

Effect of Noise on worker of Transport Industry

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ABSTRACT:-

Noise Pollution in transportation industry is heavy in terms of its impact to direct exposure to mass people, will result into health deviation in multiple ways as depression, nervous system disorder, hearing impairment etc. resulted into economic and genetic impacts which is short term and long term. Noise is one of the leading causes of hearing loss among the 466 million people around the world living with a moderate to severe hearing loss. While noise exposure can damage the hearing of people of any age, research has shown that young people are increasingly at risk due to recreational activities involving music. In fact, WHO estimates that 1.1 billion young people (aged 12-35 years) are at risk of hearing loss due to exposure to noise in recreational settings. One of the primary purposes of International Noise Awareness Day is to let people know that while noise-induced hearing loss is permanent, it is completely preventable by taking simple steps to avoid noise exposure and protect your hearing

Date of Submission: 07-06-2022

Date of Acceptance: 22-06-2022

1. Introduction

Noise pollution is a major problem in India. The government of India has rules and regulations against firecrackers and loudspeakers, Road traffic but enforcement is extremely lax. Despite increased enforcement and stringency of laws now being practiced in urban areas, rural areas are still affected.

The Supreme Court of India had banned playing of music on loudspeakers after 10pm. In 2015, The National Green Tribunal directed authorities in Delhi to ensure strict adherence to guidelines on noise pollution, saying noise is more than just a nuisance as it can produce serious psychological stress. However, implementation of the law continues to remain poor, Plan do check act methodology assist to boost enforcement actions.

So, Microanalysis, identify risk and its assessment is indeed to control or isolate hazard exists

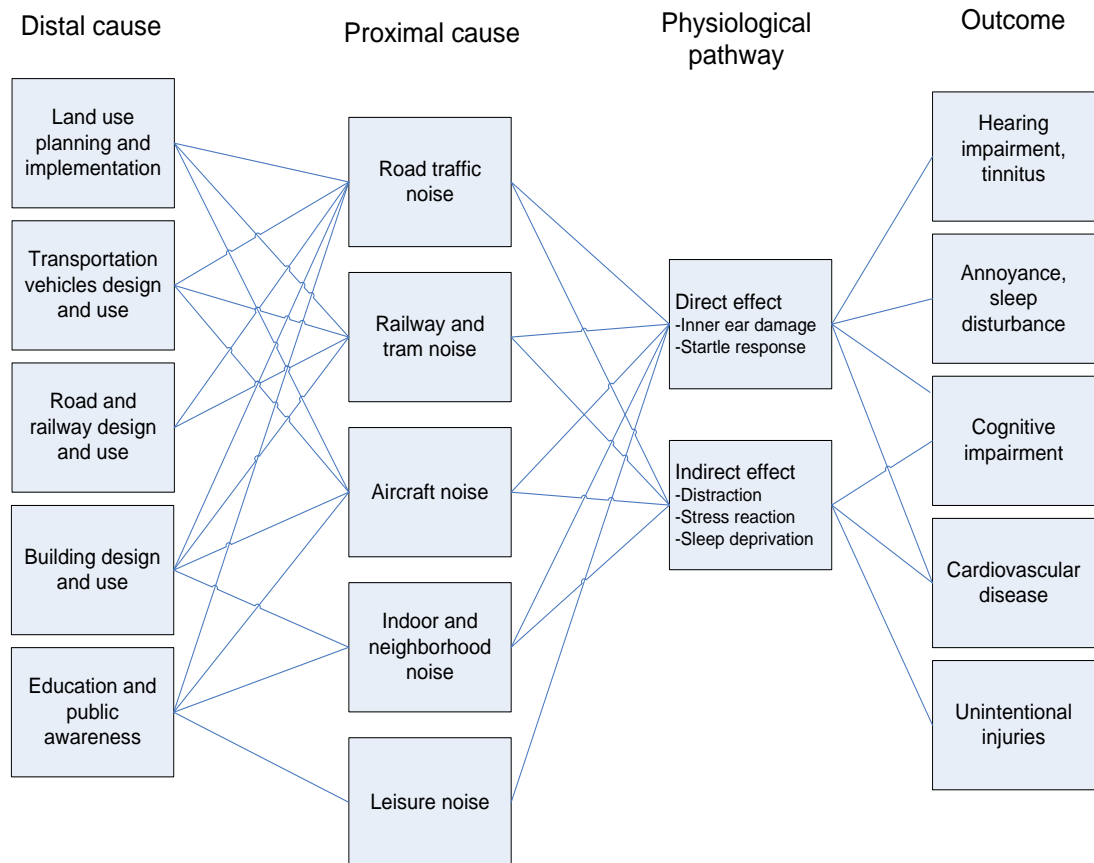
General source of noise are:

- Transportation system
- Road Traffic
- Noise From Rail roads
- Construction noise
- Industrial Noise
- Loud Speaker
- Fire Crackers

Effect of Noise Pollution on Individual



Relationship between noise and health



Enforcement Agencies

List of National and International Premier Enforcement Agencies actively work and Advice, Recommendation, Conventions, Rules and Regulations are been setup to control or reduce or eliminate Noise Pollution are:

World:

World Health Organization
International Labour Organization

India:

Central Pollution Control Board
Directorate of Industrial Health and Safety, Ministry of Labour

Objective of the project

- An assessment of Hearing Capacity
- To identify the risk for Drivers
- To evaluate the risk of hearing capacity of transportation worker.
- To protect the employee from hazard
- To aware the workers about the occupational health hazard.
- To create healthy and positive environment in Transportation industry
- To suggest Technical and behavioral based safety.
- To understand Legal implications from Enforcement agencies

Analysis & methodology

- Measuring ambient noise.
- Measuring decibel level at different speed has been measured in more then eleven month of time span.
- In goods and material movement truck used in company taken under noise level study.
- Four trucks permitted to assessment on same with four drivers.
- Measuring hearing capacity of drivers through audiometry test every four month each.
- Mean average value to be undertaken to compare noise levels above permissible limit and audiometry report and graph to be analyzed to save.
- IS:3483 : Intensity levels in the different octave bands are measured by a sound level meter in conjunction with octave-band filters. The noises are picked up by a high-quality microphone, passed through an octave-band filter and the sound pressure levels recorded on a level recorder. Impact noise, which are highly complex in nature are measured with an impact noise analyzer and simultaneously recorded on a magnetic tape recorder to facilitate octave-band analysis. It is also sometimes displayed on screen.
sound level meter
- A sound level meter is used for acoustic (sound that travels through air) measurements. It is commonly a hand-held instrument with a microphone. The best type of microphone for sound level meters is the condenser microphone, which combines precision with stability and reliability. The diaphragm of the microphone responds to changes in air pressure caused by sound waves. That is why the instrument is sometimes referred to as a Sound Pressure Level (NABL Lab Tested)



Audiometry Measuring Device

Audiogram Kit Instruments: artificial mastoid, SLM, cables/transducer Standards: ANSI



Permissible exposure limit (PEL) noise level as per the OSHA Standard 1970

Sound level in dB(A)	Permissible exposure limit (PEL)In hours as per OSHA standard
85 dB	16 hours
90 dB	8 hours
92 dB	6 hours
95 dB	4 hours
97 dB	3 hours
100 dB	2 hours
105 dB	1 hours
110 dB	½ hours
115 dB	¼ hours

Noise limits for vehicles applicable at manufacturing stage applicable from 1st April, 2005

S. No.	Type of vehicle	Noise Limits from 1 st January, 2003, dB(A)
1.0	Two wheeler	
1.1	Displacement upto 80 cc	75
1.2	Displacement more than 80 cc but upto 175 cc	77
1.3	Displacement more than 175 cc	80
2.0	Three wheeler	
2.1	Displacement upto 175 cc	77
2.2	Displacement more than 175 cc	80
3.0	Vehicles used for carriage of passengers and capable of having not more than nine seats, including the driver's seat	74
4.0	Vehicles used for carriage of passengers having more than nine seats, including the driver's seat, and a maximum gross Vehicle Weight(GVW) of more than 3.5 tonnes	
4.1	With an engine power less than 150 KW	78
4.2	With an engine power of 150 KW or above	80
5.0	Vehicles used for carriage of passengers having more than nine seats, including the driver's seat: Vehicles used for carriage goods.	
5.1	With maximum GVW not exceeding 2 tonnes	76
5.2	With maximum GVW greater than 2 tonnes but not exceeding 3.5 tonnes	77
6.0	Vehicles used for transport of goods with a maximum GVW exceeding 3.5 tonnes.	
6.1	With an engine power less than 75 KW	77
6.2	With an engine power of 75 KW or above but less than 150 KW	78
6.3	With an engine power of 150 KW or above.	80

TLV for Noise (ACGIH,2007)

Duration per day (exposure time)	Sound level dBA (TLV)
24 Hours	80
16 Hours	82
8 Hours	85
4 Hours	8/8
2 Hours	91
1 Hours	94
30 Minutes	97
15 Minutes	100
7.5 Minutes	103
3.75 Minutes	106
1.88 Minutes	109
0.94 Minutes	112
28.12 Seconds	115
14.05 Seconds	118
7.03 Seconds	121
3.52 Seconds	124
1.76 Seconds	127
0.88 Seconds	130
0.44 Seconds	133
0.22 Seconds	136
0.11 Seconds	139

Measurement of noise and Ear Audiometry report Details.

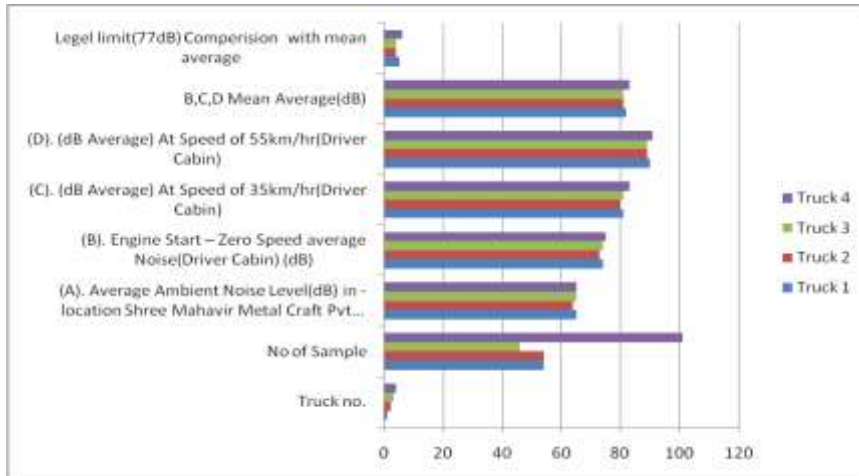
1020 no's reading is performed and measured during span of thesis to measure decibel range including:

- Ambient noise level(factory Premises)
- At ideal Engine Start Condition
- At speed of 35km/hr
- At speed of 55km/hr

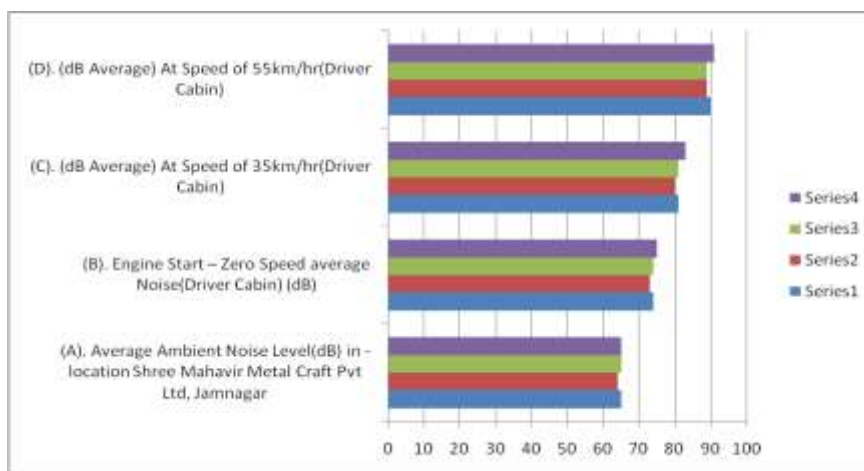
24 Nos Audiometry report has been tested for four drives (Audiometry test for all driver every three month) to analyze a hearing deficiency graph.

RC book and Driving license for Documentation has been taken from company authority.

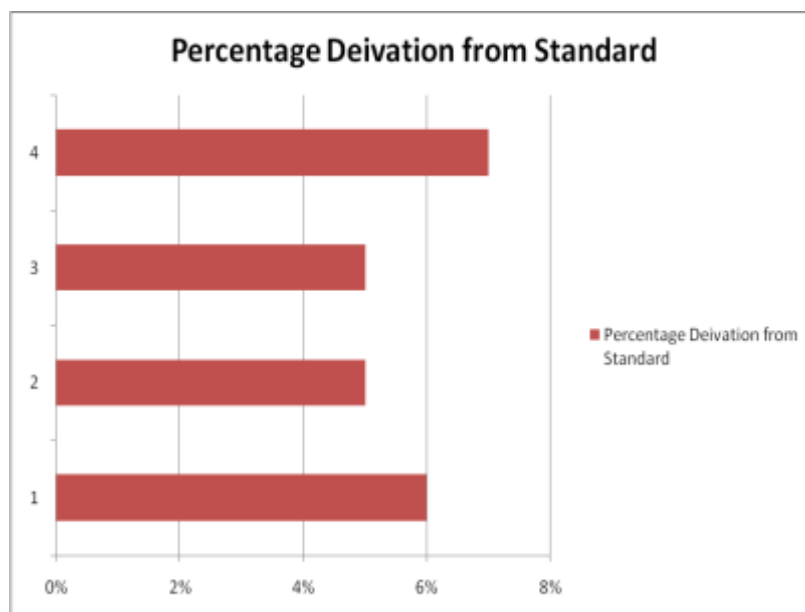
Number of Sample/Truck/Diff Speed.



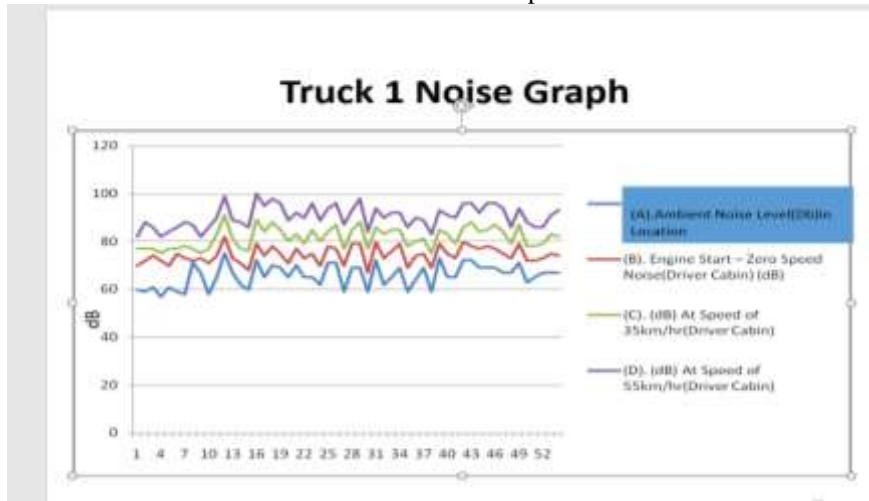
Deviation in Decibel at different speed



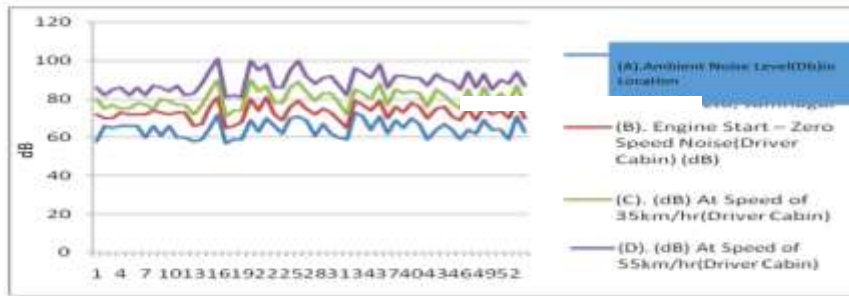
Percentage Deviation from Standard Decibel value.



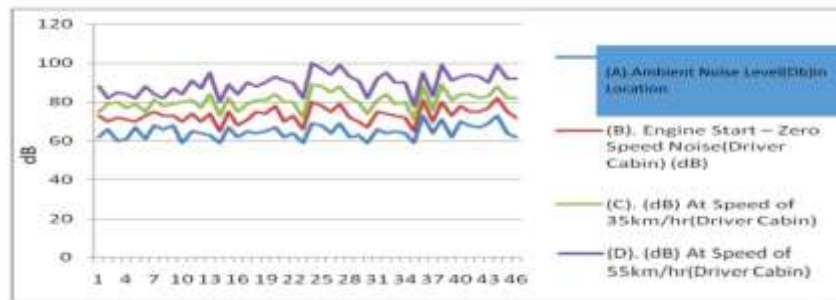
Truck 1 Noise Graph



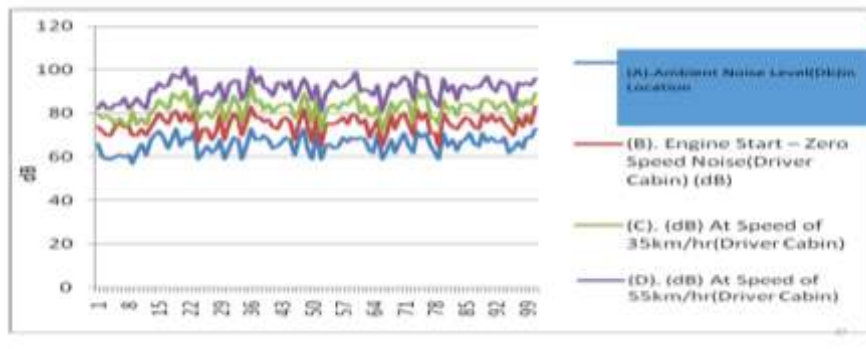
Truck 2 Noise Graph



Truck 3 Noise Graph



Truck 3 Noise Graph



Noise Level Mean Value graph

Test No.	No. of Samples	L1 Average (Equivalent Noise Level) (dB)	L2 Average (Equivalent Noise Level) (dB)	L3 Average (Equivalent Noise Level) (dB)	L4 Average (Equivalent Noise Level) (dB)	L5 Average (Equivalent Noise Level) (dB)	L6 Average (Equivalent Noise Level) (dB)	L7 Average (Equivalent Noise Level) (dB)	L8 Average (Equivalent Noise Level) (dB)	L9 Average (Equivalent Noise Level) (dB)	L10 Average (Equivalent Noise Level) (dB)	Legal Requirement (dB)	Percentage Exceeding Limit
1	54	85	79	81	86	81	81	81	81	81	81	81	5%
2	54	89	73	80	80	81	81	81	81	81	81	81	5%
3	48	83	74	80	80	81	81	81	81	81	81	81	5%
4	50	81	75	81	81	81	81	81	81	81	81	81	5%
5	55	85	75	80	80	81	81	81	81	81	81	81	5%

Mean percentage shows then 5-6% higher dB level is been measured

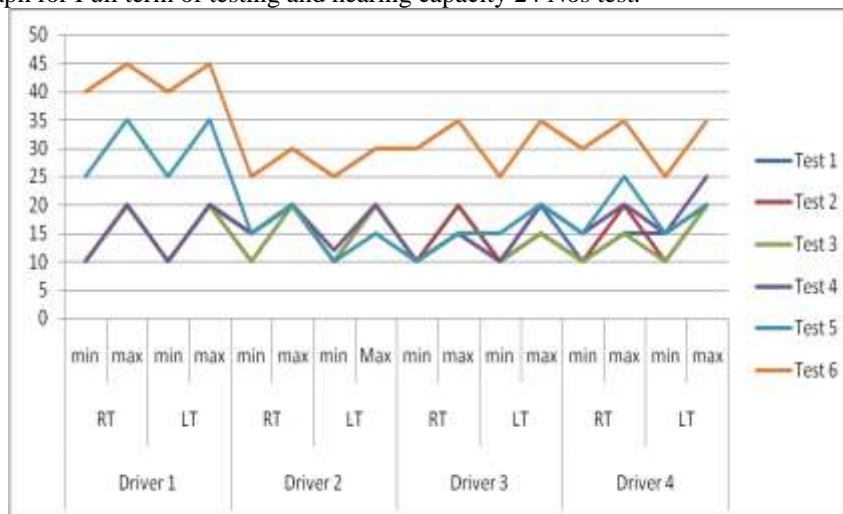
Audiometry Result

Min Max hearing Capacity of Drives in Decibel on Audiometric Reports

Test	Driver 1		Driver 2		Driver 3		Driver 4									
	RT	LT	RT	LT	RT	LT	RT	LT								
	min	max	min	Max	min	Max	min	Max								
Test 1	10	20	10	20	15	20	10	20	10	20	10	20	10	15	15	20
Test 2	10	20	10	20	10	20	10	20	10	20	10	15	10	20	10	20
Test 3	10	20	10	20	10	20	10	20	10	15	10	15	10	15	10	20
Test 4	10	20	10	20	15	20	12	20	10	15	10	20	15	20	15	25
Test 5	25	35	25	35	15	20	10	15	10	15	15	20	15	25	15	20
Test 6	40	45	40	45	25	30	25	30	30	35	25	35	30	35	25	35

2. Conclusion

Audiometry Graph for Full term of testing and hearing capacity 24 Nos test.



3. Result

The presented study has been demonstrated the hazards and risks involved due to continuous and high-level noise exposure in the transportation segment of industry. The main hazards are noise hazards and its impact on hearing capacity are found by an assessment. We have compared the hazards in steps before suggestions and

after suggestions which are found to be harmful to the drivers. so Immediate action must be taken to control this hazard to save workers' health and promote safety to the worker.

Hence study, we came to conclude that an assessment is very necessary for the transportation industry as on noise less care has been take. Which identified the noise hazards and associated the risk during exposure in driving with the help of instrument! Which tells us the actual data or values. Then we suggested control measures and techniques keep the driver and long term exposed person to be safe and healthy. And also helps to improve the working conditions in transportation industry

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