

# ELIMINATION OF FOG FATALITIES ACTION PLAN

## Fact sheet

July 2021



**MINERALS COUNCIL**  
SOUTH AFRICA



An investigation into the leading causes of fatalities indicated that fall of ground (FoG) related incidents is a key area of concern, accounting for 22 of the 60 overall fatalities in 2020.

**In 2020, the South African mining industry observed a regression in safety performance. This led to much consideration and introspection by the CEO Zero Harm Forum and within the Minerals Council. An investigation into the leading causes of fatalities indicated that fall of ground (FoG) related incidents is a key area of concern, accounting for 22 of the 60 overall fatalities. To address this challenge, the Minerals Council's CEO Zero Harm Forum mandated the Rock Engineering Technical Committee (RETC) of the Minerals Council, with the support of the South African National Institute of Rock Engineering (SANIRE), to present an action plan to eliminate FoG fatalities.**

The RETC and SANIRE held multiple consultative workshops, attended by members of the Minerals Council, the RETC and the SANIRE, to discuss the industry's performance and analyse FoG safety statistics and research projects. The consultative process also considered feedback from mine managers as represented by the Association of Mine Managers of South Africa (AMMSA) and South African Collieries Managers Association (SACMA). The analysis showed a steep decline in FoG fatalities between 2003 and 2011, followed by a plateauing period from 2012 to 2020. It further identified barring practice as one of the high-risk activities, contributing to almost 60% of FoG incidents.

The workshops identified various issues to be considered by the industry to combat FoG related fatalities, which were classified using the CEO Zero Harm Forum's Industry Ground Control Framework. It was concluded that bold, heartfelt actions are needed to bring about a step-change in the elimination of FoG fatalities.

After extensive deliberations, six recommendations were made for the Elimination of FoG Fatalities Action Plan (Action Plan). The Action Plan complements the current and ongoing work of the Minerals Council, MHSC, Mining Qualifications Authority (MQA) and Mandela Mining Precinct (MMP) to eliminate FoG fatalities.

## CHALLENGES CONSIDERED:

Little progress on execution of rock-related projects currently in Mine Health and Safety Council (MHSC) research programme and projects

Exodus of experienced rock engineers from South Africa and most experienced reaching retirement age

Behavioural challenges related to accidents – not deliberate or malicious, rather as a result of "getting the job done"

# RECOMMENDATIONS

The following recommendations, proposed over various time frames, aim to accelerate the industry's journey to zero harm.

## 1 ADOPTION OF LEADING PRACTICES

**Minimise rock mass damage from drilling and blast by:**

- Monitoring effectiveness of current drilling practice (scanning of excavation profiles) using technology **S-M**
- Using appropriate blast round designs (effective hole lengths and hole spacing) and explosives to minimise blast fracture propagation for example, emulsion-type explosives **S**

**Eliminate the risk of people working under unsupported rock by:**

- Reviewing current netting and bolting practices across the industry to customise them to the geotechnical conditions of individual mines using an enhanced MHSC audit tool **S**
- Permanent area coverage in stoping widths < 1.2m **S-M**

**Improve underground visibility by:**

- Documenting and disseminating a leading practice on workplace illumination to meet illumination standards applicable to general offices **S**

## 2 RESEARCH AND DEVELOPMENT (R&D)

**Invest R40 million over five years in collaborative R&D on low-hanging fruit for FoG fatality elimination, for example:**

- Barring technology to identify and safely remove loose rock **S-M**
- Improved or optimised seismic hazard rating and warning systems e.g. poor performance of short-term hazard assessment **M**
- Systems and technology for real-time monitoring and pro-active warning of instability in operations **S-M**
- Support designs **M**
- Implementing improved drilling accuracy by using jigs/rigs in conventional stoping panels **M**
- Any challenges related to the implementation of the Action Plan's recommendations **S-M**

## 3 SKILLS DEVELOPMENT

**Invest R6 million over three years on:**

- Updating learning material for the Chamber of Mines Strata Control Certificate and Rock Mechanics Certificate **S-M**
- Short-course programmes (typically online) to develop new and current rock engineering personnel **S-M**
- Support efforts within mines to ensure coaching and mentoring of new and current rock engineering personnel using senior personnel, as a joint initiative between the RETC and SANIRE. This includes knowledge transfer, technical capacitation, development and assessment **S**
- Developing and implementing formal learning programmes and qualifications to improve capabilities of production supervisors, mine overseers and managers to supervise, manage and lead for the elimination of FoG fatalities **S-M**

## 4 POLICY ISSUES

**Engage the Department of Mineral Resources and Energy through the Chief Inspector of Mines to fast-track:**

- Promulgation of the revised Guideline for the Mandatory Code of Practice to address Geotechnical Risk with a view to implementation, developed in 2016 **S**
- Finalisation of the review of Chapter 2 Regulations on Appointments, Duties & Responsibilities, which includes revised appointments for rock engineering personnel **S**

**Adoption by mining companies of the SAMRASS forms:**

- Rock engineers previously developed this to enable better quality FoG accident investigations, for incorporation into the Minerals Council's Digitisation of Safety Data project **S**

## 5 BEHAVIOUR, CULTURE, OPERATIONAL DISCIPLINE

**Implement ways to reduce the mining cycle time to be long enough to effectively implement all control measures needed to eliminate FoG fatalities, for example:**

- Faster drills/faster transport to working places, taking account of the relevant work done by the MMP and others. If reasonably practicable measures cannot be identified, planning should be adjusted accordingly **M**

## 6 IMPLEMENTATION AND MONITORING

**Leading implementation:**

- Supporting an annual FoG Day of Learning, hosted by AMMSA and SACMA (jointly/separately) in collaboration with the RETC, the SANIRE, and other relevant structures to align their members on the Action Plan and refresh FoG leading practices **S**

**Measures of progress:**

- Approving the use of consecutive fatal-free hours worked (normalised for any increase/decrease in number of employees) as a measure of progress for the implementation of the Action Plan **S**

**Reporting:**

- Providing a progress report on the implementation of the Action Plan by individual members on a quarterly basis, to demonstrate progress, identify successes and challenges, and communicate progress to other stakeholders **S**

**Key** **S** Short = 0-2 years **M** Medium = 2-5 years **S-M** Short to Medium = 0-5 years

### MINERALS COUNCIL SOUTH AFRICA

T +27 11 498 7100  
E info@mineralscouncil.org.za

@Mine\_RSA www.facebook.com/Mine

### MEDIA

T +27 11 880 3924  
E mineralscouncil@rasc.co.za

www.mineralscouncil.org.za

Rosebank Towers, 19 Biermann Avenue  
Rosebank, Johannesburg, 2196  
PO Box 61809, Marshalltown 2107