MINE HEALTH AND SAFETY INSPECTORATE

ANNUAL REPORT

2021/22

mineral resources & energy

Department:
Mineral Resources and Energy
REPUBLIC OF SOUTH AFRICA

2030 NDP

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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, organised labour 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 the Sector Education and Training Authority (SETA) for the minerals and mining sector, and is responsible for the education and training needs of the mining industry. The MQA was established under the Skills Development Act, 1998 (Act 97 of 1998).

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

PART 1:
General Information

1. GENERAL INFORMATION

1.1 Submission of the annual report to the executing authority

Mr SG Mantashe, MP
Minister of Mineral Resources and Energy
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 2021/22 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

D Msiza
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 occupational diseases 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

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 2021/22 financial year.

1.4.1 Staffing

The establishment of the Inspectorate provides for 278 posts, of which 235 are currently filled and 43 posts are vacant. The demographics of the Inspectorate were as follows:

GENDER	AFRICAN	WHITE	ASIAN	COLOURED	TOTAL
Male	119	9	0	0	128
Female	95	5	0	7	107

1.4.2 Implemented training

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

- A total of 21 officials attended technical and non-technical training courses, as well as conferences.
- One manager attended the Advanced Management Development Programme (AMDP).

1.4.3 Training interventions

1.4.3.1 Assistant Inspector programme

- The Department had nine Assistant Inspectors at the beginning of the period under review.
- Three of the nine Assistant Inspectors passed their respective Government Certificate of Competency (GCC) during the financial year.
- There are currently six Assistant Inspectors who are at various stages of obtaining their GCC in their respective disciplines.

1.4.3.2 Bursary scheme

- There were no MHSI bursary holders during the period under review.

1.4.4 Current health performance

1.4.4.1 Occupational health

Since various Corona Virus Infection Disease 2019 (COVID-19) lockdown restrictions and regulations were introduced in South Africa, and throughout the world, the mining industry has been equipped with the necessary knowledge and options on how to continuously deal with the consequences of the corona virus on occupational health systems at mines. Many mining companies have realised by now that we are living in the new normal, where there is a continuous need to reprioritise and reimagine the occupational health of mine employees in the times of the COVID-19 pandemic. A lot of mines were under care and maintenance during these periods, hence these mines

were non-operational. Employees were laid off work. This contributed to the decline in health data, although there were pockets of increases in some health data. Despite the improvement of health data reported during the period under review, the exposure of employees to occupational health hazards exceeding the occupational exposure limit (OEL) remains a challenge.

Compliance by the mines regarding reporting increased across all stressors in 2021, compared to 2020. Statutory reporting increased per stressor as follows: airborne pollutants by 12%, noise by 9%, thermal stress: heat by 30% and thermal stress: cold by 13%. The Northern Cape region recorded a concerning decrease in the number of mines that reported cases across all stressors.

During 2021, a slight decrease was noted in the submission of Annual Medical Reports (AMRs). However, the total number of employees covered in the AMRs showed a slight increase. The analysis of medical surveillance rates per 10 000 employees has shown an increase in the initial, periodic and exit examinations conducted in 2021, compared to 2020.

A decrease of about 5% was noted in the total number of occupational diseases reported, from 2 013 cases in 2020 to 1 924 in 2021. The analysis of occupational disease rates per 10 000 employees showed a decrease of 36 in 2021, compared to 38 in 2020. Statistics showed an overall increase in the total number of occupational diseases reported from the gold sector during 2021, with a slight decrease noted in the silicosis and pulmonary tuberculosis (PTB) cases reported, while cases of noise-induced hearing loss (NIHL) increased. The silicosis, PTB and NIHL reported from the platinum sector showed a slight decrease in 2021, compared to 2020. During 2021, the coal sector showed a slight decrease in PTB and NIHL cases reported, compared to 2020. Two silicosis cases were reported from the coal sector in 2021, while no cases had been reported in 2020.

The MHSA requires employers to submit statutory reports to the respective Principal Inspectors of Mines (PIs), detailing information of personal exposure monitoring for occupational hygiene stressors. Regrettably, there was an increase in the number of employees over-exposed to airborne pollutants, heat and cold stressors, as well as noise levels during the period under review.

There is a need for employers to assess, monitor and adhere to maintenance schedules in order to reduce excessive exposure to airborne pollutants and undesired noise levels that exceed 85 decibels (dB). Training and awareness of employees on the adverse health effects of exposure to occupational hazards, as well as continuous supervision, should remain a priority. The South African mining industry, together with original equipment manufacturers (OEMs), are encouraged to continue sharing best practices where possible, to ensure that strategies achieve the aim of reducing and eventually eliminating the risks identified.

As employees got laid off during the COVID-19 pandemic, more employees were separated from their workplaces, due to medical incapacity, resulting in most of them lodging section 20 appeals disputing the finding of unfitness by the occupational medical practitioners (OMPs). The number of section 20 appeals received increased from 152 in 2020 to 178 in 2021.

Under section 20 of the MHSA, employees are given an opportunity to dispute the decision of the OMP, or findings of an exit. The Medical Inspector intervenes if such an appeal is lodged, and then investigates the merits of the appeal. The investigation involves the inspection of the employee's workplace, researching the medical conditions being disputed, consulting specialists for expert opinions, interviewing employees, employers and their representatives, and checking other legislation that might be relevant to the appeal being processed.

The Medical Inspector received 178 appeal documents, of which only 90 qualified to be processed. From that figure, 78 appeals were finalised, translating to approximately 87% of appeals finalised during the period under review.

1.4.4.2 Human Immunodeficiency Virus (HIV), Acquired Immune Deficiency Syndrome (AIDS) and tuberculosis (TB)

Alignment between the work of the Department of Mineral Resources and Energy (DMRE) and the strategies of the Department of Health (DoH) in the spheres of HIV and TB continues. During the period under review, most of the mines complied with the reporting requirements. The analysis of TB and HIV matters is based on data contained in the DMR 164 forms received from the South African mining industry.

There has been an increase in the number of mines that have submitted TB and HIV data to the Department, from 775 in 2020 to 789 in 2021. However, the negative effects of the pandemic led to a decrease in TB screening from 95% to 92% year on year, but at least this figure is still in line with the 90:90:90 End TB Strategy. Fewer employees were diagnosed with TB, which will fall under missed cases in the following year, as fewer employees were covered in 2021.

Total compliance related to the integrated HIV and TB policy revealed that some mines still do not budget for TB and HIV programmes. This is responsible for the low rate of compliance. HIV counselling dropped from 76% in 2020 to 66% in 2021, but HIV testing increased markedly from 58% in 2020 to 73% in 2021. This improves the number of mine employees who know their HIV status.

1.4.4.3 The COVID-19 pandemic

In March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic and the President of South Africa declared a national state of disaster on COVID-19, in terms of the Disaster Management Act, 2002 (Act 57 of 2002) (DMA). Several restrictions were introduced to curb the spread of the disease. Despite these measures, the number of COVID-positive cases continued to increase dramatically throughout all sectors in the country.

During the period under review, mine inspectors continued to enforce and monitor compliance to the CIOM guideline issued in terms of the MHSA to compel all mines to prepare and implement a Code of Practice (COP) for the prevention, mitigation and management of the COVID-19 outbreak. Working with all partners in the sector to support and entrench a culture of zero harm, it remains important for all mineworkers to remain vigilant and not relax due to "COVID-19 fatigue". The global scientific community has developed, tested and produced several vaccines that are safe and effective against this disease. South Africa's scientists and research institutions have made an important contribution to these efforts, and have contributed to the global knowledge regarding the disease, including on the emergence of new variants.

1.4.5 Current safety performance

1.4.5.1 Occupational safety

Prior to COVID-19, working with mining companies and labour unions, the Department made significant strides in improving occupational safety for mineworkers. This led to the sustainable downward trend in occupational injuries and fatalities over the years. The 2019 occupational safety statistics reflect the lowest fatalities ever recorded in the sector at 51 fatalities. It is, however, with regret that, for the past two consecutive years, 2020 and 2021, the mining sector saw a deterioration in the safety performance of the South African mining industry. During October 2021, a huge spike of 13 fatalities was reported.

Despite a positive improvement of about 10% in the number of employees at work in the South African mining industry during the period under review, from 386 945 in 2020 to 426 331 in 2021, the industry is still plagued by challenges of injuries and fatalities resulting from mining activities.

An increase of 23% was recorded in the number of fatalities, from 60 fatalities in 2020 to 74 in 2021. The number of injuries recorded also showed a regression of 18% from 1 813 recorded in 2020 to 2 143 in 2021. The fatality rate per million man-hours worked increased from 0.07 to 0.08, while the injury rate per million man-hours worked increased from 2.13 to 2.28 during 2020 and 2021, respectively.

Fall of ground (FOG) accidents, including seismic-related rock bursts, remain a significant challenge in both the platinum and gold-mining sectors, especially at the country's deep-level mining operations. Transport-related accidents continue to affect mostly the coal and platinum-mining sectors.

The highest three fatality classification groups for 2021 were FOG at 22 fatalities, transportation and mining (T&M) at 18 fatalities and general-type accidents at 14 fatalities.

It is also worth noting that the fatalities recorded during 2021 include four fatalities classified under the miscellaneous category, which is fatalities that may not be readily classified under the other available categories on the South African Mines Reportable Accident Statistics System (SAMRASS). This is currently pending investigation and/or post-mortem reports. None of the cases were COVID-related deaths, but instead it was reported that the deceased employees had collapsed and passed on while on duty with no evidence of accidents.

1.4.5.2 Disaster-type accidents

There were no reports of mine disasters or disaster-type accidents during the period under review. However, multi-fatal accidents involving more than one employee were reported from various mines across the industry.

- At approximately 09:45 on Thursday, 15 April 2021, a seismic event of 2.2 magnitude occurred, injuring 10 employees at Ya Rona shaft (Sibanye-Stillwater). One Shift Boss, one Special Team Leader, one Team Leader, two Winch Operators and five Rock Drill Operators sustained multiple injuries.
- On Sunday, 19 September 2021, at Thuthukani shaft (Sibanye-Stillwater), three employees were exposed to high temperatures and were fatally injured. Two Mine Rescue Service (MRS) brigades' men were also exposed to these high temperatures while searching for a missing Electrical Foreman, who had been part of the team that was tasked to fix faulty electrical cables at 35/53 X/Cut.
- On Tuesday, 26 October 2021, the control room at Sasol Bosjesspruit Colliery received a call from the control room informing them that there was an inrush of water in section 90 coming from an old panel that the continuous miner had holed into. During this event, three employees were unaccounted for. MRS was called to assist, and the three unaccounted for employees were located and brought to the surface. They were declared dead by suspected drowning.
- A multiple-fatality accident occurred on Sunday, 28 November 2021, at Impala Platinum Limited, Shaft No. 6, in which three employees succumbed to the injuries sustained after being trapped in the mud-rush at the shaft bottom.
- On Friday, 3 December 2021, three employees of Beatrix shaft (Sibanye-Stillwater) were fatally injured when a runaway load haul dump (LHD) truck driven by an unlicensed fitter artisan lost control in a decline in one of the underground mines.

1.4.6 Illegal mining

Illegal mining adversely affects the health and safety of mine employees and the surrounding communities. Illegal mining, as in the past, resulted in a significant loss of life, mainly as a result of underground fires, FOG accidents and murder. The illicit activities also have a negative impact on our economy and result in a significant loss of revenue for the state and the mining sector.

There are reports claiming that some of these illegal activities are conducted by desperate people, including current mineworkers, who are moonlighting, former mine employees that have been laid off, as well as people from neighbouring countries. The modus operandi of illegal mining continuously changes as the Department and the relevant stakeholders implement measures to eradicate these illicit activities. For instance, there is now an increase in violent crimes, including murder, associated with illegal mining as a result of rival gang activity.

Illegal mining is a criminal activity that is fuelled by highly organised, dangerous, well-financed and complex local and international crime syndicates. The Department works with and supports other departments in a national strategy to eliminate illicit mining activities and the trade of precious metals and diamonds. It also continues to collaborate with law enforcement agencies and other stakeholders to ensure the continued implementation of strategies to combat illegal mining activities in South Africa.

1.4.7 Women in mining (WiM)

Two women were fatally injured in 2021, compared to one woman in 2020. This translates to a 100% increase, although the fatality of any mineworker is regrettable, irrespective of their gender. Statistics proves that it is possible to report zero fatalities affecting WiM because, since 2000, no women fatalities had been reported for 2001, 2003, 2005, 2010 and 2015.

There has been an increase in the number of injuries involving WiM. The injuries that were reported involving women were mainly in the general classification. These accidents were linked to slipping and falling, material handling and being struck by object.

PART 2:
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 DMRE 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 DMRE 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*

OUTPUT INDICATOR	TARGET AS PER THE ANNUAL PERFORMANCE PLAN (APP)	QUARTER 4 ACTUAL OUTPUT	REASON FOR DEVIATION	CORRECTIVE MEASURES	COMMENTS FOR QUARTER 4
Percentage reduction in occupational fatalities	10%	**Not achieved:** There were 68 fatalities from April 2021 to March 2022, compared to 59 fatalities in the same period of the previous financial year. **Calculation:** (68 − 59)/59*100 = 32%	The high number of fatalities reported during the first, second and third quarters of 2021/22.	1. More mine inspections, audits, tripartite meetings and meetings with mine management and executives to be conducted in the new financial year to combat occupational fatalities. 2. Support current measures to address COVID-19 cases at mines, including the government's vaccine roll-out programmes. 3. Revived focus on measures to address fatal accidents at mines by employers and workers.	Safety performance on fatalities is measured using a comparison with the previous year. However, with COVID-19, it is impractical to make a meaningful comparison based on the total number of occupational fatalities reported by mines during the four quarters of 2021/22 compared to the cases reported during the same period in 2020/21. The lockdown during 2020 led to the temporary shutdown or reduction of operations in the South African mining industry, which, in turn, led to fewer activities and fewer fatalities compared to 2021.
Percentage reduction in occupational injuries	5%	**Not achieved:** There were 2 127 injuries from April 2021 to March 2022, compared to 1 789 injuries in the same period of the previous financial year. **Calculation:** (2 127 − 1 802)/1 802*100 = 18%	The high number of injury accidents reported during all four quarters of 2021/22.	1. More mine inspections, audits, tripartite meetings and meetings with mine management and executives to be conducted in the new financial year to combat occupational injuries. 2. Support current measures to address COVID-19 cases at mines, including the government's vaccine roll-out programmes. 3. Revived focus on measures to address fatal accidents at mines by employers and workers.	Safety performance on injuries is measured using a comparison with the previous year. However, with COVID-19, it is impractical to make a meaningful comparison based on the total number of occupational injuries reported by mines during the four quarters of 2021/22 compared to the cases reported during the same period in 2020/21. The lockdown during 2020 led to the temporary shutdown or reduction of operations in the South African mining industry compared to 2021.

OUTPUT INDICATOR	TARGET AS PER THE ANNUAL PERFORMANCE PLAN (APP)	QUARTER 4 ACTUAL OUTPUT	REASON FOR DEVIATION	CORRECTIVE MEASURES	COMMENTS FOR QUARTER 4
Percentage reduction in occupational diseases (including TB)	10%	**Not achieved:** During April 2021 to March 2022, a total of 1 403 occupational diseases were reported compared to 1 197 cases reported during the same period in 2020/21. **Calculation:** (1 403 – 1 197)/1 197*100 = 17%	The reason for under-achievement is because fewer cases were reported during 2020/21. The national lockdown commenced during the first quarter of 2020/21, which resulted in the temporary shutdown or reduction of operations in the South African mining industry.	The mines are required to continually comply with the legislative requirements pertaining to medical surveillance and the reporting of occupational diseases over and above the implementation of initiatives towards the prevention, mitigation and management of COVID-19.	Health performance on diseases is measured using a comparison with the previous year. The COVID-19 pandemic made it impractical to make a meaningful comparison based on the total number of occupational diseases reported by mines in quarters 1, 2 and 3 of 2021/22 compared to the cases reported during the same period in 2020/21. The lockdown during 2020 led to the temporary shutdown or reduction of operations in the South African mining industry compared to 2021.
Percentage of investigations completed (initiated vs completed)	80%	**Achieved:** A total of 539 accident-initiated investigations were completed from April 2021 to March 2022. **Calculation:** (539/539)*100 = 100%	The reason for the over-achievement is that some investigations are less complex and do not require large gatherings. This measure was not totally impacted on by the lockdown regulations or restrictions.	Not applicable.	This achievement is welcomed and appreciated.
Percentage of inquiries completed (initiated vs completed)	80%	**Achieved:** A total of 44 accident investigations were initiated and 43 were completed during April 2021 to March 2022. **Calculation:** (43/44)*100 = 98%	More witnesses and legal representatives were available when lockdown regulations or restrictions were lifted.	Not applicable	This achievement is welcomed and appreciated.
Number of qualitative inspections conducted (cumulative including individual and group audits)	8 396	**Achieved:** 8 399 inspections and audits were conducted during the four quarters instead of 8 396. **Calculation:** (8 399/8 396)*100 = 100%	The reason for over-achievement is due to effort put in by inspectors in conducting more inspection in the 4th quarter when lockdown regulations or restrictions were eased up.	Not applicable	This achievement is welcomed and appreciated.

2.4 Service delivery improvement plan

Table 2.4: *Progress achieved against annual targets*

KEY SERVICE	SERVICE BENEFICIARY	DESIRED STANDARD		PROGRESS AS AT 31 MARCH 2022
Address health and safety risks in mining through: • The number of inspections conducted • The number of investigations conducted • The number of inquiries conducted • The reduction in occupational injuries • The reduction in occupational fatalities • The reduction in occupational diseases	Mining operations	Quantity	**80%** of planned investigations as per capacity **5%** of planned reduction in occupational injuries **10%** of planned reduction in occupational fatalities **10%** of planned reduction in occupational diseases **80%** of planned inquiries as per capacity	**100%** of planned investigations as per capacity **18%** regression or increase in occupational injuries reported **17%** regression or increase in occupational diseases reported **32%** regression or increase in occupational fatalities reported **98%** of planned inquiries completed as per capacity
		Quality	Implementation and compliance to standardised policies and procedures	**Achieved**
		Consultation	Quarterly consultation with mining operations	**Achieved**
		Open and transparent	Policies and procedures are public documents	**Achieved**
		Information	Information is shared with mines on a monthly basis	**Achieved**
		Value for money	Ensure the optimum utilisation of voted funds	**Achieved**

PART 3:
State of Occupational Health in the South African Mining Industry

3. STATE OF OCCUPATIONAL HEALTH IN THE SOUTH AFRICAN MINING INDUSTRY

In the past two years, the world has been engaged in preventing, mitigating and managing the COVID-19 pandemic. This has undoubtedly affected the South African mining industry as well. A lot of mines were under care and maintenance, hence non-operational. Employees were laid off work, which contributed to the decline in some health data. However, there were pockets of increases in some of the health data.

The exposure of employees to occupational health hazards exceeding the OEL remains a challenge. The number of employees at risk to airborne pollutant exposure increased from a total population of 326 744 in 2020 to 373 084 in 2021, which is a 14.18% increase. Employees at risk to noise exposure recorded a 7.21% increase from a total population of 332 578 in 2020 to 356 561 in 2021.

Thermal stress: heat recorded a 12.31% increase in the total number of employees at risk from 244 741 in 2020 to 274 862 in 2021. Although the number of employees at risk to thermal stress: cold increased from 104 565 in 2020 to 135 480 in 2021, the South African mining industry continued to record a zero over-exposure to thermal stress: cold from 2013 to the current reporting period.

Compliance by the mines regarding reporting increased across all stressors in 2021, compared to 2020. Statutory reporting increased per stressor as follows: airborne pollutants by 12.08%, noise by 9.02%, thermal stress: heat by 29.5% and thermal stress: cold by 12.50%. The Northern Cape region recorded a concerning decrease in the number of mines that reported cases across all stressors.

During 2021, a slight decrease of 0.11% was noted in the submission of AMRs from a total of 932 in 2020 to 931 in 2021. The total number of employees covered in the AMRs has shown a slight increase of 1.75%, from 524 619 in 2020 to 533 809 in 2021. The analysis of medical surveillance rates per 10 000 employees has shown an increase in the initial, periodic and exit examinations conducted in 2021, compared to 2020.

A decrease of 4.42% has been noted in the total number of occupational diseases reported, from 2 013 cases in 2020 to 1 924 in 2021. The analysis of occupational disease rates per 10 000 employees showed a decreased rate of 36 in 2021, compared to a rate of 38 in 2020. Statistics showed an overall increase in the total number of occupational diseases reported from the gold sector during 2021, with a slight decrease noted in silicosis and PTB cases, and an increase in NIHL cases. The silicosis, PTB and NIHL cases reported by the platinum sector showed a slight decrease in 2021, compared to 2020. During 2021, the coal sector showed a slight decrease in PTB and NIHL cases, compared to 2020. Two silicosis cases were reported from the coal sector in 2021, while no cases were reported in 2020.

There has been an increase in the number of mines that submitted TB and HIV data to the DMRE, from 789 in 2021 to 775 in 2020. It should be noted that fewer employees, at 480 742, were covered in 2021, compared with 482 068 in 2020, which could be the result of some employees being laid off work. Other negative effects of the pandemic include the decrease in TB screening from 94.5% to 91.9%, but this is still in line with the Joint United Nations Programme on HIV/AIDS (UNAIDS)'s 90:90:90 strategy for TB. Fewer employees were diagnosed with TB, which will fall under missed cases in the following reporting period, as fewer employees were covered in 2021.

The total compliance related to the integrated HIV and TB policy increased from 91.9% in 2020 to approximately 94% in 2021. However, most mines still do not budget for TB and HIV programmes. This could be the reason for the low compliance of 46.1%. HIV counselling declined from 75.5% in 2020 to 65.7% in 2021, but HIV testing increased markedly from 58.1% in 2020 to 72.8% in 2021. This improves the number of mine employees who know their HIV status.

As employees got laid off during the COVID-19 pandemic, more employees were separated from their workplaces, due to medical incapacity, resulting in most of them lodging section 20 appeals, disputing the finding of unfitness by the OMPs. The number of section 20 appeals received increased from 152 in 2020 to 173 in 2021.

3.1 Occupational hygiene

Section 9.2.(7) requires the employer to submit statutory reports on personal exposure monitoring to occupational hygiene stressors at the end of each prescribed reporting period. The analysis of the occupational hygiene measurements is based on these reports as submitted to the MHSI, as indicated in Table 3.1.

Table 3.1: *Compliance reporting*

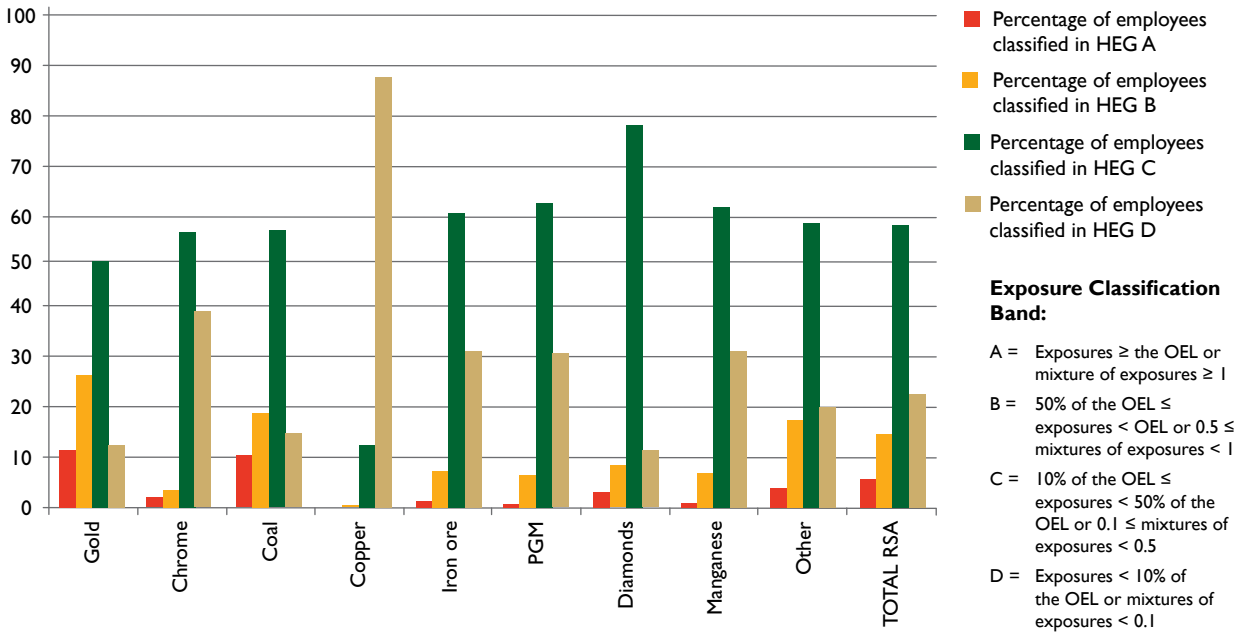
REGION	AIRBORNE		NOISE		HEAT		COLD	
	2020	2021	2020	2021	2020	2021	2020	2021
Eastern Cape	29	41	25	38	24	35	20	29
Free State	39	41	38	35	28	28	16	13
Gauteng	107	113	112	111	84	96	64	63
KwaZulu-Natal	59	53	58	52	52	46	37	36
Limpopo	60	77	58	66	46	66	38	39
Mpumalanga	124	146	121	147	77	102	83	85
North West: Klerksdorp	57	98	57	65	43	65	35	59
North West: Rustenburg	84	122	72	144	31	134	55	127
Northern Cape	122	80	136	77	95	60	82	49
Western Cape	64	64	43	50	42	44	39	36
TOTAL	745	835	720	785	522	676	469	536

3.1.1 Airborne pollutant exposure

NOTE:

- The Air Quality Index (AQI) of multiple pollutants is determined by dividing the airborne pollutant concentration of each pollutant in the mixture by its OEL and adding the results.
- The sum should not be greater than or equal to 1.

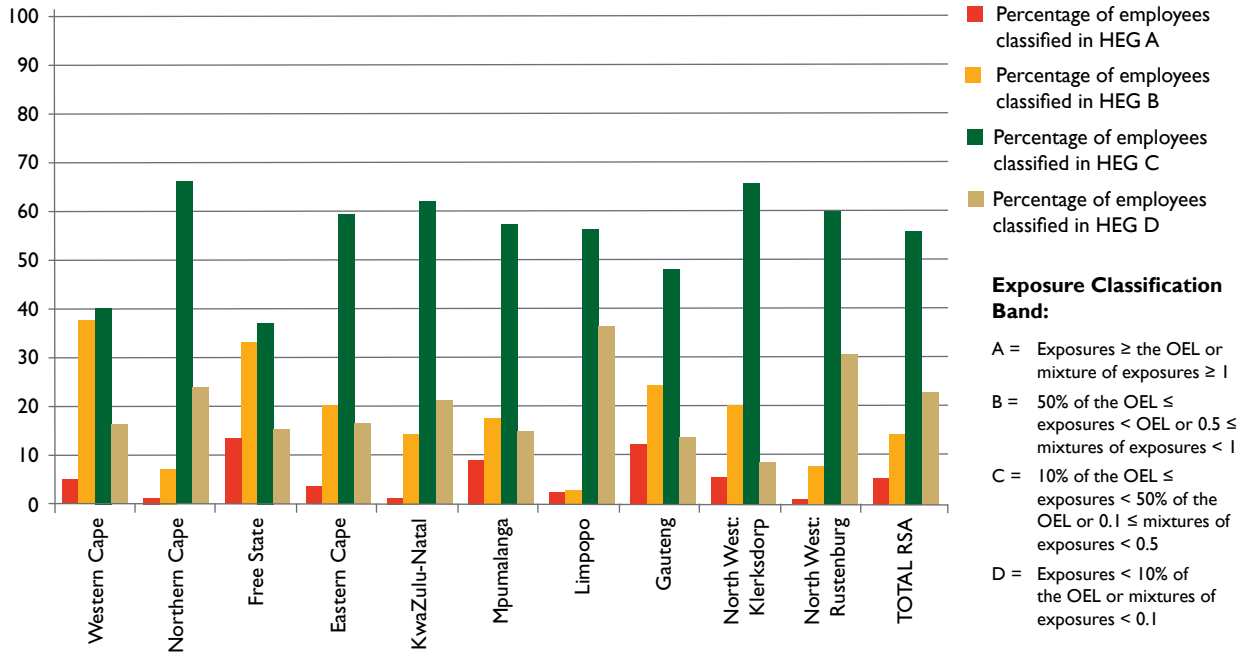
Figure 3.1.1(a): *Percentage exposure to airborne pollutants per classification band per commodity*



The number of employees over-exposed to airborne pollutants in Category A was 20 675, with a percentage of 5.54% in 2021, compared to 6.87% in 2020. This decrease is noted in the following commodities: gold from 14.29% in 2020 to 11.40% in 2021, coal from 12.31% in 2020 to 10.22% in 2021, iron ore from 2.27% in 2020 to 1.46% in 2021, Platinum Group of Metals (PGM) from 0.56% in 2020 to 0.51% in 2021, diamonds from 7.98% in 2020 to 3.06% in 2021, manganese from 3.19% in 2020 to 0.66% in 2021, and other commodities from 6.58% in 2020 to 3.87% in 2021.

Although there was a national decrease in employee over-exposure to airborne pollutants, the chrome sector recorded an increase from 0.18% in 2020 to 2.00% in 2021, and the copper sector increased from 0.00% in 2020 to 0.40% in 2021.

Figure 3.1.1(b): *Percentage exposure to airborne pollutants per classification band per region*



There was a national decrease in employee over-exposure to airborne pollutants of 1.33% in 2021, compared to 2020. This decrease was noted mainly in the Free State, from 20.33% in 2020 to 13.61% in 2021; KwaZulu-Natal, from 1.60% in 2020 to 1.35% in 2021; Mpumalanga, from 12.52% in 2020 to 9.07% in 2021; North West: Klerksdorp, from 7.63% in 2020 to 5.28% in 2021; and the Western Cape, from 14.16% in 2020 to 5.18% in 2021.

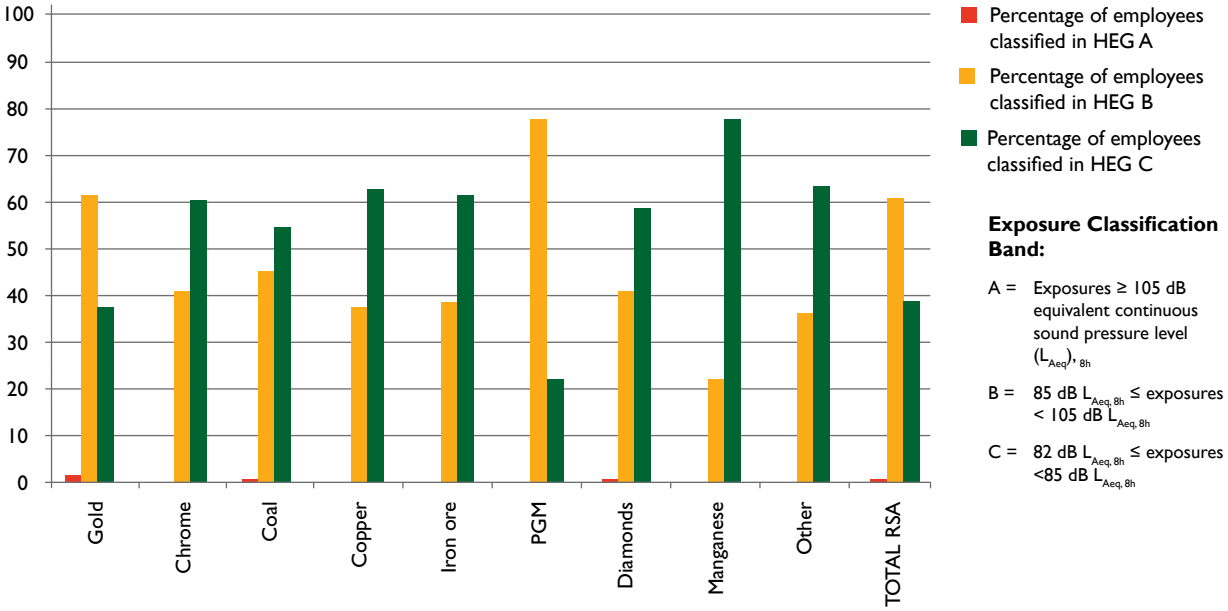
An increase in the number of employees over-exposed to airborne pollutants was noted in the Eastern Cape, from 2.22% in 2020 to 3.14% in 2021; Limpopo, from 1.64% in 2020 to 2.28% in 2021; Gauteng, from 12.35% in 2020 to 12.50% in 2021; and North West: Rustenburg, from 0.68% in 2020 to 0.98% in 2021.

3.1.2 Noise exposure

NOTE:

- The OEL for noise is 85 dB (A) based on an eight-hour exposure shift.
- No special precautions, except monitoring, are required for the C-band.
- The implementation of the Hearing Conservation Programme (HCP) is required for the A- and B-bands.
- Persons in the A- and B-bands are over-exposed.

Figure 3.1.2(a): *Percentage exposure to noise per classification band per commodity*

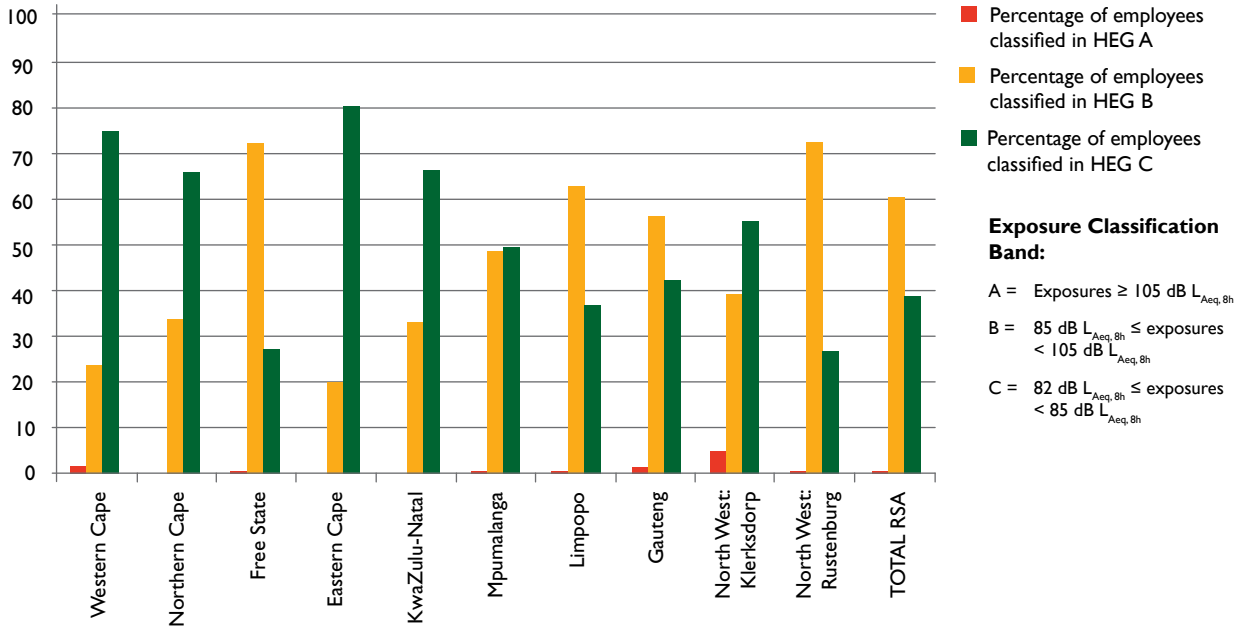


There was a decrease in the number of employees exposed to excessive noise levels in 2021, from 1 829 employees out of a total population of 356 561 employees at risk, compared to 2020. This equates to 0.51% nationally in 2021, compared to 0.87% in 2020. This decrease was recorded in the following commodities: gold, from 1.92% in 2020 to 1.49% in 2021; PGM, from 0.06% in 2020 to 0.01% in 2021; and diamonds, from 6.51% in 2020 to 0.97% in 2021.

A slight increase in employee over-exposure to excessive noise levels was noted in the manganese sector, from 0.00% in 2020 to 0.04% in 2021; in the coal sector, from 0.27% in 2020 to 0.51% in 2021; and in the other mines sector, from 0.15% in 2020 to 0.22% in 2021.

The copper and iron ore commodities are commended for maintaining zero-employee over-exposure to excessive noise levels from 2018 to 2021, while the chrome sector had zero employee over-exposure in both 2020 and 2021.

Figure 3.1.2(b): *Percentage exposure to noise per classification band per region*



There was an overall decrease in the number of employees exposed to noise levels exceeding 105 dB $L_{Aeq, 8h}$ in 2021, recorded as 0.51%, compared to 0.87% in 2020 nationally. This decrease was mainly noted in the following regions: Gauteng, from 1.33% in 2020 to 0.96% in 2021; North West: Klerksdorp region, from 6.48% in 2020 to 4.92% in 2021; North West: Rustenburg region, from 0.03% in 2020 to 0.01% in 2021; Western Cape, from 1.98% in 2020 to 1.55% in 2021; and Free State, from 1.43% in 2020 to 0.56% in 2021.

An increase in employee exposure to noise levels above 105 dB $L_{Aeq, 8h}$ was recorded in Limpopo, from 0.00% in 2020 to 0.03% in 2021; and Mpumalanga, from 0.26% in 2020 to 0.53% in 2021. In 2021, Northern Cape and KwaZulu-Natal recorded 0.00% employees exposed to excessive noise levels, compared to the previous years, and the Eastern Cape recorded zero over-exposures of employees to excessive noise levels from 2018 to 2021.

3.1.3 Thermal stress

Monitoring is conducted on an annual cycle period in compliance with section 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 monitoring.

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

- 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 marginal.
- The specific protocol would be dictated by prevailing circumstances, and therefore cannot be stipulated or prescribed.

Seasonal changes could be crucial, and relying on winter temperatures may lead to an underestimation of risk and vice versa. Environmental monitoring should take this into account.

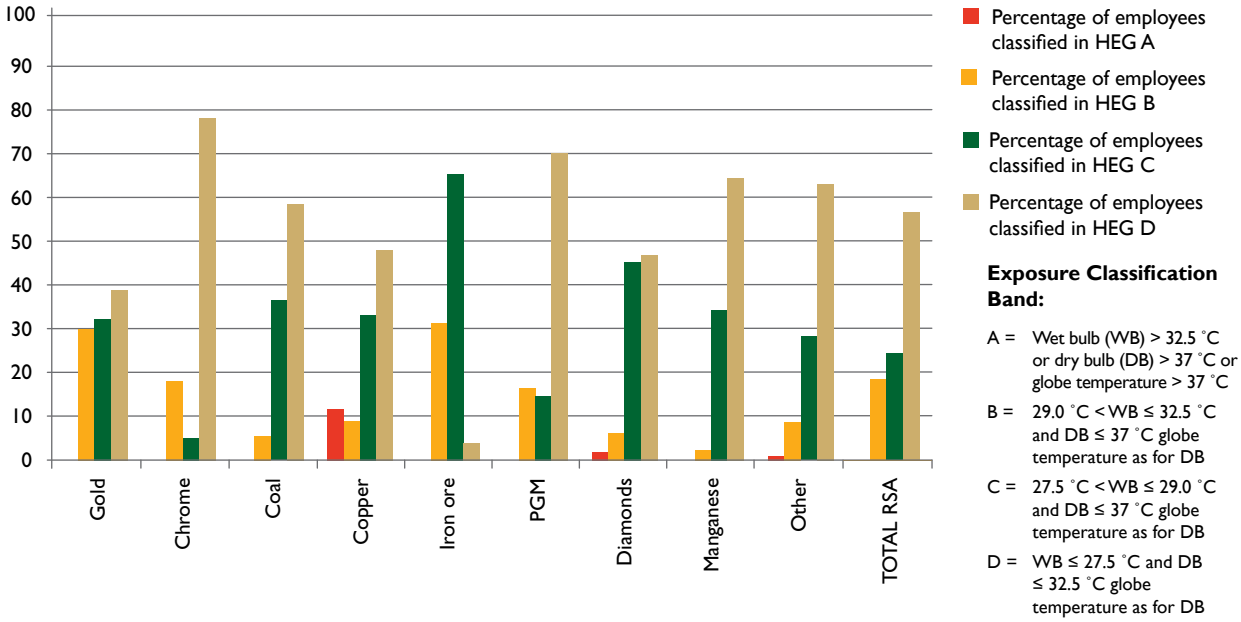
Adequate and appropriate control measures should be provided during cold seasons, and portable water should be made available to employees during very hot conditions.

3.1.3.1 Heat stress

NOTE:

- To define the thermal environment from a heat stress management (HSM) point of view, dry- and wet-bulb 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.

Figure 3.1.3.1(a): *Percentage exposure to thermal stress or heat per classification band per commodity*

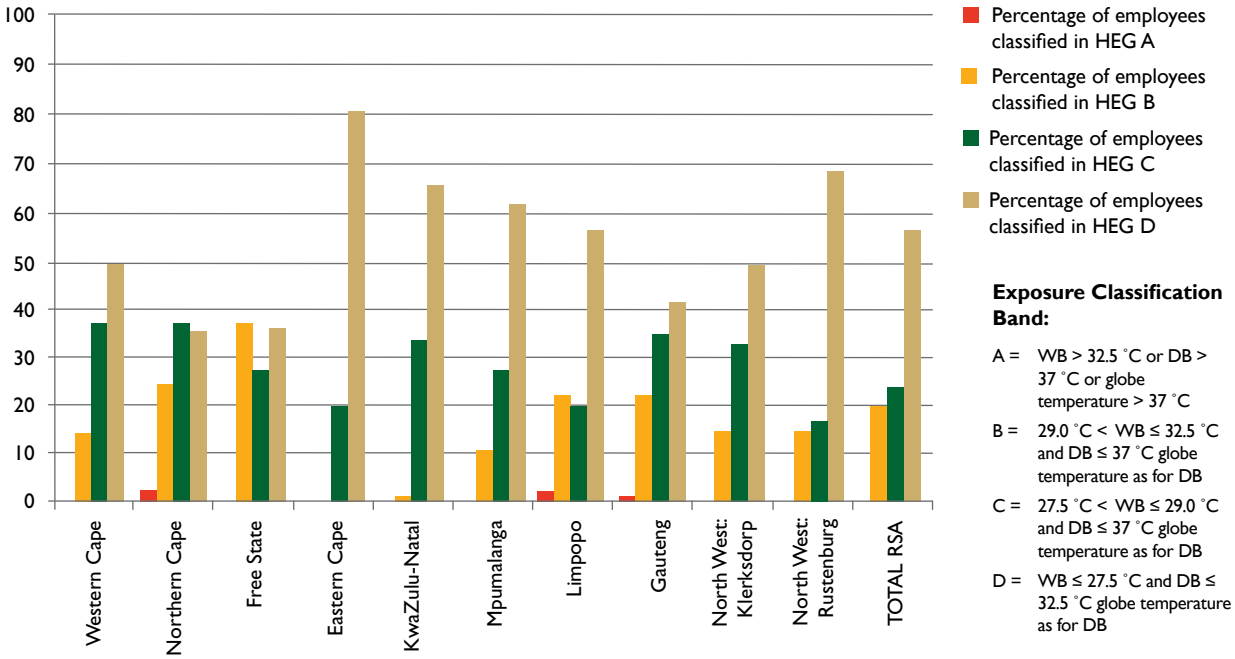


The number of employees over-exposed to thermal stress: heat in 2021 was 1 389 from a total population of 274 862 employees at risk, which is 0.51% in 2021 when compared to 2.15% recorded in 2020. This significant decrease was as the result of a decrease in employee over-exposure recorded in the following commodities: gold, from 0.57% in 2020 to 0.49% in 2021; coal, from 0.34% in 2020 to 0.23% in 2021; diamonds, from 2.40% in 2020 to 2.22% in 2021; other mines, from 2.17% in 2020 to 1.43% in 2021; and iron ore, from 28.98% in 2020 to 0.00% in 2021.

Despite the decrease noted nationally, a slight increase was recorded in the chrome sector, from 0.00% in 2020 to 0.21% in 2021; the copper sector, from 8.53% in 2020 to 11.10% in 2021; and the PGM sector, from 0.05% in 2020 to 0.06% in 2021.

Manganese recorded a zero-employee over-exposure to thermal stress: heat from 2018 until 2021.

Figure 3.1.3.1(b): *Percentage exposure to thermal stress or heat per classification band per region*



There was an overall decrease in employee over-exposure to thermal stress: heat from 2.15% in 2020 to 0.51% in 2021. This national decrease was a result of significant decreases recorded in Mpumalanga, from 0.30% in 2020 to 0.21% in 2021; Gauteng, from 1.10% in 2020 to 1.06% in 2021; Northern Cape, from 20.11% to 2.29%; KwaZulu-Natal, from 3.29% in 2020 to 0.00% in 2021; Limpopo, from 1.96% in 2020 to 1.95% in 2021; and Free State, from 0.76% in 2020 to 0.00% in 2021.

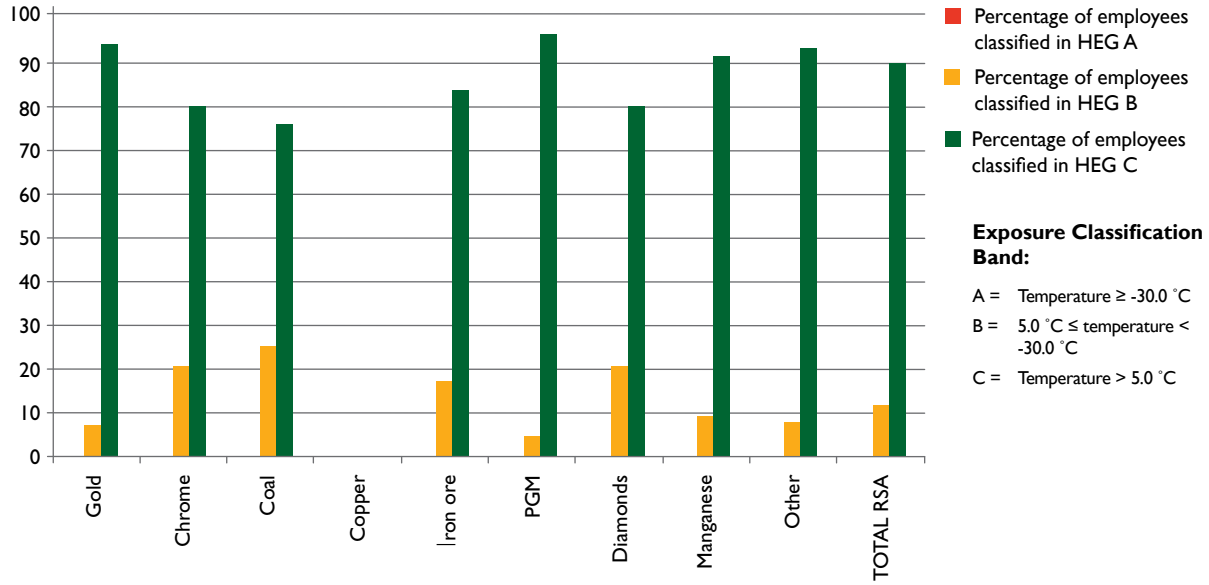
Although there was a national decrease in employee over-exposure to thermal stress: heat, the following regions recorded an insignificant increase: North West: Klerksdorp, from 0.00% in 2020 to 0.04% in 2021; and North West: Rustenburg, from 0.05% in 2020 to 0.09% in 2021. The Eastern and Western Cape regions are commended for maintaining a zero over-exposure from 2018 until 2020.

3.1.3.2 Cold stress

NOTE:

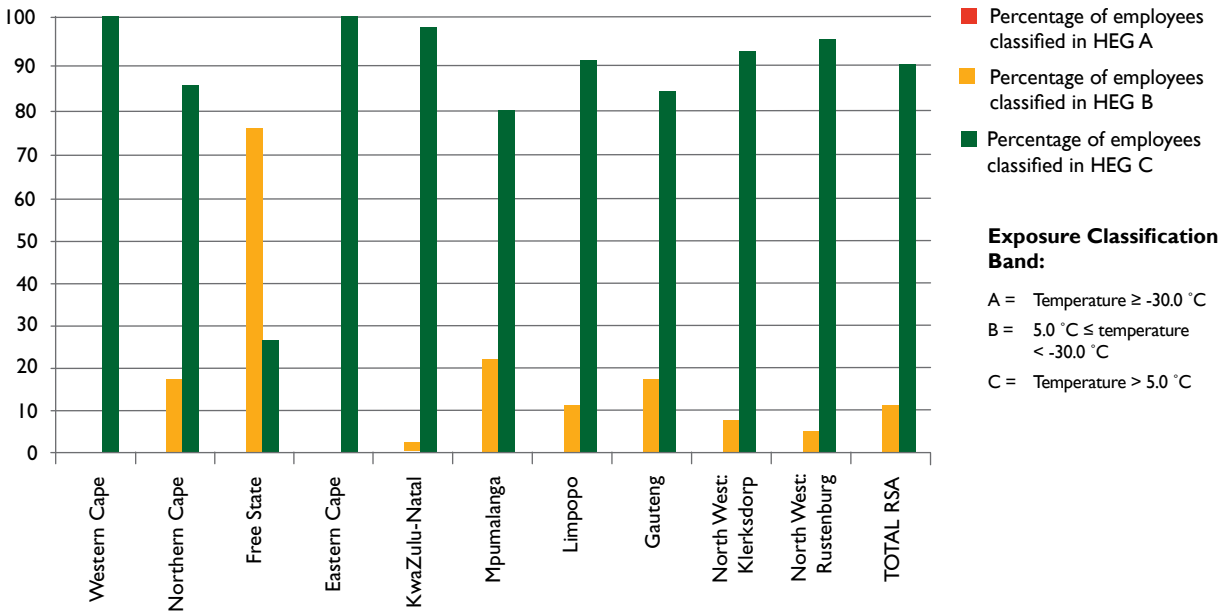
- Temperature ranges are given in terms of equivalent chill temperature.
- Cold stress management (CSM).
- Thermal monitoring for cold stress should be conducted during the coldest quarter (June to August), as determined by risk assessment.
- For defining the thermal environment from a CSM point of view, dry-bulb temperatures and velocity, any 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.

Figure 3.1.3.2(a): *Percentage exposure to thermal stress or cold per classification band per commodity*



An overall zero employee exposure above the OEL has been maintained year on year since 2013. A collective effort is required to ensure that appropriate controls are put in place to accommodate extreme cold conditions. It should be noted that exposures of employees in homogenous exposure group (HEG) B decreased nationally from 13.01% in 2020 to 11.47% in 2021.

Figure 3.1.3.2(b): *Percentage exposure to thermal stress or cold per classification band per region*



Regionally, employee exposures above the OEL have been maintained at zero, and the South African mining industry is encouraged to strive to reduce exposures in the HEG B classification. All regions are encouraged to continue to maintain their status.

3.1.4 General

There is a notable increase in the number of submitted statutory reports from the mines across all occupational hygiene stressors for 2020 compared to 2021. It is concerning that employees are still being exposed to airborne pollutants, noise and thermal stress exceeding the set OELs.

Failure to implement a hierarchy of controls and the lack of maintenance, where such controls have been implemented, remains a challenge. The hierarchy of controls at times is applied as a last resort and, in some instances, the provision of personal protective equipment (PPE) is always considered first.

The increase in the number of employees exposed to excessive noise levels can be attributed to inadequate risk assessments and the lack of the regular maintenance of machinery emitting noise levels exceeding the set OEL.

Employees exposed to excessive heat, particularly at surface operations where the globe temperature exceeds 37 °C, should frequently be monitored, and HSM programmes should be instituted and complied with.

Employers must continuously assess the effectiveness of control measures, and monitor and adhere to mines' maintenance schedules to reduce excessive exposure to occupational health hazards that exceed their respective OELs. Regular awareness training of employees on the adverse health effects of exposure to occupational health hazards and constant supervision should take precedence.

The mines should adopt available industry best and leading practices to achieve the reduction and ultimate elimination of identified risks. A collaborative diverse approach on the elimination of risks should be followed on a constant basis during occupational hygiene and mine ventilation forums.

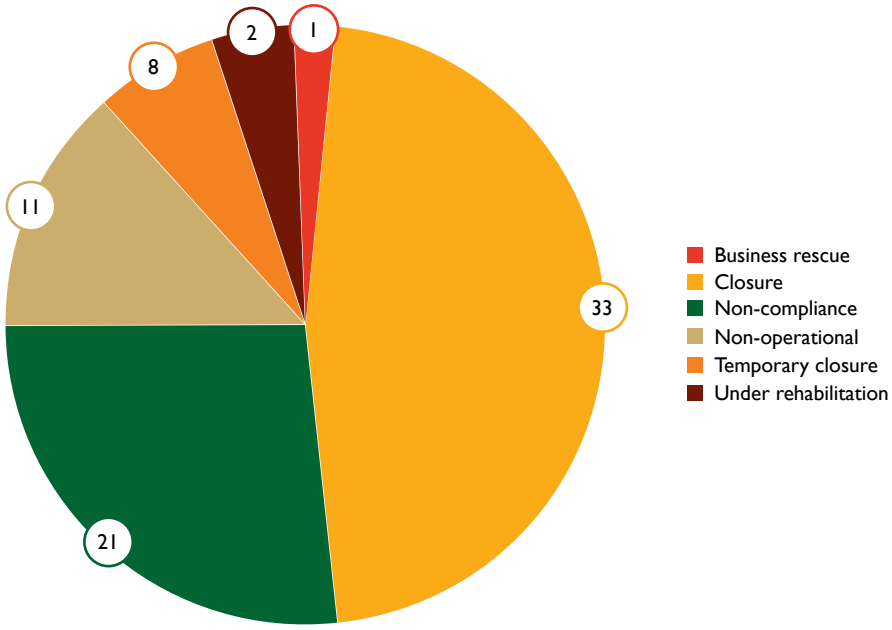
3.2 Occupational medicine

3.2.1 Annual Medical Reports

During 2021, mines submitted 931 AMRs, which is a decrease of 0.11% from 932 reports submitted in 2020. The AMRs submitted from the Eastern Cape, Gauteng, Limpopo and North West: Rustenburg regions showed a slight increase, while a decrease was noted in the AMRs submitted from the Free State, KwaZulu-Natal, Mpumalanga, Northern Cape, North West: Klerksdorp and Western Cape regions.

Sixty mines that submitted AMRs for 2020 did not submit reports for 2021. Various reasons for non-submission are illustrated in Figure 3.2.1. Employers at all operational mines are required to comply with the statutory requirement on the submission of AMRs, as per section 16 of the MHSA. The regions should enforce such compliance and execute the necessary corrective measures to ensure compliance.

Figure 3.2.1: *Non-submission of AMRs*



3.2.1.1 AMRs received per region and by commodity

Table 3.2.1.1: *Annual Medical Reports received per region and by commodity for 2020 and 2021*

	GOLD		PLATINUM		COAL		DIAMONDS		COPPER		CHROME		IRON ORE		MANGANESE		OTHER MINES		TOTAL		PERCENTAGE CHANGE
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	
Eastern Cape	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	62	**58**	**62**	6.90
Free State	19	18	0	0	2	2	3	4	0	0	0	0	0	0	0	0	23	19	**47**	**43**	-8.51
Gauteng	17	20	0	0	0	0	1	1	0	0	0	0	0	0	0	0	78	82	**96**	**103**	7.29
KwaZulu-Natal	0	0	0	0	12	12	0	0	0	0	0	0	0	0	0	0	44	41	**56**	**53**	-5.36
Limpopo	3	1	12	12	4	4	1	2	1	1	16	14	1	0	0	0	39	47	**77**	**81**	5.19
Mpumalanga	7	7	2	2	126	117	0	0	0	0	0	0	0	0	1	1	23	25	**159**	**152**	-4.40
Northern Cape	0	0	0	0	0	0	66	63	1	2	0	0	8	10	23	24	28	26	**126**	**125**	-0.79
North West: Klerksdorp	16	17	0	0	0	0	84	81	0	0	0	0	0	0	0	0	22	23	**122**	**121**	-0.82
North West: Rustenburg	0	0	72	68	0	0	1	1	0	0	19	20	2	2	0	0	22	26	**116**	**117**	0.86
Western Cape	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	74	73	**75**	**74**	-1.33
TOTAL	62	63	86	82	144	135	157	153	2	3	35	34	11	12	24	25	411	424	932	931	-0.11

3.2.1.2 Total employees covered in Annual Medical Reports

An increase of 1.75% is noted in the total number of employees covered in the AMRs, from 524 619 in 2020 to 533 809 in 2021. Table 3.2.1.2 shows an increase in the total number of employees reported in the gold, platinum, diamond, copper, iron ore and other mines sectors, while a decrease was noted in the coal, chrome and manganese sectors.

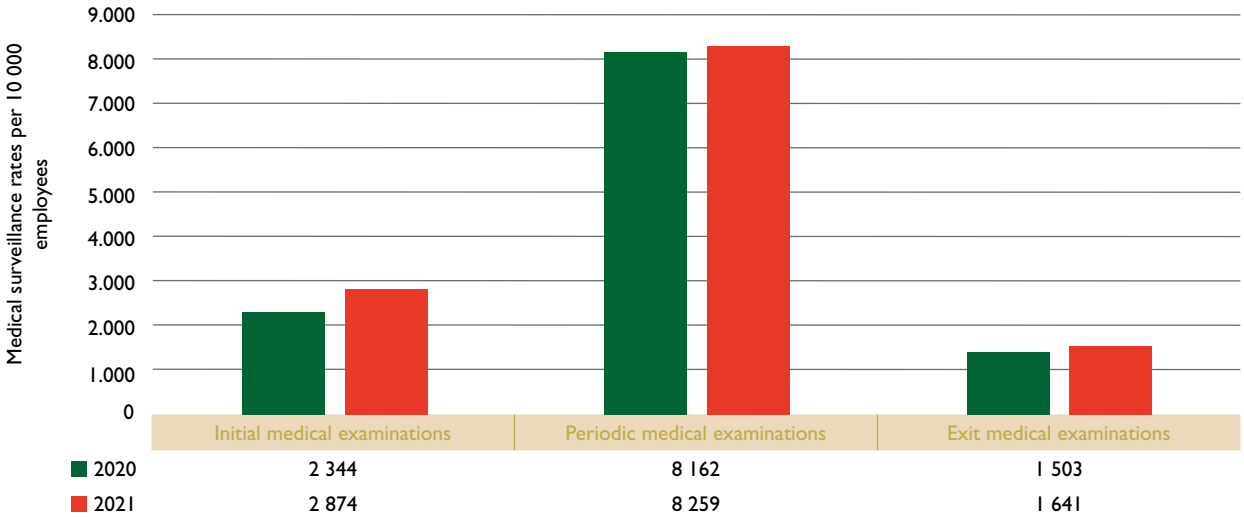
Table 3.2.1.2: *Total employees reported from Annual Medical Reports per region for 2020 and 2021*

	GOLD		PLATINUM		COAL		DIAMONDS		COPPER		CHROME		IRON ORE		MANGANESE		OTHER MINES		TOTAL		PERCENTAGE CHANGE
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	
Eastern Cape	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 727	1 686	**1 727**	**1 686**	-2.37
Free State	28 580	28 051	0	0	3 970	3 865	707	775	0	0	0	0	0	0	0	0	577	572	**33 834**	**33 263**	-1.69
Gauteng	48 586	50 067	0	0	0	0	1 617	1 722	0	0	0	0	0	0	0	0	4 919	5 193	**55 122**	**56 982**	3.37
KwaZulu-Natal	0	0	0	0	3 435	4 193	0	0	0	0	0	0	0	0	0	0	7 364	7015	**10 799**	**11 208**	3.79
Limpopo	510	15	27 350	28 969	8 706	7 795	4 107	5 190	6 062	6 507	14 424	11 809	0	0	0	0	5 722	6 023	**66 974**	**66 308**	-0.99
Mpumalanga	5 852	6 954	5 799	7 045	99 448	97 308	0	0	0	0	0	0	0	0	51	52	3 817	3 287	**114 967**	**114 646**	-0.28
Northern Cape	0	0	0	0	0	0	7 551	8 184	60	96	0	0	21 533	23 197	18 151	17 449	5 052	5 153	**52 347**	**54 079**	3.31
North West: Klerksdorp	17 115	15 687	0	0	0	0	1 032	1 077	0	0	0	0	0	0	0	0	3 306	3 559	**21 453**	**20 323**	-5.27
North West: Rustenburg	0	0	138 343	146 163	0	0	115	148	0	0	15 693	15 600	585	590	0	0	3 990	4 670	**158 726**	**167 171**	5.32
Western Cape	0	0	0	0	0	0	111	111	0	0	0	0	0	0	0	0	8 559	8 032	**8 670**	**8 143**	-6.08
TOTAL	100 643	100 774	171 492	182 177	115 559	113 161	15 240	17 207	6 122	6 603	30 117	27 409	22 211	23 787	18 202	17 501	45 033	45 190	524 619	533 809	1.75

3.2.1.3 Medical surveillance conducted

The analysis of incidence rates per 10 000 employees shows an increase in all the categories of medical surveillance conducted by mines during 2021, compared to 2020, as shown in Figure 3.2.1.3.

Figure 3.2.1.3: *Medical surveillance reported for 2020 and 2021*



3.2.2 Occupational diseases reported in the Annual Medical Reports

A decrease of 4.42% is noted in the total number of occupational diseases reported by mines, from 2 013 cases in 2020 to 1 924 cases in 2021.

The analysis of occupational disease rates per 10 000 employees in Table 3.2.2.1.1(b) shows a rate of 36 in 2021, compared to 38 in 2020. The occupational disease rates were noted as follows: four silicosis cases in 2021 compared to five cases in 2020; 15 PTB cases in 2021 compared to 16 cases in 2020; and 15 NIHL cases in 2021 compared to 14 cases in 2020, while other occupational diseases remained unchanged at a rate of two in both years.

3.2.2.1 Analysis of medical surveillance trends

3.2.2.1.1 Occupational disease trends by region

Table 3.2.2.1.1(a): *Total number of occupational diseases reported from Annual Medical Reports per region for 2020 and 2021*

	SILICOSIS		PTB		SILICO-TUBERCULOSIS (SIL+TB)		NIHL		COAL WORKERS' PNEUMOCONIOSIS (CWP)		ASBESTOSIS		OTHER		TOTAL		PERCENTAGE CHANGE
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	
Eastern Cape	0	0	2	1	0	0	0	0	0	0	0	0	0	0	**2**	**1**	-50.00
Free State	98	78	151	160	5	1	63	102	1	2	0	0	34	33	**352**	**376**	6.82
Gauteng	73	68	140	102	0	6	113	168	0	0	0	0	13	17	**339**	**361**	6.49
KwaZulu-Natal	0	1	7	8	0	0	3	2	1	0	0	0	1	0	**12**	**11**	-8.33
Limpopo	4	4	51	46	0	0	30	32	0	0	2	0	5	4	**92**	**86**	-6.52
Mpumalanga	11	12	123	108	0	0	107	67	17	9	0	0	34	8	**292**	**204**	-30.14
Northern Cape	0	0	24	10	0	0	2	5	0	0	0	0	4	0	**30**	**15**	-50.00
North West: Klerksdorp	52	70	68	90	3	5	130	136	0	0	0	0	12	10	**265**	**311**	17.36
North West: Rustenburg	33	7	280	267	0	0	278	240	0	0	0	1	23	19	**614**	**534**	-13.03
Western Cape	0	0	3	1	0	0	12	24	0	0	0	0	0	0	**15**	**25**	66.67
TOTAL	271	240	849	793	8	12	738	776	19	11	2	1	126	91	2 013	1 924	-4.42

Table 3.2.2.1.1(b): *Occupational disease incidence rates per 10 000 employees from Annual Medical Reports per region for 2020 and 2021*

	SILICOSIS		PTB		SIL+TB		NIHL		CWP		ASBESTOSIS		OTHER		TOTAL	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Eastern Cape	0	0	12	6	0	0	0	0	0	0	0	0	0	0	**12**	**6**
Free State	29	23	45	48	1	0	19	31	0	1	0	0	10	10	**104**	**113**
Gauteng	13	12	25	18	0	1	20	29	0	0	0	0	2	3	**61**	**63**
KwaZulu-Natal	0	1	6	7	0	0	3	2	1	0	0	0	1	0	**11**	**10**
Limpopo	1	1	8	7	0	0	4	5	0	0	0	0	1	1	**14**	**13**
Mpumalanga	1	1	11	9	0	0	9	6	1	1	0	0	3	1	**25**	**18**
Northern Cape	0	0	5	2	0	0	0	1	0	0	0	0	1	0	**6**	**3**
North West: Klerksdorp	24	34	32	44	1	2	61	67	0	0	0	0	6	5	**124**	**153**
North West: Rustenburg	2	0	18	16	0	0	18	14	0	0	0	0	1	1	**39**	**32**
Western Cape	0	0	3	1	0	0	14	29	0	0	0	0	0	0	**17**	**31**
TOTAL	5	4	16	15	0	0	14	15	0	0	0	0	2	2	38	36

3.2.2.1.2 Occupational disease trends per commodity

Table 3.2.2.1.2(a): *Total number of occupational diseases reported from Annual Medical Reports by commodity for 2020 and 2021*

	SILICOSIS		PTB		SIL+TB		NIHL		CWP		ASBESTOSIS		OTHER		TOTAL		PERCENTAGE RATE CHANGE
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	
Gold	233	225	367	358	8	12	298	406	0	0	0	0	61	57	**967**	**1 058**	9.41
Platinum	33	11	297	285	0	0	278	247	0	0	0	1	24	19	**632**	**563**	-10.92
Coal	0	2	110	97	0	0	88	64	19	11	0	0	30	7	**247**	**181**	-26.72
Diamond	0	0	5	3	0	0	1	0	0	0	0	0	0	2	**6**	**5**	-16.67
Copper	0	0	3	3	0	0	3	2	0	0	0	0	0	0	**6**	**5**	-16.67
Chrome	4	0	26	19	0	0	39	21	0	0	2	0	3	2	**74**	**42**	-43.24
Manganese	0	0	12	5	0	0	0	1	0	0	0	0	2	0	**14**	**6**	-57.14
Iron ore	0	0	8	2	0	0	1	3	0	0	0	0	1	0	**10**	**5**	-50.00
All other	1	2	21	21	0	0	30	32	0	0	0	0	5	4	**57**	**59**	3.51
TOTAL	271	240	849	793	8	12	738	776	19	11	2	1	126	91	2 013	1 924	-4.42

Table 3.2.2.1.2(b): *Occupational disease incidence rates per 10 000 employees from Annual Medical Reports by commodity for 2020 and 2021*

	SILICOSIS		PTB		SIL+TB		NIHL		CWP		ASBESTOSIS		OTHER		TOTAL	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Gold	23	22	36	36	1	1	30	40	0	0	0	0	6	6	**96**	**105**
Platinum	2	1	17	16	0	0	16	14	0	0	0	0	1	1	**37**	**31**
Coal	0	0	10	9	0	0	8	6	2	1	0	0	3	1	**21**	**16**
Diamond	0	0	3	2	0	0	1	0	0	0	0	0	0	1	**4**	**3**
Copper	0	0	5	5	0	0	5	3	0	0	0	0	0	0	**10**	**8**
Chrome	1	0	9	7	0	0	13	8	0	0	1	0	1	1	**25**	**15**
Manganese	0	0	7	3	0	0	0	1	0	0	0	0	1	0	**8**	**3**
Iron ore	0	0	4	1	0	0	0	1	0	0	0	0	0	0	**5**	**2**
All other	0	0	5	5	0	0	7	7	0	0	0	0	1	1	**13**	**13**
TOTAL	5	4	16	15	0	0	14	15	0	0	0	0	2	2	38	36

GOLD MINES

A total of 1 058 occupational diseases was reported from the gold sector during 2021, compared to 967 in 2020. The analysis of occupational disease rates per 10 000 employees, as illustrated in Figure 3.2.2.1.2(a), shows a decreased rate of 105 in 2021, compared to a rate of 139 in 2020.

A total of 57 other occupational diseases was reported in 2021, compared to 61 cases in 2020. The cases reported included 41 cases of chronic obstructive airway disease (COAD), two additional PTB cases, one case of hand-arm vibration syndrome, three cases of occupational skin diseases, six cases of COAD and silicosis, one case related to other occupational diseases (unspecified), two cases of occupational asthma and one case of sarcoidosis.

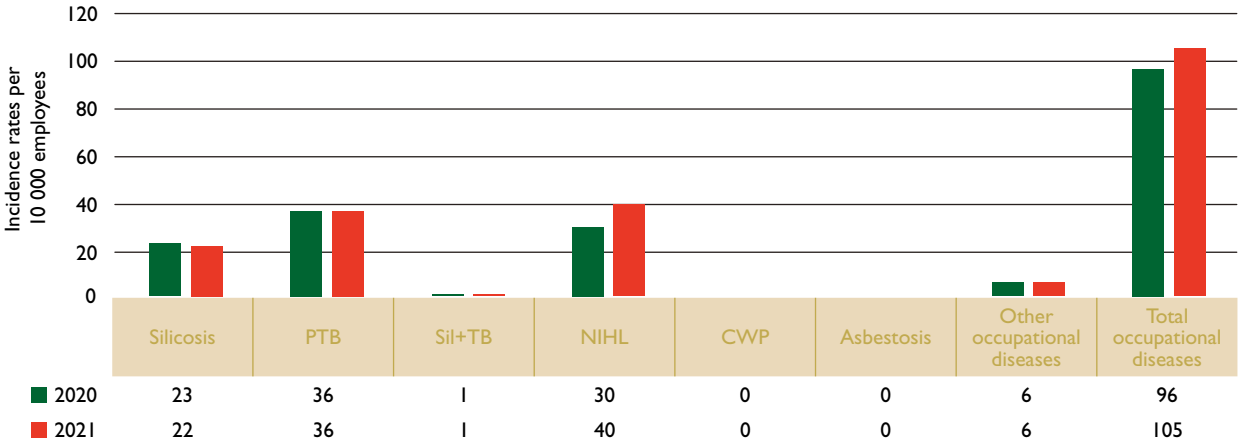
The gold sector implemented the following initiatives to reduce the incidence of occupational lung diseases (OLDs):

- Dust suppression system at high-risk areas
- Automated foot-wall treatment systems for dust-allaying spray cars
- High-pressure fogging systems at tips and ore passes
- Water spray curtains in working places
- Centralised blasting operations and adherence to re-entry procedures
- Washing down before and during loading operations
- Real-time dust monitoring
- Fitment of diesel particulate filters to LHD trucks
- Awareness campaigns
- Separating employees from risk by performing tele-remote operations from the surface
- Investigating and reporting all exposures above 0.1 mg/m
- Conducting hygiene monitoring with linkage to medical surveillance
- The adoption of a policy of prohibiting employees with first-degree silicosis from exposure to silica dust in some gold mines; this policy has achieved better outcomes in the reduction of second-degree silicosis
- The selection and use of appropriate PPE, where applicable
- Displaying PTB and silicosis awareness posters on how to eliminate airborne dust exposure
- Monthly follow-up on all TB cases to monitor compliance to the national TB guidelines
- The implementation of the COPs for the mitigation and prevention of COVID-19, as well as general adherence to the COVID-19 health protocols to prevent the spread of the corona virus.
- Mines' education programmes to include anti-smoking awareness campaigns

The gold mines' HCPs included the following initiatives to reduce the incidence of NIHL:

- Engineering controls, such as the installation of silencer fans to control noise at source
- The demarcation of noise zones and providing employees at risk with hearing-protection devices for the attenuation and reduction of noise exposure
- Rock drill machine operators, as well as employees with changes in percentage loss of hearing (PLH), to attend bi-annual monitoring audiometry examinations for monitoring purposes
- Annual audiometry (risk-based) measuring shifts from milestone-baseline, PLH shifts, clinical examination, hearing-loss investigations, diagnostic audiometry, specialist referral and notification, where applicable
- Ongoing awareness during induction programmes with regard to noise zones, hearing protection and NIHL

Figure 3.2.2.1.2(a): *Occupational disease incidence rates per 10 000 employees reported from Annual Medical Reports by gold mines for 2020 and 2021*



PLATINUM MINES

The platinum sector reported 632 cases of occupational diseases during 2021, compared to 563 in 2020. The analysis of occupational disease rates per 10 000 employees, as outlined in Figure 3.2.2.1.2(b), shows a decrease from 56 in 2020 to 31 in 2021.

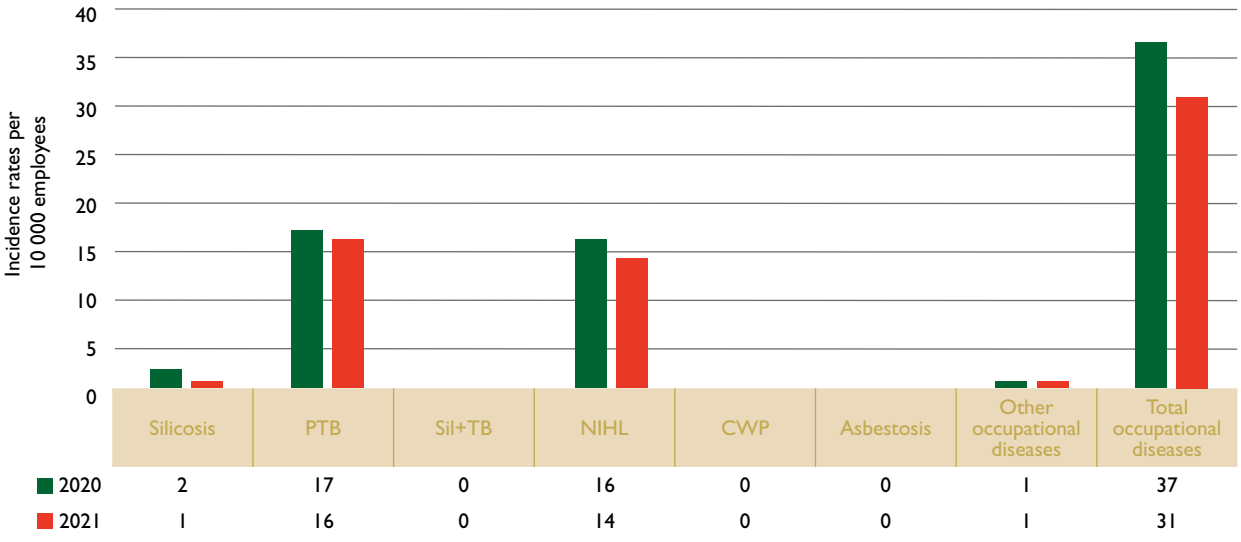
The platinum mines reported 19 other occupational diseases, compared to 24 cases in 2020. This included 16 cases of COAD, one case of occupational asthma and two cases of occupational skin diseases.

The initiatives implemented by the platinum sector have prioritised engineering controls, administrative controls and the provision of PPE.

The mines' HCPs included the demarcation of noise zones, quietening of equipment, monitoring of employees' standard threshold shift (STS), the investigation of cases with a PLH over 5%, and enforcing the use of proper hearing-protection devices by exposed employees as part of the initiatives to reduce the incidence of NIHL. The mines also continued with education and awareness campaigns, the counselling and training of employees on noise sources, exposure and prevention strategies.

The initiatives implemented to reduce the incidence of occupational skin disorders included the removal of allergens from the source, as a preferred intervention, the identification of skin diseases through medical examinations, preventive measures through the provision of proper PPE, as well as the education and training of employees.

Figure 3.2.2.1.2(b): *Occupational disease incidence rates per 10 000 employees reported from Annual Medical Reports by platinum mines for 2020 and 2021*



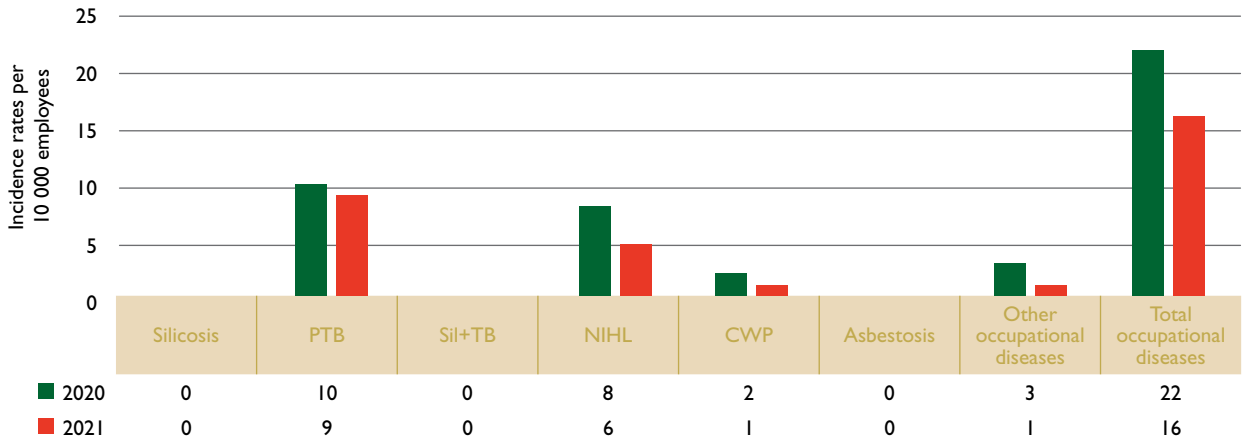
COAL MINES

During 2021, the coal sector reported 181 cases of occupational diseases, compared to 247 in 2020. The analysis of occupational disease rates per 10 000 employees, as illustrated in Figure 3.2.2.1.2(c), shows a decrease from 21 in 2020 to 16 in 2021.

The coal mines reported seven other cases of occupational diseases in 2021, compared to 30 in 2020. The other occupational diseases included one case of occupational asthma, five cases of COAD and one additional case of PTB.

The coal sector continues to implement health risk exposure reduction initiative measures to promote occupational health. An integrated and comprehensive approach is adopted to prevent occupational diseases, mental illness and communicable diseases. Some mines have a "Be Well Programme", which is a wellness programme that covers employees, contractors, family members and communities. Ongoing health and safety campaigns are launched to encourage and assist employees to make healthy lifestyle choices, such as smoking cessation, weight and stress management programmes, fatigue management and nutrition.

Figure 3.2.2.1.2(c): *Occupational disease incidence rates per 10 000 employees reported from Annual Medical Reports by coal mines for 2020 and 2021*



DIAMOND MINES

The diamond sector reported five cases of occupational diseases during 2021, compared to six in 2020. The analysis of occupational disease rates per 10 000 employees, as illustrated in Figure 3.2.2.1.2(d), shows a decrease from four in 2020 to three in 2021.

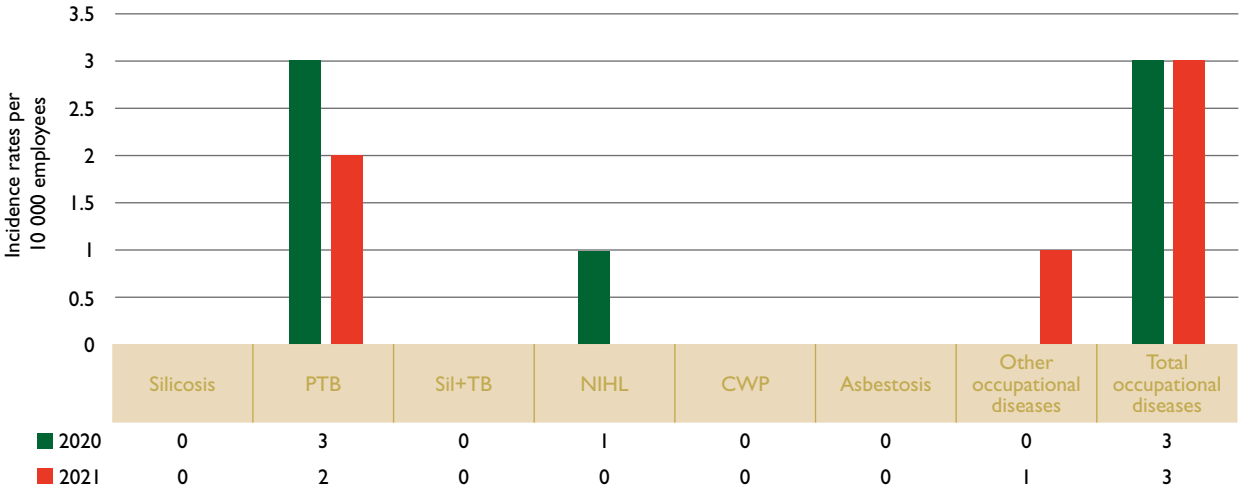
During 2021, the diamond mines reported two occupational asthma cases under other occupational diseases, compared to no cases in 2020.

Some diamond mines continue to maintain a Memorandum of Understanding (MoU) with the DoH to ensure the implementation of programmes to benefit employees and their families without medical aid. Mine dieticians aid the on-site canteens with meal planning, aimed at curbing the upward trends of communicable diseases. Some mines monitored chronic conditions weekly in light of the COVID-19 pandemic. Cancer walks were undertaken to raise awareness at the mines and among the surrounding communities to encourage a healthy lifestyle. The mass screening of male employees' prostate specific antigen (PSA) was performed as part of this initiative. Mental awareness campaigns were also undertaken. Mine statistics feed into the provincial and national strata, which guide the strategic planning of national health programmes.

Personal counselling and education regarding lifestyle diseases, dietary advice, substance abuse and other health-related matters during periodical and other medical examinations were also performed. Mines continue to discuss various health topics during the morning toolbox talks. All employees were educated and sensitised with regard to COVID-19 symptoms and the associated risks if they have co-morbidity conditions or chronic illnesses. Employees presenting with any health-related issues during the surveillance examinations were issued with referral letters for

further examination and possible medical intervention at government facilities. Provincial health care facilities are supplemented with mobile primary health care (PHC) services, as provided by the provincial health care structures, if applicable.

Figure 3.2.2.1.2(d): *Occupational disease incidence rates per 10 000 employees reported from Annual Medical Reports by diamond mines for 2020 and 2021*



COPPER MINES

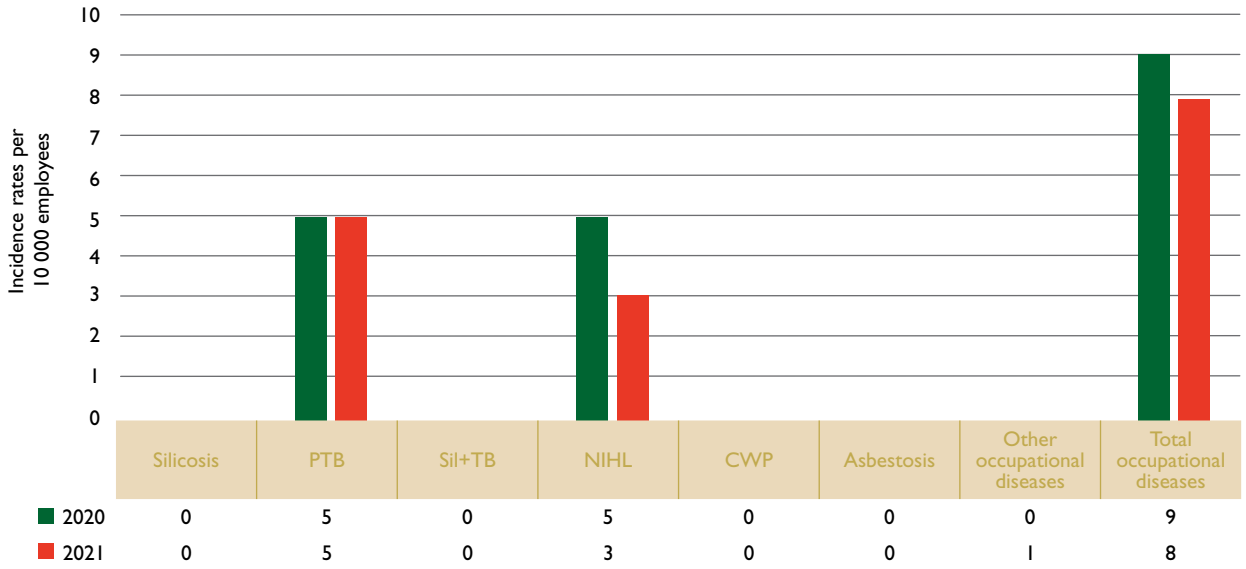
Five cases of occupational diseases were reported by the copper sector during 2021, compared to six cases in 2020. The analysis of occupational disease rates per 10 000 employees, as illustrated in Figure 3.2.2.1.2(e), shows a decrease from 10 in 2020 to eight in 2021.

The copper mines did not report any other occupational diseases for either 2020 or 2021.

Initiatives implemented by the copper sector included the following:

- Early investigation and reporting of suspected occupational diseases
- Continued information and the motivation of high-risk individuals to not only create awareness of the dangers of long-term exposure, but to always strive to avoid unnecessary exposure
- The motivation and enforcement of the use of PPE when exposure levels cannot be adequately controlled
- The dissemination of information during medical examinations to create awareness of other sources of noise exposure (not work-related) and the need to protect hearing during private activities
- A high index of suspicion is performed during medical examinations to identify individuals, and a high level of physical fitness is encouraged.
- Weight control and a healthy lifestyle is actively promoted, and the cessation of cigarette smoking is actively encouraged.

Figure 3.2.2.1.2(e): *Occupational disease incidence rates per 10 000 employees reported from Annual Medical Reports by copper mines for 2020 and 2021*



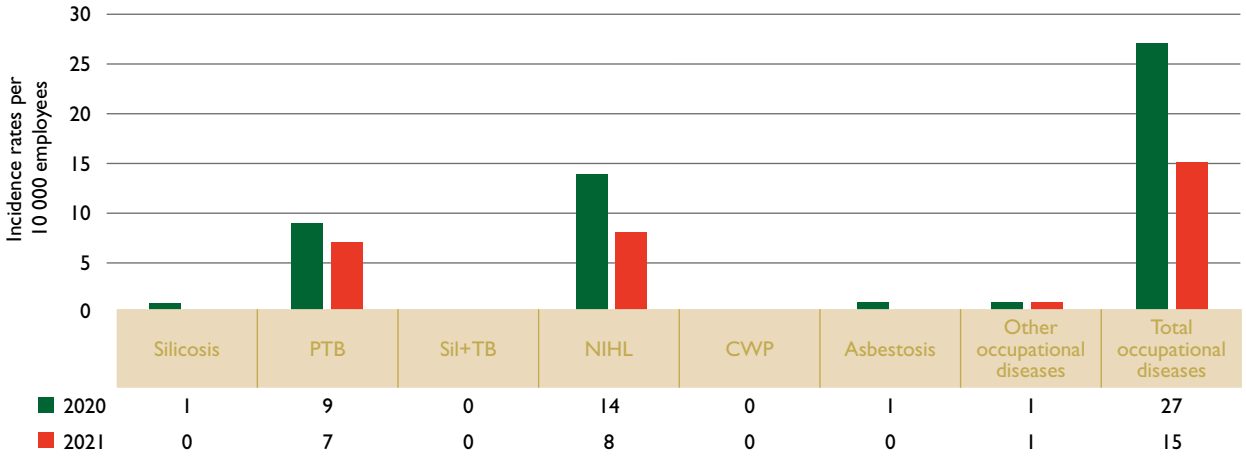
CHROME MINES

The chrome sector reported 42 cases of occupational diseases during 2021, compared to 74 in 2020. The analysis of occupational disease rates per 10 000 employees, as illustrated in Figure 3.2.2.1.2(f), shows a decrease from 25 in 2020 to 15 in 2021.

The chrome mines reported two additional cases of PTB under other occupational diseases during 2021, compared to three cases in 2020.

The initiatives implemented by the chrome sector include the continuous monitoring of exposure in identified high-risk areas. The mines also conducted health awareness campaigns in collaboration with public health institutions and private practitioners on medical surveillance screening, PHC services, counselling and the management of chronic diseases, vaccination programmes, particularly for COVID-19, an employee assistance programme and referrals, where required. These mines continued with TB screening and offered isoniazid (INH) prophylactic treatment.

Figure 3.2.2.1.2(f): *Occupational disease incidence rates per 10 000 employees reported from Annual Medical Reports by chrome mines for 2020 and 2021*



MANGANESE MINES

Six cases of occupational diseases were reported by the chrome sector during 2021, compared to 14 in 2020. The analysis of occupational disease rates per 10 000 employees, as illustrated in Figure 3.2.2.1.2(g), shows a decrease from eight in 2020 to three in 2021.

The manganese mines did not report any other occupational diseases during 2021, compared to two cases reported in 2020.

The initiatives implemented by the manganese sector to reduce the incidence of OLDs include all aspects of the hierarchy of control in risk management:

- Equipment design and air-conditioned close cabins
- Trackless mobile machines (TMM) fitted with dust-proof cabins for operators, and regular cab seal assessments conducted
- Over-exposures investigated
- Dust-proof cabins stationed at the pits to protect drill assistants from over-exposure to respirable silica-bearing dust
- Autonomous drilling in some of the pits
- Dust suppression, mitigation and ventilation systems
- Footwall treatment
- Broken ore watered down
- Ventilation dilution
- No persons allowed underground during blasting, and re-entry time is ensured

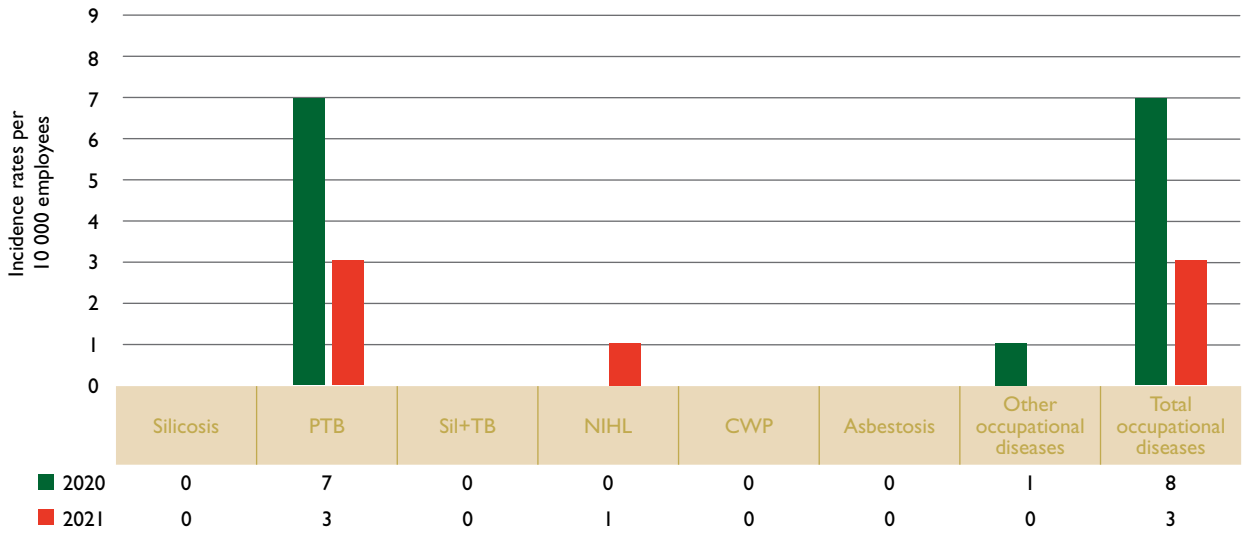
The HCP initiatives implemented include a personal noise monitoring plan, the elimination or substitution of noise sources, e.g. the installation of sound-attenuated fans, and replacing open cabs with closed-cab TMMs. It also includes noise measurements, the quietening of equipment on all TMMs and other machinery, the demarcation of noise zones, as well as the provision of custom-made hearing protection devices for selected occupations.

Relevant PPE, such as chemical-resistant overalls and gloves, sunscreen and wide-brimmed hats, is provided to exposed employees to prevent occupational skin diseases. Mines keep Material Safety Data Sheets (MSDSs) with all used chemicals. This includes training for the users of hazardous chemical substances (HCS) and personal hygiene during toolbox talks. The manganese protocol includes monitoring and health education on exposure to manganese dust or fumes, as well as the completion of neurological questionnaires during medical surveillance.

Mines' initiatives implemented for the management of musculoskeletal disorders (MSDs) include:

- Ergonomic surveys to identify risk factors
- Using visual aid posters for education to increase awareness
- The application of staggered shifts for employees at high risk to ensure the need for regular breaks and stretches
- Restricting the maximum lifting weight of 25 kg per person; no heavy lifting above shoulder height is allowed
- Machine operators issued with kidney belts to use while operating trucks

Figure 3.2.2.1.2(g): *Occupational disease incidence rates per 10 000 employees reported from Annual Medical Reports by manganese mines for 2020 and 2021*



IRON ORE MINES

The iron ore sector reported five occupational diseases during 2021, compared to 10 in 2020. The analysis of occupational disease rates per 10 000 employees, as illustrated in Figure 3.2.2.1.2(h), shows a decrease from five in 2020 to two in 2021.

The iron ore sector did not report any other occupational diseases during 2021, compared to one case reported in 2020.

Due to the COVID-19 pandemic, all employees had to be medically screened before entering a mine. Employees with existing lung conditions, as well as vulnerable employees, were identified as high-risk employees by the appointed OMPs. Additional reasonable workplace control measures were implemented for employees who were deemed fit to work on the mines. Control measures identified as critical were enhanced by implementing working from home, pre-placement screening for COVID-19 and chronic conditions to protect vulnerable workers. The early identification and reporting of respiratory symptoms were emphasised to ensure proactive management. Continuous information and health education were communicated via cellular phones, billboards and through the dedicated internal engage application.

Initiatives implemented to reduce the incidence of occupational lung diseases included dust control and suppression, dust measurement by occupational hygienists and the issuing of respiratory protection. Medical surveillance included the completion of respiratory questionnaires, conducting annual chest X-rays, as well as occupational health and hygiene linkage monitoring programmes.

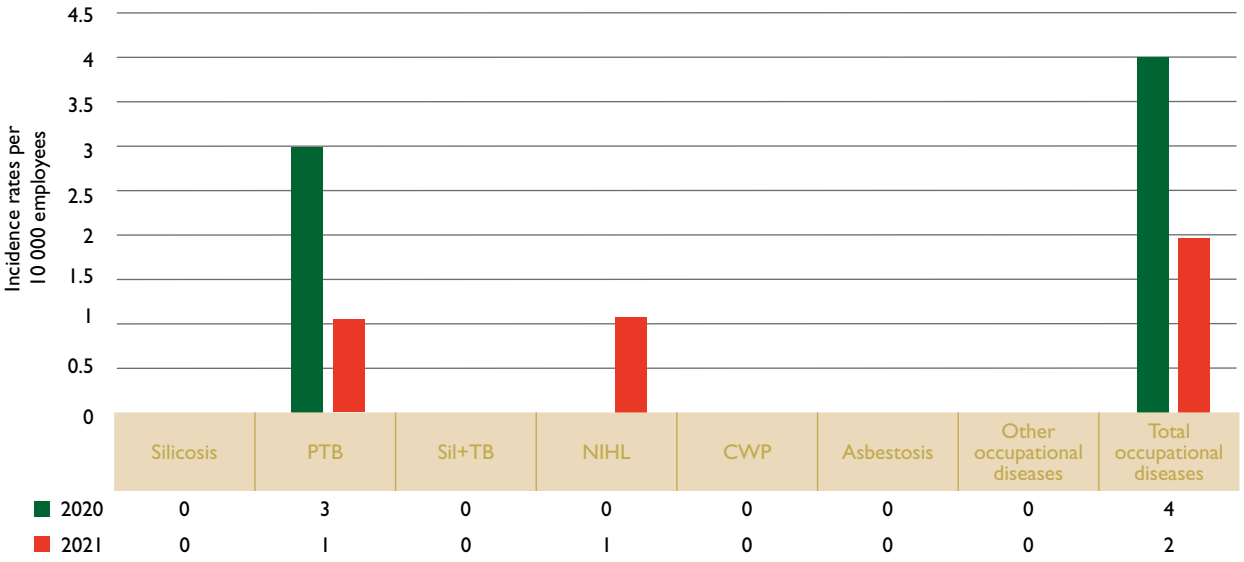
The HCP included the completion of audiometry questionnaires for the early identification of noise-induced deviations during medical surveillance. Employees were encouraged to self-report suspected cases of NIHL. The mines conducted section 11.5 investigations where the PLH shift of 5% and other deviations in hearing were identified. Other measures included noise zone demarcation, noise level measurements, the provision of hearing-protection devices (HPDs) and conducting three- or six-monthly audiometry based on the hearing loss shift presented by employees.

Measures to address thermal-related illnesses included awareness campaigns, skin assessment during medical surveillance and the provision of sunscreen lotions, brimmed hats and long-sleeved PPE to exposed employees.

Initiatives implemented to manage MSDs included ongoing awareness and the education of employees on manual material handling, posture, the appropriate use of tools and equipment, physical ability testing and the completion of MSD questionnaires during medical surveillance.

Mines continued to implement measures to reduce COVID-19 infections in line with government regulations, the provision of immune-boosting supplements to employees, as well as intensified screening and testing at all levels of the COVID-19 pandemic. Workplace vaccination programmes were initiated and extended to employees, contractors and the surrounding communities. Education and awareness materials were developed to dispel myths and highlight the benefits of vaccination. Vulnerable and willing employees were encouraged to take the annual flu booster shots.

Figure 3.2.2.1.2(h): *Occupational disease incidence rates per 10 000 employees reported from Annual Medical Reports by iron ore mines for 2020 and 2021*



ALL OTHER MINES

A total of 59 cases of occupational diseases were reported by all other mines during 2021, compared to 57 in 2020. The occupational diseases per 10 000 employees remained unchanged at a rate of 13 for both 2020 and 2021, as shown in Figure 3.2.2.1.2(i).

Four cases of other occupational diseases were reported by all other mines during 2021, compared to five cases reported in 2020. The other occupational diseases included two COAD cases and two cases of work-related upper limb disorder (WRULD).

Initiatives implemented by all other mines included the suppression of dust at source, watering broken ore and material prior to handling, dilution and removal by ventilation, as well as early referral to pulmonologists for suspected OLD.

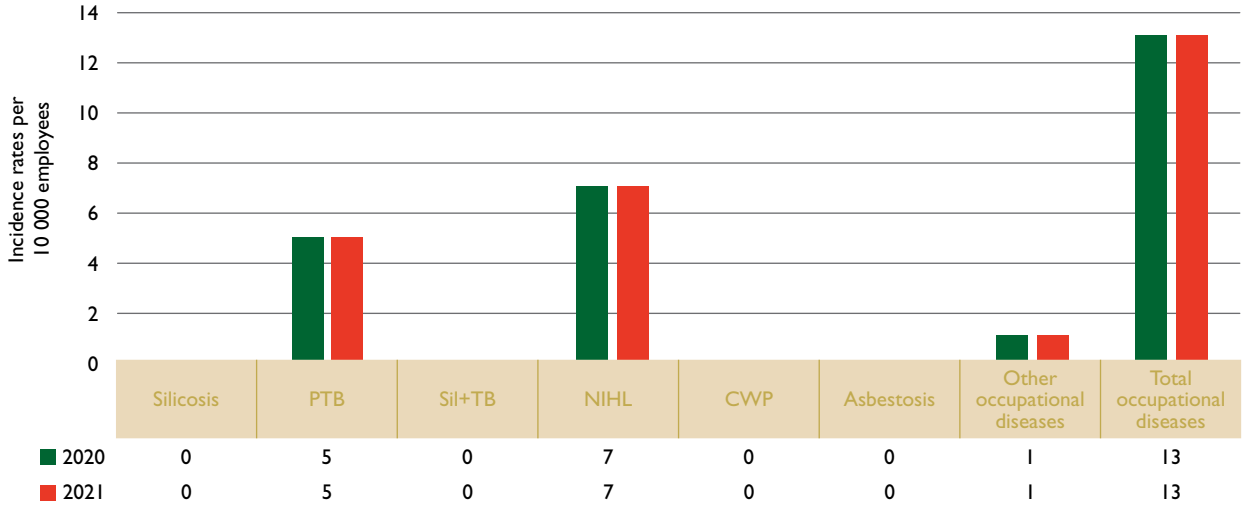
The HCPs included measures such as the following:

- The identification of noise-emitting equipment
- Noise measurement
- The installation of exhaust silencers on identified machinery and equipment
- Training and awareness programmes with regard to noise exposure and adverse health effects
- Sensitivity with STS evaluation
- Regular screening audiograms for identified cases
- Referral for diagnostic audiometry

Measures to manage occupational skin diseases included the observation of potential chemical exposure (e.g. acids and alkaline products such as lime and cement), ensuring safe work procedures, the provision of appropriate PPE (non-permeable gloves) and the referral of employees with suspected skin lesions to a dermatologist for further management.

Mines conducted workplace ergonomic assessments and the monitoring of potentially stressed occupations, and provided weekly physiotherapist visits to address any identified issues to prevent and reduce the incidence of MSDs.

Figure 3.2.2.1.2(i): *Occupational disease incidence rates per 10 000 employees reported from Annual Medical Reports by all other mines for 2020 and 2021*

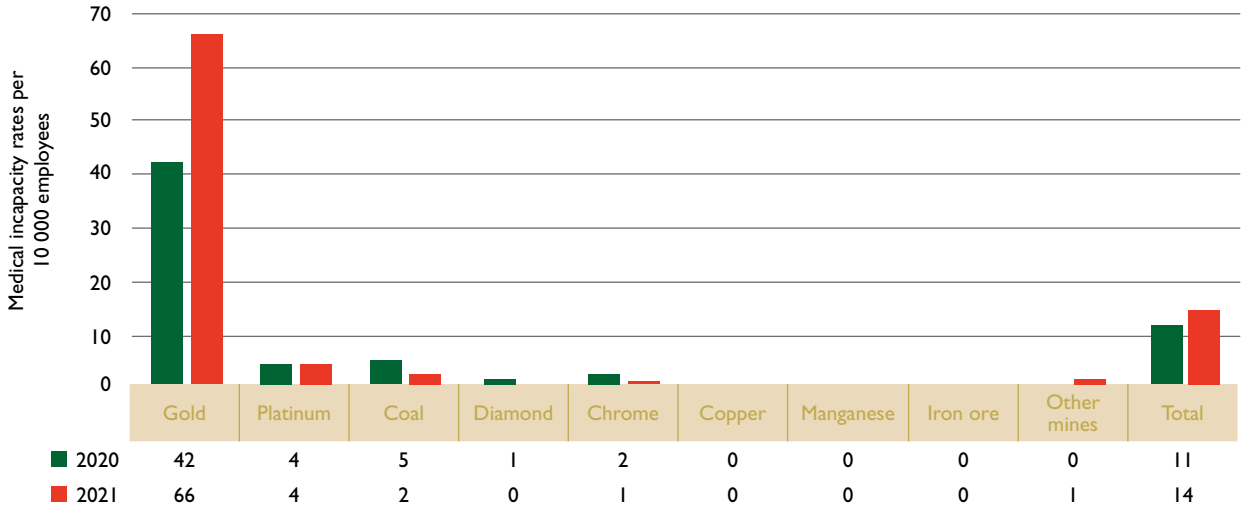


3.2.2.2 Medical incapacity due to occupational and non-occupational diseases

3.2.2.2.1 Medical incapacity due to occupational diseases

The analysis of medical incapacity due to occupational disease rates per 10 000 employees increased from 11 in 2020 to 14 during 2021, as outlined in Figure 3.2.2.2.1.

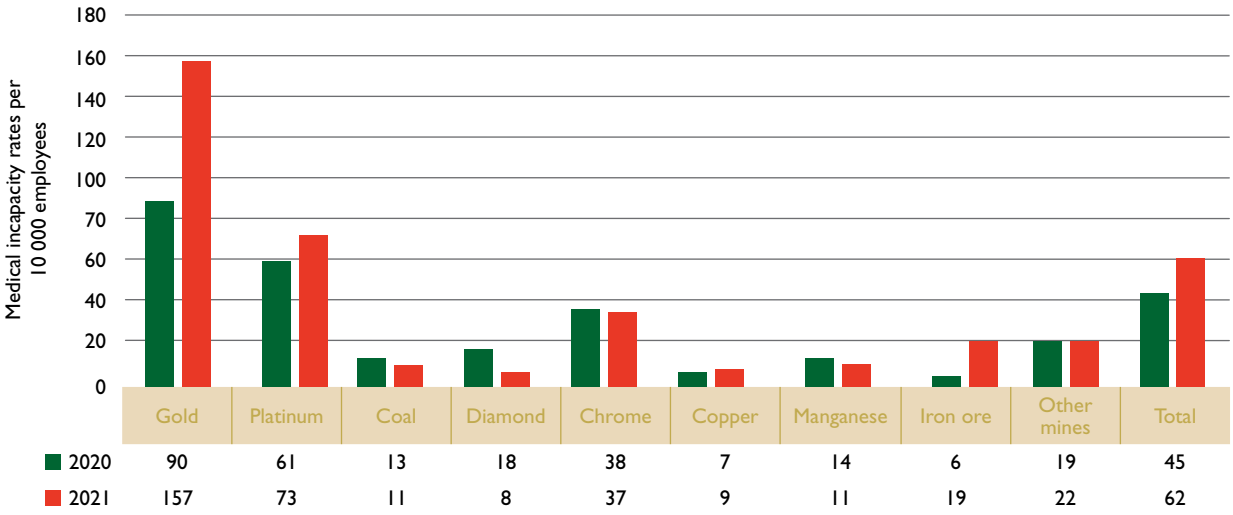
Figure 3.2.2.2.1: *Cases of medical incapacity due to occupational disease incidence rate per 10 000 employees by commodity for 2020 and 2021*



3.2.2.2.2 Medical incapacity due to non-occupational diseases

The analysis of medical incapacity due to non-occupational disease rates per 10 000 employees increased from 45 in 2020 to 62 in 2021, as illustrated in Figure 3.2.2.2.2.

Figure 3.2.2.2.2: *Medical incapacity cases due to non-occupational disease incidence rate per 10 000 employees by commodity for 2020 and 2021*



3.2.2.3 Deaths due to work-related diseases

The analysis of deaths due to work-related disease rates per 10 000 employees remained unchanged at a rate of zero for both 2020 and 2021, as shown in Figure 3.2.2.3(a).

Figure 3.2.2.3(a): *Deaths due to work-related disease incidence rates per 10 000 employees by commodity for 2020 and 2021*

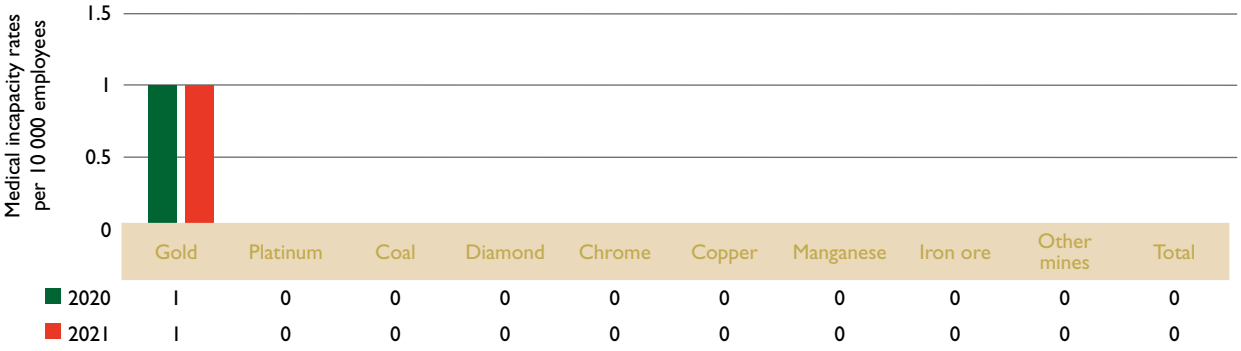


Figure 3.2.2.3(b): *Total deaths due to work-related diseases by commodity for 2020 and 2021*

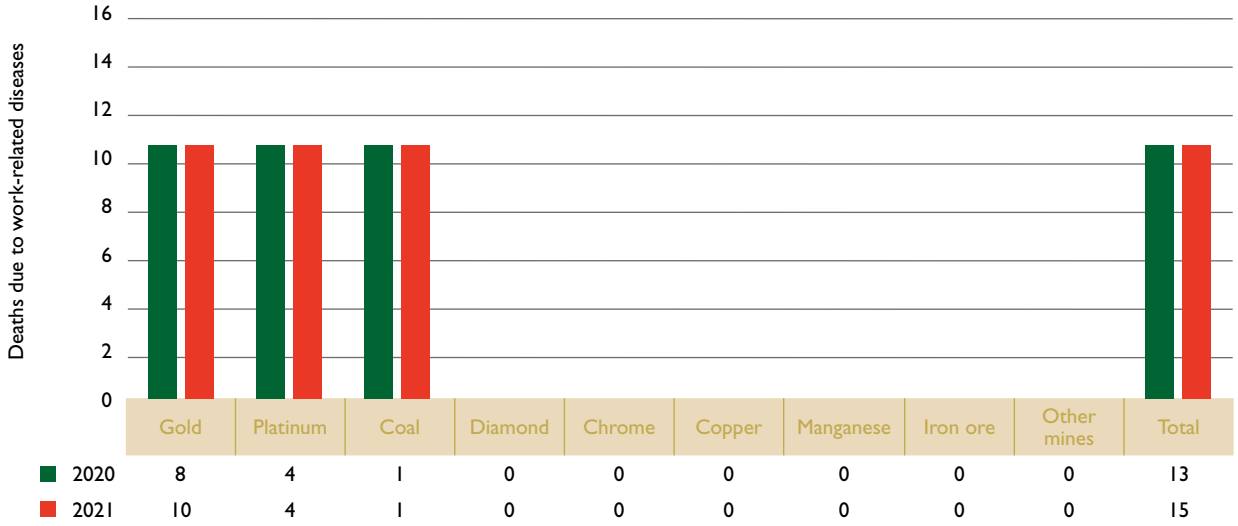
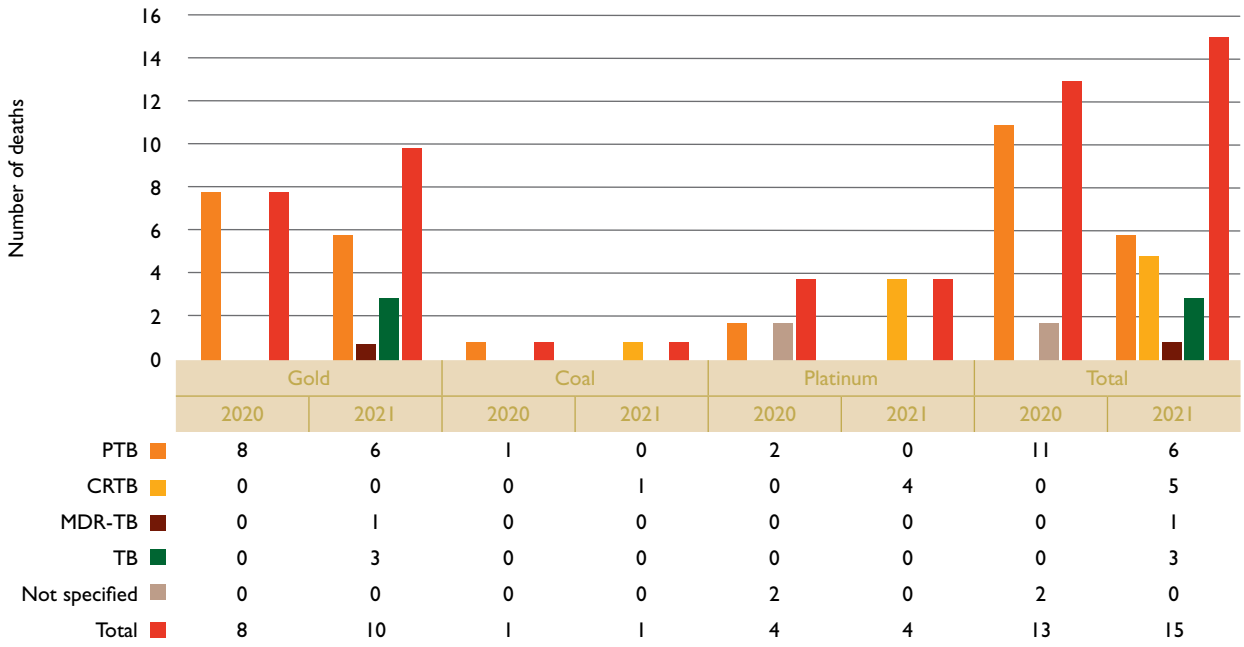


Figure 3.2.2.3(c): *Causes of deaths*



3.2.2.4 Natural deaths

The analysis of natural death rates per 10 000 employees decreased slightly from 34 in 2020 to 29 in 2021, as shown in Figure 3.2.2.4(a).

Figure 3.2.2.4(a): *Natural death incidence rates per 10 000 employees by commodity for 2020 and 2021*

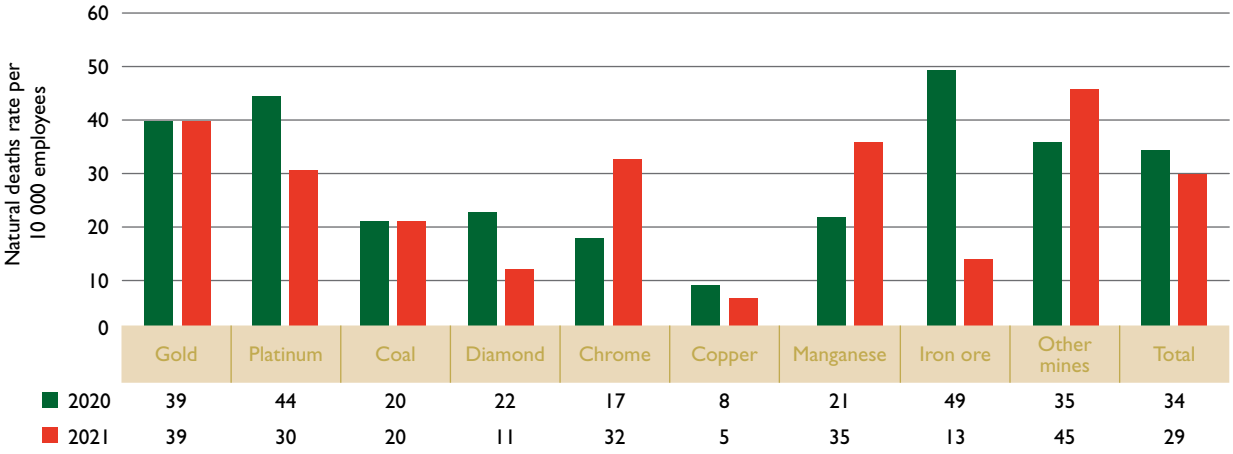
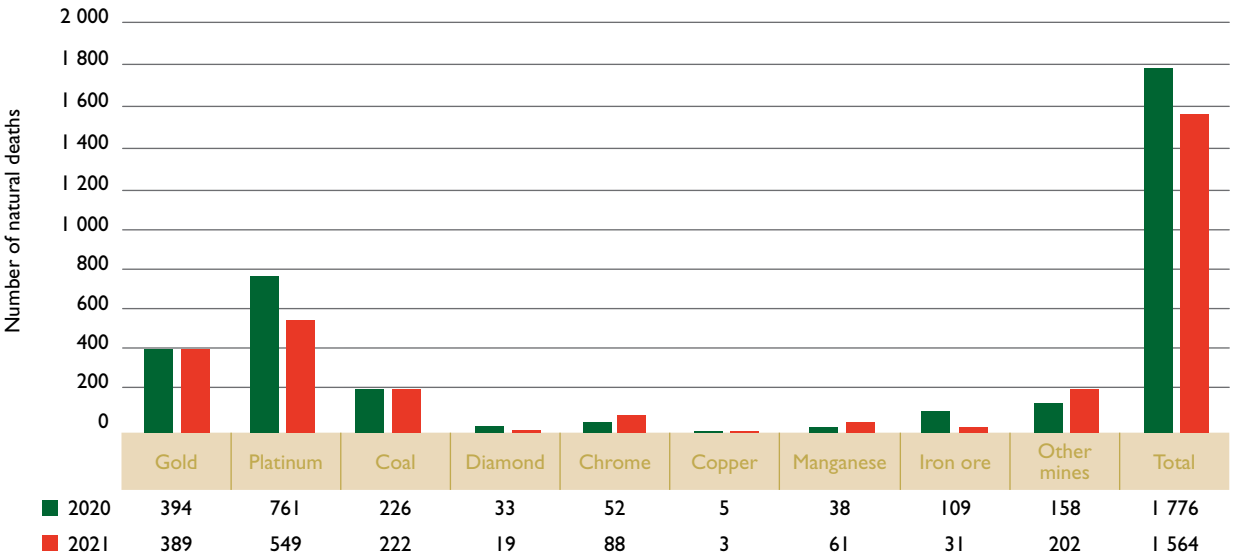


Figure 3.2.2.4(b): *Total natural deaths by commodity for 2020 and 2021*



A total of 1 564 natural deaths was reported by all mines during 2021, compared to 1 776 natural deaths in 2020.

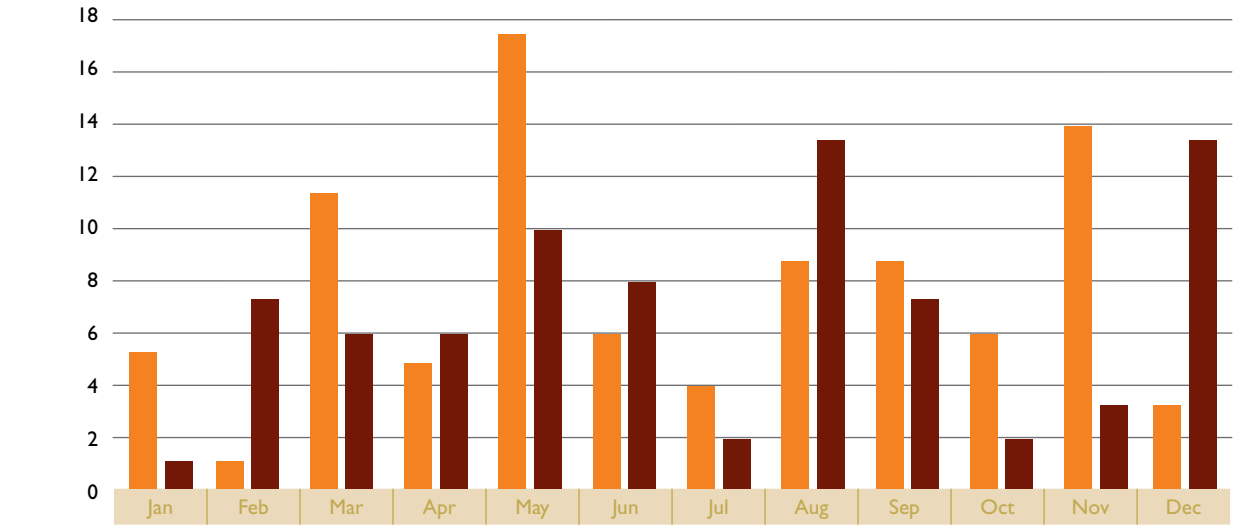
3.3 Medical Inspector's report

Section 20 of the MHSA is the responsibility of the Medical Inspector, who is legally appointed in terms of section 49(1)(b) of the same Act. Under section 20 of the MHSA, employees are given the opportunity to dispute the decision of the OMP, or an exit finding. The Medical Inspector intervenes if such an appeal is lodged, and investigates the merits of such an appeal. The investigation involves the inspection of the employee's workplace, researching the medical conditions being disputed, consulting specialists for expert opinions, interviewing employees, employers and their representatives, and checking other legislation that might be relevant to the appeal being processed.

3.3.1 Medical appeals

The COVID-19 pandemic continued to wreak havoc in 2021, affecting the health of people all over the world, including mine employees. The Medical Inspector received 178 appeal documents, of which only 90 qualified to be processed as section 20 medical appeals. This is an increase on the 50 medical appeals dealt with in 2020. The Medical Inspector was able to finalise 78 of the 90 identified medical appeals. This translated to approximately 87% of appeals being finalised.

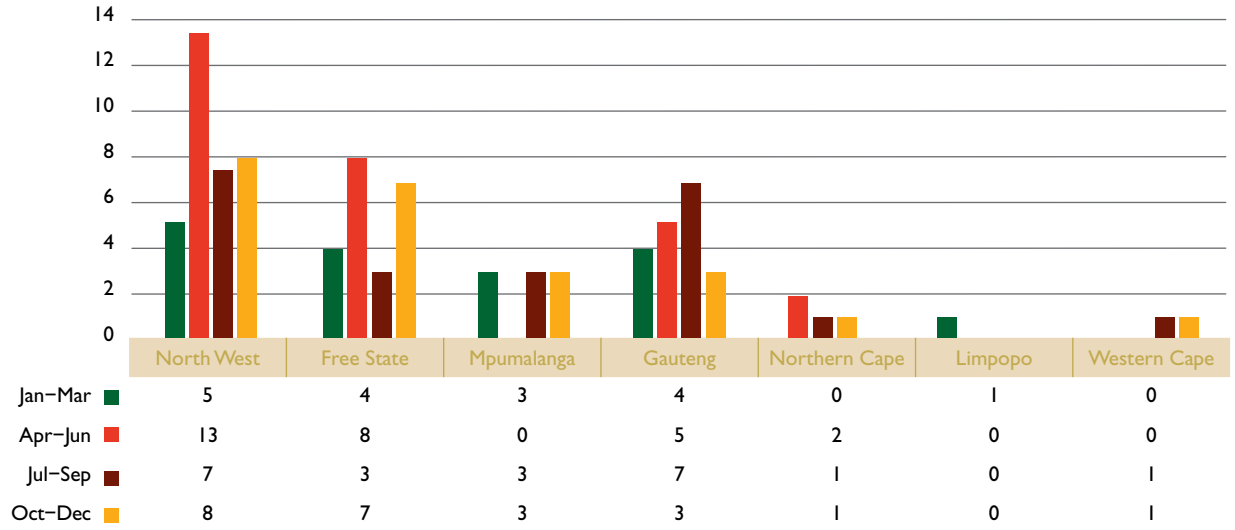
Figure 3.3.1: *Appeals received and finalised for 2021*



3.3.2 Appeals received per region

The number of appeals received increased markedly during 2021, especially from the North West, Free State, Gauteng and Mpumalanga regions. There were no appeals from the KwaZulu-Natal and Eastern Cape regions.

Figure 3.3.2: *Number of appeals per region from January to December 2021*



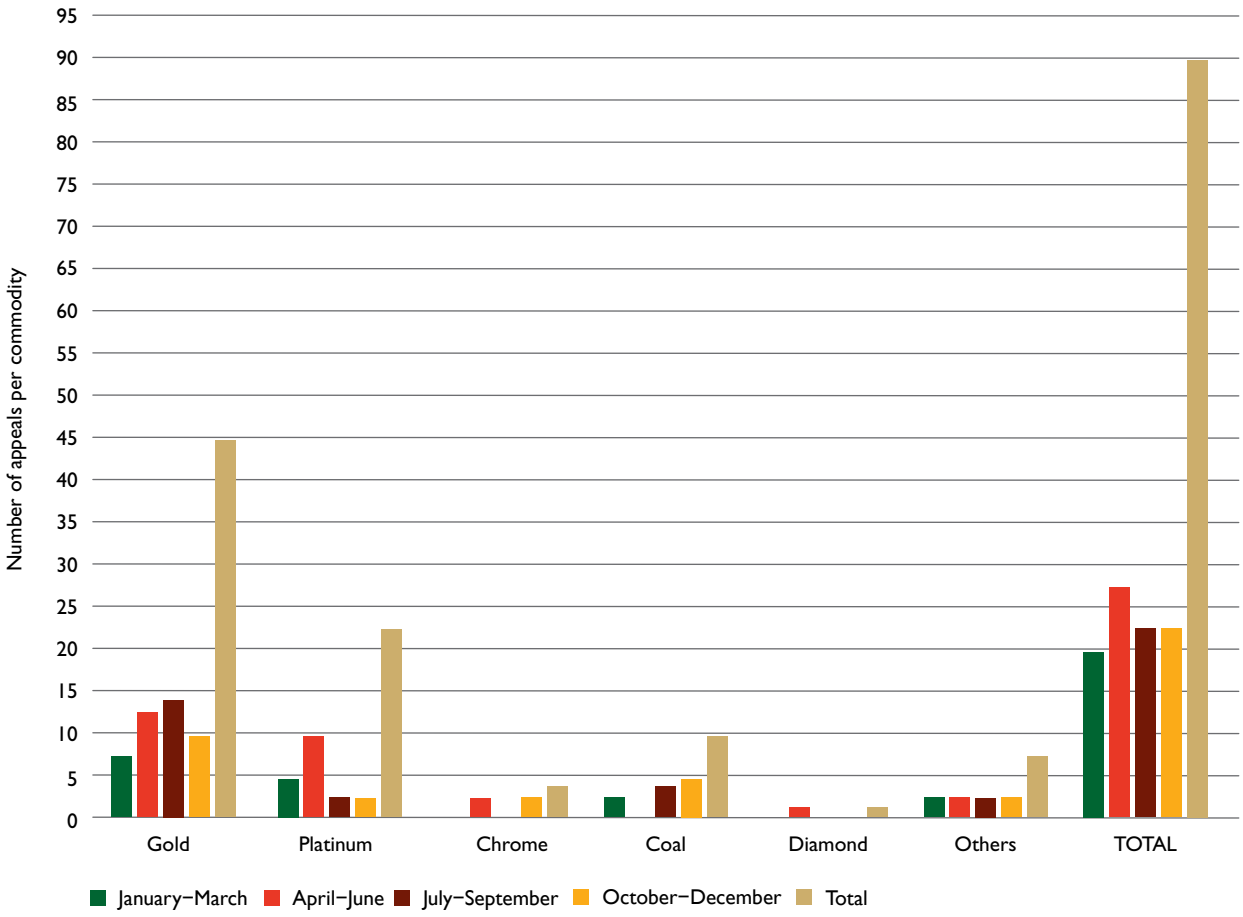
3.3.3 Appeals received per commodity

Of the 90 medical appeals received during 2021, half were received from the gold commodity, followed by the platinum commodity. Most appeals were received from April to December, and the number increased compared to 2020, when the COVID-19 pandemic was at its worst.

Table 3.3.3: *Appeals received per commodity*

	GOLD	PLATINUM	CHROME	COAL	DIAMOND	OTHERS	TOTAL
January to March	8	6	0	2	0	2	18
April to June	13	10	2	0	1	2	28
July to September	14	3	0	3	0	2	22
October to December	10	3	2	5	0	2	22
TOTAL	45	22	4	10	1	8	90

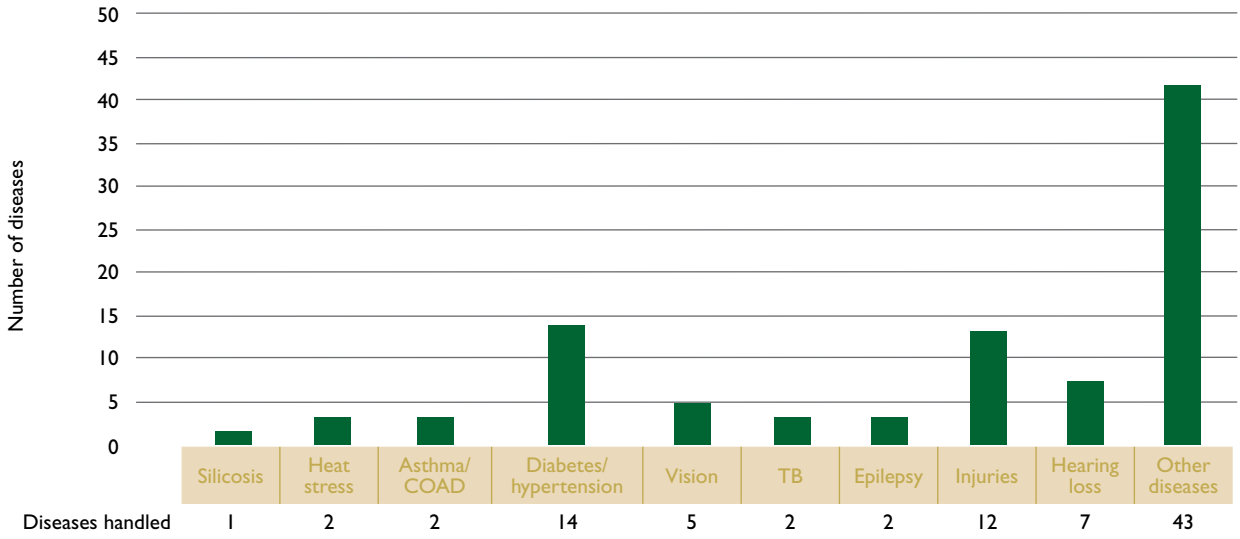
Figure 3.3.3: *Appeals received per commodity*



3.3.4 Diseases associated with appeals received for 2021

The number of diseases that were handled in the appeals increased compared to 2020 when the COVID-19 pandemic started. Most of the appeals involved non-communicable diseases like diabetes and hypertension. Other diseases constituted almost half of the appeals dealt with and were related to different kinds of diseases like musculoskeletal conditions, weight problems, carcinomas, cardiovascular conditions, psychiatric or psychological conditions, and renal diseases.

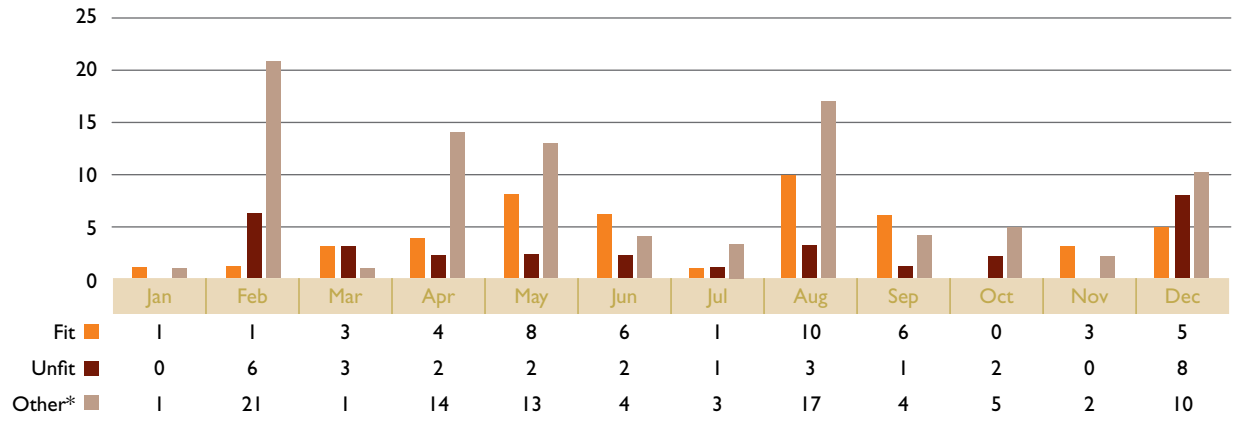
Figure 3.3.4: *Diseases associated with appeals received for 2021*



3.3.5 Appeals findings

The Medical Inspector received 173 appeal documents for 2021, of which 90 qualified to be processed as section 20 medical appeals. Fitness status was determined for the appellants and a ruling was made in line with section 20(4)(a)(b) of the MHSA, which gives the Medical Inspector the authority to vary, confirm or set aside the decision of the OMP.

Figure 3.3.5: *Appeal findings from January to December 2021*



Of the 78 cases that were finalised, 62% were found to be fit and 38% were found to be unfit. The other 95 cases received did not meet the requirements for section 20 of the MHSA, because they were based on complaints and labour-related matters. These were handled differently and concluded accordingly.

3.3.6 Challenges to the appeal process

COVID-19 has had an impact on a lot of issues and has contributed to the section 20 challenges. Some of the challenges have remained constant, as indicated below.

3.3.6.1 Employees

- Employees were appealing late.
- Employees were not accessible for referrals.
- Employees were still appealing against unfair labour processes, instead of against unfitness.
- Employees were not providing all the details required in the appeal form.

3.3.6.2 Employers (OMPs)

- OMPs were not stating clear reasons why employees were declared unfit.
- OMPs were declaring employees unfit based on human resources (HR)-related matters.
- OMPs were not responding timeously to requests from the DMRE to provide medical information for the appellants.

3.3.6.3 Second-opinion doctors

- Doctors were unable to provide appointment dates.
- Doctors were not eager to write reports for the appellants.

3.3.6.4 Section 20 of the MHSA

- It still remains out of synchronisation with the latest medical developments and ethics.
- It is often misinterpreted, causing unnecessary problems.

3.4 Reporting on TB and HIV

The mines submit TB and HIV data to the Department annually. This data is verified and analysed in preparation for submitting inputs to the annual report. For the 2020/21 financial year, 789 mines submitted DMRE 164 forms, consisting of data on TB and HIV. These mines represented 480 742 employees, compared to 775 mines with 482 068 employees in 2020.

3.4.1 Compliance for all mines

Table 3.4.1(a): *Compliance for all mines per commodity for 2021*

MEASURE	GOLD	COAL	PLATINUM	DIAMOND	OTHER COMMODITIES	TOTAL
	Number of mines	Number of mines	Number of mines	Number of mines	Number of mines	Total number of mines
	50	**140**	**65**	**147**	**387**	**789**
	Employees	Employees	Employees	Employees	Employees	Employees
	81 572	**117 601**	**189 971**	**16 150**	**75 448**	**480 742**
Integrated HIV and TB Policy	46	136	65	144	348	739 **93.7%**
Integrated HIV and TB Programme	43	131	64	17	223	478 **60.6%**
HIV and TB Programme Budget	39	103	63	12	147	364 **46.1%**
Monitoring and Evaluation System for TB and HIV Programmes	44	123	63	10	210	450 **57.0%**

Total compliance of the Integrated HIV and TB Policy increased from 91.9% in 2020 to 93.7% in 2021. There is an increase in compliance with the Integrated HIV and TB Programme. The overall HIV and TB Programme Budget has remained unchanged at 46.1% for both periods. The diamond sector is persistently the worst performer with regard to compliance with HIV and TB programmes, budget, as well as monitoring and evaluation. The platinum mines remain the best performers in terms of compliance.

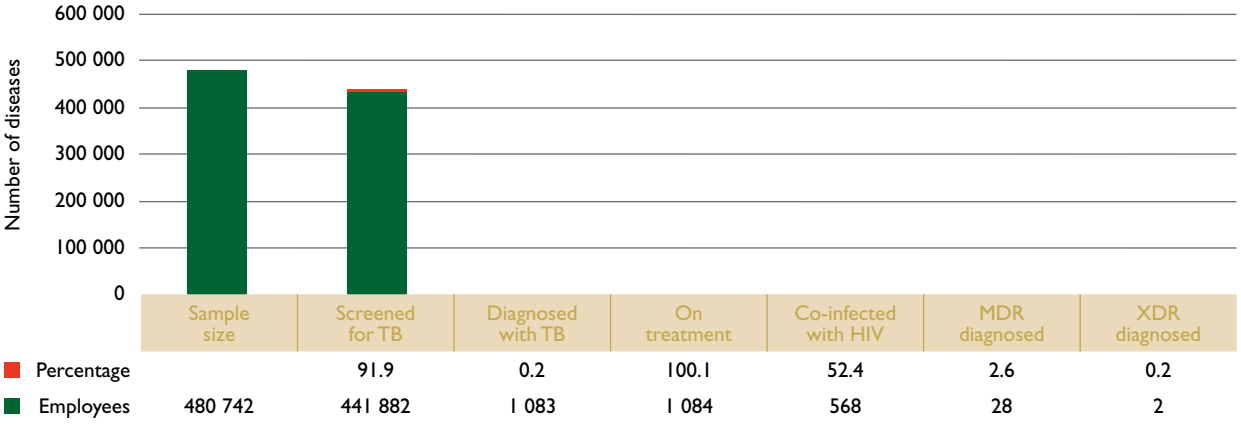
Table 3.4.1(b): *HIV counselling and testing (HCT) services and TB programme data elements for all commodities in 2021*

DATA ELEMENTS	GOLD	COAL	PLATINUM	DIAMOND	OTHER COMMODITIES	TOTAL
	Number of mines	Number of mines	Number of mines	Number of mines	Number of mines	Total number of mines
	50	140	65	147	387	789
	Employees	Employees	Employees	Employees	Employees	Employees
	81 572	117 601	189 971	16 150	75 448	480 742
Counselled for HIV	64 047 78.5%	74 474 63.3%	131 842 69.4%	10 588 65.6%	34 765 46.1%	315 716 65.7%
Tested for HIV	60 477 94.4%	40 495 54.4%	102 014 77.4%	6 736 63.6%	20 159 58.0%	229 811 72.8%
HIV-positive	1 334 2.2%	1 165 2.9%	7 110 7.0%	133 2.0%	395 2.0%	10 137 4.4%
Co-infected with TB and HIV	265 58.1%	38 30.4%	235 57.5%	3 13.0%	27 38.6%	568 52.4%
Living with HIV and on antiretrovirals (ARV)	13 355	7 286	26 495	644	3 876	51 656
Screened for TB	79 510 97.5%	105 382 89.6%	177 945 93.7%	15 004 92.9%	64 041 84.9%	441 882 91.9%
Diagnosed with TB	456 0.6%	125 0.1%	409 0.2%	23 0.2%	70 0.1%	1 083 0.2%
On TB treatment	457 100.2%	125 100.0%	409 100.0%	23 100.0%	70 100.0%	1 084 100.1%
Diagnosed with multidrug-resistant TB (MDR-TB)	14 3.1%	3 2.4%	10 2.4%	0 0.0%	1 1.4%	28 2.6%
Diagnosed with extensively drug-resistant TB (XDR-TB)	2 0.4%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	2 0.2%

The rate of employees diagnosed with TB decreased from 0.4% in 2020 to 0.2% in 2021. The decrease might be due to the decline in the number of employees covered in the period under review.

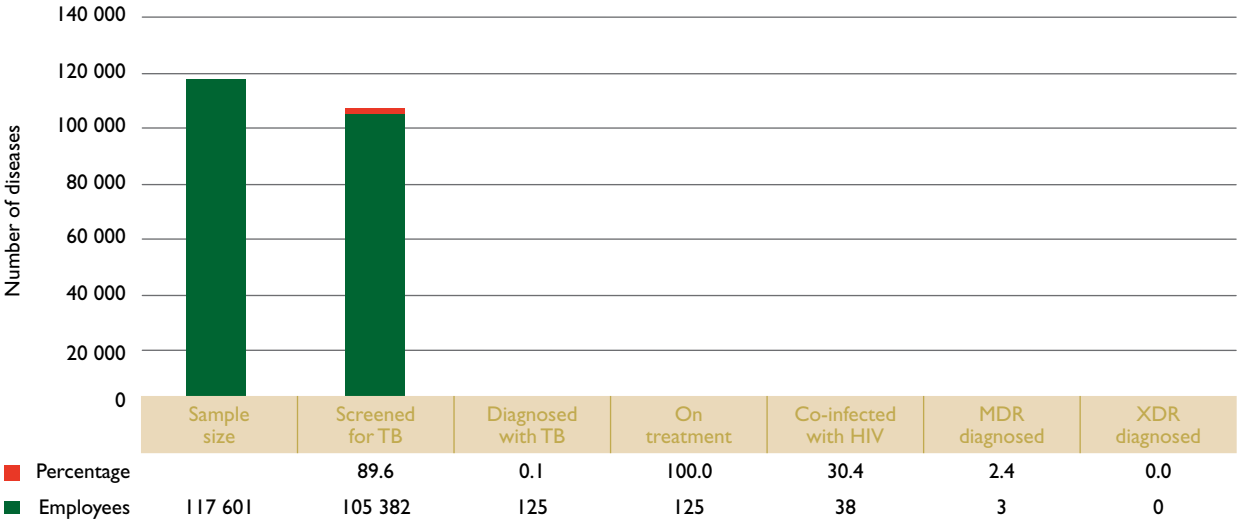
3.4.2 TB programme and TB/HIV co-infection in all mines

Figure 3.4.2: *TB programme and TB/HIV co-infection per commodity*



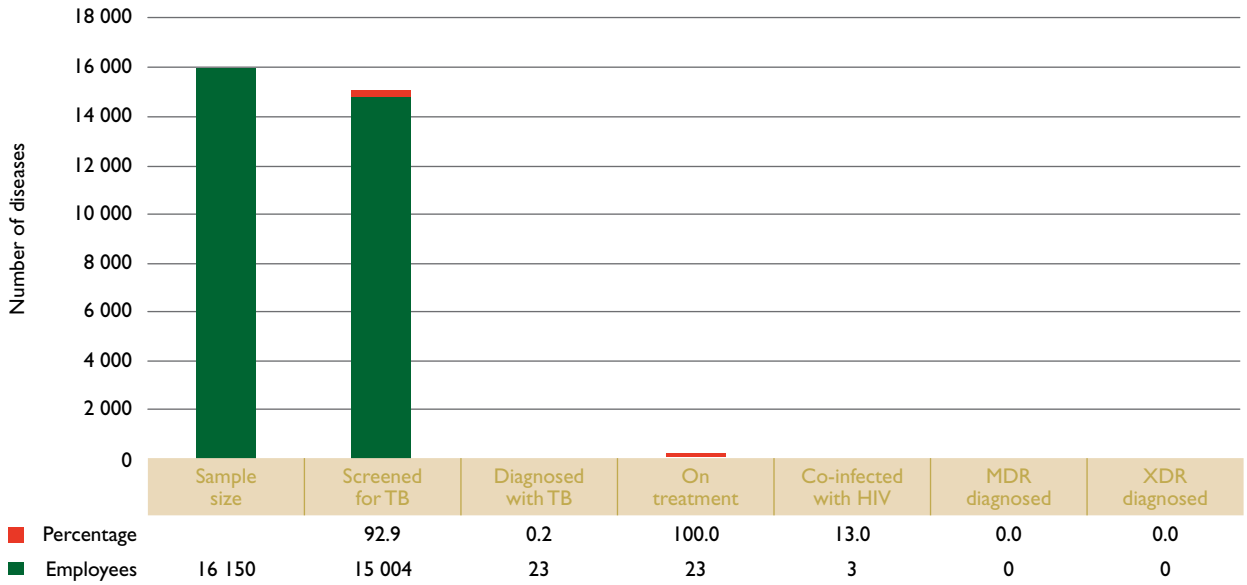
The effects of COVID-19 for the past two years have contributed to the decline in TB screening in the mining sector. TB screening decreased from 94.5% in 2020 to 91.9% in 2021. However, the rate is still in line with UNAIDS's 90:90:90 strategy for TB. The co-infection rate increased from 40.5% in 2020 to 52.4% in 2021.

Figure 3.4.2(a): *Coal-mining sector*



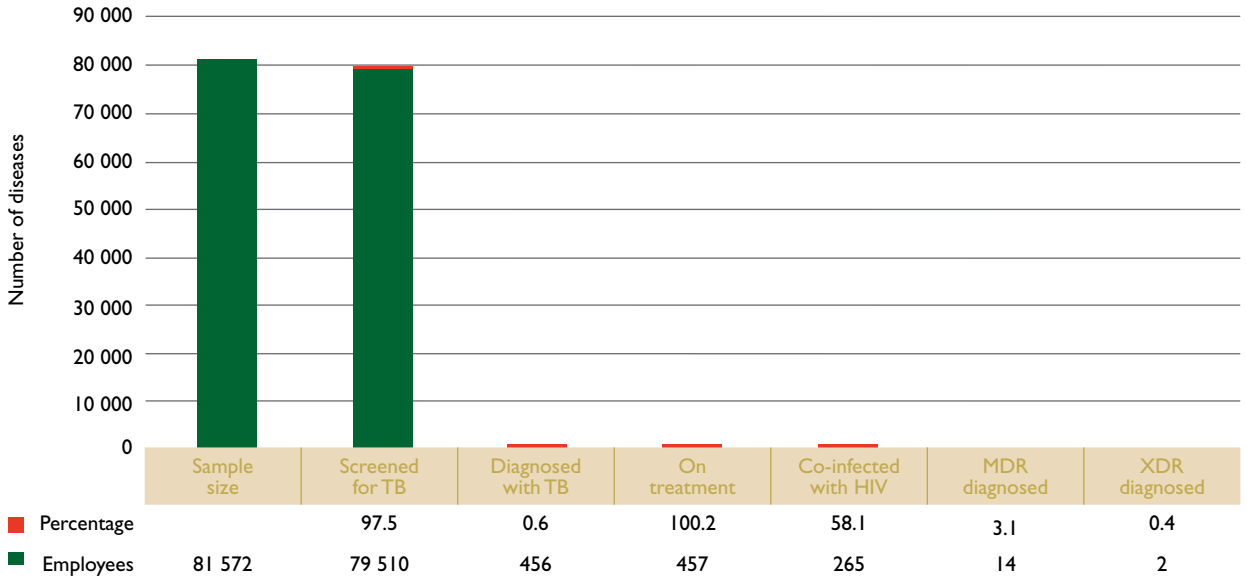
The coal-mining sector is still struggling to achieve the first 90 of UNAIDS's 90:90:90 strategy for TB, as screening remains below 90%, although it increased to 89.6% in 2021 from 86.5% during 2020. The co-infection rate increased from 27.3% in 2020 to 30.4% in 2021.

Figure 3.4.2(b): *Diamond-mining sector*



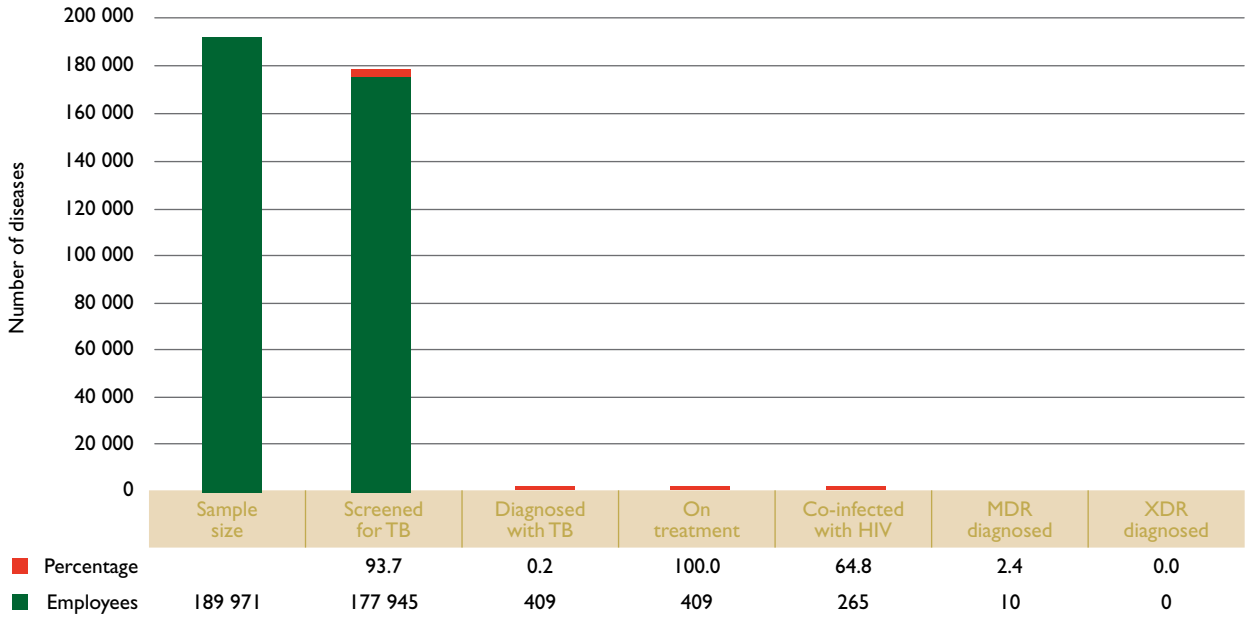
In the diamond-mining sector, TB screening remained constant at 93%, although it decreased from the 98.6% reported in 2019. Employees diagnosed with TB increased from 0.1% in 2020 to 0.2% in 2021. The co-infection rate decreased from 50% in 2020 to 13% in 2021.

Figure 3.4.2(c): *Gold-mining sector*



TB screening in the gold-mining sector increased gradually from 96.4% in 2020 to 97.5% in 2021. TB diagnosis halved to 0.6% in 2021 from 1.2% in 2020. This might be an indication that mines have embarked on a recovery plan after the interruption of TB programmes by the COVID-19 pandemic, which negatively affected these programmes. The co-infection rate increased from 34.9% in 2020 to 58.1% in 2021.

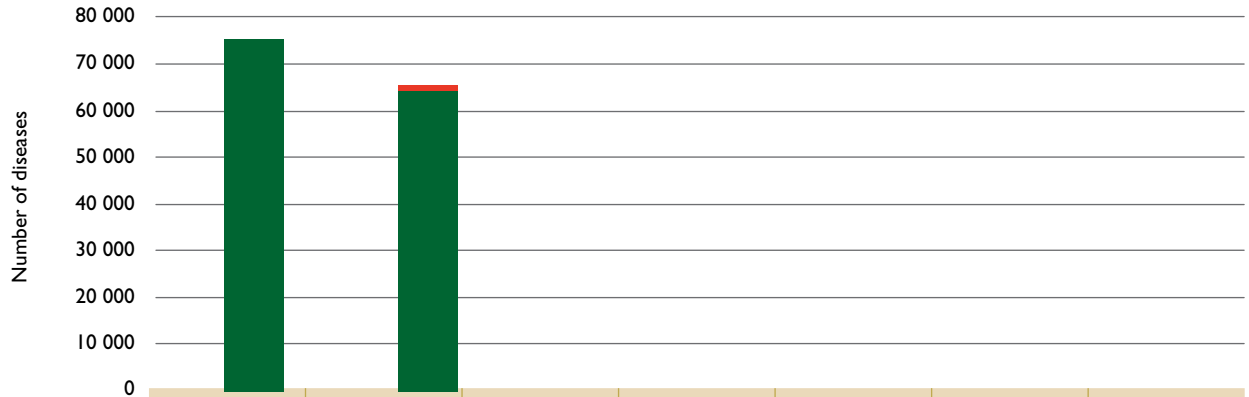
Figure 3.4.2(d): *Platinum-mining sector*



	Sample size	Screened for TB	Diagnosed with TB	On treatment	Co-infected with HIV	MDR diagnosed	XDR diagnosed
Percentage		93.7	0.2	100.0	64.8	2.4	0.0
Employees	189 971	177 945	409	409	265	10	0

TB screening in the platinum-mining sector decreased further from 98.1% in 2020 to 93.7% in 2021. TB diagnosis remained constant at 0.2% during both periods.

Figure 3.4.2(e): *Other commodities*

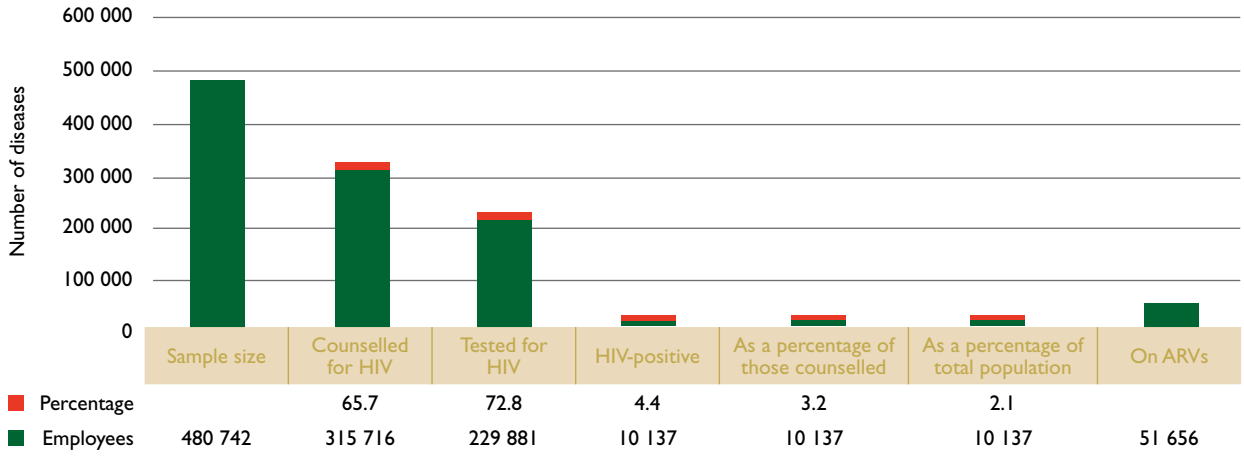


	Sample size	Screened for TB	Diagnosed with TB	On treatment	Co-infected with HIV	MDR diagnosed	XDR diagnosed
Percentage		84.9	0.1	100.0	38.6	1.4	0.0
Employees	75 448	64 041	70	70	27	1	0

Mines that consist of commodities not mentioned above have struggled to maintain TB screening at 90% and above. However, employees diagnosed with TB decreased from 0.2% in 2020 to 0.1% in 2021. This is unlikely to be a true reflection of the situation, as most of these mines did not provide the required data.

3.4.3 HIV counselling and testing services at all mines

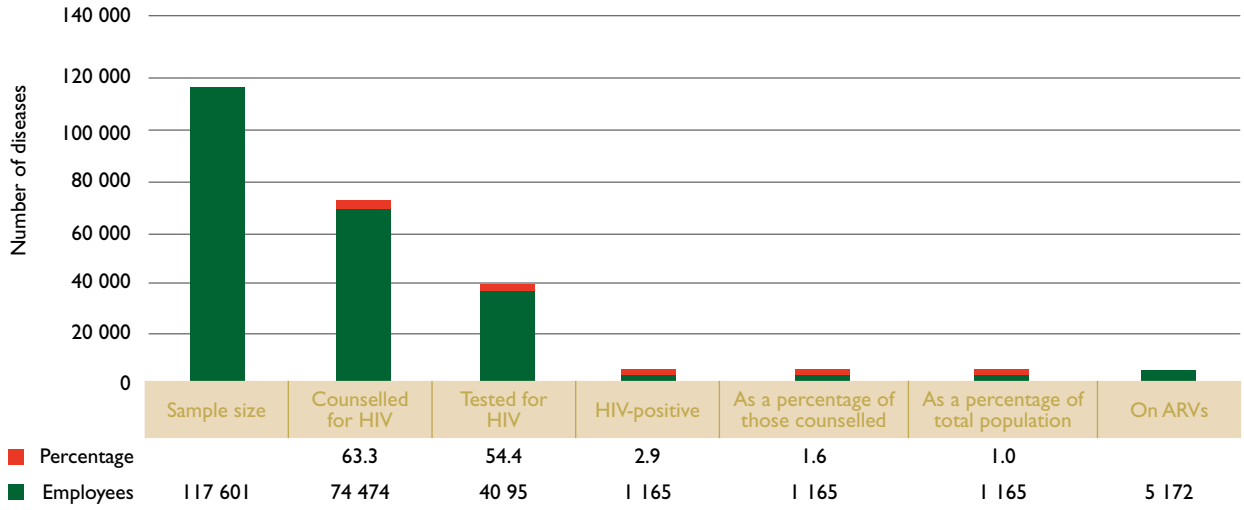
Figure 3.4.3: *HIV counselling and testing services at all mines*



HIV counselling decreased from 75.5% in 2020 to 65.7% in 2021, while HIV testing increased markedly from 58.1% in 2020 to 72.8% in 2021. Strategies that were implemented to improve this percentage might be starting to yield positive results, especially now that COVID-19 infections are getting under control. This is impressive and a step in the right direction, considering that HIV testing is not mandatory.

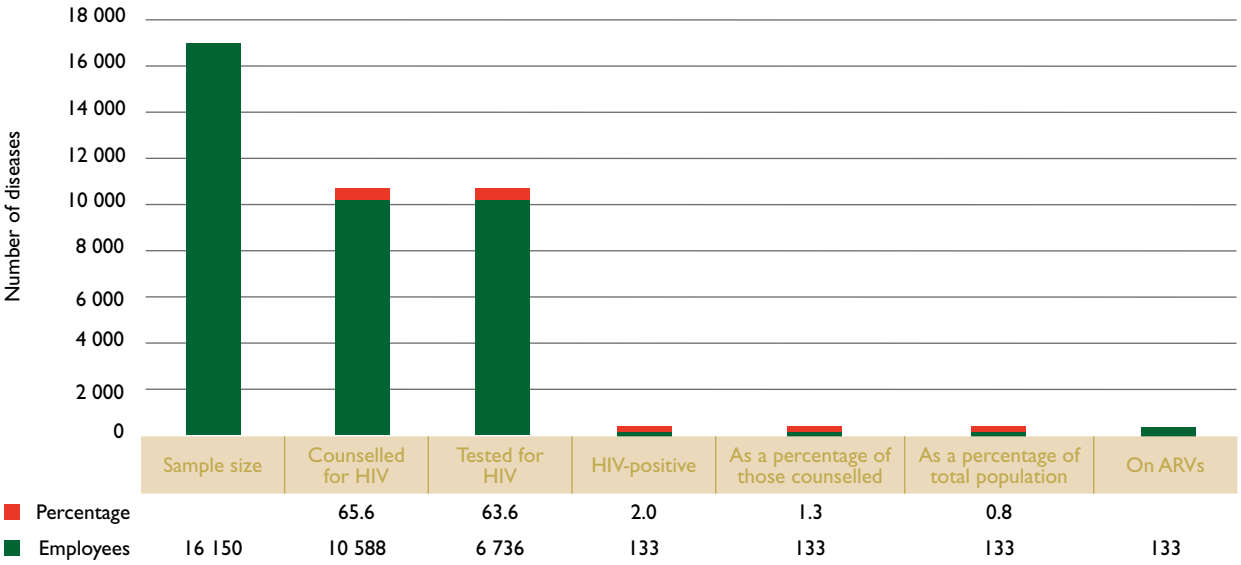
3.4.4 HIV counselling and testing services per commodities

Figure 3.4.4(a): *Coal-mining sector*



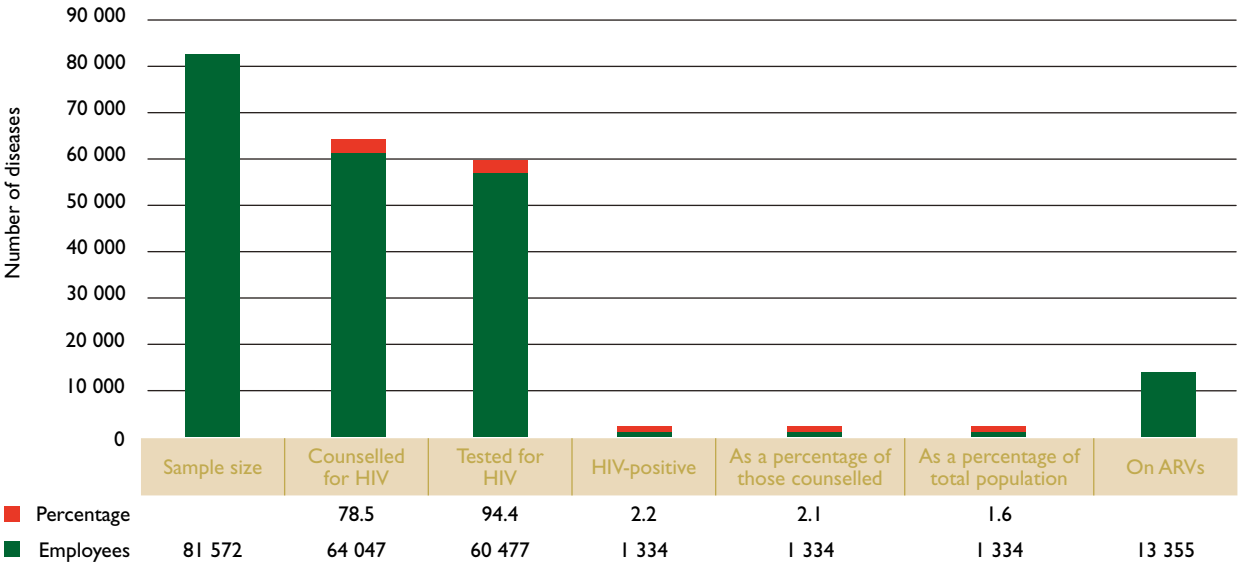
HIV counselling in the coal-mining sector has remained constant. However, testing employees for HIV increased from 47.3% in 2020 to 54.4% in 2021, while the rate of employees who tested positive for HIV decreased gradually from 3.6% in 2020 to 2.9% in 2021.

Figure 3.4.4(b): *Diamond-mining sector*



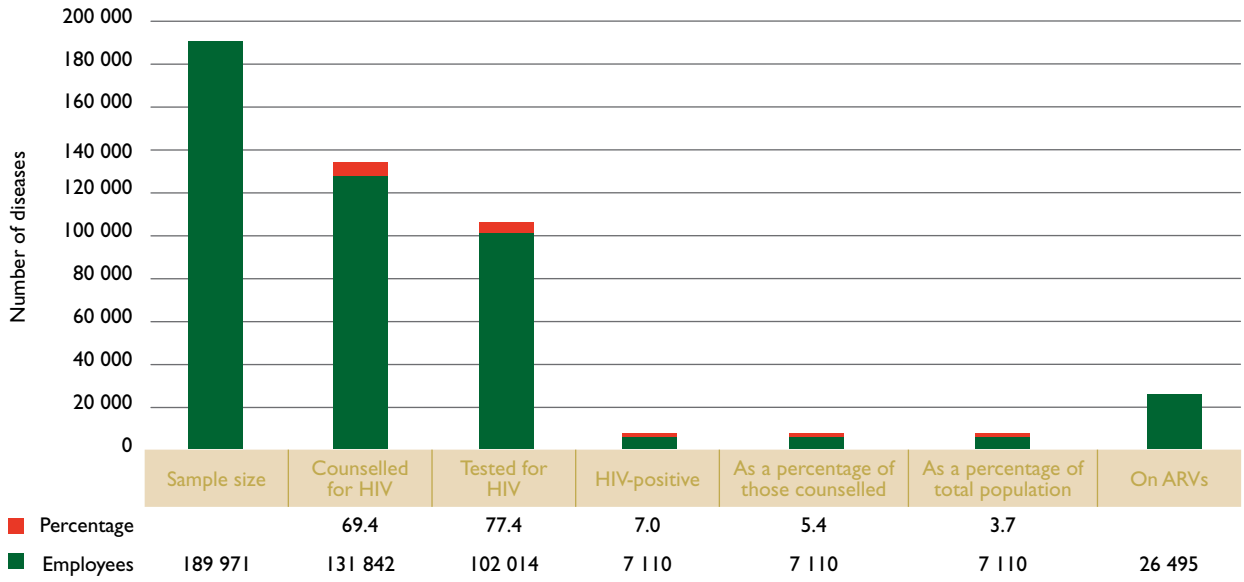
Employees who agreed to be tested for HIV decreased from 81.1% in 2020 to 63.6% in 2021. However, the positivity rate increased to 2% in 2021 from 1.6% in 2020.

Figure 3.4.4(c): *Gold-mining sector*



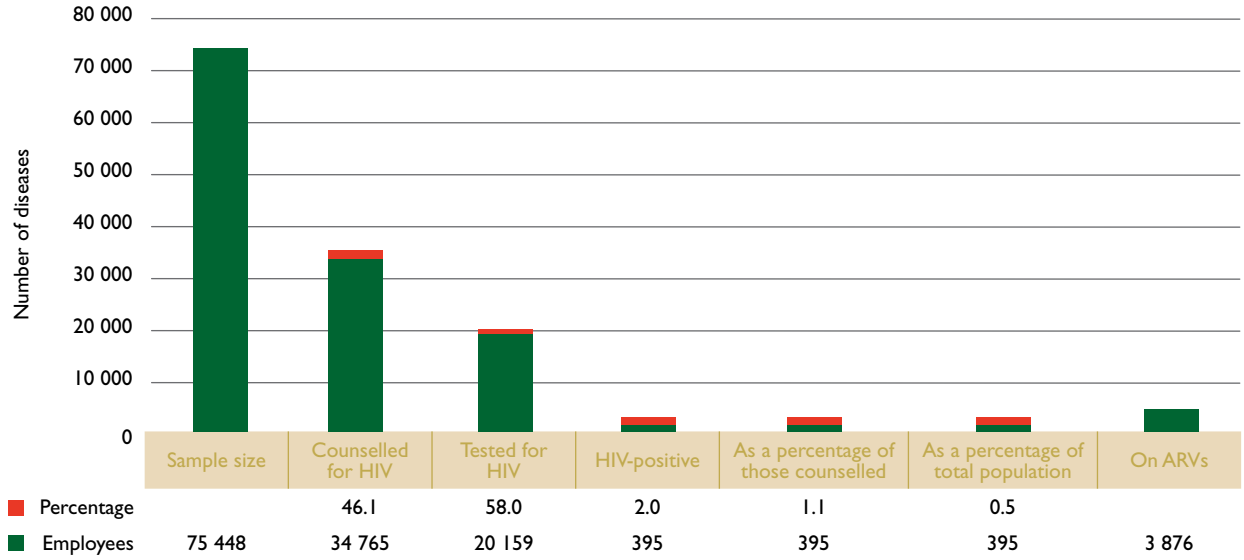
The gold-mining sector increased markedly in terms of HCT. For the first time, there is an achievement of more than 90% of employees agreeing to be tested for HIV to know their statuses.

Figure 3.4.4(d): *Platinum-mining sector*



Unfortunately, counselling in the platinum-mining sector decreased from 93.1% in 2020 to 69.4% in 2021. The testing rates improved from 59.7% in 2020 to 77.4% in 2021. The platinum sector did not perform well during the period under review, considering that it had consistent performances over the past years.

Figure 3.4.4(e): *Other commodities*



Other commodities are usually smaller mines that outsource TB and HIV management services or depend on mobile and government clinics for TB and HIV management. The data submitted by these mines is usually inadequate and incomplete. The COVID-19 pandemic worsened the situation as some of these smaller mines were not operating for several months.

Table 3.4.4: *Trends of data elements for 2013 to 2021*

DATA ELEMENTS	TOTAL LABOUR FORCE								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
	423 032	465 923	476 625	455 681	473 972	493 054	449 246	482 068	480 742
Counselled for HIV	**229 151** (54.2%)	**259 297** (55.7%)	**299 566** (62.9%)	**299 444** (65.7%)	**329 562** (69.5%)	**360 994** (73.2%)	**315 381** (70.2%)	**354 466** (73.5%)	**315 716** (65.7%)
Tested for HIV	**192 557** (84%)	**183 202** (70.7%)	**191 333** (63.9%)	**192 517** (64.3%)	**206 033** (62.5%)	**205 596** (57.0%)	**210 456** (66.7%)	**209 315** (59.1%)	**229 811** (72.8%)
HIV-positive	**17 384** (9.0%)	**19 084** (10.4%)	**21 913** (11.5%)	**16 243** (8.4%)	**16 293** (7.9%)	**15 630** (7.6%)	**13 101** (6.2%)	**10 684** (5.1%)	**10 137** (4.4%)
Co-infected with TB and HIV	**2 905** (80.9%)	**2 820** (63.2%)	**3 063** (72.7%)	**2 359** (62.1%)	**1 719** (66.6%)	**1 441** 69.7%)	**895** (63.8%)	**699** (40.4%)	**568** (52.4%)
Living with HIV and on ARV	**28 887**	**24 740**	**27 272**	**38 804**	**39 308**	**42 002**	**12 858**	**85 418**	**51 656**
Screened for TB	308 403 (72.9%)	376 718 80.8%)	422 670 (88.7%)	437 436 (96.0%)	455 242 (96.0%)	474 429 (96.2%)	437 199 (97.3%)	449 815 (93.3%)	441 882 (91.9%)
Diagnosed with TB	**3 593** (1.2%)	**4 461** (1.2%)	**4 211** (1.0%)	**3 799** (0.9%)	**2 581** (0.6%)	**2 066** (0.4%)	**1 403** (0.3%)	**1 726** (0.4%)	**1 083** (0.2%)
On TB treatment	**3 483**	**3 999**	**4 367**	**3 687**	**2 414**	**1 899**	**1 729**	**1 676**	**1 084**
Diagnosed with MDR-TB	**149** (4.1%)	**190** (4.3%)	**112** (2.7%)	**123** (3.2%)	**114** (4.4%)	**71** (3.4%)	**86** (6.1%)	**46** (2.7%)	**28** (2.6%)
Diagnosed with XDR-TB	**11** (0.3%)	**18** (0.4%)	**14** (0.3%)	**13** (0.3%)	**12** (0.5%)	**8** (0.4%)	**8** 0.6%	**11** (0.6%)	**2** (0.2%)

TB and HIV programmes at the mines continued to be affected by the COVID-19 pandemic, resulting in a decrease in both TB screening and employees diagnosed with TB. The DoH is in the process of developing recovery strategies for the management of TB and HIV. This will be discussed at the upcoming Mine Medical Professional Association/Masoyise seminar. The outputs from the seminar will be used to inform the South African mining industry about recovering the good work that had been done with regard to TB and HIV programmes prior to the COVID-19 pandemic.

PART 4:
State of Safety in the South African Mining Industry

4. STATE OF SAFETY IN THE SOUTH AFRICAN MINING INDUSTRY

4.1 Accident statistics

The South African mining industry is still plagued by challenges of injuries and fatalities resulting from mining activities, as indicated by the accident statistics of 2021. An increase of 23% was recorded in the number of fatalities recorded, from 60 in 2020 to 74 in 2021. The South African mining tripartite stakeholders – comprising government, which regulates the mining sector, the mine employers and the mine employees – continue to work towards an enviable state of zero harm. The number of injuries recorded shows a regression of 18% from 1 813 recorded in 2020 to a provisional figure of 2 143 recorded in 2021.

4.1.1 The number of employees at work in the South African mining industry

Statistics shows that there was an increase of 10% in the number of employees at work in the South African mining industry, from 386 945 in 2020 to 426 331 in 2021. Table 4.1.1 shows a decrease of 2% and 1% in the other mines and diamond sectors, respectively, while a general increase is shown across all other commodities.

Table 4.1.1: *Number of employees at work: 2020 compared with 2021*

	2020*	2021*	PERCENTAGE CHANGE
TOTAL	**386 945**	**426 331**	**10**
Gold	75 548	87 329	**16**
Platinum	129 240	146 522	**13**
Coal	81 789	85 794	**5**
Diamonds	12 790	12 619	**-1**
Copper	5 421	6 065	**12**
Chrome	17 294	19 077	**10**
Iron ore	19 612	21 273	**8**
Manganese	11 527	14 564	**26**
Other mines	33 724	33 088	**-2**

* *Provisional*

4.2 Analysis of accident rate trends

4.2.1 Fatality and injury frequency rates per million hours worked

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, discounting weekends, public holidays and annual leave days. The Basic Conditions of Employment Act, 1997 (Act 75 of 1997), requires a person to work more than 45 hours a week. Therefore, the conversion factor is rounded off to 2 200 hours per person per year.

The rate is annualised. Therefore, for a full year, it is as follows:

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

4.2.2 Fatality frequency rates (FFR) per region

In terms of section 47(2) of the MHSA, the Minister of Mineral Resources and Energy has, by notice in the Government Gazette, established regions in South Africa for the purpose of administering this Act. Table 4.2.2 indicates the number of fatalities reported to each of the regions of the MHSI, as well as the fatality rates during 2020 and 2021. There was an increase of 23% in the number of fatalities reported to the region year-on-year, as well as a 10% increase in the number of employees at work. The FFR increased from 0.07 to 0.08 in 2020 and 2021, respectively.

Table 4.2.2: *FFR per region*

	2020			2021*			PERCENTAGE CHANGE
	FATALITIES	AT WORK	FFR	FATALITIES	AT WORK	FFR	
ALL MINES	**60**	**386 945**	**0.07**	**74**	**426 331**	**0.08**	**14**
Eastern Cape	0	1 375	0	0	1 550	0	**0**
Free State	8	25 235	0.14	10	28 533	0.16	**14**
Gauteng	14	45 562	0.14	16	51 109	0.14	**0**
KwaZulu-Natal	1	10 494	0.04	1	10 733	0.04	**0**
Limpopo	8	45 482	0.08	6	50 649	0.05	**-38**
Mpumalanga	11	83 755	0.06	10	88 065	0.05	**-17**
Northern Cape	2	40 250	0.02	6	44 796	0.06	**200**
North West: Klerksdorp	4	12 023	0.15	4	14 664	0.12	**-20**
North West: Rustenburg	12	117 685	0.05	20	131 296	0.07	**40**
Western Cape	0	5 084	0	1	4 936	0.09	**100**

* *Provisional*

4.2.3 Injury frequency rates (IFR) per region

The overall IFR increased by 7% during 2021, compared to 2020. The total provisional number of injuries in 2021 was 2 143, compared to 1 813 in 2020. Table 4.2.3 indicates the injuries reported in each region and the IFR during 2020 and 2021.

Table 4.2.3: *IFR per region*

	2020			2021*			PERCENTAGE CHANGE
	INJURIES	AT WORK	IFR	INJURIES	AT WORK	IFR	
ALL MINES	**1 813**	**386 945**	**2.13**	**2 143**	**426 331**	**2.28**	**7**
Eastern Cape	4	1 375	1.32	3	1 550	0.88	**-33**
Free State	196	25 235	3.53	214	28 533	3.41	**-3**
Gauteng	355	45 562	3.54	431	51 109	3.83	**8**
KwaZulu-Natal	18	10 494	0.78	19	10 733	0.80	**3**
Limpopo	131	45 482	1.31	132	50 649	1.18	**-10**
Mpumalanga	156	83 755	0.85	169	88 065	0.87	**2**
Northern Cape	89	40 250	1.01	54	44 796	0.55	**-46**
North West: Klerksdorp	95	12 023	3.59	117	14 664	3.63	**1**
North West: Rustenburg	754	117 685	2.91	998	131 296	3.46	**19**
Western Cape	15	5 084	1.34	6	4 936	0.55	**-59**

* *Provisional*

4.2.4 FFR per commodity

The FFR per commodity for the mining industry increased by 14%, from 0.07 in 2020 to 0.08 in 2021, while the number of employees at work shows an increase of 10% in 2021, compared to 2020. The increase in the number of fatalities of 23% between 2020 and 2021 contributed to the increase in the FFR. Table 4.2.4 shows the FFR per commodity for 2020 and 2021. The FFR for manganese, iron ore and copper shows an increase of 100%. The FFR for coal and other mines reduced by 17% and 29%, respectively.

It is noteworthy that the number of employees at work in the manganese, iron ore and copper sectors increased by 26%, 8% and 12%, respectively.

The gold sector recorded a 15% increase in the number of fatalities reported, from 26 in 2020 to 30 in 2021. The platinum sector recorded a 31% increase in the number of fatalities reported, from 16 in 2020 to 21 in 2021, whereas the other mines sector recorded a decrease of 20%, from five in 2020 to four in 2021.

Table 4.2.4: *FFR per commodity*

	2020*			2021*			PERCENTAGE CHANGE
	FATALITIES	AT WORK	FFR	FATALITIES	AT WORK	FFR	
ALL MINES	**60**	**386 944**	**0.07**	**74**	**426 331**	**0.08**	**14**
Gold	26	75 548	0.16	30	87 329	0.16	**0**
Platinum	16	129 240	0.06	21	146 522	0.07	**17**
Coal	11	81 789	0.06	10	85 974	0.05	**-17**
Diamonds	0	12 790	0	0	12 619	0	**0**
Copper	0	5 421	0	3	6 065	0.23	**100**
Chrome	2	17 294	0.05	3	19 077	0.07	**40**
Iron ore	0	19 612	0	1	21 273	0.02	**100**
Manganese	0	11 527	0	2	14 564	0.06	**100**
Other mines	5	33 724	0.07	4	33 088	0.05	**-29**

* *Provisional*

4.2.5 IFR per commodity

The overall IFR per commodity increased by 7.04%, from 2.13 in 2020 to 2.28 in 2021. Table 4.2.5 shows that the IFR for the platinum, coal and chrome sectors increased by 39.6%, 9.9% and 1.1%, respectively, while the gold, diamond, copper, iron ore, manganese and other mines sectors show a decrease of 24.1%, 47%, 28.6%, 55.1%, 45.6% and 21.8%, respectively.

Table 4.2.5: *IFR rates per commodity*

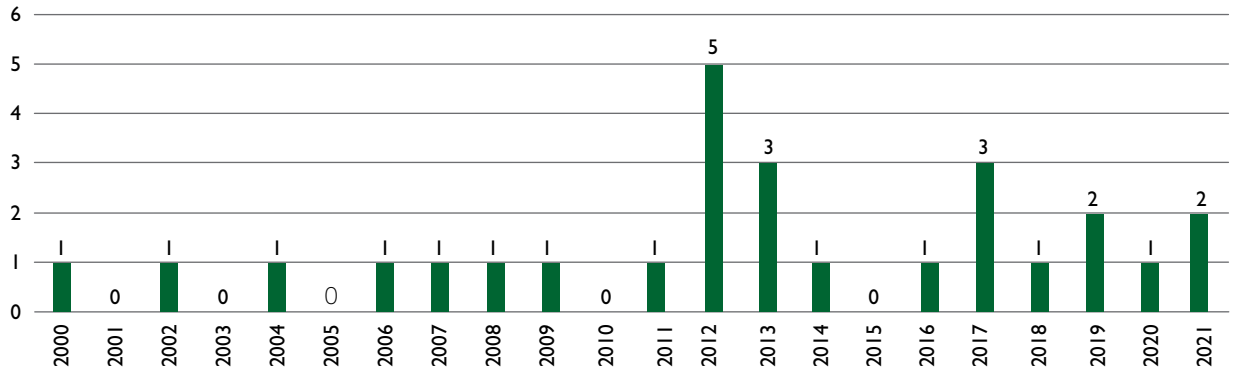
	2020			2021*			PERCENTAGE CHANGE
	INJURIES	AT WORK	IFR	INJURIES	AT WORK	IFR	
ALL MINES	**1 813**	**386 945**	**2.13**	**2 143**	**426 331**	**2.28**	**7**
Gold	621	75 548	3.74	738	87 329	2.84	**-24**
Platinum	782	129 240	2.75	1 027	146 522	3.84	**40**
Coal	145	81 789	0.81	170	85 974	0.89	**10**
Diamonds	42	12 790	1.49	22	12 619	0.79	**-47**
Copper	5	5 421	0.42	4	6 065	0.3	**-29**
Chrome	68	17 294	1.79	76	19 077	1.81	**1**
Iron ore	25	19 612	0.58	12	21 273	0.26	**-55**
Manganese	26	11 527	1.03	18	14 564	0.56	**-46**
Other mines	99	33 723	1.33	76	33 088	1.04	**-22**

* *Provisional*

4.2.6 Fatalities: Women in mining

Two women were fatally injured in 2021, compared to one woman in 2020. This translates to a 100% increase. Although the fatality of a mineworker is regrettable, irrespective of gender, Figure 4.2.6 shows that, since 2000, there were no women fatalities reported for 2001, 2003, 2005, 2010 and 2015.

Figure 4.2.6: *Number of fatalities to women in mining from 2000 to 2021*



4.2.7 Injuries: Women in mining

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

Figure 4.2.7(a): *Number of injuries to women in mining from 2000 to 2021*

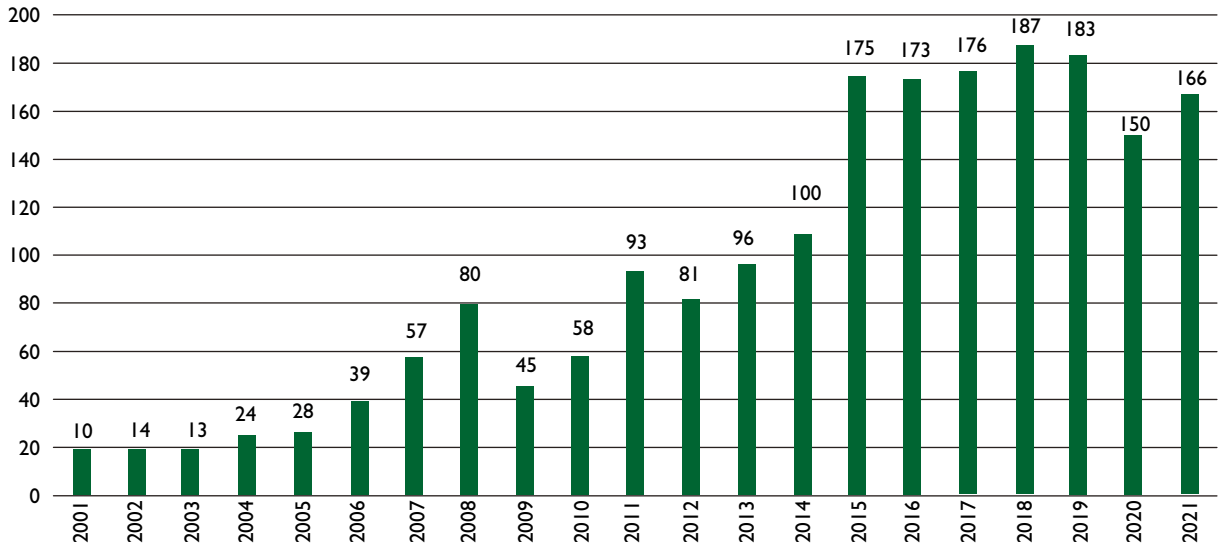
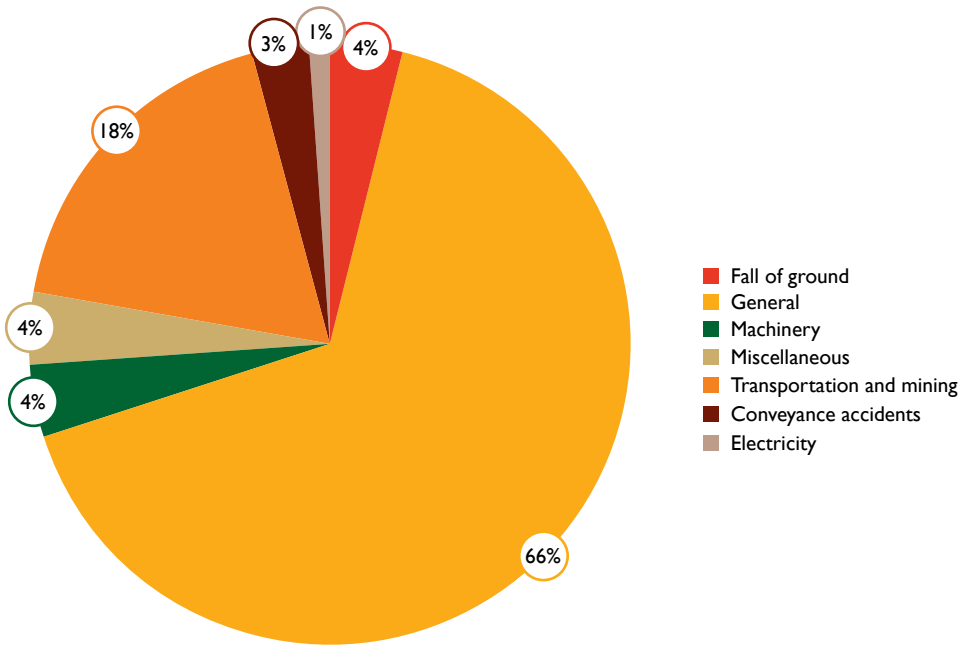


Figure 4.2.7(b): *Classification of injuries to women in mining from 2001 to 2021*



4.2.8 Fatalities classified by casualty classification

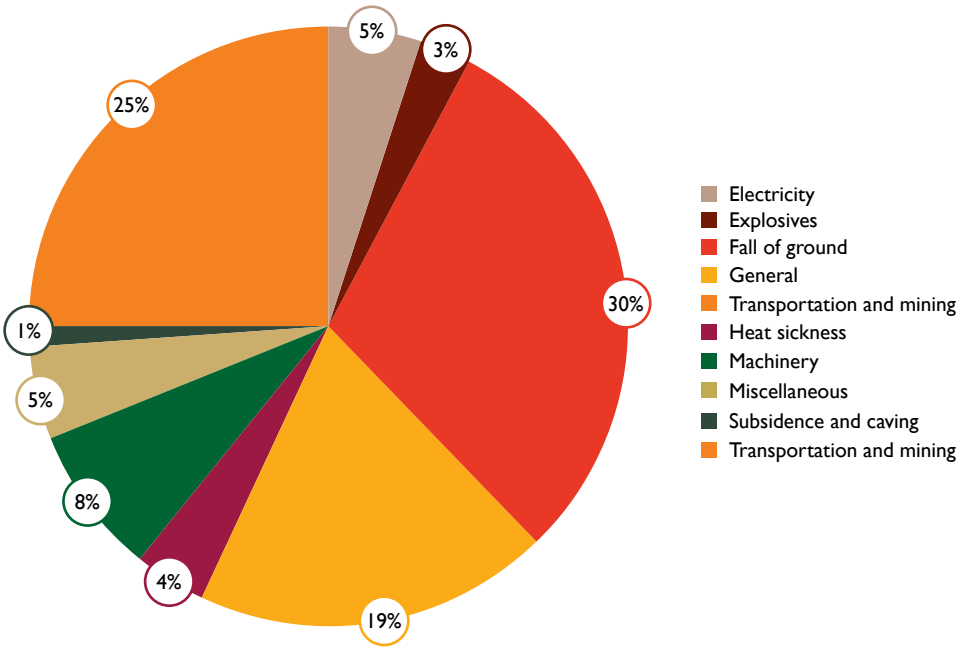
The 74 fatalities that were reported in 2021 are indicated in Table 4.2.8. The total number of fatality classification groups for 2020 followed the same trend as the preceding year (2019). The highest three fatality classification groups for 2019 were FOG (22 in 2021, as opposed to 22 in 2020), T&M (17 in 2021, as opposed to nine in 2020) and general (14 in 2021, as opposed to 14 in 2020).

Table 4.2.8: *Fatalities classified by casualty classification*

	1 JANUARY TO 31 DECEMBER 2020	1 JANUARY TO 31 DECEMBER 2021	PERCENTAGE CHANGE
FOG	**22**	**22**	**0**
Rockburst	7	6	**-14**
Gravity	15	16	**7**
MACHINERY	**4**	**6**	**50**
Conveyor belts	1	4	**300**
Portable power tools	1	0	**-100**
Other machinery (not included in TMM)	2	2	**0**
T&M	**9**	**18**	**100**
Track-bound transport (TBT)	**2**	**6**	**200**
Locomotive	1	2	**100**
Locomotive-drawn vehicle	0	3	**300**
Coupling/uncoupling	1	0	**-100**
Other transport	0	1	**100**
Winches	**3**	**3**	**0**
Scraper winch installation	2	3	**50**
Single drum winch	1	0	**-100**
TMM	**4**	**9**	**125**
Mechanical loaders	0	1	**100**
Transporters	2	7	**250**
Motor vehicles	1	0	**-100**
Lifting machines	0	1	**100**
Other TMM	1	0	**-100**

	1 JANUARY TO 31 DECEMBER 2020	1 JANUARY TO 31 DECEMBER 2021	PERCENTAGE CHANGE
GENERAL	**14**	**14**	**0**
Fall of material/rolling rock	2	1	**-50**
Manual handling of material	1	0	**-100**
Manual handling of mineral	0	3	**300**
Falling in/from	5	4	**-20**
Slipping and falling	2	0	**-200**
Dust, gas and fumes	2	4	**100**
Inundation/drowning	1	1	**0**
Struck by any object – manual handling	1	1	**0**
CONVEYANCE ACCIDENTS	**3**	**0**	**-300**
ELECTRICITY (not causing fires)	**1**	**4**	**300**
FIRES	**3**	**0**	**-300**
EXPLOSIVES	**1**	**2**	**100**
SUBSIDENCE AND CAVING	**0**	**1**	**100**
HEAT SICKNESS	**1**	**3**	**200**
MISCELLANEOUS	**2**	**4**	**100**
TOTAL	**60**	**74**	**23**

Figure 4.2.8: *Fatalities classified by casualty classification*



4.2.8.1 Analysis of fatalities by casualty classification

4.2.8.1.1 Breakdown of fatalities classified under FOG (30%)

There were 22 fatalities classified under FOG in 2021, compared to 22 in 2020. This translates to no change year on year. Six of the FOG fatalities reported in 2021 were related to seismic events, compared to seven reported in 2020, while 16 FOG fatalities reported in 2021 were gravity-related events, compared to 15 in 2020.

4.2.8.1.2 Breakdown of fatalities classified under machinery (8%)

Six fatalities were classified under machinery in 2021, compared to four in 2020. This translates to an increase of 50% year on year.

4.2.8.1.3 Breakdown of fatalities classified under T&M (25%)

Eighteen fatalities were classified under T&M in 2021, compared to nine in 2020. This translates to an increase of 100% year on year. Fatalities reported in this classification in 2021 included six that were related to rail-bound equipment (RBE), three that were related to winches and nine that were related to TMM.

4.2.8.1.4 Breakdown of fatalities classified under general (19%)

The general classification of accidents is detailed under 4.2.9 below. It remained the same for both 2020 and 2021 at 14 fatalities.

4.2.8.1.5 Breakdown of fatalities classified under electricity (5%)

There were four fatalities classified under electricity in 2021, compared to one in 2020. This translates to an increase of 300% year on year.

4.2.8.1.6 Breakdown of fatalities classified under explosives (3%)

There were two fatalities classified under explosives in 2021, compared to one in 2020. This translates to an increase of 100% year on year.

4.2.8.1.7 Breakdown of fatalities classified under subsidence or caving (1%)

There was one fatality classified under subsidence or caving. This translates to an increase of 100% year on year.

4.2.8.1.8 Breakdown of fatalities classified under heat sickness (4%)

There were three fatalities classified under heat sickness in 2021, compared to one in 2020. This translates to an increase of 200% year on year.

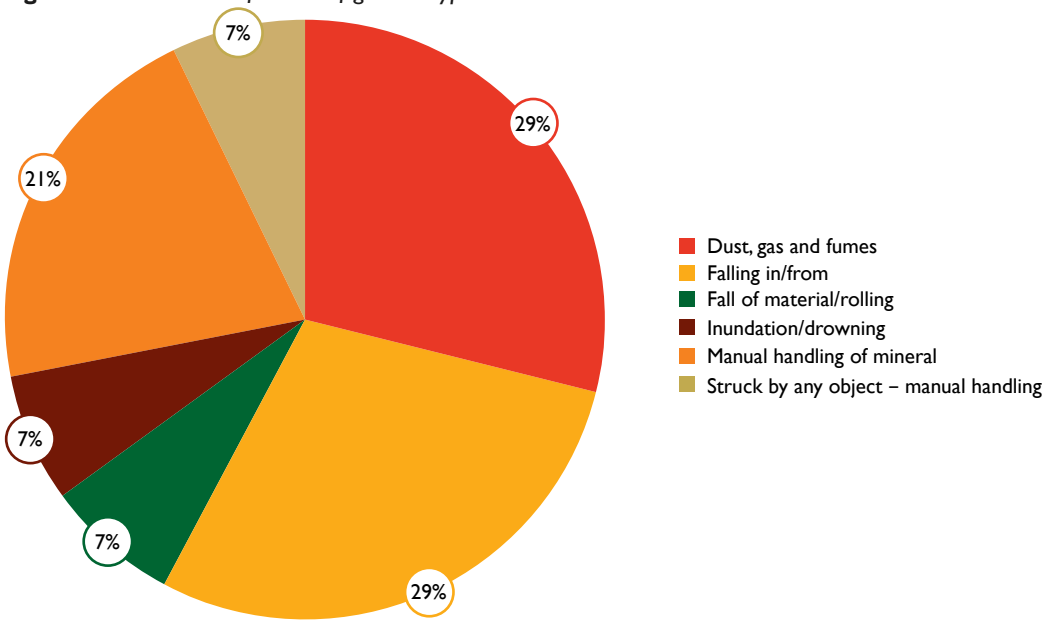
4.2.8.1.9 Breakdown of fatalities classified under miscellaneous (5%)

There were four fatalities classified under miscellaneous in 2021, compared to two in 2020. This translates to an increase of 100% year on year. The miscellaneous classification of fatalities refers to fatalities that are still pending the outcomes of investigations or inquiries, or post-mortem examination.

4.2.8.1.10 Accidents classified by casualty classification

The classification of general accidents (19%) has remained the same at 14 fatalities for both 2020 and 2021. One fatality was sub-classified under fall of material/rolling rock in 2021, compared to two in 2020; three were sub-classified under manual handling of mineral in 2021, compared to none in 2020; four were sub-classified under falling in/from in 2021, compared to five in 2020; four were sub-classified under dust, gas and fumes, compared to two in 2020. Inundation/drowning and struck by any object – manual handling did not incur any changes in 2021 compared to 2020, remaining at one fatality.

Figure 4.2.9: *Sub-classification of general-type accidents*



4.2.9 Injuries classified by casualty classification

The provisional total number of injuries recorded in 2021 shows an increase of 18% from 1 813 recorded in 2020 to 2 143 recorded in 2021.

Table 4.2.10: *Injuries classified by casualty classification*

	1 JANUARY TO 31 DECEMBER 2020	1 JANUARY TO 31 DECEMBER 2021*	PERCENTAGE CHANGE
FOG	308	373	21
Rockburst	72	79	10
Strainburst	45	32	-29
Gravity	191	262	37
Machinery	122	161	32
Conveyor belts	29	32	10
Drives, belts, chains	10	18	80
Portable power tools	61	80	31
Other machinery (not included in TMM)	22	31	41
T&M	326	329	1
TBT	114	116	2
Locomotive	19	31	63
Locomotive-drawn vehicle	27	18	-33
Re-railing	14	9	-36
Coupling/uncoupling	32	33	3
Rocker arm shovel	11	7	-36
Personnel transport	6	8	33
Other transport (specify)	5	10	100
Winches	96	107	11
Scraper winch installation	58	68	17
Mono rope/rail	12	6	-50
Hand trammed	5	11	120
Single drum winch	6	10	67
Double drum winch	15	12	-20

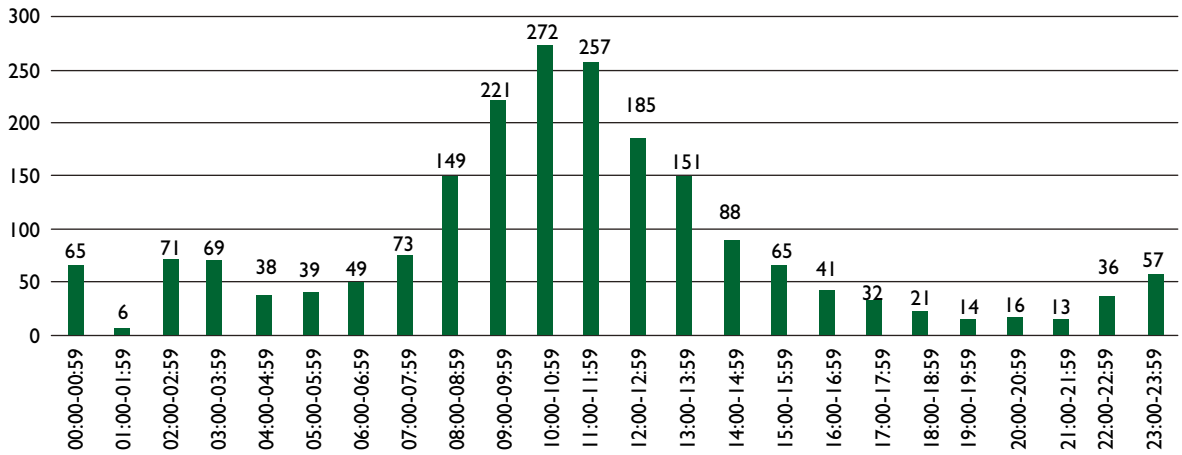
	1 JANUARY TO 31 DECEMBER 2020	1 JANUARY TO 31 DECEMBER 2021*	PERCENTAGE CHANGE
TMM	116	106	-9
Tractor/trailer	2	7	250
Coal-mining machines	4	4	0
Mechanical loaders	10	7	-30
Transporters	35	31	-11
Motor vehicles	19	13	-32
T&M lifting machines	14	13	-7
T&M mobile drilling machines	25	23	-8
Other T&M equipment	7	8	14
General	989	1 171	18
Fall of material/rolling rock	119	139	17
Manual handling of material	220	268	22
Manual handling of mineral	38	48	26
Falling in/from	26	32	23
Slipping and falling	317	419	32
Burning and scalding	27	31	15
Splinters	24	28	17
Dust, gas and fumes	43	21	-51
Inundation/drowning	3	1	-67
Struck by ventilation door	8	16	100
Struck by object – manual handling	164	168	2
CONVEYANCE ACCIDENTS	24	39	63
ELECTRICITY (not causing fires)	11	13	18
FIRES	0	3	100
EXPLOSIVES	3	11	267
SUBSIDENCE/CAVING	0	1	100
OCCUPATIONAL DISEASES (non-diving)	0	0	0
HEAT SICKNESS	7	30	329
MISCELLANEOUS	23	12	-48
TOTAL	1 813	2 143	18

* *Provisional*

4.2.10 Accidents classified by time of occurrence

Statistics shows that accidents in 2021, when classified by time of occurrence, mainly took place between 08:00 and 14:00. This period is during the day shift when there are more employees at work. Most underground workers start the morning shift at 06:00, and the number of accidents peak at mid-shift between 09:00 and 11:00.

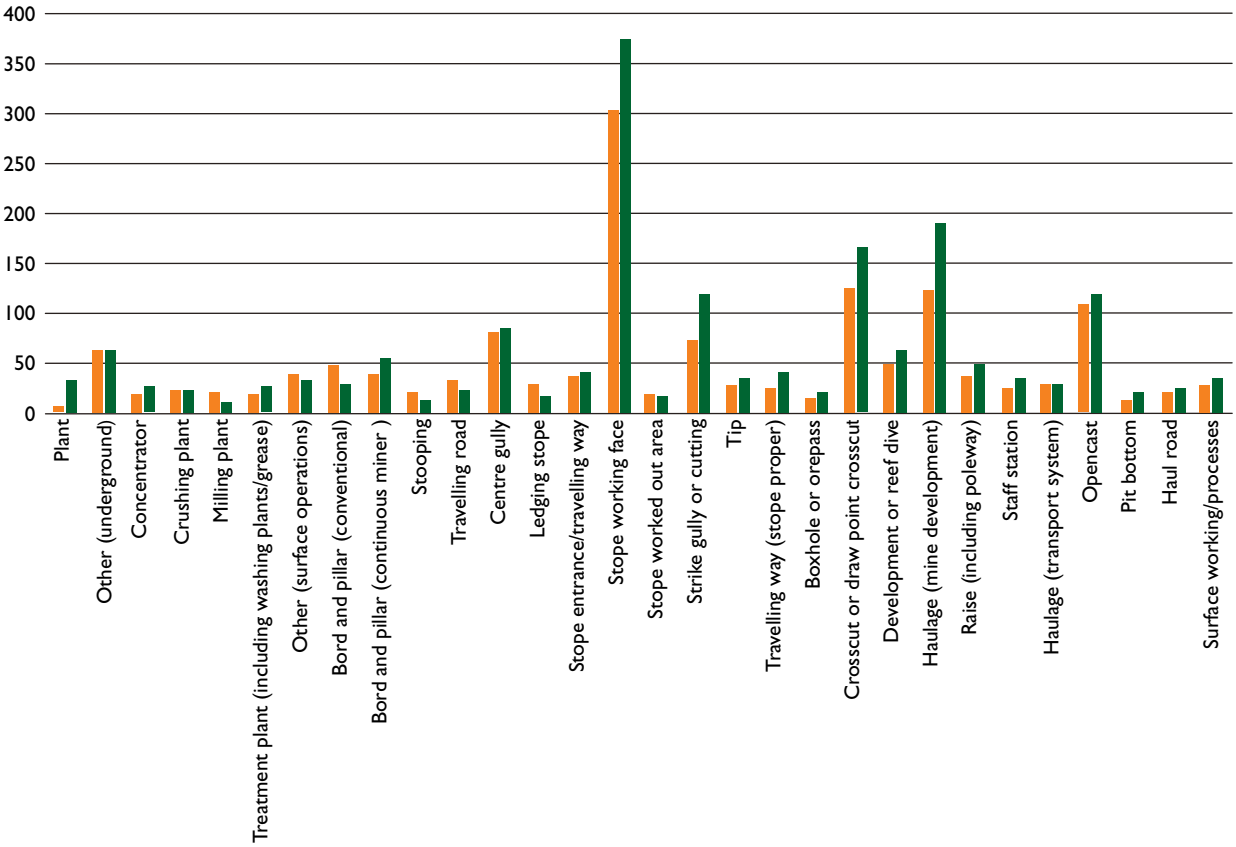
Figure 4.2.11: *Accidents classified by time of occurrence*



4.2.11 Accidents classified by location

Most accidents occurred at the stope working face, the haulage, the crosscut or draw point, the strike gully or cutting, and opencast. These are areas with a considerable concentration of employees working towards the set production targets.

Figure 4.2.12: *Accidents classified by location*



4.3 Enforcement

4.3.1 Section 54 instructions to deal with dangerous conditions

Table 4.3.1(a): *Section 54 instructions*

SECTION 54 OF THE MHSA	
Number of notices issued	**547**
Number of transgressions identified	**4 247**
Number of instructions issued	**2 400**

Table 4.3.1(b): *Section 54 transgressions identified*

NO	CATEGORIES OF SECTION 54 TRANSGRESSIONS	SECTION 54 TRANSGRESSIONS IDENTIFIED
1.	FOGs	**252**
2.	TMM	**385**
3.	Mining practices / standard operating procedure	**206**
4.	RBE	**171**
5.	Conveyor belts	**391**
6.	Winches	**226**
7.	Machinery	**76**
8.	Safe declaration	**146**
9.	Emergency preparedness	**131**
10.	COPs	**117**
11.	Explosives	**62**
12.	Ventilation	**58**
13.	Supervision	**547**
14.	Legal appointments	**112**
15.	Shafts	**45**
16.	Training	**94**
17.	Electricity	**64**
18.	Risk assessment	**320**
19.	Airborne pollutants	**51**
20.	Occupational hygiene	**13**
21.	Medical surveillance / COVID-19 COP	**66**
22.	Drilling / rigging	**22**
23.	Work conditions	**5**
24.	Statutory reporting / sub-standard reports	**24**
25.	Fires	**26**
26.	Exemptions / permissions / approvals / authorisations	**15**
27.	PPE	**6**
28.	Safety devices	**12**
29.	Mud-rush	**46**
30.	Lamp room / refuge bay	**19**
31.	Waiting place	**11**
32.	Noise	**2**
33.	Housekeeping / barring / barricade	**128**
34.	Mine permit / unauthorised access	**4**
35.	Traffic management	**53**
36.	Blasting	**45**

NO	CATEGORIES OF SECTION 54 TRANSGRESSIONS	SECTION 54 TRANSGRESSIONS IDENTIFIED
37.	Road conditions / haul roads / illumination	**38**
38.	Substandard support	**200**
39.	Lifting equipment	**7**
40.	Tip area	**6**
41.	Unsealed panels not checked	**1**
42.	Working while in operation	**2**
43.	Certificate of fitness	**1**
44.	Geo-mos monitoring	**3**
45.	Water drain / pipes	**6**
46.	Guarding	**3**
47.	Step ladders	**1**
48.	Proximity detection system (PDS)	**2**
49.	Communications	**9**
50.	Notices	**9**
51.	Non-compliance on change houses	**1**
52.	Mine inspections non-compliance	**3**
53.	Isolation and lockout	**4**
TOTAL		**4 247**

4.3.2 Section 55 instructions to order compliance

Table 4.3.2(a): *Section 55 instructions*

SECTION 55 OF THE MHSA	
Number of notices issued	**469**
Number of transgressions identified	**1 726**
Number of instructions issued	**1 148**

Table 4.3.2(b): *Section 55 transgressions identified*

NO	CATEGORIES OF SECTION 55 TRANSGRESSIONS	SECTION 55 TRANSGRESSIONS IDENTIFIED
1.	COPs	**278**
2.	TMM	**179**
3.	Legal appointments	**151**
4.	Conveyor belts	**78**
5.	Occupational hygiene	**34**
6.	Machinery	**53**
7.	Risk assessment	**179**
8.	Training	**71**
9.	Electricity	**31**
10.	FOGs	**40**
11	Supervision	**89**
.12.	Medical surveillance / COVID-19 COP	**62**
13.	RBE	**22**
14.	Dust	**13**
15.	Emergency preparedness	**78**
16.	Statutory reporting	**26**

NO	CATEGORIES OF SECTION 55 TRANSGRESSIONS	SECTION 55 TRANSGRESSIONS IDENTIFIED
17.	PPE	**16**
18.	Explosives	**17**
19.	Working conditions	**17**
20.	Standard operating procedure	**26**
21.	Ventilation	**13**
22.	Shafts	**1**
23.	Safe declaration	**23**
24.	Mining practices	**63**
25.	General / housekeeping / barring / barricade	**66**
26.	Noise	**5**
27.	Mine plans	**6**
28.	Health and safety policy	**19**
29.	Surveying	**0**
30.	Logbooks	**7**
31.	Fires	**1**
32.	Exemptions / permissions / approvals / authorisation	**7**
33.	Winches	**2**
34.	Inspector's instructions	**1**
35.	Isolation and lockout	**1**
36.	Hazard identification and risk assessment (HIRA)	**3**
37.	Road traffic management	**14**
38.	Support designs	**8**
39.	Fitness certificate	**1**
40.	Illumination	**1**
41.	No access control and perimeter fence	**2**
42.	Guarding	**6**
43.	Lamp room / refuge bay	**9**
44.	Investigations	**3**
45.	Pre-use checklist	**4**
TOTAL		**1 726**

PART 5:
Mine Surveying in the South African Mining Industry

5. STATE OF MINE SURVEYING IN THE SOUTH AFRICAN MINING INDUSTRY

5.1 Activities of the Mine Surveying Directorate

Table 5.1: *Completed tasks for the financial year compared with the previous financial year*

ACTIVITIES	PLANNED	COMPLETED	PERFORMANCE ANALYSIS
Mine surveying inspections (underground and surface mines)	314	313	Inspections were planned with consideration to the budget provided.
Underground inspections (control measurements)	192	198	Underground inspections were prioritised with the focus on causes of deaths in the mining industry. This is mainly attributed to FOGs.
	RECEIVED	**COMPLETED**	
Permissions and exemptions	34	28	Applications received at the end of the reporting period are carried over to the next reporting period.
SURFACE UTILISATION APPLICATIONS			
	RECEIVED	**COMPLETED**	**PERFORMANCE ANALYSIS**
	124	106	Applications received at the end of the reporting period are carried over to the next reporting period. Some of the applications lack information and the applicants are informed accordingly to enable them to rectify their applications for further processing.

5.2 Surveying matters

The Directorate: Mine Surveying continues to assist the 10 regional offices of the DMRE to maintain surveying and mapping standards by monitoring compliance by mines to the relevant MHSA regulations and ensuring that departmental copies of all statutory mine plans are deposited annually at the regional offices. The Directorate comments on and makes recommendations regarding the safe utilisation of land for township development, especially on undermined land, and the processing of applications for permissions and exemptions from the provision of the MHSA.

The Mine Surveying Inspectors perform underground measurements in restricted areas, where surface structures require protection. They also check the measurements of underground workings to determine the accurate representation of such workings on the plans. During such underground visits, the inspectors check for escape route plans and if the refugee bays are life sustaining, as prescribed in the regulations.

5.3 Special surveys

The Directorate is occasionally required to assist in surveying the extent of illegal surface mining activities and to quantify the volume of minerals removed. Inspectors are also requested to determine the distances of mining operations from residential areas where complaints are lodged against mining operations. The inspectors check and verify the accuracy of the survey data and the plans submitted by candidates undertaking trial survey projects as part of their Mine Surveyors Certificate of Competency (MSCC) examinations.

5.4 Section 55 instructions issued

A total of 69 section 55 notices in terms of the MHSA were issued during the period under review for the following contraventions:

- No existing plans at the mine
- No appointment of a competent person at the mine
- Inaccurate plans
- The erection of a surface structure over undermined areas without written permission

5.5 Mapping services

The Sub-directorate Geographical Information System (GIS) and Mapping Services administers the archiving, retrieval and safekeeping of the prescribed mine plans, departmental copies and survey records of mines that have closed.

It provides clients with information of the undermining status of land for township development and other purposes, as well as making mine plans of closed mines available to the mine owners or their representatives.

PART 6:
Training and Examinations

6. TRAINING AND EXAMINATIONS

6.1 Implemented training

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

- A total of 21 officials attended technical and non-technical training courses, as well as conferences
- One manager attended the AMDP

6.2 Training interventions

6.2.1 Assistant Inspector programme

- The Department had nine Assistant Inspectors at the beginning of the period under review.
- Three of the nine passed their respective GCCs during the financial year.
- Six Assistant Inspectors are currently at various stages of obtaining their GCC in their respective disciplines.

6.2.2 Bursary scheme

- There were no MHSI bursary holders during the period under review.

6.3 Examinations

6.3.1 Written candidates as opposed to certificates issued per examination category

Table 6.3.1: *Number of candidates and certificates issued per examination category*

TYPE OF CERTIFICATE	NUMBER OF CANDIDATES	CERTIFICATES ISSUED
Mine Engineer's (Electrical and Mechanical) Certificate	334	36
Mine Manager's Certificate	696	69
Mine Overseer's Certificate	214	87
Mine Surveyor's Certificate	448	10
Winding Engine Driver's Certificate	0	0
TOTAL	**1 692**	**202**

PART 7:
Activities of the Inspectorate

7. ACTIVITIES OF THE INSPECTORATE

7.1 Regional operations: Central and Coastal regions

The Central and Coastal regional operations consist of Gauteng and KwaZulu-Natal. The major commodities mined are gold, coal and industrial minerals. Numerous base minerals are also mined, and there are crushers, quarries and borrow pits. There were approximately 166 operating mines in both these regions during the period under review.

Occupational health performance

Over-exposure to airborne pollutants at mines continues to lead to diseases such as silicosis and CWP, which affect mineworkers. Some employees are also over-exposed to high noise levels, which led to the high number of NIHL cases reported.

The number of cases of occupational diseases reported from AMRs unfortunately increased from 351 in 2020 to 372 in 2021. The main occupational diseases reported in 2021 were PTB (110), NIHL (170) and silicosis (69). It is regrettable to note that there was a slight increase in the total number of cases reported by both Gauteng and KwaZulu-Natal year on year. Gauteng had the third-highest number of reported cases (339), accounting for approximately 7% of the total national cases of occupational diseases reported by the mining sector.

Occupational safety performance

Regrettably, 16 fatalities occurred in 2021, compared to 12 in 2020. This represents a regression of 33% year on year. A total of 424 mine injury accidents were reported in 2021, compared to 580 injuries in 2020. This translates to a 27% year-on-year improvement in the number of mine injury accidents.

In dealing with the accidents that led to the above-mentioned fatalities and injuries at mines, the Central and Coastal regional operations completed 101 accident investigations and 11 fatal inquiries. The outstanding fatal inquiries and accident investigations could not be completed, mainly due to the unavailability of the legal representatives of the mines, as well as organised labour. The COVID-19 restrictions on movement and gatherings also hampered the completion of investigations and inquiries. The outstanding accident investigations and fatal inquiries will be prioritised during the next financial year.

Enforcement

During the period under review, 1 940 inspections and audits were conducted at the mines. As part of the enforcement measures implemented during the inspections and audits, 82 section 54, and 62 section 55 notices were issued in terms of the MHSA. The notices issued under section 54 dealt with dangerous conditions at mines, while those issued under section 55 order compliance with the provisions of the MHSA.

Strategies adopted for improving the status quo

Working under the difficult conditions imposed by the COVID-19 restrictions, we still believe that zero harm among mineworkers is possible. The Inspectors continue working with all stakeholders to implement initiatives to protect the occupational health and safety of mineworkers, in accordance with the MHSA.

It is of great concern that mines continue to report on the fatalities of mineworkers due to occupational-related accidents and diseases. Prior to COVID-19, working with mining companies and labour unions, the DMRE made significant strides in improving the health and safety of mine employees, as well as the sustainable downward trend in occupational diseases, injuries and fatalities over the years.

Regrettably, the pandemic did not spare the mining sector from its ravages, and based on statistics, the impact of COVID-19 in the mining sector, like many sectors, is glaring. Our heartfelt condolences are extended to the families of all the workers in the mining and energy sectors who lost their lives to COVID-19, and we wish a speedy recovery to those who have tested positive.

The Central and Coastal regional operations will strive to improve visibility at the mines as a proactive measure to enforce compliance at the mines. Strategies will focus on increased inspections, audits and investigations, with the aim of revealing system failures in terms of the MHSA. Where applicable, appropriate enforcement action will be taken if necessary. Inspectors will continue to monitor compliance and demand all mines to implement the following:

- Engineering controls to reduce exposure levels to airborne pollutants
- Enforcement of the Buy Quiet Policy to ensure that employees are not exposed to high levels of noise
- Ensuring that national HIV and TB strategies are implemented to achieve UNAIDS's 90:90:90 targets, especially because the mines had the highest number of reported cases of occupational diseases during the period under review
- Implementation of effective strategies to ensure the elimination of employee over-exposure to health hazards and mining accidents that lead to injuries and fatalities

On 25 November 2021, stakeholders in the mining sector convened an urgent summit, Mine Safe 2021, to address continued increases in the number of fatalities affecting mineworkers. During Mine Safe 2021, all stakeholders in the sector recommitted themselves to working towards the elimination of fatalities, injuries and occupational diseases in the South African mining industry, in pursuit of zero harm, to ensure that each employee returns home unharmed every day.

According to all stakeholders, the urgency of interventions to address health, safety and – more specifically – the continued loss of life of employees in the mining sector remains paramount. The industry was concerned and shocked by the continued regression and increase in the number of deaths caused by mining accidents. This was the second consecutive year of a regression in fatalities. The mining stakeholders need to work together to establish effective measures that will urgently address the unacceptable situation of increases in the number of deaths and mine injuries in the sector.

To achieve a step change towards transforming health and safety in the mining sector, stakeholders of the DMRE, namely the Minerals Council South Africa (MCSA), the MHSC, the MQA and other professional associations, are committed to taking full accountability to address the challenges besetting the mining sector. Strategies were agreed upon by all stakeholders to prioritise and curb FOG and transport-related accidents, in particular, which continue to be the leading sources of fatalities.

Tangible outcomes of the Mine Safe 2021 Conference included agreements on the implementation of the following actions:

- Treating all employees with respect, trust and dignity
- Assisting each other, asking for help and providing guidance to maintain a healthy and safe environment
- Building on existing relationships by earning the trust of other stakeholders, honouring agreements and upholding commitments, while engaging respectfully with each other
- Adopting technologies that include mine modernisation and Fourth Industrial Revolution (4IR)-enabled innovations
- Adopting leading safety practices, such as collision-prevention systems, addressing transport-related risks and mining with nets and bolts to address FOG accidents
- Adopting production technologies such as faster rock drills to shorten the mining cycle, drilling outside the box cut, which reduces risks to operators and promotes zero harm, and production by enabling safe behaviour
- Engaging in priority actions to promote COVID-19 vaccinations to support the physical and mental health of employees, and reduce disruptions to operations. Both these actions will enable all stakeholders to have a renewed focus on occupational safety.
- Implementing the five-year R46-million investment in the implementation of a FOG action plan launched at the MCSA National Day of Health and Safety in Mining held in July 2021
- Implementing a holistic, risk-phased plan on collision-prevention systems with ecosystem readiness for industry-wide adoption
- Adopting safe mining practices, including the use of safe equipment to favourably respond to the divergent challenges experienced by some mining operations. Examples of these challenges are diminishing ore reserves, ageing infrastructure, unfavourable commodity prices, and travelling long distances underground to areas of work.

- Conducting a statistical analysis of all fatalities over the last decade using leading international practice methodologies and proposing an action plan to effectively eliminate all other risks through modern training methods, for example
- The urgent implementation of an independent assessment study of the Culture Transformation Framework (CTF) priority pillars by the MHSC. The aim of the assessment should be to identify leading practices that could be promoted. It should furthermore identify the gaps that still need to be addressed.
- The transformation of the health and safety culture should focus on the following, among others:
  - Health and safety campaigns
  - Visible felt leadership (VFL)
  - Zero tolerance for unsafe behaviour
  - Extra vigilance by all workers
  - Strategies to ensure that all mineworkers have the knowledge, skills and support to exercise their rights to withdraw or refuse to work under dangerous conditions (as per the DMRE guideline)
  - Effective supervision by all responsible mine personnel to prevent accidents and create a no-blame culture to learn and grow from incidents, for example, by holding "days of learning"
- Ensuring that there are adequate consultations at the mine level since these interactions between management, the unions and the employees will aid in determining effective measures to enhance health and safety. Furthermore, these consultations and engagements will enable a relationship of trust and goodwill among all stakeholders.

7.1.1 Gauteng

Gauteng is the economic and administrative hub of South Africa. It is divided into five districts, characterised by urban, peri-urban, agricultural, vast industrial and mining areas. The region's population is the largest in the country, resulting in an increased need for resources such as land, electricity and water, resulting in communities encroaching into mining lease areas.

The five municipal districts of Johannesburg, Ekurhuleni, Tshwane, Sedibeng and Merafong have numerous mining activities in various stages of life of mine. The following commodities are predominantly mined:

- Johannesburg mainly has rehabilitation and reclamation projects with slime dumps, minimal gold, waste rock crushing for aggregate and sand.
- Ekurhuleni has vast commodities, including gold deposits, the rehabilitation of slime dumps, coal mining in the far East Rand, aggregate, sand and clay.
- Tshwane predominantly mines building sand, aggregate, clay, kimberlite diamonds and alluvial diamonds. Iron ore and fluorspar are mined in the far north, and high-quality quartzite silica deposits are mined in the south.
- Sebideng has a high number of porcelain and refractory clay mines, as well as sand, aggregate and coal deposits.
- Merafong is the bedrock of gold mining, uranium extraction, slime dump reclamation, waste rock crushing and clay mining for brickmakers.

7.1.1.1 Topical issues and matters of interest

Gauteng is still facing safety challenges within the mining industry due to the deep level of its underground mining. This results in seismicity, rock fall, material handling, explosions, working from heights, TMM, RBE, transport and machinery accidents.

Quartzite rock has a high silica content and emits dust during blasting operations since it is mostly done in confined spaces underground with high temperatures and high noise emission. The health challenges caused by the blasting of quartzite rock have a negative impact on the wellbeing of employees, resulting in the infection of employees' respiratory systems. It may lead to pulmonary diseases.

The land rehabilitation programme can include, among others, the clearing of existing historical mining remnants to give way to developmental activities such as the restoration of the historical flora and fauna, housing, industrialisation, recreational facilities and cemetery development.

Surrounding communities are affected by the activities of surface mining remnants, for instance, high dust emission, air pollution, contaminated ground water from flooded mines, land degradation and soil pollution during windy seasons. Underground environmental conditions that affect the surrounding communities include, among others, the presence of gases, heat, fire, noise and the emission of dust during blasting activities.

Load shedding had a negative impact in the mining industry. During the period of power disruption, criminals target mines by stealing electrical cables. Mining activities or production is also affected as it is difficult to communicate with employees in their workplaces. It also becomes difficult to cool down the underground workings, and there is a possibility of flooding of the escape routes into secondary outlets during load shedding.

The mining industry embarked on the development of independent power production (IPP) projects to supplement the energy requirements within the respective mining areas, with reference to notable solar farm installations and limited hydropower production plants in underground mines.

Deepening programmes and projects have been initiated by Sibanye Stillwater Kloof Division, Gold Fields South Deep lateral development, Harmony Mponeng mine and Gold1.

The COVID-19 community outreach programmes and vaccination sites, provided by different mining houses to the surrounding communities, have benefited employees and communities.

7.1.1.2 Inspections and audits

CATEGORY	INSPECTIONS	AUDITS
Planned	1 120	40
Actual	1 332	45
Percentage compliance	119	113

7.1.1.3 Total accidents reported

Fatal accidents	**14**
> 14-day accidents	401
1- to 13-day reportable accidents	137

7.1.1.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	98	2	100
Completed	98	10	108
Percentage completed	100	500	108

7.1.1.5 Disaster-type accidents or incidents

No disaster-type accidents were reported. However, near-disaster accidents occurred in Gauteng:

- On Sunday, 19 September 2019, at approximately 04:15, three employees at Thuthukani shaft (Sibanye-Stillwater) were exposed to high temperatures and were fatally injured. Some 29 MRS brigades' men were also exposed to these high temperatures while they were searching for a missing Electrical Foreman, who was part of the team that was tasked to fix faulty electrical cables at 35/53 X/Cut.
- At approximately 09:45 on Thursday, 15 April 2021, a seismic event of 2.2 magnitude occurred injuring 10 employees at Ya Rona shaft. One Shift Boss, one Special Team Leader, one Team Leader, two Winch Operators and five Rock Drill Operators sustained multiple injuries.

7.1.1.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
70	41

7.1.1.7 Administrative fines

No administrative fines were recommended by the PI.

7.1.1.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	10	10	100
Mining and prospecting rights	16	16	100
Closure certificates	18	18	100
Environmental management	5	5	100
Complaints, exemptions, commissions and approvals	80	80	100

7.1.1.9 Strategies adopted for improving the status quo

- Health and safety engagements within the bilateral and tripartite formations include promoting the attendance of regional tripartite forums, discussions on health, safety and hygiene milestones, and engagements with executive and management teams, as well as labour representatives and health and safety committees.
- Promoting wellness, as well as health and safety campaigns.
- Promoting annual health and safety days, the attendance of and participation in global and national campaigns, such as World TB Day, HIV and AIDS Day, observing gender-based activism days, attending of Christmas break safety campaigns, and participation in regular VFL and WiM programmes.
- Conducting inspections that focus on physical conditions and underground challenges, environmental conditions, the maintenance of infrastructure, medical surveillance, COVID-19, occupational diseases, leading practises and clean mining.
- Conducting audits focusing predominantly on health and safety systems, including the health and safety planning regime, the staffing and manning of labour, the provision of competent supervisors and management capabilities, service department reports and the implementation of recommendations, the continuous review of standards, policies and procedures, as well as promoting third-party inspections and audits.
- Illegal mining and plant invasion by criminals present challenges relating to infrastructure and equipment sabotage, disruptions in ventilation, water, compressed air, fire and the theft of explosives.

7.1.2 KwaZulu-Natal

KwaZulu-Natal is bordered by Lesotho, Swaziland and Mozambique. Most mineral resources are found in rural areas in the region, where land is owned by rural communities and structured tribal authorities. Mining in these areas often gives rise to challenges, ranging from corporate social responsibilities to health and safety.

The mineral resources consist mainly of sand and aggregates, where most mining operations are in those commodities. Ilmenite, rutile and zircon are mined on a large scale for their titanium and zirconium contents from the aeolian beach dunes in the northern parts of the province. The region is also rich in other minerals, such as aluminium, anthracite, limestone, shale and calcitic marbles. The coal mined in the province is of a high quality and is mined through both open-cast and underground mining.

7.1.2.1 Topical issues and matters of interest

The region has been faced with both macro-economic and social impact factors, presented by the unique set of challenges inherent in operating mining activities in host residential communities in the province. Criminal activities, ranging from shooting incidents to explosions, have significantly compromised mine security measures and the

safety of mining operations. The region recently noted the recurrence of underground sit-ins as a result of payment and benefit disputes between employees and employers.

Stakeholders are encouraged to find alternative ways to deal with these challenges without compromising the health and safety of their employees. The region also faces a challenge in retaining qualified engineers at operations since engineering-related accidents increased during the period under review. The probability of the two elements being related cannot be ignored.

The DMRE continues to engage with employers on strategic measures to be taken in ensuring that mines are well positioned to deal with engineering-related challenges going forward.

7.1.2.2 Inspections and audits

CATEGORY	INSPECTIONS	AUDITS
Planned	528	44
Actual	519	44
Percentage compliance	98	100

7.1.2.3 Total accidents reported

Fatal accidents	**1**
> 14-day accidents	23
1- to 13-day reportable accidents	7

7.1.2.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	3	1	4
Completed	3	1	4
Percentage completed	100	100	100

7.1.2.5 Disaster-type accidents

No disaster-type accidents were reported.

7.1.2.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
12	21

7.1.2.7 Administrative fines

No administrative fines were recommended by the PI.

7.1.2.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	6	6	100
Mining and prospecting rights	98	98	100
Closure certificates	2	2	100
Environmental management			
Complaints	11	2	18

7.1.2.9 Strategies adopted for improving the status quo

As a region, KwaZulu-Natal is encouraged by the demonstrated efforts and commitments of its stakeholders towards a safer mining environment. During the period under review, visibility through regional inspectors remains critical and has yielded positive results thus far.

The collaborative effort by all stakeholders in dealing with the prevalence of COVID-19 at its operations was rewarding. The regional vaccination campaigns, in cooperation with the DoH, resulted in 86% of the 11 208 workers being vaccinated, and a 96% recovery rate in reported COVID-19 cases for the period under review.

The province is encouraged by the positive response from all stakeholders in dealing with the challenges presented by the virus. The region will continue to support such efforts as the goal of zero harm remains a priority. The collaboration with all stakeholders in the region has proven to be progressive in saving lives.

7.2 Regional operations: Central, Coastal and North-eastern regions

Regional Operations: Central, Coastal and North-eastern regions consists of the Eastern Cape, the Free State, Limpopo and Mpumalanga. It must be noted that this is the first report that includes the Eastern Cape. 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 in these regions. There were approximately 216 000 employees in the Eastern Cape, Free State, Limpopo and Mpumalanga in 2021, which is a minor decrease on 2020.

Occupational health performance

A total of 738 cases of occupational diseases were reported in these regions in 2020, compared to 667 cases in 2021. There was a decrease of 10%, or 71 cases, in the number of cases of occupational diseases reported during this period.

The main occupational diseases reported by mines in these regions were PTB, with 315 cases in 2021, compared to 327 in 2020; NIHL, with 201 cases in 2020, compared to 200 in 2020; and silicosis, with 94 cases in 2021, compared to 113 in 2020. There was a 37% decrease in CWP cases, from 18 in 2020 to 11 in 2021. PTB continues to be the highest reported occupational disease in these regions. There was no significant decrease in the number of NIHL cases between 2020 and 2021.

The mining companies must improve their respective case findings and procure mine equipment that generates less noise and dust levels to ensure compliance with legislation. Programmes should be implemented to ensure that employees that are diagnosed with TB complete their treatment. It must be aligned to the national UNAIDS 90:90:90 strategy for TB.

The regions are monitoring compliance to the lockdown levels and the DMRE's guideline on COVID-19. The Eastern Cape, Free State, Limpopo and Mpumalanga reported 62, 4 713, 14 650 and 14 821 positive cases as at 31 March 2021, respectively. The total number of positive cases was 34 246 and the overall recovery rate was at 99.03%. While regrettably, the corresponding deaths for each of these regions were 0, 76, 108 and 129, respectively. The total number of COVID-19 related deaths was 313.

A total of 97 367 employees were vaccinated during the period under review, which corresponds to 65% of all employees being vaccinated. This was well below the national average because of the low vaccination numbers in the Eastern Cape and Mpumalanga. The Free State had the highest vaccination rate at 86%. Mine management and union leadership will have to embark on campaigns to encourage employees to get vaccinated since vaccination is the first line of defence against COVID-19.

Occupational safety performance

There were regrettably 23 fatalities in 2021, compared to 26 in 2020. This corresponds to a 12% decrease year on year. The fatalities in the Eastern Cape, Free State and Limpopo had a decrease of 36% and 14%, respectively. Mpumalanga had an increase from eight to 10 fatalities during the period under review, which corresponds to a 25% increase. The analysis of fatalities indicated that the majority of fatalities was due to T&M equipment, and general and FOG accidents. It is commendable that there was a 67% reduction in FOG incidents in the year under review.

A total of 532 injuries was reported in 2021, compared to 457 in 2020. This corresponds to an increase of 16%. The major contributors for these injuries were general, T&M equipment and FOG, which had 281, 96 and 68 incidents, respectively. There was a significant increase in general-type injury accidents of 27%, from 222 in 2020 to 281 in 2021. The Free State, Limpopo and Mpumalanga had a significant increase in general-type accidents, which include the manual handling of material, drowning and inundation, and slipping and falling.

The three provinces successfully implemented the occupational health and safety (OHS) improvement strategy action plan to enforce compliance with health and safety measures. The strategy addresses the issue of unacceptable loss of life and injuries at mines by emphasising roof fall accidents, T&M-related accidents and investigations.

Overall, there were mines that performed well on safety and did not have any fatalities during the period under review. These mines are true examples that zero harm can be achieved in the sector, and all stakeholders must work together on the journey to zero harm.

Topical issues and matters of interest

During the period under review, a number of complaints were received due to mines blasting close to communities and township developments. The complaints normally include damages to properties due to ground vibration, air blasting and dust.

The Legal Knowledge examinations in June and November 2020 and 2021 were written by 83 and 141 candidates, respectively. Similarly, the Plant Engineering examinations were written by 105 and 193 candidates, respectively. The significant difference in the number of candidates can be attributed to the fact that there were no examinations in June 2020 due to the COVID-19 pandemic restrictions. Approximately 70 registered candidates did not write any of the subjects. In 2021, 41 candidates passed the Legal Knowledge examinations and 36 candidates passed the Plant Engineering examinations. The corresponding pass rate for the two subjects was 29% and 19%. This is the lowest pass rate for Plant Engineering for the past five years.

The Central and North-eastern regional operations will continue to embark on zero tolerance for non-compliance through the implementation of the OHS improvement strategy action plan. This will be achieved by doing the following:

- Convene meetings with the Chief Executive Officers (CEOs) of mining companies, professional associations in the mining sector and the labour leadership to ensure that health and safety strategies are implemented.
- Implement the guideline for the compilation of a mandatory COP on the Mitigation and Management of the COVID-19 outbreak.
- Focus on strategies to reduce noise levels, as well as exposure levels to respirable crystalline silica by implementing effective engineering controls.
- Focus on mines with employees in the HEG A exposure group, ensuring that these companies develop engineering controls to reduce the occupational exposure levels of those employees. This will also lead to the withdrawal of employees who are over-exposed to noise and silica dust.
- Improve TB case findings, and encourage and monitor employees to complete their treatment courses.

Illegal mining

The DMRE's Director-General and the Mpumalanga Provincial Commissioner established a task team to address the scourge of illegal mining in Mpumalanga, focusing on precious metals and coal mining. Consequently, the Mpumalanga Illicit Mining Stakeholder Forum was suspended to prevent a possible overlap or duplication of functions and resources.

The stakeholder forum consists of the DMRE, the Department of Home Affairs (DHA), the Department of Justice and Constitutional Development (DoJ&CD), the Directorate: Priority Crime Investigation (DPCI), the South African Police Service (SAPS): Barberton, SAPS Crime Intelligence, the State Security Agency (SSA), local municipalities, community policing forums, organised labour and the following mining companies: Galaxy Gold Reefs Mining Gold, Barberton Mines, Evander Gold Mines, Transvaal Gold Mines Estates and Vantage Goldfields.

7.2.1 Eastern Cape

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

There are approximately 400 registered mining operations in the Eastern Cape that employ over 2 000 employees. Operational mining takes place in hard rock quarries, as well as many gravel and clay quarries that provide the necessary materials for the construction industry. There continues to be much activity through the region in the repair and upgrading of roads with materials mined from many borrow pits in the region. The underground coal mining operation near Indwe remained unproductive during the period under review due to a change of ownership. Initiatives are underway to recommence this coal-mining operation.

A total of 68 AMRs were submitted in 2014, 61 were submitted in 2015, 64 were submitted in 2016, 66 were submitted in 2017, 62 were submitted in 2018, 56 were submitted in 2019, 58 were submitted in 2020 and 62 were submitted in 2021. During 2018, one case of occupational asthma and one case of PTB were reported, and in 2019, one case of PTB and one case of silicosis were reported. No diseases were reported during 2020 and 2021, and one case of PTB was reported during 2021. All mine employees were exposed to awareness programmes from the DoH with regard to HIV and TB, as well as the promotion of health issues from the OMPs and the occupational health practitioners.

Captured data for average airborne exposures for the period under review indicated 12.8%, 23.4% and 63.8% for HEGs A, B and C, respectively. Exposure to noise was 6.5%, 27.4% and 67.1% for HEGs A, B and C, respectively.

With regard to occupational safety, no fatalities were reported during 2020 and 2021. Four reportable injuries were recorded in 2020, compared to three in 2021.

7.2.1.1 Topical issues and matters of interest

The Nelson Mandela and Buffalo Metropolitan areas were declared COVID-19 "hotspot" areas in 2020. As at 31 March 2022, 62 mineworkers were reported to have contracted the disease in the Eastern Cape mining sector, with a 100% recovery rate.

The underground coal mine located near Indwe continues to remain closed as a consequence of ownership issues. Renewed interest is noted in the Molteno coalfields and various minerals in the Mt Ayliff area.

7.2.1.2 Inspections and audits

CATEGORY	INSPECTIONS	AUDITS
Planned	234	32
Actual	312	47
Percentage compliance	133	147

7.2.1.3 Total accidents reported

Fatal accidents	**0**
> 14-day accidents	3
1- to 13-day reportable accidents	10

7.2.1.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	3	0	3
Completed	3	0	3
Percentage completed	100	0	100

7.2.1.5 Disaster-type accidents

No disaster-type accidents were reported.

7.2.1.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
9	16

7.2.1.7 Administrative fines

No administrative fines were recommended by the PI.

7.2.1.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	14	14	100
Mining and prospecting rights	169	169	100
Closure certificates	10	10	100
Environmental management	57	57	100
Complaints	5	3	60

The two outstanding complaints were received in March 2022 and will be investigated and completed within the prescribed time frame of 30 days.

7.2.1.9 Strategies adopted for improving the status quo

- While the COVID-19 pandemic restricted gatherings under the DMA, one virtual Regional Tripartite Forum was held during each quarter. The participation of stakeholders was disappointing.
- Several community meetings were attended with the Mineral Regulation Branch of the DMRE to discuss issues related to mining, especially concerns related to blasting operations. Investigations into community complaints relating to blasting operations led to the conclusion that the concerns are Social and Labour Plan related.
- Virtual management meetings were attended.
- Inspectors performed more inspections due to gatherings and/or group audits being prohibited due to the COVID-19 outbreak.
- The posts for Inspector of Mines and Occupational Medicine Inspector were advertised during the period under review. However, these posts were still vacant as at 31 March 2022.

7.2.2 Free State

The total labour complement in the Free State is 30 635. The gold sector is the largest employer at 26 536 employees. The remaining labour is from two coal mines, one diamond mine, crusher operations and sand operations. There are 58 operational mines in the province. The mineral resource is diminishing and no known new exploration is being carried out.

7.2.2.1 Topical issues and matters of interest

Three diamond mines and two gold operations in the region are pending closure. Reports were received of employees who went on strike in three operations at one mine in the region.

COVID-19 vaccination sites were established at the mines and the vaccination drive is in full force as more than 86% of mine employees have been vaccinated.

7.2.2.2 Inspections and audits

CATEGORY	INSPECTIONS	AUDITS
Planned	768	44
Actual	828	44
Percentage compliance	108	100

7.2.2.3 Total accidents reported

Fatal accidents	**10**
> 14-day accidents	205
1- to 13-day reportable accidents	133

7.2.2.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	183	4	187
Completed	183	5	188
Percentage completed	100	125	101

7.2.2.5 Disaster-type accidents

On Friday, 3 December 2022, three employees were fatally injured when a runaway LHD driven by an unlicensed fitter artisan lost control in a decline in one of the underground mines. The fitter artisan was one of the employees that was fatally injured.

7.2.2.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
44	35

7.2.2.7 Administrative fines

No administrative fines were recommended by the PI.

7.2.2.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	16	16	100
Mining and prospecting rights	99	99	100
Closure certificates	12	12	100
Environmental management	29	29	100
Complaints	9	9	100

7.2.2.9 Strategies adopted for improving the status quo

- Collaboration between organised labour, the state and employers with challenges related to health and safety takes place through joint inspections, audits, investigations and involvement in inquiries.
- Quarterly meetings were held with senior executives, including senior managers of companies to present and evaluate their health and safety strategies, as well as the implementation of these strategies.
- Supervisors are involved in the lower-level training and development of these strategies.
- Ongoing focused inspections and audits take place at the mines.
- The ongoing issuing of relevant instructions for non-compliance takes place at the mines.
- The appointments of managers are suspended if they are found negligent, including the suspension of certificates of competency.
- Ongoing use is made of tripartite structures and subcommittees to share best practices and engage in challenges in different fields.

7.2.3 Limpopo

A wide variety of minerals are mined in Limpopo, with coal, copper, chrome and platinum being the main commodities. Numerous base minerals are also mined, and there are many crushers and quarries in the region.

The region reported a reduction in the number of fatalities, while a slight increase was noted in the number of reportable injuries. There was a significant reduction in the cases of occupational diseases reported in 2021, compared to 2020.

7.2.3.1 Topical issues and matters of interest

The illegal mining of chrome and gold remains a challenge in the region and has spread to Malamulele and Muyexe around Giyani since the recent discovery of gold in that area.

The COVID-19 pandemic negatively affected mines in the area, resulting in the closure of a few mines.

7.2.3.2 Inspections and audits

CATEGORY	INSPECTIONS AND AUDITS
Planned	844
Actual	794
Percentage compliance	94.1

The frequency of inspections and audits is determined by the analysis of accident statistics at mines, and instructions issued over the period. The inspections and audits focused on measures to eliminate fatalities and injuries. COVID-related matters were also addressed during these inspections and audits.

7.2.3.3 Total accidents reported

Fatal accidents	**6**
> 14-day accidents	133
1- to 13-day reportable accidents	

It is encouraging to note that there was a decrease in the number of fatalities reported during the period under review. It is disheartening to note the increase in the number of reportable accidents, where 133 injuries were reported during this period. This can be attributed to the reduced number of employees at work during the 2020 lockdown period, which resulted in fewer numbers being reported. Since the easing of the lockdown regulations, more employees came back to work and more accidents were noted.

A total of 47 cases of occupational diseases were reported during 2021, compared to 69 in 2020. The most common occupational diseases reported continue to be PTB, followed by NIHL. It is concerning to note that additional measures were not introduced to assist in the reduction of these two diseases.

At the time of reporting, the region had reported 14 650 confirmed COVID-19 cases, with 108 deaths. Eight active COVID-19 cases were reported, and 14 534 persons recovered.

7.2.3.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	89	5	94
Completed	89	5	94
Percentage completed	100	100	100

Mines are encouraged to ensure that the SAMRASS forms are duly completed, as required by the regulations.

7.2.3.5 Disaster-type accidents

No disaster-type accidents were reported.

7.2.3.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
44	20

A total of 44 section 54 notices were issued, with 142 transgressions identified, resulting in 181 instructions being issued. Twenty section 55 notices were issued, where 41 transgressions were identified and 57 instructions issued.

Section 54 and section 55 instructions were issued on issues relating to the following:

- Safe declaration books or unsafe areas declared safe
- FOG or substandard support in face areas and travelling ways
- Drilling
- Inadequate explosives control
- Winches (substandard rigging, signalling arrangements)
- TMM
- Conveyor belt installations (fire precautions were inadequate)
- Disregarding rock engineering reports and recommendations
- Legal appointments and supervision
- Predetermined risk assessments
- COPs not adhered to
- Medical surveillance

- Inadequate ventilation and illumination
- Dust control
- PPE not issued

Most section 54 instructions issued resulted in parts of working places, activities or equipment being stopped until remedial measures were put in place and presented to the PI. Most deviations identified reflect on the level of discipline in the workplace, where there is a high level of non-adherence to mine standards and procedures.

7.2.3.7 Administrative fines

No administrative fines were recommended by the PI.

Even though no administrative fines were imposed during the period under review, there was a noticeable improvement when work was stopped.

7.2.3.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	32	32	100
Mining and prospecting rights	152	152	100
Closure certificates	40	40	100
Environmental management	7	7	100
Complaints	5	5	100

In addition, 88 mining permit applications were processed and finalised within the prescribed time frames.

7.2.3.9 Strategies adopted for improving the status quo

The region believes that the visibility of inspectors, through regular inspections and audits, is a proactive way of ensuring compliance with health and safety standards. The strategy is to conduct purposeful inspections and audits to identify any failure and weaknesses in the health and safety systems of the mines. The region will continue to analyse the outcomes of the inspections and audits conducted to improve the quality of activities. Where non-compliance and substandard conditions are observed, appropriate enforcement actions will be taken.

Cooperation between mine employers, mine employees, communities affected by mining operations and the MHSI will continue to be encouraged to ensure that there are effective and efficient ways and strategies in place to deal with health and safety related to mining operations in the region.

Mines are encouraged to continue developing and implementing strategies and measures to deal with occupational diseases. The Inspectorate continues to support efforts and initiatives to combat TB-HIV/AIDS and COVID-19 through various interventions.

7.2.4 Mpumalanga

Mpumalanga is surrounded by Gauteng, KwaZulu-Natal, the Free State and Limpopo, as well as the neighbouring countries of Mozambique and Swaziland. A wide variety of minerals is mined in Mpumalanga, with coal as the main commodity. The province also has many brickworks, crushers and quarries.

7.2.4.1 Topical issues and matters of interest

During the period under review, the region identified that general accidents are still a major contributor to reportable accidents. A high number of FOGs and TMM accidents, particularly at coal mines, is still a great concern.

The activities of the region will focus on the prevention of FOG accidents, slope failures, as well as transport in mining and machinery-related accidents, with the emphasis on the enforcement of the new regulations, and the implementation of new COPs and directives.

Community complaints that emanate from the blasting operations of mines in close proximity are still continuing to be a challenge, and mines are encouraged to follow their respective procedures to manage these complaints.

There was an increase in the reporting of underground coal mine conveyor belt fires and general underground fires. Mines are encouraged to ensure compliance with the relevant directives issued by the DMRE. Mines are also encouraged to revisit their respective risk assessments to determine areas of high potential fire risk at their mines.

It is evident from the ageing infrastructure at underground coal mines and hard rock mines that the underground coal mines are running out of coal reserves; hence the mining of remnants and opening up of sealed-off areas. Mines are encouraged to ensure that mining operations continue to be done with adherence to all health and safety standards, as well as compliance to all relevant directives issued by the MHSI.

The COVID-19 vaccination rate of mine employees is still low. Mines are urged to continue to encourage their employees to be vaccinated.

Illegal mining (precious metals, open-cast coal, scrap metal and copper) increased, and mines are encouraged to participate in all relevant structures put in place to curb the increase of all forms of illegal mining, including the protection and securing of mine employees from all types of illegal mining activities.

It has been noted with concern that some mines do not have integrated TB and HIV/AIDS programmes in place. Mines are encouraged to have such programmes in place. The on-site wellness programmes remain a challenge to the small mines. These mines are encouraged to use the local municipal clinics where possible. Occupational diseases such as PTB and CWP are still reported in high numbers. In accordance with the 2024 MHSC occupational health milestones, mines are encouraged to improve the current preventive measures.

Mines are audited on the implementation of COPs. The Inspectorate will endeavour to ensure that mines put strategies in place to curb the increasing number of cases of PTB and CWP among employees in the region.

In terms of exposure to airborne pollutants and noise, there is still a sizeable number of employees who are still being exposed to airborne pollutants in HEG A and HEG B. These cases will be investigated according to the expectations of the MHSA.

Occupational hygiene workshops will continue to be held, and the region will continue to work with all stakeholders to assist with this issue. Mines are encouraged to implement strategies to reduce over-exposure to airborne pollutants. Mines are also advised to adopt current leading best practices available in the industry to reduce over-exposure to airborne pollutants.

7.2.4.2 Inspections and audits

CATEGORY	INSPECTIONS	AUDITS
Planned	1 280	44
Actual	1 303	12
Percentage compliance	102	27

7.2.4.3 Total accidents reported

Fatal accidents	**10**
> 14-day accidents	184
1- to 13-day reportable accidents	29

7.2.4.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	25	6	31
Completed	25	3	28
Percentage completed	100	50	90

7.2.4.5 Disaster-type accidents

On Tuesday, 26 October 2021, the control room at Sasol Bosjesspruit Colliery received a call informing them of an inrush of water in section 90, coming from an old panel that the continuous miner had holed into. During this event, three employees were unaccounted for. MRS was called to assist, and the three missing employees were located and brought to the surface. They were declared deceased by suspected drowning.

7.2.4.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
50	26

7.2.4.7 Administrative fines

No administrative fines were recommended by the PI.

7.2.4.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	2	2	100
Mining and prospecting rights	262	262	100
Closure certificates			
Environmental management			
Complaints			

7.2.3.9 Strategies adopted for improving the status quo

The region 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 identifying system failures in terms of mine health and safety, and that the appropriate enforcement actions are taken if necessary. Mines are encouraged to revisit their respective risk assessment and management procedures to ensure that their safety management strategies align with their risk ratings. The adoption of leading practices and technological advancement in the mines is also key in achieving the goal of zero harm.

7.3 Regional operations: Western and Coastal regions

The Chief Directorate: Western and Coastal regions comprises the Northern Cape, North West: Klerksdorp, North West: Rustenburg and the Western Cape. The main commodities mined are PGM, iron ore, diamonds, manganese, chrome, gold, granite, dimension stones, sand and aggregates. Various mining methods are employed in these four regions, such as conventional and mechanised underground mining, open-cast mining, block caving, sub-level open-stoping and off-shore mining.

Occupational health performance

Several mineworkers were still over-exposed to various occupational hygiene stressors, such as thermal stress, noise and airborne pollutants. Over-exposure to airborne pollutants resulted in occupational lung-related diseases, such as silicosis among mineworkers.

Prolonged over-exposure to high noise levels has resulted in cases of NIHL among mineworkers. A regression was noted in NIHL cases from 393 in 2020 to 498 in 2021.

A total of 644 cases of occupational diseases was reported in these regions in 2021, compared to 491 in 2020. This sadly translated into a 31% regression in cases of occupational diseases reported. The main occupational diseases reported nationally in 2021 were PTB (566 cases), silicosis (498 cases) and NIHL (199 cases). There was a slight improvement in the reported cases of silicosis, from 212 in 2020 to 199 in 2021.

North West: Rustenburg reported 394 cases of occupational diseases, which is the highest number reported in one region, and amounts to 28% of the total national cases of occupational diseases in the South African mining sector. This is mainly because most mineworkers in the country work in that region.

Occupational safety performance

These four regions regrettably reported 32 fatalities in 2021, which was a significant regression from 18 fatalities reported in 2020. The major mine fatality regression occurred in North West: Rustenburg and the Northern Cape, which reported 21 and six fatalities in 2021, compared to 12 and two fatalities in 2020, respectively.

A total of 1 522 injuries were reported in 2021, compared to 976 in 2020. This translates to a 36% year-on-year increase in injuries during the period under review. In dealing with the abovementioned fatalities and injuries, the Western and Coastal regions conducted 27 fatal inquiries and 140 accident investigations.

Enforcement

During the period under review, the Western and Coastal regions conducted 2 600 inspections and 152 audits at the mines. During these mine inspections and audits, inspectors issued a minimum of 316 section 54 notices and 310 section 55 notices to safeguard mineworkers from dangerous conditions, occurrences and practices that posed a danger, or had the potential to pose a danger to their lives. The notices issued under section 54 of the MHSA deal with dangerous conditions at mines, while those issued under section 55 address non-compliance with the provisions of the MHSA.

Strategies adopted for improving the status quo

The following are some of the strategies that were adopted to improve health and safety performance at mines:

- Engagements with the CEOs of mining companies on health and safety improvement plans.
- The MHSI Executive Committee (EXCO)'s engagements with regional PIs and other inspectors to encourage them to administer the provisions of the MHSA without fear or favour.
- Filling vacancies as soon as possible to combat the high staff turnover in these regions.
- Withdrawal of legal appointments in suspected cases of dereliction of duty or gross negligence.
- Encouraging mines to adopt leading health and safety practices, and technologies.
- Monitoring compliance to applicable COVID-19 protocols at mines.

7.3.1 Northern Cape

The Northern Cape is the largest of South Africa's nine provinces in terms of area and the smallest in terms of population. The province covers a total area of 372 889 km^2 with a population of 1 237 217, according to the census of 2011 to 2015. Mining in the region is dominated by open-cast mines. These mines require machines to haul waste and ore to the dumping sites and plants respectively. Because machines are used in most of the mining operations, accidents in the region are mostly machinery related.

The region hosts eight underground operations. The dominant mining method used at these mines is bord and pillar, and sub-level open caving. Mines that use these methods use machines for ore and waste transportation, and are not as labour intensive as the gold- and platinum-mining operations in other regions. Minerals that are mined in the region are manganese, iron ore, diamonds, base metals, rose quartz, gypsum, tiger's eye, granite, feldspar and salt.

7.3.1.1 Topical issues and matters of interest

The region recorded six fatalities during the period under review, of which 83% were machinery related and 17% were mining related. Approximately 33% of accidents that occurred were either from new small-scale miners or from small-scale diamond diggers. The remainder of the accidents occurred at well-established operators. Small-scale miners and diggers are highly affected by the commodity price volatility. These operations close when there is a fluctuation in commodity prices and only re-open when commodity prices increase. Most of these operations re-open abruptly and neglect the systematic phased approach in opening their operations safely.

The region established forums to discuss trends and inspection findings as part of education and information-sharing with industry role-players. Information gathered during inquiries and investigations is also shared at these forums.

7.3.1.2 Inspections and audits

CATEGORY	INSPECTIONS	AUDITS
Planned	288	48
Actual	304	48
Percentage compliance	106	100

7.3.1.3 Total accidents reported

Fatal accidents	**6**
> 14-day accidents	54
1- to 13-day reportable accidents	13

7.3.1.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	24	2	26
Completed	24	2	26
Percentage completed	100	100	100

7.3.1.5 Disaster-type accidents

No disaster-type accidents were reported.

7.3.1.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
32	28

7.3.1.7 Administrative fines

No administrative fines were recommended by the PI.

7.3.1.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	37	37	100
Mining and prospecting rights	179	179	100
Closure certificates	13	13	100
Environmental management	37	37	100
Complaints	25	25	100

7.3.1.9 Strategies adopted for improving the status quo

Key to the strategies that the region adopted is stakeholder participation and the recognition of those that continuously strive to ensure that mineworkers return to their families unharmed. The region collaborated with the provincial government through the Provincial Joint Operations and Intelligence Structure (PROV JOINTS) to address the risk posed by COVID-19 to employees and the wider community. PROV JOINTS workshops were held with the DoH to assess the readiness of the regional mining industry measures to deal with the COVID-19 pandemic.

The working relationship between all stakeholders remains core to the regional strategies. Regional tripartite meetings continue with the mines in the Calvinia/Springbok area, as well as the Kimberley area. The region will also continue with safety campaigns in line with the regional risk-based approach.

Combined with the above strategies, the region continues to enforce compliance with the MHSA with the purpose of improving health and safety conditions at mines through the implementation of the following measures:

- Profile the mines through the analysis of accident statistics and increase the number of inspections and audits in mining operations with poor safety statistics, while not neglecting the newly opened or reopened mining operations.
- Task inspectors to conduct comprehensive inspections and audits that focus on leading contributors to fatalities and injuries.
- Timeously investigate all serious accidents and dangerous occurrences and share the findings and outcomes from these investigations with the mining industry to prevent similar occurrences.
- Investigate slope failures and instruct mines to install real-time slope monitoring devices.
- Instruct mines in the vicinity of sinkholes and cavities that have been identified to develop and implement a system to proactively identify sinkholes and cavities.
- Enforce compliance in relation to the appointment of engineers.
- Instruct mines to investigate and present all fire incidents at the operations to the PI.
- Issue section 54 and section 55 instructions, as well as administrative fines, where necessary, and conduct follow-up inspections.
- Withdraw the legal appointment of mine managers without the required mining qualifications and experience.
- Monitor and enforce directives and instructions issued by the CIOM.

7.3.2 North West: Klerksdorp

North West: Klerksdorp is surrounded by the Free State, Gauteng and the Northern Cape. Gold is the predominant mineral mined in the few remaining underground mines that are still labour intensive, despite massive retrenchments in the last few years.

Most of the mines in the region are surface diamond diggings around the Wolmaransstad, Bloemhof, Schweizer-Reneke, Vryburg, Taung, Ottosdal and Christiana areas. Other minerals that are being exploited in the region include uranium, limestone, fluorspar, sand and clay, which are commonly exploited with less labour-intensive surface operations.

7.3.2.1 Topical issues and matters of interest

- The Harmony Kalgold Mine achieved 3.87 million fatality-free shifts in 2021.
- South Uranium and Noligwa metallurgical plants, both owned by Harmony Gold Limited, achieved 5.8 million and 5.1 million fatality-free shifts in 2021, respectively.
- Metallurgical plants, cement and diamond-producing mines recorded zero fatalities for the period under review.
- The Harmony Gold Limited Moab Khotsong mine achieved one million fatality-free shifts in March 2022.

7.3.2.2 Inspections and audits

CATEGORY	INSPECTIONS	AUDITS
Planned	576	44
Actual	712	48
Percentage compliance	124	109

7.3.2.3 Total accidents reported

Fatal accidents	**4**
> 14-day accidents	117
1- to 13-day reportable accidents	50

7.3.2.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	55	2	57
Completed	55	2	57
Percentage completed	100	100	100

7.3.2.5 Disaster-type accidents

No disaster-type accidents were reported.

7.3.2.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
74	167

7.3.2.7 Administrative fines

Number of fines recommended by Inspector	1
Value of fines recommended by Inspector	R50 000
Number of fines set aside by Principal Inspector	0
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

7.3.2.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	22	22	100
Mining and prospecting rights	4	4	100
Closure certificates	33	33	100
Environmental management	1	1	100
Complaints	21	20	95

7.3.2.9 Strategies adopted for improving the status quo

- Conduct quality occupational hygiene audits on noise, thermal stress and emergency preparedness.
- Conduct investigations on all the fire incidents encountered in the cement-producing mines and issuing appropriate statutory notices.
- Thoroughly interrogate all mines' presentations conducted before uplifting the section 54 instructions.
- Profile mines according to the number of accidents or incidents, and conduct more inspections and audits at high-risk mines.
- Instruct mines to provide FOG management strategies.
- Profile all pillars and/or isolated blocks of grounds intended to be removed in the future.
- Ensure that multidisciplinary, comprehensive investigations are conducted, and that sound strategies are developed and implemented prior to the extraction or removal of any pillars and/or isolated blocks of ground.
- Monitor the implementation of the health and safety strategies of the mines based on the risk levels of the operations.
- Encourage the adoption of Mine Occupational Safety and Health (MOSH) best practices.
- Involve the mine's Technical Service departments on all health and safety-related matters.
- Empower health and safety representatives by engaging them during inspections, audits, accident investigation and inquiries.
- Encourage mines to have wellness programmes to address healthy lifestyles and non-occupational diseases, including HIV/AIDS.
- Encourage the medium-operation mines to conduct wellness campaigns in accordance with the South African health awareness calendar.
- Encourage mines to deal with lifestyle conditions at the mine hospitals or medical stations for employees who are not on medical aid.
- During awareness campaigns, counsel mine employees and do HIV testing with their consent. It should be noted that this is managed at the PHC centres and not at the occupational health centre.
- Encourage mines to conduct health and safety campaigns once each quarter.
- Continuously monitor occupational hygiene stressors.
- Encourage mines that recorded HEG A on occupational hygiene stressors to submit their new control measures to ensure that they minimise employees' exposure.

7.3.3 North West: Rustenburg

North West: Rustenburg is one of the two regions in the North West province. It is situated within the Bojanala District Municipality. Although the North West province regulates the mines within the provincial border lines, the region extends as far as the Waterberg District Municipality in the Thabazimbi and the Northam areas of Limpopo.

The labour force in the region comprises approximately 40% of the employees in the South African mining industry. The mines mainly extract PGM from the Bushveld Igneous Complex, which is the largest known intrusion of PGM in the world. PGM, chrome, iron ore, silica and granite are the predominant minerals mined in North West: Rustenburg.

There are underground and surface mining operations in which mineral extraction is carried out through a series of hard rock metalliferous mining methods, employing conventional and mechanised mining methods. Mineral processing is performed at various metallurgical plants. There are 22 inspectors who administer the enforcement of the MHSA in the region, as well as 15 administrative personnel.

The mines are highly unionised, with employees largely represented by the Association of Mineworkers and Construction Union (AMCU), the National Union of Mineworkers (NUM) and others in fewer numbers, such as the National Union of Metalworkers of South Africa (NUMSA).

7.3.3.1 Topical issues and matters of interest

During the period under review, North West: Rustenburg encountered an increase in medical-related deaths. Upon *in-loco* investigations conducted and analysed by the region, reported medical deaths were found to be due to natural deaths emanating from underlying chronic medical diseases, which were not occupational related. There were 11 medical-related deaths during the period under review.

In terms of the COVID-19 pandemic, the mining companies in the region have been supportive with regard to the administration of vaccinations to their employees and the surrounding communities. The DMRE continues to remind mine employers and employees that the COVID-19 pandemic is still with us and we all need to remain vigilant to minimise its spread and impact.

7.3.3.2 Inspections and audits

CATEGORY	INSPECTIONS	AUDITS
Planned	1 188	24
Actual	1 173	33
Percentage compliance	99	138

7.3.3.3 Total accidents reported

Fatal accidents	**20**
> 14-day accidents	987
1- to 13-day reportable accidents	290

7.3.3.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	45	22	67
Completed	45	22	67
Percentage completed	100	100	100

7.3.3.5 Disaster-type accidents

A multiple fatality accident occurred on Sunday, 28 November 2021, at Impala Platinum Limited, Shaft No. 6. Three employees succumbed to the injuries that they sustained after being trapped in the mud-rush at the shaft bottom.

7.3.3.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
210	102

7.3.3.7 Administrative fines

Number of fines recommended by Inspector	11
Value of fines recommended by Inspector	0
Number of fines set aside by Principal Inspector	11
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

7.3.3.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	These are handled by the Directorate: Mineral Regulation of the North West: Klerksdorp Region		
Mining and prospecting rights			
Closure certificates			
Environmental management			
Complaints	227	215	95

7.3.3.9 Strategies adopted for improving the status quo

Mine health and safety

CHALLENGES	STRATEGIES
Increased FOG accidents	Enforcement of aerial coverage support
Inadequate barring techniques and skills (lack of on-the-job training)	Scrutiny of planned task observations on barring during inspections and audits
Lack of focus by line supervision during early-entry examination on high-risk declared panels	Presence of shift bosses on high-risk panels during early-entry examination
Inadequate hazard identification and risk assessment	Withdrawals of incompetent supervisors
Timeous reaction to hazards observed	Presentations on poor-performing operations in terms of FOG accidents
Unidentified or untreated geological features	Enforcement of service department instructions during inspections and audits

Mine equipment

CHALLENGES	STRATEGIES
Deteriorating rail infrastructure (poor maintenance, planning and staffing)	Scrutiny of maintenance records during inspections and audits
Poor discipline and behaviour of locomotive operators (disregard of standard operating procedures)	Encourage the adoption of best practices
No over-inspections by supervisors	Withdrawal of incompetent supervisors
Poor management of TMM	Regular review of workplace risk assessments during inspections and audits

Occupational hygiene

CHALLENGES	STRATEGIES
Some mines are still reporting on HEG A exposures, even though mitigating controls are in place	Profiling of high-risk mines
Mines are not submitting section 11.5 reports for over-exposures	Enforcement of dust extraction or suppression systems
Region is experiencing extremely hot temperatures in hotspot areas, especially during the fourth and first quarters of the year	Awareness brief to all mines on HSM prior to the start of each season
Employees at furnace operations are exposed to extreme temperatures while tapping	Provision of shadows and portable water, implementation of rest cycles
Employees are not wearing customized HPDs in high-risk noise workplaces	Demarcation of high noisy areas (above 85 decibels A (dBA))
Inefficiencies on muffled machines	Enforcement of customised HPDs

Occupational medicine

CHALLENGES	STRATEGIES
Difficulty in accessing medical surveillance records from previous employers (liquidated mines)	Enforcement of total implementation of legislative requirements pertaining to health
No exit medical for employees deserting the mines	Promote uptake and implementation of DoH's health strategies
System of medical surveillance is not risk based	Participate in other forums, e.g. health forums and tripartite forums, to represent occupational medicine
Failure by some companies to lodge compensation claims for occupational diseases on behalf of employees	Joint inspection of occupational hygiene and medicine
COVID-19 stigmatisation and poor-quality investigations	Targeted inspections to address medical and COVID-19 investigations

7.3.4 Western Cape

7.3.4.1 Topical issues and matters of interest

The Western Cape is one of the bigger regions in South Africa, and the mines are spread throughout the region. This requires inspectors to travel far to do inspections, audits, investigations and inquiries. Most mines in the region are small surface mines. However, there are several bigger mines, namely PetroSA, Namakwa Sands, Afrisam, Lafarge, Afrimat and PPC. The region has one dormant small underground mine, where monazite and other rare earth metals were mined. All the mines use TMMs, except for PetroSA, which has an offshore platform, and the offshore diamond industry.

The minerals mined in the Western Cape include sand, diamonds, clay, lime, phosphate, aggregates, silica, gypsum, kaolin, salt, bentonite, ball clay, ilmenite and gas. The brickworks mine clay to make bricks. The clay is mined in the summer months when it is not raining. During the rainy months, some brickworks close, due to the danger of slippery roadways.

There are six Inspector positions in the Western Cape: Principal Inspector, Senior Mining Inspector, Senior Machinery Inspector, Machinery Inspector, Occupational Medical Inspector and Occupational Hygiene Inspector. The region has been without a Principal Inspector, Occupational Medical Inspector and Occupational Hygiene Inspector for more than a year. The Senior Machinery Inspector has been acting as Principal Inspector. The region was without a Mining Inspector for the first half of the year, a Senior Mining Inspector joined the region in June 2021.

Due to COVID-19 and other financial challenges, production at a number of mines in the Western Cape dropped substantially. However, with the easing of COVID-19 restrictions, mining activities are slowing improving.

7.3.4.2 Inspections and audits

CATEGORY	INSPECTIONS	AUDITS
Planned	209	36
Actual	240	50
Percentage compliance	115	139

The planning of inspections is such that the bigger mines, where the risk is higher, are inspected more often, and a different Inspector will visit the mine every month. Smaller, less hazardous mines are visited less frequently. During 2021, however, with only half the complement of Inspectors in the region, the number of inspections was reduced.

7.3.4.3 Total accidents reported

Fatal accidents	**1**
> 14-day accidents	6
1- to 13-day reportable accidents	5

The region had one fatal accident. Six reportable injuries were reported in the current reporting period, compared to 15 reportable injuries in the previous year. The causes of the accidents were as follows: one slipping and falling, one struck by object, one burning and three caught between injuries.

7.3.4.4 Investigations and inquiries

	INVESTIGATIONS	INQUIRIES	TOTAL
Initiated	16	1	17
Completed	16	1	17
Percentage completed	100	100	100

The region managed to do all the investigations and conclude one inquiry within the allowed time frame. Investigations conducted relate to seven injuries and nine dangerous occurrences.

7.3.4.5 Disaster-type accidents

No disaster-type accidents were reported.

7.3.4.6 Statutory notices

SECTION 54 NOTICES	SECTION 55 NOTICES
0	13

During the period under review, 13 section 55 notices were issued, in which 22 transgressions were noted and 24 instructions issued. The transgressions were as follows:

- Machinery not or inadequately guarded
- Non-compliance to TMM procedures
- No emergency exit from tunnel
- Improper design of structure
- Safety precautions needed at overhead power line
- General safety precautions not taken
- Documents not up to date or inadequate
- Risk assessment inadequate

7.3.4.7 Administrative fines

No administrative fines were recommended by the PI.

7.3.4.8 Land-use applications and complaints

	RECEIVED	COMPLETED	PERCENTAGE
Township developments	25	20	80
Mining and prospecting rights	33	30	91
Closure certificates	11	10	91
Environmental management	0	0	0
Complaints	1	1	100

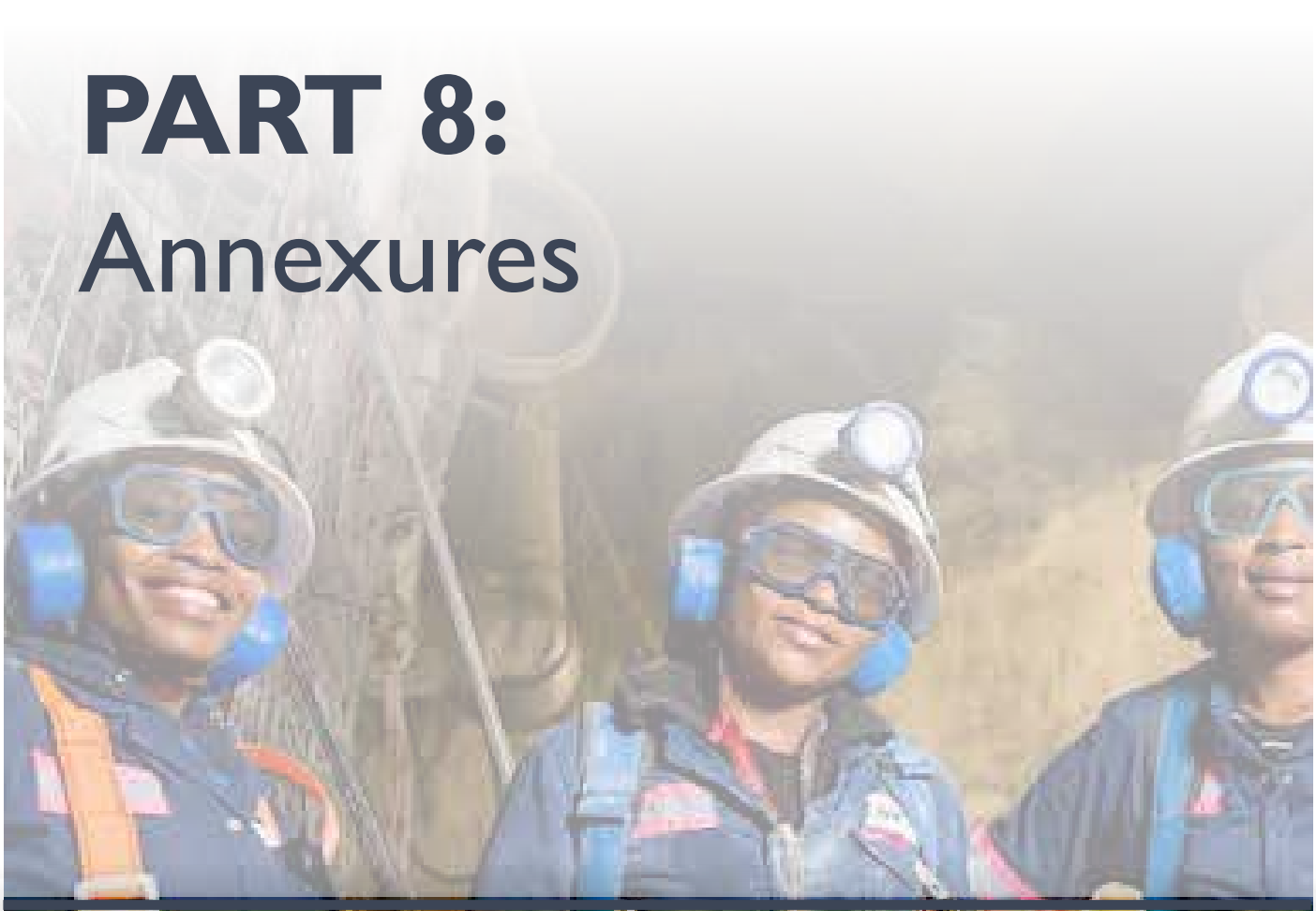
All the applications were completed within the turnaround time. A few still need to be completed, but are still within the turnaround period allowed.

7.3.4.9 Strategies adopted for improving the status quo

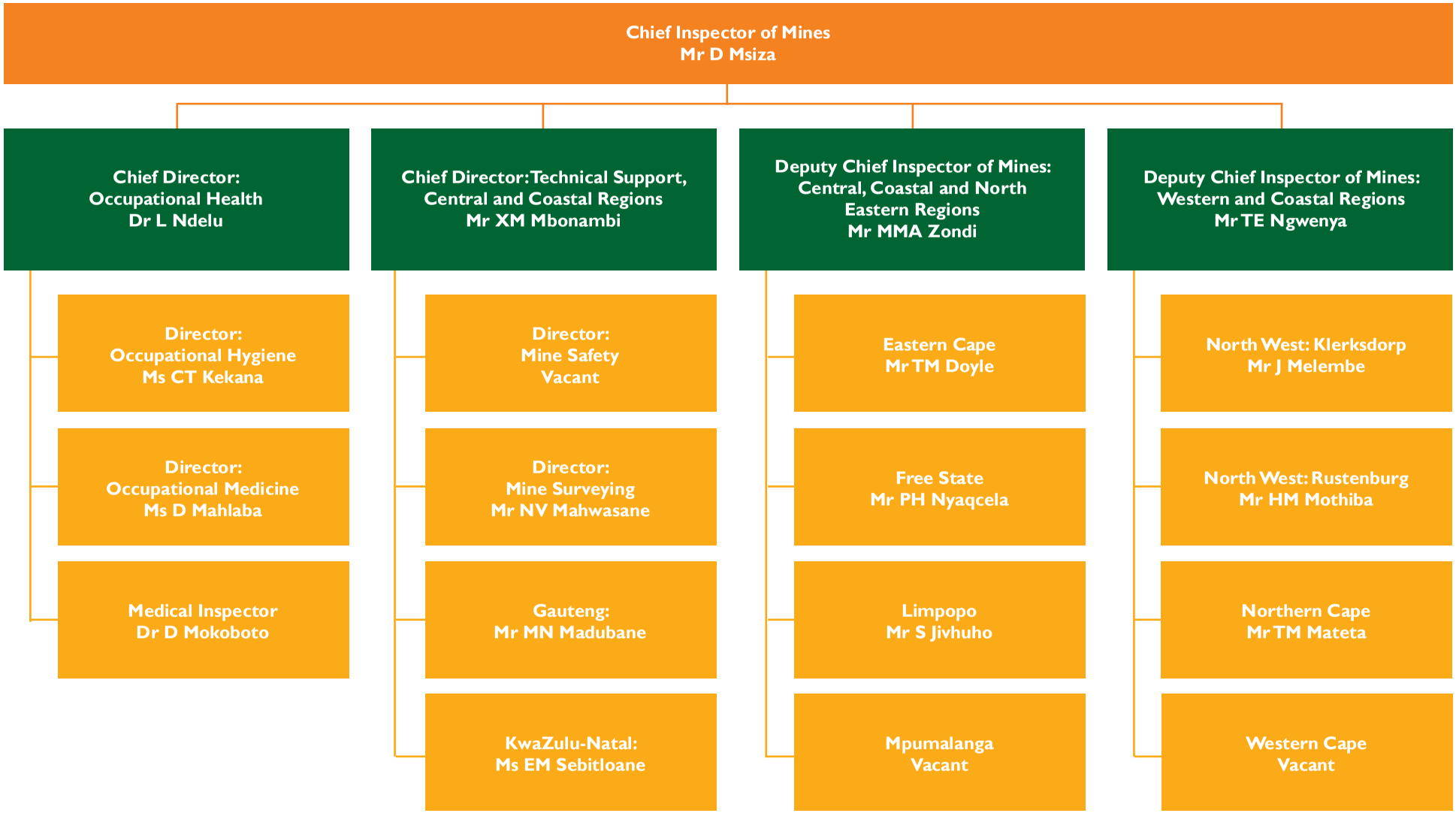
The vacant inspector positions need to be filled. Equipment such as laptops that are outdated need to be replaced. The enforcement of the MHSI and its regulations need to continue through inspections and audits.

Tripartite meetings and other meetings will continue to be held with employers and employees regarding health and safety issues.

PART 8:
Annexures



ANNEXURE A:
Organogram of the MHSI for the period ending 31 March 2021



ANNEXURE B:
Contact list for the period ending 31 March 2021

OFFICE OF THE CIOM				
Chief Inspector of Mines	**Mr D Msiza**	012 444 3639 012 444 3970	phumudzo.rambau@dmre.gov.za sithembile.nzimande@dmre.gov.za	Private Bag X59, ARCADIA, 0007
CHIEF DIRECTORS				
Deputy Chief Inspector of Mines: Central, Coastal and North-eastern Regions	**Mr MMA Zondi**	012 444 3663	lindiwe.sekwati@dmre.gov.za	Private Bag X59, ARCADIA, 0007
Deputy Chief Inspector of Mines: Western and Coastal Regions	**Mr T Ngwenya**	012 444 3547	daphney.sekgobela@dmre.gov.za	Private Bag X59, ARCADIA, 0007
Chief Director: Technical Support, Central and Coastal Regions	**Mr X Mbonambi**	012 444 3676	arista.muller@dmre.gov.za	Private Bag X59, ARCADIA, 0007
Chief Director: Occupational Health	**Dr L Ndelu**	012 444 3667	trevia.kungoane@dmre.gov.za	Private Bag X59, ARCADIA, 0007
DIRECTORS				
Director: Mine Safety	**Vacant**	012 444 3649	freda.seema@dmre.gov.za	Private Bag X59, ARCADIA, 0007
Medical Inspector	**Dr D Mokoboto**	012 444 3614	pertunia.makhubela@dmre.gov.za	Private Bag X59, ARCADIA, 0007
Director: Occupational Medicine	**Ms D Mahlaba**	012 444 3785	rudzani.moshapo@dmre.gov.za	Private Bag X59, ARCADIA, 0007
Director: Occupational Hygiene	**Ms CT Kekana**	012 444 3646	anesia.matjokane@dmre.gov.za	Private Bag X59, ARCADIA, 0007
Director: Mine Health and Safety Legal Services	**Vacant**	012 444 3274	mmasello.maimela@dmre.gov.za	Private Bag X59, ARCADIA, 0007
Director: Mine Surveying	**Mr NV Mahwasane**	012 444 3789	goitsemang.sekwati@dmre.gov.za	Private Bag X59, ARCADIA, 0007
PRINCIPAL INSPECTORS				
Principal Inspector of Mines: Eastern Cape	**Mr TM Doyle**	041 403 6640	megan.singh@dmre.gov.za	Private Bag X6076, PORT ELIZABETH, 6000
Principal Inspector of Mines: Free State	**Mr PH Nyaqcela**	057 391 1373	puleng.mofokeng@dmre.gov.za	Private Bag X33, WELKOM, 9460
Principal Inspector of Mines: Gauteng	**Mr MN Madubane**	011 358 9776	portia.sokhulu@dmre.gov.za	Private Bag X5, BRAAMFONTEIN, 2017
Principal Inspector of Mines: KwaZulu-Natal	**Ms EM Sebitloane**	031 335 9626	sindy.dlamini@dmre.gov.za	Private Bag X54307, DURBAN, 4000
Principal Inspector of Mines: Limpopo	**Mr S Jivhuho**	015 287 4705	nancy.montana@dmre.gov.za	Private Bag X9467, POLOKWANE, 0700
Principal Inspector of Mines Mpumalanga	**Vacant**	013 653 0514	sbongile.mokoena1@dmre.gov.za	Private Bag X7279, WITBANK, 1035
Principal Inspector of Mines: Northern Cape	**Mr TM Mateta**	053 807 1735	dorothy.goliath@dmre.gov.za	Private Bag X6093, KIMBERLEY, 8300
Principal Inspector of Mines: North West: Klerksdorp	**Mr J Melembe**	018 487 4316	elizabeth.mmota@dmre.gov.za	Private Bag A1, KLERKSDORP, 2570
Principal Inspector of Mines: North West: Rustenburg	**Mr HM Mothiba**	014 594 9240	tintswalo.baloyi@dmre.gov.za	P O Box 150, TLHABANE, 0309
Principal Inspector of Mines: Western Cape	**Vacant**	021 427 1004	ntombikayise.ntlenzi@dmre.gov.za	Private Bag X9, ROGGE BAY, 8012
Mining Qualifications Authority Chief Executive Officer	**Mr T Mmotla**	011 547 2600	Rochelle.m@mqa.org.za	7 Anerley Road, PARKTOWN, 2193
Mine Health and Safety Council General Manager	**Mr D Dlamini**	011 656 1797 x 112	ysethlapelo@mhsc.org.za	Private Bag X11, WENDYWOOD, 2144

ANNEXURE C:
Acronyms

4IR	Fourth Industrial Revolution
AIDS	Acquired Immune Deficiency Syndrome
AMCU	Association of Mineworkers and Construction Union
AMDP	Advanced Management Development Programme
AMR(s)	Annual Medical Report(s)
APP	Annual Performance Plan
AQI	Air Quality Index
ARV	Antiretrovirals
CEO(s)	Chief Executive Officer(s)
CIOM	Chief Inspector of Mines
COAD	Chronic obstructive airway disease
COP(s)	Code(s) of Practice
COVID-19	Corona Virus Infection Disease 2019
CRTB	Chronic refractory tuberculosis
CSM	Cold Stress Management
CTF	Culture Transformation Framework
CWP	Coal workers' pneumoconiosis
dB	Decibels
DB	Dry bulb
dBA	Decibels A
DHA	Department of Home Affairs
DMA	Disaster Management Act, 2002 (Act 57 of 2002)
DMRE	Department of Mineral Resources and Energy
DoH	Department of Health
DoJ&CD	Department of Justice and Constitutional Development
DPCI	Department of Priority Crime Investigation
EXCO	Executive Committee
FFR	Fatality frequency rates
FOG(s)	Fall(s) of ground
GCC	Government Certificate of Competency
GIS	Geographical Information System
HCP(s)	Hearing Conservation Programme(s)
HCS	Hazardous chemical substances
HCT	HIV counselling and testing
HEG(s)	Homogenous exposure group(s)
HIRA	Hazard identification and risk assessment
HIV	Human Immunodeficiency Virus
HPD(s)	Hearing protection device(s)
HR	Human resources
HSM	Heat stress management
IFR	Injury frequency rates
INH	Isoniazid
IPP	Independent Power Production
LAeq	Equivalent continuous sound pressure level
LHD	Load haul dump
MCSA	Minerals Council South Africa
MDR-TB	Multidrug-resistant TB

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
MoU	Memorandum of Understanding
MQA	Mining Qualifications Authority
MRS	Mine Rescue Service
MSCC	Mine Surveyors Certificate of Competency
MSD(s)	Musculoskeletal disorder(s)
MSDS	Material Safety Data Sheets
NIHL	Noise-induced hearing loss
NUM	National Union of Mineworkers
NUMSA	National Union of Metalworkers of South Africa
OEL(s)	Occupational exposure limit(s)
OEM(s)	Original equipment manufacturer(s)
OHS	Occupational health and safety
OLD(s)	Occupational lung disease(s)
OMP(s)	Occupational medical practitioner(s)
PDS	Proximity detection system
PGM	Platinum Group of Metals
PHC	Primary health care
PI(s)	Principal Inspector(s) of Mines
PLH	Percentage loss of hearing
PPE	Personal protective equipment
PROV JOINTS	Provincial Joint Operations and Intelligence Structure
PSA	Prostate specific antigen
PTB	Pulmonary tuberculosis
RBE	Rail-bound equipment
SAMRASS	South African Mines Reportable Accident Statistics System
SAPS	South African Police Service
Sil+TB	Silico-tuberculosis
SOP	Standard operating procedures
SETA	Sector Education and Training Authority
SSA	State Security Agency
STS	Standard threshold shift
T&M	Transportation and mining
TB	Tuberculosis
TBT	Track-bound transport
TMM	Trackless mobile machines
UNAIDS	Joint United Nations Programme on HIV/AIDS
VFL	Visible felt leadership
WB	Wet bulb
WHO	World Health Organization
WiM	Women in mining
WRULD	Work-related upper limb disorder
XDR-TB	Extensively drug-resistant TB

mineral resources
& energy

Department:
Mineral Resources and Energy
REPUBLIC OF SOUTH AFRICA

MINE HEALTH AND SAFETY INSPECTORATE

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