

# SAFETY IN MINING

## Fact sheet



**MINERALS COUNCIL**  
SOUTH AFRICA



AngloGold Ashanti, Mponeng

“The industry saw a 10% improvement in safety performance with 81 fatalities in 2018.”

### QUICK FACTS

10%



SAFETY PERFORMANCE IMPROVEMENT

RE-  
GRESSION  
IN 2017



FIRST TIME  
IN 10 YEARS

88%



REDUCTION IN FATALITIES  
FROM 1993 TO 2016

R250  
MILLION



DEEP-LEVEL MINING  
SEISMICITY RESEARCH

## LONG-TERM INDUSTRY PERFORMANCE

Since the dawn of democracy in South Africa, the mining industry has made significant strides in reducing fatalities and safety incidents. The industry experienced an 88% decline in the number of fatalities in the 23 years from 1993 to 2016, which shows that it is possible to achieve the industry's ultimate goal of zero harm when all stakeholders work together.

However, a sharp deterioration was experienced in 2017 with 90 fatalities. This was the first regression in 10 years – a 17% increase since 2016 when 73 fatalities were recorded.

## SAFETY PERFORMANCE IN 2018

The deterioration in performance that began in 2017 prompted the Minerals Council South Africa Board to initiate a number of measures designed to urgently address the trend, largely through the CEO Zero Harm Forum. Initial measures included intense scrutiny of the major causes of accidents, sharing good practice and additional fundamental research through the Mine Health and Safety Council (MHSC).

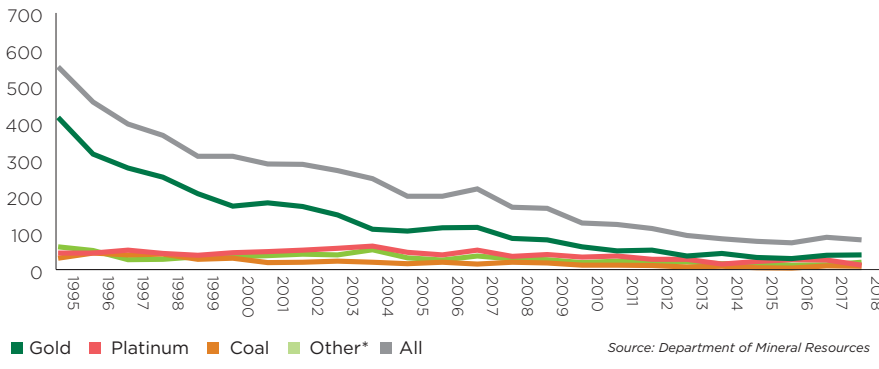
## NATIONAL DAY OF SAFETY & HEALTH IN MINING 2018

Part of this initiative was the launch of the National Day of Safety & Health in Mining 2018 when Minerals Council members hosted events focusing on safety and health.

The launch signalled the start of a month-long initiative for member companies to visibly and publicly uphold their commitments to safety and health. A total of 93 health and safety days were hosted at various operations.

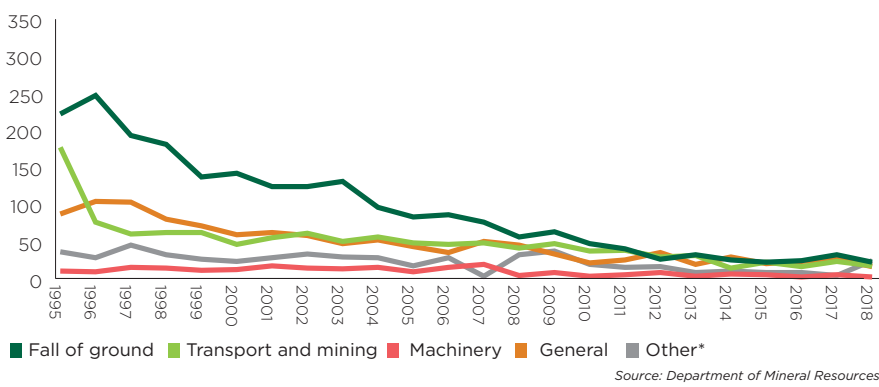
Greater awareness of safety and health led to a decrease of 10% in the number of fatalities to 81 in 2018.

### Mining fatalities per commodity (1995-2018)



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

### Causes of fatalities (1995-2018)



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

### Injuries per commodity (2017-2018)

Commodity	2017	2018	% change
<b>Total</b>	<b>2,669</b>	<b>2,350</b>	<b>(12)</b>
Gold	1,021	880	(14)
Platinum	1,048	1,154	10
Coal	202	167	(17)
Other*	398	149	(63)

Source: Department of Mineral Resources

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

## IDENTIFYING AND MITIGATING SAFETY RISKS

Although the causes of accidents, injuries and fatalities may vary, falls of ground, transport incidents and general accidents are the three primary causes of injuries on mines. Since 2017, there has been an increase in the number of disasters related to seismic activity, falls of ground and fire incidents.

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

Joint industry efforts have focused intensely on falls of ground in deep-level mines over several years. Through the MHSC, more than R250 million has been spent on research into seismicity associated with deep-level mining. Another R40 million has been spent on fundamental and applied research as well as technology transfer. Various improvements in mine design and underground support methods have resulted in fewer fatalities attributable to falls of ground. As a result, the number of fall-of-ground fatalities decreased to 22 in 2018 from 131 in 2003.

“Working together, South African mining companies, unions, employees and the regulatory authorities can make significant strides in improving the safety performance of South African mines.”





## CEO ZERO HARM FORUM

In 2012, the Minerals Council established the CEO Zero Harm Forum (formerly the CEO Elimination of Fatalities Team), which acknowledges the value of leading by example. The initial focus area was fall of ground as the greatest contributor to fatalities at the time.

The forum continues to drive health and safety initiatives, and shares experiences in addressing key challenges in a manner that will accelerate the industry's journey to zero harm.

The objectives of the forum are to:

- Develop a model for industry leadership at CEO level
- Model leadership behaviour to demonstrate commitment and expectations
- Share experiences and help each other manage key challenges
- Establish working protocols with industry stakeholders and communities
- Monitor and agree on adjustments to industry models for specific needs

## MODERNISATION FOR SAFETY

A key driver of modernisation is emphasis on zero harm while the investment in new technology is one of the fundamentals of mine safety.

As mining is still largely labour-intensive, and fully automated mining may still be some way off, there is a call for people-centric technologies. This is particularly important in the South African mining context as the majority of thousands of employees work underground every day. The Minerals Council has partnered with 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, aimed at reducing underground accidents as far as possible, in addition to the removal of miners from working-face dangers.

A wide range of technologies are used to reduce and prevent incidents related to health and safety. These initiatives have led to the development of early warning systems for seismic activity and rolling stock. The Council for Scientific and Industrial Research (CSIR) has also developed a pedestrian detection system, which uses a range sensor to determine the distance to each identified person, and tracks each person to determine if and when a collision is likely to occur. The CSIR has also been exploring the development of the "monster" – a robot platform with safety inspection sensors that can enter mines when it is unsafe for people to do so. The robot will assess and identify risks for underground mines, and reach areas that are inaccessible to people during an incident.

Modernisation is not simply mechanisation and/or gradual implementation of new technology. It is a process of transition and transformation of the mining industry of yesteryear and today to that of tomorrow.



## HEARTFELT CONVERSATIONS

In January 2019, the CEO Zero Harm Forum held a half-day facilitated health and safety event, called "Heartfelt conversations", to deepen leadership engagement about the industry's safety and health matters.

The event was attended by 34 CEOs and four Minerals Council office bearers, among other relevant executives. It was facilitated by a renowned industry health and safety expert as well as a highly experienced mediator and arbitrator. Discussions were open and frank, centred on the importance of visible felt leadership (particularly in respect of CEO and senior management visibility), addressing risk culture and safety concerns, sharing best practice, and encouraging openness in reporting. As a follow-up, the CEO-led Strategy on Health and Safety has been developed. It includes an implementation plan aimed at achieving a step change in safety and health performance in the industry.





## REGULATORY STRUCTURES

### MINE HEALTH AND SAFETY ACT

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

As required by the MHSA, companies and mines have specific agreements that regulate many aspects of safety and health in the workplace, and that provide joint planning, decision-making, training and auditing.

Typically, each shaft has its own health and safety committee, comprising representatives of management and unions, seeking to ensure compliance with regulations, to provide safety training for all employees, and to promote active collaboration in all matters relating to safety and health. Accidents and incidents are thus addressed, and lessons learned are documented and shared. Collaboration in matters of health and safety in the mining industry is extensive and intensive.

### MINE HEALTH AND SAFETY COUNCIL

The MHSC was set up in 1996 to direct safety in the mining industry and to respond to industry safety challenges. This body, funded by the mining industry, was built on the achievements of decades of fundamental research. The MHSC comprises a tripartite board, represented by the state, employers and organised labour, under the chairmanship of the Chief Inspector of Mines. The MHSC is funded by the mining industry and is accountable to Parliament.


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

“The Minerals Council regards safety as critical at all levels in companies and will continue to lead by example through effective collaboration with industry stakeholders.”







 Kumba Iron Ore, Sishen

### **MINING QUALIFICATIONS AUTHORITY**

The MHSC works closely with the Mining Qualifications Authority (MQA), which 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.

### **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 in the past decade. 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 falls of ground. Similarly, proximity detection system (PDS) technology has helped prevent incidents by alerting mineworkers about safety risks. Adoption of PDS technology has not been without challenges – as with any new technology, functionality improves and develops over time. Companies must keep up to date with the newest versions of the technology. The Minerals Council relentlessly encourages the industry to adopt new technology.



 Anglo American, Mogalakwena



## BUILDING A CULTURE OF SAFETY

The Culture Transformation Framework (CTF), developed by the MHSC and approved at the 2011 Health and Safety Summit, seeks to transform the culture of health and safety in the workplace to control risks. Research shows that an organisation’s culture has an impact on health and safety. In 2011, the MHSC launched a campaign – “Changing minds, changing mines” – to develop a framework that would guide the South African mining sector into making the necessary changes towards achieving zero harm.

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 in the operations.

After December 2020, the remaining pillars of the CTF will be implemented:

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



Anglo American Platinum, Tumela

“Mining companies are changing accident investigation methods to reduce baseless allegations among workers, modifying bonuses to enhance safe production and putting more emphasis on visible leadership in the operations.”

## CONTACT DETAILS

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