



SAFETY IN MINING

FACT SHEET 2017

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.

Since 1993, the number of fatalities has reduced by 88%. In 2016 a total of 73 fatalities were recorded, the lowest in the history of the industry, despite the fact that employee numbers have risen over this time period. This marked an improvement of 5% year-on-year. The industry has reduced the number of fatalities for nine consecutive years. Even though significant progress has been made, the industry recognises that much remains to be done, and that every fatality is one too many.

Mining can be arduous work in challenging and potentially hazardous circumstances; the South Africa's mining environment is unique and exceptionally challenging. Certain mines operate up to five kilometres underground where the virgin rock temperatures can reach 60°C. In these and other circumstances, the safety of mine workers must take priority.

REGULATORY STRUCTURES

INTRODUCTION OF MINE HEALTH AND SAFETY ACT

South Africa's Mine Health and Safety Act (MHSA), introduced in 2006 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 (DMR), established in terms of the MHSA, is responsible for the overall regulation of safeguarding 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 for such a decision.

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

Typically, each shaft has its own health and safety committee that comprises representatives from 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 the learnings are documented and shared. Collaboration on matters of health and safety in the mining industry is both extensive and intensive.



QUICK FACTS

- SINCE 1994**
the number of fatalities has reduced by 88%
- R40 MILLION**
has been spent on fundamental and applied research and technology transfer focusing on supply
- R250 MILLION**
has been spent on research about seismicity associated with deep-level mining

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 Chamber 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 Chamber in the last 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 mine workers 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 the companies to keep up to date with the newest versions of the technology. The Chamber's efforts to encourage the industry to adopt new technology are ongoing.

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. These include, for example, anti-collision technology for underground trackless equipment, securing hanging walls with netting and bolts, hydro-powered rock drills and new water-based emulsions that can be electronically detonated.

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 training at Anglo American Platinum's Dishaba Mine

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, 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.

The Cultural Transformation Framework (CTF) has eleven pillars. The Chamber is committed to the effective implementation of the following pillars of the CTF by 2020:

- 1 Bonus and performance incentive pillar to prioritise safety ahead of production
- 2 Risk management pillar aimed at reducing risk at its source and to investigate root causes
- 3 Leadership pillar encouraging leaders to lead by example and walk the talk of Zero Harm
- 4 Leading practice pillar provides a unified approach to identifying and facilitating the adoption of leading occupational health and safety practices and research outcomes
- 5 Diversity management pillar aimed at eliminating racism, genderism and any other forms of discrimination
- 6 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 amongst workers, modifying bonuses to enhance safe production, and putting more emphasis on visible leadership in the operations.

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

- 7 Integrated mining activity pillar
- 8 Technology pillar
- 9 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 ten '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 research about seismicity associated with deep-level mining



Safety checks underway at Harmony Gold's Tshepong Mine

MILESTONES

Fatality milestone:

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

Injury milestones:

Up to December 2016, 20% reduction in serious injuries per year.

From January 2017, a 20% reduction in lost time injuries (LTI).

CEO ZERO HARM TASK TEAM

In 2012, the Chamber established the CEO Zero Harm Task Team (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 (FOG) – the greatest contributor to fatalities at the time.

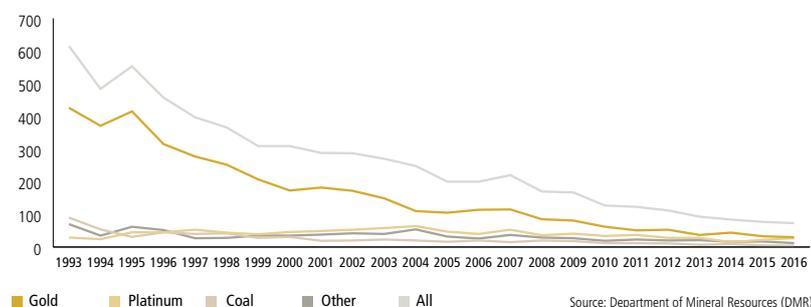
This team continues to drive health and safety initiatives and share their experiences from the top to help address key challenges in a manner that will accelerate the industry's journey to Zero Harm. The objectives of the team are to:

- 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 community
- Monitor and agree adjustments to industry models to suit specific needs

IDENTIFYING AND MITIGATING SAFETY RISKS

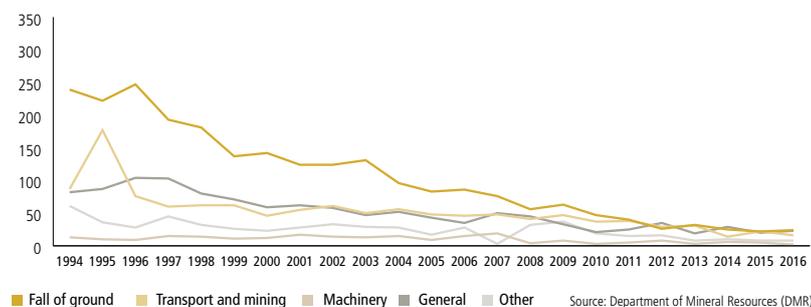
Although the cause of accidents, injuries and fatalities may vary, FOG, transport incidences and general accidents are the three primary causes of mine injuries.

MINING FATALITIES PER COMMODITY (1993 - 2016)



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

CAUSES OF FATALITIES (1994 - 2016)



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

There was a 15% year-on-year decrease in the actual number of serious injuries by 476 from 3,138 in 2015 to 2,662 in 2016. The Chamber would like to recognise the efforts of companies for this substantive reduction in the number of injuries reported in 2016.

INJURIES IN 2016

Commodity	2015	2016	% Change
Total	3,138	2,662	-15
Gold	1,249	1,069	-14
Coal	206	183	-11
Platinum	1,329	1,110	-16
Other*	354	300	-15

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

A JOURNEY TOWARDS ZERO HARM: SAFETY MILESTONES

- 1996** Introduction of Mine Health and Safety Act
- 1998** Formation of the Mine Health and Safety Council
- 2003** Tripartite stakeholders agree on 10-year health and safety milestones to improve performance
- 2008** Development of Tripartite Action Plan to achieve health and safety milestones
Formation of Regional Tripartite Health and Safety Forums
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 Elimination of Fatalities Team
- 2014** Tripartite stakeholders agree on 2014 milestones on health and safety
Launch the Centre of Excellence
- 2016** Tripartite stakeholders signed declaration of actions (pledge) as a step change to improve the industry OHS performance, harness the achievement of 2024 milestones and accelerate the industry's journey to Zero Harm.

The Chamber is encouraged by these milestones and the concrete actions that all stakeholders committed to. The Chamber regards safety as critical to all levels in the companies and will continue to lead by example through effective collaboration with industry stakeholders.

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