# Mine Health and Safety Council

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SIM 11-05-01

NOSHCON 2012

Presented by Dr Anita Edwards

CSIR, Centre for Mining Innovation

13th September 2012

# Title

**Awareness training and Hearing Protection Devices: Current practices in the South African mining industry**

**SIM11-05-01**

**Conducted during 2011**

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# Acknowledgements

## Research team

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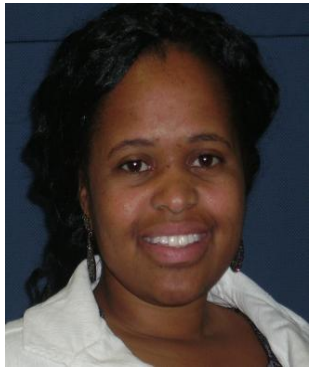
**CSIR**



**Lesedi Milanzi**
**CSIR**


- **Mine Health and Safety Council for funding**
- **Mr. Navin Singh Chief Research Operations Manager**
- **Mines and mine employees who acted as research sites**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# Outline of presentation

- Introduction
- Definitions
- Methodology
- Results
- Resources
- Recommendations for the industry

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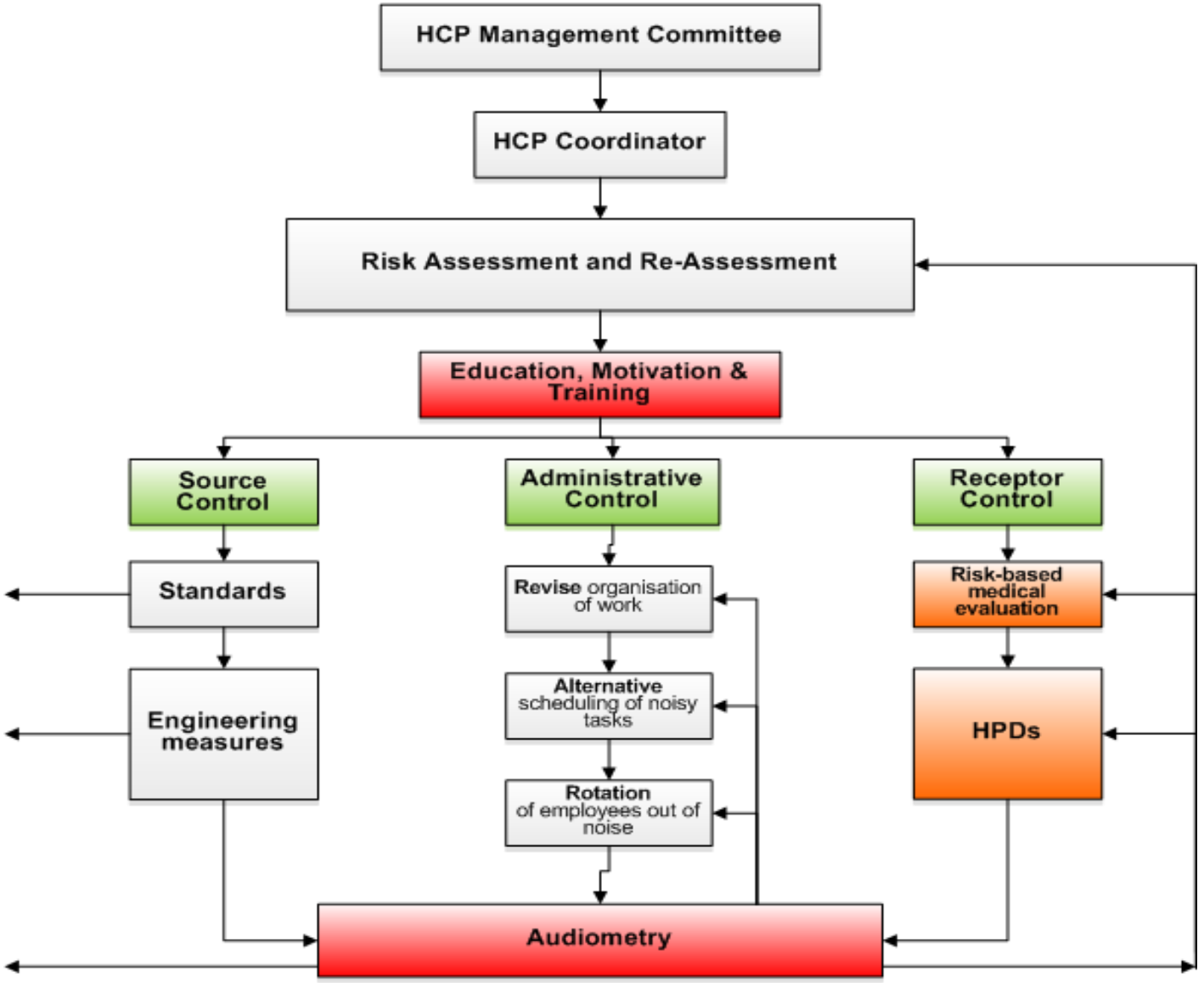
# Introduction

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# Definitions

**Awareness training**

***Education, motivation and training***

***Education***

- *teaching that will ensure the worker has knowledge about the risks of noise and how noise can effect hearing and quality of life*

***Motivation***

- *to protect his/her hearing and prevent hearing loss*

***Training***

- *on how to effectively use Hearing Protection Devices*

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# Definitions

**HPDs**

*Hearing Protection Device provision as one of the control strategies to reduce noise exposure*

*Common types*

- Formable earplugs made of expandable foam. One-size -fits-all
- Pre-molded earplugs made from flexible plastics
- Canal caps consisting of flexible tips on a lightweight headband
- Earmuffs having rigid cups with soft plastic cushions that seal around the ears
- Custom moulded for individuals ear-some of the brand names are Variphone, Noise Ban, Noise Clipper

# Methodology

- Literature review
- Survey mines - interview managers
- Interview employees
- Observe employees

# Methodology

## Sample

| Commodity represented | Number of shafts represented | Number of employees represented | Regions represented |
|---|---|---|---|
| **Gold** | 6 | 34000 | NW and Free State |
| **Platinum** | 3 | 35000 | NW |
| **Coal** | 3 | 7500 | Mpumalanga |
| **Diamond** | 1 | 750 | Free State |
| **Titanium** | 1 | 720 | KZN |
| **Contractors** | 1 | 10000 | KZN |

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# Awareness training - Data analysis

## Criteria for evaluating the current Awareness training practices (What should it look like?)

1. Commitment to NIHL mitigation by means of policy that includes all stakeholders and continual improvement
2. Commitment to NIHL mitigation by means of apportioned resources and management authority to enforce policy-HCP co-ordinator
3. Use of expert knowledge of health promotion theory and adult education to ensure best teaching methods and self motivated prevention and protection of hearing
4. Amount of training in relation to extent of the problem
5. Properly equipped trainers - Who should do the training

# Awareness training - Data analysis

**What should it look like?...continued**

6. **Training methods - Adult education - own language, visually stimulating, interactive, perceptions of susceptibility, touch emotions**
7. **Essential content of awareness training - cause of NIHL, effect of NIHL, methods to mitigate NIHL and HPD fitting and use**
8. **Needs of various target audiences - need to know (self protection), need to motivate (supervisors), need to co-operate (team effort - managers and workers), need to measure and improve (reporting processes)**
9. **Evaluate employees knowledge - how effective is the training**
10. **Evaluate the training programme - leading indicators - continual improvement. Cannot manage if do not measure- reports to senior managers - for real ownership of the programme**

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# Awareness training - Results

| Compliance of SAMI/Gaps (What does it look like?) |
| --- |
| • 91% refer to the “COP for Noise” as the policy<br><br>• None have specific policy on training |
| • All managed by Occupational Hygiene Manager - no or little integration with Health Manager None have a dedicated HCP co-ordinator |
| • 60% not based on theoretical model of teaching health promotion nor adult education<br><br>• 80% no theoretical basis |
| • 54% less than 15 minutes per annum |

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# Awareness training - Results

- 30% of trainers need Education and Training Development SETA accreditation. Others are internal qualifications- mainly mining knowledge
- 40% of trainers have specific training on health behaviour modification

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- 30% English only
- 30% English and Zulu
- 40% other languages when necessary
- 50% make use of videos mostly power point presentations

# Awareness training - Results

- 90% workers trained to identify noisy areas
- 27% of employees knew how to correctly identify loud noise- "shout" when at one - meter distance
- 100% include knowledge about signs 66% of employees know about signs

- 20% reported different training material for supervisors but not able to give evidence. On further questioning no real differences for supervisors receive same as all other workers

- 60% do not test employees on their knowledge after training. The 40% that do test use computer based evaluation - need 80% to pass Multiple Choice Questions

- 80% management reviews the stats on training

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# HPD management - Data analysis

**Criteria for evaluating the current HPD management practices (What should it look like?)**

1. **Commitment to NIHL mitigation by means of HPD policy that includes all stakeholders, best practice and continual improvement.**

2. **Commitment to NIHL mitigation by means of apportioned resources and management for HPD policy e.g. authority to enforce policy - Integrated management of HPD policy e.g. Risk Based Medical Examination (RBME), Health trained trainers.**

# HPD management - Data analysis

3. Motivational training that is based on current knowledge of health promotion theory and self protection and is holistic by including non - occupational causes of NIHL. Integration with Health Management.

4. Individualised HPD management - RBME, personalised fitting, systems for individual needs for HPDs e.g. lists of appropriate HPDs for different occupations, systems for problems, monitoring of HPD effectiveness in - situ.

5. Commitment to continual improvement- leading indicators of effective HPD policy, senior management own policy by review and strategic, effective system to manage non-compliance.

# HPD management - Results

| Compliance of SAMI/Gaps (What does it look like?) |
| --- |
| • 100% have a policy all use COP. 50% report it was developed by a team. 90% use attenuation as the criteria for choice,45% consider comfort, 9% price,18%other factors such as safety, environmental factors, leak test, etc. |

# HPD management - Results

| Compliance of SAMI/Gaps (What does it look like?) |
| --- |
| HPD policy managed by various departments<br><br>• 36% Occupational Hygiene and Procurement<br>• 27% Procurement only<br>• 27% Safety<br>• 9% Occupational hygiene only<br>• None by Health<br>• 50% report HPD strategy to mine manager |

# HPD management - Results

| Compliance of SAMI/Gaps (What does it look like?) |
| --- |
| • 100% trained on use and care of HPDs<br>• None on motivational aspects |
| • 39% report tinnitus after a working shift indicating overexposure |

# Employee knowledge

| | | | |
|---|---|---|---|
| NIHL | Recognize dangerous noise levels | 1 m rule 27% | Signage 67% |
| | Know the consequences of noise exposure | NIHL 90% | |
| | Know the nature of NIHL | Permanent 76% | Understand the audiogram 47% |
| | Know how to protect hearing | Wear HPDs all the times 89% | |

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# Employee knowledge

| | | | | |
|---|---|---|---|---|
| HPD | Reason why wear HPD | Self protection 95% | When do they remove HPDs 83% do not remove them. 90% only remove when leave noisy area | When observed only 69% were wearing |
| | Replace | Why- Pain/discomfort 48% know | Where to replace 47% | When to replace 73% only when lost |
| | Fitting | Given a choice Personal fitting 35%, choice 22% no choice 44% | Know how to insert easily and correctly 83% | |

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# Employee knowledge

| | | | | | |
|---|---|---|---|---|---|
| HPD | Fit | Comfortable 69% | Effective<br>Can hear warning signals 80%.<br>Quieter when wearing HPDs 54% | Tinnitus post exposure 39% | |
| | Care | Cleaning ease and method 88% easy to clean | Regular cleaning 80% every day | | |
| | Supervisor | Sets example 84%<br>When observer 60% were wearing | Motivates to wear 81% | Approachable about HPD problems 72% | Solution for HPD problems 67% |
| | Preference | Type | 54%prefer reusable 26% prefer custom moulded | | |

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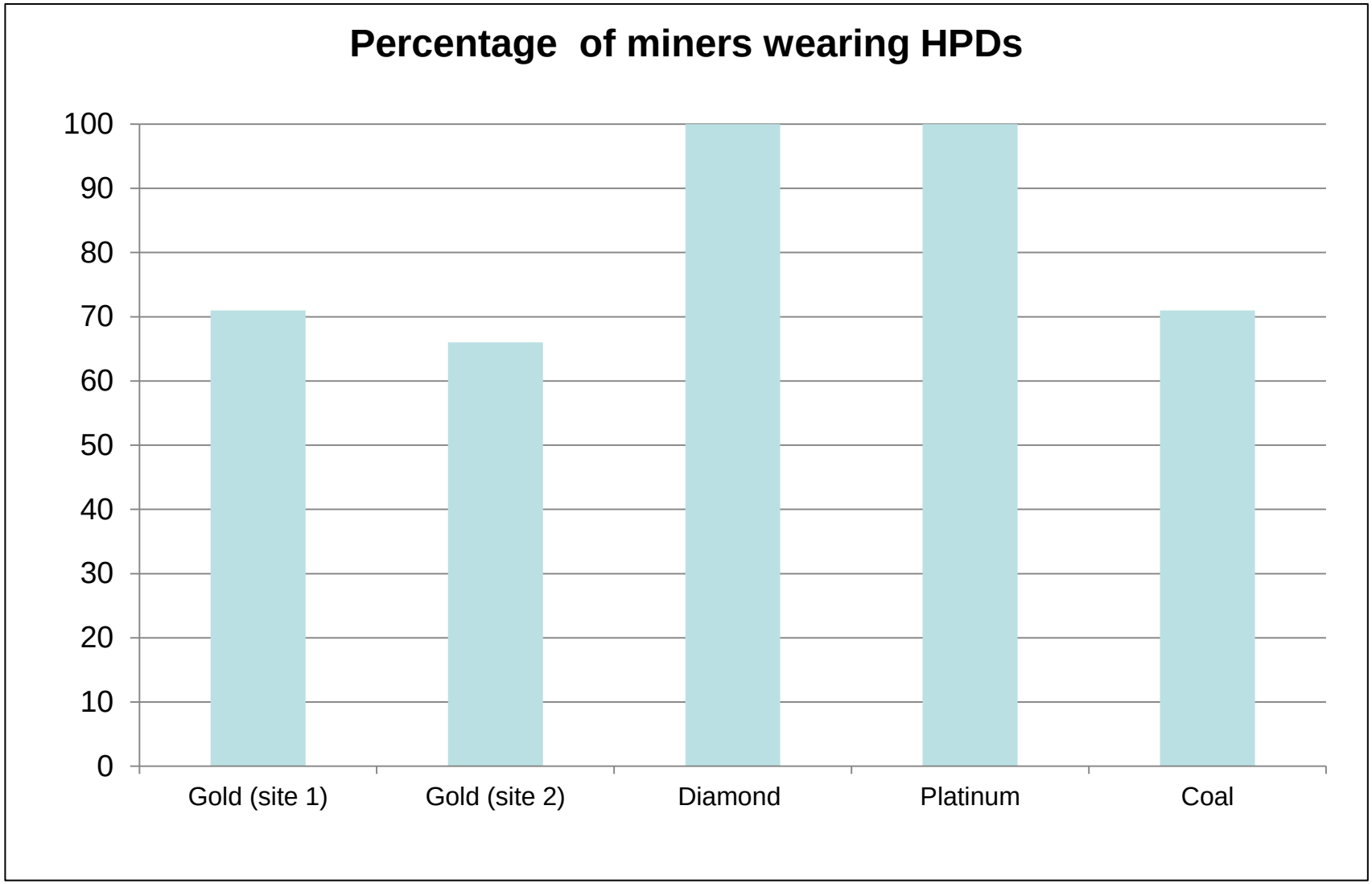
# Employee Observations

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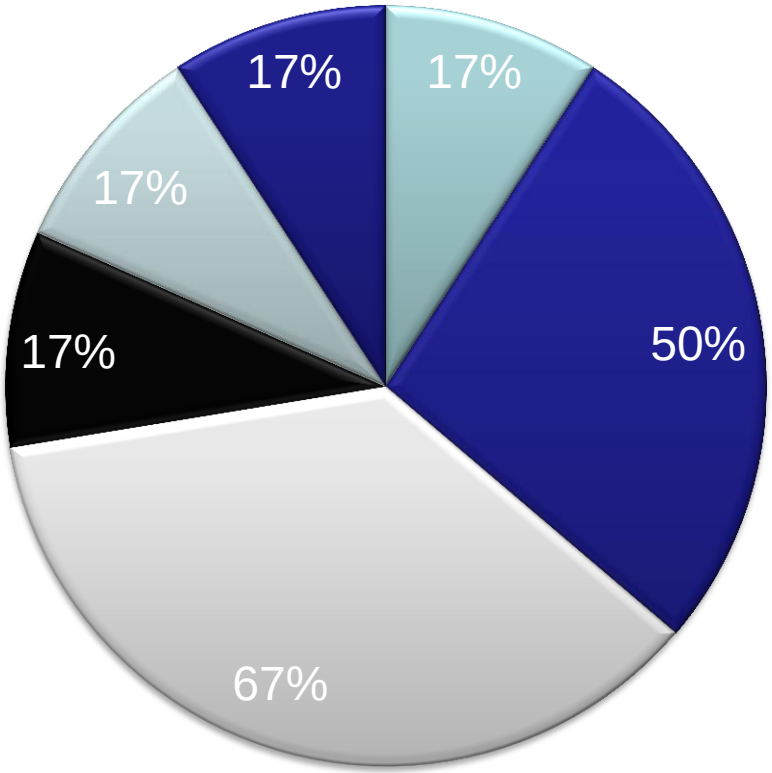
# Employee observations

## Reasons given for non-compliance with HPD use




- HPDs left/forgotten/lost misplaced
- Doesn't think the area is noisy
- HPDs cause irritation/ infection
- Exposed to noise for a short duration
- Experience has taught me to discern when noise is deafening
- HPDs are uncomfortable/ cause pain

# Resources

Guidelines

Ebook

# Recommendations

***Regulator requirements*** Development of policy that legislates best practice and HCP co-ordinator at each mine Appointing of Director and 9 regional HCP co-ordinators that support the mines to implement the legislation Development of audit tools that will facilitate enforcement

***Senior mine management requirements*** Each mine must appoint a HCP co-ordinator who manages an integrated department dedicated to NIHL mitigation that is made up of trained noise measurement, noise engineering, HPD dispensing, occupational health trainers and counsellors, hearing testing specialists Identification of leading indicators for continual improvement of the HCP managed by the HCP co-ordinator

***Skills requirements*** All members of the HCP department at mines must have adequate and relevant training and skills to provide the different aspects of awareness training and therefore the SAQA/EDTA/MQA system must be investigated in order to provide appropriate training qualifications

***Middle and line management requirements*** Development of training materials and systems for various target audiences based on the responsibility level, the language and educational level and the need to know how to motivate others to prevent hearing loss

***Miner requirements*** Development of MQA unit standard regarding adequate knowledge, motivation and training to prevent hearing loss MQA unit standard on NIHL mitigation debated in technical committees and implemented throughout mining industry

# Recommendations

## *Regulator requirements*

- Development of policy that legislates best practice
- HCP co-ordinator at each mine
- Appointing of  Director and 9 regional HCP co-ordinators  that support the mines to implement the legislation
- Development of audit tools that will facilitate enforcement

# Recommendations

***Senior mine management requirements***

Each mine appoint a HCP co-ordinator

- manages an integrated department dedicated to NIHL mitigation
- made up of trained
  - noise measurement
  - noise engineering
  - HPD dispensing
  - occupational health trainers

Identification of leading indicators

- continual improvement of the HCP managed by the HCP co-ordinator

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# Recommendations

***Skills requirements***

All members of the HCP department at mines

Must have adequate and relevant training and skills to provide the different aspects of awareness training

Therefore the SAQA/EDTA/MQA system must be investigated in order to provide appropriate training qualifications

# Recommendations

***Middle and line management requirements***

Development of training materials and systems for various target audiences based on:

- the responsibility level
- the language
- the educational level
- the need to know how to motivate others to prevent hearing loss

# Recommendations

***Miner requirements***

Development of MQA unit standard regarding adequate knowledge, motivation and training to prevent hearing loss

MQA unit standard on NIHL mitigation accepted by technical committees and implemented throughout mining industry

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*Thank you*



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