

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

RAJYA SABHA
STARRED QUESTION NO. 260
TO BE ANSWERED ON 19.12.2024

Health impact of air pollution

260. SHRI SHAKTISINH GOHIL:

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

- (a) Government's assessment of the health impact of air pollution in urban areas over the last three years, including the total number of deaths attributed to it;
- (b) the specific measures taken to address the rising cases of respiratory illnesses caused by air pollution;
- (c) the number of cities that have implemented air quality monitoring systems and the status of their performance and data transparency;
- (d) the plans that aim to improve air quality in cities with million plus population, along with their achievements; and
- (e) whether the smart city mission could result in improving the air quality?

ANSWER

MINISTER FOR ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI BHUPENDER YADAV)

(a) to (e): A Statement is laid on the table of the House.

STATEMENT REFERRED TO IN REPLY OF PARA (a) to (e) OF RAJYA SABHA STARRED QUESTION NO. 260 TO BE ANSWERED ON 19.12.2024 RAISED BY SHRI SHAKTISINH GOHIL TITLED “HEALTH IMPACT OF AIR POLLUTION”

(a): There are several studies conducted by different organizations on the health impact of air pollution, which is one of the many factors affecting respiratory ailments and associated diseases. However, there is no conclusive data available to establish a direct correlation of deaths due to air pollution. Health is affected by cumulative impact of a number of factors apart from the environment, which include food habits, occupational habits, socio-economic status, medical history, immunity, heredity, etc., of the individuals.

(b)&(d): National Clean Air Programme (NCAP) was launched by Ministry of Environment, Forest and Climate Change (MoEFCC) in January 2019 with an aim to improve air quality in 130 cities (non-attainment cities and Million-Plus cities) in 24 States/UTs through implementation of National, State and City level clean air action plans. NCAP envisages reduction in PM10 levels up to 40% or achievement of national standards (60 microgram/cubic meter) by 2025-26.

NCAP emphasises on implementation of City Action Plans (CAPs) through the convergence of resources from various Central Government schemes such as Swachh Bharat Mission (Urban), AMRUT, Smart City Mission, SATAT, and Nagar Van Yojana, as well as resources from State Govts./ UT administration and agencies like Municipal Corporations and Urban Development authorities.

As per the annual performance assessment carried out for 2023-24, 97 cities out of 130 cities have shown improvement in air quality in terms of PM10 concentrations in FY 2023-24 as compared to base levels of 2017-18. 55 cities have achieved reduction of 20% and above in PM10 levels in 2023-24 with respect to the levels of 2017-18. Further, 18 cities conform to national ambient air quality standards in terms of Particulate Matter concentrations during FY 2023-24.

Government launched National Air Quality Index (AQI) in the year 2015, which transforms complex air quality data of various pollutants into single number for effective communication of air quality status. There are six AQI categories namely, Good, Satisfactory, Moderately Polluted, Poor, Very Poor and Severe and are based on ambient concentration of air pollutants and their likely health impacts. Details of Air Quality Index and its associated health impacts are provided at **Annexure I**. Daily AQI bulletin for 289 cities is disseminated through CPCB website and SAMEER app.

Further, a Graded Response Action Plan (GRAP) has been prepared which identifies graded measures and implementing agencies in response to various AQI categories namely, Poor, Very Poor, Severe, and Severe+ as an emergency response. GRAP is implemented in Delhi NCR by Commission for Air Quality Management in NCR and Adjoining Areas based on AQI forecast provided by IMD for control of air pollution in Delhi-NCR during winter months. Further, GRAP and Emergency response plan has been prepared by 130 cities under NCAP to implement response measures against the poor air quality.

Other measures taken by the Government for air quality management are placed at **Annexure II**.

48 Million-Plus cities/Urban Agglomeration have been allocated Rs. 16,905.39 crore as a performance based incentive grant under XV Finance Commission Million-Plus City Challenge Fund (MPCCF) for the period FY 2020-21 to 2025-26 for taking air quality improvement measures through the implementation of City Action Plans. An amount of Rs. 9595.6 crore has been provided to these cities till FY 2023-24.

In addition, 3 Million-Plus cities have been allocated Rs. 366.39 crore as a performance based grant under Control of Pollution Scheme of MoEF&CC for implementing air quality improvement measures through the implementation of City Action Plan for the period FY 2019-20 to 2025-26. An amount of Rs 166.37 crore has been provided to these cities till FY 2023-24.

40 Million-Plus cities have shown improvement of air quality in terms of PM10 levels in 2023-24 with respect to the year 2017-18. Details of air quality improvement of Million-Plus cities are provided at **Annexure III**.

Ministry of Health and Family Welfare (MoHFW) have developed “National Health Adaptation Plan for Diseases due to Air Pollution”. Further, all States have developed State level Adaptation Plan on Air Pollution and Health under State Action Plan on Climate Change and Human Health (SAPCCHH). National Programme on Climate Change and Human Health (NPCCHH) conducts surveillance on air pollution related respiratory illness through the network of 232 sentinel surveillance sites spanning 228 cities in 30 States/UTs.

(c): Central Pollution Control Board (CPCB) in coordination with State Pollution Control Boards (SPCBs)/ Pollution Control Committees (PCCs) has established 1524 Ambient Air Monitoring Stations in 550 cities in the country to monitoring air quality in these cities.

Guidelines for measurement of Ambient Air Pollutants through manual and continuous monitoring systems have been published by CPCB and are followed by SPCB/PCCs. These guidelines contain Standard Operating Procedures (SOP) for sampling & analysis and calibration along with instruments/equipment required for this purpose. The data generated after sampling & analysis is fed to the centralized web-portal of CPCB by respective SPCB/PCC. In case of real-time monitoring, data is transmitted directly to CPCB server. SAMEER app available in public domain is also used to track the data generated at any point of time.

(e): Smart Cities Mission launched in June 2015 aims to enhance the quality of life in 100 selected cities by providing efficient services, robust infrastructure, and sustainable environment. Mission has an allocated Government of India budget of ₹ 48,000 crore for the 100 Cities.

Implementation of infrastructure and public transportation projects such as Integrated Command and Control Centre (ICCC), Intelligent Traffic Management System (ITMS), smart roads, electric buses, E-charging stations, parks, gardens, green spaces and creation of footpath contributes for reduction of air pollution in these smart cities.

Details of Air Quality Index and associated health impacts

AQI values and corresponding ambient concentrations (health breakpoints) for the identified eight pollutants are as follows:

| AQI Category, Pollutants and Health Breakpoints | | | | | | | | |
|---|-----------------|-----------------|-----------------|------------------|----------------|------------------|-------------------|------------------|
| AQI Category (Range) | PM10 24-hr | PM2.5 24-hr | NO2 24-hr | O3 8-hr | CO 8-hr(mg/m) | SO2 24-hr | NH3 24-hr | Pb 24-hr |
| Good (0-50) | 0-50 | 0-30 | 0-40 | 0-50 | 0-1.0 | 0-40 | 0-200 | 0-0.5 |
| Satisfactory (51-100) | 51-100 | 31-60 | 41-80 | 51-100 | 1.1-2.0 | 41-80 | 201-400 | 0.5 – 1.0 |
| Moderately polluted (101-200) | 101-250 | 61-90 | 81-180 | 101-168 | 2.1- 10 | 81-380 | 401-800 | 1.1-2.0 |
| Poor (201-300) | 251- 350 | 91- 120 | 181- 280 | 169- 208 | 10-17 | 381- 800 | 801- 1200 | 2.1- 3.0 |
| Very poor (301-400) | 351- 430 | 121- 250 | 281- 400 | 209- 748* | 17-34 | 801- 1600 | 1200- 1800 | 3.1- 3.5 |
| Severe (401-500) | 430 + | 250+ | 400+ | 748+* | 34+ | 1600+ | 1800+ | 3.5+ |

*One hourly monitoring (for mathematical calculations only)

| AQI | Associated Health Impacts |
|-------------------------------|---|
| Good (0–50*) | Minimal Impact |
| Satisfactory (51–100*) | May cause minor breathing discomfort to sensitive people. |
| Moderately polluted (101–200) | May cause breathing discomfort to people with lung disease such as asthma, and discomfort to people with heart disease, children and older adults. |
| Poor (201–300) | May cause breathing discomfort to people on prolonged exposure, and discomfort to people with heart disease |
| Very Poor (301–400) | May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases. |
| Severe (401-500) | May cause respiratory impact even on healthy people, and serious health impacts on people with lung/heart disease. The health impacts may be experienced even during light physical activity. |

Measures taken by the Government for air quality management

- i. Emission standards for more than 80 industries have been notified under Environment (Protection) Rules, 1986
- ii. Emission standards recently notified/revised:
 - a) Thermal power plants
 - b) Diesel/petrol/CNG generator sets
 - c) Industrial boilers
 - d) Lime Kilns
 - e) Brick kilns and conversion of zig-zag technology
 - f) Calcinated petcoke industry
 - g) Hot mix plants
- iii. Leapfrogging to Bharat Stage-VI (BS-VI) emissions norms from 1st April 2020
- iv. Vehicle Scrapping Policy, Rules for Registered Vehicle Scrapping Facilities and Automated Testing Stations by MoRTH
- v. Waste management rules for solid waste, plastic waste, hazardous waste, e-waste, battery waste, biomedical waste, 100% ash utilisation by Thermal Power Plants
- vi. Market-based Extended Producer Responsibility (EPR) regulations introduced for waste categories, viz. plastic packaging, e-waste, battery waste, waste tyres & used oil
- vii. 12 identified Single-Use Plastics (SUP) having high littering potential and low utility were banned from 1st July, 2022
- viii. Mandate for utilisation of minimum 5% of crop residue along with coal (pellets/brickettes) in thermal power plants in NCR and adjoining areas
- ix. Categorization of industrial areas as critically and Severely Polluted Areas (CPAs/SPAs) based on Comprehensive Environmental Pollution Index (CEPI).

Annexure III

Improvement in Air Quality in terms of PM10 levels in 2023-24 with respect to 2017-2018

| S.No. | City | PM10 concentrations in 2017-18 ($\mu\text{g}/\text{m}^3$) (Annual Avg.) | PM10 concentrations in 2023-24 ($\mu\text{g}/\text{m}^3$) (Annual Avg.) | Percentage reduction in PM10 concentrations in 2023-24 with respect to the year 2017-18 (%) |
|-------|------------|---|---|---|
| 1 | Varanasi | 230 | 73 | 68 |
| 2 | Dhanbad | 315 | 138 | 56 |
| 3 | Trichy | 88 | 47 | 47 |
| 4 | Lucknow | 253 | 137 | 46 |
| 5 | Kanpur | 227 | 125 | 45 |
| 6 | Agra | 202 | 116 | 43 |
| 7 | Mumbai | 161 | 94 | 42 |
| 8 | Ahmedabad | 164 | 98 | 40 |
| 9 | Ghaziabad | 285 | 172 | 40 |
| 10 | Rajkot | 150 | 92 | 39 |
| 11 | Amritsar | 189 | 119 | 37 |
| 12 | Kolkata | 147 | 94 | 36 |
| 13 | Jodhpur | 189 | 124 | 34 |
| 14 | Vijayawada | 91 | 61 | 33 |
| 15 | Vadodara | 133 | 95 | 29 |
| 16 | Srinagar | 132** | 96 | 27 |
| 17 | Allahabad | 169 | 124 | 27 |
| 18 | Asansol | 147 | 108 | 27 |
| 19 | Hyderabad | 110 | 81 | 26 |
| 20 | Ranchi | 141 | 107 | 24 |
| 21 | Bangalore | 92 | 70 | 24 |
| 22 | Bhilai | 86 | 68 | 21 |
| 23 | Surat | 130 | 103 | 21 |
| 24 | Thane | 138 | 111 | 20 |
| 25 | Howrah | 139 | 111 | 20 |
| 26 | Faridabad | 229** | 190 | 17 |
| 27 | Delhi | 241 | 208 | 14 |
| 28 | Jaipur | 172 | 148 | 14 |
| 29 | Nashik | 82 | 72 | 12 |
| 30 | Kota | 139 | 124 | 11 |
| 31 | Jabalpur | 101 | 91 | 10 |
| 32 | Nagpur | 100 | 94 | 6 |

| S.No. | City | PM10 concentrations in 2017-18 ($\mu\text{g}/\text{m}^3$) (Annual Avg.) | PM10 concentrations in 2023-24 ($\mu\text{g}/\text{m}^3$) (Annual Avg.) | Percentage reduction in PM10 concentrations in 2023-24 with respect to the year 2017-18 (%) |
|-------|----------------|---|---|---|
| 33 | Madurai | 72 | 68 | 6 |
| 34 | Meerut | 159 | 149 | 6 |
| 35 | Badlapur | 160 | 152 | 5 |
| 36 | Chennai | 66 | 63 | 5 |
| 37 | Jamshedpur | 135 | 130 | 4 |
| 38 | Pune | 102 | 98 | 4 |
| 39 | Ludhiana | 168 | 161 | 4 |
| 40 | Ulhasnagar | 153 | 149 | 3 |
| 41 | Bhopal | 112 | 113 | -1 |
| 42 | Chandigarh | 114 | 116 | -2 |
| 43 | Patna | 172 | 178 | -3 |
| 44 | Gwalior | 126 | 136 | -8 |
| 45 | Raipur | 70 | 76 | -9 |
| 46 | Navi Mumbai | 88 | 98 | -11 |
| 47 | Barrackpore | 86 | 99 | -15 |
| 48 | Indore | 82 | 99 | -21 |
| 49 | Vasai-Virar | 99 | 125 | -26 |
| 50 | Aurangabad | 75 | 98 | -31 |
| 51 | Vishakhapatnam | 76 | 120 | -58 |

** PM10 levels in the FY 2017-18 for Faridabad and Srinagar are not available. PM10 levels of FY 2020-21 for Faridabad and PM10 levels of FY 2018-19 for Srinagar have been considered as a baseline.