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"STUDY OF NOISE LEVEL IN DIFFERENT ZONE OF GWALIOR M.P."

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ABSTRACT- Noise pollution is recognized globally as a significant problem that negatively impacts the quality of life for urban dwellers. As metropolitan areas become more urbanized, industrialized, and commercialized, noise pollution levels are increasing. Traffic is the main cause of noise. Noise pollution, which is regarded as an environmental stressor, is becoming a global issue, especially in developing countries like India. The city of Gwalior, located in the Indian state of Madhya Pradesh, is well-known for its historical significance and quick development. The city, which has a population of over 11.2 lakh, has experienced fast expansion in traffic, industrialization, and urbanization, all of which have increased noise levels.
Determining the ambient noise levels in several Gwalior city zones in May and June of 2023 is the aim of the current study. The noise levels were tested at ten different locations in the residential zone and the silent zone, which are the two separate zones of Gwalior. Leq, L10, L50, L90, and LNP were among the parameters used to examine the obtained noise data.

1. The Central Pollution Control Board's (CPCB) recommended standards were compared with the Leq readings at various times and places. Sound levels were found to be much higher than the uppermost allowable limits during peak hours in every research area. According to this study, noise pollution is a major problem in several parts of Gwalior city, underscoring the necessity of appropriate control methods to lower noise levels.

Key words: Gwalior City, residential zone, silence zone, noise pollution, sound level meter, and noise parameter.

2. INTRODUCTION-

1.1BACKGROUND

Sounds are the air vibrations that reach our ears, and they can be either unwanted or overwhelming. India and other developing countries face numerous environmental challenges. These environmental problems include noise pollution, water pollution, and air pollution. Of the three, noise pollution is the one that worries city inhabitants the most. The primary causes of the excessive noise levels are the growing population and the number of transportation. The noise from traffic creates new issues for people who live near a highway.

1.2 IMPORTANCE OF STUDY-

The Indian state of Madhya Pradesh contains the district and city of Gwalior. It is the third largest urban agglomeration in Madhya Pradesh and the 38th largest in India, according to figures from the 2011 census. Noise pollution in Gwalior City has been exacerbated by the city's fast urbanization, increased traffic, and population expansion during the past ten years. The city is also plagued by noise pollution from loudspeakers, screaming horns, and other sources. The persistent actions of citizens have made noise pollution inevitable. Knowing the noise level in each part of Gwalior City, how it impacts the neighborhood, and what can be done to reduce it are all very important. The investigation's principal goals are:

1.The environmental noise level in each of Gwalior City's zones is assessed using

(a) Leq (equivalent nasal level), which reflects a constant noise level.

b) L90 (most common sound level heard at 90% of total time).

(c) L50 (Denotes the average noise level that is present for half of the time).

(d) L10, which primarily represents the highest noise level that lasts for 10% of the overall duration.

(e) LNP (level of noise pollution)

2. To assess and rate noise exposure in different urban zone of the city.

3. To compare noise level with prescribed standard of CPCB aimed to evaluate the ambient noise quality status in and around the study area.

4. Suggesting the possible remedial measure for management of noise.

5. To compare noise level in different zone of Gwalior city with noise level of other similar cities.

6. To find impact of high noise level to human health including non-auditory effects.

2. OBJECTIVE

The following are the primary goals of the current study:

1. To measure the amount of noise pollution in Gwalior city.
2. To contrast the outcome with WHO noise specification requirements.

3. To illustrate the noise profiles of the various Gwalior city zones at different times of the day. between the morning, noon, and evening sound pressure levels.

3. METHODOLOGY

Modern life has contributed to noise pollution, which is particularly prevalent in India's big cities. In Madhya Pradesh's second-largest city, Gwalior, industrialization and urbanization have resulted in significant noise pollution. The reading, observation, data analysis, and recommended corrective actions for noise management comprised the primary divisions of this study. Among the data collection and analysis from the majority of the research, measuring the noise parameter is essential for the evolution of the city's ambient noise quality.

3.1 STUDY AREA

The city of Gwalior, which has a population of 12.81 lakh and is spread across 53 square kilometers, is located in the central region of India between latitudes 230 10!N and longitudes 790 56!E. Its gun carriage factory, ordinance factory khamaria, vehicle factory grey iron foundry, 506 army workshop, and central ordnance depot contribute to the nation's defense, and it is the zonal headquarters of the WCR. Additionally, two national highways, NH-7 and NH-12, pass through Gwalior. The population of Gwalior is very diverse, with some areas being quite noisy and others being relatively quiet.

To study the intensity of noise pollution in commercial, residential and silence zone of Gwalior city monitoring of noise level will be conducted as per guideline of the central pollution control board (CPCB) India Total 10 location identified prior to monitoring that are listed below.

List of location which have to survey-

Residential- vinay nagar,adhartal area,hathital colony,wright town,civil line area

Silent-victoria campus,RDVV campus,high court avenue,JEC campus, bhawar tal garden

3.2 Noise Measurements

The SLM100 Sound Level Meter will use the traditional method to measure sound levels between 34 and 134 dB during the working day, from 8 AM to 9 PM. According to the CPCB guidelines, standard noise levels are maintained at night and during the day for different locations. The 12 hours of daylight that make up our monitoring period are 8 a.m. to 9 a.m., 9 a.m. to 10 a.m., 10 a.m. to 11 a.m., 11 a.m. to 12 p.m., 12 p.m. to 01 p.m., 01 p.m. to 2 p.m., 2 p.m., 3 p.m., 4 p.m. to 5 p.m., 6 p.m. to 7 p.m., 7 p.m. to 8 p.m. The Central Pollution Control Board (CPCB) of India's suggested limits and ambient sound levels are being compared.
The Central Pollution Control Board (CPCB) of India's recommended guidelines and ambient sound levels are being compared. The Noise Pollution (Regulation and Control) . present study various noise descriptors such as Leq , L10, L50, L90 , LNP has been evaluated to reveal the extent of noise pollution.

4. DATA ANALYSIS

4.1Observation and Calculation

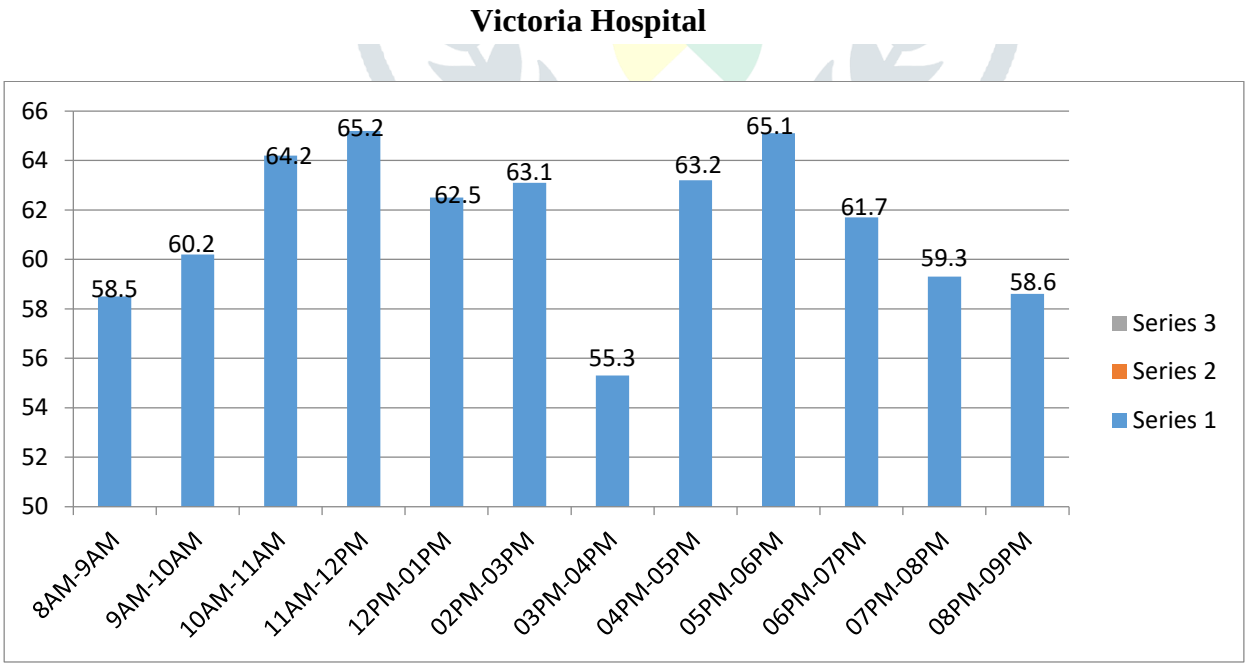

Fig 5.6: Temporal distribution of equivalent noise level Leq dB Victoria Hospital

RDVV CAMPUS

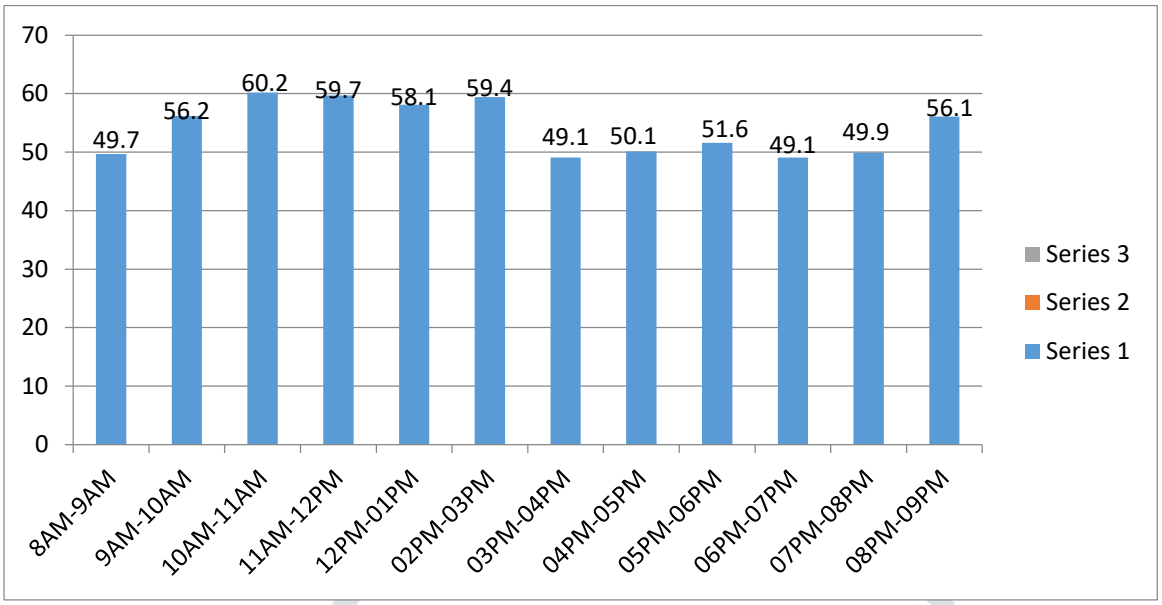

Fig 5.7: Temporal distribution of equivalent noise level Leq dB RDVV CAMPUS

HIGH COURT

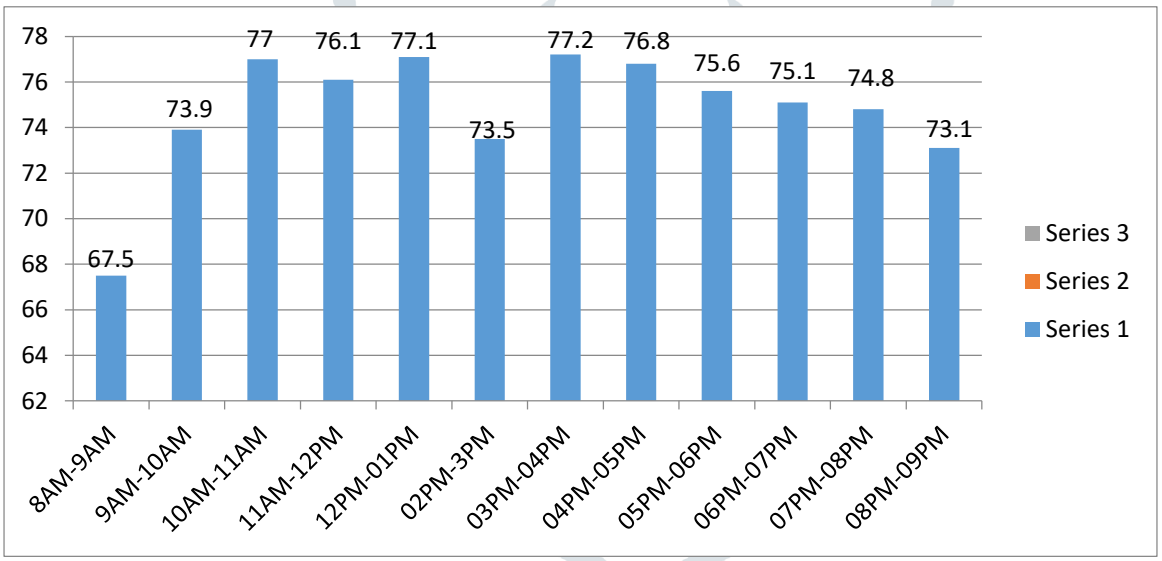

Fig 5.8: Temporal distribution of equivalent noise level Leq dB High Court

JEC CAMPUS

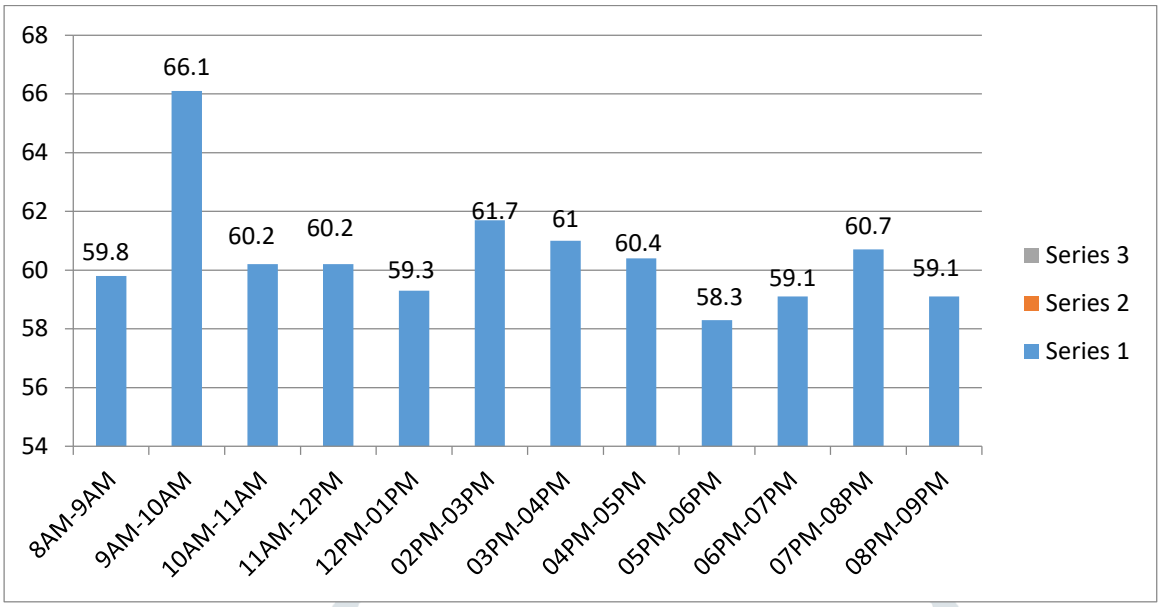

Fig 5.9: Temporal distribution of equivalent noise level Leq dB JEC CAMPUS

BHAVARTAL GARDEN

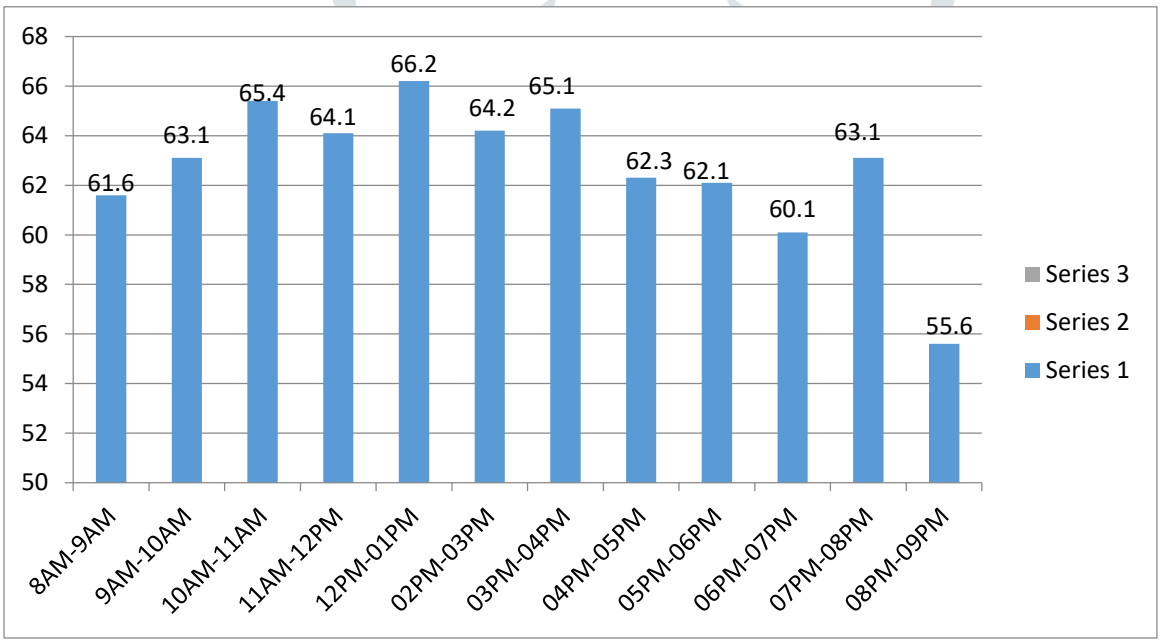

Fig 5.10: Temporal distribution of equivalent noise level Leq dB Bhavartal Garde

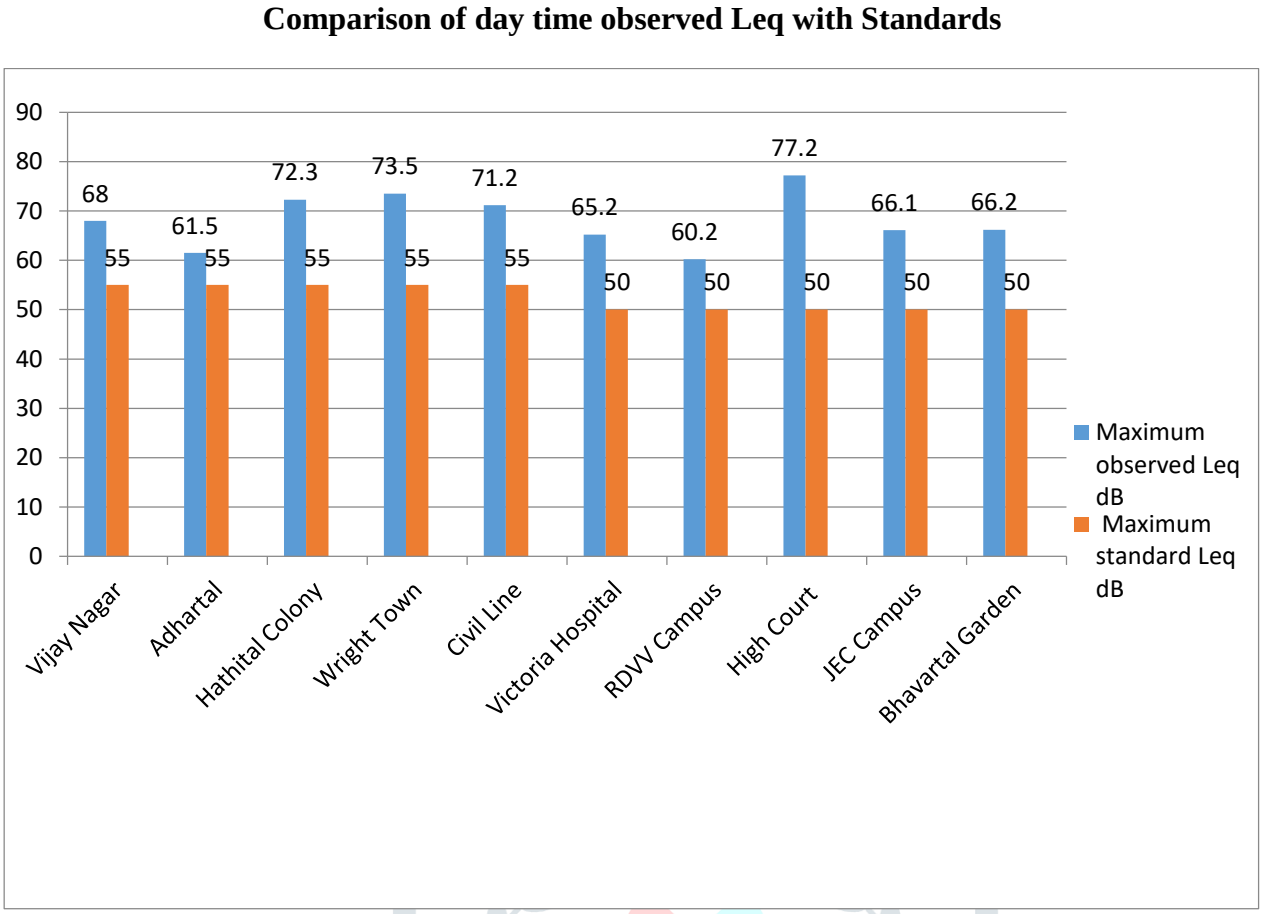

Fig 5.11: Comparison of day time maximum observed noise level (Leq) in dB with standard value

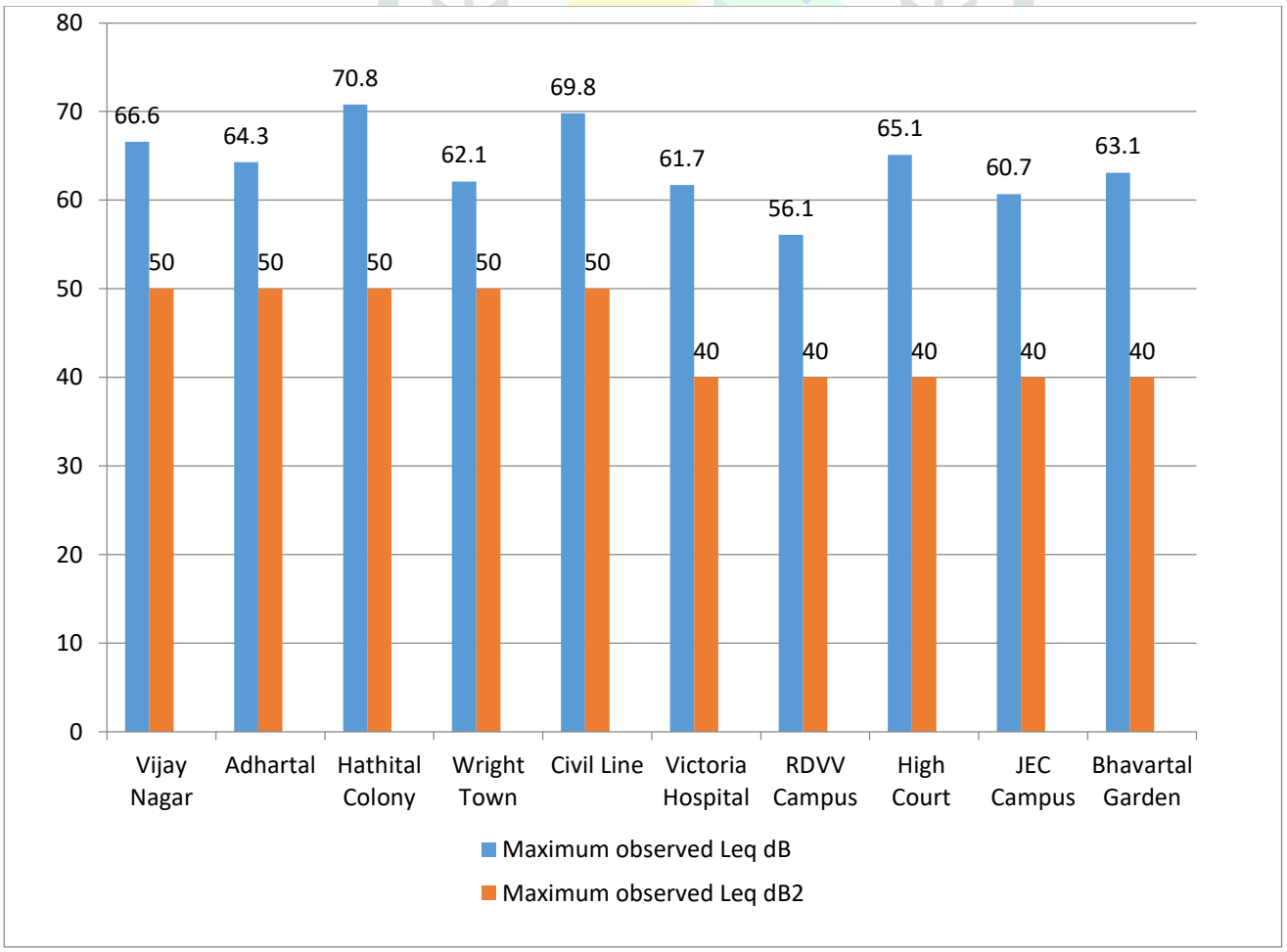

Fig 5.12: Comparison of night time maximum observed noise level (Leq) in dB with standard value

5. CONCLUSION- The investigations reveal that the Gwalior cities are highly exposed to noise pollution. Rapid urbanization and heavy traffic flow and vehicle horn are the main reason that poses noise pollution in the town. Hence to keep the noise level with in the acceptable limit the following top five main factors for noise control should be followed. Movement of vehicles on the inner arterial roads should be restricted, The vehicles should not generate noise more that limit prescribed by the Regulatory Authorities, Heavy vehicles movement near residential and silence area should be rusticated, The noisiest three wheeler tempo should be banned and There should be restriction on the use of horn by vehicles passing by the residential area.

Preparation of noise maps for city is the one of most valuable step to decrease nose pollution in Gwalior. Noise maps are very powerful tools for communicating result of assessment of environmental noise to the general public and for the government (local and national) to devise noise correction measure. The noise map itself, with the values of descriptors, provides baseline data for planner, engineers and other professional and researcher for the planning and execution of their projects.

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