Assessment of Ambient Air Quality of Lucknow City

Pre-Monsoon 2026

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सीएसआईआर-भारतीय विषविज्ञान अनुसंधान संस्थान
CSIR-INDIAN INSTITUTE OF TOXICOLOGY RESEARCH
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Salient Features of the Study Area: Lucknow City

- **Geographical Position** : 26° 52' N Latitude
  80° 56' E Longitude
  128 m above Sea Level
- **Area** : 631 sq. km.
- **Population** : 2815033 as per 2011 Census
- **Projected Population** : 65 lakhs as per Master Plan 2031
- **Climatic condition** : Subtropical climate, cool dry winter (Dec-Feb) & summer (Mar-Jun). Temperature about 45°C in summer to 3°C in winter. The average annual rainfall is about 100 cm.
- **Total Vehicular number as on 31/03/2026** : 3199297
- **Growth of Vehicles over 2025-2026** : 4.9%
- **Total No. of Fuel Filling Stations (Petrol/Diesel/CNG/LPG)** : 221
- **Consumption of Fuel**
  - **Petrol** : 318738.5kL
  - **Diesel** : 193497.5kL
  - **CNG** : 74559017kg
  - **LPG** : 383000 kg
- **Major Sources of Pollution** : Automobiles, D.G. Sets
  Biomass burning
  Construction activities
  Dry sweeping and resuspension of road dust, residential emission
- **Parameters Monitored** : PM_{10}, $PM_{2.5}$, SO_2, NO_2, Pb, Ni, and Noise Level
- **Study Conducted by** : Environmental Monitoring Laboratory
  CSIR-IITR, Lucknow

ASSESSMENT OF AMBIENT AIR QUALITY OF LUCKNOW CITY DURING PRE-MONSOON, 2026

Summary

To assess the prevailing ambient air quality status of Lucknow city, the institute has been conducted ambient air monitoring during the pre-monsoon season (April–May 2026) at nine representative locations covering residential, commercial, and industrial areas. The monitoring parameters included were assessment of particulate matter (PM_{10} and $PM_{2.5}$), gaseous pollutants (SO_2 and NO_2), heavy metals (Pb and Ni), and daytime and nighttime noise levels.

The findings indicated that the ambient concentration of particulate matter have exceeded their NAAQS limits (i.e., 100 µg/m^3 for PM_{10} and 60 µg/m^3 for $PM_{2.5}$). The city average exceedance factor (EF) was 1.5 and 1.3 for PM_{10} and $PM_{2.5}$, respectively, indicating high particulate pollution *as per CPCB classification. However, gaseous pollutants (i.e., SO_2 and NO_2) were within their national limits of 80 µg/m^3. The average concentration of toxic metals associated with PM_{10} (i.e., Pb and Ni) were also within their respective ambient standards of 1.0 µg/m³ and 20 ng/m³. In contrast, both daytime and nighttime noise levels exceeded the prescribed national standards at all monitored locations. Overall, the city has observed an improved in ambient air quality compared to the finding of the premonsoon survey conducted in 2025. Notably, the average concentration of PM_{10} and $PM_{2.5}$ decreased by 6.6% and 17.5%, respectively, which is linked to the meteorological and anthropogenic factors, including a few rainfall events during the monitoring period.*

The persistently high levels of particulate matter and noise pollution throughout the city remain a matter of concern for human health. During the monitoring period (April-May), Lucknow experience moderately dry atmospheric conditions. Thus, a rise in surface temperature and dry weather favoured the resuspension of loose soil and road dust particles into the atmosphere. The ongoing road widening, pavements, and building construction activities in the city also contributed the entrainment of dust into the ambient air environment. In addition, growth in registered vehicles in city contributed to more jams and increased fuel consumption and relative traffic pollution along the city roads.

Further, a five years trend analysis indicated a decline in particulate matter pollution from the last previous two years of pre-monsoon surveys. Over the years, multiple action plans have also been implemented by the government to mitigate air pollution in the city. During last two year (i.e. 2024-26) more number of CNG and EV buses has been added to the public transport of the city. The gradual increase in personal EV cars and EV two and three wheelers has also been observed on city roads indicating a shift towards cleaner fuel vehicle use in the city. Besides, the number of passengers using the Lucknow city metro has increased. Several new flyovers, connecting roads, and outer roads have also shared the load of the city traffic. The outer ring-roads (Kishan path) around the city have provided uninterrupted routes for long-distanced vehicles to avoid entry into the city. Furthermore, the deployment of mechanized road sweeping machines for road cleaning and dust suppression may also have contributed to lower particulate matter levels. Moreover, open waste burning has also decline following the implementation of the Zero Fresh Waste Dump initiative by Lucknow Municipal Corporation.

Air pollution is a dynamic phenomenon that varies across locations and time due to changing natural and human-induced factors. Continuous monitoring of air quality, public awareness, and sustained efforts by both government agencies and citizens are essential for safeguarding public health and further improving environmental quality in the city.

1.0 Introduction

Rapid urbanization, industrialization, and other human activities have increased air pollutant emissions and deteriorated air quality in India. Air pollution has become a major environmental challenge, affecting public health and the economy. To address this issue, the Ministry of Environment, Forest and Climate Change (MoEF&CC) launched the National Clean Air Programme (NCAP) in 2019 to reduce particulate pollution in 131 non-attainment cities across 24 states and union territories. Recent studies have shown that ambient air pollution seriously affects public health, urban environment, crop productivity, etc. Poor air quality also cause major economic losses and hinders national development. Along with the influence of meteorological and terrain conditions, there are numerous emission sources responsible for deteriorating the quality of air in the city such as dense traffic movement, entrainment of paved and/or unpaved road dust, dust emissions from construction and demolition activities, waste burning, DG sets emissions and road-side cooking, etc. Other than the local sources that are present within the cities, there are multiple elevated sources that also considerably contribute to atmospheric air pollution from outside of that city and influence the surface air quality within the cities. Besides fine particulate matter, pollutants such as sulphur oxides, nitrogen oxides, ammonia, and volatile organic compounds (VOCs) also harm public health and contribute to the formation of secondary pollutants that persist longer in the atmosphere.

In order to control and mitigate the ambient air pollution levels, the central and state administrators have implemented several measures such as setting up of national ambient air quality standards, improved air quality monitoring systems, promotion of gaseous fuels in the residential and transport sector, emission norms for highly polluting industries, advanced vehicular emissions and fuel quality norms, etc. Despite these initiatives, the pollutant levels in some cities have reduced little and have increased in many cities with rapid urban growth patterns. Evidently, more intensive efforts are still required at both urban and national scales to combat the issues.

As a first step in this direction, MoEF&CC, GoI, has launched the national clean air framework i.e. NCAP with a goal to meet the prescribed annual average ambient air quality standards at all locations in the country. This program sets an interim national level target of 20-30% reduction in $PM_{2.5}$ and PM_{10} concentration by 2024-25 compared to the baseline year of 2017-18, which has now been revised to 40% reduction and attainment of national standards (60 µg/m³ for $PM_{2.5}$ and 100 µg/m³ for PM_{10}) by 2025–26. In this connection, various stakeholders are working towards improving air quality monitoring and developing pollution control technologies for both industrial and ambient environments.

In line with above objectives, CSIR-Indian Institute of Toxicology Research (IITR), an Institute of Reputes (IoRs) under NCAP of MoEF&CC, has been conducting air pollution monitoring and assessment in Lucknow city on a regular basis to address the influence of seasonal variations and land use changes on the city's air quality. CSIR-IITR has been conducting the air quality survey every year at 9 different locations in Lucknow city since 1997 for the pre-monsoon (April-May) and post-monsoon (September-October) seasons to determine the city's ambient particulate (PM_{10} and $PM_{2.5}$) and PM_{10} associated toxic metals (Pb & Ni), and gaseous (SO_2 and NO_x), and ambient Noise pollution levels. This report presents the ambient air quality assessment of Lucknow city for the pre-monsoon seasons of 2026.

1.1 Layout of Lucknow City

Lucknow is the capital and the largest city in the Indian state of Uttar Pradesh and the city's area and urban population are growing rapidly. It is the eleventh-most city and the twelfth-most populous urban agglomeration of India. The current estimate population of Lucknow city is 42 Lakh. Lucknow is bordered by Barabanki in the east, Unnao in the west, Raebareli in the south, and Sitapur and Hardoi in the north. The city is located on the northwestern bank of the Gomti River. Gomati River flows across the city and divides it into 2 parts viz Cis and Trans Gomati. The city stands at an elevation of 124 meters (404 ft) above sea level. Lucknow city had an area of 402 km^2 till December 2019, when 88 villages were added to the municipal limits and

the area increased to 631 km^2. Lucknow has always been a multicultural city that flourished as a North Indian cultural and artistic hub and the seat of power of Nawabs in the 18th and 19th centuries. It is an important center of governance, administration, education, commerce, aerospace, finance, pharmaceuticals, technology, design, culture, tourism, music and poetry.

1.2 Vehicular Inventory and Fuel Consumption in the City

Road transportation is a significant contributor to the urban air pollution, therefore, data on registered vehicles and fuel consumption inventory of Lucknow city and other primary information were collected from RTO (Regional Transport Office) as of March 31, 2026 (Table 1). Based on vehicular and fuel consumption inventory, the vehicular population increased registered vehicle numbers by 4.9% in the city from 2024-25. The total number of CNG & electric buses of UPSRTC operational in Lucknow city is 4 & 115, respectively in 2026 (Table 2 & 3). Different oil and gas companies have provided the total number of fuel outlets (i.e. petrol, diesel & CNG) in Lucknow are 221 (Table 4). Fuel consumption data for 2025-2026 (Table 5) reveal that petrol consumption increased by 5.6%, whereas the consumption of diesel, CNG and LPG decreased by 8.9%, 18.5% and 5.9%, respectively compared to the previous year (2024-2025). Data on CNG and EV vehicles presented in Table 6 (a & b) indicate a substantial increase in EV-vehicle adoption, with the number of EVs rising by 59.7% over the previous year (2025), reflecting a growing shift towards cleaner transportation options in the city.

1.3 Study rationale

Scientific studies and monitoring reports have consistently shown an increasing trend in ambient air pollution levels in Lucknow city, which is also widely reflected in print and telemedia reports. The dominant contributor for the poor air quality of the city are vehicular emissions, construction/demolition activities, waste burning, cooking fuel combustion, road dust entrainment, etc. Despite implementing air pollution control

measures in the city such as enforcement of BS-VI compliant vehicles, promotion of CNG, and increased adoption e-vehicles on national wide, air pollution reduction in the city continue to exceed national standards and has become a great challenge for policymakers. By 2025, Lucknow is estimated to have approximately 31.9 lakh registered vehicles, with an annual addition of about 1.2–1.5 lakh new vehicles, reflecting a growth rate of around 8-12% per year. Vehicle movement in the city is managed by more than 110 traffic signals, however, the idle mode of vehicles, as well as traffic jams at multiple signals, has affected the air quality. Further, the increasing urban population and associated economic activities have increased demands for open cooking and street food stall vending further adding to combustion-related emission in the ambient air. The problem is often compounded by the predominance of widely distributed area (fugitive) sources in the city and the lack of understanding of the sources of secondary aerosol, their formation, and transport.

Currently, dry seasonal natural wind-blown, new construction of major flyovers, roads, and road pavement activities, malls, and office complexes in the city are the major sources of atmospheric pollution. The unpaved and damaged roads are also sources of soil and road dust that are entrained to the atmosphere air. Although the Govt. has taken many initiatives like cleaning programs under the Swachha Bharat Programmes, many off-side localities/areas of the city have huge garbage and waste dumps, which are also a source of air pollution. The fugitive and house-cooking combustion sources along the roadsides also significantly contribute to air pollution.Therefore, the current status of air pollution in the city is important to know for regulating the sources and receptor linkages and implementing cost-effective abatement measures to reduce air pollution load in the city. To address the air pollution status of Lucknow city, CSIR-IITR has been conducting air quality surveys at 9 locations across Lucknow city since 1997 for the pre-monsoon (May-June) and post-monsoon (October-November) seasons every year. The regular air quality survey identifies the new sources, vehicular number and fuel consumption inventory in the city. It generates air pollution data for different functional zones and seasons of the city for public awareness and to support government agencies in enforcing control

measures. On account of these understandings, this report complies with the study results of the pre-monsoon 2026 (April to May) air quality survey at 9 different locations in Lucknow covering industrial, residential, and commercial areas concerning PM_{10}, $PM_{2.5}$ SO_2, NO_2, trace metals (Pb and Ni), and Noise pollution. Further, this report illustrates the scientific discussion, interpretations, and recommendations for reducing air pollution load in the city.

1.4 Objectives

The following objectives are delineated for the Pre-monsoon 2026 study:

- *To study the air quality status of pre-monsoon season of 2026 at different functional areas of the city*
- *To measure the concentration of PM_{10}, $PM_{2.5}$, SO_2, NO_2, and trace metals (Pb and Ni) associated with PM_{10}.*
- *To study the trend of air pollution in Lucknow city over the years.*
- *To find out the day and night-time Noise levels at different functional areas of the city*
- *To provide awareness of the current air pollution status of the city*
- *To develop the scientific database and recommendations to support regulatory agencies with remedial measures in the city*

Table 1: Comparison of Vehicle Numbers in Lucknow

S. No.	Type of Vehicles	Number of Registered Vehicles as on March 31 of each year		Increment in %
		2024-25	2025-26	
1	Multi Articulated	8369	8442	0.9
2	Light, Medium & Heavy Weight Vehicles (Four Wheelers)	63603	67470	6.1
3	Light Commercial Vehicles (Three-Wheeler)	5140	5205	1.3
4	Buses	5721	5808	1.5
5	Omni Buses	0	03	-
6	Taxi	64976	65394	0.6
7	Light Motor Vehicles (Passenger)	23100	23156	0.2
8	Two Wheelers	2143390	2247109	4.8
9	Car	613843	652886	6.4
10	Tractors	39941	41954	5.0
11	Trailers	2572	2582	0.4
12	Others	78885	79288	0.5
Increase in total number of vehicles		**3049540**	**3199297**	**4.9**

Source: *RTO Lucknow, 2026*

Table 2: Details of CNG City Bus Service (Dubagaa Depot, 2026) in Lucknow

S. No.	Route No.	To and From	No. of Buses	Frequency (Km/Bus/day)
1	TATA CNG	Scooter India-Shahid Path-Telibagh-Lulu Mall-Ekana Stadium- Kamta Bus Station	04	265
		Total	**04**	

Table 3: Details of Electric City Bus Service (Dubagga Depot, 2026) in Lucknow

S.No.	Route No.	To and From	No. of Buses	Frequency (Km/Bus/day)
1	801-E	Dubagga Bus Station-Sitapur bypass-Bhithauli-Engineering Collage- Virajkhand	20	184
2	1201-E	Dubagga Bus Station to Pursaini Radha Swami via Awadh Hospital-Bangla Bazar- Telibagh -SGPGI	20	198
3	PMI-04	Dubagga Bus Station-Sitapur bypass-Bhithauli-Engineering Collage- Virajkhand	06	182
4	PMI-7A	Rajajipuram bus Station-Charbagh-GPO-Mantri Awas-Lohiya Hospital- Pikup Bhawan Chinhat-Tata Motars- Ram Swaroop Collage	03	213
5	PMI-07	Rajajipuram bus Station-Charbagh-Nishatganj-Polytechnic Chinhat-Tata Motars- Ram Swaroop Collage	08	209
6	PMI-10	Ghantaghar Chowk to Naimisharayan Mandir via Sandila-Bainiganj	04	196
7	PMI-12	Scooter India-Shahid Path-Telibagh-Lulu Mall-Ekana Stadium- Kamta Bus Station	42	222
8	PMI-12A	Airport-Shahid Path-Telibagh-Lulu Mall- Ekana Stadium- Kamta Bus Station	06	202
9	PMI-14	Airport-Shahid Path-Telibagh-Lulu Mall- Ekana Stadium- Kamta Bus Station	06	180
Total			**115**	

Table 4: Fuel Outlets in Lucknow City

S.No.	Agency	Number of outlets as of March 31, 2026
1	Indian Oil Corporation Limited (IOCL)	62
2	Bharat Petroleum Corporation Limited (BPCL)	38
3	Hindustan Petroleum Corporation Limited (HPCL)	48
4	Compressed Natural Gas Stations (CNGS)	20
5	Liquefied Petroleum Gas Stations (LPGS)	2
6	Green Gas Limited (GGL)	51
Total		**221**

Table 5: Fuel Consumption in Lucknow City, 2026

S. No.	Agency	Petrol in kL			High-Speed Diesel in kL			CNG in kg		
		April 24 to March 25	April 25 to March 26	% Change	April 24 to March 25	April 25 to March 26	% Change	April 24 to March 25	April 25 to March 26	% Change
1.	IOCL	144471	153412	6.2	85806	85128	-0.8	29612281	14903506	-49.7
2.	BPCL	93822	95933	2.3	79583	56105	-29.5	2425294	0	-100.0
3.	HPCL	63458	69393.5	9.4	46925	52264.5	11.4	4395000	4103890	-6.6
4.	GGL	-	-	-	-	-	-	55049329	55551621	0.9
Total		**301751**	**318738.5**	**5.6**	**212314**	**193497.5**	**-8.9**	**91481904**	**74559017**	**-18.5**
		LPG in Ton								
5.	**IOCL**	**April 24 to March 25**	**April 25 to March 26**	**% Change**	-	-	-	-	-	-
Total		**407**	**383**	**-5.9**	-	-	-	-	-	-

Source: *M/s Indian Oil Corporation Limited (IOCL), Lucknow; M/s Bharat Petroleum Corporation Limited (BPCL); M/s Hindustan Petroleum Corporation Limited (HPCL); M/s Green Gas Limited (GGL), Lucknow, 2026.*

Table 6 (a): Comparison of Registered CNG Vehicle Number in Lucknow

S. No.	Vehicles	Total Number		% of Change
		2024-25	2025-26	
1	Auto Rickshaws	8681	8812	1.5
2	Tempo Taxi	4693	4693	0
3	Buses	401	505	25.9
4	School Buses	5586	5636	0.9
5	Private Cars	51250	51420	0.3
6	M-Cycle/Scooter	0	139	-
7	Three-wheeler (goods)	0	367	-
8	Articulated vehicle	0	01	-
9	Cash van	0	06	-
10	Goods carrier	0	982	-
	Total	**70611**	**72561**	**2.8**

Source: *RTO Lucknow*

Table 6 (b): Comparison of Registered EV-Vehicle Number in Lucknow

S. No.	Vehicles	Total Numbers		% of Change
		2024-25	2025-26	
1	Buses	7	14	100
2	e-Rickshaw with Cart(G)	2139	3737	74.7
3	e-Rickshaw (P)	19155	23276	21.5
4	Goods Carrier	6068	6318	4.1
5	M-Cycle/Scooter	11154	21807	95.5
6	Moped	9	10	11.1
7	Motor Cab	11	16	45.5
8	Motar Car	1848	4263	130.7
9	Three Wheeler (Goods)	952	1157	21.5
10	Three Wheeler (Passenger)	14631	28730	96.4
11	Construction equipment vehicle (commercial)	0	43	-
	Total	**55974**	**89371**	**59.7**

Source: *RTO Lucknow*

2.0 Monitoring locations and methodology

For the pre-monsoon 2026 assessment, a total of nine air quality monitoring locations were strategically selected to represent various functional areas within the city. These comprised 4 residential areas, 4 commercials cum traffic areas and 1 industrial site as summarized in Table 7 and Figure 1. The methodologies employed for monitoring and analysis are given in Table 8. A total of 8-week samplings were carried out during April-May 2026.

Table 7: Monitoring Locations

S .No.	Locations	Activities
1	Aliganj	Residential
2	Vikas Nagar	Residential
3	Indira Nagar	Residential
4	Gomati Nagar	Residential
5	Charbagh	Commercial cum traffic
6	Alambagh	Commercial cum traffic
7	Aminabad	Commercial cum traffic
8	Chowk	Commercial cum traffic
9	Amausi	Industrial

Table 8: Parameters and Methodology for Air Quality Monitoring

Sl. No.	Parameters	Time Weighted Average	Methods of Measurement
1	Particulate Matter (PM_{10})	24 hours	Gravimetric
2	Fine Particles ($PM_{2.5}$)	24 hours	Gravimetric
3	Sulphur dioxide (SO_2)	24 hours	Improved West Gaeke
4	Nitrogen dioxide (NO_2)	24 hours	Modified Jacob & Hochhesier (Na-Arsenite)
5	Trace metals (i.e., Pb and Ni)	24 hours	Associated with PM_{10} sample on AAS.
6.	Noise Level	1 hour	The measurement of noise level was carried out during the day (6 AM to 10 PM) and night time (10 PM to 6 AM) by Noise Level Meter

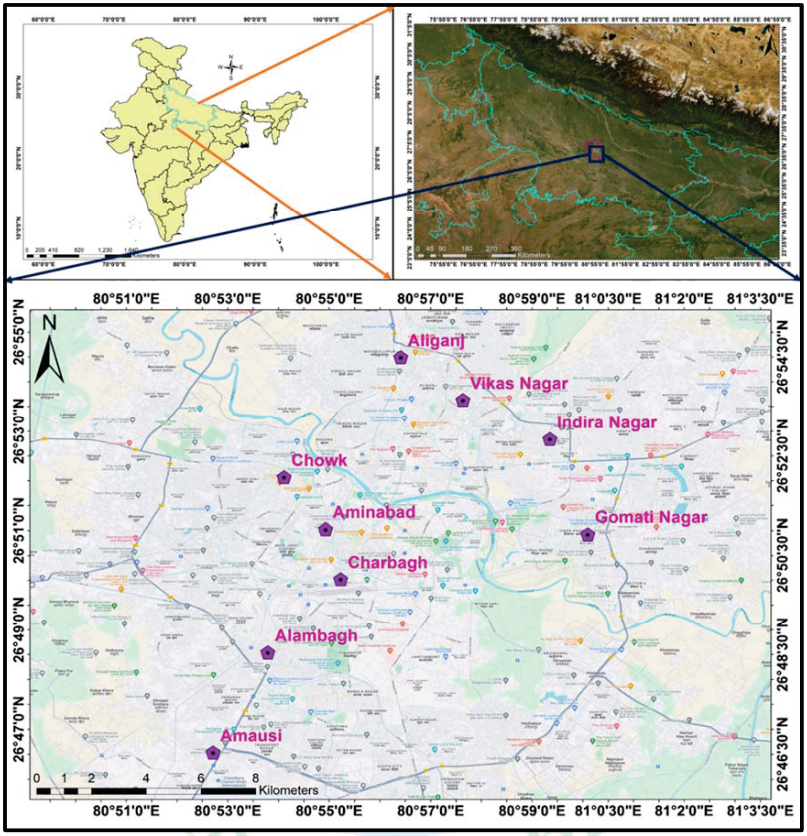

Figure 1: Shows ambient air pollution monitoring/sampling locations in Lucknow city.

3.0 Results

The detailed results of air quality monitoring during the pre-monsoon 2026 period are presented in Table 9 and Figure 2 to Figure 3.

3.1 Respirable Suspended Particulate Matter (RSPM or PM_{10})

In the residential areas (Aliganj, Vikas Nagar, Indira Nagar and Gomati Nagar), the 24 hours concentrations of PM_{10} were in the range of 63.7 to 212.1 µg/m^3 with an average of 132.8 µg/m^3. The average PM_{10} concentration (152.0µg/m^3) was highest at Aliganj among the residential areas.

In the commercial areas (Charbagh, Alambagh, Aminabad, and Chowk), the concentrations of PM_{10} were in the range of 87.5 to 254.1 µg/m^3 with an average of 141.7 µg/m^3, respectively. The average PM_{10} concentration (153.1 µg/m^3) was highest at Charbagh among the commercial areas.

In the industrial areas (Amausi), the average concentration of PM_{10} was 172.4 µg/m^3. However, in all locations, PM_{10} levels exceeded the prescribed National Ambient Air Quality Standard (NAAQS) of 100 µg/m^3.

3.2 Fine Particulate Matter ($PM_{2.5}$)

In the residential areas (Aliganj, Vikas Nagar, Indira Nagar and Gomati Nagar), the 24 hours concentrations of $PM_{2.5}$ were in the range of 39.9 to 106.9 µg/m^3 with an average of 71.5 µg/m^3. The average $PM_{2.5}$ concentration (73.8 µg/m^3) was highest at Aliganj among the residential areas.

In the commercial areas (Charbagh, Alambagh, Aminabad and Chowk), the concentration of $PM_{2.5}$ was in the range of 58.5 to 121.0 µg/m^3 with an average of 77.8 µg/m^3 respectively. The average $PM_{2.5}$ concentration (81.8 µg/m^3) was highest at Charbagh among the commercial areas.

In the industrial area (Amausi), the average concentration of $PM_{2.5}$ was 87.3 µg/m^3. However, in all locations, $PM_{2.5}$ levels exceeded the prescribed National Ambient Air Quality Standard (NAAQS) of 60 µg/m^3.

3.3 Sulphur dioxide (SO_2)

In the residential area (Aliganj, Vikas Nagar, Indira Nagar and Gomati Nagar), the levels of SO_2 ranged from 7.1 to 21.0 µg/m^3 with an average of 12.5 µg/m^3. In the commercial areas (Charbagh, Alambagh, Aminabad and Chowk), the concentrations of SO_2 ranged from 11.9 to 34.2 µg/m^3 with an average of 18.2 µg/m^3. In the industrial area (Amausi), the average level of SO_2 was 20.2 µg/m^3. However, all the values of SO_2 were well below the prescribed NAAQS of 80 µg/m^3 for all the locations.

3.4 Nitrogen dioxide (NO_2)

In the residential areas (Aliganj, Vikas Nagar, Indira Nagar and Gomati Nagar) the 24 hours concentration of NO_2 was in the range of 19.7 to 43.5 µg/m^3 with an average of 30.9 µg/m^3. In the commercial areas (Charbagh, Alambagh, Aminabad and Chowk) the concentration of NO_2 was 22.2 to 64.8 µg/m^3 with an average of 39.1 µg/m^3. The average concentration in the industrial areas (Amausi) was 44.8 µg/m^3. However, all the values of NO_2 were within the prescribed NAAQS of 80 µg/m^3 for all the monitoring locations.

Table 9: Concentration (µg/m^3) of PM_{10}, $PM_{2.5}$, SO_2 and NO_2 during Pre-monsoon 2026

Location	PM_{10} (RSPM)			$PM_{2.5}$			SO_2			NO_2		
Residential												
	Min	**Max**	**Avg**	**Min**	**Max**	**Avg**	**Min**	**Max**	**Avg**	**Min**	**Max**	**Avg**
Aliganj	70.4	221.9	152.0 ± 56.1	40.0	109.1	73.8±23.6	7.7	20.9	12.6±4.4	16.3	35.0	24.0±7.0
Vikas Nagar	60.6	185.9	121.8±36.7	43.3	114.6	72.0±26.7	6.2	18.8	12.3±3.9	21.1	51.5	36.5±10.7
Indira Nagar	72.5	268.6	140.8±58.2	39.0	119.2	72.9±27.9	6.1	21.4	13.1±5.6	13.6	42.0	27.9±8.1
Gomati Nagar	51.4	171.8	116.6±40.2	37.2	84.6	67.2±16.9	8.3	23.0	11.9±5.0	27.8	45.4	35.1±5.9
Average	**63.7**	**212.1**	**132.8**	**39.9**	**106.9**	**71.5**	**7.1**	**21.0**	**12.5**	**19.7**	**43.5**	**30.9**
Commercial												
Charbagh	86.5	282.1	153.1±61.0	55.3	140.9	81.8±24.9	10.3	54.7	22.4±15.2	23.4	73.5	41.9±15.1
Alambagh	81.3	190.0	128.7±36.2	53.6	92.3	72.3±12.7	9.4	25.0	14.5±5.0	20.2	53.0	35.5±10.2
Aminabad	93.0	282.8	150.8±73.3	60.5	128.6	76.9±26.2	14.2	26.6	18.8±4.8	25.7	68.2	40.0±15.4
Chowk	89.2	261.6	134.0±51.2	64.7	122.3	80.3±15.6	13.7	30.6	17.1±4.8	19.6	64.3	39.0±15.2
Average	**87.5**	**254.1**	**141.7**	**58.5**	**121.0**	**77.8**	**11.9**	**34. 2**	**18.2**	**22.2**	**64.8**	**39.1**
Industrial												
Amausi	105.**9**	**319.6**	**172.4±59.5**	**67.5**	**157.8**	**87.3±25.4**	**15.3**	**31.57**	**20.2±5.7**	**16.1**	**86.3**	**44.8±22.6**
NAAQS	100			60			80			80		
WHO Guidelines	50			25			20			40*		

*=Annual Average, NAAQS=National Ambient Air Quality Standard

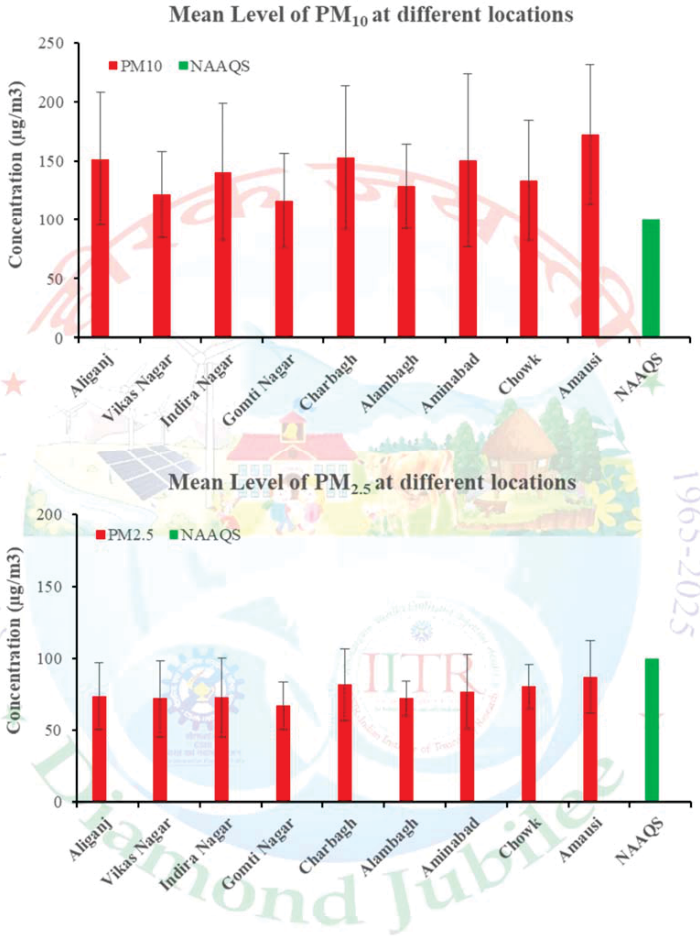

Figure 2: Concentration (µg/m^3) of PM_{10} and $PM_{2.5}$ in different functional areas of Lucknow city during Pre-monsoon 2026 and comparison with prescribed National Ambient Air Quality Standard (NAAQS)

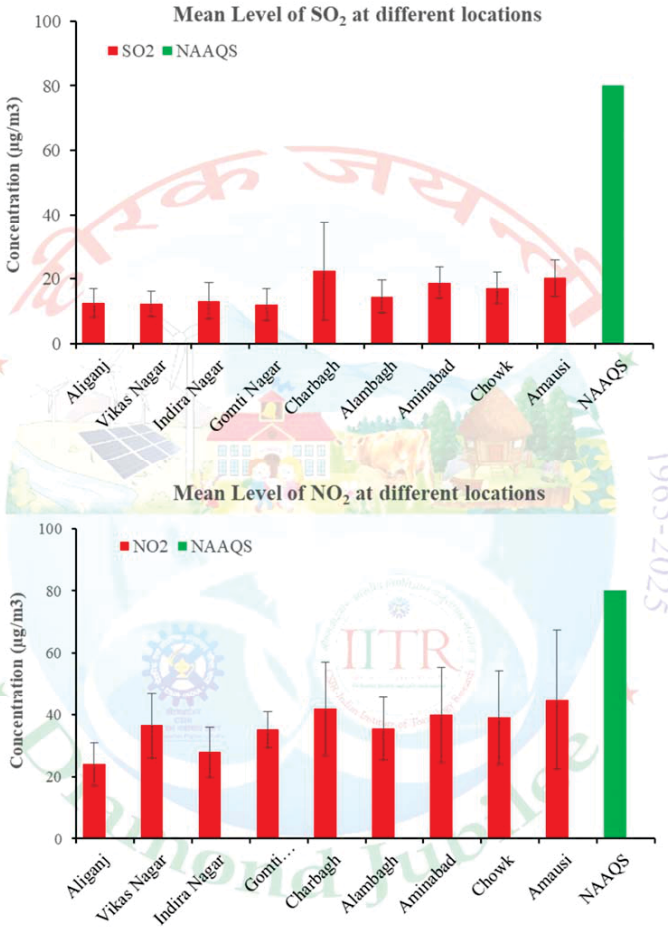

Figure 3: Concentration (µg/m^3) of SO_2 and NO_2 in different areas of Lucknow city during Pre-monsoon 2026 and comparison with prescribed National Ambient Air Quality Standard (NAAQS)

3.5 Trace elements

Toxic trace metals such as Pb and Ni associated with particulate matter have detrimental effects on both air quality and human health. The measured Pb and Ni concentrations (ng/m^3) associated with PM_{10} are presented in Table 10. The concentration of Pb among the residential areas ranged between 0.01 (Gomati Nagar) to 0.03 (Aliganj) µg /m^3 with an average of 0.02 µg /m^3. In commercial areas, the values ranged between 0.01 (Alambagh) to 0.08 (Charbagh) µg /m^3 with an average of 0.03 µg /m^3. In the industrial area Amausi, the value of Pb was 0.01 µg /m^3.

The concentration of Ni among the residential areas ranged between 12.3 (Gomati Nagar) to 24.2 (Aliganj) ng/m^3 with an average of 16.7 ng/m^3. In commercial areas, the values ranged between 8.1 (Charbagh) to 14.2 (Aminabad) ng/m^3 with an average of 12.1 ng/m^3.In the industrial area Amausi, the value of Ni was 15.3 ng/m^3.

Table 10: Metal concentration (ng/m^3) associated with PM_{10}

S. No.	Location	Pb, µg/m^3	Ni, ng/m^3
1	Aliganj	0.03	24.2
2	Vikas Nagar	0.01	16.9
3	Indira Nagar	0.02	13.6
4	Gomati Nagar	0.01	12.3
Average		**0.02**	**16.7**
5	Charbagh	0.08	8.1
6	Alambagh	0.01	13.4
7	Aminabad	0.02	14.2
8	Chowk	0.01	12.7
Average		**0.03**	**12.1**
9	Amausi	0.01	15.3
NAAQS		**1#**	**20***

= 24-hour Average and *= Annual Average

3.6 Noise Level

The noise monitoring data recorded during the pre-monsoon period (April-May 2026) is presented in Table 11. In the residential areas, the average day and night time noise levels were recorded in the range of 67.6 to 75.8 and 59.2 to 69.2 dB(A), respectively. All the average values were significantly higher than the prescribed national limits of 55 and 45 dB (A) for day and night, respectively. In commercial and traffic areas, the day and night noise levels were recorded in the range of 77.8 to 83.9 and 72.2 to 81.7 dB(A), respectively. Noise levels at all commercial sites were significantly higher than the prescribed national limits of 65 dB (A) and 55 dB (A) for day and night, respectively.

Table 11: Noise level dB(A) during day and night time

Location	Range	Day	Night
Aliganj	Min	53.7	54.4
	Max	85.5	75.7
	Avg. (Leq)	**71.8**	**69.2**
Vikas Nagar	Min	50.0	56.4
	Max	86.9	80.2
	Avg. (Leq)	**70.5**	**66.9**
Indira Nagar	Min	56.4	51.2
	Max	89.9	82.3
	Avg. (Leq)	**75.8**	**59.2**
Gomati Nagar	Min	48.1	48.6
	Max	88.0	73.7
	Avg. (Leq)	**67.6**	**63.8**
NAAQS for Residential Area		**55**	**45**
Charbagh	Min	73.5	67.5
	Max	98.1	101.8
	Avg. (Leq)	**83.9**	**81.7**
Alambagh	Min	70.9	60.7
	Max	99.8	98.5
	Avg. (Leq)	**81.8**	**76.8**
Aminabad	Min	61.9	57.1
	Max	92.6	95.9
	Avg. (Leq)	**77.6**	**72.2**
Chowk	Min	61.8	65.5
	Max	96.8	91.2
	Avg. (Leq)	**78.1**	**77.8**
NAAQS for Commercial Area		**65**	**55**
Amausi	Min	60.3	58.8
	Max	97.2	90.25
	Avg. (Leq)	**82.5**	**74.6**
NAAQS for Industrial Area		**75**	**70**

In the industrial area Amausi, the day and night noise levels ranged between 60.3 to 97.2 during the day and 58.8 to 90.3 dB(A) at night, respectively. Noise levels in industrial areas were recorded higher than the NAAQS of 75.0 and 70.0 dB(A), respectively.

4.0 Trends of ambient air quality in Lucknow city

The observed PM_{10}, $PM_{2.5}$, SO_2, and NO_2 for the past 5 years of pre-monsoon seasonal data (i.e., from 2022 to 2026) have been compared to find out the prevailing trend of air pollution in Lucknow city (Figures 4-7). Overall, a slight change was observed in the air quality trend, which is attributed to some local environmental, urban development, and climatic factors.

4.1 Trend of PM_{10} and $PM_{2.5}$

Five-year trend analysis of PM_{10} (Figure 4) indicates that concentrations remained above the National Ambient Air Quality Standards (NAAQS) limit of 100 µg/m³ at all residential, commercial, and industrial monitoring locations during 2022–2026. In residential areas, PM_{10} levels showed moderate fluctuations, with Aliganj recording the highest concentration (152.0 µg/m³) in 2026, while Vikas Nagar remained relatively stable throughout the study period. Indira Nagar and Gomti Nagar exhibited peak concentrations in 2024, followed by a gradual decline in 2025 and 2026. Commercial areas recorded substantially higher PM_{10} concentrations than residential areas. PM_{10} levels peaked in 2024 at all monitored locations (Charbagh, Alambagh, Aminabad, and Chowk) and subsequently declined in 2025 and further declined 2026, indicating an improvement in air quality during the study period. A similar trend was observed in the industrial area (Amausi), where PM_{10} concentrations peaked in 2024 and declined thereafter.

Figure 5 shows that $PM_{2.5}$ concentrations consistently exceeded the NAAQS limit of 60 µg/m³ across all monitoring locations during 2022–2026. In residential areas, $PM_{2.5}$ levels generally increased up to 2024, with the highest concentrations observed at Indira Nagar and Gomti Nagar, followed by a decline in 2025 and 2026. Commercial and industrial areas exhibited a similar pattern, with concentrations peaking in 2024

and decreasing thereafter. Despite the observed reductions, $PM_{2.5}$ concentrations remained above the prescribed NAAQS limit at all sites throughout the study period.

4.2 Trend of SO_2 and NO_2

The trend of SO_2 and NO_2 during the pre-monsoon seasons from 2022 to 2026 is presented in Figures 6 and 7 for all monitoring locations in the city. SO_2 concentrations showed minor fluctuations over the study period, with slightly higher values observed during 2024-2025. Similarly, NO_2 concentrations exhibited moderate year-to-year variations, with peak levels generally recorded during 2024-2025 and a slight decrease at most locations in 2026. Commercial and industrial areas recorded comparatively higher concentrations than residential areas. However, all observed SO_2 and NO_2 concentrations remained well below the National Ambient Air Quality Standards (NAAQS) throughout the study period.

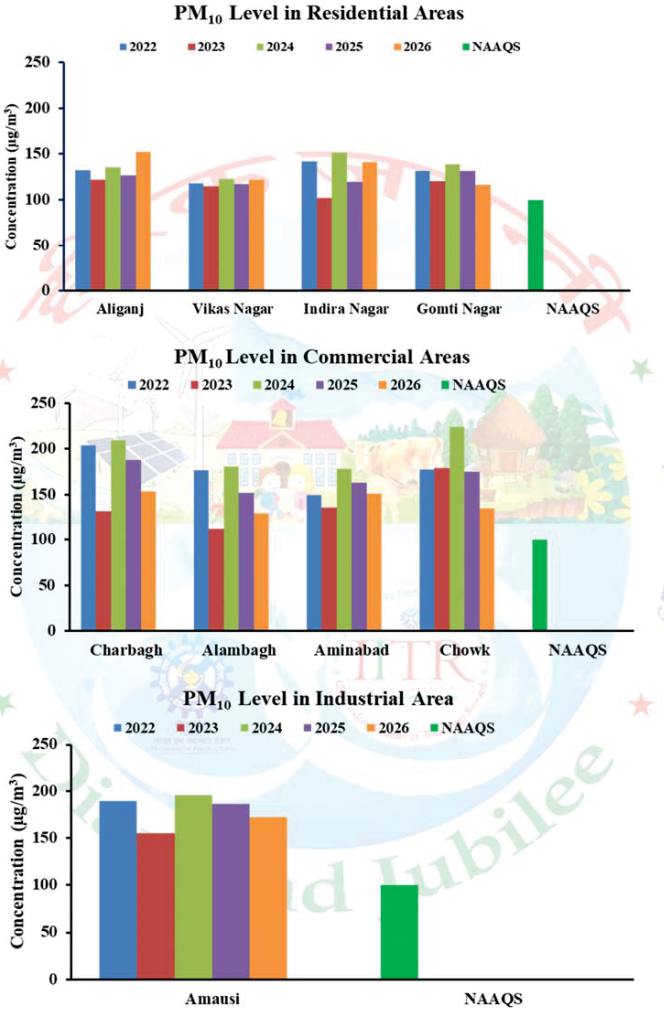

Figure 4: Concentration (µg/m^3) of PM_{10} **(**RSPM**)** in residential, commercial and industrial areas of Lucknow city during 2022 to 2026 (pre-monsoon) and compared with prescribed National Ambient Air Quality Standard (NAAQS)

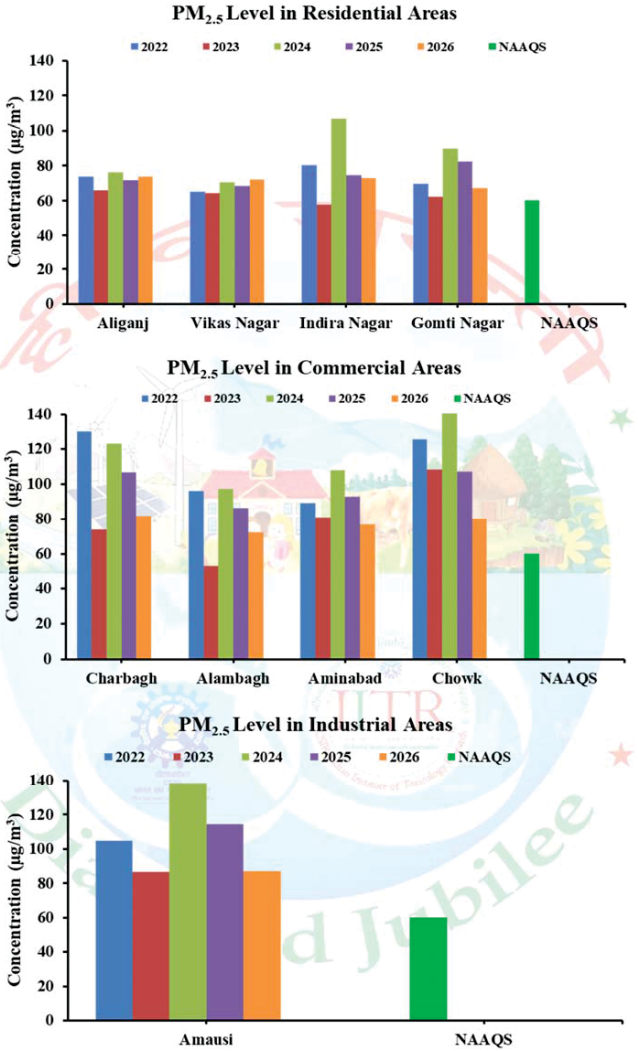

Figure 5: Concentration (µg/m^3) of $PM_{2.5}$ in residential, commercial and industrial areas of Lucknow city during 2022 to 2026 (pre-monsoon) and compared with prescribed National Ambient Air Quality Standard (NAAQS)

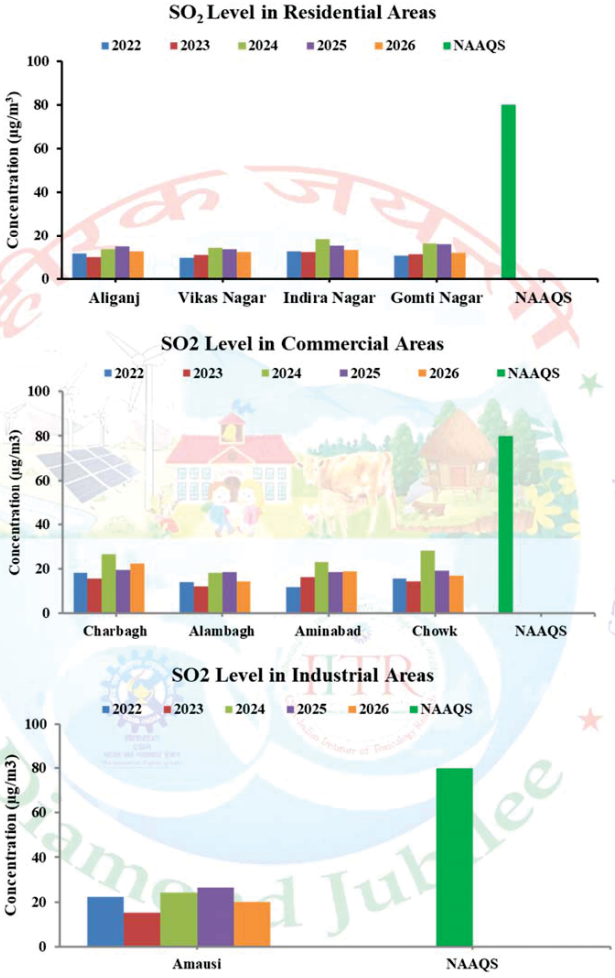

Figure 6: Concentration (µg/m^3) of SO_2 in residential, commercial and industrial areas of Lucknow city during 2022 to 2026 (pre-monsoon) and compared with prescribed National Ambient Air Quality Standard (NAAQS)

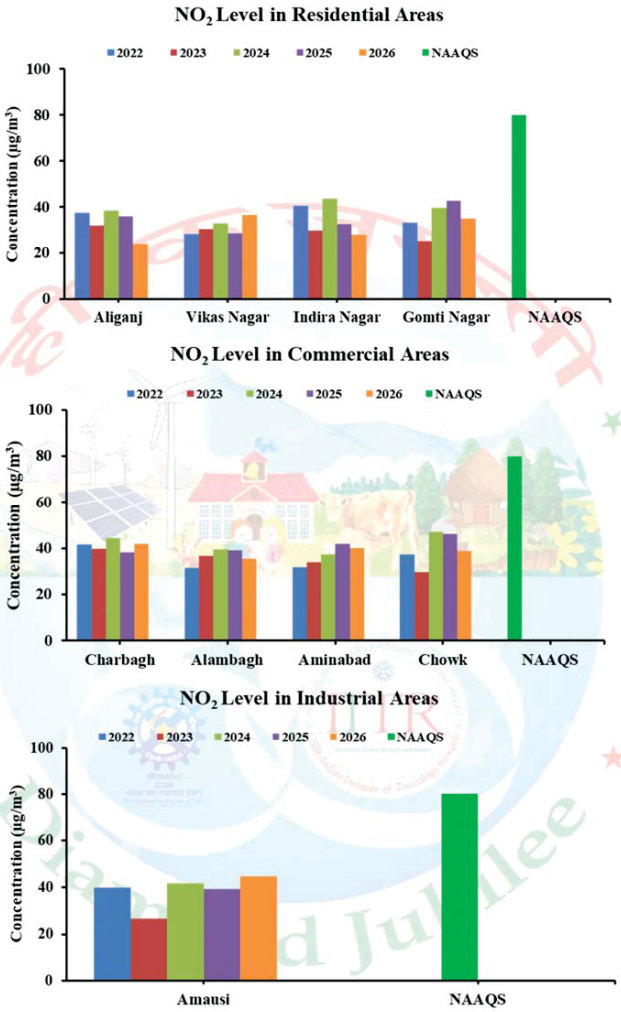

Figure 7: Concentration (µg/m^3) of NO_2 in residential, commercial and industrial areas of Lucknow city during 2022 to 2026 (pre-monsoon) and compared with prescribed National Ambient Air Quality Standard (NAAQS)

4.3 Trend of Noise Level

The nose levels adversely affect the lives of millions of people in the city. Studies have shown that there are direct links between noise and health. Therefore, pre-monsoon 2026 noise data was compared with the corresponding data of the previous four years (i.e. 2022 to 2026), and results are presented in Figures 8 and 9 and trend is described in the following sections.

4.3.1 Day time noise level

Trend analysis of daytime noise levels during 2022–2026 showed that residential, commercial-cum-traffic, and industrial (Amausi) areas generally recorded the highest noise levels in 2024, followed by a declining trend in subsequent years. However, in residential areas, noise levels increased slightly at Indira Nagar and Gomti Nagar in 2026, while levels at Vikas Nagar and Aliganj remained comparable to those recorded in 2025. The comparative data are presented in Figure 8.

4.3.2 Night time noise level

Trend analysis of night-time noise levels during 2022–2026 revealed minor year-to-year fluctuations. In residential areas, noise levels increased slightly at Vikas Nagar, whereas decreases were observed at Indira Nagar and Gomti Nagar; Aliganj remained nearly unchanged. In commercial-cum-traffic areas, night-time noise levels declined at all monitored locations except Alambagh when compared with 2025. In the industrial area (Amausi), noise levels remained largely comparable throughout 2022–2026, with a marginal increase observed in 2026. The comparative data are presented in Figure 9.

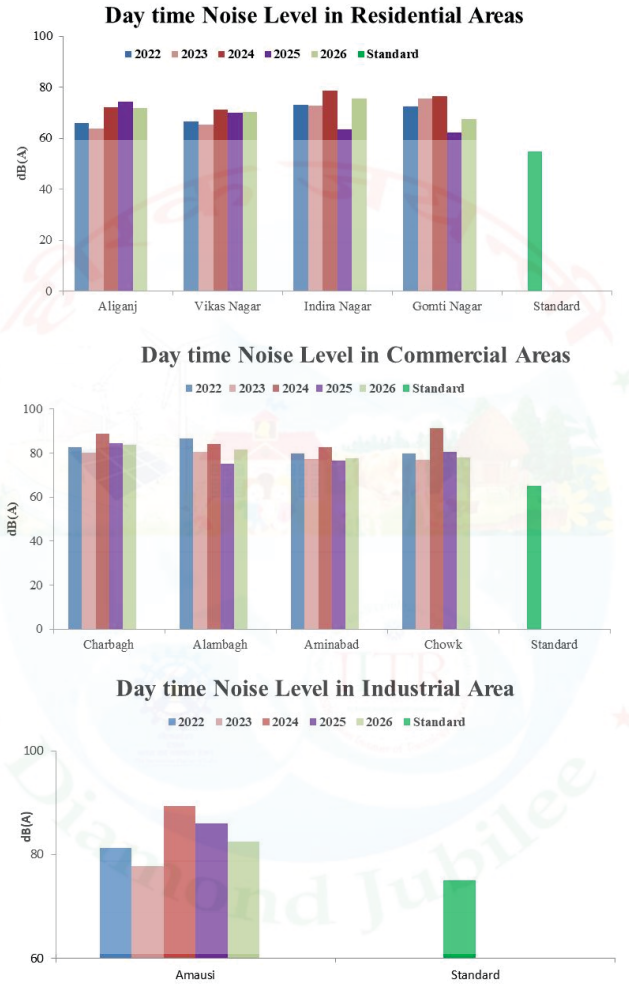

Figure 8: Comparison of day time Noise Level in dB(A) for different areas of Lucknow city (Pre-monsoon 2022-2026)

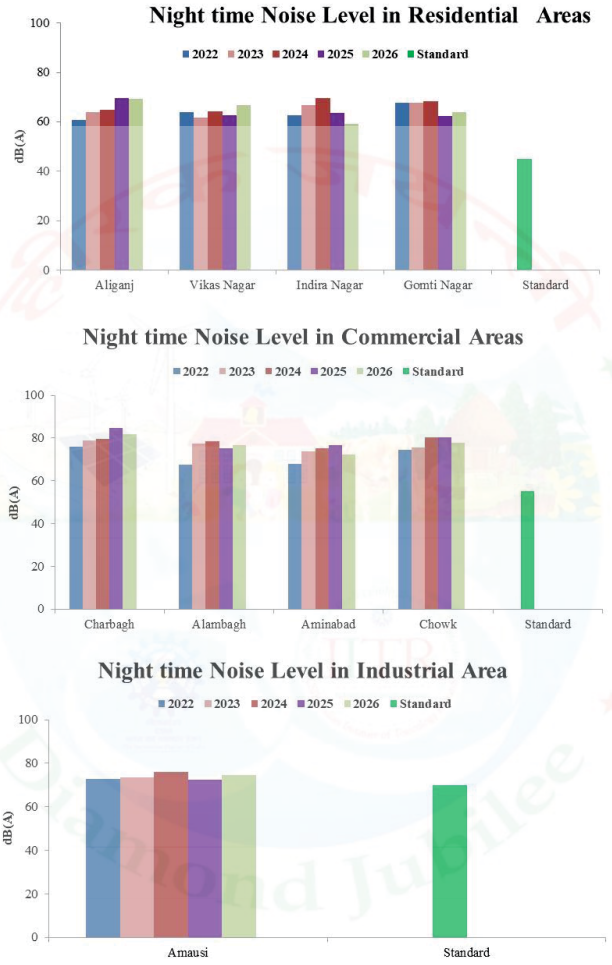

Figure 9: Comparison of night time Noise Level in dB(A) for different areas of Lucknow city (Pre-monsoon 2022-2026)

5.0 Conclusions/ main findings

CSIR-IITR conducted monitoring of air pollutants such as PM_{10}, $PM_{2.5}$, SO_2, NO_2 and toxic heavy metals i.e., Lead (Pb) and Nickel (Ni) associated with PM_{10} at 9 locations to assess ambient air quality during the month of April-May 2026 (i.e., pre-monsoon period). Day and night-time noise levels were also monitored at the exact locations across the city. The main findings from the study are summarized below:

The city average 24 hr concentrations of particular matter were determined, with PM_{10} ranging from 51.4 $\mu g/m^3$ to 319.6 $\mu g/m^3$ with an average of 149.0 $\mu g/m^3$ while in the case of $PM_{2.5}$, the 24 hr concentrations were ranged from 37.2 $\mu g/m^3$ to 157.8 $\mu g/m^3$ with an average of 78.9 $\mu g/m^3$. Irrespective of location, these average values of PM_{10} and $PM_{2.5}$ were found to be above the permissible limits of 100 $\mu g/m^3$ for PM_{10} and 60 $\mu g/m^3$ for $PM_{2.5}$ as prescribed by the Central Pollution Control Board, New Delhi. The exceedance factor (EF) of PM_{10} was recorded as 1.3, 1.4, and 1.7, while that of $PM_{2.5}$ was 1.2, 1.3, and 1.5 in residential, commercial, and industrial areas, respectively. These values indicate that all three zones are experiencing high particulate pollution except the industrial area (Amausi) which is most severely affected (EF=1.7). However, both PM_{10} and $PM_{2.5}$ concentrations decreased by 6.6% and 17.5%, respectively, compared to levels of pre-monsoon 2025.

Trace metals analysis of particulate matter (i.e. Pb and Ni) in the city showed that Pb concentration ranged from 0.01-0.08 $\mu g/m^3$with an average of 0.02 $\mu g/m^3$. The Ni concentration is also in the range of 8.1-24.2 ng/m^3 with an average value of 14.7 ng/m^3. The 24 hr concentrations of SO_2 ranged from 6.1 to 54.7 $\mu g/m^3$ with an average of 17.0 $\mu g/m^3$ while NO_2 ranged from 13.6 to 86.3 $\mu g/m^3$ with an average of 38.3 $\mu g/m^3$. Compared to previous year (2025), the concentration of SO_2 and NO_2 decreased by 15.4% and 0.5%, respectively in the current year. However, average values of SO_2 and NO_2 were well below the permissible limits of 80 $\mu g/m^3$ for SO_2 and NO_2 as prescribed by CPCB (NAAQS-2009).

The day time and night time noise levels ranged from 48.1 to 89.9 dB(A) and 48.6 to 82.3 dB(A) in residential areas and from 61.8 to 99.8 dB(A) and 57.1 to 101.8 dB(A) in commercial areas respectively. These measured values were above their respective

day-time standard of 55 dB(A) and night time standard of 45 dB(A) for residential areas and 65 dB(A) and 55 dB(A) for commercial areas respectively as per NAAQS. In the Amausi Industrial area, the average day time and night time noise levels were 82.5 dB(A) and 74.6 dB(A) respectively. The values are above the national standard of 75 dB(A) for day time and 70 dB(A) for night time recommended for industrial areas.

Trend analysis of particulate matter (PM_{10} and $PM_{2.5}$) over five years (i.e., 2022-2026). was performed to assess the temporal dynamics of air quality in the region. A decline in particulate matter concentrations was observed from pre-monsoon 2025 to pre-monsoon 2026. Specifically, PM_{10} concentrations decreased by 7.3%, 16.2%, and 7.4% while $PM_{2.5}$ concentrations declined by 3.7%, 21.0%, and 23.8% in residential, commercial, and industrial areas, respectively. This downward trend suggests an overall improvement in air quality across all zones. The observed decrease in particulate matter concentrations may be due to moderate atmospheric dryness and rainfall during the last week of May and the first week of June 2026. These meteorological conditions likely facilitated the removal of particulate matter from the atmosphere, resulting in lower concentrations during the sampling period. However, high surface level micro-meteorology may have contributed to the natural wind blowing entrain of the soil and road dust into the atmosphere.

Further, Aliganj (residential area), Charbagh (commercial area) and Amausi (industrial area) sites in the city were recorded the highest PM_{10} pollution concentration, while the highest $PM_{2.5}$ pollution was observed at Aliganj (residential area), Charbagh (commercial area) and Amausi (industrial area) sites. Overall, particulate matter pollution was highest at the industrial followed by commercial and residential areas.

The reasons for the exceeded pollution levels at these sites are excess on-road vehicular flow and traffic jams, which are also affected by ongoing activities such as construction and pavements of the roads. Besides, the percentage of registered vehicular increment and fuel consumption in the city has increased from last year, which likely impacts increase in air pollution concentration than NAAQS throughout the city.

The trend analysis of Noise levels revealed that both residential and commercial sites experienced higher noise during day time compared to night time. In the residential

areas, the elevated daytime noise level was due to nearby road traffic, local transportation activities, and other anthropogenic sources operating in the surrounding areas. In commercial areas increased day time noise levels were linked to near-market activities, excess regular vehicle movements and commercial operations. Notably, during the night time, the noise levels at commercial sites were significantly exceeded due to heavy carriers/truck movements through roads of commercial sites in the city. The industrial site (Amausi) consistently recorded elevated noise levels during both daytime and nighttime due to industrial operations and associated transportation activities.

6.0 Health impacts of air and noise pollution

Rapid urban development and modernization have resulted in an increase in air pollution. Researchers have recently begun to pay more attention to explore and establish the association between air pollution and respiratory system diseases. Studies in toxicology, epidemiology, and other related fields have demonstrated that respirable particles are closely associated with the incidence of human diseases and mortality rate.

Particulate Matter (PM_{10} & $PM_{2.5}$)

When inhaled, fine airborne particulate matter for the diameter $\leq$ 2.5 µm would penetrate beyond the larynx. $PM_{2.5}$ (particles less than 2.5 micrometers in diameter) can penetrate deeply into the lung, irritate and corrode the alveolar wall, and impair lung function, cause emphysema and bronchitis, and aggravate existing heart disease. Ultrafine particles ranging from 0.001 to 0.1 microns in diameter can penetrate deep into the lungs and alveolar sacs where gaseous exchange occurs. Particles increase the blood flow rates and vascular permeability to white blood cells, elevating clotting activity, constriction of the airways, and fever induction.

Sulfur Dioxide (SO_2)

Increased SO_2 may irritate the eyes, nose, and throat and cause choking and coughing. Reflex cough, irritation, and a feeling of chest tightness, which may lead to narrowing of the airways, is particularly likely to occur in people suffering from chronic lung

disease, whose airways are often inflamed and easily irritated. Oral inhalation of larger volumes may reach the segmental bronchi and damage the organ and exposure of the eyes may result in loss of vision and severe burns. Repeated or prolonged exposure to moderate concentrations may cause respiratory tract inflammation, wheezing, and lung damage.

Oxides of Nitrogen (NO_x)

Various compounds and derivatives in the family of NO_2, including NO_2, HNO_3, NO, nitrates and nitric oxide, cause a variety of health impacts. Long-term exposure to NO_2 may affect lung function and lower the resistance to diseases such as pneumonia and influenza. Extremely high-dose exposure (as in a building fire) to NO_2 may result in pulmonary edema, diffuse lung injury and development of bronchitis. Industrial exposure to nitric oxide can cause unconsciousness and vomiting. Exposure to low levels of nitrogen oxides in smog can irritate the eyes, nose, throat and lungs and can cause coughing, shortness of breath, fatigue, and nausea.

Trace element-Lead (Pb)

Lead is a neurotoxin causing impairment of neurodevelopment in children, and effects the development of the brain of the fetus. Mortality in workers exposed to high levels of lead is increased. In children, decreased nerve conduction velocity, cognitive development and instinctual performance, hearing loss, jaundice, anemia. Cognitive and neuro-behavioral deficits are seen in children at low levels of exposure.

Trace element-Nickel (Ni)

The harmful human health effects of nickel are an allergic reaction, chronic bronchitis, reduced lung function, lung cancer and nasal sinus cancer. Animal studies have found an increase in newborn deaths and a decrease in newborn weight after ingesting Nickel.

Noise

Noise pollution is the spread of unwanted sounds into the environment. Unwanted sounds have a range of mental health effects. The brain continuously monitors sounds for signs of danger, even during sleep. Continued exposure to noise pollution can

trigger anxiety or stress. Problems related to noise include stress-related illnesses, high blood pressure, speech interference, hearing loss, sleep disruption, and lost productivity. People living with noise pollution may feel irritable, on edge, frustrated, or angry. If a person feels they cannot control the amount of noise in their environment, its impact on their mental health intensifies.

7.0 Recommendations for mitigation of air pollution in Lucknow

Continuous interactions and coordination with government bodies, public agencies and urban local bodies is essential for assessing mitigation measures and strengthening air quality management. In this regard, the government authorities/district administration may organize short-duration programs like a summit/seminar by inviting relevant stakeholder agencies, such as State PCBs, CPCB, CPWD, R&D organizations, Universities/ engineering institutes, social workers, regulatory bodies, city planners, NGOs, general public for their valuable input/ ideas and recommendations through debate & discussion about the causes and effects of air pollution and preventive control measures which are to be adopted for the management of air pollution in the city. The experts in the meeting shall review the implantation and their influence on the improved air quality in the city. Besides, the following are some recommendations as they stand and are required for the city's improved air quality.

1. Govt. action plans should include and promote device-based technological solutions to control/treat the city's ambient air pollution directly.
2. Road works, flyover construction, and demolition activities in the city should be planned during non-peak hours to avoid traffic jams and the relative additional load of vehicular exhaust contribution to air pollution.
3. Construction and demolition activities in the city should be done with dust obstacles and follow the construction and demolition waste management rules.
4. Retrofitting of particulate matter filters should be encouraged in vehicles and the fasten the usage of BS VI vehicle models and avoid old-age vehicles.
5. Restrict on-road vending and encroachment in congested market areas to ensure smooth traffic flow.
6. Regulating erratic e-rickshaw driving will improve traffic flow, reduce congestion and idling, and thereby lower vehicular emissions and improve ambient air quality.

7. Wrong-side parking or blocking roads should be prohibited to prevent traffic jams and unforeseen incidents.
8. CNG-based vehicles and electrical/battery-operated or hybrid vehicles are to be encouraged.
9. CNG filling stations across the city should be increased.
10. Avoid the random burning of waste, and prioritize waste reduction, reuse, and recycling. If burning is necessary, ensure proper permits and follow regulations to minimize pollution.
11. All active city roads should be maintained clean by frequent water sprinkling/ sweeping operations.
12. Subsidized public transport systems such as metro-rail & buses should be promoted and public awareness to utilize the subsidy and reduce private vehicle emissions in the city.
13. All transportation goods/HCV/LCV should be covered properly before entering highways.
14. Vehicular engines should be switched off when idling mode, particularly during jams at traffic signals.
15. Solid-waste dump yards should be shifted from the roadsides and solid waste must be disposed off in completely covered conditions.
16. Pressure horns are to be removed from vehicles, and minimal usage of horns should be promoted.
17. Public awareness programme to be organized about air pollution and its health effects, reduction of automobile emissions by proper maintenance of vehicles, and driving skills.
18. Subsidize EVs and expand charging infrastructure throughout the city.
19. Develop carpooling incentives, low-emission zones, and eco-friendly public transport.
20. Establish Vehicle Scrapping Centers for old/retired vehicles.
21. Green buildings and urban planning: Promote vertical gardens, green roofs, and air-purifying infrastructure in building codes.
22. Citizen reporting platforms: Create mobile apps or helplines for the public to report pollution violations.

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"सामूहिक सफलता में ही प्रत्येक व्यक्ति की सफलता निहित है।" "Until all of us have succeeded, none of us have"




अनुसंधान एवं विकास प्रभाग

- खाद्य, औषधि, पर्यावरण और प्रणाली विषविज्ञान (FEST)
- विश्लेषणात्मक विज्ञान, सेवाएं और तकनीकी समाधान के माध्यम से औद्योगिक सहायता (ASSIST)
- विनियामक और कम्प्यूटेशनल विषविज्ञान (ReaCT)

अनुसंधान क्षेत्र

- खाद्य, औषधि और रासायनिक विषविज्ञान
- पर्यावरण विषविज्ञान
- नियामक विषविज्ञान
- टॉक्सिकोइंफॉर्मेटिक्स एवं औद्योगिक अनुसंधान
- प्रणाली विषविज्ञान एवं स्वास्थ्य आपदा मूल्यांकन

उद्योग और स्टार्टअप के लिए आर एंड डी साझेदारी

- सेंटर फॉर इनोवेशन एंड ट्रांसनैशनल रिसर्च (सितार–बाइरैक–बायोनेस्ट)
- डीएसआईआर–आईआईटीआर–सीआरटीडीएच पर्यावरण निगरानी और हस्तक्षेप हब

सेवाएं दी गईं

- जीएलपी प्रमाणित पूर्व–नैदानिक विषाक्तता अध्ययन
- एनएबीएल (आईएसओ/आईईसी 17025:2017) मान्यता प्राप्त एनसीई की सुरक्षा/विषाक्तता मूल्यांकन
- जल गुणवत्ता मूल्यांकन और निगरानी
- विश्लेषणात्मक सेवाएं
- पर्यावरण निगरानी और प्रभाव मूल्यांकन
- रसायनों/उत्पादों के बारे में जानकारी
- कम्प्यूटेशनल भविष्य कहनेवाला विषाक्तता मूल्यांकन

मान्यताएं

- वैज्ञानिक और औद्योगिक अनुसंधान संगठन (एसआईआरओ)
- यूपी प्रदूषण नियंत्रण बोर्ड (जल और वायु)
- भारतीय कारखाना अधिनियम (पीने का पानी)
- भारतीय मानक ब्यूरो (सिंथेटिक डिटर्जेंट)
- भारतीय खाद्य सुरक्षा और मानक प्राधिकरण (FSSAI)

विकसित/उपलब्ध प्रौद्योगिकियां

- ओनीर– सुरक्षित पेयजल के लिए एक नया समाधान
- पोर्टेबल जल विश्लेषण किट
- पर्यावरण और मानव स्वास्थ्य के लिए मोबाइल प्रयोगशाला
- सरसों के तेल में आर्जीमोन की त्वरित जांच के लिए एओ किट
- मक्खन पीले रंग का पता लगाने के लिए एमओ जांच, एक मिलावटी, खाद्य तेलों में

R & D Divisions

- Food, Drug, Environment & Systems Toxicology (FEST)
- Analytical Sciences & Services and Industrial Support through Technological Solutions (ASSIST)
- Regulatory and Computational Toxicology (ReaCT)

Research Areas

- Food, Drug & Chemical Toxicology
- Environmental Toxicology
- Regulatory Toxicology
- Toxicoinformatics & Industrial Research
- Systems Toxicology & Health Risk Assessment

R & D Partnership for Industries & Startup

- Centre for Innovation and Transnational Research (CITAR-BIRAC-BioNEST)
- DSIR-IITR-CRTDH Environmental Monitoring and Intervention Hub

Services Offered

- GLP certified pre-clinical toxicity studies
- NABL (ISO/IEC 17025:2017) accredited Safety/ toxicity evaluation of NCEs
- Water quality assessment and monitoring
- Analytical services
- Environmental monitoring and impact assessment
- Information on chemicals/ products
- Computational predictive toxicity assessment

Recognitions

- Scientific & Industrial Research Organizations (SIROs)
- UP Pollution Control Board (Water & Air)
- Indian Factories Act (Drinking water)
- Bureau of Indian Standards (Synthetic detergents)
- Food Safety & Standards Authority of India (FSSAI)

Technologies Developed/ Available

- Oneer- A novel solution for safe drinking water
- Portable Water Analysis Kit
- Mobile Laboratory for environment and human health
- AO Kit for rapid screening of Argemone in mustard oil
- MO Check for detection of Butter Yellow, an adulterant, in edible oils

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