Assessment of Ambient Air Quality of Lucknow City

Post Monsoon-2026







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

- **Geographical Position** : 26º 52' N Latitude
  80º 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)** : 221
- **Consumption of Fuel**
  - **Petrol** : 318738.5 kL
  - **Diesel** : 193497.5 kL
  - **CNG** : 74559017 kg
  - **LPG** : 383000 kg
- **Major Sources of Pollution** : Automobiles, D.G. Sets
  Biomass burning
  Construction activities
  Dry sweeping and resuspension of road dust
- **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 POST-MONSOON, 2026

Executive Summary

Air pollution is a major concern, require regular ambient air quality monitoring essential for protecting public health. Accordingly, the institute conducted a monitoring study of PM_{10}, $PM_{2.5}$, SO_2, NO_2, Lead (Pb), Nickel (Ni), and day-time and night-time noise levels at nine sites representing residential, commercial, and industrial areas of Lucknow during September-October 2026 (post-monsoon season). The results indicated that concentrations for particulate matter in the city have exceeded their NAAQS limits at all the monitoring sites (i.e., 100 µg/m^3 for PM_{10} and 60 µg/m^3 for $PM_{2.5}$). The city exceedance factor (EF) for PM_{10} and $PM_{2.5}$ were 1.48 and 1.27, respectively, indicating high 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. Further, the associated toxic metals with PM_{10} (i.e., Pb and Ni) were also within their ambient standards. Whereas, Noise levels of city during both day-time and night-time were exceeded the respective national noise permissible limits. Post-monsoon 2026 air quality of city was improved compared to the pre-monsoon period of 2026 due to the increased atmospheric humidity during post-monsoon seasons which promoted particle agglomeration, making them heavier and facilitating their deposition from the atmosphere onto the ground. However, the yearly increment of registered vehicular numbers and fuel consumption in the city has likely impacted the air pollution concentration than their national standards.

Trend analysis (2022-2026) revealed that PM_{10} and $PM_{2.5}$ concentrations during the the post-monsoon period of 2026 increased by approximately 26.2% and 8.2%, respectively, compared to the post-monsoon period of 2025. This increase may be attributed to metrological conditions, coupled with major ongoing construction and infrastructure development activities across the city. These include underpass construction in certain location as well as road digging for laying cables, wires, and water pipelines, footpaths development, and green zones creation under the CM Grid Yojana. These activities have contributed to traffic congestion, dust generation, and re-suspension of road dust, thereby increasing PM concentrations in the ambient air. Further, PM_{10} and $PM_{2.5}$ concentration showed an overall decline from 2022 onward, followed by moderate year-to-year fluctuations during 2023-2026, indicating an overall improvement in the city air quality.

To mitigate the air pollution, the Uttar Pradesh government launched the Clean Air Plan (UCAP) in 2025, targeting $PM_{2.5}$ reduction. Over the past year, EV and CNG buses have been added to the public transport and the number of personal EV cars and EV two-wheelers has increased, indicating a shift to 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 improved traffic flow and diverted long-distance vehicles away from the city. Furthermore, initiatives by the Lucknow Municipal Corporation (LMC), including timely collection of municipal solid waste (MSW), disposal and mechanized road sweeping, have likely contributed to lowering ambient particulate matter levels. These efforts have resulted in a continuous decline in particulate pollution since 2023. Air pollution is a changing phenomenon with respect to location and time due to fluctuating natural and man-made activities. Continuous awareness of the status of city air quality, and efforts by the individual and government communities are essential for safeguarding public health.

1.0 Introduction

Air pollution is a major environmental challenge, posing significant risks to human health, ecosystems, and environmental quality. Under the natural conditions, atmospheric air, is a balanced mixture of gases consisting mainly of nitrogen (78.0%) and oxygen (20.9%) along with trace components of CO_2 (0.04%), SO_2 (0.0002%), NO_2 (0.0001%), NO (0.0002%), CO (0.0001%) and moisture (4%). However, rapid industrialization, urbanization, and population growth have significantly altered this composition by introducing various pollutants in gaseous, liquid, and particulate forms. Atmospheric criteria pollutants such as particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), ozone (O_3), and volatile organic compounds (VOCs) and lead (Pb) are characterised as criteria pollutants by the USEPA under the Clean Air Act. These contaminants change the natural characteristics of the atmosphere through aerosolized physicochemical and biological agent interactions. The rising levels of these contaminants have deteriorated air quality and pose adverse health impacts on humans, plants, and the environment.

Air pollution is a growing global problem linked to economic growth and human activities. In cities, the main sources include vehicular emissions, resuspension of road dust, construction and demolition activities, industrial emissions, waste burning, diesel generator use, and roadside cooking. Meteorological factors, terrain, and land-use patterns further influence the dispersion and concentration of these pollutants. While local sources significantly contribute to urban air pollution, long-range atmospheric transport from external regions also contributes to urban air pollution.

Recognizing the growing threat, the Central Pollution Control Board (CPCB) under the National Air Monitoring Programme (NAMP) has monitored ambient air quality across India for over three decades at 804 stations across 344 cities and towns in 28 states and 6 union territories. Based on these data, 131 cities in 24 states have been identified as non-attainment cities that consistently fail to meet the National Ambient Air Quality Standards (NAAQS). To address this, the Ministry of Environment, Forest and Climate Change (MoEF&CC) and CPCB launched the National Clean Air Programme (NCAP) in 2019 with an initial target of reducing $PM_{2.5}$ and PM_{10} concentrations by 20-30% by 2024-25 from 2017-2018 levels, later revised to a 40%

reduction or achieving the prescribed national standards by 2025-26. The programme also involves each city's Institutes of Repute (IoRs) to support scientific investigations and develop city-specific, source apportionment-based action plans.

In this context, CSIR-Indian Institute of Toxicology Research (IITR), Lucknow, designated as an IoR under NCAP, has been monitoring ambient air quality in Lucknow city since 1997. The study aims to evaluate seasonal changes in the ambient air quality at nine representative locations across the Lucknow city. Monitoring is conducted during pre-monsoon (April-May) and post-monsoon (September-October) seasons. The key parameters include particulate matter (PM_{10} and $PM_{2.5}$), PM_{10} associated toxic metals (Pb and Ni), gaseous pollutants (SO_2 and NOx), and ambient noise levels. The present report provides a detailed assessment of ambient air quality of Lucknow city during the post-monsoon season of 2026.

1.1 Layout of Lucknow City

Lucknow is the capital and the largest city of Uttar Pradesh and is experiencing rapid expansion of both area and urban population. The present population is anticipated to touch 41 lakhs. It ranks as the eleventh-most populous city and the twelfth-most populous urban agglomeration of India. Geographically, Lucknow is bordered by Barabanki to the east, Unnao to the west, Raebareli to the south, and Sitapur and Hardoi to the north. The Gomti River flows through the city, dividing it into two parts viz Cis and Trans Gomti regions. The city is 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 surrounding villages were added to the municipal limits, and the area increased to 631 km^2. Historically, Lucknow has consistently been recognized as 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. Today, the city has evolved into a major center of governance, administration, education, commerce, aerospace, finance, pharmaceuticals, technology, design, culture, tourism, music and poetry. Beyond its economic and administrative prominence, Lucknow continues to uphold its reputation as a city of culture, poetry, music, and tourism, blending heritage with modernity in a dynamic urban landscape. The annual rainfall in Lucknow during the last five years (2022-2026) has ranged from 351.2 mm to 683.2 mm.

1.2 Vehicular Inventory and Fuel Consumption in the City

Registered vehicles and fuel consumption inventory of Lucknow city and other relevant information were collected from RTO (Regional Transport Office) as of March 31, 2026 (Table 1). Based on this data, the number of registered vehicles in the city increased by 4.9% compared to 2024-25. The total number of CNG & electric buses of UPSRTC operational in Lucknow city is 04 & 115, respectively, in 2026 (Table 2 & 3). According to various oil and gas companies, the city has 221 fuel outlets, including petrol, diesel, and CNG stations (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

Lucknow has been designated as a non-attainment city under the NCAP of the MoEF&CC due to the persistent exceedances of the NAAQS, 2009. Further, source apportionment studies of the city also reported a significant increase in ambient air pollution concentration in Lucknow. To better understand atmospheric chemistry, air quality, and its impact on human health, spatially and temporally distributed air pollution levels in the city need to be known. Such insights are crucial for policymakers to design effective emission control measures and implement sustainable air quality management strategies for cleaner air in Lucknow.

The deterioration of air quality in Lucknow city is primarily attributed to vehicular emissions, resuspension of road dust, and emissions arising from construction and demolition activities, industrial operations, open waste burning, diesel generator usage, and roadside cooking. Additional contributions originate from residential fuel combustion and regional pollutant transport, while adverse meteorological conditions further exacerbate pollutant accumulation by limiting atmospheric dispersion.

Despite air pollution abatement measures in the city, and the enforcement of BS-VI compliance vehicles, CNG, and e-vehicles nationwide, air pollution reduction in the city is still breaching its national standards and has become a great challenge for

policymakers. The authorities have also installed traffic signals to control vehicle movements. However, the idle mode of vehicles and traffic jams at multiple signals have affected the air quality. The rapid increase in e-rickshaws in Lucknow city has contributed to traffic congestion, particularly in densely populated areas, indirectly leading to elevated vehicular emissions due to prolonged idling and reduced traffic flow efficiency. Further, the increase in urban population and economic activities has resulted in demands for open cooking and street food stall activities, increasing the cooking combustion-related emission load to 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.

During the current air quality survey period (September-October 2026), Lucknow experienced an extended monsoon season, with intermittent rainfall during September, temporarily disrupting ongoing construction activities. However, commercial operations, vehicular movement, resuspension of road dust, and domestic cooking remained the major contributors to atmospheric pollution. Although the State Government has undertaken citywide cleaning initiatives under the Swachh Bharat Mission, several peripheral and unregulated areas continue to face issues of unmanaged waste and garbage dumps, contributing to localized air pollution.

Therefore, understanding the current status of air pollution in the city is crucial 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 (September-October) seasons every year. The regular air quality survey identifies the city's new sources, vehicular and fuel consumption inventory. 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 post-monsoon 2026 (September-October) air quality survey at 9 locations in Lucknow city, covering industrial, residential, and commercial areas with respect to 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 Aim & Objectives

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

- To study the air quality status of post-monsoon season of 2026 at different functional areas of the city
- To ascertain 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 of the current season at different functional areas of the city
- To provide awareness on the current air pollution status of the city
- To develop the scientific database and recommendations to assist regulatory agencies for 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, 2026

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 Vehicles 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, and Green Gas Limited, 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

Nine air quality monitoring locations representing different functional zones of Lucknow city, comprising 4 residential, 4 commercial cum traffic, and 1 industrial area were selected for the Post-monsoon 2026 study, as summarized in Table 7 and Figure 1. The measurement methodologies are detailed in Table 8. Sampling was conducted over 8 weeks during September-October 2026.

Table 7: Monitoring Locations

S .No.	Locations	Latitude	Longitute	Activities
1	Aliganj	26.8989	80.9442	Residential
2	Vikas Nagar	26.8955	80.9650	Residential
3	Indira Nagar	26.8813	80.9928	Residential
4	Gomti Nagar	26.8560	81.0059	Residential
5	Charbagh	26.8388	80.9337	Commercial cum traffic
6	Alambagh	26.804	80.8950	Commercial cum traffic
7	Aminabad	26.8482	80.9246	Commercial cum traffic
8	Chowk	26.8671	80.9124	Commercial cum traffic
9	Amausi	26.7682	80.8709	Industrial

Table 8: Parameters and Methodology for Air Quality Monitoring

Sl. No.	Parameters	Time Weighted Average	Methods of Measurement (as per CPCB, 2009)
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 & Ni)	24 hours	Associated with PM_{10} sample and analyzed through AAS facility of IITR
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

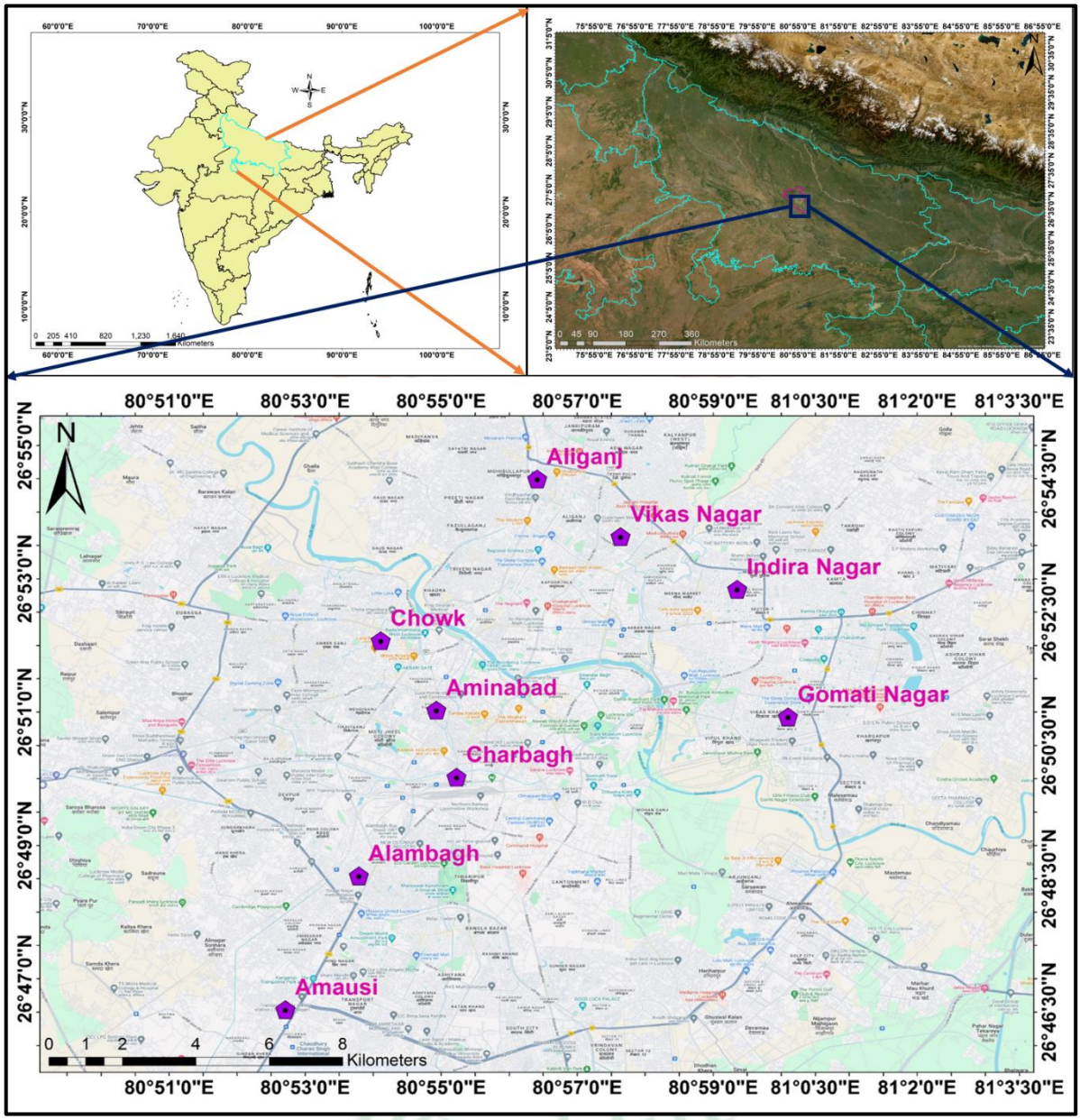


Figure 1: Locations for ambient air pollution monitoring/sampling sites in Lucknow city

3.0 Results

The detailed results of air quality monitoring for post-monsoon 2026 are presented in Table 9, Figure 2, and Figure 3, and the following sections discuss the inferences of the results.

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

The average PM_{10} level in Lucknow city recorded was highest in the industrial area, followed by the commercial area and the residential area (Table 9). In residential areas (Aliganj, Vikas Nagar, Indira Nagar and Gomti Nagar), the 24-hour average concentrations of PM_{10} were in the range of 39.8 to 181.0 µg/m^3 with an average of 116 µg/m^3. The average concentration of PM_{10} was observed to be highest at Indira nagar (126.5µg/m^3) among the residential areas. In residential areas, the average PM_{10} level was exceeded the NAAQs standard of 100 µg/m^3. In commercial areas (Charbagh, Alambagh, Aminabad and Chowk) the concentrations of PM_{10} were in the range of 61.8 to 218.2 µg/m^3 with an average of 138.1 µg/$m^{3,}$ respectively. The average concentration of PM_{10} was highest at Charbagh (157.2 µg/m^3) among the commercial areas. In the industrial area (Amausi), the average concentration of PM_{10} was 188.5 µg/m^3. The residential, commercial and industrial areas, the average PM_{10} levels were higher than the NAAQS standard of 100 µg/m^3.

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

The average $PM_{2.5}$ level in Lucknow city recorded was highest in the industrial area, followed by the commercial area and the residential area (Table 9). In residential areas (Aliganj, Vikas Nagar, Indira Nagar and Gomti Nagar), the average 24-hour concentrations of $PM_{2.5}$ were in the range of 30.1 to 86.5 µg/m^3 with an average of 61.7 µg/m^3. The average concentration of $PM_{2.5}$ was observed to be highest at Indira Nagar (68.6 µg/m^3) among the residential areas. In commercial areas (Charbagh, Alambagh, Aminabad, and Chowk), the $PM_{2.5}$ ranged from 36.6 to 106.0 µg/m3 with an average of 72.4 µg/m3, respectively. The average concentration of $PM_{2.5}$ was highest at Charbagh (81.6 µg/m^3) among the commercial areas. In an industrial area (Amausi), the average concentration of $PM_{2.5}$ was 93.5 µg/m^3, which was almost 35.8% higher than the prescribed NAAQS standard of 60 µg/m^3. In residential and

commercial and industrial areas average $PM_{2.5}$ levels was exceeded the prescribed NAAQS of 60 µg/m^3.

3.3 Sulphur Dioxide (SO_2)

In residential areas (Aliganj, Vikas Nagar, Indira Nagar and Gomti Nagar), the levels of SO_2 were 8.5 to 23.1 µg/m^3 with an average of 18.4 µg/m^3. In commercial areas (Charbagh, Alambagh, Aminabad and Chowk), the concentrations of SO_2 ranged from 11.4 to 31.0 µg/m^3 with an average of 21.6 µg/m^3. In an industrial area (Amausi), the mean level of SO_2 was 23.5 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 residential areas (Aliganj, Vikas Nagar, Indira Nagar and Gomti Nagar), the average 24-hour concentration of NO_2 was 15.8 to 36.9 µg/m^3 with an average of 28.4 µg/m^3. In commercial areas (Charbagh, Alambagh, Aminabad and Chowk) the concentration of NO_2 was 24.0 to 47.5 µg/m^3 with an average of 35.0 µg/m^3. The average concentration in an industrial area (Amausi) was 42.4 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 Post-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	35.3	182.4	121.2 ± 48.8	29.2	80.8	63.5±19.2	8.6	22.9	19.3±5.2	15.8	37.6	28.2±7.1
Vikas Nagar	39.5	179	110.4±50.3	30.1	89.3	60.6±16.2	8.2	23.3	17.5±3.9	16.5	34.4	27.0±5.8
Indira Nagar	48.3	199.5	126.5±41.8	32.8	101.4	68.6±20.5	9.2	25.5	19.8±5.5	17.3	41.9	31.0±7.5
Gomti Nagar	36.1	163.1	105.8±35.7	28.4	74.3	54.2±13.1	7.8	20.8	16.8±3.7	13.5	33.5	27.4±5.8
Average	**39.8**	**181.0**	**116.0**	**30.1**	**86.5**	**61.7**	**8.5**	**23.1**	**18.4**	**15.8**	**36.9**	**28.4**
Commercial												
Charbagh	73	242.4	157.2±56.8	40.6	122.1	81.6±27.3	12.9	41.8	26.4±9.1	29.8	52.1	39.1±8.1
Alambagh	51.1	181.2	122.6±38.3	34.2	96.5	75.8±19.3	9.9	23.1	18.4±4.3	18.8	38.7	29.8±6.0
Aminabad	64.8	236	143.5±49.5	36.7	106.8	67.3±21.2	11.8	30.3	21.0±5.7	24.5	52.8	38.0±8.3
Chowk	58.1	213.3	129.2±49.3	34.9	98.4	65.0±20.3	11	28.6	20.7±5.5	22.7	46.3	32.9±8.3
Average	**61.8**	**218.2**	**138.1**	**36.6**	**106.0**	**72.4**	**11.4**	**31.0**	**21.6**	**24.0**	**47.5**	**35.0**
Industrial												
Amausi	**131.7**	**278.6**	**188.5±53.1**	**70.5**	**147**	**93.5±27.9**	**16.2**	**33.5**	**23.5±7.0**	**22.9**	**69.3**	**42.4±20.0**
NAAQS	100			60			80			80		
WHO Guidelines	50			25			20			40*		

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

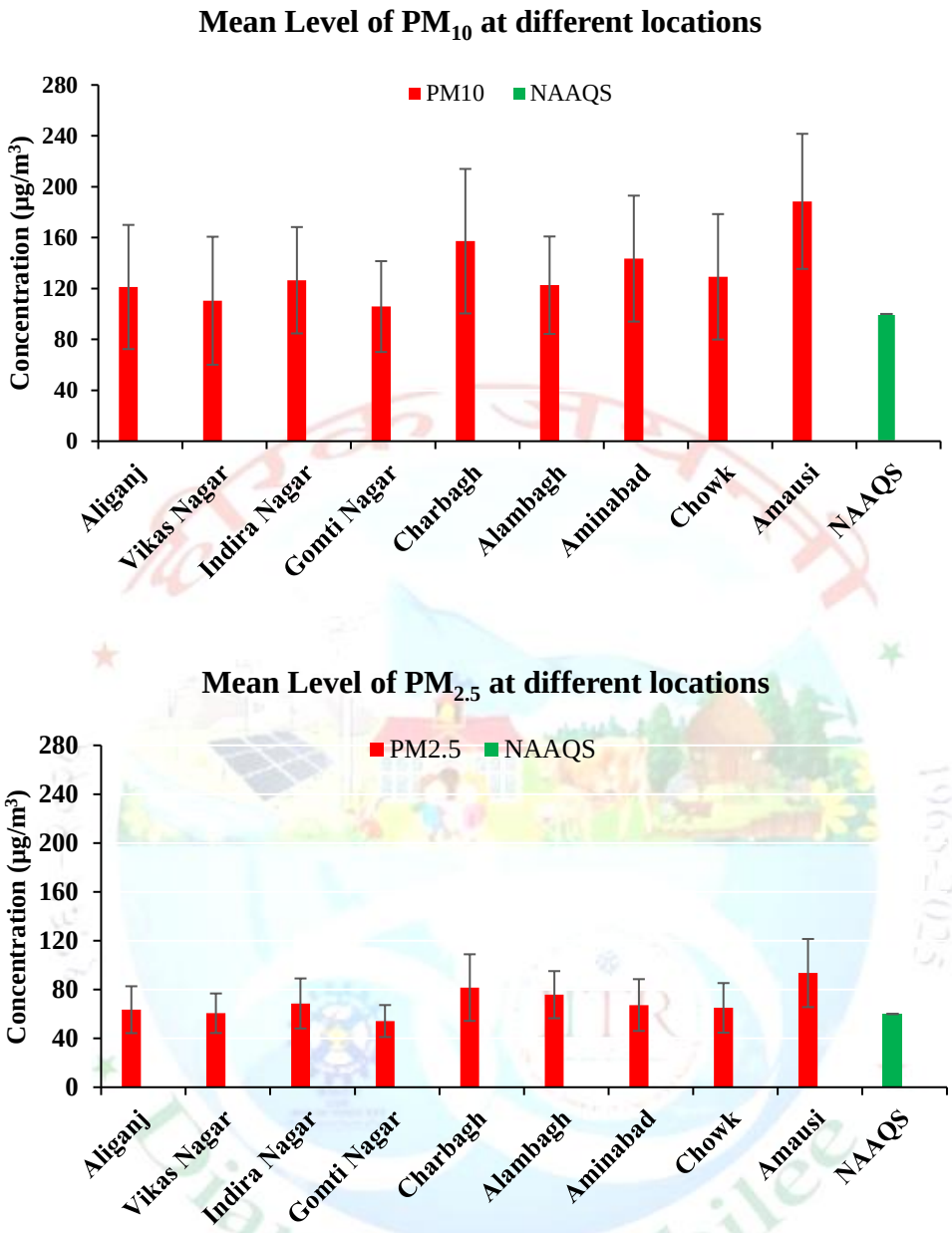


Figure 2: Concentration (µg/m^3) of PM_{10} and $PM_{2.5}$ in different functional zones of Lucknow city during post-monsoon 2026 and comparison with prescribed National Ambient Air Quality Standard (NAAQS)

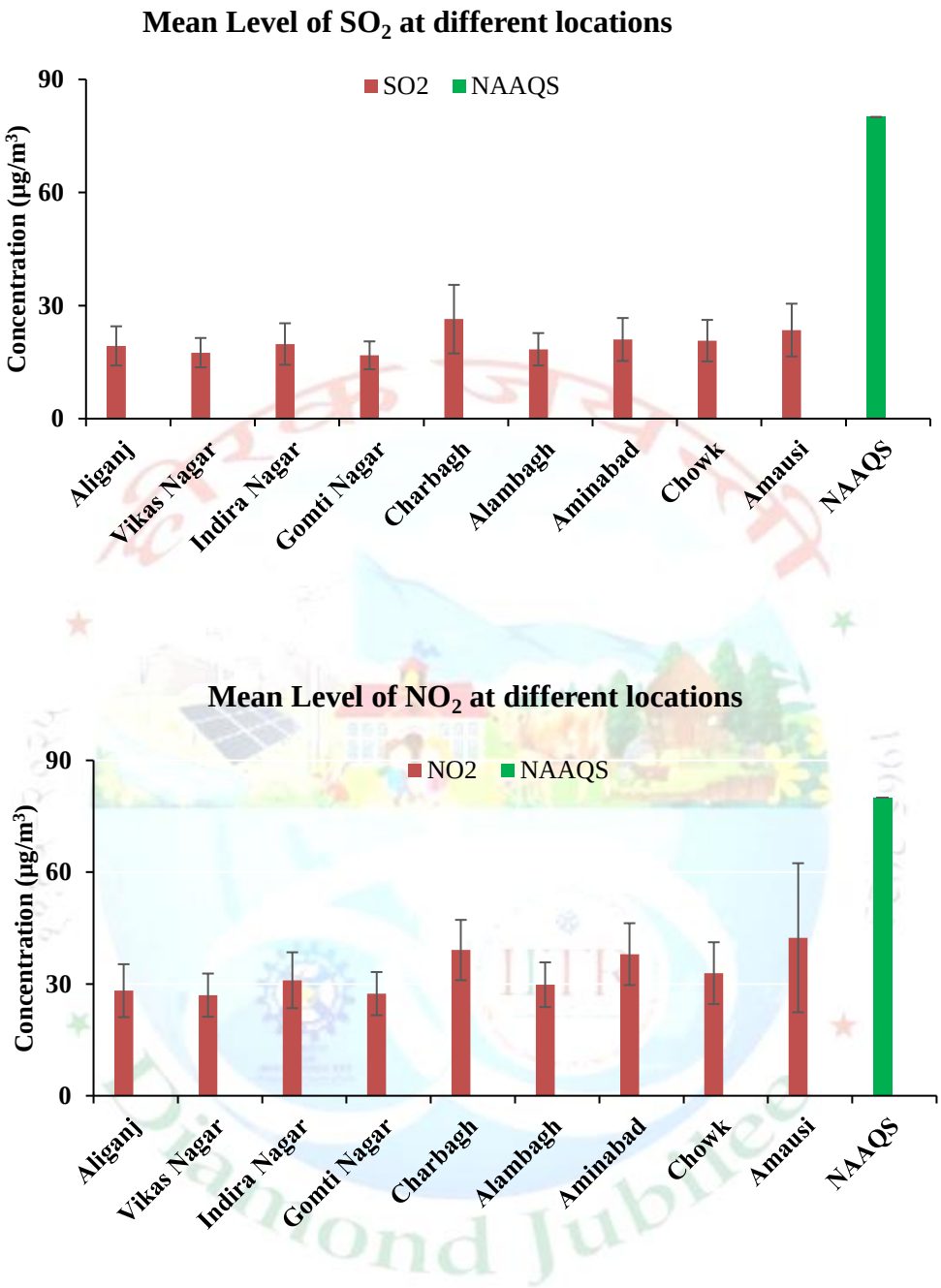


Figure 3: Concentration (µg/m^3) of SO_2 and NO_2 in different areas of Lucknow city during post-monsoon 2026 and comparison with prescribed National Ambient Air Quality Standard (NAAQS)

3.5 Trace Elements

The concentrations of metals (µg/m^3) associated with PM_{10} are presented in Table 10. Lead (Pb) concentration in residential areas were recorded at 0.02 µg/m^3 across all locations. In commercial areas, Pb levels ranged from 0.01 to 0.04 µg/m^3 with an average of 0.03 µg/m^3. The highest concentration was observed in the industrial area of Amausi, at 0.11 µg/m^3.

The concentration of Ni in residential areas ranged from 8.51 ng/m^3 (Gomti Nagar) to 18.24 ng/m^3 (Indira Nagar) ng/m^3 with an average of 13.15 ng/m^3. In commercial areas, Ni levels ranged between 8.99 ng/m^3 (Charbagh) to 17.21 ng/m^3 (Chowk) ng/m^3 averaging 11.92 ng/m^3. In the industrial area of Amausi**,** the Ni concentration was 16.80 ng/m^3. Overall, all the values of Pb and Ni were within the prescribed NAAQS limits.

Table 10: Metal Concentration Associated with PM_{10}

S. No.	Location	Pb, µg/m^3	Ni, ng/m^3
1	Aliganj	0.02	15.01
2	Vikas Nagar	0.02	10.82
3	Indira Nagar	0.02	18.24
4	Gomti Nagar	0.02	8.51
Average		**0.02**	**13.15**
5	Charbagh	0.03	8.99
6	Alambagh	0.01	10.00
7	Aminabad	0.02	11.50
8	Chowk	0.04	17.21
Average		**0.03**	**11.92**
9	Amausi	0.11	16.80
NAAQS		**1$^{\#}$**	**20***

#: 24-hour Average, and *: Annual Average

3.6 Noise Level

The noise monitoring data recorded during the post-monsoon period (September-October, 2026) is presented in Table 11. In the residential areas, the day and night noise levels ranged from 55.8 to 93.2 and 44.5 to 88.0 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.

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

Location	Range	Day	Night
Aliganj	Min	55.7	61.0
	Max	90.4	78.0
	Avg. (Leq)	**66.5**	**65.2**
Vikas Nagar	Min	50.8	44.5
	Max	87.1	72.0
	Avg. (Leq)	**68.9**	**62.5**
Indira Nagar	Min	55.5	58.4
	Max	93.2	80.5
	Avg. (Leq)	**73.7**	**66.8**
Gomti Nagar	Min	50.9	45.9
	Max	87.2	88.0
	Avg. (Leq)	**70.6**	**76.7**
NAAQS for Residential Area		**55**	**45**
Charbagh	Min	71.4	67.2
	Max	115.0	87.3
	Avg. (Leq)	**89.7**	**87.4**
Alambagh	Min	65.8	54.9
	Max	106.1	95.4
	Avg. (Leq)	**81.8**	**72.1**
Aminabad	Min	62.0	49.2
	Max	104.2	91.2
	Avg. (Leq)	**79.2**	**76.6**
Chowk	Min	73.4	53.8
	Max	102.3	94.0
	Avg. (Leq)	**82.0**	**73.2**
NAAQS for Commercial Area		**65**	**55**
Amausi	Min	63.5	52.3
	Max	95.1	93.7
	Avg. (Leq)	**76.6**	**73.5**
NAAQS for Industrial Area		**75**	**70**

In the commercial areas, the day and night noise levels were recorded from 62.0 to 115.0 and 49.2 to 99.5 dB(A), respectively. Noise levels of residential and commercial sites at all locations were significantly higher than the prescribed national limits for day and night, respectively (Table 11). In an industrial area, Amausi, average day and night noise levels were recorded at as 76.6 and 73.5 dB(A), respectively. Noise levels at an industrial area 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 post-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). The five-year trend (2022-2026) of pollutants across residential, commercial, and industrial areas of Lucknow shows significant temporal variation.

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

Figure 4 illustrates the five-year trend (2022-2026) of PM_{10} concentrations at residential sites in Lucknow, showing notable spatial and temporal variation with slight increasing pattern in recent years. PM_{10} levels peaked in 2022, while 2023 exhibited a mixed trend, declining at Aliganj and Vikas Nagar but increasing at Indira Nagar, likely due to localized construction activities. During post-monsoon 2026, PM_{10} concentration in residential area showed an increasing trend compared to 2025. This may be correlated with prevailing meteorological conditions and city development activities. A similar trend was observed in the commercial areas, where the highest PM_{10} levels were recorded in 2022 across all monitoring sites, with Charbagh showing the maximum concentration **(**330 µg/m³). The PM_{10} concentration was also increased in 2026 compared with 2025 at all commercial sites except Alambagh. In the industrial area**,** PM_{10} concentration was substantially higher in 2026 than in 2025, however, they remained bit lower than the level recorded in 2023.

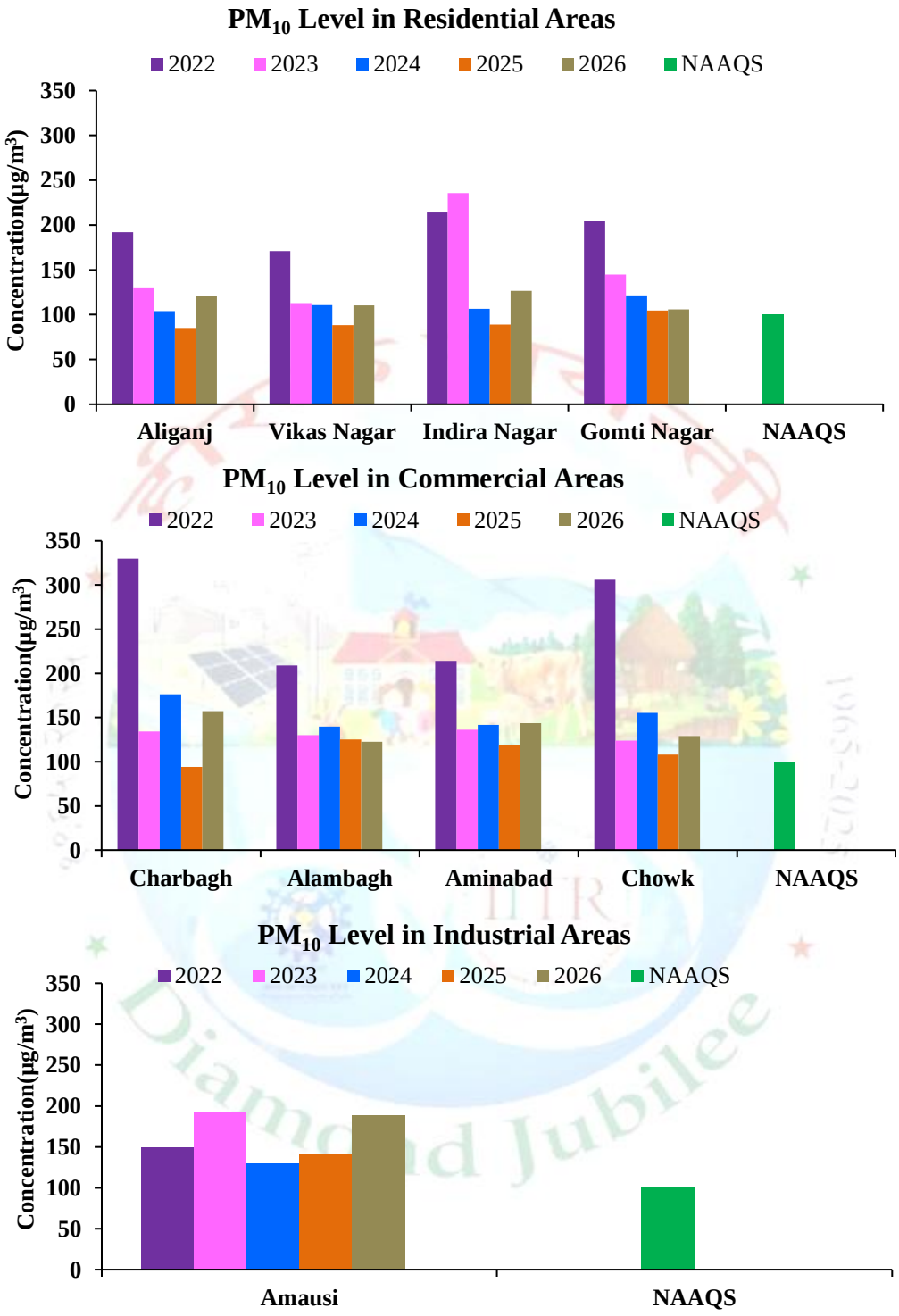


Figure 4: Concentration (µg/m^3) of PM_{10} **(**RSPM**)** in residential, commercial and industrial areas of Lucknow city during 2022 to 2026 (post-monsoon) and compared with prescribed National Ambient Air Quality Standard (NAAQS)

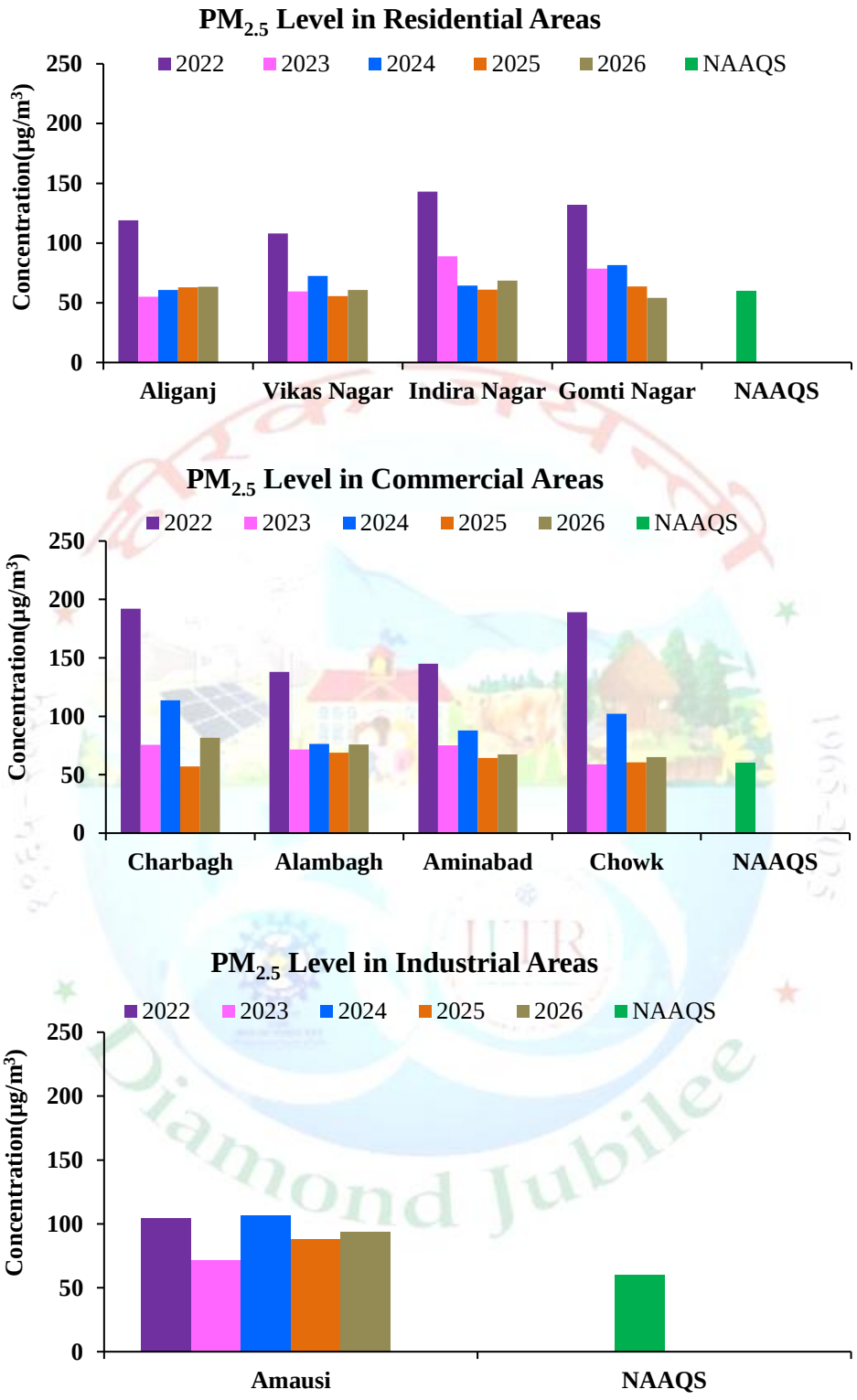


Figure 5: Concentration (µg/m^3) of $PM_{2.5}$ in residential, commercial and industrial areas of Lucknow city during 2022 to 2026 (post-monsoon) and compared with prescribed National Ambient Air Quality Standard (NAAQS).

Figure 5 indicates the temporal variations in $PM_{2.5}$ concentrations across residential, commercial, and industrial monitoring areas in Lucknow. $PM_{2.5}$ concentration showed an increasing trend in 2022 at all monitoring areas, followed by a sharp decline in 2023. However, in 2024, the $PM_{2.5}$ concentration was again increased at some residential sites (Vikas Nagar and Gomti Nagar) and all commercial and industrial locations compared to the post-monsoon data of 2023. In 2026, a further increase in $PM_{2.5}$ concentration was observed at all monitoring areas and sites except at Gomti Nagar in residential areas. Despite this mixed trend, $PM_{2.5}$ concentration at all sites slightly exceeded the NAAQS limit.

4.2 Trend of SO_2 and NO_2

The post-monsoon trend of SO_2 and NO_2 concentration from 2022-2026 for all locations in the city is illustrated in Figures 6 and 7. The overall concentration of SO_2 and NO_2 showed an increasing trend from 2024 to 2026 with the exception of SO_2 at the Chowk site, where this trend was not observed. Notably, the values of SO_2 and NO_2 at all monitored locations were found well below the NAAQS limit.

4.3 Trend of Day and Night Time Noise Level

The day and night-time level (dB(A)) data for post-monsoon 2026 in residential, commercial, and industrial areas were compared with the corresponding data of the previous five years (i.e. 2022-2026) and the results are presented in Figures 8 and 9, showing distinct temporal variation.

The day-time noise levels data for residential, commercial and industrial areas (Figure 8) were compared to find out trend over the last 5 years study periods. The lowest daytime noise levels were observed during the post-monsoon monitoring period of 2025. A similar trend was observed in commercial areas, where noise levels were comparatively lower in 2025. However, daytime noise levels increased in 2026 compared with 2025. In industrial areas, daytime noise levels remained relatively comparable throughout the study period, with a slight overall decreasing trend from 2022-2026.

The five-year comparison of night-time noise levels across residential, commercial and industrial areas indicates considerable spatial and temporal variations during 2022-2026 (Figure 9). In residential areas, night-time noise levels exhibited a fluctuating pattern across monitoring locations, with relatively higher levels in 2026 compared with 2025 at all sites except Aliganj. The highest night-time noise level in residential areas was recorded at Gomti Nagar (76.7 dB(A)). A similar trend was observed in commercial area except at Alambagh where a lower night-time noise level was measured in 2026 compared with the post-monsoon monitoring period of 2025. The highest night-time noise level in commercial areas was measure at Charbagh (87.4 dB(A)), likely due to late-night vehicular movement around railway and bus stations. In industrial area, night-time noise level remained relatively comparable during the 2023 and 2026 post-monsoon monitoring periods, ranging from 72.4 to 73.5 dB(A), whereas the highest level (81.2 dB(A)) was recorded in 2022. Overall, night-time and day-time noise levels were consistently higher than the national standard limits across most sites. The higher noise levels adversely affect the lives of millions of people in the city. Studies have shown that there are direct links between noise and health.

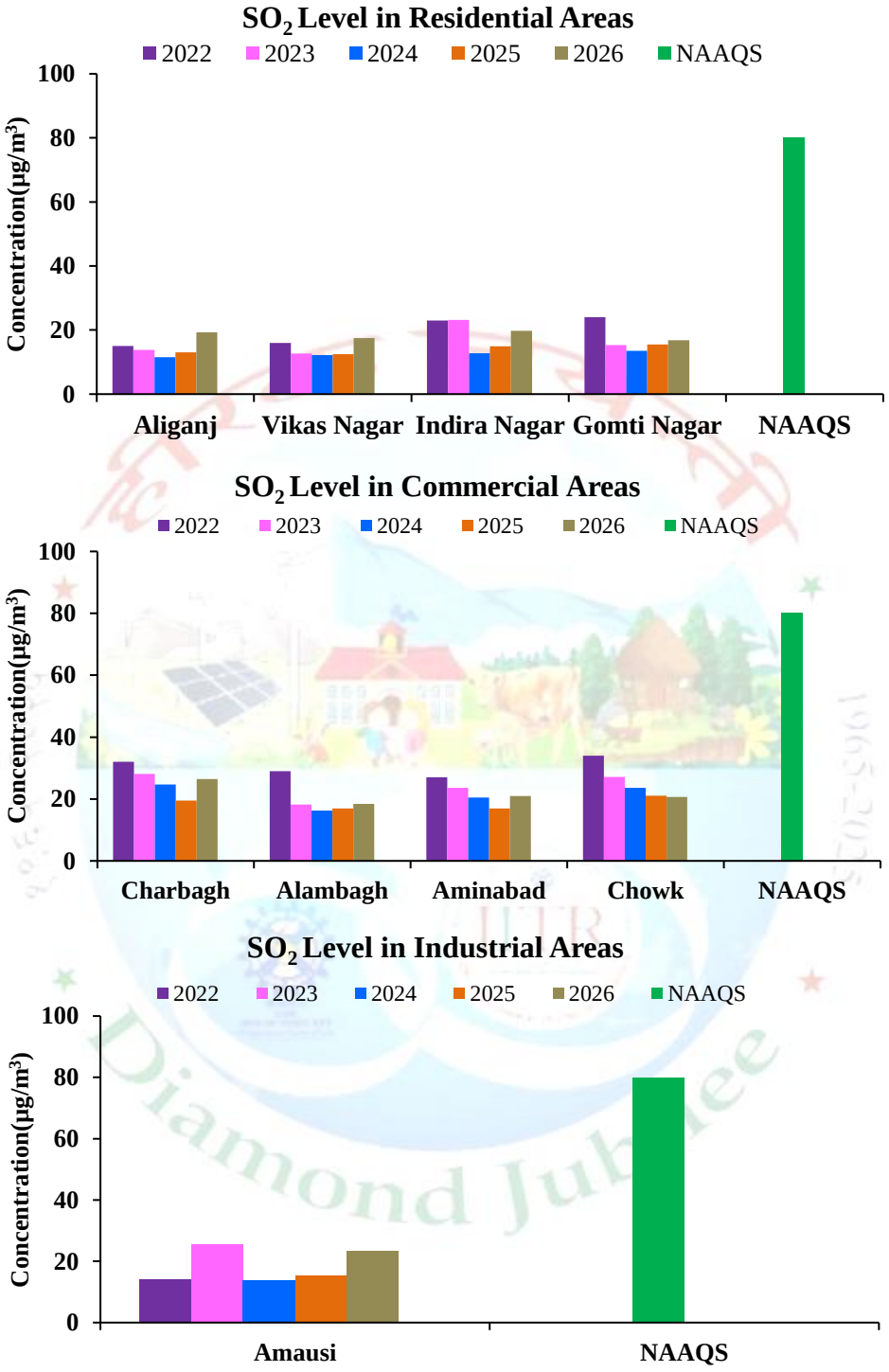


Figure 6: Concentration (µg/m^3) of SO_2 in residential, commercial and industrial areas of Lucknow city during 2022 to 2026 (post-monsoon) and compared with the prescribed National Ambient Air Quality Standard (NAAQS)

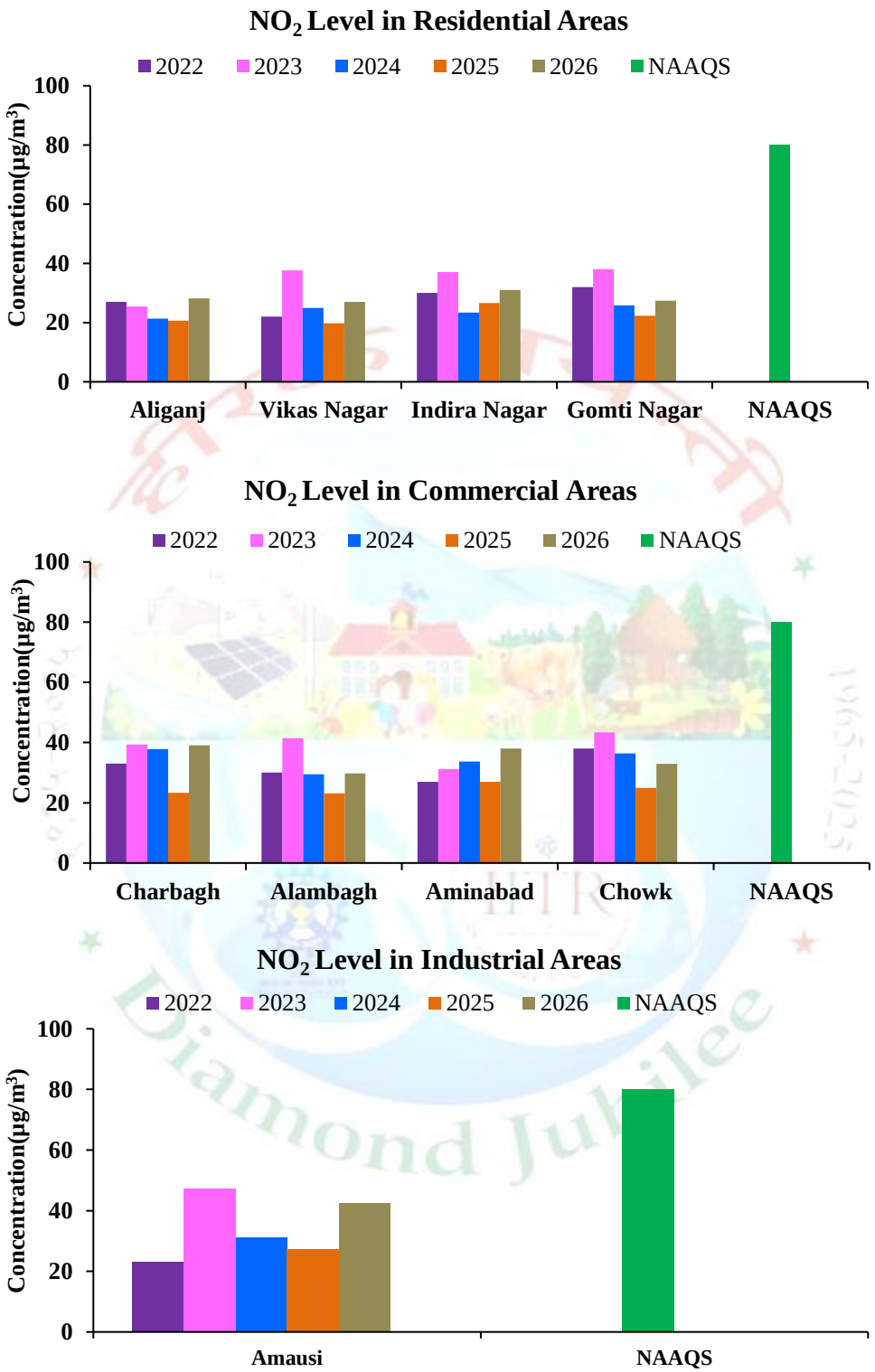


Figure 7: Concentration (µg/m^3) of NO_2 in residential, commercial and industrial areas of Lucknow city during 2022 to 2026 (post-monsoon) and compared with the prescribed National Ambient Air Quality Standard (NAAQS)

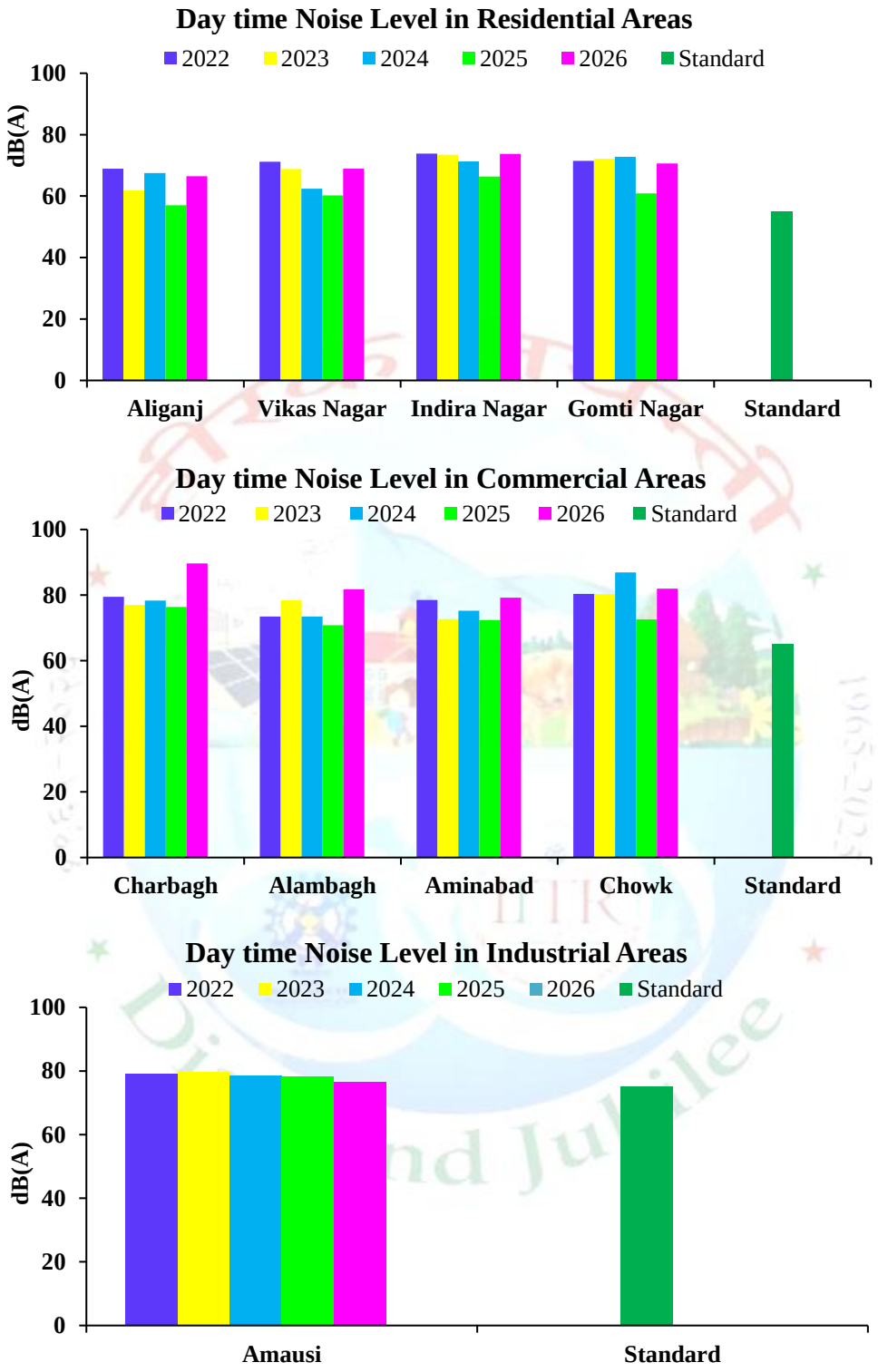


Figure 8: Comparison of day-time Noise Level in dB(A) for different areas of Lucknow city (post-monsoon 2022-2026)

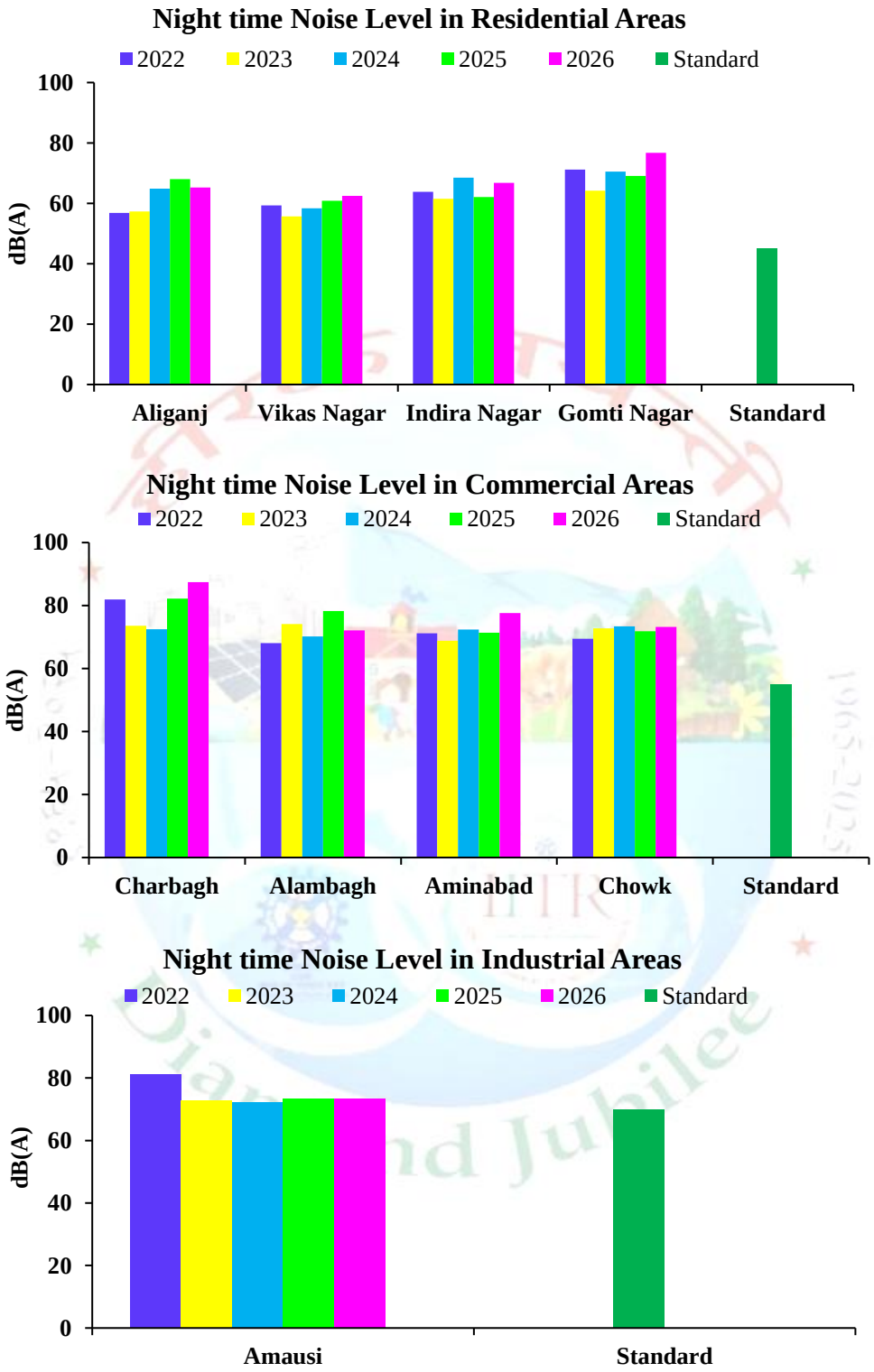


Figure 9: Comparison of night-time Noise Level in dB(A) for different areas of Lucknow city (post-monsoon 2022-2026)

5.0 Conclusions / Main Findings

CSIR-IITR assessed the air quality status of Lucknow during the post-monsoon period (September-October 2026) through monitoring and analysis of ambient PM_{10}, $PM_{2.5}$, SO_2, NO_2, and toxic heavy metals, namely Lead (Pb) and Nickel (Ni), associated with PM_{10} at nine locations categorized as residential, commercial, and industrial areas. In addition, day and night-time noise levels were also monitored at these sites across the city. The key findings of the study are summarized below:

The 24-hour average PM_{10} concentrations in Lucknow city ranged from 105.8 µg/m^3 to 188.5 µg/m^3 with an overall average of 133.9 µg/m^3. Similarly, $PM_{2.5}$, concentration were ranged from 54.2 µg/m^3 to 93.5 µg/m^3 with an average of 70.0 µg/m^3. Overall the city PM_{10} and $PM_{2.5}$ levels were exceeded the prescribed NAAQS standard of 100 µg/m^3 and 60 µg/m^3, respectively. Trend analysis revealed that the mean PM_{10} concentrations during post-monsoon 2026 increased by 26.6%, 23.6%, and 33.4% in residential, commercial, and industrial areas, respectively, compared with post-monsoon 2025. Similarly, mean $PM_{2.5}$ concentrations during post-monsoon 2026 increased by 1.6%, 15.3%, and 6.4% in residential, commercial, and industrial areas, respectively, compared with post-monsoon 2025. The city exceedance factor (EF) for PM_{10} and $PM_{2.5}$ was 1.48 and 1.27, respectively, indicating high pollution as per CPCB classification. Overall, the findings highlight deterioration in particulate matter air quality during the post-monsoon period of 2026 compared with 2025, with both PM_{10} and $PM_{2.5}$ remaining above the prescribed annual standards.

The trace metals (i.e. Pb and Ni) which are associated with PM_{10} in Lucknow city are found in the range 0.01-0.11 µg/m^3 with an average of 0.03 µg/m^3 for Pb, and the range 8.51-18.24 ng/m^3 with an average of 13.01 ng/m^3 for Ni. The 24-hour concentrations of SO_2 in Lucknow city ranged from 16.8 to 26.4 µg/m^3 with an average of 20.4 µg/m^3, while the 24-hour concentrations of NO_2 ranged from 27.0 to 42.4 µg/m^3 with an average of 32.9 µg/m^3. However, average values of SO_2 and NO_2 were well below the permissible NAAQS limits of 80 µg/m^3.

The day-time and night-time noise levels in Lucknow city were in the range of 50.8 to 115.0 dB(A) and 44.5 to 95.4 dB(A), respectively. The mean noise values were above

their respective day-time standard of 55 dB(A) and night-time standard of 45 dB(A) for residential areas and day-time standard of 65 dB(A) and night-time standard of 55 dB(A) for commercial areas respectively as per CPCB standards. At an industrial area Amausi, the average day-time and night-time noise levels were 76.6 dB(A) and 73.5 dB(A), respectively. The noise measurements are above the national standard of 75 dB(A) for day-time and 70 dB(A) for night-time which are recommended for Industrial sites.

Post-Monsoon 2026 showed an decrease in concentration level of particulate pollution in the city was observed compared to the pre-monsoon 2026. The monsoon rains scavenge the particles in the atmosphere and the wet surface controls dust from its resuspension to the ambient air. During the post-monsoon, the increased atmospheric humidity can lead to the agglomeration of particles which makes the particles heavier and deposited on the ground from the atmosphere. The activities in the city like construction, markets, and movement of vehicles, are also reduced due to rain. However, the yearly increment of registered vehicular numbers and fuel consumption in the city is likely to have a greater impact on air pollution concentration than the national standards.

The trend analysis revealed an overall decline in PM_{10} and $PM_{2.5}$ concentration from 2022 onward, followed by moderate year-to-year fluctuations during 2023-2026, suggesting an overall improvement in air quality after 2023. To mitigate the air pollution and improve air quality, the Uttar Pradesh government launched the Clean Air Plan (UCAP) in 2025, targeting $PM_{2.5}$ reduction. Over the past year, EV and CNG buses have been added to the public transport and the number of personal EV cars and EV two-wheelers has increased, indicating a shift to 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 around the city have provided uninterrupted routes for long-distance vehicles to avoid entry into the city. Furthermore, the Lucknow Municipal Corporation (LMC) initiative, including timely collection of municipal solid waste (MSW), disposal, and mechanized road sweeping, has likely contributed to lowering ambient particulate matter levels. These efforts have resulted

in a continuous decline in particulate pollution since 2022. Air pollution is a changing phenomenon with respect to location and time due to fluctuating natural and man-made activities. Continuous awareness of the status of city air quality, and efforts by the individual and government communities are essential for the safeguard of public health.

6.0 Health Impacts of Air and Noise Pollution

Rapid urban development and modernization have increased air pollution. Researchers have recently begun to focus more on exploring and establishing 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} & $PM_{2.5}$)

Particulate matter (PM_{10} and $PM_{2.5}$) poses significant health hazards upon inhalation. Fine particles (≤2.5 µm) can penetrate deep into the respiratory tract, reaching the alveolar region where gas exchange occurs. $PM_{2.5}$ exposure is associated with alveolar inflammation, reduced pulmonary function, and increased incidence of bronchitis, emphysema, and cardiovascular diseases. Ultrafine particles (0.001-0.1 µm) can translocate into the bloodstream, altering vascular permeability, enhancing coagulation activity, and triggering systemic inflammatory responses, including airway constriction and fever.

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 resistance to 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 exposures to nitric oxide can cause unconsciousness and vomiting. Exposure to low nitrogen oxides in smog can irritate the eyes, nose, throat and lungs and cause coughing, shortness of breath, fatigue, and nausea.

Trace element-Lead (Pb)

Lead is a well-known neurotoxin that impairs neurodevelopment in children and adversely affects fetal brain development. Occupational exposure to elevated lead levels is associated with increased mortality. Clinical manifestations include reduced nerve conduction velocity, cognitive and behavioral impairments, hearing loss, jaundice, and anemia in children. Even low-level exposure can result in measurable cognitive and neurobehavioral deficits.

Trace element-Nickel (Ni)

Nickel (Ni) exposure poses significant health risks, including allergic reactions, chronic bronchitis, impaired lung function, and increased incidence of lung and nasal sinus cancers. Experimental animal studies have demonstrated that nickel ingestion can lead to elevated neonatal mortality and reduced birth weight, indicating its potential developmental toxicity.

Noise

Noise pollution is the spread of unwanted sounds into the environment. Unwanted sounds have a range of mental health effects. The brain continually 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, the impact on their mental health intensifies.

7.0 Recommendations for Mitigation of Air Pollution in Lucknow

To ensure sustained improvement in ambient air quality in Lucknow, it is recommended that the district administration and relevant authority organize periodic short programs such as summits or seminars involving key stakeholders, including SPCBs, CPCB, CPWD, R&D institutions, universities, engineering colleges, social and environmental groups, regulatory bodies, city planners, NGOs, and the general public. These forums should promote knowledge sharing and constructive discussions on the sources, impacts, and mitigation of air pollution. Expert panels must periodically review implementation and assess effectiveness. Based on these deliberations, the following recommendations are proposed for improving the Lucknow city air quality:

- Strict enforcement of pollution control regulations, emission standards and environmental guidelines.
- Promote advanced device-based air pollution control technologies at traffic intersections, industrial areas and pollution hotspots.
- Ensure dust-control measures at construction and demolition sites through HDPE nets, barricading and dust barriers.
- Road repairs, flyover construction and demolition activities should be scheduled during non-peak hours to minimize traffic congestion.
- Regular mechanized road sweeping and water sprinkling should be ensured to minimize road dust re-suspension and maintain road cleanliness
- To promote BS-VI vehicles, particulate filter retrofitting and phase out older polluting vehicles through authorized scrapping centers.
- Adoption of CNG, electric and hybrid vehicles should be encouraged through government subsidies.
- Expand CNG filling stations and EV charging infrastructure across the city.
- Strengthen affordable public transport, including metro rail and city buses, to reduce private vehicle use.
- Promote carpooling, low-emission zones, cycling and pedestrian-friendly infrastructure.

- Regulate e-rickshaw, auto and tempo movement through designated routes and driver training.
- Prohibit roadside parking, wrong-side driving and unauthorized road encroachments.
- Relocate roadside vendors to designated zones to ensure smooth traffic movement.
- Mandate engine switch-off during idling, particularly at traffic signals.
- Prohibition of open burning of garbage, plastic, biomass and other waste materials.
- Ensure regular waste collection and scientific disposal in covered vehicles and designated facilities.
- Expand urban green cover through roadside plantations, vertical gardens and rooftop greenery.
- Ensure uninterrupted electricity supply and promote rooftop solar energy to reduce diesel generator use.
- Prohibit pressure horns and enforce noise pollution regulations.
- Organize public awareness programs on air pollution, health impacts, vehicle maintenance and sustainable practices.
- Encourage community participation through NGOs, residential societies and local institutions.
- Develop mobile applications and helplines for reporting pollution violations.
- Strengthen coordination among UPPCB, Municipal Corporation, traffic police and other authorities through regular monitoring and review meetings.

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सीएसआईआर-भारतीय विषविज्ञान अनुसंधान संस्थान
CSIR-INDIAN INSTITUTE OF TOXICOLOGY RESEARCH

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




"सुरक्षा पर्यावरण और स्वास्थ्य
और उद्योग के लिये सेवा"
**"safety to environment &
health and service to industry"**




R & D 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)
- 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

अनुसंधान एवं विकास 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 (सिटार)
- 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 (पै।ए)

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

#startupindia

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