Effect of Noise on Worker of Transport Industry

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Abstract- *This Paper is Discussion about Noise Level Impacts to Noise Induced Hearing loss in Drivers associated with daily high level exposure to noise as well working hours. This analysis will complied with details on Decibel reading of truck noise to analysis to compare with legal prescribed limit. And those drivers confound hearing capacity reduction on real time bases. As well many non-audiometric effects occurred to human body which is leading to distract natural human body condition from normal including Hearing loss as a major factor. This may turn into genetic change as well. So this topic is mainly focus on the Audiometric and decibel comparison with standards.*

Keywords- Audiometric Report, Decibel, Noise induced hearing loss

I. INTRODUCTION

Transport related environmental noise pollution has many faces, especially onerous particular significance of noise. Effective counteracting to these nuisances requires tools supporting decision making in designing sustainable transport systems, especially in the area of predicting and managing traffic flows and urban areas and highways.

The assessment of environmental efficiency of transport system in terms of noise should take into account costs of preventing and eliminating harmful effects of transport activities. In general, the efficiency of transport system is a mix of two elements: effective realization of its main objectives and the costs of counteracting negative effects of its operations. The level of objectives implementation can be described as the effects of the system, while the inputs correspond to the resources involved to achieve the objectives – including reduction of the negative impact of transport on the worker unwanted effects of transport operation are health degradation. For example, community noise, including traffic noise, is already recognized as a serious public health problem by the World Health Organization. Most important in this context is the road transport sector, due to the fact that it is responsible for the majority of external costs of transport. Over 40% people in India is exposed to harmful traffic noise which has a variety of adverse impacts on human health. Noise-induced health effects include: disturbance on sleep, activities, performance and concentration, annoyance and stress, biological risk factors, cardiovascular diseases and psychiatric disorders.

Detrimental effects of transport health entails significant indirect effect (arising in the design, manufacture, consumption and utilization of transport means and infrastructure) and direct costs (accidents, noise, vibration). Although effects of this impact are difficult to estimate, but it must be done for proper decision making in analysis of noise exposure as well eudiometry test to analyses time based impact in continues work in road transport activities. Mechanical parameter influence of transport (internalization), especially in road mode, is postulated as a factor in the development of transport systems in conformity with health aspects.

II. METHODOLOGY

Noise level measurement and Audiometric Measurement is based on Acoustics — Determination of sound power levels of noise sources — Guidelines for the use of basic standards. Audiograms are produced using a piece of test equipment called an audiometer, and this allows different frequencies to be presented to the subject, usually over calibrated headphones, at any specified level. The levels are, however, not absolute, but weighted with frequency relative to a standard graph known as the minimum audibility curve which is intended to represent a 'normal' hearing. This is not the best threshold found for all subjects, under ideal test conditions, which is represented by around 0 Phon or the threshold of hearing on the equal-loudness contours, but is standardised in an ANSI standard to a level somewhat higher at 1 kHz. There are several definitions of the minimal audibility curve, defined in different international standards, and they differ significantly, giving rise to differences in audiograms according to the audiometer used.

2.1 Monitoring

A decibel meter is a measuring instrument used to assess noise or sound levels by measuring sound pressure. Often referred to as a sound pressure level (SPL) meter, decibel (dB) meter, noise meter or noise dosimeter, a sound

level meter uses a microphone to capture sound. Intensity of sound is measured in decibels (dB) which can be thought of as the 'loudness' of the sound. The decibel scale is logarithmic (based on a factor of 10): An increase of 10 dB means a 10-fold increase in sound intensity. An increase of 20 dB means the sound is 100-fold more intense. Standard audiograms test between 0 and 110dB. For reference, normal conversation is around 60 dB. To compare with national legal standards. Four Truck and Four Driver sample is collected at Shree Mahavir Metalcraft Private Limited. Jamnagar between Jamnagar to Rajkot 90km Distancing.

2.2 Safety Consideration

Audiometry is noninvasive and carries no risk. Screening audiometry presents tones across the speech spectrum (500 to 4,000 Hz) at the upper limits of normal hearing (25 to 30 dB for adults, and 15 to 20 dB for children). Threshold search audiometry determines the softest sound a patient can hear at each frequency 50 percent of the time.

III. RESULT

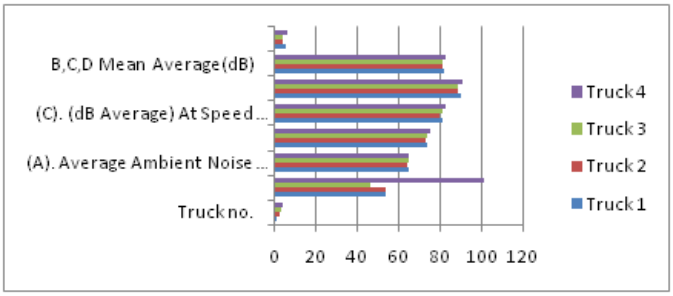
Analysis as per standard, A hearing test isn't a pass-fail exam. But the results can show whether you have hearing loss in one or both ears and how much hearing is gone. The intensity of sound is measured in units called decibels. When someone whispers in your ear, that's 30 decibels.

Hearing is graphed on an audiogram, a graph of the softest sounds you can hear. ... 20 dB sounds twice as loud as 10 dB... 40 dB sounds twice as loud as 30 dB and 8 times as loud as 10 dB (10 to 20 to 30 to 40 = 2 x 2 x 2 = 8). Normal hearing ranges from 0 to 20 dB in all frequencies.

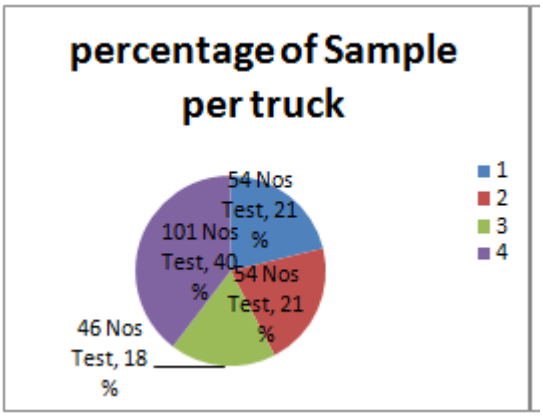
Though a 'normal' audible range for loudness is from 0 to 180dB, anything over 85dB is considered damaging, so we should try not to go there. As we age, it's the upper frequencies we lose first.

A hearing loss of up to 20 decibels below the hearing threshold is still considered to be normal hearing. More severe hearing loss can be described according to severity, as follows: Mild hearing loss: Hearing loss of 20 to 40 decibels. Moderate hearing loss: Hearing loss of 41 to 60 decibels.

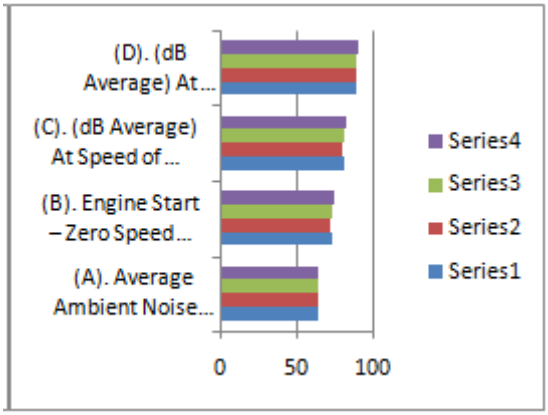
Truck no.	No. of Sample	(A). Average Ambient Noise Level(dB) in - location Shree Mahavir Metal Craft Pvt Ltd, Jamnagar	(B). Engine Start – Zero Speed average Noise(Driver Cabin) (dB)	(C). (dB Average) At Speed of 35km/hr(Driver Cabin)	(D). (dB Average) At Speed of 55km/hr(Driver Cabin)	B,C,D Mean Average(dB)	Legal limit(77 dB) Comparison with mean average	Legal min Recommended Level	Percentage Deviation from Standard
1	54	65	74	81	90	82	5.16	77	6%
2	54	64	73	80	89	81	4	77	5%
3	46	65	74	81	89	81	4	77	5%
4	101	65	75	83	91	83	6	77	7%
Total =4	255	65	75	81	90	82	5	77	6%



Number of sample/truck/Diff Speed.



% Sample per Truck(four Truck)



Deviation in Decibel at Diff Speed

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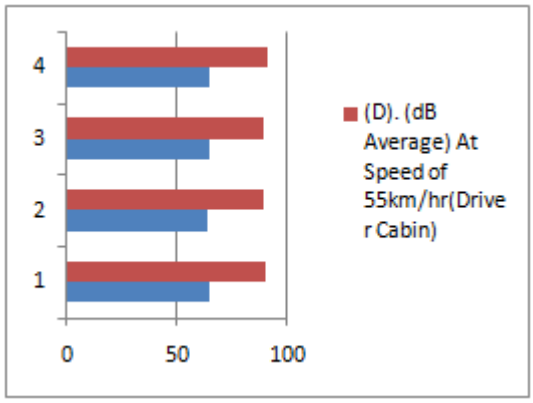
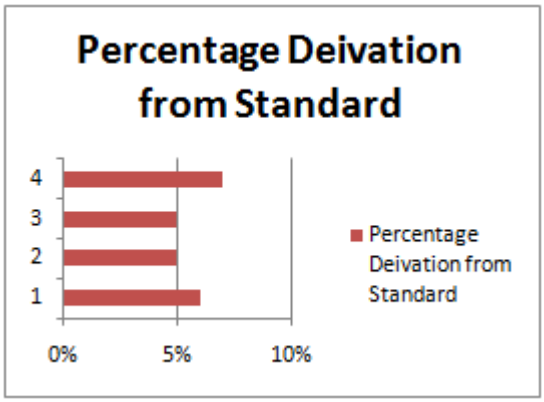
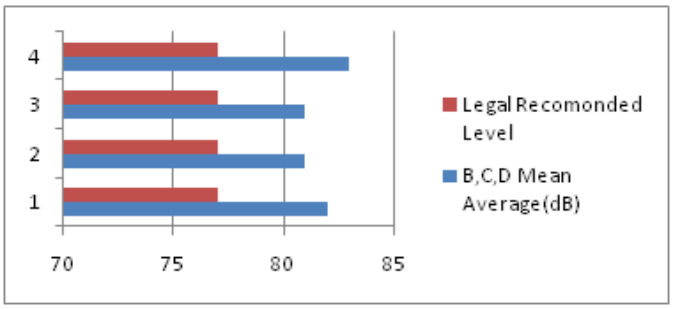


Ambient Noise vs Noise at 55km/hr speed



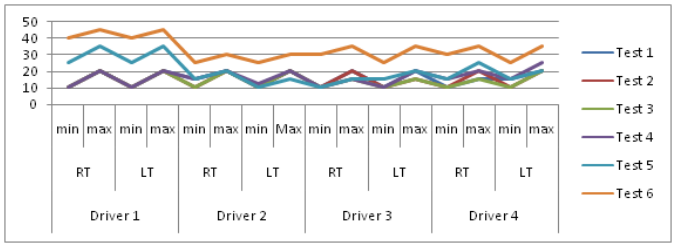
% Deviation in Compresion with Legal Limts



Deviation in Decibel with Mean Average

	Driver 1				Driver 2				Driver 3				Driver 4			
	RT		LT		RT		LT		RT		LT		RT		LT	
	min	max	min	max	min	max	min	Max	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

Min Max hearing Capacity measured of Drives in Decibel on Audiometric Reports



Audimetry Graph for Full term of testing and hearing capacity

IV. CONCLUSION

Noise level measurement and Audiogram of drivers indicates 6% deviation in compare with prescribed limit and hearing capacity shoes mild moderate hearing immurement based on this result. This analysys is been conducted for period of eleven months, this decline in hearing loss indicating long term exposure with noisy environment lead to further hearing loss if PPEs and other precautions. Industrial noise exposure has been identified as a very obvious danger especially in small and hand tool industries which are still not mechanized. During our measurements it has been determined that the noise levels in the majority industries are exceeds the maximum (OSHA) exposure limits. According to results of the questionnaire applied to the all workers in all industries: 1. Majority of workers in the industries are annoyance from the noise in their workplaces. 2. Mostly workers are of little education even under primary, primary and intermediate therefore they are not fully aware of the hazardous effects of noise.

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