



Status of Ambient Noise level in Kota city (July to December 2021)

Introduction

Background

The word "noise" descends from the Latin word "nausea," meaning seasickness or discomfort. Mechanical energy released by any source in a medium creates vibrations of molecules. The molecules start vibrating in the oscillatory mode and the energy travels through the medium in form of vibrations. If the oscillation in the medium are in the range of 20 Hz to 20,000 Hz (the audio frequency range), it is audible by human ears and categorises as sound.

Under section 2(a) of Air (Prevention and Control of Pollution) Act, 1981 noise is defined as air pollutant.

“Air pollutant” means any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.”

Study Area

The Regional Laboratory, Rajasthan State Pollution Control Board, Kota monitored noise level day and night time in Kota city. The city of Kota (previously spelt as Kotah) is located in south-eastern Rajasthan along eastern bank of the Chambal River, a very region widely known as “Hadoti”. Kota district lies between 24⁰ 25’ and 25⁰ 51’ North Latitude and 75⁰ 37’ and 77⁰ 26’ East Longitude. Kota district has an area of 5098 sq. km. The population of kota is 5,37,371.

Site selection for monitoring is depended on land use pattern as prescribed in the standard. In order to maintain uniformity in monitoring, Residential, Commercial, Industrial and Silence zones were selected in respect of Noise Standards prescribed under the provisions of Noise Pollution (Regulation & Control) Rules, 2000. The monitoring network consisted of a total of 4 noise monitoring locations in Kota City.



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Table 1: Noise level monitoring location of Kota city

S.No.	Name of monitoring location	Category of area / Zone
1	Civil Line, Nayapura, Kota	Residential
2	New Medical College Hospital, Rama Krishna Puram, Kota	Silence
3	Police chowki, Gumanpura, Kota	Commercial
4	Regional Office, RSPCB, Indraprastha Industrial Area, Kota	Industrial



Fig: Map showing noise level monitoring location of Kota city



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Methodology

The Noise level monitoring was conducted day time (6:00 AM to 10:00 PM) and night time (10:00 PM to 6:00 AM) for half hour interval at each location with sampling frequency of one second.

Noise levels have been recorded by means of a Precision Noise Level Meter of Make 'Cirrus Research, Model No. G078091. A widely used scale to measure sound pressure levels is the weighting scale, "A-weighting." It correlates with the subjective response of auditory system, and is expressed as decibels in A-Scale (dBA).

Observation

Table 2: Noise level monitoring result from July 2021 to December 2021.

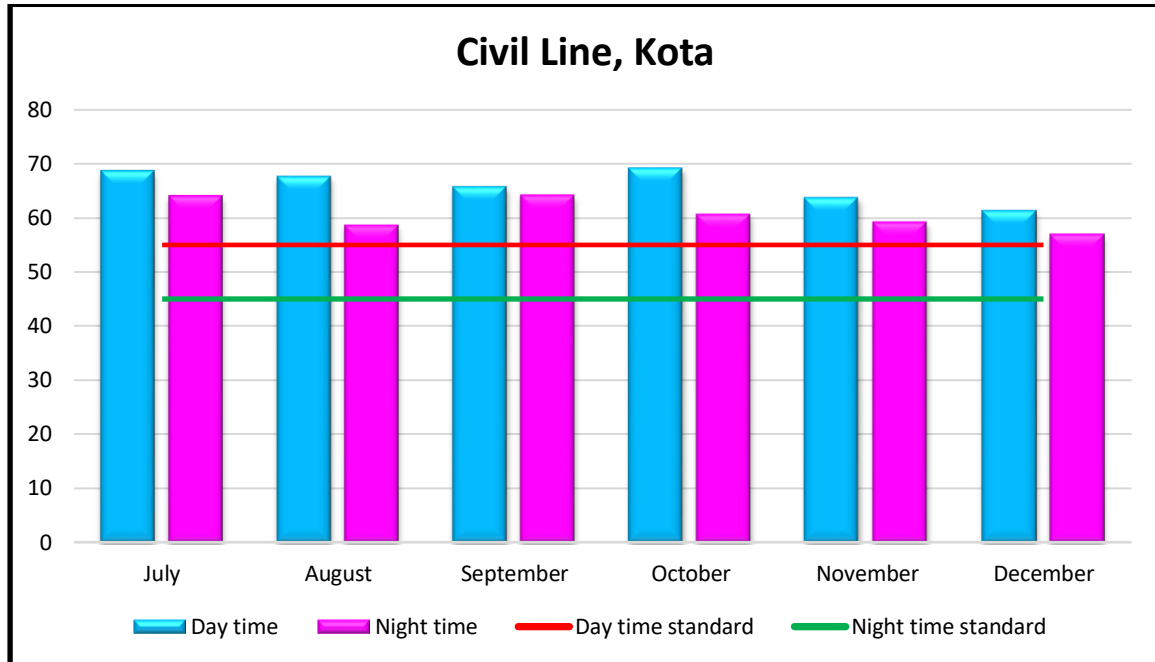
Category of area / Zone	Residential Zone		Silence Zone		Commercial Zone		Industrial Zone	
Name of monitoring location	Civil Line, Nayapura, Kota		New Medical College Hospital, Rama Krishna Puram, Kota		Police chowki, Gumanpura, Kota		RO, RSPCB, Indraprastha Industrial Area Kota	
Monitoring period	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
July	68.7	64.1	58.8	56.4	63.2	59.3	72.4	62.7
August	67.7	58.7	64.0	58.7	69.6	63.5	65.5	61.2
September	65.7	64.2	64.7	61.0	65.9	64.8	65.4	64.6
October	69.2	60.7	62.7	54.1	70.1	63.9	64.8	59.4
November	63.7	59.2	58.8	55.0	67.2	63.2	62.4	61.1
December	61.4	57.0	62.0	54.5	72.5	67.0	66.2	63.2
Standard	55.0	45.0	50.0	40.0	65.0	55.0	75.0	70.0

All values are in Leq. dB(A)

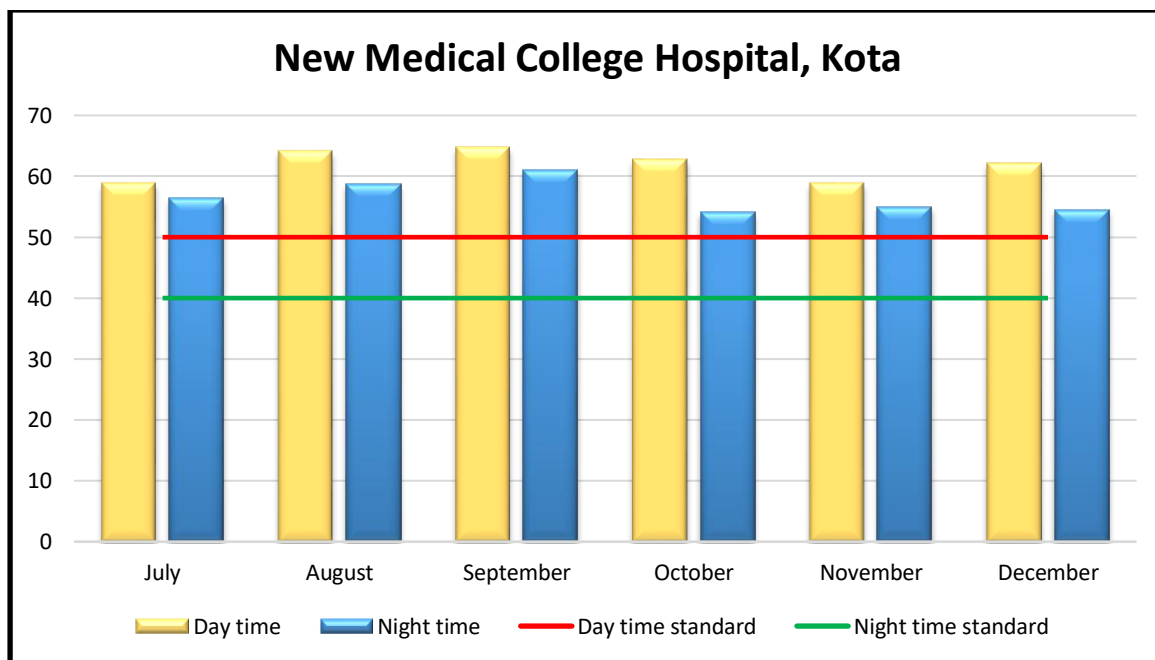


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Graph No. 1 - Noise level monitoring Civil Line, Kota (Residential Zone).



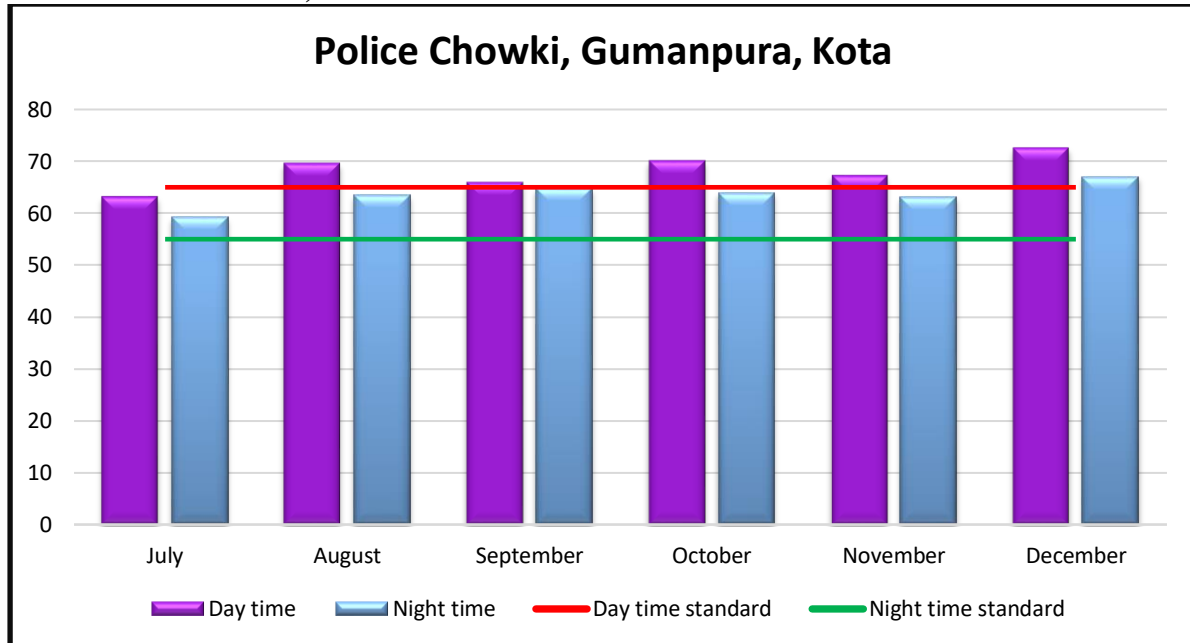
Graph No. 2 - Noise level monitoring New Medical College, Kota (Silence Zone).



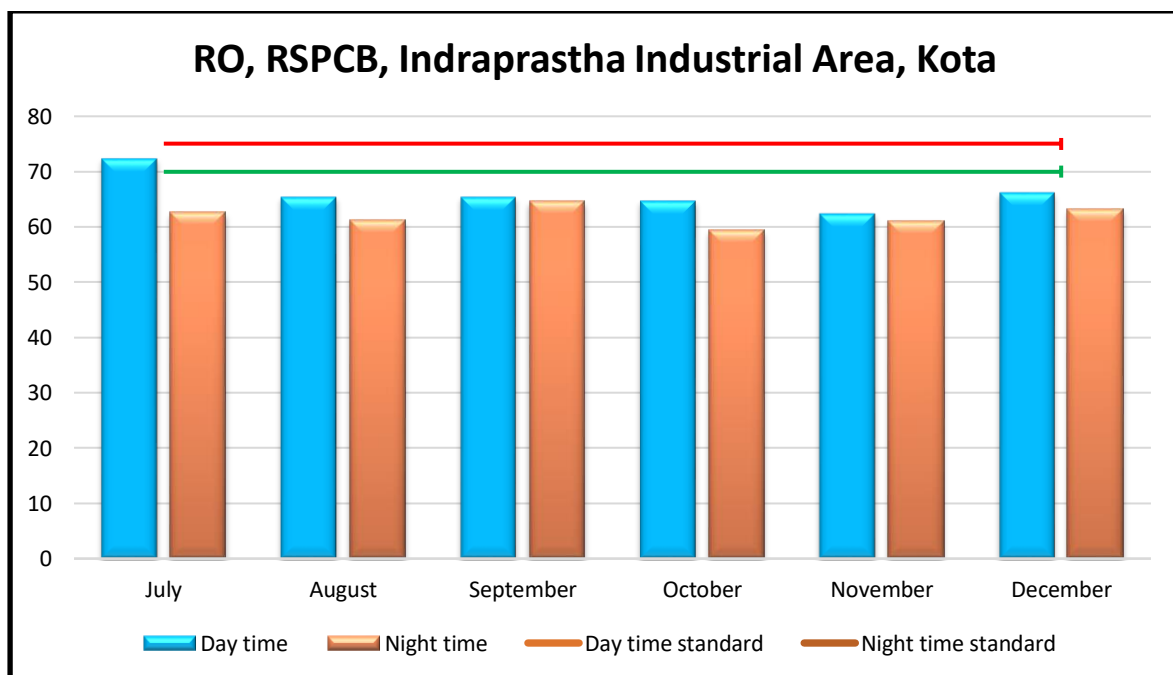


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Graph No. 3 - Noise level monitoring Police Choki, Gumanpura, Kota (Commercial Zone).



Graph No. 4 - Noise level monitoring RO, RSPCB, Indraprastha Industrial Area, Kota (Industrial Zone).





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Conclusion

Residential Zone

The recorded data revealed that sound level ranged from 61.4 to 69.2 dB(A) during day time and 57.0 to 64.2 dB(A) during night time in residential zone. It is concluded that noise level of residential zone has exceedance of prescribed standards during day and night time from July to December 2021.

Silence Zone

In silence zone sound level ranges from 58.8 to 64.7 dB(A) during day time and 54.1 to 61.0 dB(A) during night time. The observed values at silence zone exceedance of prescribed standards during day and night time from July to December 2021.

Commercial Zone

In commercial zone sound level ranges from 63.2 to 72.5 dB(A) during day time and 59.3 to 67.0 dB(A) during night time. The monitored value of day and night time has above the prescribed standards, except month of July 2021 during day time.

Industrial Zone

On comparison of data at industrial zone sound level ranges from 62.4 to 72.4 dB(A) during day time and 59.4 to 64.6 dB(A) during night time. The results revealed that observed value of noise level monitoring from July to December 2021 during day and night time has within prescribed standards.



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