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BLACK ROCK MINE OPERATIONS



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Trackless Mining Machinery:
Is it Noise Induced Hearing Loss or Nerve Injury?

- Israel Sibisi
- Marco Barnard



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Background

- Trackless Mobile Machinery
 - ✓ Reduced number of Occupational injuries
 - ✓ Increased production
 - ❖ Increased heat loads
 - ❖ Increased noise levels
 - ❖ Increased emissions (DPM)



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Methodology

Noise
measurements



Noise
dosimeter in
the cabin and
on the
operator



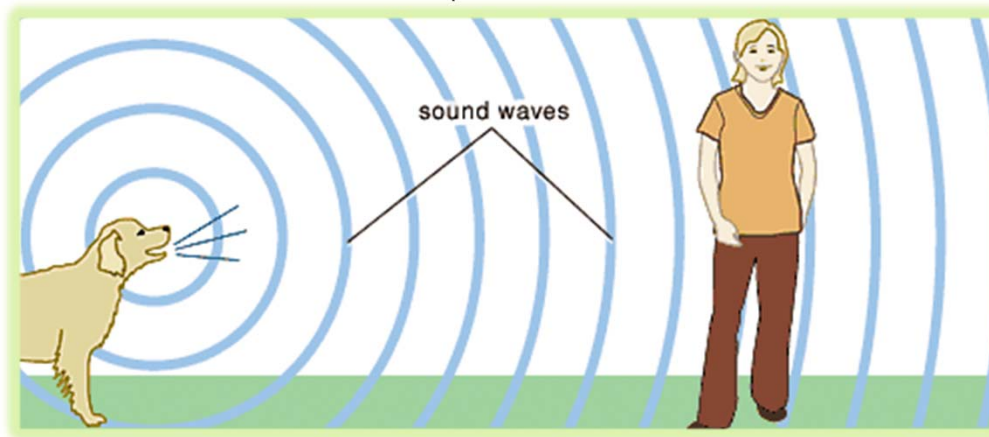
Downloading
of the results



Visit the clinic
for audiometry
results



Compare and
contrast
findings
(Analysis)



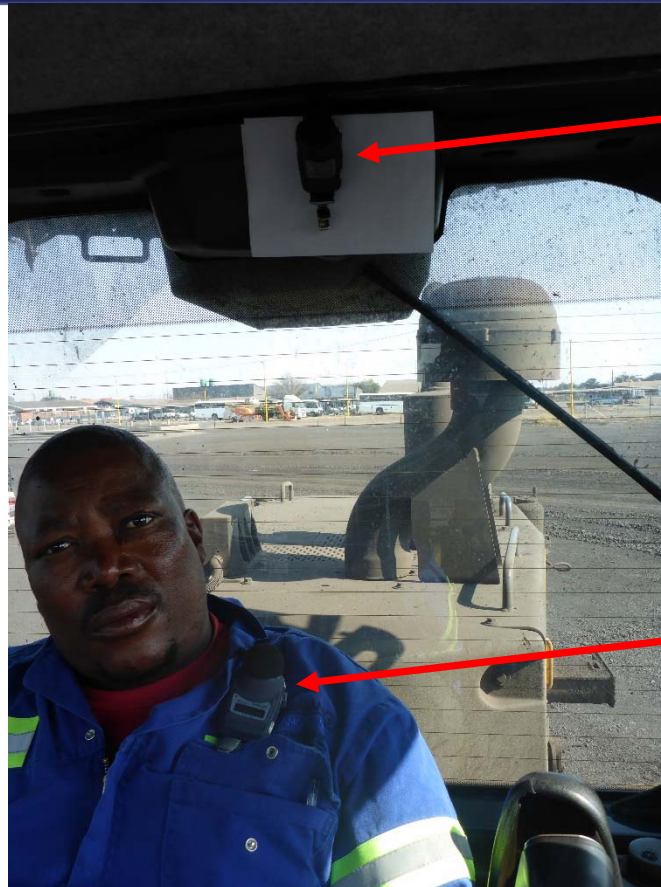


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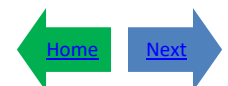


Methodology



Cabin-
Noise Dosimeter

Operator- Noise
Dosimeter



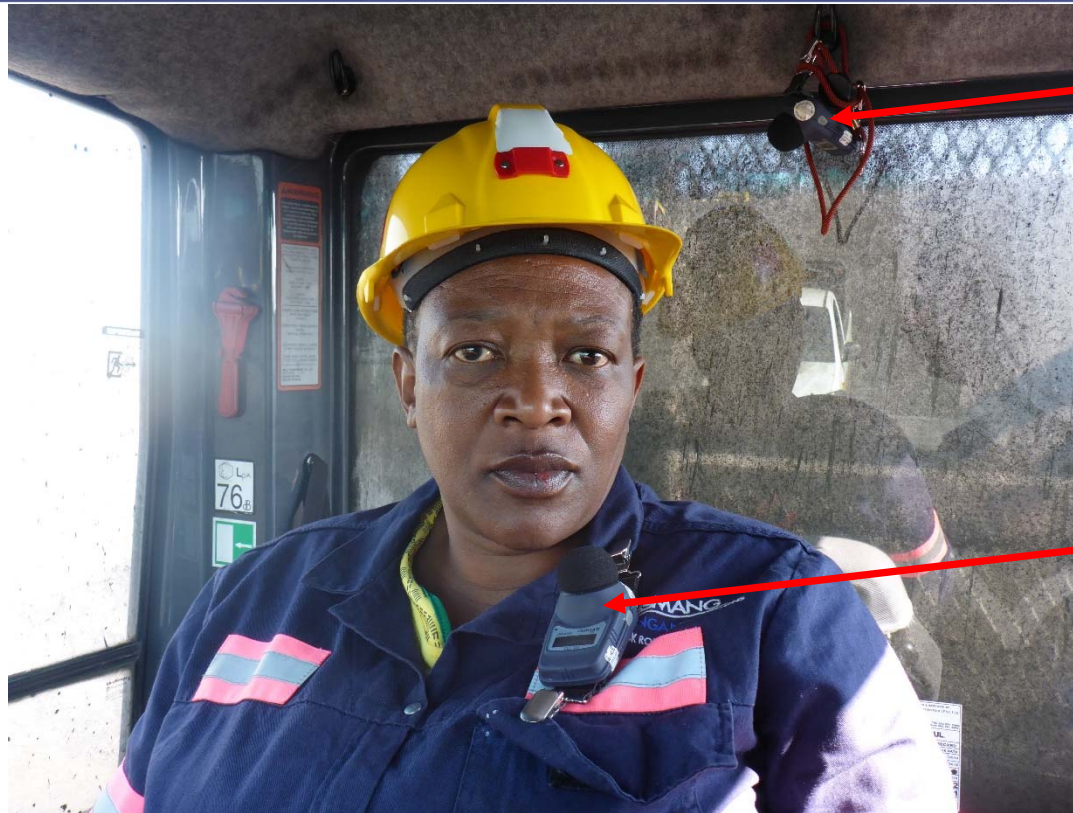


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Methodology



Cabin-

Noise Dosimeter

Operator- Noise
Dosimeter



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Methodology



Dump Truck



Results

Equipment type	Cabin Noise	Operator's Noise exposure	% Equipment measured
FEL	77.4	79.0	50%
Dump Truck	82.0	82.3	60%
Drill Rig	99.3	99.7	60%
LDV	72.7	73.3	55%
UV	90.7	91.2	60%
Grader	81.2	85.0	65%
			58.0%



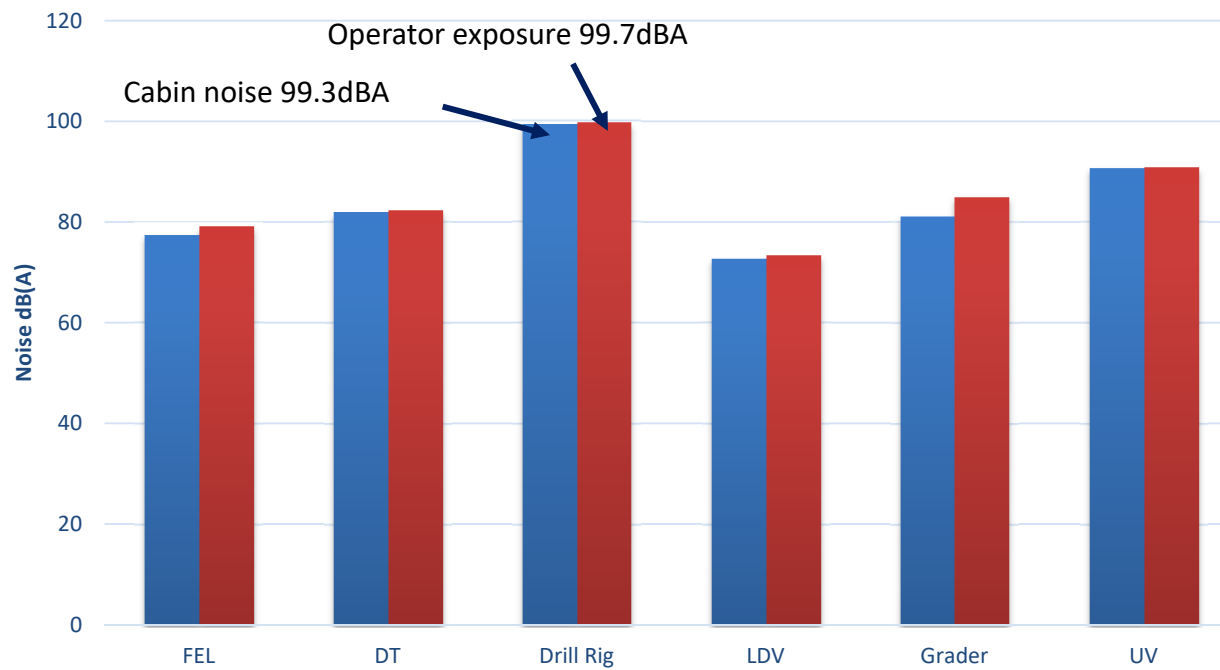
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Results

Noise Sampling Results



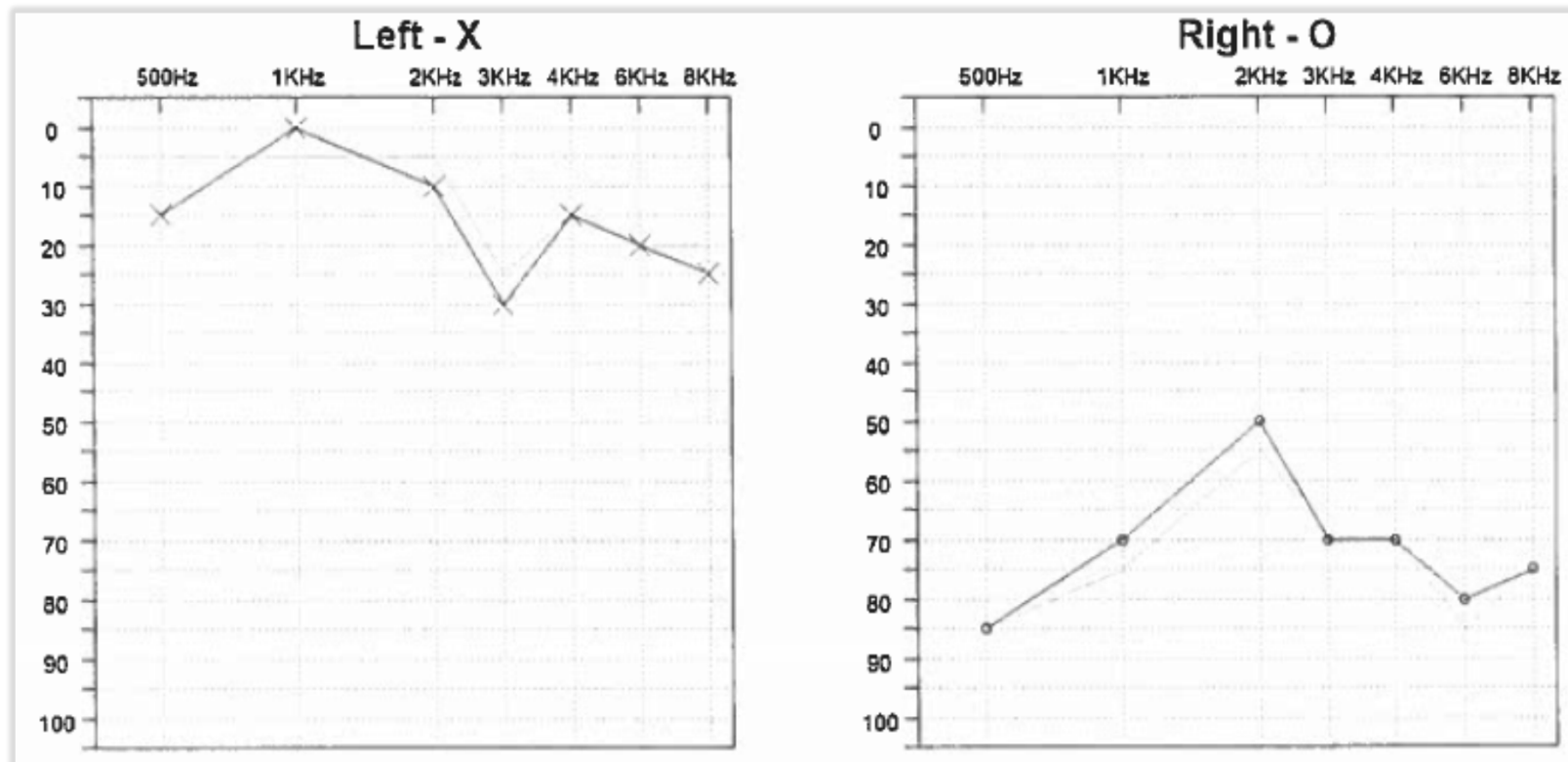


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Results Cont....



Audiometry results of a Drill rig operator (BL)

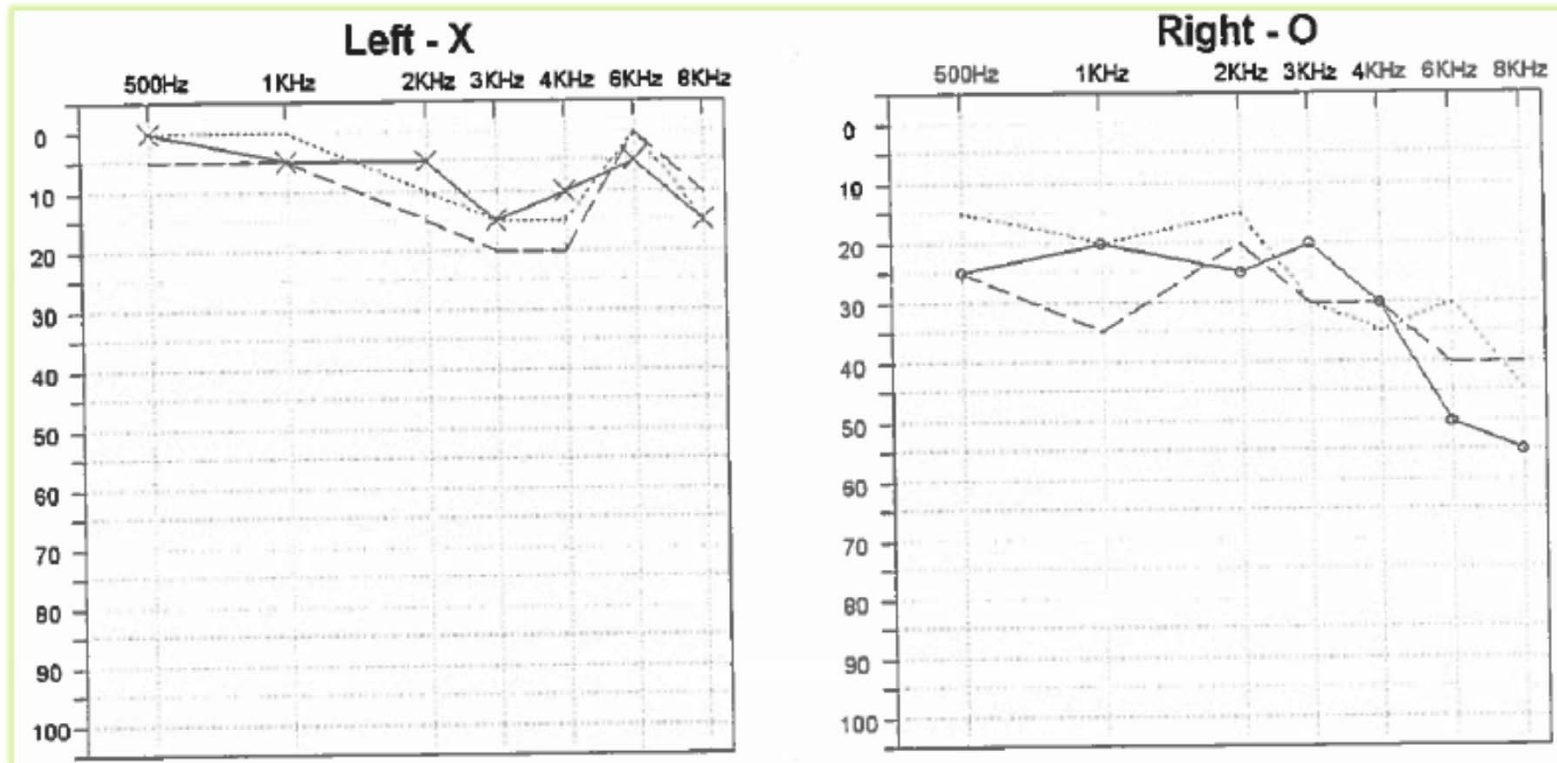


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Results Cont....



Audiometry results of a UV Operator (BL)

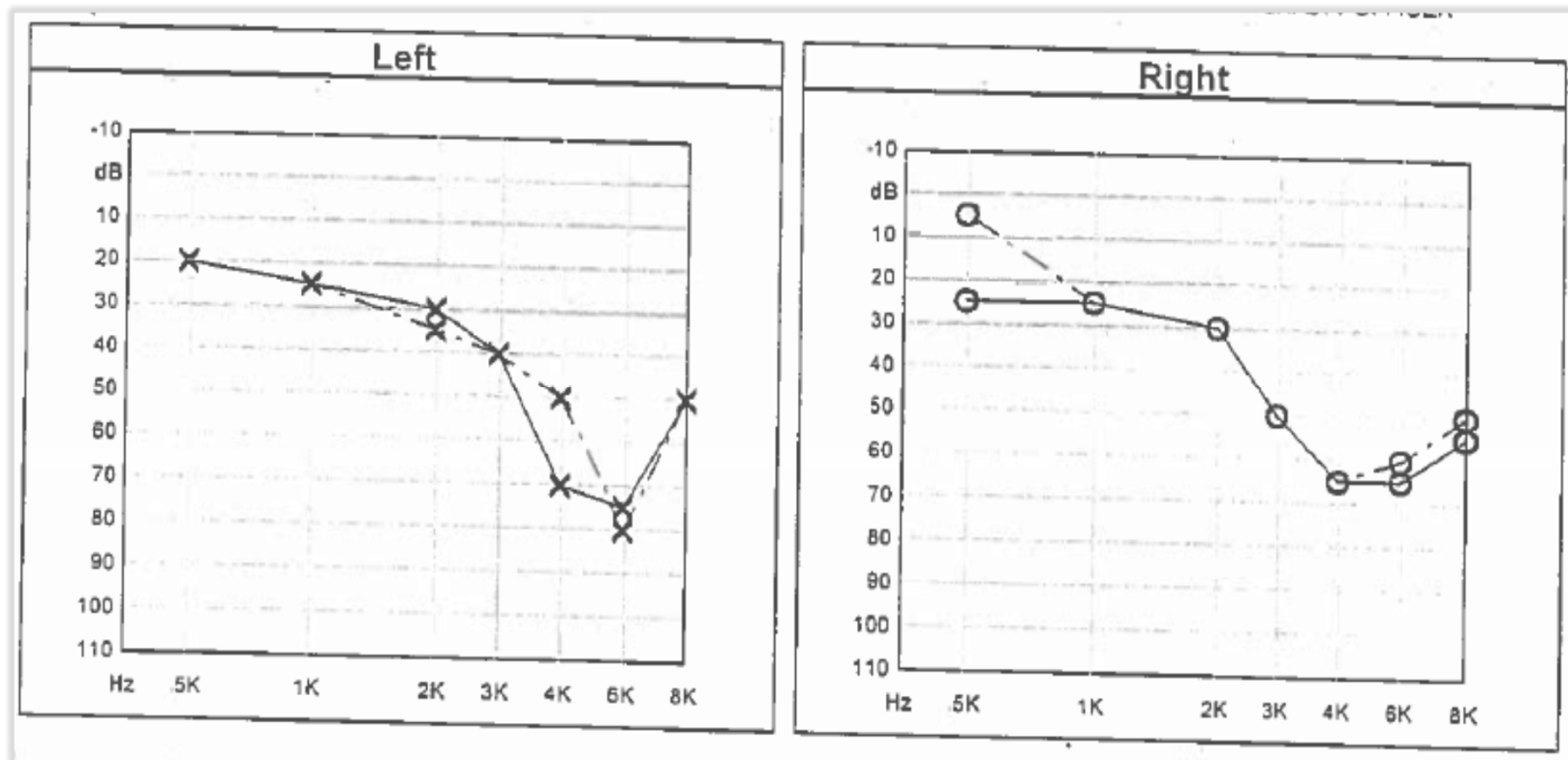


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Results Cont....



Audiometry results of an LDV Operator (BL)

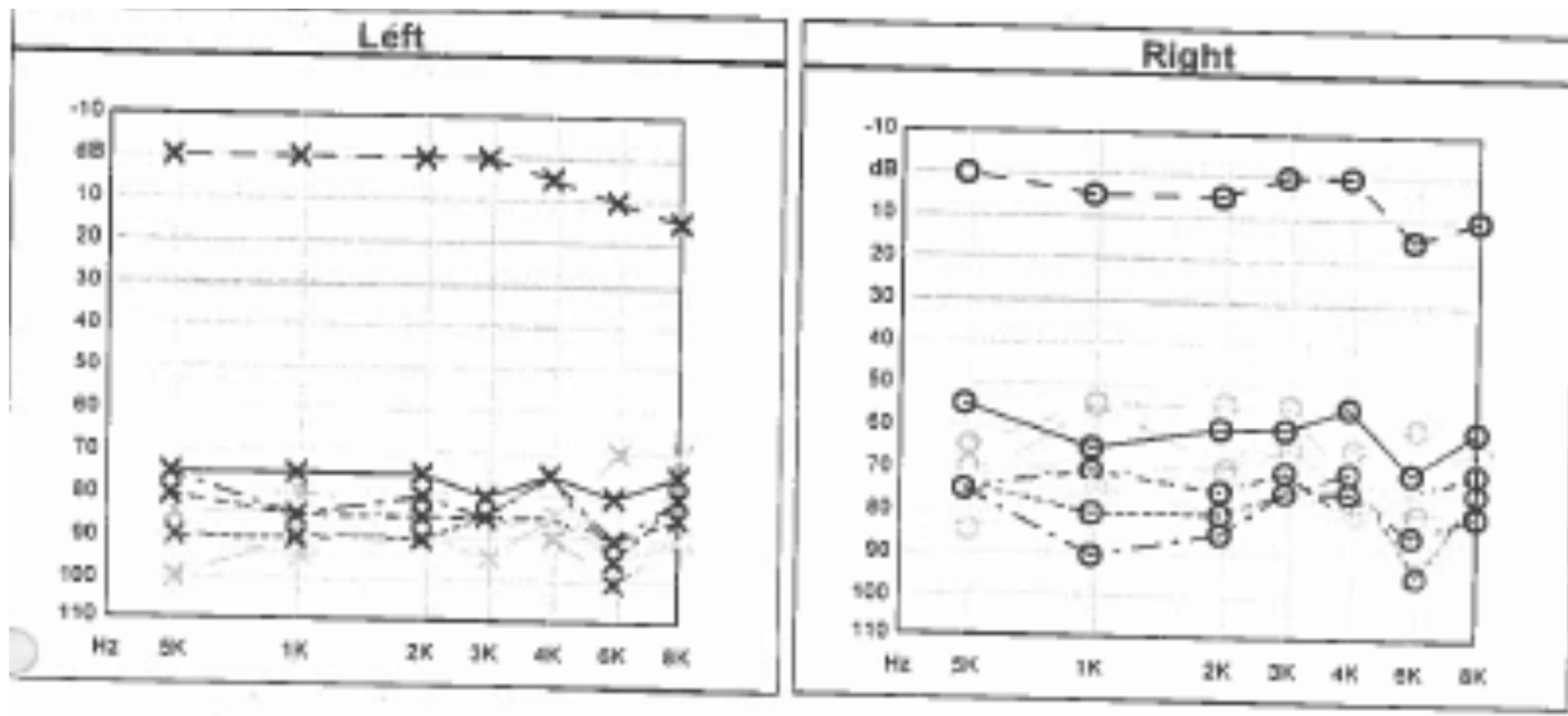


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Results Cont....



Audiometry results of a Dump truck operator (UL)



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Conclusions/ Way Forward

- Most operators and drivers suffer NIHL,
- Most operators are affected in both ears (Bilateral HL)
- NIHL can happen in one ear, depending on the source of noise
- Conclude the 40% fleet
- Refer selected individuals to a specialist (ENT)
- Noise is still a silent killer



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Recommendations

- **Sound Insulation**- Prevent the transmission of noise by introduction of mass barrier.
- **Sound absorption**- a porous material which acts as a “noise sponge “by converting the energy into heat within the material.
- **Vibration Damping** – application of large vibration surfaces, which extracts vibration energy and convert it into heat.
- **Vibration Isolation** – Prevention of transmission of vibration energy from the source to the receiver by using flexible element or physical breaker.



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QUESTIONS??

THANK YOU!!!

