



MHSC

Mine Health and Safety Council

IDENTIFY OPPORTUNITIES TO IMPROVE THE SAFETY OF BARRING-DOWN PRACTICES

SIM 140202

26 June 2019

LIMPOPO TRIPARTITE FORUM

Lester Martin

Technology Transfer & Knowledge Facilitator

Email: lmartin@mhsc.org.za

Presentation Outline

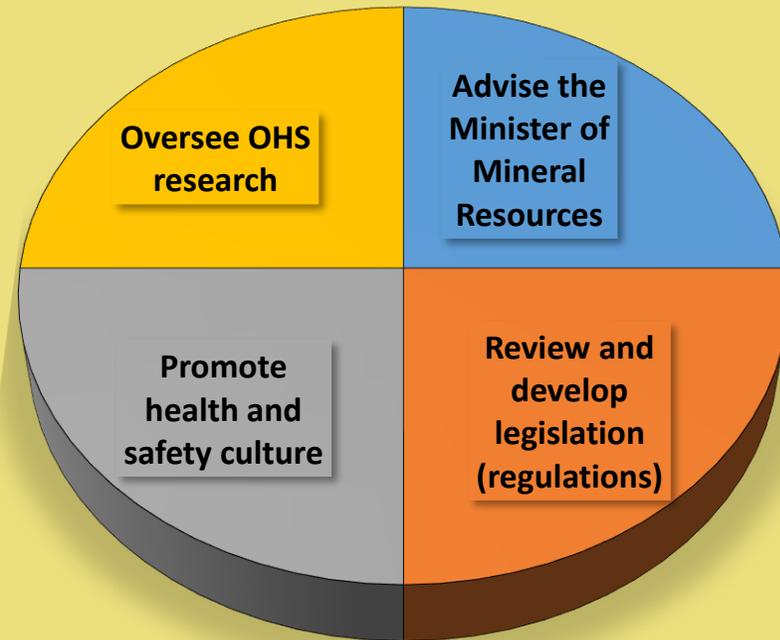
1. MHSC Mandate
2. Project (Study):
 1. Background of the Study
 2. Objectives of the study
 3. Methodology
 4. Results of the Study
 5. Conclusion
 6. Recommendations



MHSC mandate

MHSC is a national public entity established in terms of the MHS Act, No 29 of 1996.

Zer



Harm

Project SIM 140202

The purpose of the study was to **IDENTIFY OPPORTUNITIES TO IMPROVE THE SAFETY OF BARRING DOWN PRACTICES** for the commodities of gold, platinum and coal.

Research Agency: Golder Associates Africa(PTY)Ltd.

Authors: A Boodoo, CA Jermy, V Kuppusamy and P Ramsaroop

Approx Completion Date: July 2016



MHSC

Mine Health and Safety Council

What is Barring

Barring is the removal of loose slabs of rock from roofs and walls of excavations. This is done to remove the fall of ground hazard posed by these loose blocks of rock. Barring may be performed manually with a steel or aluminium pinch bar which are the most locally used materials, or by using a mechanical barring machine such as a scaler.

Project SIM 140202

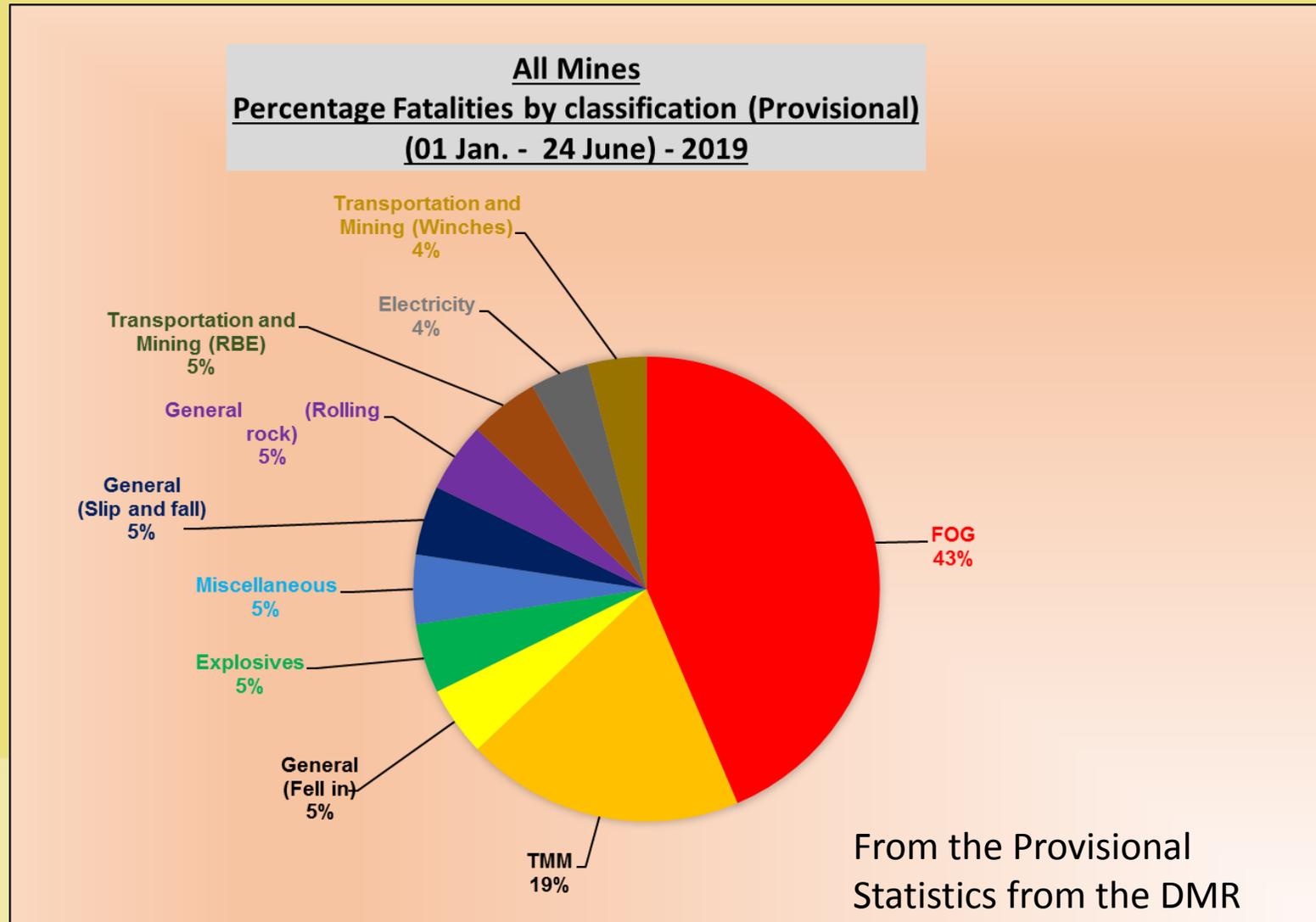


MHSC

Mine Health and Safety Council

Back Ground

This study stemmed from the number of preventable rock related accidents that led to fatalities over a two and a half year period in South African Mines. Between 2009 to May 2011, 94 fatalities occurred.



Objectives of the Study

The objectives of this study were to report on root cause analysis of barring-down related accidents and incidents in the Platinum, Gold and Coal commodities.

Other research outcomes included:

1. the identification of leading practices and the recommendation of feasible implementation solutions,
2. the assessment of barring training material, and
3. the development of barring training material.



MHSC

Mine Health and Safety Council

Methodology

1. Obtaining
 1. copies of barring related accidents from the regional DMR offices and from the champion mines
 2. barring standards, COPs and training material from the champion mines
2. Observing and undergoing
 1. barring and strata control training, on surface, in mock-ups and underground
 2. barring in the underground environment in a range of mining environments
3. Interviewing mine personnel underground post barring activities to ascertain barring knowledge and competence
4. Social data collection on surface with focus group discussions and key informant interviews
5. Completing Root cause analyses
6. The assessment of barring training material, and
7. The development of an innovative barring training product in conjunction with Simulated Training Solutions (STS3D).



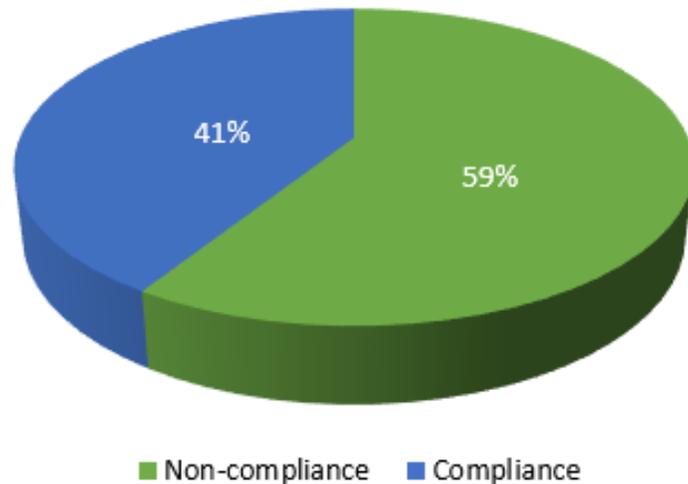
MHSC

Mine Health and Safety Council

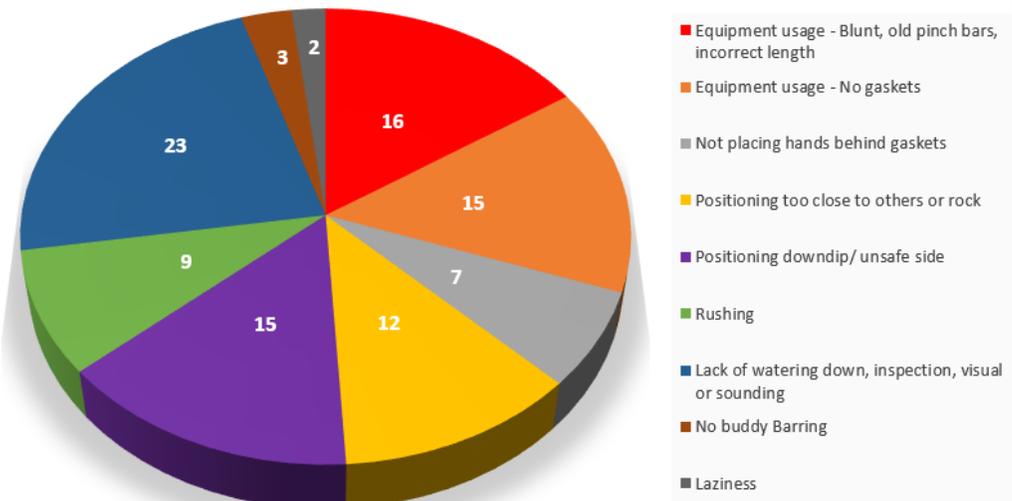
Results of the Study

1. The root causes were found to be predominantly related to human behaviour factors
2. These were inadequate leadership, inadequate training, and poor habits or personal preference.
3. Results from the social study highlighted worker attitudes, incorrect barring procedures, training systems and lack of appropriate leadership as key issues
4. Generally, worker attitudes reflect an unmotivated, unsupervised, non-compliant and dissatisfied workforce across all

Barring to standard



Reasons for non-compliance



Results of the Study

A lack of appropriate knowledge and experience when undertaking barring.

The most frequent reported worker attitude is complacency on the job where workers grow accustomed to the environment and job tasks that they are not vigilant when working in potential risk areas.

Workers have expressed that they are overworked, stressed and fatigued which leads to lack of concentration and incorrect barring which increase the risk of incidents and injuries.



MHSC

Mine Health and Safety Council

Results of the Study

The following general comments can be made in respect to barring training practices:

- a) Barring is physical task and therefore requires a significant practical component.
- b) Barring rules should be unambiguous to prevent the misinterpretation by mine workers .
- c) More emphasis should be placed on the occupational health and safety hazards of the individual related to barring. E.g. Good posture.
- d) Behaviour that is unsafe and safe should be included in the theoretical and practical components and re-iterated frequently. Essentially incorporate corrective behaviour techniques in barring training.
- e) Transportation of the pinch bar and correct storage isn't always incorporated in the barring training.
- f) The training methods employed do not satisfy all the critical cross field outcomes mentioned in the standard. Efforts need to be made to include them.



MHSC

Mine Health and Safety Council

Conclusion

Training is an expensive undertaking and ineffective barring training practices are even more so hence the need for continual improvement of training practices.

The reasons for technological advancements that assist with barring not being adopted

The three areas suggested for improvement from the social

Leadership, by:

Employee Behaviour, by:

Training Material, by:



MHSC

Mine Health and Safety Council

Recommendations

The wide distribution and usage of the barring training product is recommended. Future project considerations that arose from this research include:

1. Further research into human behaviour studies (psychology of underground employees)
2. Further research and design of Entry examination LED lights in collaboration with manufacturers and suppliers.
3. Adoption of CSIR and/or UP Integrated Thermal Acoustic (ITA) Devices
4. Further research into non-compliance to MOSH initiatives, and the reasons why
5. Social studies per mine investigating mine specific themes
6. Ergonomics of tasks underground



Project Journey Conti...

OPPORTUNITIES TO IMPROVE THE SAFETY OF BARRING-DOWN PRACTICES IN THE SOUTH AFRICAN PLATINUM, GOLD AND COAL UNDERGROUND MINES




MHSC
Mine Health and Safety Council



IDENTIFYING OPPORTUNITIES TO IMPROVE THE SAFETY OF BARRING-DOWN PRACTICES



THE ROAD TO ZERO HARM

 **MHSC**
Mine Health and Safety Council

 **MINERALS COUNCIL**
SOUTH AFRICA

Training Material



Barring Training Videos are available

- 1. Introduction**
- 2. Hazard Identification**
- 3. 5 Ps to safe barring**
- 4. Tricks of the Trade**
- 5. Lesson learned and short cuts**
- 6. Positive leadership.**



MHSC

Mine Health and Safety Council

Thank you for your attention

Questions?

