

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

RAJYA SABHA
UN-STARRED QUESTION NO. 1166
TO BE ANSWERED ON 05.12.2024

Artificial rain in Delhi

1166. SHRI VIKRAMJIT SINGH SAHNEY:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased state:

- (a) whether the Ministry has received any letters dated 30.08.2024, 10.10.2024, 23.10.2024, 19.11.2024 from GNCT of Delhi requesting for a meeting with the ministry officials and other stakeholders to assess the feasibility of artificial rain to combat pollution in Delhi;
- (b) if so, the details thereof;
- (c) whether Government has conducted any meeting or assessment to introduce artificial rain in Delhi to reduce air pollution and get better air quality index;
- (d) if so, details thereof, if not, reasons therefor; and
- (e) details of the steps taken by Government to reduce air pollution of Delhi for Winters of 2024?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI KIRTI VARDHAN SINGH)

(a) to (e):

D.O. letters dated 30.08.2024, 10.10.2024, 23.10.2024 and 19.11.2024 were received from Shri Gopal Rai, Hon'ble Minister Environment, Forest and Wildlife, Government of the National Capital Territory of Delhi (GNCTD) in this Ministry regarding the consideration of cloud seeding as an emergency measure to improve air quality in Delhi during the winter months.

In this regard, expert opinions were sought from India Meteorological Department (IMD), Commission for Air Quality Management in NCR and Adjoining areas (CAQM) and Central Pollution Control Board (CPCB) regarding feasibility of cloud seeding for artificial rainfall in the Delhi during winter. Expert opinion received is as below:

Winter clouds in the region are primarily formed due to Western Disturbances (WD), which are short-lived and travel from West to East. When low clouds form due to WDs, they typically result in natural rainfall over Northwest India, eliminating the need for cloud seeding. High- altitude clouds, which are typically at elevations above 5-6 km, cannot be seeded due to aircraft limitations. Furthermore, effective cloud seeding requires specific cloud conditions, which are

generally absent during Delhi's cold and dry winter months. Even if suitable clouds were present, the dry atmospheric layer beneath them could cause any developed precipitation to evaporate before reaching the surface. Additionally, concerns about the uncertainties, efficacy, and, potential adverse effects of cloud seeding chemicals remain.

The aforesaid expert opinion was shared with Delhi Govt. vide this Ministry's D.O. letter dated 30.10.2024. Further, Delhi Pollution Control Committee (DPCC) was requested, vide D.O. letter dated 23.09.2024, to submit a more detailed and specific proposal, which can be evaluated upon receipt.

A meeting with concerned stakeholders and experts was convened by CAQM on 27.11.2024 for exploring the feasibility of the cloud seeding to tackle the air pollution crisis in Delhi.

Air pollution in Delhi and NCR is a collective result of multiple factors including high level of anthropogenic activities in the high-density populated areas in NCR, arising from various sectors viz. Vehicular Pollution, Industrial Pollution, Dust from Construction and Demolition activities, Road and Open Areas Dust, Biomass Burning, Municipal Solid Waste burning, Fires in Landfills and air pollution from dispersed sources, etc. During post-monsoon and winter months, lower temperature, lower mixing heights, inversion conditions and stagnant winds lead to trapping of the pollutants resulting in high pollution in the region. This is further aggravated due to the emissions from episodic events like stubble burning, firecrackers etc.

Various measures have been taken by the Government to reduce Air Pollution in Delhi during the ongoing Winter Season, which are provided in **Annexure I**.

Steps taken for abatement of Air Pollution in Delhi during Winter Season 2024**1. Air Quality Monitoring and Network:**

- Ambient Air Quality Network: The country has a network of 1524 ambient air quality monitoring stations (558 continuous and 966 manual) covering 550 cities in the country including Delhi and NCR cities.
- A centralized air quality monitoring portal is operated by CPCB wherein, tracking of various information such as hourly PM concentrations, Live Air Quality Data of Monitoring stations and Live Air Quality Index is being carried out.
- Daily AQI Bulletin is published on CPCB website as well as social media platforms giving AQI information for cities across India. Various campaigns as well as informative posts related to air pollution, firecrackers, vehicular pollution, stubble burning, sustainable lifestyle, etc. are also posted regularly on social media platforms.
- CPCB issues a daily report comprising of AQI of Delhi and NCR towns, comparative AQI status, year-wise trends of PM concentration, hotspots for the day, stubble burning cases, contribution of stubble burning and meteorological forecast. This report is prepared based on the inputs available from various sources such as IMD, SAFAR, IARI, etc., and disseminated through CPCB website.

2. Regulatory Actions in Delhi-NCR:

- Graded Response Action Plan (GRAP) was formulated for Delhi-NCR to tackle the issue of sudden rise in air pollution levels which was notified by MoEF&CC in January 2017 on recommendation of CPCB for implementation. A comprehensive review of actions listed under GRAP was carried out by CPCB in 2020 based on actions taken and improvement observed in air quality in recent years. Based on the inputs given by CPCB, the revised GRAP was published by Commission for Air Quality Management in NCR and adjoining areas (CAQM) and further directions were issued for its implementation. Actions listed for different AQI levels under GRAP are invoked from time to time by a sub-committee constituted by CAQM, having CPCB as a member.
- For air pollution abatement and control in Delhi / NCR, the Commission for Air Quality Management in NCR and Adjoining Areas has devised a comprehensive policy for air pollution abatement in NCR in July 2022, stipulating sector-specific action points quantifying targets along with timelines and implementation plan by various agencies in NCR States. The policy framework details sector-wise interventions, quantified targets and timelines for various sectors contributing to air pollution.
- Directions prescribing measures for control of pollution from various sources such as implementation of RECD system/ dual fuel kits in DG sets, use of cleaner fuels in industries, shift to EV/ CNG/ BS VI diesel fuel in transport sector, implementation of dust control measures at C&D sites etc., have been issued by CAQM, wherein CPCB is also a member and provided technical inputs to CAQM. Further, policy to curb air pollution in NCR has also been formulated.

3. Measures for control of emissions from Stubble Burning in Delhi-NCR:

- Ministry of Agriculture & Farmers Welfare (MoA&FW) in 2018 launched scheme for providing subsidy for purchase of crop residue management machinery and establishment of custom hiring centres (CHCs) in NCT of Delhi and the States of Punjab, Haryana and Uttar Pradesh for in-situ management of paddy straw. During the

period from 2018 to 2024-25 (till 15.11.2024), a total of Rs. 3623.45 crores have been released (Punjab - Rs. 1681.45 crores, Haryana - Rs. 1081.71 crores, Uttar Pradesh - Rs. 763.67 crores, NCT of Delhi - Rs. 6.05 Crores and ICAR-Rs. 83.35 crores). The states have distributed more than 3.00 lakh machines to the individual farmers and to more than 40000 CHCs in these 4 States, which also include more than 4500 Balers & Rakes which are used for collection of straw in the form of bales for further ex-situ utilization. MoA&FW in 2023 revised guidelines under the scheme to support establishment of crop residue/paddy straw supply chain, by providing financial assistance on the capital cost of machinery and equipment.

- Based on the deliberations and discussions held in series of meetings with the State Governments of Punjab, Haryana, UP, Rajasthan, Government of NCT of Delhi, State Pollution Control Boards of NCR States and Delhi Pollution Control Committee (DPCC) and various other stakeholders viz. ISRO, ICAR, Indian Agricultural Research Institute (IARI), CAQM has provided a Framework to the states concerned for control / elimination of crop residue burning and directed these to draw up detailed state-specific action plans based on the major contours of the framework.
- An Inter-Ministerial Committee has been constituted under the chairmanship of Special Secretary, MoAFW for convergence of scheme of Schemes/Initiatives supporting Ex-situ management of paddy straw.
- CAQM has issued directions permitting use of PNG or biomass as industrial fuel in NCR except Delhi where only PNG is permitted as industrial fuel. CAQM has also issued directions for co-firing of 5-10% biomass with coal in thermal power plants located within 300 kms of Delhi, and, in captive power plants of industrial units located in NCR.
- Directions issued by CAQM to State governments of Punjab, Haryana and Uttar Pradesh to strictly and effectively implement revised action plan to eliminate and control stubble burning.
- Based on the framework advised by CAQM through Direction dated 10.06.2021 to the concerned State Governments of Punjab, Haryana, Uttar Pradesh, Rajasthan and Government of NCT of Delhi to prepare state specific detailed, monitorable action plans based on learnings from the years 2021, 2022 and 2023. Action plans were reviewed, updated and finalised by the all concerned State Governments for the year 2024. Accordingly, a statutory direction for strict implementation of the framework and revised action plan for prevention and control of paddy stubble burning during the year 2024, to eliminate the practice through strict enforcement was issued to the respective States on 12.04.2024.
- Central Pollution Control Board (CPCB) has framed Guidelines for grant of one-time financial support under Environment Protection Charge funds for establishment of pelletization and Torrefaction plants to promote utilisation of paddy straw. In case of setting up of palletisation plant, Rs. 28 lakhs per tonne per hour (TPH), or 40% of the capital cost considered for plant and machinery of a 01 TPH plant, whichever is lower, is provided as one-time financial assistance with a maximum total financial support of Rs. 1.4 crore per proposal. In case of setting up of torrefaction plants, Rs. 56 lakhs per TPH, or 40% of the capital cost considered for plant and machinery of a 01 TPH plant, whichever is lower, is provided as one-time financial assistance with a maximum total financial support of Rs. 2.8 crore per proposal.

- A total of 17 applications for establishment of pelletization and Torrefaction plants under the above mentioned CPCB Guidelines have been sanctioned so far, out of which 02 plants are not coming up. Pellet production capacity of 15 sanctioned plants is 2.07 lakh tonne/annum. These plants are expected to utilize 2.70 lakh tonne of paddy straw per annum.
- During stubble burning season of 2023 (10.11.23 onwards), 33 scientists of CPCB were deployed as flying squads for assisting CAQM in NCR and adjoining areas for intensifying monitoring and enforcement actions towards prevention of paddy stubble burning incidents in 22 districts of Punjab and 11 districts of Haryana. The flying squads coordinated with state govt/nodal officers//officers from respective districts and sent their daily report to CAQM.
- CPCB has deployed 26 teams (in 16 districts of Punjab and 10 districts of Haryana) for the period 01st October - 30th November, 2024 to intensify monitoring and enforcement actions regarding stubble burning. These teams are coordinating with concerned authorities/officers deployed at the district level by the State Govt. and reporting to CAQM.
- MoA&FW had deputed 31 Central Teams, which have conducted Quality Survey work w.e.f. 1-15th September, 2024 in the States of Punjab, Haryana and Uttar Pradesh and the Teams had visited 275 manufacturers and conducted quality audit of 910 agricultural machines. Further, 10 Central Teams have conducted survey on utilization of machines in States of Punjab and Haryana during 15th October-31st October 2024. A Team comprising members from DA&FW, CAQM and ICAR and other stakeholders had visited to the State of Punjab to witness the activities of paddy straw management on 14th November, 2024.

4. Measures for control of vehicular emissions:

- Directions issued by CAQM to Government of NCT of Delhi and State Governments of Haryana, Rajasthan and Uttar Pradesh for migration of public transport services, especially buses in NCR to cleaner modes. All state govt. bus services between Delhi and any city/town in the states of Haryana, Rajasthan and Uttar Pradesh to be operated only through EV /CNG/BS-VI diesel w.e.f. 01.11.2023.
- Installation of VRS system at 3256 petrol pumps in Delhi-NCR in compliance with orders of Hon'ble Supreme Court and Hon'ble NGT.

5. Measures for control of industrial emission:

- Installation of Online Continuous Emission Monitoring System (OCEMS) in red category air polluting industries in Delhi-NCR
- Industrial units in Delhi have shifted to PNG/cleaner fuels and, operational units in NCR have shifted to PNG/Biomass.
- Directions issued for conversion of brick kilns to zig-zag technology in Delhi and NCR. A total of 3003 out of 4608 brick kilns have converted to zig-zag technology including 1762 kilns in Haryana, 1024 kilns in U.P. and 217 kilns in Rajasthan. Brick kilns not converted to zig-zag technology are not permitted to operate.
- In order to control DG set emissions, CPCB is also funding retrofitment/ upgradation of DG sets in Govt. hospitals in Delhi-NCR and guidelines have been issued in this regard.
- Ban on use of pet coke and furnace oil as fuel in NCR States since October 24, 2017.
- An approved fuel list is in force in Delhi-NCR w.e.f. 01.01.2023. Industries operating on only PNG or biomass are permitted in NCR, except for specific requirement of other fuels by specific industries owing to technical, technological and process requirements.

Out of 7759 fuel based industries in NCR, 7449 have been shifted to approved fuels, with the balance 310 industries under closure.

- Stringent PM emission norms for biomass based boilers have been prescribed for compliance in NCR.

6. Construction & Demolition (C&D) Waste:

- Directions issued to DPCC and NCR SPCBs to enforce installation of anti-smog guns and other dust control measures at C&D sites.
- Directions issued for setting up of a “Dust Control and Management Cell” by road owning/ maintaining/ construction agencies for monitoring and effective implementation of dust control measures in the NCR.
- Online monitoring mechanism (through web portal) introduced for monitoring compliance of dust mitigation measures for construction sites.

7. Close Monitoring & Ground level implementation in Delhi-NCR:

- 40 teams have been deputed by CPCB since December 2021, to assist CAQM, for conducting incognito inspections of air polluting industries, C&D sites, DG sets in Delhi-NCR to check implementation status of pollution control measures and compliance of other provisions of the Air (P&CP) Act,1981. A total of 18976 units/ entities/ projects have been inspected as on Nov 08, 2024.

8. National Clean Air Programme:

- There are total 06 Non-attainment cities (NACs) in Delhi NCR, out of which 03 cities – Delhi, Alwar and Noida are funded under National Clean Air Programme (NCAP) and 03 cities- Ghaziabad, Meerut and Faridabad are funded under Fifteenth Finance Commission (XV-FC).
- City Action Plans for improvement in air quality have been rolled out for implementation in all the 06 identified cities.
- During 2019-20 to 2024-25, a total budget of Rs 476.04 Cr has been released for Delhi NCR cities, out of which Rs, 334.53 (70%) have been utilized. A budget of Rs 42.69 Cr has been released for Delhi during the said period, out of which Rs. 13.56 Cr (32%) have been utilized.
