

# Noise Pollution in Construction Industry & its adverse effects on construction workers

Dinesh Bhosale

PG scholar, Civil Engineering Department, D Y Patil College of Engineering, Akurdi, Pune, Maharashtra, India.

*Abstract: The study examines the matter of noise pollution within the wake of its sick result on the lifetime of the folks. Major effects of noise pollution embody interference with communication, wakefulness, and reduced efficiency. The acute effects are hearing disorder and mental breakdown. This study examines the environmental noise levels of construction sites. Three construction sites were chosen to determine noise level, peak noise level and dominant noise sources at these locations in accordance to task, machinery, trade. The 100 audio metric testing's were taken of labors in line with various parameters like time of exposure, distance from source, short or prolonged exposure etc. The audio metric testing's were scrutinized as per relevant parameters to get results of audio metric testing showing the adverse effects on labors audio metric health, additionally form was ready to gather immediate health issues featured as a result of continuous exposure. The results of this study are helpful for construction managers and different participants in construction sites to become tuned in to construction processes impacts on the surroundings.*

## 1. Introduction

Sound that's unwanted or disrupts one's quality of life is named as noise. Noise may be a traditional feature of life and provides one in all the foremost efficient alarm systems in man's physical surroundings. Once there's ton of noise within the surroundings, it's termed as sound pollution. Sound becomes undesirable once it disturbs the conventional activities like working, sleeping, and through conversations. It's an underrated environmental drawback as a result of the very fact that we can't see, smell, or taste it. At equivalent time increased urban population have resulted in larger exposure of a bigger share of the population to the exaggerated noise levels. World Health Organization explicit that —Noise should be recognized as a significant threat to human well-being. There has been a scarcity of attention towards the hazards by pollution. A really restricted study is

conducted on the sound pollution aspects. Sound pollution is taken into account to be a secondary pollution, primary behind air and water pollution. In India, the noise pollution (Regulation and Control) Rules, 2000 are framed below the environment (Protection) Act, 1986. These are a collection of guidelines for regulation and management of noise.

## 2) Objectives

1. To Measure noise intensity at different important locations in construction industry.
2. To study the effects of noise exposure on labour's health.
3. To study the various construction activities and methodology's generating different noise levels.
4. Implementation of improvement measures to control the noise pollution at different sites.

## 3) Methodology

- 1) Different levels of noise to be tested on construction site.
- 2) Noise levels to be categorized and recorded accordingly.
- 3) Descriptive noise statistics to be generated.
- 4) Audiometric testing's.
- 5) Scrutinizing of each audiogram obtained of audiometric testing's.
- 6) Observations and remarks out of audiometric results.
- 7) Remedial suggestions for control of noise pollution.
- 8) Noise level test after remedial measures.
- 9) Comparative study of before and after remedial suggestions noise levels.
- 10) Results are conclusions are to be drawn from the current study implemented.

## 4) Remedial suggestions for management of sound pollution.

Effective sensible Solutions recommended on Construction Worksites to manage Noise levels at safety.

Every construction project is totally different and perpetually ever-changing. Therefore, noise management solutions have to be compelled to be tailored for the case. As luck would have it, there are

spreads of the way by that construction instrumentation and worksite noise are often controlled.

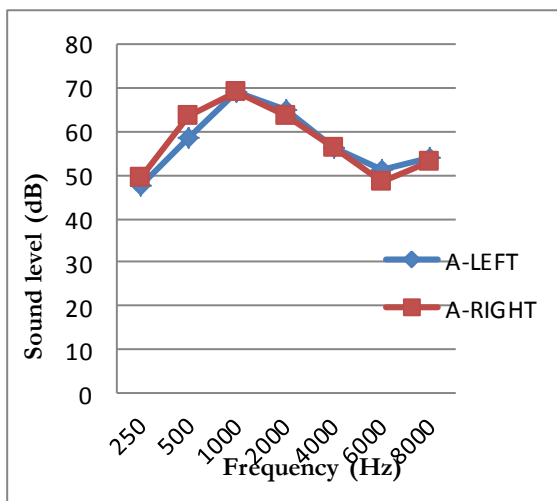
The following could be a list of the way to control noise level recommended at worksites

- Quieter equipment
- Modifying Existing recent equipment
- Barrier Protection
- Maintenance
- Noise Perimeter Zones
- Work Activity scheduling

5) **Audiograms of labours on construction site.**

Audiograms of 50 construction site labours from road site, building site, RMC plant are plotted from audiometric test of labours carried out at Bhabha hospital bandra west, the audiograms of labour consist of left ear pattern, right ear pattern plotted against the sound level on vertical axis and frequency on horizontal axis.

Average of all reading recorded in audiograms of affected people are taken and plotted in below audiogram.



Frequency (Hz) VS Sound Level (dB)

**Figure 5.1 Audiograms of labours affected due to noise pollution**

**Notes:** The Audiogram shows a range of 50 to 70 dB over a spectrum of 250 to 8000Hz.

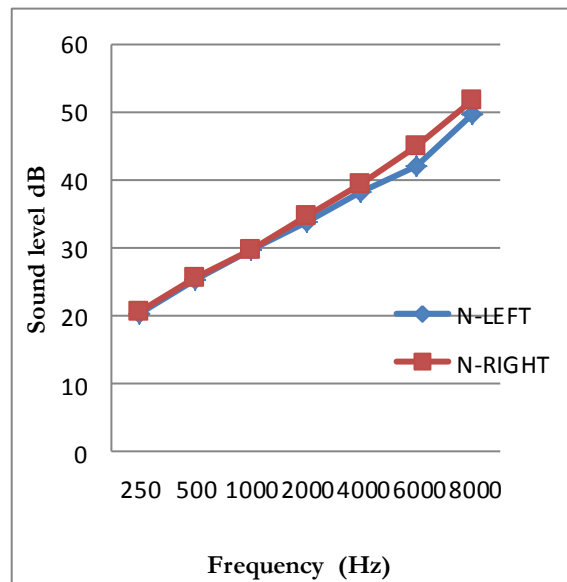
Thus we can conclude that the workers are suffering from severe hearing loss, due to exposure over years and impact of noise on their ears.

6) **Audiograms of labours protected on construction site.**

Audiograms of 50 construction site labours that are protected from noise from road site, building site, RMC plant are plotted from audiometric test of labours carried out at Bhabha hospital bandra west, the audiograms of labour consist of left ear pattern,

right ear pattern plotted against the sound level on vertical axis and frequency on horizontal axis.

Average of all reading recorded in audiograms of protected people are taken and plotted in below audiogram.



Frequency (Hz) VS Sound Level (dB)

**Figure 6.1: Audiograms of labours protected from noise pollution**

**Notes:** The Audiogram shows a range of 20 to 50 dB over a spectrum of 250 to 8000Hz.

Thus we can conclude that the subject is suffering from mild to moderate hearing loss.

Thus show that when protected from noise it can save hearing losses.

It is observed through above audiograms that protected people have hearing levels from 20dB to 50dB.

On the other hand affected people have hearing levels from 50dB to 70dB.

It clearly indicates that affected people have problem in hearing and are suffering from conductive hearing loss.

7) **Comparison of noise levels and audiograms**

**Table 4.31 Total noise on Remedial working site**

| Years of exposure | Avg hearing dB Affected | Avg noise level before protection | Avg hours of exposure | Avg hearing dB Protected | Avg noise level after protection | Avg hours of exposure | Difference of hearing dB |
|-------------------|-------------------------|-----------------------------------|-----------------------|--------------------------|----------------------------------|-----------------------|--------------------------|
|                   |                         |                                   |                       |                          |                                  |                       |                          |

|                |           |            |           |           |           |          |           |
|----------------|-----------|------------|-----------|-----------|-----------|----------|-----------|
| 0 to 3 years   | 51.0<br>7 | 103.<br>94 | 10.4<br>4 | 31.2<br>3 | 84.6<br>3 | 8.0<br>0 | 19.<br>84 |
| 3 to 6 years   | 51.7<br>9 |            |           | 35.2<br>2 |           |          | 16.<br>57 |
| 6 to 9 years   | 53.5<br>7 |            |           | 38.5<br>7 |           |          | 15        |
| 9 to 12 years  | 57.0<br>2 |            |           | 41.9      |           |          | 15.<br>12 |
| 12 to 15 years | 58.8<br>6 |            |           | 42.4      |           |          | 16.<br>46 |
| 15 to 18 yrs   | 60.1<br>2 |            |           | 43.2<br>9 |           |          | 16.<br>83 |
| 18 to 21 yrs   | 60.7<br>1 |            |           | 44.0<br>5 |           |          | 16.<br>66 |

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It shows that by using protection and remedial suggestions the severity of hearing loss can be decreased up to 40%, and there is reduction of noise level of 19.31dB.

## 8) Conclusion

This project studies the sources, effects, reactions and suggestions for reducing the excessive noise. Construction work is inherently noisy. This study explains why high noise levels on construction work sites are a serious issue that can affect labours. The calibrated sound level meters were used to measure the noise levels of construction equipments during construction. Many of the straight forward controls for common construction activities presented herein can be easily applied because contractors and workers do not have to have an extensive acoustical technical background to quiet equipment. Reducing noise exposure or isolation of people from the sources are the noise control techniques also providing personal ear protection, engineered control for noise. In order to reduce the overall amount of pollution, other methods, such as alternative construction technologies, new materials, have to be applied.

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