SAFETY IN MINING

Fact sheet

MINERALS COUNCIL
SOUTH AFRICA

Formerly the Chamber of Mines of South Africa

AngloGold Ashanti

"The industry has reduced the number of fatalities for nine consecutive years."

Working together, South African mining companies, unions, employees and the regulatory authorities have made significant strides in improving the safety performance of South African mines.

Indeed, since the dawn of democracy in South Africa, the mining industry has made significant strides in reducing fatalities and safety incidents. Between 1993 and 2016, the number of fatalities declined by around 88%. This improvement in safety performance over 23 years illustrates that achieving the industry's ultimate goal of zero harm is possible.

REGULATORY STRUCTURES

INTRODUCTION OF MINE HEALTH AND SAFETY ACT

South Africa's Mine Health and Safety Act 29 of 1996 (MHSA) was considered to be fairly radical in its time as it made provision for a tripartite approach to safety and health, requiring industry, the unions and government to act in concert in promoting a safe and healthy workplace. This approach underpins some of the successes achieved to date.

The Mine Health and Safety Inspectorate of the Department of Mineral Resources, established in terms of the MHSA, is responsible for the 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 certain work in certain areas, and/or activities.

These stoppages may be extended to entire mines should the inspectorate have valid reason.

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

QUICK FACTS

1993 TO 2016

fatalities reduced by 88%

R40 MILLION

spent on fundamental and applied research and technology transfer focusing on supply

R250 MILLION

spent on research about seismicity associated with deep-level mining

Typically, each shaft has its own health and safety committee comprising representatives of management and unions. These committees seek to ensure compliance with regulations, provide safety training for all employees, along with promoting active collaboration in all matters relating to safety and health. They provide a forum for the investigation of accidents and incidents, and lessons learned are documented and shared. Collaboration on matters of health and safety in the mining industry is extensive and intensive.

MINE HEALTH AND SAFETY COUNCIL

The Mine Health and Safety Council (MHSC) was set up in 1996 to direct safety in the mining industry and to respond to industry safety challenges. This body was built on the achievements of decades of fundamental research and funded by the mining industry. 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 public revenue 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.

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 and minerals sector has sufficient numbers of competent people who have been trained to improve health and safety standards and processes.

TRIPARTITE ACTION PLAN

In 2009, the Minerals Council South Africa (Minerals Council) launched the Mining Industry Occupational Safety and Health (MOSH) Learning Hub 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 using nets with bolts to help prevent falls of ground. Similarly, proximity detection systems (PDS) have helped prevent incidents by alerting mineworkers to safety risks. The adoption of this PDS technology has not been without challenges – as with any new technology, functionality improves and develops over time and it is the responsibility of companies to keep up to date with the newest versions of the technology. The Minerals Council's efforts to encourage the industry to adopt new technology are ongoing.

CEO ZERO HARM LEADERSHIP FORUM

In 2012, the Minerals Council established the CEO Zero Harm Leadership Forum (formerly called the CEO Elimination of Fatalities Team) to acknowledge the value of leading by example. The first focus area was on fall of ground – the greatest contributor to fatalities at the time.

This team continues to drive health and safety initiatives, and to share experiences from the top to help address key challenges in a manner that will accelerate the industry's journey to zero harm. The objectives of the team 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 deal with and solve key challenges
- Establish working protocols with industry stakeholders and communities
- Monitor and agree on adjustments to industry models to suit specific needs

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DEVELOPING NEW TECHNOLOGY FOR SAFER WORK

Central to curbing underground accidents is, as far as possible, the removal of miners from working-face dangers and in-stope health hazards. Where that is not possible, technology is directed at protecting workers. This includes, for example, anti-collision technology for underground trackless equipment, securing hangingwalls with netting and bolts, hydro-powered rock drills and new water-based emulsions that can be detonated electronically.

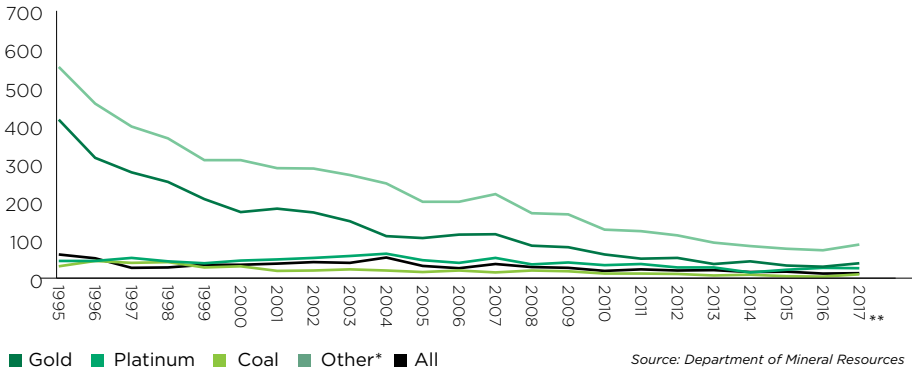
These are all incremental improvements but they add up to making our mines far safer places to work. South African mining companies are co-operating with each other and with equipment makers in devising better and safer working methods and technology.

SAFETY PERFORMANCE IN 2017

The Minerals Council is deeply disappointed about the deterioration in safety performance in 2017. During the year, there was an increase in the number of fatalities across the industry to 88 compared to 73 in 2016 (as per data available from the Department of Mineral Resources). This marked the first regression in the number of fatalities in a decade and is particularly disappointing given the consistent improvement over the past two decades as a result of various tripartite health and safety initiatives in the mining industry.

A particular concern in 2017 was the number of accidents related to seismic activity and subsequent fall-of-ground incidents. The industry has seen a notable increase in the number of rockbursts while the number of rockfalls, which is typically the main cause of falls of ground, decreased. The industry has noted this development and has renewed its commitment to better understanding and addressing the matter. The MOSH Fall of Ground Team has been established to lead the development of leading practice, particularly with regard to rockbursts. The findings of the task team will be shared across the industry.

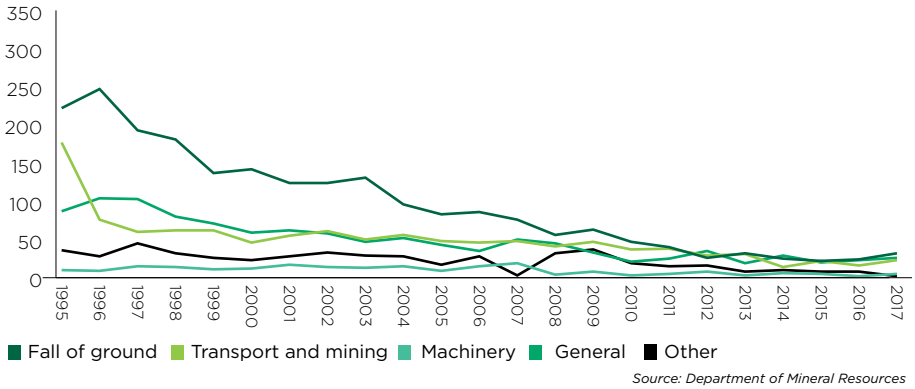
Mining fatalities per commodity (1995-2017)



Source: Department of Mineral Resources

* *Other includes diamonds, chrome, copper, iron ore and all others not specified above*
** *2017 figures to be confirmed*

Causes of fatalities (1995-2017)



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 incidences and general accidents are the three primary causes of injuries on mines.

Joint industry efforts have focused intensely on addressing fall-of-ground incidents, particularly in deep-level mines, over several years. This is reflected in more than R150 million invested by the MHSC in research to this end. In addition, through the MHSC, more than R250 million has been spent on research into seismicity associated with our deep-level mines. Another R40 million has been spent on fundamental and applied research and technology transfer. Research outcomes have led to new mine designs and methods. As a result, the number of fatalities associated with seismicity fell from 48 in 2003 to 15 in 2017.

Injuries in 2017

Commodity	2016	2017**	% change
Total	**2,785**	**2,534**	**-9**
Gold	1,167	955	-18
Coal	184	193	5
Platinum	1,120	1,104	-1
Other*	314	282	-10

* *Other includes diamonds, chrome, copper, iron ore and all others not specified above*
** *2017 figures to be confirmed*

BUILDING A CULTURE OF SAFETY

The Culture Transformation Framework (CTF), developed by the MHSC and approved at the 2011 Health and Safety Summit, is an initiative that 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 safety. In 2011, the MHSC launched a campaign entitled "Changing minds, changing mines" with the aim of developing a framework to guide the South African mining sector into making the necessary changes towards attaining zero harm.

JOURNEY TOWARDS ZERO HARM: SAFETY MILESTONES

1996 Introduction of Mine Health and Safety Act
- Formation of the Mine Health and Safety Council

2009 Establishment of the Mining Industry Occupational Safety and Health Learning Hub

2010 Inclusion of health and safety in the revised Mining Charter

2011 Tripartite stakeholder principals approve the Culture Transformation Framework

2012 Establishment of the CEO Zero Harm Task Team

2014 Tripartite stakeholders agree on 2014 milestones for health and safety
- Centre of Excellence launched

2016 Tripartite stakeholders sign declaration of actions (pledge) as a step change to improve industry occupational health and safety performance, harness achievement of 2024 milestones and accelerate industry's journey to zero harm

2017 Mining Industry Occupational Safety and Health Fall of Ground task team established

The Minerals Council is encouraged by these milestones and the concrete actions of all stakeholders, and regards safety as critical at all levels in companies and will continue to lead by example through effective collaboration with industry stakeholders.

The CTF has 11 pillars. The Minerals Council is committed to the effective implementation of the following pillars of the CTF by 2020:

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 putting greater emphasis on visible 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

ESTABLISHING A CENTRE OF EXCELLENCE

In November 2014, MHSC principal tripartite stakeholders launched a Centre of Excellence to conduct world-class research, build research capacity and facilitate the implementation of research outcomes. To date, the scopes of the 10 "quick-win" projects have been concluded and will be commissioned by the centre. In addition:

R40 million
has been spent on fundamental and applied research and technology transfer

R250 million
has been spent on seismicity research associated with deep-level mining

COLLECTIVE ACTION

Ensuring the safety and health of all mine employees requires active collaboration between management, employees and regulators. All stakeholders need to remain committed to achieving zero harm. The Minerals Council and its members will continue to work with stakeholders, including government and organised labour, to protect the occupational health and safety of all mineworkers.


Kumba Iron Ore

"Mining companies are also 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."

MILESTONES

FATALITIES

Every fatality is one too many. We will eliminate fatalities by December 2020. During the 2014 MHSC Summit, all stakeholders agreed that we needed to accelerate the elimination of fatalities. Hence this milestone was set for 2020.

INJURIES

Up to December 2017, there has been a 9% reduction in serious injuries per year. From January 2017, there was a 20% reduction in lost time injuries (LTIs).

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