmr.gov.za
Deputy Chief Inspector of Mines: Central and Eastern Northern Region	Mr MMA Zondi	012 444 3663	lindiwe.sekwati@dmr.gov.za
Deputy Chief Inspector of Mines: Western Region	Vacant	012 444 3661	mokgadi.lesoka@dmr.gov.za
Deputy Chief Inspector of Mines: Central and Coastal Regions	Vacant	012 444 3649	freda.seema@dmr.gov.za
Chief Director: Occupational Health	Dr L Ndelu	012 444 3373	trevia.kungoane@dmr.gov.za
Chief Director: Technical Support	Vacant	012 444 3676	arista.muller@dmr.gov.za
Medical Inspector	Dr D Mokoboto	012 444 3614	pertunia.makhubela@dmr.gov.za
Director: Occupational Hygiene	Ms CT Kekana	012 444 3646	anesia.matjokane@dmr.gov.za
Director: Occupational Medicine	Ms D Lekoba	012 444 3785	rudzani.moshapo@dmr.gov.za
Director: Mine Safety	Vacant	012 444 3612	portia.sokhulu@dmr.gov.za
Director: Mine Surveying	Mr N Mahwasane	012 444 3789	goitsemang.sekwati@dmr.gov.za
Director: Support Services	Vacant	012 444 3547	daphney.sekgobela@dmr.gov.za
Principal Inspector of Mines: Eastern Cape	Mr TM Doyle	041 403 6640	megan.singh@dmr.gov.za
Principal Inspector of Mines: Free State	Mr PH Nyaqcela	057 391 1372	bayo.lefoka@dmr.gov.za
Principal Inspector of Mines: Gauteng	Mr FJ Nkuna (Acting)	011 358 9776	nokhaya.magudumana@dmr.gov.za
Principal Inspector of Mines: KwaZulu-Natal	Vacant	031 335 9626	sindy.dlamini@dmr.gov.za
Principal Inspector of Mines: Limpopo	Mr S Jivhuho	015 287 4705	nancy.montana@dmr.gov.za
Principal Inspector of Mines: Mpumalanga	Mr E Letsoko	013 653 0514	maropeng.moloko@dmr.gov.za
Principal Inspector of Mines: Northern Cape	Vacant	053 807 1735	ntsako.sibuyi@dmr.gov.za
Principal Inspector of Mines: North West: Klerksdorp	Mr T Ngwenya	018 487 4316	elizabeth.mmota@dmr.gov.za
Principal Inspector of Mines: North West: Rustenburg	Mr HM Mothiba	014 594 9240	tintswalo.baloyi@dmr.gov.za
Principal Inspector of Mines: Western Cape	Mr LJA Bezuidenhout	021 427 1004	ntombikayise.ntlenzi@dmr.gov.za
Mine Health and Safety Council: General Manager	Mr TT Dube	011 656 1797	dndumndum@mhsc.org.za
Mining Qualifications Authority: Chief Executive Officer	Mr S Seepei	011 547 2604	EstelleT@mqa.org.za

ANNEXURE C: Acronyms

AIDS	Acquired Immune Deficiency Syndrome
AMDP	Advanced Management Development Programme
AMR	Annual Medical Report
AQI	Air Quality Index
ARV	Antiretroviral
CCMA	Commission for Conciliation, Mediation and Arbitration
CIOM	Chief Inspector of Mines
COAD	Chronic obstructive airways disease
COP	Code of Practice
CSM	Cold stress management
CXR	Chest X-ray
CWP	Coal workers' pneumoconiosis
DB	Dry bulb
DMR	Department of Mineral Resources
DOTS	Directly Observed Treatment Strategy
FEL	Front-end loader
FOG	Fall of ground
GCC	Government Certificate of Competency
GPR	Ground-penetrating radar
HCT	HIV counselling and testing
HEG	Homogenous exposure group
HIV	Human Immunodeficiency Virus
HPD	Hearing protection device
HRD	Human Resource Development
IOM	Inspector of Mines
MDR-TB	Multi-drug-resistant TB
MHS	Mine health and safety
MHSA	Mine Health and Safety Act, 1996 (Act 29 of 1996), as amended
MHSC	Mine Health and Safety Council
MHSI	Mine Health and Safety Inspectorate
MOSH	Mine Occupational Safety and Health
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002))
MQA	Mining Qualifications Authority
MSCC	Mine Surveyors' Certificate of Competency
Mtpa	Million tonne per annum
NCSMT	National Coordinating Strategy Management Team
NIHL	Noise-induced hearing loss
OEL	Occupational exposure limit
OEM	Original equipment manufacturer
OHC	Occupational Health Centre
OMP	Occupational Medical Practitioner
OHS	Occupational Health and Safety
PDS	Proximity detection system
PDS and VDS	Pedestrian and vehicle detection systems
PGM	Platinum Group Metals
PHC	Primary Health Care
PI	Principal Inspector of Mines
PPE	Personal protective equipment
PTB	Pulmonary tuberculosis
RBE	Rail-bound equipment
SAMRASS	South African Mines Reportable Accidents Statistical System
SANIRE	South African National Institute of Rock Engineering
SAPS	South African Police Service
SCSR	Self-contained self-rescuer
SGA	Sibanye Gold Academy
SiI+TB	Silico-tuberculosis
SLA	Service level agreement
T&M	Transportation and mining
TB	Tuberculosis
TMM	Trackless mobile machines
WB	Wet bulb
WHO	World Health Organisation
XDR-TB	Extremely drug-resistant TB

NOTES

NOTES

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