

ACTION PLAN

FOR

THE CONTROL OF AIR POLLUTION

IN

LUCKNOW CITY



REGIONAL OFFICE
UTTAR PRADESH POLLUTION CONTROL BOARD
IVTH FLOOR, PICUP BUILDING VIBHUTI KHAND,
GOMTI NAGAR, LUCKNOW-226021

1. INTRODUCTION

Lucknow is situated on the North western bank of Gomti River, is not only the largest but also the capital city of Uttar Pradesh. The city is bounded on the east by Barabanki, on the west by Unnao, on the south by Raebareli, and on the north by Sitapur & Hardoi. Modern Lucknow spread evenly on both sides of River Gomti initially the city was situated along the right bank of the river but now a days city is spreading very fast towards all sides & specially on the left side of river Gomti. Lucknow has a Humid subtropical climate with cool, dry winters from mid – November to February and dry, hot summer from late March to June. In winter, maximum temperature is around 25⁰C and minimum is in the range of 3⁰C- 7⁰C is quite common from mid December to late January. Lucknow's coordinates are 26.840N 80.940 E and its population (2011) census 28,15,601 . Approximate area is 470.7km² and population density is 5981per km².

Like other cities, Lucknow is also developing very fast due to rapid increase in urbanization, industrialization & population growth. As reported by the census of India, 2011, Lucknow has a population of 2,815,601. There was an increase of 25.36% compared to 2001 figures. The initial provisional data suggests a population density of 5981per km² in 2011. As the total area covered by the Lucknow city is only about 470.7 sq. km., the population density was much higher than the 690 persons per km²recorded at state level. There are 04 designated Industrial sites in and around Lucknow city viz., Amausi Industrial Area, Talkatora Udyog Asthan, Sarojini Nagar Industrial Area & Deva Road Chinhat Industrial Area where 10 large, 15 medium & 15 small industries of Red category are in operation, 03 large, 04 medium, 65 small scale Orange category industries are in operation and 01 medium, 131 small scale Green category industries are in operation. Besides these, different category industries including 255 brick kilns are also in operation around Lucknow City.

Two major Indian National Highways have their intersection at Lucknow's Hazratganj intersection NH-24 to Delhi, NH-30 to Allahabad. Multiple modes of public transport are available such as taxis, city buses, auto, tempos, Rickshaws, Jeeps cars and others. A number of different categories of vehicles registered with R.T.O, Lucknow is 1864556 as on 31 March 2016. UPSRTC also introduce bus services under the banner of "Lucknow Parivahan Seva" for different routes of Lucknow city. There are 125 filling stations of petrol/ diesel and 06 filling stations of CNG in 2015-16. As per oil marketing companies IOC, BPCL, HPCL the consumption/ sale of petrol & diesel was 173617 & 182481 Kilo Liter respectively as on 31 March 2016 and 30246000 kg approximately CNG in the year 2015-16.

Presently the city has more than 18 lakhs vehicles which are increasing at an average annual rate of about 9%. Also huge ongoing construction activities, metro rail construction, Roads and fly over construction, Multistory apartment construction have also been contributing to the air pollution in addition to domestic, commercial, industrial & vehicular sources in the city. Considering all the factors Ambient Air Quality of Lucknow city is being monitored by the Board at 07 locations manually and at 01 location by CAAQMS with respect to PM₁₀, PM_{2.5}, SO₂, NO₂ and other parameters.

Population growth, Urbanization, needs and rapid increase in energy consumption are major driving force of air pollution in large cities like Lucknow. The consequences of pollution have led to poor urban air quality in Lucknow. The air pollution can be attributed to emissions from transportation, industrial & domestic activities, Re-suspension of road dust, Construction

activities, Burning of Biomass/Crop residues/municipal solid waste/garbage & unapproved fuel, operation of Diesel generator sets during power failure.

Air pollution has been viewed seriously by the Hon'ble Supreme Court, Hon'ble High Court & Hon'ble National Green Tribunal and issued specific directions from time to time for the improvement the air quality of the city. Central Pollution Control Board has also issued direction under section 18 (1)(b) of the Air (Prevention & Control of Pollution) Act 1981, regarding prevention, control or abatement of Air pollution in various cities of Uttar Pradesh including Lucknow.

2. ACTION TAKEN BY THE BOARD

Board has issued directions to Principal Secretary Urban Development, Principal Secretary Forests, Principal Secretary Transport, Principal Secretary Agriculture, Managing Director Central U.P. Gas Ltd., Managing Director Indraprastha Gas Ltd, and Managing Director Green Gas Ltd. under section 31 (A) of the Air (Prevention and Control of Pollution) Act, 1981 regarding prevention and control of air pollution in Lucknow city on dated 05.09.2016 in compliance of directions issued by Central Pollution Control Board, Delhi under section 18(1) (b) of the Air (Prevention and Control of Pollution) Act, 1981. Board has also issued directions under section 31(A) of the Air (Prevention and Control of Pollution) Act, 1981 as amended regarding prevention and control of air pollution in Lucknow city on dated 14.11.2017.

Ambient Air is being monitored regularly by the Board. At source emission monitoring i.e. stack monitoring of industries is also being done regularly and action is being taken accordingly on the basis of analysis report. If any industry is found violating the standards firstly show-cause notice is issued to the industry followed by closure under Air (Prevention and Control of Pollution) Act, 1981.

3. ANNUAL AVERAGE DATA OF AMBIENT AIR QUALITY PM₁₀ (µg/m³) (YEAR 2013-2018)

U.P. Pollution Control Board is monitoring ambient air quality of Lucknow city manually at 07 locations viz. Aliganj, Chowk, Mahanagar, Hazratganj, Talkatora, Ansal Technical campus & Gomtinagar for PM₁₀, SO₂ and NO₂ parameters. Annual Average data of Ambient Air Quality particularly PM₁₀ (Particulate Matter size less than 10 microns) were observed during the year 2013-18 are as given below.

S.No.	Name of Location	Category	2013	2014	2015	2016	2017	2018
1	Nagar Nigam Building, Hazratganj	Commercial	185.9	171.9	168.0	217.7	315.5	244.95
2	Forensic Lab, Mahanagar	Residential	185.8	167.7	160.0	198.1	212.1	204.50
3	DIC Office, Talkatora	Industrial	202.3	184.6	179.7	219.7	214.1	229.43
4	Vishnupuri, Aliganj	Residential	193.9	170.8	163.3	208.8	199.3	174.72
5	Sarai Mali Khan, Chowk	Commercial	188.9	179.5	171.3	216.3	243.3	230.27

6	ATC, Sultanpur Road	Commercial	-	-	146.1	219.7	197.1	208.84
7	Nagar Nigam Building, Gomti Nagar	Commercial	-	-	159.0	184.1	233.5	218.26
	STANDARD (annual average)	60 $\mu\text{g}/\text{m}^3$						

It is clear from the data that the pollution levels are increasing year by year and the air quality index is getting worst. If we do not take steps now, this can lead to severe consequences. In spite of all the effort to control air pollution by regulatory authorities the data summarized above suggest that the air pollution level in Lucknow is on higher side. Lucknow has witnessed significant growth during last one & half decade and recorded similar trends of Air pollution to other cities in Northern Indian planes in India.

4. SOURCES OF POLLUTION IN LUCKNOW

Based on Spatial and Temporal GIS Based Emission Inventory of Air Pollutants and Green House Gases in Three Major Cities of Uttar Pradesh, the main sources of air pollution in Lucknow city are Vehicular (5%), Road dust (87%), Construction & Demolition activities, Industries (Point source & Areas source), Garbage burning (2%) & Agriculture waste burning (2%) etc. Data obtained from Continuous Ambient Air Quality Monitoring System (2018) at Nishatganj, Lucknow showed values of CO 2.43 (mg/m^3); O₃ 44.7 ($\mu\text{g}/\text{m}^3$); NO₂ 40.0($\mu\text{g}/\text{m}^3$); SO₂ 11.5 ($\mu\text{g}/\text{m}^3$); PM_{2.5} 95.0 ($\mu\text{g}/\text{m}^3$); and Benzene 2.28($\mu\text{g}/\text{m}^3$).

During 2001 to 2011 city recorded a growth of approximately 25 % population & 160% number of vehicles. The present review based on monitoring conducted in Lucknow identified particulate matter as main pollutant in the city. High traffic densities and abnormal meteorological factors adversely influenced Ambient Air Quality of Lucknow in winter. Degraded Air Quality has adverse effect on buildings, materials, Human health, Plants, historical monuments and material surface get degraded and decolorize due to air pollutants. Clean air is a "matter of right" and the steps are urgently required to improve air quality and also the steps require a multi prolonged, sustained and integrated approach including close monitoring of implementation. Hence a short term and long term action plan is an urgent need to control air Pollution of Lucknow city.

5. Short term & Long term Action Plan

(A) Vehicle emission control

(a) Long Term Action Plan: Reduce congestion

Sl. No	Action Points	Timeframe for implementation	Action Required to be Taken by Responsible Departments
i	Plying of Public transport for public transport including establishment of sufficient charging stations.	360 days	Transport Department

ii	Prepare plan for construction of expressways/bypasses to avoid congestion due to non-destined vehicles.	360 days	N.H.A.I. /PWD
iii	Construction of peripheral road around the city to avoid congestion.	360 days	N.H.A.I./PWD
iv	Arrangement of Multilevel Parking Facilities	360 days	Nagar Nigam/Development Authorities
vi	Development/Strengthening of Bike zone/Cycle zone at metro/railways/bus stations from where travelers hire bi-cycle to reach the destination.	360 days	Nagar Nigam/Development Authorities
vii	Initiate steps for retrofitting of particulate filters in diesel vehicles, when BS-VI fuels are available	360 days	Vehicle Manufacturing Companies/Ministry of Road Transport & Highways (MoRTH)
viii	Use of Bio-Ethanol in the city/urban transport system/waste to energy.	360 days	Transport Department

(b)Short Term Action Plan

Sl. No	Action Points	Timeframe for implementation	Action Required to be Taken by Responsible Departments
i	Launch extensive drive against polluting vehicles for ensuring strict compliance	As regular activity	R.T.O/Traffic Police
ii	Launch public awareness campaign for air pollution control, vehicle maintenance, minimizing use of personal vehicles, lane discipline, etc.	As regular activity	R.T.O/ Traffic Police
iii	Prevent parking of vehicles in the non-designated areas	As regular activity	Traffic Police/ Nagar Nigam
iv	Prepare & implement action plan to check fuel adulteration and random monitoring of fuel quality data	30 days	District Supply Officer/Oil companies

v	Prepare & implement plan for widening of roads and improvement of infrastructure for decongestion of road	90 days	Nagar Nigam
vi	Prepare plan for construction of expressways/bypasses to avoid congestion due to non-destined vehicles.	180 days	N.H.A.I. /PWD
vii	Steps for promoting battery operated vehicles including establishment of charging stations.	120 days	Transport Department/Nagar Nigam & Development Authorities
viii	Install weigh in motion bridges at the borders of cities/towns and States to prevent overloading of vehicles	180 days	Transport Department
ix	Synchronize traffic movements/Introduce intelligent traffic systems for lane-driving	180 days	Traffic Police
x	Installation of remote sensor based PUC system	180 days	Traffic Police

(B) Suspension of road dust and other fugitive emissions control

(a) Long Term Action Plan

Sl. No.	Action Points	Timeframe for implementation	Action Required to be Taken by Responsible Departments
i)	Implementation of maintaining at least 33% forest cover area in the city in master plan.	360 days	Nagar Nigam/LDA/Forest Department
ii)	All the canals/nullah's side roads should be brick lined. Proper plantation also carried out.	360 days	Irrigation Department/Forest department

(b) Short Term Action Plan

Sl. No.	Action Points	Timeframe for implementation	Action Required to be Taken by Responsible Departments
i)	Prepare plan for creation of green buffers along the traffic corridors. Plantation of specific types of species of	90 days	Forest Department/Nagar Nigam & Development

	plants which are helpful in pollution control.		Authorities
iii)	Maintain potholes free roads for free-flow of traffic	90 days & as regular activity afterwards.	Nagar Nigam/ Development Authorities
iv)	Introduce water fountains at major traffic intersection, wherever feasible	90 days	Nagar Nigam
v)	Greening of open areas, gardens, community places, Residential welfare associations/societies (RWAS), schools and housing societies	90 days	Forest Department
vi)	Blacktopping of metalled road including pavement of road shoulders	180 days	Nagar Nigam
vii)	Use of treated effluent of STPs in Pollution Control Measure such as watering of Plants, sprinkling for dust suppression purposes.	90 days	Nagar Nigam
viii)	Wall to Wall pavement for control of dust from road. Design the footpath pavement/tiles having capacity to grow grass in between.	180 days	Nagar Nigam

(C) Control of emissions from biomass/crop residue/garbage/municipal solid waste burning

Sl. No.	Action Points	Timeframe for implementation	Action Required to be Taken by Responsible Departments
i)	Launch extensive drive against open burning of bio-mass, crop residue, garbage, leaves, etc.	90 days	Nagar Nigam
ii)	Regular check and control of burning of municipal solid wastes Availability of fire extinguisher for control of fire in municipal solid waste and bio mass.		Nagar Nigam
iii)	Proper collection of horticulture waste (bio-mass) and its disposal following composting-cum-gardening approach		Nagar Nigam
iv)	Ensure ban on burning of agriculture waste and crop residues and its implementation	180 days	Agriculture Department & U.P. Pollution Control Board

v)	Door to Door collection of segregated waste by agency and then its disposal directly in plant without dumping it on land.	90 days	Nagar Nigam
vi)	Establishment of composting pits in Parks/ residential societies etc for management of biodegradable waste.	90 days	Nagar Nigam/LDA
vii)	No plot should be left open more than 02 years and planting of trees must be mandatory on vacant plots.	90 days	Nagar Nigam/LDA

(D) Control of industrial emissions

Sl. No.	Action Points	Timeframe for implementation	Action Required to be Taken by Responsible Departments
i)	Identification of brick kilns and their regular monitoring including use of designated fuel, and closure of unauthorized units. Adoption of cleaner technology like zigzag in brick kilns.	60 days	U.P. Pollution Control Board/ Nagar Nigam
ii)	Conversion of natural draft brick kilns to induced draft	120 days	U.P. Pollution Control Board
iii)	Monitoring of industrial emission including real time online monitoring through OCEMS (Online Continuous Emission Monitoring System) and live camera feed to take action against non-complying industrial units.	60 days, and thereafter, regular activity	U.P. Pollution Control Board
iv)	Bank guarantee should be taken for the compliance of conditions imposed in CTO/CTE for control of Environmental Pollution from industries. The bank guarantee shall be forfeited in case of any violation. Verification of these conditions to be carried out by UPPCB/selected Third Party Institutions/Quality control agencies etc.	60 days, and thereafter, regular activity	U.P. Pollution Control Board
v)	Shifting of Air polluting industries to conforming zone i.e., Aishbagh area & Tiwariganj Road, Plywood industries	360 days	UPPCB/DIC/UPSIDC/ District Administration
vi)	Installation of web cams and OCEMS in Grossly Polluting Industries.	60 days	U.P. Pollution Control Board

(E) Control of air pollution from constructions and demolition activities

Sl. No.	Action Points	Timeframe for implementation	Action Required to be Taken by Responsible Departments
i)	Enforcement of Construction & Demolition Rules 2016. Fine should be imposed on defaulters.	15 days , and thereafter, continue as regular activity	Urban Development/Development Authorities
ii)	Control measures for fugitive emissions from material handling, conveying and screening operations through water sprinkling, curtains, barriers and dust suppression units;		Urban Development/Development Authorities
iii)	Ensure carriage of construction material in closed/covered vessels.		Development authorities/ Regional Transport Department
iv)	Environmental aspects should be included during preparation of master plan for development of city.	Proposed Master Plan for Lucknow City 2021	Urban Development/Development Authorities
v)	Builders should leave 33% area for green belt in residential colonies. Plantation should be done as per Office order No. H16405/220/2018/02 dated 16.02.2018 available on website of the Board i.e., www.uppcb.com.	Within a reasonable timeframe	Urban Development/Development Authorities/ housing companies
vi)	All construction areas must be covered to avoid dispersion of particulate matter	30 days	Nagar Nigam /Development Authorities

(F) Other Steps to control Air Pollution**(a) Long Term Action Plan**

Sl. No.	Action Points	Timeframe for implementation	Action Required to be Taken by Responsible Departments
i)	Dead Bodies of Animals should be disposed through proper treatment facility like rendering plant etc	360 days	Nagar Nigam
ii)	Installation of CAAQMS by polluting units/institutions etc. under "Polluters Pay Principles".	360 days	U.P. Pollution Control Board

(b)Short Term Action Plan

Sl. No.	Action Points	Timeframe for implementation	Action Required to be Taken by Responsible Departments
i)	Air Quality Index to be calculated and disseminated to the people through website and other media (on maximum fortnightly basis for manually operated monitoring stations and real time basis for continuous monitoring stations).	15days, and thereafter, continue as regular activity	U.P. Pollution Control Board
ii)	Establish an Air Quality Management Division at SPCB/PCC Head Quarters to oversee air quality management activities in the State and interact with CPCB	30 days	U.P. Pollution Control Board
iii)	Set-up and publicize helpline in the city/town as well as SPCB/PCC HQ for complaints against reported non-compliance	30 days	U.P. Pollution Control Board
iv)	Engage with concerned authorities on continual basis for maximizing coverage of LPG/PNG for domestic and commercial cooking with target of 100% coverage	30 days	District Supply Officer
v)	Monitoring of DG sets and action against violations. Fine should be imposed on defaulters.	30 days	U.P. Pollution Control Board/ Nagar Nigam
vi)	Street vendors are to be controlled strictly in respect of removing their wastes and debris before leaving the site of operation	30 days	Nagar Nigam /Development Authorities
vii)	Complete ban on littering of streets with municipal solid wastes (MSW). Segregation & source collection at source of MSW to be implemented.	30 days	Nagar Nigam /Development Authorities
viii)	If Air Quality Index found severe or above grade, ensure availability of masks to public for protection.	90 days	Nagar Nigam