

Noise-induced hearing loss prevention in the South African mining industry

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Acknowledgements



Team members

- Kobus Dekker
- Mike Franz
- Tania van Dyk

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- Project co-ordinator Dr Audrey Banyini

Outline of presentation



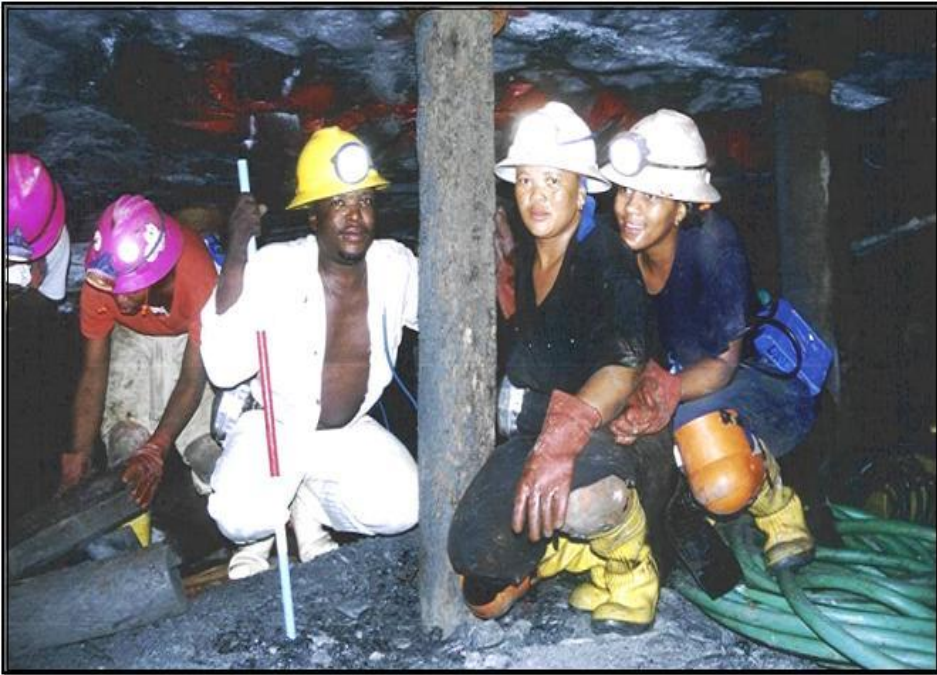
- Introduction
- Methodology
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- Conclusions
- Recommendations

Introduction



- Excessive noise exposure
 - Limits communication and compromises safety
 - Increases risk of hearing loss
 - Implications for worker's health
 - Quality of life
 - Employment prospects
- Noise-induced hearing loss (NIHL) can be prevented
- Noise control engineering is the main method of NIHL prevention

Introduction



- Mining industry
 - use of drilling and rock breaking equipment results in widespread exposure to high levels of noise
- USA
 - 80% of miners exposed above OEL
- USA coal miners
 - stage loaders = 82-103dB
 - hydraulic pump = 74- 103dBA
 - shearers = 85 -100dBA
- USA Sand and gravel miners = 97-112dBA

Introduction



- South African miners
 - more than 90% > 85 dBA
 - Between 1980 and 1998
 - winch operators 97.1-98.3 dBA
 - team leaders 97.4-104.9 dBA
- Target:
 - by December 2013
 - total noise emitted by all equipment not exceed 110 dBA
- MHSC baseline project

Methodology



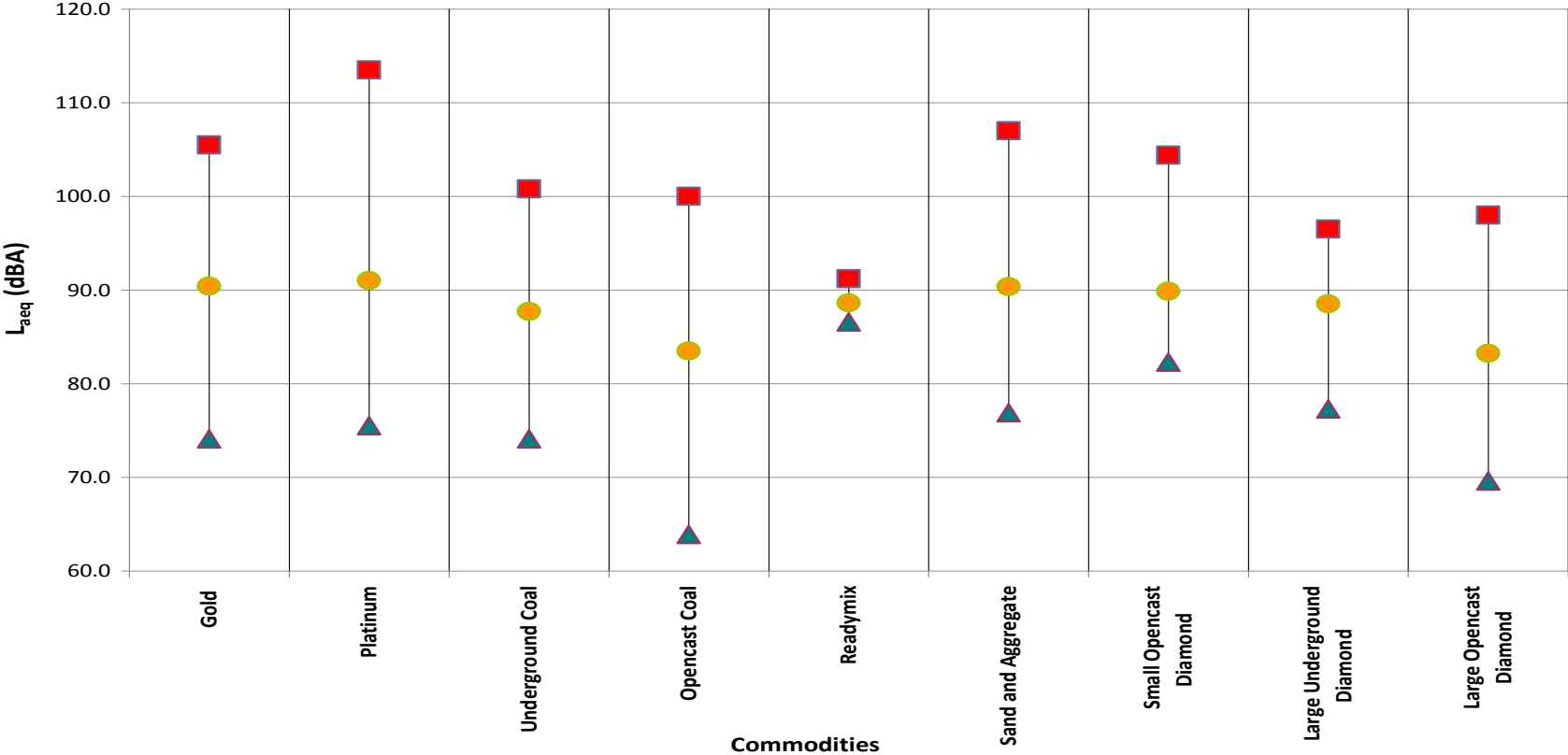
- Multi-task research design
- Adapted from Concawe Health Management Group - gasoline vapour exposures European petroleum industry employees
- To measure personal noise exposure levels
 - in various mining commodities
 - in different mining occupations
- Data collection
 - Personal noise exposures
- Volunteer host mines

Methodology

Commodity	Number of samples taken	Number of occupations represented
Large-scale mines		
Underground Gold	90	18
Underground Platinum	119	27
Underground Coal	72	23
Opencast Coal	74	33
Total	355	101
Small- to medium-scale mines		
Ready Mix	6	6
Sand & Aggregate	59	26
Small Opencast Diamond	27	16
Large Underground Diamond	50	21
Large Opencast Diamond	48	20
Total	190	89

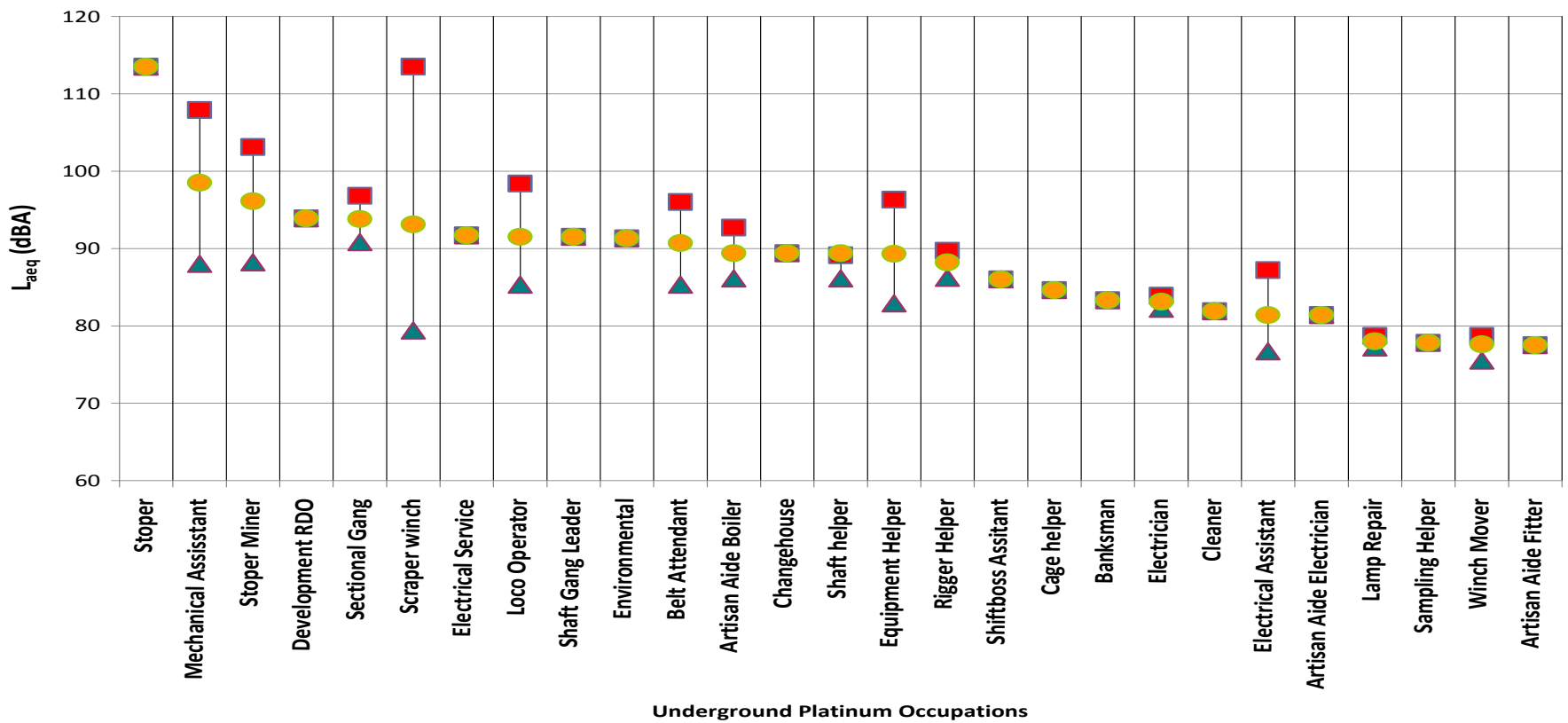
Results

Noise exposure levels in South African mining commodities



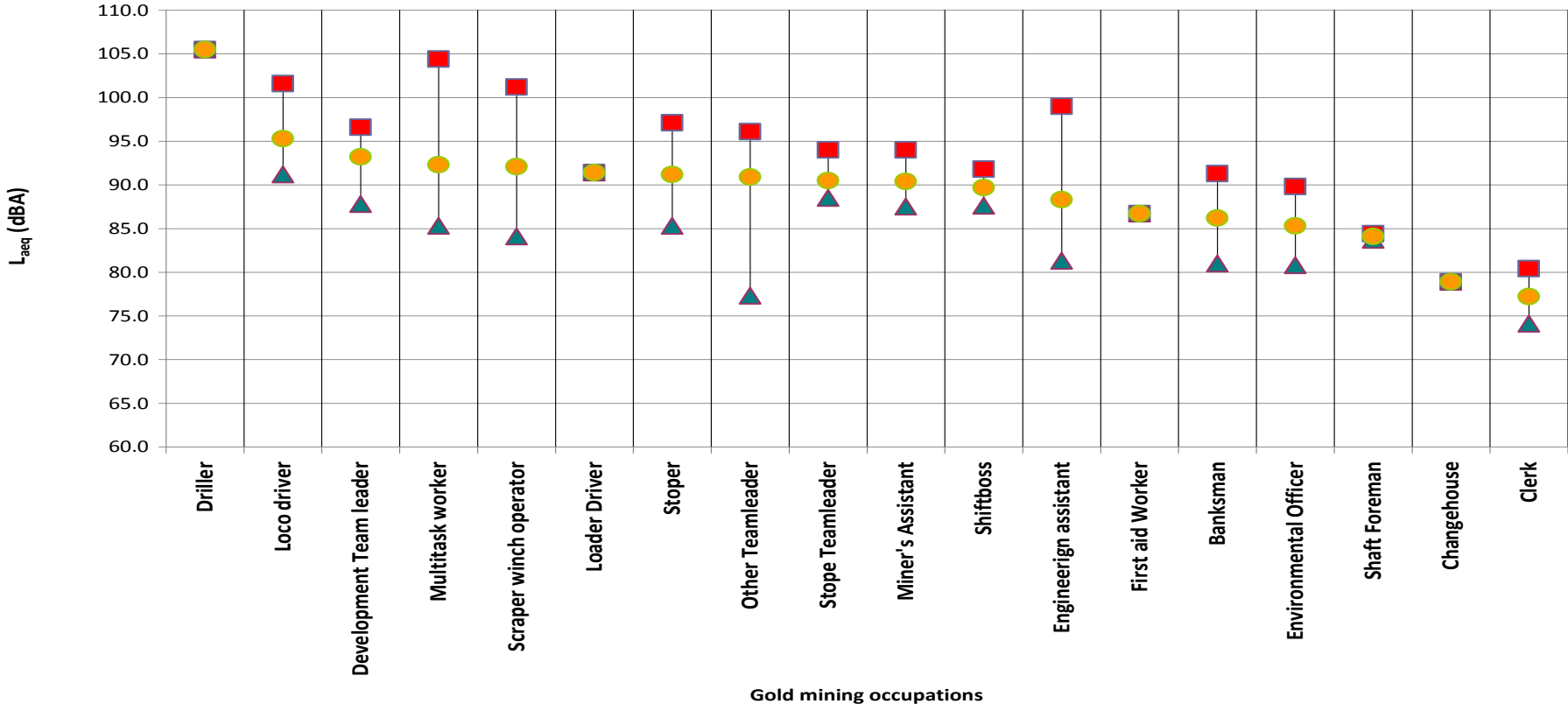
Results

Noise exposure levels in underground platinum occupations



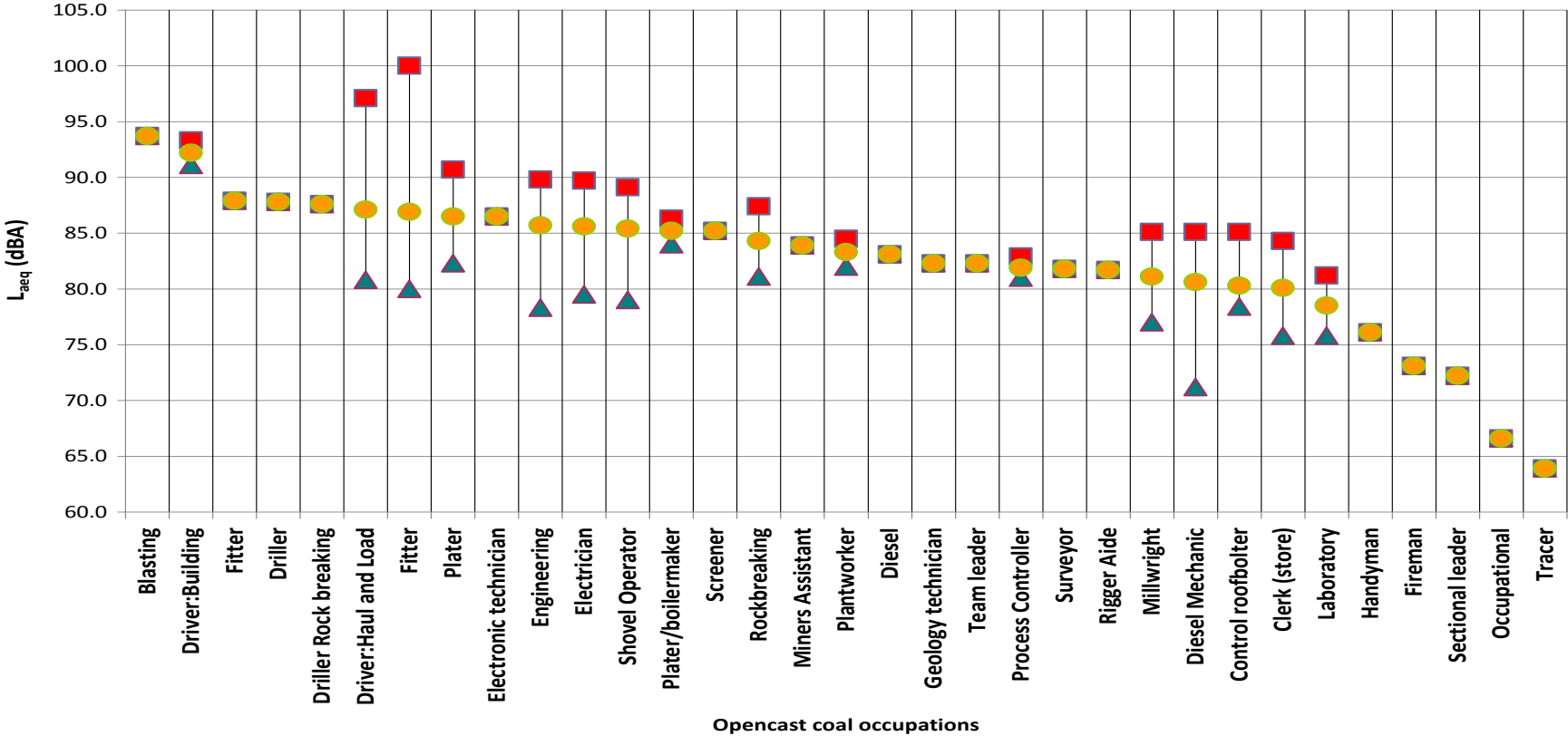
Results

Noise exposure levels in gold mining occupations



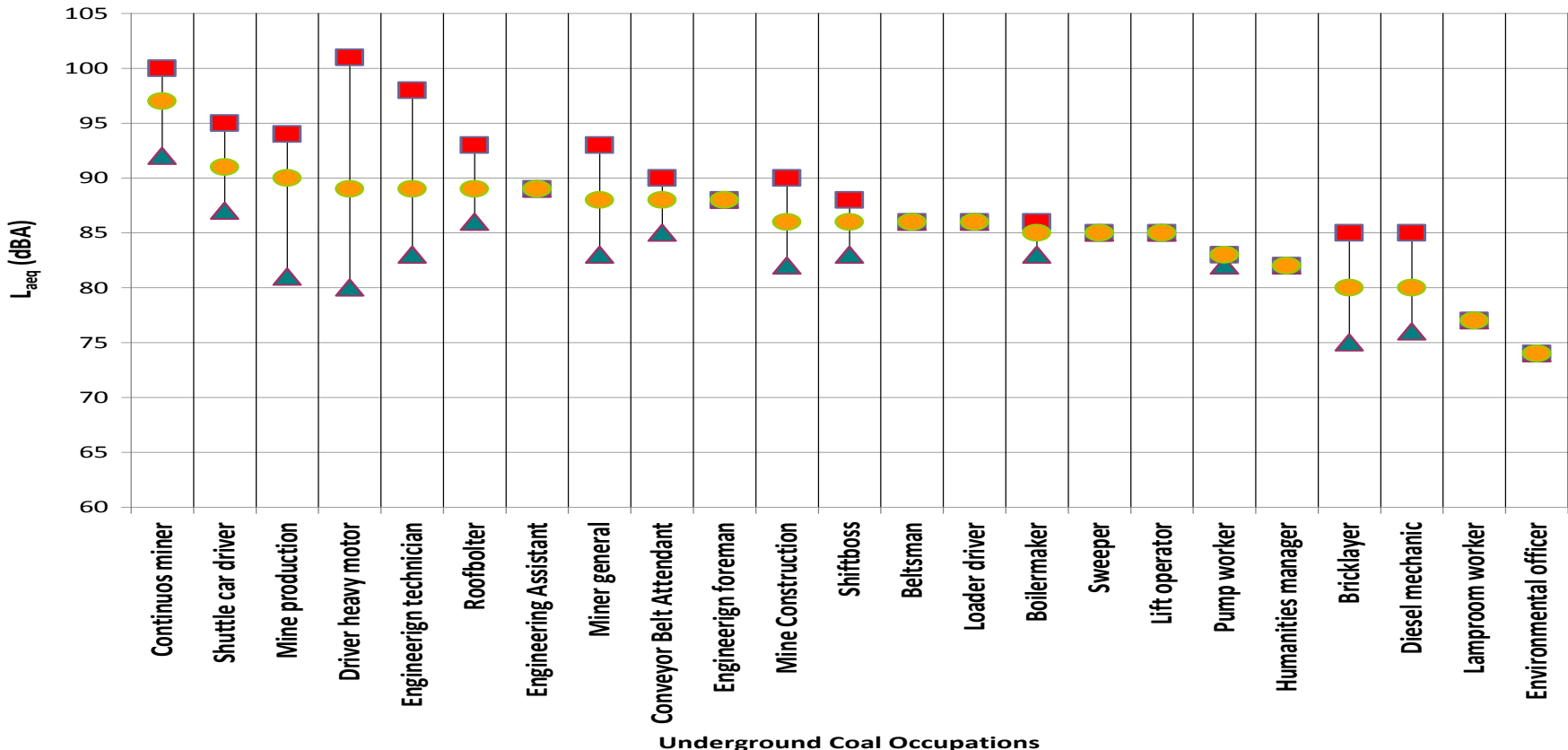
Results

Noise exposure levels in opencast coal occupations



Results

Noise exposure levels in underground coal occupations



Results

Project mine	Percentage of samples above (85 dBA)
Underground Gold	84
Underground Platinum	81
Underground Coal	61
Opencast Coal	41
Readymix	100
Sand & Aggregate	86
Small Opencast Diamond	89
Large Underground Diamond	42
Large Opencast Diamond	75
Total	73.2

Conclusions



- South African miners
 - 73% are exposed to > 85 dBA
 - Decrease from 90% in 2007
- Results indicate
 - Some improvements
 - Winch operators 98.3 to 92.1
 - Team leaders 104.9 to 90.9
 - Some deterioration
 - Platinum stopers 112 to 113.5

Recommendations



- Use information
 - Prioritise high risk occupations
 - Measure of success of interventions
- Results indicate urgent need to develop and implement
 - Inter-disciplinary hearing conservation programmes
 - Audiologist
 - Occupational Hygienists
 - Engineers
- Must include
 - Hearing loss monitoring results
 - Noise exposure records
 - Equipment noise monitoring records

Thank You