

## **A Study of Noise Pollution Measurement at Dwaraka Circle in Nashik City.**

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### **ABSTRACT**

The sounds we hear become noise when they are unwanted ,when sounds interferes with thinking, concentrating, working, talking, listening, or sleeping. With active populations, road traffic, industry, and construction, cities are expectedly noisy places. Still, noise is a leading source of dissatisfaction for city residents. Urban noise affects more than quality of life issue; the level of noise in Nashik city can cause serious and long-term harm to health, Noise not only makes hearing, concentrating, and working more difficult, Noise disturbs sleep. Insufficient or poor quality sleeps results in stress, fatigue, and changes in body's chemical balances.Noise is a sound that is unwanted or disrupts one's quality of life. Noise disturbs the normal activities such as working, sleeping, and during conversations Community noise, or environmental noise, is one of the most common pollutants Community noise includes the primary sources of road, rail and air traffic, industries, construction and public works and the neighborhood (WHO, 1999).

Environmental noise is increasingly becoming a community concern internationally considerable efforts have been made over about the last four decades to reduce noise impacts from transportation sources. The lot of noise in the environment, it is termed as noise pollution. Most of the area in the Nashik city of Maharashtra are congested and densely populated. City consist of the combinations of old and new road and building structure. Because of heavy traffic, urbanization, migrants of peoples from north Maharashtra, Marathawadwa and Vidharbha region

for employment purpose, also village to town for their civil work with vehicles and residential has been increased noise level. We noted noise level by decibel meter at different time of the day in the interval of one hours at main commercial area Dwaraka square area in Nashik. It is the junction point of Bombay – Agra and Nashik – Pune National Highway, Noise level is notably high at this location as compared to prescribed standard of pollution control Board. The present study investigate that noise level during rush hours in the evening is comparatively higher than the noise level than other time in a day. The heavy traffic , no plantation cover, design of buildings with no proper spacing and acoustic design consideration. We conclude that public awareness and public environmental education is essential to safeguard natural environment and to control pollution. Peoples showed be aware about importance of human health and environment protection Act.1986.

**KEY WORDS:** Noise pollution, Noise data of Dawark decibel meter, Environment projection Act.1986.

## **INTRODUCTION**

Noise interferes with cognitive functions, including attention, concentration, memory, reading ability, and sound discrimination. Long term exposure to noise from road, rail, and air traffic results in physiological and psychological stress, which indirectly may contribute to heart disease, and high blood pressure. While urban noise may seem inevitable and unavoidable, even the most dense and active places can take steps to limit noise. Many cities in India have laws that limit noise in residential areas; however, these laws are variably enforced. While there has been progress in limiting noise along airport flight paths, relative to other environmental problems, such as air pollution, there has been limited progress on noise management over the past several decades. Health protective laws, attention to design and planning, and improvements

to machines can minimize noise from transportation, construction, mechanical equipment, entertainment, and human behavior.

Sound is produced by vibration in air pressure. Sound may be pleasant as well as unpleasant, vibrating sound reaches our ears and we hear the sound. The unwanted sound (Loud sound) irritates ear and human health and it is known as noise. Humans can not hear all sound. The frequency range below 20 Hz is called infrasonic and above 20 KHz is called Ultrasonic. Loudness, and pitch and quality three characteristics of sound. Loudness is measured in decibel (dB).

Noise is derived from the Latin word "NIVSEA" means unwanted sound. It is undesired. Unpleasant, unexpected, irritant and source of stress. Sound is measured in decibel (dB). It is a logarithmic scale invented by engineers of the bell telephone network in 1923 and named in the honor of the inventor of Telephone Alexander Graham Bell (1847-1922) Audio Engineering Society recommends that a space be used dB A. In India it is often written as dB (A). Human ear can hear sound between frequency range 20 Hz to 20 KHz. The speech zone lie in the range of 500 to 2000 Hz.

The human ear is most sensitive in the range of 2,000 to 5,000 Hz. Noise has been recognized as ambient air pollutant. Standards in this regard are laid down under Environment (protection) Rules, 1986 and under the model rules of the factories Act. 1948.

### **NOISE POLLUTION**

**dB**

{ 140 - 50 HP at 30 m

			Oxygen torch, pneumatic
Painfully loud	{	130 -	chipper
		120 -	Discotheque
Uncomfortably loud	{	110 -	Textile loom, jetliner 300 m overhead
		100 -	Farm tractor, newspaper press, air hammer, air compressor, milling machine, bench
Very loud	{	90 -	Heavy city traffic, train whistle
		80 -	Key punch machine
		70 -	Average traffic
Moderately loud	{	60 -	Conversational speech
		50 -	Business speech
		40 -	Soft whisper
Quiet	{	30 -	A room in a quiet house at night
		20 -	Motion picture studio
Very quiet	{	10 -	Motion picture studio
		0 -	Threshold of hearing

**Effects of Noise Pollution :** Noise affects health both by physiologically and psychologically Hearing loss, damage of ear, hearing deafness increasing systolic & diastolic blood pressure reduction in birth weight of baby, premature birth skin resistance alteration headache, neurological disorder, respiratory modification loss of memory hyper tension cardiovascular

constriction are the physiological effects and annoyance anxiety fatigue, tension, tear, lack of concentration change in behavior interference in communication task inference in performance reduction in work efficiency loss of sleep, cause of irritation, frustration, depression and birds, increases in heart beat rate causing respiratory difficulties in animals and birds, general stress, reaction changes the behaviors of bird, abandonment of territory, loss of ability to produce.

Noise pollution is one of the major problems faced by the people of Nashik City in populated area or in commercial area . A rapid growth of population, uncontrolled urbanization, rural urban migration, industrialization, road transportation, traffic jamming, civil work and machinery, human activities in festivals & cultural programme and unnecessary use of loudspeakers, loud musical systems, harsh sounds of vehicle horns, barking of dogs are the major source & contributors in noise pollution.

### **LEGAL PROVISION**

According to Report of WHO to the UN Conference on environment, out of all environmental problems noise is easiest to control. It is controlled by law & awareness of people. Constitution of India provides in Article 48A the provision of environment protection improve the environment and to safeguard the forest and wildlife of the country. Article 51(A) (G) which says that every citizen shall have the duty to protect and improve the natural environment including forest, lakes, rivers and the wildlife. In India number of legislation have been enacted for the protection and preservation of environment. The important legislation Act were framed as Environment Protection Act.1986. under which noise pollution, regulation and control rules 2000 have been framed. Now noise has been recognize as a pollutant and the production and use of high sound intensity firecrackers have been banned. The Central pollution control board (CPCB) committee has recommended permissible noise level for different locations as given be Table.

<b>Area Code</b>	<b>Category of Area/Zone</b>	<b>Limitations in Day time (dB)</b>	<b>Limitations in Night time (dB)</b>
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

When sound level reaches 140 dB our ears are hurt and long exposure to noise results in permanent damage to ears and even at 85 dB (A) can cause hearing loss begins. The noise level 120 dB (A) is known as threshold of pain, a level 140 dB (A) is very harmful and causes permanent hearing deafness and 150 dB (A) could kill the person. The international reference pressure level of  $2 \times 10^{-5}$  Pa is the average threshold of hearing. A survey by Central Pollution control Board (CPCB) shown in Delhi, the noise level in most places exceeds the permissible limits, similarly a survey and study of Maharashtra Pollution Central Board (MPCB) shown that people in residential commercial, industrial and silence zone of Mumbai too suffers from high levels of noise pollution. Pinkle and Koppen (1948) showed that there is a sharp decline in auditory acuity rise in fasting blood sugar and increases fatigue. According to Kryster (1970) noise causes heart out put to decrease with greater fluctuation in an arterial blood pressure, Johnson and Hansin (1977) in one of their studies found that systolic and diastolic blood pressures were significantly higher in industrial workers because of continuous exposure to noise. Shetye et al (1982) had estimated that noise level in crowded places in Mumbai was almost double that of residential standards. J.K. Datta (2005) was found that sound level lies within a range of 65-83 dB or above in different places of Burdawan town. West Bengal. P.

Bhatia (1995) showed that noise level 100 dB (A) was increased blood pressure and pulse rate. According to De (2000) 65 dB noise level at distance of one meter affect human heart while 125 dB gives sensation of pain in the ear. D Banerjee (2007) estimated increase in noise level in Asansol during Kali Puja Festival.

Noises harm the body and mind both. Effects of noise pollution are auditory and non-auditory; Number of researchers & investigators discussed the impact of noise pollution on human health and behavior. World Health Organization (WHO) suggested that the people should aware and everyone should know the impact of noise pollution on human health.

#### **INTRODUCTION:**

Dwaraka cicle is nearly one km away from main Nashik city.It is situated on the Mumbai Agra and Nashik Pune national Highway. Is a square of both the road, It is connecting point of two highways. Large No of vehicles are crossing this circle throughout the day.

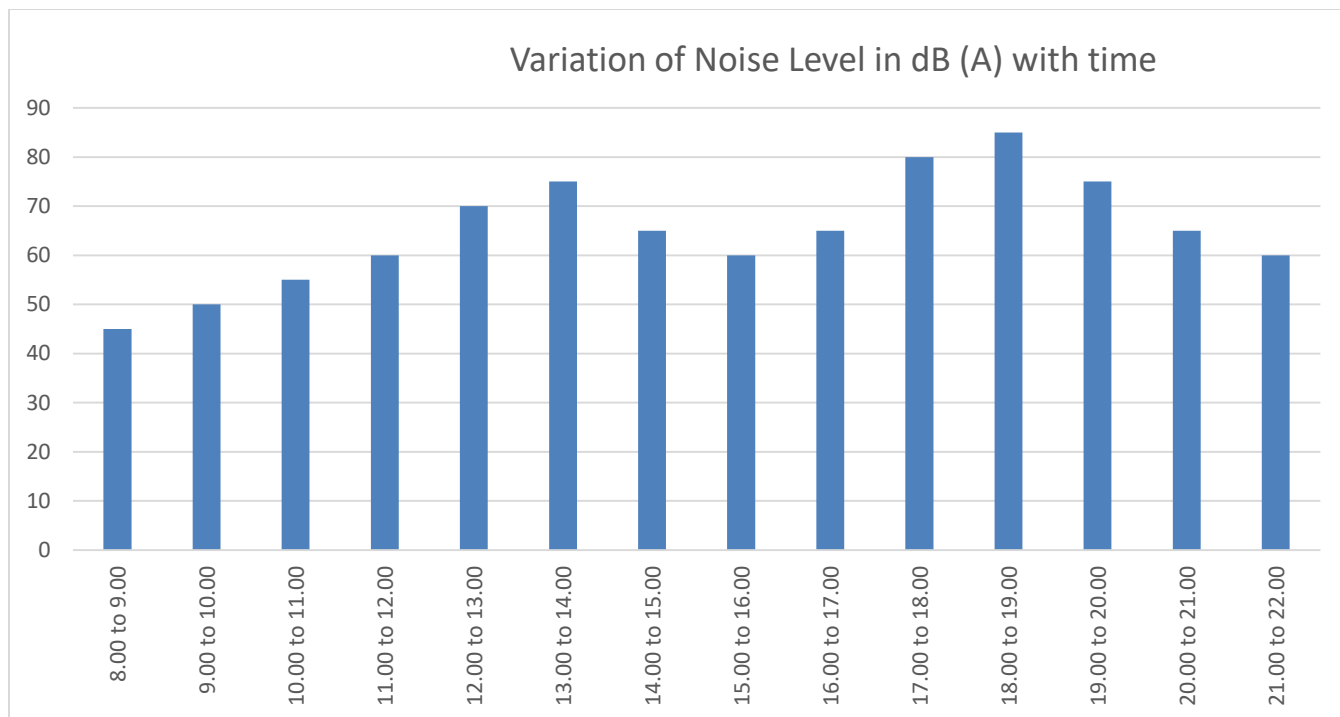
**MATERIALS AND METHODS :** Noise levels were recorded at Dwaraka square circle area which is located on the Bombay – Agra national High way in Nashik. This study was conducted throughout the day. The noise levels were observed with sound level meter YF-20 having low range 40-80 (A) and high range 80-120 dB (A) in 1Hour intervals at each location average noise levels were recorded. The sound level meter consists of capacitance microphone calibration with signal generator amplifier, weighing network and display, indicator meter. Noise sampling being done between morning 8.00 to 22.00Hrs at night time. All readings were taken at height of 1.5 meters from ground level. The data noted tabular form as below

#### **TABLE - SOUND LEVEL INFORMATION OF RAVIVAR KARANJA**

**( NORMAL DAY)**

<b>Sr. No.</b>	<b>Time in Hrs</b>	<b>Noise Level in dB (A)</b>
1	7.00 to 8.00	35
2	8.00 to 9.00	40
3	9.00 to 10.00	47
4	10.00 to 11.00	52
5	11.00 to 12.00	58
6	12.00 to 13.00	75
7	13.00 to 14.00	80
8	14.00 to 15.00	60
9	15.00 to 16.00	65
10	16.00 to 17.00	68
11	17.00 to 18.00	77
12	18.00 to 19.00	83
13	19.00 to 20.00	74
14	20.00 to 21.00	66
15	21.00 to 22.00	62





The results of noise survey at Dwaraka Circle area shows that noise pollution level compare to standard data prescribed by Central Pollution Control Board. The Graphical representation shows that at certain peak hours the the noise level is quit high as compared to the standard data. To control noise level the easiest control measure is public awareness and public environmental education. It is duty of every citizen that obey rules and regulation and safeguard protect the natural environmental and step should take to reduce noise and overall pollution.

**Conclusion:**

In this paper we conclude that the noise level is increases during peak hours mostly in the evening location that we have chosen for study. The sources, effects, assessment of noise level and offers suggestions for controlling the noise level are also discussed. To avoid the high noise level implementation of good noise control policy and to increase public awareness about noise

pollution. The need of increase funds for environmental policy and educational programme. The future development plan should be considered with adequate plantation, walkways and underground roads at road crossings, use of insulation and sound absorbing materials in construction is essential.

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