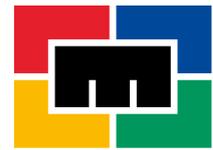


SAFETY IN MINING

Fact sheet

July 2021



MINERALS COUNCIL
SOUTH AFRICA



Kumba Iron Ore - Sishen

In 2020, the industry saw an 18% regression in fatalities with 60 compared to the 51 in 2019.

QUICK FACTS

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FALL OF GROUND MAIN FATALITY CAUSE IN 2020

2020

SAFETY PERFORMANCE REGRESSION IN ALL COMMODITIES EXCEPT PLATINUM

26%

IMPROVEMENT IN OVERALL INJURIES IN 2020

Safety in South Africa since democracy

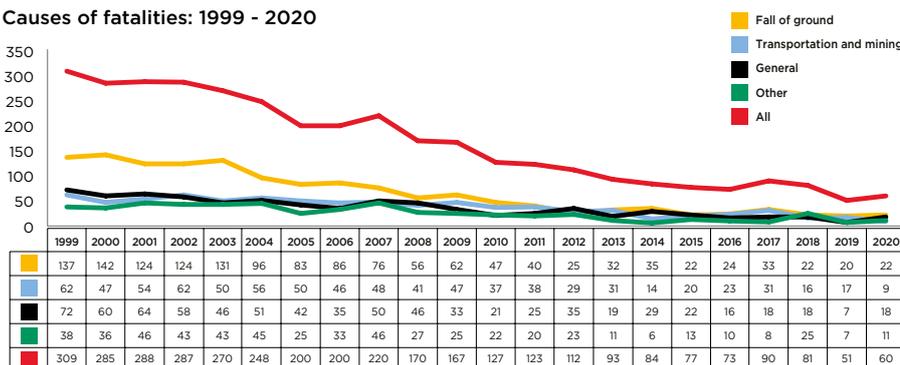
In the years since democracy, South Africa's mining industry and its partners have implemented numerous health and safety initiatives that have paid off in dramatic and literally life-saving ways. Between 1993 and 2020, the industry experienced a 90% overall decline in the number of fatalities, and a 93% decline in fatalities that occurred as a result of falls of ground. Injuries decreased by 80% over the same time period.

Safety performance in 2020

However, the mining industry safety performance declined in 2020 by 18% with 60 fatalities, compared to 51 fatalities in 2019. This unacceptable regression has caused the industry great concern, resulting in additional resources being urgently committed to undertake research into understanding the root causes of these accidents and how they can be prevented.

Majority of the industry's fatalities are as a result of fall of ground, transport and general accidents. 22 of the 60 fatalities (37%) reported in 2020 were caused by fall of ground, nine by transport and 18 from the general type of accidents. Miscellaneous causes of fatalities increased, with 11 reported.

Causes of fatalities: 1999 - 2020



Fall of ground accidents, including seismic-related rock bursts, remain a significant challenge in the platinum and gold sectors, especially in deep mines, while transport-related accidents continue to mostly affect the coal and platinum sectors. In 2020, there was a regression in all commodities except platinum.

Fatalities by commodity

Commodity	2019	2020	% change
Platinum	20	16	(20)
Gold	18	26	44
Coal	7	11	57
Other*	6	7	17
Total	51	60	18

Source: Department of Mineral Resources and Energy

* Other includes diamonds, chrome, copper, iron ore and all others not specified

Injuries by commodity

Commodity	2019	2020	% change
Platinum	1,156	782	(20)
Gold	766	620	(19)
Coal	224	146	(35)
Other*	306	266	(32)
Total	2,452	1,814	(26)

Source: Department of Mineral Resources and Energy

* Other includes diamonds, chrome, copper, iron ore and all others not specified

26%
DECREASE IN INJURIES
FROM 2019 TO 2020

There was a 26% decrease in injuries from 2,452 in 2019 to 1,814 in 2020. This reduction is the highest improvement recorded in the last five years, above the annual milestone reduction target of 20%.



SAFETY EFFORTS IN 2020 AND BEYOND

The Khumbul'ekhaya health and safety strategy continued in 2020 with a focus on the holistic approach to eliminating fatalities as a result of the increased safety incidents. This strategy has been challenged, and leadership conversations amongst CEOs are being reconvened, while close engagements with unions and the DMRE continue, as the industry finds new ways towards zero harm.

There is a concern that COVID-19 may have played a role in the deteriorating performance, but there is currently no concrete correlation that can be made. However, the high levels of anxiety relating to the impact of COVID-19 at home and at work, COVID-19 fatigue, concerns about job security and concerns around decreased levels of front-line supervision could be related factors.

In July 2020, the industry demonstrated its commitment to the shared imperative of zero harm by launching the third annual National Day of Health and Safety in Mining virtually under the Khumbul'ekhaya health and safety strategy banner. Every year, the National Day of Health and Safety calls on member companies to devote a day to renew management and employees' focus on health and safety. In 2020, the commemoration was focused on reinforcing behaviour change - at home and at work - in the face of COVID-19. Each member company has its own safety programmes with the aim of achieving zero harm.

Going forward, we are taking a targeted approach to address the major causes of fatalities across the various commodities through the

holistic Khumbul'ekhaya strategy. A renewed focus is required, the heart of which is changing the safety culture through the culture transformation framework. We encourage better and faster learning from incidents through various platforms with the aim of changing behaviour and transforming the safety culture.

The Chair of the CEO Zero Harm Forum will also be conducting heartfelt visible engagements with the various member CEOs on the steps required to eliminate fatalities as part of the Khumbul'ekhaya CEO-ship commitment.

Identifying and mitigating safety risks

While the causes of fatalities, injuries and accidents vary, falls of ground, transport incidents and general accidents are the three main causes of injuries on mines. Since 2017, the industry has seen a rise in the number of disasters related to seismic activity, fall of ground and fire incidents.

The Mining Industry Occupational Safety and Health (MOSH) fall of ground task team, established to address these concerns, is collaborating with the Mine Health and Safety Council (MHSC) and the Council for Geoscience to address the challenge of seismicity. Leading practices for rock bursts are also being developed and shared across the industry.

Through the MHSC, more than R250 million has been spent on research into the seismicity associated with deep-level mining. Another R40 million has been spent on fundamental and applied research as well as technology transfer. The improvements in mine design and underground support methods that have been implemented as a result of this research have resulted in fewer fall of ground-related fatalities. In 2020, this figure was 22, down from 131 in 2003.

Regulatory structures

The Mine Health and Safety Act

The Mine Health and Safety Inspectorate of the Department of Mineral Resources and Energy (DMRE), established in terms of the Mine Health and Safety Act 29 of 1996 (MHSA), is responsible for the overall regulation and safeguarding of the health and safety of mine employees, as well as the residents of areas affected by mining operations. The Chief Inspector of Mines has extensive authority and may impose directives to prohibit work in certain areas. The stoppages may be extended to entire mines if the inspectorate has valid reason.

According to the requirements of the MHSA, companies and mines have agreements in place that regulate health and safety in the workplace, and which provide planning, decision-making, training and auditing oversight.

The Mine Health and Safety Council

The MHSC was set up in 1996 to direct safety in the mining industry and to respond to safety-related challenges. This industry-funded body was built on the achievements of decades of fundamental research. The MHSC includes a tripartite board, which includes representatives from the state, employers and organised labour, and works under the chairmanship of the Chief Inspector of Mines.

The MHSC's primary tasks are to advise the DMRE Minister on occupational health and safety legislation, and research outcomes focused on improving and promoting occupational health and safety in South African mines. The MHSC is accountable to Parliament.

The Mining Qualifications Authority

The Mining Qualifications Authority (MQA) plays a critical role in addressing skills shortages in the mining industry through capacity development and process improvement. The MQA is mandated to ensure that the mining industry has sufficient numbers of competent people who have been trained to improve health and safety standards and processes. The MQA works closely with the MHSC.

The Tripartite Action Plan

The MOSH Learning Hub was established in 2009 by the Minerals Council to help companies learn from pockets of excellence in the industry. It is the largest programme initiated by the Minerals Council. Through the MOSH system, mines have implemented and adopted leading practices to reduce health and safety risks.

One of the leading practices promoted by the MOSH Learning Hub is the use of nets with bolts to help prevent fall of ground. Similarly, proximity detection system (PDS) technology has helped prevent incidents by alerting mineworkers about safety risks. The Minerals Council encourages the industry to persistently explore and adopt new and innovative technologies that will make workplaces safer.

Modernising for safety

The Minerals Council actively endorses the industry's move towards modernisation. One of the most critical reasons for this is the effect modernisation efforts have on ensuring work environments that are safer for the hundreds of thousands of mineworkers who work in them.

The Minerals Council's modernisation efforts are particularly focused on people-centric technologies. This means that modernisation is intended to empower people, not replace them. As mines deepen and economically viable ore bodies extend further and further from shafts, miners are required to travel great distances into ever-narrower reefs and steeper gradients before they can begin their work. Safety and health, productivity and production, and costs are all negatively impacted as a result.

In order to keep as many people safely employed in the mining industry as possible, and to keep mines open for as long as possible to support these livelihoods, modernisation is essential.

The Minerals Council has partnered with the Research Institute for Innovation and Sustainability (RIIS), an independent innovation firm, to design a new hand-held rock drill that is lighter, more ergonomic and precise. Other technologies include mechanised drilling and blasting as well as non-explosive rock breaking, which are aimed at reducing underground accidents and eliminating potential risks.

Additional initiatives have led to the development of early warning systems for seismic activity. And the Council for Scientific and Industrial Research (CSIR) has developed a pedestrian detection system that can determine the distance between people and whether a collision is likely to occur. The CSIR has also been exploring the development of a robot platform with safety inspection sensors that can enter mines when it is unsafe for people to do so.



Building a **CULTURE OF SAFETY**

Research shows that an organisation's culture has a significant impact on health and safety protocol adherence and success. As a result, the Culture Transformation Framework (CTF) was developed by the MHSC and approved at the 2011 Health and Safety Summit. It seeks to transform health and safety in mining workplaces.

A review and analysis of the implementation progress of the CTF pillars, conducted by the Minerals Council in July 2020, revealed that progress has been made on the implementation of the pillars since a gap analysis in 2012.

The Minerals Council is committed to the effective implementation of the CTF's 11 pillars by 2024:

01 Bonus and performance incentive pillar to prioritise safety ahead of production	02 Risk management pillar aimed at reducing risk at its source and investigating root causes
03 Leadership pillar encouraging leaders to lead by example and walk the talk of zero harm	04 Leading practice pillar providing a unified approach to identifying and facilitating the adoption of leading occupational health and safety practices and research outcomes
05 Diversity management pillar aimed at eliminating racism, genderism and any other forms of discrimination	06 Data management pillar to monitor and evaluate progress of CTF implementation and mine health and safety performance

Mining companies are also changing accident investigation methods to reduce baseless allegations among workers, modifying bonuses to enhance safe production and placing greater emphasis on visible felt leadership at operations.

The five remaining pillars of the CTF will be implemented after December 2020:

07 Integrated mining activity pillar	08 Technology pillar	09 Inspectorate pillar	10 Tripartism pillar	11 Regulatory framework pillar
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REMEMBER HOME

Khumbul'ekhaya

Khumbul'ekhaya is the Nguni word for "remember home" and is the CEO Zero Harm Forum's strategy to drive and sustain the mining industry's pursuit of zero harm. The emphasis on home directly acknowledges that fatalities have the greatest impact on loved ones at home, and encourages mine employees and their managers to bear these loved ones in mind as they go about their day-to-day tasks.

The objectives of the Khumbul'ekhaya strategy are to:

- Promote a holistic approach to the elimination of fatalities
- Develop a system of understanding occupational deaths in and beyond employment
- Adopt methods for more effective and competitive training, for example through centralisation and modernisation
- Adopt globally leading practice to learn better and faster from others

Khumbul'ekhaya has been rolled out at many operations across the country over the past two years since its inception.



In order to keep as many people safely employed in the mining industry as possible, modernisation is essential.