MINING INDUSTRY
OCCUPATIONAL
SAFETY & HEALTH

CHAMBER OF MINES
of South Africa

APPENDIX 2

EQUIPMENT NOISE REPORTING GUIDE

BACKGROUND

During 2016, the Chamber of Mines published a "Guidance Note on the Noise Measurement of Equipment to Ensure Compliance with MHSC Milestones" factsheet.

The purpose of this guidance note was to serve as an industry guideline for the implementation of the MHSC noise milestones, and also detail the required noise measurement procedures to ensure the employment of uniform measurement procedures under realistic operating conditions. This would allow for the comparability of the noise measurement data of various mines, as part of the South African mining industry's journey towards compliance to the MHSC noise milestones.

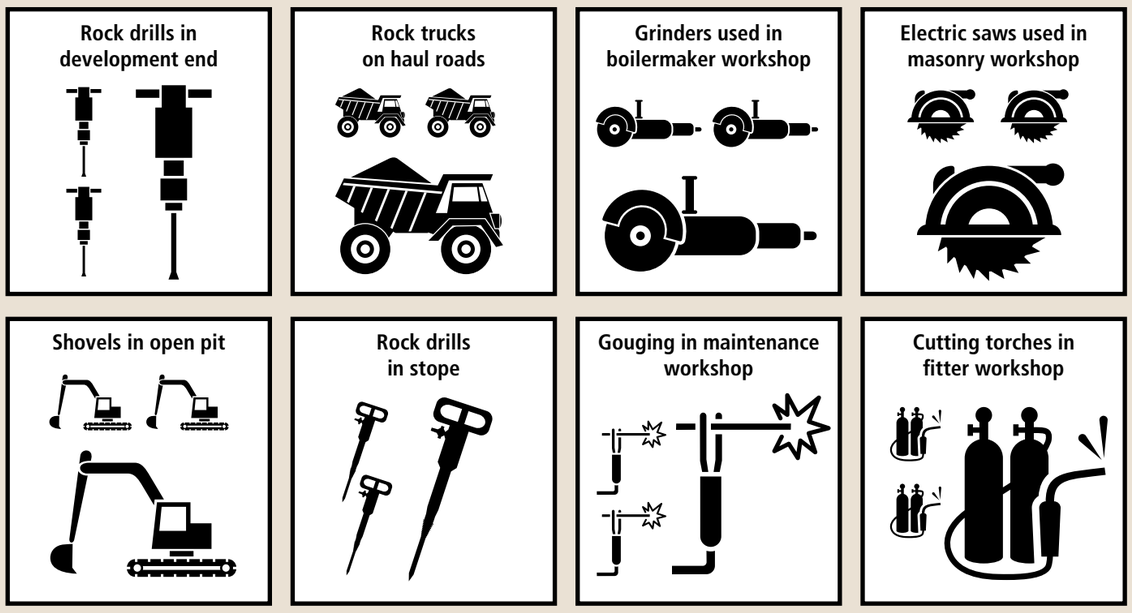
PURPOSE

The purpose of this step-by-step guide is to assist mining companies in grouping (also referred to as equipment populations) of equipment for noise measurement, as well as recording and reporting of individual pieces of equipment. It is envisaged that the implementation of this step-by-step equipment noise reporting guide would allow for comparable equipment noise reporting by mining companies.

STEP-BY-STEP EQUIPMENT NOISE REPORTING GUIDE

STEP 1:

Group equipment according to the equipment type/model into populations based on the South African Mines Occupational Hygiene Programme (SAMOHP) activity area (e.g. S215 rock drills used in stoping activity area as a population).



STEP 2:

Conduct noise measurements on 5% of the equipment population, as per activity area (e.g. five samples for an equipment population of 100 S215 rock drills per activity area).

Note: Equipment noise measurements to be conducted in accordance with the "Guidance Note on the Noise Measurement of Equipment to Ensure Compliance with MHSC Milestones" factsheet.

STEP 3:

Calculate the logarithmic average noise level for the equipment population, making use of the noise measurement results obtained in Step 2.

$$L_{Aeq} = 10 \log \left(\frac{anti\log \frac{105.0}{10} + anti\log \frac{103.8}{10} + anti\log \frac{108.2}{10} + anti\log \frac{104.6}{10}}{n} \right)$$

L_{Aeq} = 105.8 dB(A) n = number of total samples

STEP 4:

Report the logarithmic average noise result from Step 3 for the equipment population for noise milestone tracking purposes and not according to individual measurement results.

CALCULATION OF THE LOGARITHMIC AVERAGE

For quarter 1 the logarithmic average for the quarter is calculated using readings 1, 2, 3 and 4 as indicated below. The same applies to calculate the log average for the quarter going forward.

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Log Average	105.8	105.4	103.9	106.0
Log Average for quarter		105.6	104.8	[A]105.3
Reading (1)	105.0	104.1	105.7	105.0
Reading (2)	103.8	105.6	99.9	103.8
Reading (3)	108.2	106.9	104.2	[B]108.2
Reading (4)	104.6	104.2	–	104.6
Reading (5)	–	–	–	106.9

A: This logarithmic average result of the noise measurements for the entire population of equipment measured will be used for the reporting of noise milestone tracking.

B: This individual piece of equipment within the equipment population should be investigated (Step 5) and not reported as an individual piece of equipment exceeding 107dB(A).

Note: Should the logarithmic average noise result for the equipment population be greater or equal to 107dB(A), then the entire S215 rock drill population used in the stoping activity area is reported as equipment greater or equal to 107dB(A)

STEP 5:

Investigate any individual noise measurement recorded for the sampled equipment population which was equal to or above the milestone sound pressure limit of 107dB(A).

Note: The workplace information specified in the "Data reporting" section of the "Guidance Note on the Noise Measurement of Equipment to Ensure Compliance with MHSC Milestones" factsheet should inform the investigation process