

NATIONAL CLEAN AIR PROGRAMME (NCAP)-INDIA

1. BACKGROUND

1.1 India is committed to clean environment and pollution free air and water. In fact, it is mandated in our constitution. India's commitments and obligations to conservation and protection of environment within the ambit of targeted goals on environmental sustainability under the Sustainable Development Goals (SDGs) is manifested in the fact that several administrative and regulatory measures including a separate statute on air and water pollution are under implementation since long. The Air (Prevention and Control of Pollution) Act, 1981, was enacted under Art. 253 of the Constitution to implement the decisions taken at the United Nations Conference on Human Environment held at Stockholm in June 1972, in which India participated. Sustainable development, in terms of enhancement of human well-being, is an integral part of India's development philosophy.

1.2 However, a vast country and an emerging economy like India, face enormous challenges with its burgeoning population and widespread poverty, in meeting its various other significant commitments associated with poverty and hunger eradication under the SDGs. India has been going through a phase of accelerated industrial activities for the past three decades. The associated growth in terms of industrialization and urbanization has led to manifold increase in pollution issues more specifically air pollution issues.

1.3 In recent years, medium and small towns and cities have also witnessed spurt in pollution thus getting fast reflected in the non-attainment cities of India. Air pollution has increasingly been becoming a serious concern, predominantly for health of the people. The reported perplexing statistics in various international reports, drawing correlation of air pollution with various aggravated figures on health, without validation on Indian population further complicates the issues by creating a flawed public perception.

1.4 Air pollution emission issues are associated with many sectors which inter-alia include power, transport, industry, residential, construction, and agriculture. The impact of air pollution is not limited to health but it gets extended to agriculture and general well-being of human, floral and faunal population. Furthermore, since air pollution is not a localized phenomenon, the effect is felt in cities and towns far away from the source. Thus creating the need of inter-state and inter-city coordination in addition to multi-sectoral synchronisation. While the problem of air pollution is mainly urban centric, studies shows the regional scale pollution, which is more concentrated in entire Indo-Gangetic plains of India and more industrialized states. Incidences of episodic air pollution during winters in Delhi NCR in recent years has attracted

significant media attention thus bringing the entire issue of air pollution under regular public scrutiny.

1.5 In order to address the issue, Government has undertaken many significant steps which *inter-alia* include notification of National Ambient Air Quality Standards and sector specific emission and effluent standards for industries; setting up of monitoring network for assessment of ambient air quality; introduction of cleaner gaseous fuels like CNG, LPG etc and ethanol blending; launching of National Air Quality Index (AQI); universalization of BS-IV for vehicles by 2017; leapfrogging from BS-IV to BS-VI standards for vehicles by 1st April, 2020; banning of burning of biomass; promotion of public transport network; Pollution Under Control Certificate; issuance of directions under Air (Prevention and Control of Pollution) Act, 1981; installation of on-line continuous (24x7) monitoring devices by 17 highly polluting industrial sectors; ban on bursting of sound emitting crackers between 10 PM to 6 AM; notification of graded response action plan for Delhi and NCR identifying source wise actions for various levels of air pollution, etc.

1.6 With these recent policy interventions, air quality has purportedly shown some minor improvement in some major cities in recent time which as of now cannot be called as trend. This is not sufficient and higher level of focused time bound initiatives at both city and rural level now appear obligatory to address the issue in comprehensive manner at national level. It is in this context, the need for a **National Clean Air Programme (NCAP)-India** as national level strategies for reduction in air pollution levels at both regional and urban scales is felt.

2. GOAL

2.1 Goal of NCAP is to meet the prescribed annual average ambient air quality standards at all locations in the country in a stipulated timeframe.

3. OBJECTIVES

- 3.1 To augment and evolve effective and proficient ambient air quality monitoring network across the country for ensuring comprehensive and reliable database
- 3.2 To have efficient data dissemination and public outreach mechanism for timely measures for prevention and mitigation of air pollution and for inclusive public participation in both planning and implementation of the programmes and policies of government on air pollution
- 3.3 To have feasible management plan for prevention, control and abatement of air pollution.

4. APPROACH

4.1 Collaborative, Multi-scale and Cross-Sectoral Coordination between relevant Central Ministries, State Government and local bodies.

4.2 Focus on no Regret Measures, Participatory and Disciplined approach

5. GOVERNMENT INITIATIVES

5.1 National Air Quality Monitoring Programme

5.1.1 Government is executing a nation-wide programme of ambient air quality monitoring known as National Air Quality Monitoring Programme (NAMP). The network consists of Six hundred and ninety-one (691) manual operating stations covering Three Hundred and three (303) cities/towns in twenty-nine (29) states and six (6) Union Territories of the country. Under NAMP, four air pollutants viz. Sulphur Dioxide (SO₂), Oxides of Nitrogen as NO₂, Suspended Particulate Matter (PM₁₀) and Fine Particulate Matter (PM_{2.5}) have been identified for regular monitoring at all the locations. In addition, there are hundred and one (101) real-time Continuous Ambient Air Quality Monitoring stations (CAAQMS) in 57 cities monitoring 08 pollutants viz. PM₁₀, PM_{2.5}, SO₂, NO_x, ammonia (NH₃), CO, ozone (O₃) and benzene. PM₁₀ are inhalable coarse particles, which are particles with a diameter between 2.5 and 10 micrometers (µm) and PM_{2.5} are fine particles with a diameter of 2.5 µm or less. Particulates are the deadliest form of air pollutant due to their ability to penetrate deep into the lungs and blood streams unfiltered. The smaller PM_{2.5} are particularly deadly as it can penetrate deeper into the lungs.

5.1.2 The objectives of the NAMP are (i) to determine status and trends of ambient air quality; (ii) to ascertain whether the prescribed ambient air quality standards are violated; (iii) to Identify Non-attainment Cities; (iv) to obtain the knowledge and understanding necessary for developing preventive and corrective measures; and (v) to understand the natural cleansing process undergoing in the environment through pollution dilution, dispersion, wind based movement, dry deposition, precipitation and chemical transformation of pollutants generated.

5.1.3 The monitoring of meteorological parameters such as wind speed and wind direction, relative humidity (RH) and temperature were also integrated with the monitoring of air quality. The monitoring of pollutants is carried out for 24 hours (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter) with a frequency of twice a week, to have one hundred and four (104) observations in a year. The monitoring is being carried out with the help of Central Pollution Control Board (CPCB); State Pollution Control Boards (SPCB); Pollution Control Committees (PCC); National Environmental Engineering Research Institute (NEERI), Nagpur. CPCB co-ordinates with these

agencies to ensure the uniformity, consistency of air quality data and provides technical and financial support to them for operating the monitoring stations. NAMP is being operated through various monitoring agencies. Large number of personnel and equipment are involved in the sampling, chemical analyses, data reporting etc. It increases the probability of variation and personnel biases reflecting in the data, hence it is pertinent to mention that these data be treated as indicative rather than absolute. State and city-wise distribution of operating stations under NAMP and their location may be referred at **Annexure I**.

5.2 National Ambient Air Quality Standards (NAAQS)

5.2.1 Ambient air quality refers to the condition or quality of air surrounding us in the outdoors. National Ambient Air Quality Standards are the standards for ambient air quality with reference to various identified pollutant notified by the Central Pollution Control Board under the Air (Prevention and Control of Pollution) Act, 1981. Major objectives of NAAQS are (i) to indicate necessary air quality levels and appropriate margins required to ensure the protection of vegetation, health and property, (ii) to provide a uniform yardstick for assessment of air quality at the national level, and (iii) to indicate the extent and need of monitoring programme. *Annual standards are basically Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at a uniform interval and 24 hourly 08 hourly or 01 hourly monitored values, as applicable shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.* The NAAQS notified as on November 2009 is at **Annexure II**.

5.2.2 In addition to above, MoEF&CC through CPCB has notified 118 emission/effluent standards for 122 different sectors of industries, besides 32 general standards for ambient air. Installation of on-line continuous (24x7) monitoring devices by 17 major polluting industries has been made mandatory.

5.3 National Air Quality index (AQI)

5.3.1 AQI was launched by the Prime Minister in April, 2015 starting with 14 cities and now extended to 57 cities. Air Quality Index is a tool for effective communication of air quality status to people in terms, which are easy to understand. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour. There are six AQI categories, namely Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (known as

health breakpoints). AQ sub-index and health breakpoints are evolved for eight pollutants (PM10, PM2.5, NO2, SO2, CO, O3, NH3, and Pb) for which short-term (upto 24-hours) National Ambient Air Quality Standards are prescribed. Based on the measured ambient concentrations of a pollutant, sub-index is calculated, which is a linear function of concentration (e.g. the sub-index for PM2.5 will be 51 at concentration 31 µg/m³, 100 at concentration 60 µg/m³, and 75 at concentration of 45 µg/m³). The worst sub-index determines the overall AQI. AQI categories and health breakpoints for the eight pollutants are at **Annexure III**.

5.4 Forty-two Action Point

5.4.1 Central Pollution Control Board (CPCB) has issued a comprehensive set of directions under section 18 (1) (b) of Air (Prevention and Control of Pollution) Act, 1986 for implementation of forty-two (42) measures to mitigate air pollution in major cities including Delhi and NCR comprising of action points to counter air pollution which include control and mitigation measures related to vehicular emissions, re-suspension of road dust and other fugitive emissions, bio-mass/municipal solid waste burning, industrial pollution, construction and demolition activities, and other general steps. Directions containing 42 action point which was issued initially for implementation in NCR was subsequently extended to State Boards for implementation in other non-attainment cities. The copy of the direction is at **Annexure IV**.

5.4.2 In addition regular specific directions are being issued to various authorities in all 22 districts in NCR i.e. to Municipal Commissioners for road dust, garbage burning; to Superintendent of Police for Effective movement of traffic at busy intersections; to Director (Agriculture) in NCR States & Punjab for Stubble burning.

5.5 Environment Pollution (Prevention and Control) Authority (EPCA)

5.5.1 Environment Pollution (Prevention and Control) Authority (EPCA) was constituted under Section 3(3) of Environment (Protection) Act, 1986 in 1998 in pursuance of Hon'ble Supreme Court Order dated 7.1.1998 in Writ Petition (C) no. 13029/1985 in the matter of M.C. Mehta vs Uol &Ors to look into the matter pertaining to environmental pollution in National Capital Region (NCR). As per the Order, the Authority was proposed to be comprised of Shri Bhure Lal, Secretary, CVC as Chairman; and Shri D.K. Biswas, Shri Anil Aggarwal, Shri Jagdish Khattar, and Smt Kiran Dhingra as members. Accordingly, this Ministry notified the constitution of EPCA vide notification no. SO 93(E) dated 29.2.1998 for two years comprising of above stated members and TOR. In the notification, jurisdiction of EPCA has been stated as National Capital Region as defined in clause (f) of section 2 of National Capital Region Planning Board Act, 1985 (2 of 1985). The EPCA has been subsequently re-constituted from time to time extending the tenure of the Authority and/or substituting or including new members.

5.6 Impetus on Vehicular Pollution

5.6.1 Vehicles being identified as major source of pollution, there had been greater emphasis on regulation of vehicular pollution. In this regard Bharat Stage IV (BS-IV) norms has been launched for mandatory implementation since 1st April 2017 and leap-frogging to BS- VI by 1st April, 2020 has been proposed. Bharat stage emission standards (BSES) are emission standards instituted by the Government of India to regulate the output of air pollutants from internal combustion engines and Spark-ignition engines equipment, including motor vehicles. The standards and the timeline for implementation are set by the Central Pollution Control Board under the Ministry of Environment & Forests and climate change. The standards, based on European regulations were first introduced in 2000. Progressively stringent norms have been rolled out since then. All new vehicles manufactured after the implementation of the norms have to be compliant with the regulations. Since October 2010, Bharat Stage (BS) III norms have been enforced across the country. In 13 major cities, Bharat Stage IV emission norms have been in place since April 2010 and it's enforced for whole country from April 2017. In 2016, the Indian government announced that the country would skip the BS-V norms altogether and adopt BS-VI norms by 2020.

5.6.2 In addition to BS norms, various other measures have been taken up by government for control and management of vehicular emission. These measures include emphasis on cleaner / alternate gaseous fuel like CNG, LPG etc, ethanol blending in petrol in order to reduce vehicle exhaust emissions, promotion of public transport, Pollution Under Control Certificate, lane discipline, vehicle maintenance etc. It is estimated that a 5% blending (105 crore litres) can result in replacement of around 1.8 million Barrels of crude oil . The renewable ethanol content, which is a by-product of the sugar industry, is expected to result in a net reduction in the emission of carbon dioxide, carbon monoxide (CO) and hydrocarbons (HC). Ethanol itself burns cleaner and burns more completely than petrol it is blended into. In India, ethanol is mainly derived by sugarcane molasses, which is a by-product in the conversion of sugar cane juice to sugar.

5.7 Graded Response Action Plan (GRAP)

5.7.1 The Government has notified a Graded Response Action Plan for Delhi and NCR, which comprises of the graded measures for each source framed according to the AQI categories. It also takes note of the broad health advisory for each level of AQI that was adopted by the Government of India along with the AQI . The proposal has been framed keeping in view the key pollution sources in Delhi and National Capital Region of Delhi (NCR). While major sources of pollution including vehicles, road dust, biomass burning, construction, power plants and industries remain continuous throughout all seasons, the episodic pollution from stubble burning, increase in biomass burning, etc. varies across seasons. During winter the relative share of vehicles,

biomass burning, MSW burning, firecracker, stubble burning, construction, and secondary particles increase. During summer, the influence of road dust, fly ash, vehicles, biomass burning etc is high. The proposed graded measure approach has considered all these aspects and includes appropriate measures for each level of pollution according to AQI. The graded measures according to AQI are listed from public health emergency level to downward. The measures are cumulative. Emergency and Severe levels include cumulatively all other measures listed in the lower levels of AQI including Very Poor, Poor and Moderate. It is also clear that the actions listed in the poor category need to be implemented though out the year. But during months when weather conditions turn more adverse there is need for greater scrutiny on enforcement. The responsibility of implementing GRAP lies with EPCA. The GRAP is enclosed as **Annexure V**.

5.8 Source Apportionment Studies

5.8.1 Data generated from NAMP over the years reveal that particulate matters (PM10 & PM2.5) are exceeding more than the permissible levels at many locations, particularly in urban areas. Air pollution problem becomes complex due to multiplicity and complexity of air polluting sources (e.g. industries, automobiles, generator sets, domestic fuel burning, road side dusts, construction activities, etc.). A cost-effective approach for improving air quality in polluted areas involves (i) identification of emission sources; (ii) assessment of extent of contribution of these sources on ambient environment; (iii) prioritizing the sources that need to be tackled; (iv) evaluate various options for controlling the sources with regard to feasibility and economic viability; and (v) formulation and implementation of most appropriate action plans. Source apportionment study, which is primarily based on measurements and tracking down the sources through receptor modelling, helps in identifying the sources and extent of their contribution. The Auto Fuel Policy document of Government of India also recommended for carrying out source apportionment studies. Accordingly, source apportionment studies have been initiated in six major cities viz. (i) Delhi; (ii) Mumbai; (iii) Chennai; (iv) Bangalore; (v) Pune; and (vi) Kanpur. The study would focus on apportionment of particulate matters (PM 10 & PM 2.5), being most critical. Statistics generated from source apportionment studies of Delhi by CPCB and IIT Kanpur showing percentage contribution of PM10 from various sources is at **Annexure VI**.

5.9 Other Measures

5.8.1 Focusing on pollution from waste, five Waste Management Rules on solid waste, hazardous waste, plastic waste, biomedical waste and e-waste has been revised and rules on Construction & Demolition Waste major source of dust pollution was newly notified during 2016. Further, ban was imposed on burning of leaves, biomass and municipal solid waste.

6. PRESENT POLLUTION STATUS

6.1 SO₂ (Sulphur dioxide)- The levels of sulphur dioxide are within the prescribed National Ambient Air Quality Standards. SO₂ concentration has decreased over the years indicating that there has been a decline in SO₂ levels. Decreasing trend may be due to various interventions that have taken place in recent years such as reduction in sulphur in diesel, use of cleaner fuel such as CNG in metro cities, change in domestic fuel from coal to LPG etc.

6.2 NO₂ (Nitrogen dioxide)- The levels of nitrogen dioxide are within the prescribed National Ambient Air Quality Standards in most of the cities. NO₂ concentration has remained stable over the years with a slight decrease in last three years despite increase in sources like vehicles. The reason for this may be various intervention measures that have taken place such as improvement in vehicle technology and other vehicular pollution control measures like alternate fuel etc

6.3 PM₁₀ (Particular Matter)-The levels of PM₁₀ exceed the prescribed National Ambient Air Quality Standards in most of the cities. PM₁₀ concentration shows fluctuating trend exceeding the NAAQS. The reasons being emission from gensets, small scale industries, biomass incineration, suspension of traffic dust, natural dust, commercial and domestic use of fuel and vehicular emission etc. Furthermore, the increasing trend for PM₁₀ may be attributed to the increasing number of vehicles and re-suspension of natural dust.

6.4 Non-attainment Cities

CPCB has identified list of polluted cities in which the prescribed National Ambient Air Quality Standards (NAAQS) are violated. These cities have been identified based on ambient air quality data obtained (2011-2015) under National Air Quality Monitoring Programme (NAMP). PM₁₀ has been found to be exceeding in 94 cities consecutively for five years and NO₂ is exceeding in 5 cities. PM_{2.5} data since 2015 indicates 16 cities as non-attainment cities. List of 94 non-attainment cities is at **Annexure VII**.

7.0 NATIONAL CLEAN AIR PROGRAMME (NCAP)

7.1. In line with the gaps drawn from the ongoing government initiatives and existing air pollution status, the need is felt for augmentation of our efforts towards mitigation of air pollution in mission mode. Comprehensive strategy in NCAP is being envisaged to plug the gaps in maintenance of air quality in the country.

7.1.1 Augmenting Air Quality Monitoring Network

National air quality monitoring network to be revisited, past data to be analyzed for rationalization of monitored parameters, and monitoring needs be reassessed for augmenting the monitoring network adopting optimum blending of techniques such as manual, continuous, sensor & satellite based techniques. A few initiatives are suggested below:

- i. **Manual monitoring stations** -With reference to existing 4000 cities in the country, 691 manual monitoring stations in 303 cities reflects limited number and need augmentation. It is proposed to augment it to 1000 stations from existing 691 stations.
- ii. **CAAQMS** - Recognizing the need to monitor real time and peak concentration levels of critical pollutants avoiding the time lag, more specifically with reference to AQI, it is proposed under NCAP to augment the existing number of Continuous Ambient Air Quality Monitoring Stations (CAAQMS). Presently there are 101 CAAQMS stations in 64 cities. In addition, 28 are under installation and process for installation has been initiated for 81 stations. This make total of 210 of CAAQMS not requiring funding under NCAP. Acknowledging the fact that air pollution is an issue majorly confined to cities in Indo-Gangetic Plain, covering approximately 45-50 cities of Indo-Gangetic Plain spread across the states of Assam, Bihar, Haryana, Jharkhand, Madhya Pradesh, Punjab, Rajasthan, Uttarakhand, Uttar Pradesh and West Bengal, the total number of expected real time stations would be approximately 100 in number with average of 2-3 stations in each city to be decided on the basis of population, industrial activities etc. Further, impetus will be on low cost indigenous real-time monitoring stations.
- iii. **Identification of alternative technology for real time monitoring-** Central Pollution Control Board (CPCB) is to steer the process of identifying and for developing/validating alternative cost effective technology for source and ambient air quality monitoring in consultation with IIT, CSIR and other such institutes as NEERI.
- iv. **Rural Monitoring Network-** Air quality in rural areas remains a neglected issue so far. The common belief is that rural areas are free from air pollution. On the contrary, air quality in the rural areas all over the world and particularly in the developing countries may be more polluted than some of the urban areas. Rural areas suffer from outdoor air pollution as well as indoor air pollution. Major sources of outdoor air pollution are indiscriminate use of insecticides/pesticides sprays and burning of wheat and paddy

straw. Atmospheric concentration of ozone has been observed higher in rural areas as compared to urban areas. Indoor air pollution exposes more people worldwide to health risks than outdoor air pollution. The indoor air pollution exists in rural areas where the main source of air pollution is domestic fuel used. In rural areas cow dung, wood sticks are used as fuel in household. The kitchen is without any proper ventilation resulting in build-up of air pollutants in the houses. Since rural areas have not been covered under NAMP till it is proposed to set up 50 such stations in rural areas.

- v. **Protocol for setting up of monitoring stations and monitoring** - Guidelines for Ambient Air Quality Monitoring has been issued by CPCB in 2003 for assisting taking decision with respect to setting up of monitoring stations. However, it is noted that the guideline needs revision in reference to sound decision making in selection of pollutants, selection of locations, frequency, duration of sampling, sampling techniques, infrastructural facilities, man power and operation and maintenance costs. The network design also depends upon the type of pollutants in the atmosphere through various common sources. Accordingly, it is planned to review the existing guideline and issue protocol for setting up of monitoring stations and monitoring.
- vi. **Monitoring of PM 2.5**- Particulates are the deadliest form of air pollution due to their ability to penetrate deep into the lungs and blood streams unfiltered, causing various health issues. The smaller PM_{2.5} are particularly deadly, as it can penetrate deeper into the lungs and blood stream. The monitoring data also indicates higher concentration of PM_{2.5} in major cities. Accordingly, in order to evolve comprehensive mechanism for management of PM 2.5 it is proposed to augment the number of monitoring stations for PM_{2.5} from existing 67 to all stations under NAMP.
- vii. **Setting up of 10 city Super Network**- This network may capture overall air quality dynamics of the nation, impact of interventions, trends, investigative measurements, etc. The cities may be identified for capturing possible variations (e.g. metro city, village, mid-level town, coastal town, controlled background location, industrial town, etc.). Each city may have one well-equipped monitoring station representing the city background. In addition to notified 12 pollutants, constituents of PM₁, particle number, etc. may be monitored. It should generate highly quality controlled data and will represent national air quality dynamics.

7.1.2 Air Quality Management Plan for 100 Non-Attainment Cities- The city action plans need to be guided by a comprehensive science based approach involving (i) identification of emission sources; (ii) assessment of extent of contribution of these sources; (iii) prioritizing the sources that need to be tackled; (iv) evaluation of various options for controlling the sources with regard to feasibility and economic viability; and (v) formulation of action plans. A detailed source apportionment study including air quality monitoring, emission inventory, chemical speciation and receptor modelling can provide vital inputs for drawing up city specific action plans. Source apportionment study is resource intensive and highly specialized technical work, and considering that such studies are required in about 94 non-attainment towns; capacity building and networking of domestic Institutes will be extremely important. It is suggested that these studies are taken up in a few cities and towns, to begin with. It has been observed that towns in northern India, particularly in Indo-gangetic plains, have higher ambient particulate concentrations in comparison to southern parts. Similarly, source activities (industries, typical urban, etc.) and meteorological settings (e.g. coastal) are other important factors that may influence air pollution levels. It is, therefore, proposed to select candidate cities and towns considering above factors. Further, State capitals and cities with population more than a million (due to more people being exposed to higher PM concentrations) may be taken up on priority. All the non-attainment cities & towns may be covered in a phased manner. In the first phase, 10 cities may be taken up with support of leading Institutes like IITs, NEERI, TERI, ARAI, etc. Each of these Institutes may associate two or three Institutes during the study for their capacity building and involvement in subsequent phases.

7.1.3 Indoor Air Pollution Monitoring & Management- It refers to the physical, chemical, and biological characteristics of air in the indoor environment within a home, building, or an institution or commercial facility. In the developing countries, it is the rural areas that face the greatest threat from indoor pollution, where some 3.5 billion people continue to rely on traditional fuels such as firewood, charcoal, and cowdung for cooking and heating. In urban areas, exposure to indoor air pollution has increased due to a variety of reasons, including the construction of more tightly sealed buildings, reduced ventilation, the use of synthetic materials for building and furnishing and the use of chemical products as in paints, pesticides, and household care products. Indoor air pollution can begin within the building or be drawn in from outdoors. Other than nitrogen dioxide, carbon monoxide, and lead, there are a number of other pollutants that affect the air quality in an enclosed space. The issue is proposed to be addressed through Guidelines and Protocols on indoor air pollution.

7.1.4 Air Pollution Health Impact Studies- Many international studies often report data on mortality due to air pollution exposures. These studies use extrapolation techniques for air quality and health/disease related data, which probably may not be realistic. While there is no denial on serious health

implications, attributing one to one correlation and number of deaths due to air pollution needs to be further investigated and supported by indigenous studies. More authentic Indian data and studies may further strengthen our efforts and public participation in improving air quality. With focus on environmental health issues, MoEF&CC has constituted a high level Apex Committee and a Working Group under the joint chairmanship of ICMR and the Ministry to identify thrust areas in environment health and to evaluate the related projects. In line with recommendation of Working Group, our Ministry in coordination with M/o Health and ICMR has already initiated action towards study on National Environmental Health Profile, with emphasis on impact of air pollution on health.

7.1.5 Setting up Air Information Centre- An Air Information Center may be set up, which will be responsible for data analysis, interpretation, dissemination including through GIS platform, issuing bulletins, keeping track of international developments, and bringing out policy updates.

7.1.6 Certification system for monitoring instruments- There is no certification body in the country which provides certification of equipment specifically equipment used in environmental monitoring programme. This body is expected to be accredited by authentic Accreditation Service according to the existing ISO standards. The accreditation will provide confidence in the impartiality, competence and consistency of the certifications provided by accreditation body. This certification will promote public confidence in monitoring data, equipment and personnel and provides a framework for choosing monitoring equipment and services that meet the regulatory specifications.

7.1.7 Air Quality Forecasting System- Air Quality Forecasting System (AAQFS) as a state of the art modelling system which forecasts the following day's air quality is being envisaged. The meteorological and emissions information is to be entered into the model which aims to accurately forecast air pollution on daily basis and also expected air pollution exigencies.

7.1.8 Extensive Plantation Drive- In the first broad-scale estimate of air pollution removal by US trees nationwide, researchers found that trees and forests in the US removed 17.4 million tons of air pollution in 2010, with human health effects valued at \$6.8 billion. Although this pollution removal equated to an average air quality improvement of less than 1 percent, its effects on human health were significant, especially in urban areas. Trees remove air pollution primarily by uptake of pollutants via leaf stomata (pores on the outer "skin" layers of the leaf). Some gaseous pollutants are also removed via the plant surface. Thus extensive plantation drive by identification and use of plant have high pollutants absorbing capacity is expected not only to purify air but also will help in improvement of health.

7.1.9 Issuance of Notification on Dust Management (Road dust and C&D)- It has been noted that though government has notified various waste management rules including C&D waste rules, there is no regulation prescribing preventive measures to be taken for management of dust including road dust and C&D dust that arises during construction. This is in spite of the fact that PM is the major source of air pollution in our country. Accordingly, it is proposed to formulate and notification on dust management (Road dust and C&D).

7.1.10 Intensive Awareness, Training and Capacity Building Drive- One of the major issue which is hurdle in effective implementation of air pollution management plans have been observed to be lack of capacity and awareness on air quality issues due to limited manpower and infrastructure in the CPCB and SPCBs, lack of formal training available; limited collaboration between government, universities and other research institutions; lack of a forum for sharing of published local research work on air quality; limited number of trained individuals in air quality management, limited publications designed to provide information on local air quality issues. Accordingly, it is planned to undertake extensive awareness and public outreach programme and capacity building of manpower involved in air quality management. **The capacity building will have specific impetus on augmentation of manpower and infrastructure facilities of CPCB and SPCB.**

7.1.11 Three tier mechanism for review of monitoring, assessment and inspection for implementation - The experience indicates lack of regular monitoring and inspection as the major reason for non-compliance. Trained manpower and regular inspection drive will be ensured for stringent implementation purpose. A credible, transparent, and accountable data collection, and monitoring system that is available for timely swift action is the required. A three-tier system that include real time physical data collection, data archiving and data analytics infrastructure, and Action trigger system. These three tier systems will work independently under the supervision of a single authority, which will ensure accreditation of three independently operating entities. These entities will interface only through IT software and communication system.

For data collection, a Phone application that could be adapted to any smart phone will be developed. The application allows a user to quickly and easily generate simple reports about individual industry that include: the current position (provided by the phones built-in GPS), type of industry, and parameters such as monitored data on site, and a picture of the industry (taken with the phone's camera). This facility at each state will be operated by a third party verifiers in close coordination with SPCBs. The data collected will be archived at a central location and will be used by high quality IT

companies specialized in data analytics to corroborated the data, establish its authenticity with industry standards, previously collected information, data from other utilities (electricity bill, water bill) and with GPS information feed into the system. The action trigger system, will decide on appropriate action once the data authenticity is established. The action trigger system will have predefined action based on the status of the data. There will be minimal human interface in action trigger system. **Guidelines for review and inspection will be formulated by CPCB on above line.**

7.1.12 National Emission Inventory- An emission inventory is an accounting of the amount of pollutants discharged into the atmosphere. An emission inventory usually contains the total emissions for one or more specific air pollutants, originating from all source categories in a certain geographical area and within a specified time span, usually a specific year. Emissions and releases to the environment are the starting point of every environmental pollution problem. Information on emissions therefore is an absolute requirement in understanding environmental problems and in monitoring progress towards resolving these. Emission inventories are essential for policy formulation and implementation, and other related scientific studies. Its significance is in tracking progress towards emission reduction targets and as inputs to air quality model. Comprehensive National Emission Inventory which is still lacking in the country will be formalized under this mission.

7.1.13 Network of Technical Institutions- Knowledge Partners

Network of highly qualified and experienced academicians, academic administrators and technical institutions in the area of air pollution will be created to provide holistic services for the establishment and operation of policies and programmes of Government of India on air pollution. Further, Knowledge Partners will also endeavour towards making these Universities and higher education institutions in India globally competitive in terms of the body of knowledge, academic resources and academic processes on the issue of air pollution.

7.1.14 Technology Assessment Cell - Technology Assessment as the study and evaluation of new technologies is based on the conviction that new technologies are relevant for the world at large rather than just for the scientific experts themselves. Technology assessment in reference to prevention, control and mitigation of air pollution assumes a global perspective. Technology assessments, which are a form of cost–benefit analysis needs to assume an interdisciplinary approach to solving the problem of air pollution so as to prevent potential damage caused by the commercialization of new technologies. Technology Assessment Cell is being envisaged to evaluate the technologies having significance in reference to prevention, control and abatement of pollution. The cell is expected to focus on both indigenous and international monitoring and abatement technologies. It is also expected to

contribute towards evaluating the technology and devising the mechanism of technology transfer under various bilateral and multilateral agreements.

7.1.15 Technology Support- Science, technology, engineering and innovation have played a game changing role in India's strive towards sustainable development. It has been integral not just in contributing to the economic boom that the country is seeing today but also has been crucial for social development and environmental protection. The government with a steadfast approach has been aiming to establish India as one of the global leaders in science and technology. We already have a lot to be proud of in the research and development (R&D) sector with India's trailblazing achievements in various fields such as space exploration, health care, agriculture, and nanotechnology. New technologies, particularly the ones that are indigenously developed hold tremendous potential in resolving air pollution challenges and improving human lives. While developing and implementing technologies, it is of paramount importance that the technology suits the Indian scenario with respect to short and long term ecological and environment impacts, social infrastructure, cultural ethos, and characteristics of the Indian economy. Technologies with potential for air pollution mitigation will be supported under the programme

7.1.16 International Cooperation including sharing of International Best Practices on Air Pollution- The issue of management of air pollution in developing countries and countries with economy in transition is impacted by lack of expertise, technology and adequate related information. With reference to developing countries and countries with economy in transition as India, technological and expertise limitations are considered as major hindrance in achieving our obligations under various international conventions and in meeting the national commitments with reference to prevention, control and abatement of pollution; and protection of environment. Accordingly, technology transfer and information sharing is the way forward for any collaboration on environment. Technology transfer does not just relate to equipment or "hardware", but also to total systems and their component parts, including know-how, goods and services, equipment, and organisational and managerial procedures. Accordingly, multilateral and bilateral cooperation on air pollution including in related demonstration/pilot Projects, including prototype development for Best Available Technologies and Best Environmental Practices for pollution prevention, minimization and mitigation strategies and for control and abatement of pollution specifically air pollution is being proposed. All such international cooperation including Externally Aided Project necessitate national contribution in cash or kind in various ratios.

7.1.17 Extending source apportionment studies to all non-attainment cities

Source apportionment study, which is primarily based on measurements and tracking down the sources through receptor modelling, helps in identifying the sources and extent of their contribution. Source apportionment studies which have been initiated in six major cities viz. (i) Delhi; (ii) Mumbai; (iii) Chennai; (iv) Bangalore; (v) Pune; and (vi) Kanpur at present is planned to be extended to all 94 non-attainments. Details are at para 5.8 above.

7.1.18 Review of ambient air quality standards and emission standards -

Ambient air standards which sets limits on pollutants with reference to quality of air surrounding us in the outdoors and emission standards which set quantitative limits on the permissible amount of specific air pollutants that may be released from specific sources over specific timeframes have already been notified barring for some of the sources. However, the existing standards need to be strengthened periodically and new standards need to be formulated for the sources where standards are not available, based on extensive scientific evidence with reference to protection of public health and environment.

7.1.19 Institutional Framework- An effective institutional framework which basically refers to formal organisational structures is the precondition for the successful implementation of pollution specifically air pollution related intervention tools and therefore needs to be considered in particular. In the field of air pollution institutional framework involves creation of specific organizational structure and outlining the responsibilities. Institutional structure may vary as per the requirement, however the purpose is to have mechanisms for focused dialogue and coordination on air pollution issues. Accordingly, it is proposed to have following organizational structure to give impetus to the issue of air pollution in time bound manner as required under this mission:

- i. Apex Committee under Hon'ble MEF&CC
- ii. Steering Committee under Secretary(EF&CC)
- iii. Monitoring Committee under Joint Secretary
- iv. National Level PMU at MoEF&CC- 25 scientific personal and 3-4 secretarial assistance
- v. National level Project Implementation Unit (PIU) at CPCB- 5-6 scientific personal
- vi. State Level PMU – 3-4 scientific personal

7.2 Target, Timelines and Cost

S.No.	Component/Activities	Existing	Target	Timeline	Cost (crore)
1	Augmenting Air Quality Monitoring Network				
(a)	Manual monitoring stations	691	1000	2 yrs	24
(b)	CAAQMS	210	100	2 yrs	120
(c)	Rural Monitoring stations	nil	50	2 yrs	4
(d)	Protocol for setting up of monitoring stations and monitoring	guideline	Revise as Protocol	6 months	00
(e)	Monitoring of PM 2.5	67	1000	2 yrs	25
(g)	Setting up of 10 city Super Network	nil	New	2 yrs	5
2	City Specific Action Plan formulation for Non-Attainment Cities	Nil	100	1 yr	20
3	Indoor air pollution-Monitoring & Management	nil	Guidelines	1 yr	00
4	Air Pollution Health Impact Studies	Nil	2	1 yr	5
5	Setting up Air Information Centre	Nil	1	1 yr	2
6	Certification system for monitoring instruments	Nil	1	2 yrs	1
7	Air Quality Forecasting System	Nil	10	2 yrs	10
8	Extensive Plantation Drive	Nil	Initiate	ongoing	00

9	Issuance of Notification on Dust Management (Road dust and C&D)	Nil	New	6 m	00
10	Intensive Awareness and Training	Minimal	Intensive	ongoing	50
11	Capacity Building including manpower and infrastructure augmentation of CPCB and SPCBs	Minimal	Intensive	ongoing	150
12	Three tier mechanism for review of monitoring, assessment and inspection for implementation	Minimal	Intensive	ongoing	50
13	National Emission Inventory	Nil	Formulate	2 yrs	30
14	Network of Technical Institutions- Knowledge Partners	Nil	Formulate	2 yrs	20
15	Technology Assessment Cell	Nil	Formulate	1 yr	5
16	Technology Support	Nil	Formulate	ongoing	10
17	International Cooperation including sharing of International Best Practices on Air Pollution	Minimal	Intensive	1 yr	5
18	Extending source apportionment studies to all non-attainment cities	6 cities	94 cities	2 yrs	100

19	Review of ambient air quality standards and emission standards	existing	Review and revise	ongoing	00
20	Institutional Framework	3 m		3 m	01
	Total cost				637

- * *It is to be noted that cost for city specific action Plan implementation which will entail major cost is not reflected as part of this NCAP and will have to be majorly borne by States.*

**Status of Operating Stations under National Air Quality Monitoring Programme
(NAMP)**

S.no	State/Union Territory	City	Operating Monitoring Station
1	Arunachal Pradesh	Itananagar	1
		Naharlagun	1
2	Andhra Pradesh	Visakhapatnam	8
		Kakinada	1
		Rajamundry	1
		Eluru	1
		Vizianagaram	1
		Srikakulam	1
		Kurnool	1
		Tirupati	1
		Chittor	2
		Kadapa	1
		Anatapur	1
		Vijayawada	3
		Ongole	1
		Guntur	1
		Nellore	1
		3	Assam
Gawahati	6		
Tezpur	1		
Sibasagar	2		
Dibrugarh	1		
Golaghat	1		
Silcher	2		
Daranga	1		
Margheita	1		
North Lakhimpur	1		
Nagaon	1		
Tinsukhia	3		
Nalbari	1		
4	Bihar		
		Barauni	1
		Mujjafarpur	1
		Gaya/Bodhgaya	1
5	Chandigarh (UT)	Chandigarh	5
6	Chattisgarh	Korba	3
		Bhilai	3
		Raipur	3
		Bilaspur	1
7	Delhi (UT)	Delhi	10
8	Dadara & Nagar Haveli (UT)	Silvasa	2
9	Daman Diu (UT)	Daman	2
10	Goa	Panaji	1
		Vasco	1
		Marmagao	1
		Codli tisk	1
		Honda Junction	1

		Bicholim City	1
		Amona	1
		Assanora Junction	1
		Curchorem	1
		Usgao-Pale	1
		Margao Town	1
		Mapusa Town	1
		Sanguem	1
		ponda	1
		Tilamol	1
		Kundaim	1
		Tuem Industrial Estate	1
		Cuncoim	1
11	Gujarat	Ahmedabad	9
		Ankaleshwar	2
		Jamnagar	1
		Rajkot	2
		Surat	3
		Vadodara	5
		Vapi	2
12	Haryana	Faridabad	2
		Hissar	2
		Yamuna Nagar	1
13	Himachal Pradesh	Damtal	2
		Parwanoo	2
		Poanta Sahib	2
		Shimla	2
		Kala Amb	2
		Baddi-Barotiwala	3
		Nalagarh	1
		Una	2
		Sunder Nagar	2
		Dharamshala	2
		Marhi	1
		Gulaba	1
		Vashisht	1
		Manali	2
14	Jammu& Kashmir	Jammu	3
15	Jharkand	Dhanbad	3
		Jharia	1
		Sindri	1
		Jamshedpur	2
		Ranchi	1
		Saraikela-Kharsawan	1
		West Singhbhum	1
16	Karnataka	Bangalore	9
		Dharwar, Hubli	2
		Mangalore	1
		Hassan	1
		Mysore	2
		Gulbarga	1
		Belgaum	1
		Devanagere	3
		Mandya	1
		Raichur	1

		Bijapur	1
		Chitradurga	1
		Shimoga	1
		Karwar	1
		Bagalkote	1
		Kolar	1
		Tumkar	1
		Bidar	1
17	Kerala	Kozhikode	2
		Kottayam	2
		Cochin	7
		Thiruvananthapuram	4
		Palakkad	1
		Alappuzha	2
		Pathanamthitta	1
		Kollam	2
		Sulthan, Bathery, Wayanad	1
		Kakkanchery, Mallappuram	1
		Thrissur	1
18	Lakswadeep	Lakswadeep islands	1
19	Madhya Pradesh	Bhopal	8
		Indore	3
		Jabalpur	2
		Nagda	3
		Gwalior	2
		Sagar	2
		Satna	2
		Singrauli	3
		Ujjain	4
		Prithampur	2
		Chindwara	2
		Amlai	2
		Katni	2
		Dewas	3
		20	Maharashtra
Bhiwandi	3		
Lote	2		
Tarapur	3		
Kolhapur	3		
Mumbai	3		
Ambernath	2		
Chandrapur	6		
Nagpur	7		
Nasik	4		
Solapur	2		
Pune	3		
Pimpri Chinchiwad	1		
Thane	3		
Navi Mumbai	6		
Mahad	3		
Roha	2		
Sangli	3		
Amravati	3		
Latur	3		
Ulhas Nagar	2		

		Badlapur	1
		Nanded	3
		Jalgaon	3
		Jalna	2
		Akola	3
21	Meghalaya	Shillong	4
		Dwaki	1
		Ri-Bhoi, Brynihat	1
		Tura	1
		Nongstoin	1
		Umam	1
		Khlihriat	1
22	Mizoram	Aizwal	5
		Lunglei	2
		Kolasib	2
		Champhai	2
23	Manipur	Imphal	1
24	Nagaland	Dimapur	2
		Kohima	2
25	Orissa	Rayagada	2
		Rourkela	6
		Talcher	2
		Angul	2
		Bhubaneshwar	6
		Cuttack	3
		Sambalpur	1
		Balasore	3
		Kalinga Nagar	3
		Berhampur	1
		Puri	2
		Konark	1
		Jarsuguda	3
		Paradeep	3
26	Punjab	Gobindgarh	3
		Jalandhar	4
		Ludhiana	4
		Naya Nangal	2
		Khanna	2
		Pathankot(Dera baba)	1
		Amritsar	3
		Derra Bassi	2
		Bhatinda	1
		Batala	1
		Patiala	2
		Sangrur	1
		Faridkot	1
		Hoshiarpur	1
27	Puducherry (UT)	Pondicherry	3
		Karaikal	3
28	Rajasthan	Alwar	3
		Jaipur	6
		Jodhpur	6
		Kota	6
		Udaipur	3
		Bharatpur	3

		Bhiwadi	3
29	Sikkim	Gangtok	2
		Namchi (South Sikkim)	1
		Jorithang / Ravangla (South Sikkim)	1
		Mangan (North Sikkim)	1
		Chungthang (North Sikkim)	1
		Singtam (East Sikkim)	1
		Rangpo (East Sikkim)	1
		Pelling (West Sikkim)	1
30	Tamilnadu	Chennai	11
		Tuticorin	3
		Coimbatore	3
		Madurai	3
		Salem	1
		Trichy	5
		Cuddalore	3
		Mettur	2
31	Tirupura	Agartala	2
32	Telangana	Hyderabad	10
		Ramagundum	1
		Patencheru	1
		Nalgonda	2
		Khammam	2
		Warangal	2
		Karimnagar	1
		Sangareddy	3
		Nizamabad	1
		Kothur	1
		Manchiriala, Adilabad	1
33	Uttar Pradesh	Agra	6
		Allahabad	5
		Anpara	2
		Firozabad	3
		Gajroula	2
		Ghaziabad	2
		Kanpur	9
		Lucknow	8
		Noida	2
		Varanasi	5
		Jhansi	2
		Khurja	2
		Meerut	2
		Bareilly	2
		Moradabad	2
		Mathura	2
		Saharanpur	2
		Unnao	2
Gorakhpur	3		
Rai Bareilly	3		
34	Uttaranchal	Dehradun	3
		Haridwar	1
		Rishikesh	1
		Haldwani	1
		Rudrapur	1

35	West Bengal	kashipur	1
		Kolkata	20
		Durgapur	4
		Haldia	5
		Howrah	4
		Asansol	3
		South Suburban	3
		Barrckpore	3
		Sankrail	4
		Raniganj	3
		Uluberia	1
		Barasat	1
		Kalyani	1
		Ranaghat	1
		Krishnanagar	1
		Baharampur	1
		Dankuni	1
		Rishra	1
		Chinsura	1
		Tribeni	1
		Kharagpur	1
		Medinipur Town	1
		Ghatal	1
		Tamluk	1
		Bardhaman	1
		Bankura	1
		Suri	1
		Rampurhat	1
		Bolpur	1
		Purulia	1
		Malda	1
Siliguri	1		
Jalpaiguri	1		
Darjeeling	1		
Coochbihar	2		
Balurghat	1		
Raigun	1		
	Total	303	691

National Ambient Air Quality Standards (NAAQS)

Sr. No	Pollutants	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (notified by Central Government)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual*	50	20
		24 Hours**	80	80
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual*	40	30
		24 Hours**	80	80
3	Particulate Matter (Size <10 µm) or PM ₁₀ µg/m ³	Annual*	60	60
		24 Hours**	100	100
4	Particulate Matter (Size <2.5 µm) or PM _{2.5} µg/m ³	Annual*	40	40
		24 Hours**	60	60
5	Ozone (O ₃), µg/m ³	8 hours**	100	100
		1 hours **	180	180
6	Lead (Pb), µg/m ³	Annual*	0.50	0.50
		24 Hours**	1.0	1.0
7	Carbon Monoxide (CO), mg/m ³	8 hours**	02	02
		1 hours **	04	04
8	Ammonia (NH ₃), µg/m ³	Annual*	100	100
		24 Hours**	400	400
9	Benzene (C ₆ H ₆), µg/m ³	Annual*	05	05
10	Benzo(a)Pyrene (BaP)-particulate phase only, ng/m ³	Annual*	01	01
11	Arsenic (As), ng/m ³	Annual*	06	06
12	Nickel (Ni), ng/m ³	Annual*	20	20

About National Air Quality Index

1. Air Quality Index is a tool for effective communication of air quality status to people in terms, which are easy to understand. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour.
2. There are six AQI categories, namely Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (known as health breakpoints). AQ sub-index and health breakpoints are evolved for eight pollutants (PM₁₀, PM_{2.5}, NO₂, SO₂, CO, O₃, NH₃, and Pb) for which short-term (upto 24-hours) National Ambient Air Quality Standards are prescribed.
3. Based on the measured ambient concentrations of a pollutant, sub-index is calculated, which is a linear function of concentration (e.g. the sub-index for PM_{2.5} will be 51 at concentration 31 µg/m³, 100 at concentration 60 µg/m³, and 75 at concentration of 45 µg/m³). The worst sub-index determines the overall AQI. AQI categories and health breakpoints for the eight pollutants are as follow:

AQI Category	AQI	Concentration range*							
		PM ₁₀	PM _{2.5}	NO ₂	O ₃	CO	SO ₂	NH ₃	Pb
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+ -

* CO in mg/m³ and other pollutants in µg/m³; 2h-hourly average values for PM₁₀, PM_{2.5}, NO₂, SO₂, NH₃, and Pb, and 8-hourly values for CO and O₃.

AQI	Associated Health Impacts
Good (0–50)	Minimal Impact
Satisfactory (51–100)	May cause minor breathing discomfort to sensitive people
Moderate (101–200)	May cause breathing discomfort to the 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 with short exposure
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 effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity



File No. A-18011/41/2000(Part-II)-MON

29th December, 2015

To

The Chairman,
U.P. Pollution Control Board,
Building No. TC-12V,
Vibhuti Khand, Gomti Nagar,
Lucknow 226010 (U.P.)

Directions under Section 18(1)(b) of the Air (Prevention and Control of Pollution) Act, 1981 regarding prevention, control or abatement of air pollution and improvement of Ambient Air Quality in Delhi and National Capital Region (NCR)

Whereas, under Section 17 (1) (a) of the Air (Prevention and Control of Pollution) Act, 1981, one of the functions of the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) is to plan comprehensive programmes for prevention, control or abatement of air pollution and to secure the execution thereof;

Whereas, levels of Particulate Matter (PM10 & PM2.5) exceed the National Ambient Air Quality Standards (NAAQS) 2009 in the National Capital Region (NCR);

Whereas, the primary sources of air pollution in NCR States are: a) vehicular emissions; b) burning of biomass, Crop residues, Municipal Solid Waste and Garbage, c) Road dust; d) Constructions and Demolitions; and g) Industrial emissions, etc;

Whereas, serious concerns have been expressed by Hon'ble Supreme Court, High Court of Delhi and the National Green Tribunal (NGT) in the matter from time to time and specific directions have been issued;

Whereas, there have been regular meetings between Ministry of Environment, Forest & Climate Change (MoEF&CC) with the Government of Delhi, Haryana, Uttar Pradesh and Rajasthan to evolve and implement short and long term action plans;

1 | Page

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032

Parivesh Bhawan, East Arjun Nagar, Delhi-110032

दूरभाष/Tel : 43102030, 22305792, वेबसाइट/Website : www.cpcb.nic.in

Whereas, the concerned State Governments have agreed to implement identified actions on short and long term basis;

Whereas, clean air is a matter of right and it is necessary to implement steps towards improvement of Air Quality in the National Capital Region;

Whereas, functions of the Central Pollution Control Board under Section 16 of the Air (Prevention and Control of Pollution) Act, 1981 include improvement of quality of air and to prevent, control or abate air pollution in the country;

Whereas, steps are urgently required to improve air quality adopting a multipronged and integrated approach including close monitoring of implementation;

NOW, THEREFORE, in view of the above stated facts, the following directions in exercise of powers under section 18(1) (b) of the Air (Prevention and Control of Pollution) Act, 1981 are hereby issued in order to improve the air quality in Delhi and NCR as per timelines indicated:

A.) Control of Vehicular Emissions:

Sl. No.	Action Points	Time Frame for implementation
i)	Launch extensive awareness drive against polluting vehicles;	Immediate
ii)	Ensure Strict action against visibly polluting vehicles;	Immediate
iii)	Install weigh in motion bridges at Delhi borders to prevent overloading;	Immediate
iv)	Take steps to prevent parking of vehicles in the non-designated areas;	Immediate
v)	Introduce early alarm system for benefit of commuters related to traffic congestion on major routes for route diversion ;	Immediate
vi)	Consider introducing plan for Flexi/staggered timings to minimize peak movement of vehicles on the road;	Immediate
vii)	Take steps for retrofitting of diesel vehicles with Particulate Filters;	Immediate
viii)	De-congest pathways;	Immediate
ix)	Synchronize traffic movements / Introduce intelligent traffic systems for lane-driving;	30 days
x)	Install vapor recovery system in fueling stations;	30 days
xi)	Take steps for installation of remote sensor based PUC system etc.;	90 days



xii)	Formulate action plan for controlling decongestion of fuel stations including increasing number of dispensing machines;	90 days
xiii)	Prepare action plan to check fuel adulteration and random monitoring of fuel quality data;	90 days
xiv)	Prepare action plan for public transport on CNG mode;	90 days
xv)	Undertake road widening and improvement of infrastructure for decongestion of road;	90 days
xvi)	Promote battery operated vehicles;	90 days
xvii)	Take steps to expedite early completion of Western and Eastern Peripheral expressway and submit completion schedule;	60 days

(B) Control of Road Dust/Re-suspension of dust and other fugitive emission:

Sl. No.	Action Points	Time Frame for implementation
i)	Formulate action plan for creation of green buffers along the traffic corridors;	Immediate
ii)	Introduce wet/ mechanized vacuum sweeping of roads;	30 days
iii)	Maintain pot holes free roads for free-flow of traffic to reduce emissions and dust;	60 days
iv)	Introduce water fountains at major traffic intersection, wherever feasible;	90 days
v)	Undertake greening of open areas, gardens, community places, schools and housing societies;	90 days
vi)	Take steps for blacktopping / pavement of road shoulders to avoid road dust;	180 days

(C) Control of Air Pollution from Bio-Mass Burning:

Sl. No.	Action Points	Time Frame for implementation
i)	Take stringent action against open burning of bio-mass/leaves/tyres etc to control such activities and submit periodic status reports;	Immediate
ii)	Ensure proper collection of horticulture waste (bio-mass) and composting-cum-gardening approach;	Immediate
iii)	Ensure strict enforcement of ban on burning of agriculture waste and crop residues;	Immediate



iv)	Prohibit use of coal in hotels and restaurants and eliminate use of kerosene for cooking in Delhi;	60 days
-----	--	---------

(D) Control of Industrial Air Pollution;

Sl. No.	Action Points	Time Frame for implementation
i)	Ensure strict action against unauthorized brick kilns;	30 days
ii)	Ensure strict action against industrial units not complying with standards ;	60 days
iii)	Enforce strict compliance of conversion of Natural draft brick kilns to induced-draft;	90 days
iv)	Launch action plan for switching over to natural gas by industries, wherever feasible.	120 days

(E) Control of Air Pollution from Construction and Demolition Activities:

Sl. No.	Action Points	Time Frame for implementation
i)	Control dust pollution at construction sites through appropriate cover ;	Immediate
ii)	Undertake control measures for fugitive emissions from material handling, conveying and screening operations through water sprinkling, curtains, barriers and dust suppression units;	30 days
iii)	Ensure carriage of construction material in closed/covered vessels;	30 days

(F) Other Steps to control Air Pollution

Sl. No.	Action Points	Time Frame for implementation
i)	Set-up helpline in States/UT for taking action against reported non-compliance;	Immediate
ii)	Evolve a system of reporting of garbage /municipal solid waste burning through mobile based applications and other social media platform linked with Central and State level Control Rooms ;	30 days
iii)	Establish Standard Operating Procedure to provide quick and effective response to complaints;	30 days



v)	Ensure DG sets meeting the standards only be allowed to operate;	30 days
vi)	Promote use of LPG instead of coal in restaurants/ dhabas/ road side eateries;	90 days
vii)	Undertake Satellite based monitoring for tracking and enforcing agriculture waste burning;	90 days
viii)	Take steps for setting up of bio-mass based power generation units to avoid bio-mass burning.	One year

The State Pollution Control Boards (SPCBs) / Pollution Control Committee (PCC) shall acknowledge the receipt of this direction immediately and shall communicate the status of the implementation before 31st January 2016 supplemented with ambient air quality monitoring data being maintained by them. The SPCBs/PCC shall issue further directions to such authorities as may be necessary for implementation of these directions by 15th of January, 2016.


 (Arun Kumar Mehta)
 Chairman
 29/12/15



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

File No. A-18011/41/2000(Part-II)-MON

29th December, 2015

To

The Chairman,
Haryana Pollution Control Board
C-11, Sector 6,
Panchkula
Haryana - 134109

Directions under Section 18(1)(b) of the Air (Prevention and Control of Pollution) Act, 1981 regarding prevention, control or abatement of air pollution and improvement of Ambient Air Quality in Delhi and National Capital Region (NCR)

Whereas, under Section 17 (1) (a) of the Air (Prevention and Control of Pollution) Act, 1981, one of the functions of the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) is to plan comprehensive programmes for prevention, control or abatement of air pollution and to secure the execution thereof;

Whereas, levels of Particulate Matter (PM10 & PM2.5) exceed the National Ambient Air Quality Standards (NAAQS) 2009 in the National Capital Region (NCR);

Whereas, the primary sources of air pollution in NCR States are: a) vehicular emissions; b) burning of biomass, Crop residues, Municipal Solid Waste and Garbage, c) Road dust; d) Constructions and Demolitions; and g) Industrial emissions, etc;

Whereas, serious concerns have been expressed by Hon'ble Supreme Court, High Court of Delhi and the National Green Tribunal (NGT) in the matter from time to time and specific directions have been issued;

Whereas, there have been regular meetings between Ministry of Environment, Forest & Climate Change (MoEF&CC) with the Government of Delhi, Haryana, Uttar Pradesh and Rajasthan to evolve and implement short and long term action plans;

1 | Page

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032

Parivesh Bhawan, East Arjun Nagar, Delhi-110032

दूरभाष/Tel : 43102030, 22305792, वेबसाईट/Website : www.cpcb.nic.in

Whereas, the concerned State Governments have agreed to implement identified actions on short and long term basis;

Whereas, clean air is a matter of right and it is necessary to implement steps towards improvement of Air Quality in the National Capital Region;

Whereas, functions of the Central Pollution Control Board under Section 16 of the Air (Prevention and Control of Pollution) Act, 1981 include improvement of quality of air and to prevent, control or abate air pollution in the country;

Whereas, steps are urgently required to improve air quality adopting a multipronged and integrated approach including close monitoring of implementation;

NOW, THEREFORE, in view of the above stated facts, the following directions in exercise of powers under section 18(1) (b) of the Air (Prevention and Control of Pollution) Act, 1981 are hereby issued in order to improve the air quality in Delhi and NCR as per timelines indicated:

A.) Control of Vehicular Emissions:

Sl. No.	Action Points	Time Frame for implementation
i)	Launch extensive awareness drive against polluting vehicles;	Immediate
ii)	Ensure Strict action against visibly polluting vehicles;	Immediate
iii)	Install weigh in motion bridges at Delhi borders to prevent overloading;	Immediate
iv)	Take steps to prevent parking of vehicles in the non-designated areas;	Immediate
v)	Introduce early alarm system for benefit of commuters related to traffic congestion on major routes for route diversion ;	Immediate
vi)	Consider introducing plan for Flexi/staggered timings to minimize peak movement of vehicles on the road;	Immediate
vii)	Take steps for retrofitting of diesel vehicles with Particulate Filters;	Immediate
viii)	De-congest pathways;	Immediate
ix)	Synchronize traffic movements / Introduce intelligent traffic systems for lane-driving;	30 days
x)	Install vapor recovery system in fueling stations;	30 days
xi)	Take steps for installation of remote sensor based PUC system etc.;	90 days

xii)	Formulate action plan for controlling decongestion of fuel stations including increasing number of dispensing machines;	90 days
xiii)	Prepare action plan to check fuel adulteration and random monitoring of fuel quality data;	90 days
xiv)	Prepare action plan for public transport on CNG mode;	90 days
xv)	Undertake road widening and improvement of infrastructure for decongestion of road;	90 days
xvi)	Promote battery operated vehicles;	90 days
xvii)	Take steps to expedite early completion of Western and Eastern Peripheral expressway and submit completion schedule.	60 days

(B) Control of Road Dust/Re-suspension of dust and other fugitive emission:

Sl. No.	Action Points	Time Frame for implementation
i)	Formulate action plan for creation of green buffers along the traffic corridors;	Immediate
ii)	Introduce wet/ mechanized vacuum sweeping of roads;	30 days
iii)	Maintain pot holes free roads for free-flow of traffic to reduce emissions and dust;	60 days
iv)	Introduce water fountains at major traffic intersection, wherever feasible;	90 days
v)	Undertake greening of open areas, gardens, community places, schools and housing societies;	90 days
vi)	Take steps for blacktopping / pavement of road shoulders to avoid road dust;	180 days

(C) Control of Air Pollution from Bio-Mass Burning:

Sl. No.	Action Points	Time Frame for implementation
i)	Take stringent action against open burning of bio-mass/leaves/tyres etc to control such activities and submit periodic status reports;	Immediate
ii)	Ensure proper collection of horticulture waste (bio-mass) and composting-cum-gardening approach;	Immediate
iii)	Ensure strict enforcement of ban on burning of agriculture waste and crop residues;	Immediate

iv)	Prohibit use of coal in hotels and restaurants and eliminate use of kerosene for cooking in Delhi;	60 days
-----	--	---------

(D) Control of Industrial Air Pollution;

Sl. No.	Action Points	Time Frame for implementation
i)	Ensure strict action against unauthorized brick kilns;	30 days
ii)	Ensure strict action against industrial units not complying with standards ;	60 days
iii)	Enforce strict compliance of conversion of Natural draft brick kilns to induced-draft;	90 days
iv)	Launch action plan for switching over to natural gas by industries, wherever feasible.	120 days

(E) Control of Air Pollution from Construction and Demolition Activities:

Sl. No.	Action Points	Time Frame for implementation
i)	Control dust pollution at construction sites through appropriate cover;	Immediate
ii)	Undertake control measures for fugitive emissions from material handling, conveying and screening operations through water sprinkling, curtains, barriers and dust suppression units;	30 days
iii)	Ensure carriage of construction material in closed/covered vessels;	30 days

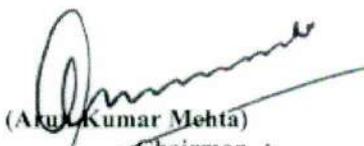
(F) Other Steps to control Air Pollution

Sl. No.	Action Points	Time Frame for implementation
i)	Set-up helpline in States/UT for taking action against reported non-compliance;	Immediate
ii)	Evolve a system of reporting of garbage /municipal solid waste burning through mobile based applications and other social media platform linked with Central and State level Control Rooms ;	30 days
iii)	Establish Standard Operating Procedure to provide quick and effective response to complaints;	30 days

Handwritten signature

v)	Ensure DG sets meeting the standards only be allowed to operate;	30 days
vi)	Promote use of LPG instead of coal in restaurants/ dhabas/ road side eateries;	90 days
vii)	Undertake Satellite based monitoring for tracking and enforcing agriculture waste burning;	90 days
viii)	Take steps for setting up of bio-mass based power generation units to avoid bio-mass burning.	One year

The State Pollution Control Boards (SPCBs) / Pollution Control Committee (PCC) shall acknowledge the receipt of this direction immediately and shall communicate the status of the implementation before 31st January 2016 supplemented with ambient air quality monitoring data being maintained by them. The SPCBs/PCC shall issue further directions to such authorities as may be necessary for implementation of these directions by 15th of January, 2016.


 (Arun Kumar Mehta)
 Chairman
 29/12/15



File No. A-18011/41/2000(Part-II)-MON

29th December, 2015

To

The Chairman,
Delhi Pollution Control Committee
6th Level, B-Wing,
Delhi Secretariat,
I.P.Estate,
New Delhi - 110002

Directions under Section 18(1)(b) of the Air (Prevention and Control of Pollution) Act, 1981 regarding prevention, control or abatement of air pollution and improvement of Ambient Air Quality in Delhi and National Capital Region (NCR)

Whereas, under Section 17 (1) (a) of the Air (Prevention and Control of Pollution) Act, 1981, one of the functions of the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) is to plan comprehensive programmes for prevention, control or abatement of air pollution and to secure the execution thereof;

Whereas, levels of Particulate Matter (PM10 & PM2.5) exceed the National Ambient Air Quality Standards (NAAQS) 2009 in the National Capital Region (NCR);

Whereas, the primary sources of air pollution in NCR States are: a) vehicular emissions; b) burning of biomass, Crop residues, Municipal Solid Waste and Garbage, c) Road dust; d) Constructions and Demolitions; and g) Industrial emissions, etc;

Whereas, serious concerns have been expressed by Hon'ble Supreme Court, High Court of Delhi and the National Green Tribunal (NGT) in the matter from time to time and specific directions have been issued;

Whereas, there have been regular meetings between Ministry of Environment, Forest & Climate Change (MoEF&CC) with the Government of Delhi, Haryana, Uttar Pradesh and Rajasthan to evolve and implement short and long term action plans;

परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032

Parivesh Bhawan, East Arjun Nagar, Delhi-110032

दूरभाष/Tel : 43102030, 22305792, वेबसाईट/Website : www.cpcb.nic.in

Whereas, the concerned State Governments have agreed to implement identified actions on short and long term basis;

Whereas, clean air is a matter of right and it is necessary to implement steps towards improvement of Air Quality in the National Capital Region;

Whereas, functions of the Central Pollution Control Board under Section 16 of the Air (Prevention and Control of Pollution) Act, 1981 include improvement of quality of air and to prevent, control or abate air pollution in the country;

Whereas, steps are urgently required to improve air quality adopting a multipronged and integrated approach including close monitoring of implementation;

NOW, THEREFORE, in view of the above stated facts, the following directions in exercise of powers under section 18(1) (b) of the Air (Prevention and Control of Pollution) Act, 1981 are hereby issued in order to improve the air quality in Delhi and NCR as per timelines indicated:

A.) Control of Vehicular Emissions:

Sl. No.	Action Points	Time Frame for implementation
i)	Launch extensive awareness drive against polluting vehicles;	Immediate
ii)	Ensure Strict action against visibly polluting vehicles;	Immediate
iii)	Install weigh in motion bridges at Delhi borders to prevent overloading;	Immediate
iv)	Take steps to prevent parking of vehicles in the non-designated areas;	Immediate
v)	Introduce early alarm system for benefit of commuters related to traffic congestion on major routes for route diversion ;	Immediate
vi)	Consider introducing plan for Flexi/staggered timings to minimize peak movement of vehicles on the road;	Immediate
vii)	Take steps for retrofitting of diesel vehicles with Particulate Filters;	Immediate
viii)	De-congest pathways;	Immediate
ix)	Synchronize traffic movements / Introduce intelligent traffic systems for lane-driving;	30 days
x)	Install vapor recovery system in fueling stations;	30 days
xi)	Take steps for installation of remote sensor based PUC system etc.;	90 days

xii)	Formulate action plan for controlling decongestion of fuel stations including increasing number of dispensing machines;	90 days
xiii)	Prepare action plan to check fuel adulteration and random monitoring of fuel quality data;	90 days
xiv)	Prepare action plan for public transport on CNG mode;	90 days
xv)	Undertake road widening and improvement of infrastructure for decongestion of road;	90 days
xvi)	Promote battery operated vehicles;	90 days
xvii)	Take steps to expedite early completion of Western and Eastern Peripheral expressway and submit completion schedule.	60 days

(B) Control of Road Dust/Re-suspension of dust and other fugitive emission:

Sl. No.	Action Points	Time Frame for implementation
i)	Formulate action plan for creation of green buffers along the traffic corridors;	Immediate
ii)	Introduce wet/ mechanized vacuum sweeping of roads;	30 days
iii)	Maintain pot holes free roads for free-flow of traffic to reduce emissions and dust;	60 days
iv)	Introduce water fountains at major traffic intersection, wherever feasible;	90 days
v)	Undertake greening of open areas, gardens, community places, schools and housing societies.	90 days
vi)	Take steps for blacktopping / pavement of road shoulders to avoid road dust;	180 days

(C) Control of Air Pollution from Bio-Mass Burning:

Sl. No.	Action Points	Time Frame for implementation
i)	Take stringent action against open burning of bio-mass/leaves/tyres etc to control such activities and submit periodic status reports;	Immediate
ii)	Ensure proper collection of horticulture waste (bio-mass) and composting-cum-gardening approach;	Immediate
iii)	Ensure strict enforcement of ban on burning of agriculture waste and crop residues;	Immediate

iv)	Prohibit use of coal in hotels and restaurants and eliminate use of kerosene for cooking in Delhi;	60 days
-----	--	---------

(D) Control of Industrial Air Pollution;

Sl. No.	Action Points	Time Frame for implementation
i)	Ensure strict action against unauthorized brick kilns;	30 days
ii)	Ensure strict action against industrial units not complying with standards ;	60 days
iii)	Enforce strict compliance of conversion of Natural draft brick kilns to induced-draft;	90 days
iv)	Launch action plan for switching over to natural gas by industries, wherever feasible.	120 days

(E) Control of Air Pollution from Construction and Demolition Activities:

Sl. No.	Action Points	Time Frame for implementation
i)	Control dust pollution at construction sites through appropriate cover;	Immediate
ii)	Undertake control measures for fugitive emissions from material handling, conveying and screening operations through water sprinkling, curtains, barriers and dust suppression units;	30 days
iii)	Ensure carriage of construction material in closed/covered vessels;	30 days

(F) Other Steps to control Air Pollution

Sl. No.	Action Points	Time Frame for implementation
i)	Set-up helpline in States/UT for taking action against reported non-compliance;	Immediate
ii)	Evolve a system of reporting of garbage /municipal solid waste burning through mobile based applications and other social media platform linked with Central and State level Control Rooms ;	30 days
iii)	Establish Standard Operating Procedure to provide quick and effective response to complaints;	30 days

B

v)	Ensure DG sets meeting the standards only be allowed to operate ;	30 days
vi)	Promote use of LPG instead of coal in restaurants/ dhabas/ road side eateries;	90 days
vii)	Undertake Satellite based monitoring for tracking and enforcing agriculture waste burning;	90 days
viii)	Take steps for setting up of bio-mass based power generation units to avoid bio-mass burning.	One year

The State Pollution Control Boards (SPCBs) / Pollution Control Committee (PCC) shall acknowledge the receipt of this direction immediately and shall communicate the status of the implementation before 31st January 2016 supplemented with ambient air quality monitoring data being maintained by them. The SPCBs/PCC shall issue further directions to such authorities as may be necessary for implementation of these directions by 15th of January, 2016.


 (Arun Kumar Mehta)
 Chairman
 29/12/15



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

File No. A-18011/41/2000(Part-II)-MON

29th December, 2015

To

The Chairman,
4, Jhalana Institutional Area,
Jhalana Doongri,
Jaipur,
Rajasthan 302004

Directions under Section 18(1)(b) of the Air (Prevention and Control of Pollution) Act, 1981 regarding prevention, control or abatement of air pollution and improvement of Ambient Air Quality in Delhi and National Capital Region (NCR)

Whereas, under Section 17 (1) (a) of the Air (Prevention and Control of Pollution) Act, 1981, one of the functions of the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) is to plan comprehensive programmes for prevention, control or abatement of air pollution and to secure the execution thereof;

Whereas, levels of Particulate Matter (PM10 & PM2.5) exceed the National Ambient Air Quality Standards (NAAQS) 2009 in the National Capital Region (NCR);

Whereas, the primary sources of air pollution in NCR States are: a) vehicular emissions; b) burning of biomass, Crop residues, Municipal Solid Waste and Garbage, c) Road dust; d) Constructions and Demolitions; and g) Industrial emissions, etc;

Whereas, serious concerns have been expressed by Hon'ble Supreme Court, High Court of Delhi and the National Green Tribunal (NGT) in the matter from time to time and specific directions have been issued;

Whereas, there have been regular meetings between Ministry of Environment, Forest & Climate Change (MoEF&CC) with the Government of Delhi, Haryana, Uttar Pradesh and Rajasthan to evolve and implement short and long term action plans;

1 | Page

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032

Parivesh Bhawan, East Arjun Nagar, Delhi-110032

दूरभाष/Tel : 43102030, 22305792, वेबसाइट/Website : www.cpcb.nic.in

Whereas, the concerned State Governments have agreed to implement identified actions on short and long term basis;

Whereas, clean air is a matter of right and it is necessary to implement steps towards improvement of Air Quality in the National Capital Region;

Whereas, functions of the Central Pollution Control Board under Section 16 of the Air (Prevention and Control of Pollution) Act, 1981 include improvement of quality of air and to prevent, control or abate air pollution in the country;

Whereas, steps are urgently required to improve air quality adopting a multipronged and integrated approach including close monitoring of implementation;

NOW, THEREFORE, in view of the above stated facts, the following directions in exercise of powers under section 18(1) (b) of the Air (Prevention and Control of Pollution) Act, 1981 are hereby issued in order to improve the air quality in Delhi and NCR as per timelines indicated:

A.) Control of Vehicular Emissions:

Sl. No.	Action Points	Time Frame for implementation
i)	Launch extensive awareness drive against polluting vehicles;	Immediate
ii)	Ensure Strict action against visibly polluting vehicles;	Immediate
iii)	Install weigh in motion bridges at Delhi borders to prevent overloading;	Immediate
iv)	Take steps to prevent parking of vehicles in the non-designated areas;	Immediate
v)	Introduce early alarm system for benefit of commuters related to traffic congestion on major routes for route diversion ;	Immediate
vi)	Consider introducing plan for Flexi/staggered timings to minimize peak movement of vehicles on the road;	Immediate
vii)	Take steps for retrofitting of diesel vehicles with Particulate Filters;	Immediate
viii)	De-congest pathways;	Immediate
ix)	Synchronize traffic movements / Introduce intelligent traffic systems for lane-driving;	30 days
x)	Install vapor recovery system in fueling stations;	30 days
xi)	Take steps for installation of remote sensor based PUC system etc.;	90 days

xii)	Formulate action plan for controlling decongestion of fuel stations including increasing number of dispensing machines;	90 days
xiii)	Prepare action plan to check fuel adulteration and random monitoring of fuel quality data;	90 days
xiv)	Prepare action plan for public transport on CNG mode;	90 days
xv)	Undertake road widening and improvement of infrastructure for decongestion of road;	90 days
xvi)	Promote battery operated vehicles;	90 days
xvii)	Take steps to expedite early completion of Western and Eastern Peripheral expressway and submit completion schedule.	60 days

(B) Control of Road Dust/Re-suspension of dust and other fugitive emission:

Sl. No.	Action Points	Time Frame for implementation
i)	Formulate action plan for creation of green buffers along the traffic corridors;	Immediate
ii)	Introduce wet/ mechanized vacuum sweeping of roads;	30 days
iii)	Maintain pot holes free roads for free-flow of traffic to reduce emissions and dust;	60 days
iv)	Introduce water fountains at major traffic intersection, wherever feasible;	90 days
v)	Undertake greening of open areas, gardens, community places, schools and housing societies;	90 days
vi)	Take steps for blacktopping / pavement of road shoulders to avoid road dust;	180 days

(C) Control of Air Pollution from Bio-Mass Burning:

Sl. No.	Action Points	Time Frame for implementation
i)	Take stringent action against open burning of bio-mass/leaves/tyres etc to control such activities and submit periodic status reports;	Immediate
ii)	Ensure proper collection of horticulture waste (bio-mass) and composting-cum-gardening approach;	Immediate
iii)	Ensure strict enforcement of ban on burning of agriculture waste and crop residues;	Immediate



iv)	Prohibit use of coal in hotels and restaurants and eliminate use of kerosene for cooking in Delhi;	60 days
-----	--	---------

(D) Control of Industrial Air Pollution;

Sl. No.	Action Points	Time Frame for implementation
i)	Ensure strict action against unauthorized brick kilns;	30 days
ii)	Ensure strict action against industrial units not complying with standards ;	60 days
iii)	Enforce strict compliance of conversion of Natural draft brick kilns to induced-draft;	90 days
iv)	Launch action plan for switching over to natural gas by industries, wherever feasible.	120 days

(E) Control of Air Pollution from Construction and Demolition Activities:

Sl. No.	Action Points	Time Frame for implementation
i)	Control dust pollution at construction sites through appropriate cover;	Immediate
ii)	Undertake control measures for fugitive emissions from material handling, conveying and screening operations through water sprinkling, curtains, barriers and dust suppression units;	30 days
iii)	Ensure carriage of construction material in closed/covered vessels;	30 days

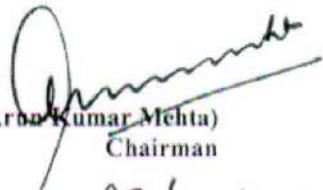
(F) Other Steps to control Air Pollution

Sl. No.	Action Points	Time Frame for implementation
i)	Set-up helpline in States/UT for taking action against reported non-compliance;	Immediate
ii)	Evolve a system of reporting of garbage /municipal solid waste burning through mobile based applications and other social media platform linked with Central and State level Control Rooms ;	30 days
iii)	Establish Standard Operating Procedure to provide quick and effective response to complaints;	30 days



v)	Ensure DG sets meeting the standards only be allowed to operate;	30 days
vi)	Promote use of LPG instead of coal in restaurants/ dhabas/ road side eateries;	90 days
vii)	Undertake Satellite based monitoring for tracking and enforcing agriculture waste burning;	90 days
viii)	Take steps for setting up of bio-mass based power generation units to avoid bio-mass burning.	One year

The State Pollution Control Boards (SPCBs) / Pollution Control Committee (PCC) shall acknowledge the receipt of this direction immediately and shall communicate the status of the implementation before 31st January 2016 supplemented with ambient air quality monitoring data being maintained by them. The SPCBs/PCC shall issue further directions to such authorities as may be necessary for implementation of these directions by 15th of January, 2016.


 (Arun Kumar Mehta)
 Chairman
 29/12/15



Central Pollution Control Board
Ministry of Environment, Forest & Climate Change
(Govt. of India)

Graded Response Action Plan for Delhi & NCR

In pursuant to the Hon'ble Supreme Court's order dated December 02, 2016 in the matter of M. C. Mehta vs. Union of India regarding air quality in National Capital Region of Delhi, a Graded Response Action Plan has been prepared for implementation under different Air Quality Index (AQI) categories namely, Moderate & Poor, Very Poor, and Severe as per National Air Quality Index. A new category of "Severe+ or Emergency" has been added. Ministry of Environment, Forests & Climate Change has notified for implementation of Graded Response Action Plan through Environment Pollution (Prevention & Control) Authority vide S.O. 118 (E) dated January 12, 2017 (copy enclosed).

Severe + or Emergency (ambient PM _{2.5} or PM ₁₀ concentration values of 300 µg/m ³ or 500 µg/m ³ respectively persist for 48 hours or more)	Agency responsible/Implementing Agency
Stop entry of truck traffic into Delhi (except essential commodities)	Municipal Corporations and Traffic Police of Delhi and NCR Towns
Stop construction activities	Delhi Pollution Control Committee/Municipal Corporations of Delhi and NCR towns
Introduce odd and even scheme for private vehicles based on license plate numbers and minimize exemptions	Secretary cum Commissioner of Transport Department, NCT of Delhi, and Transport Commissioners of NCR towns
Task Force to take decision on any additional steps including shutting of schools	
Severe (ambient PM _{2.5} or PM ₁₀ concentration value is more than 250 µg/m ³ or 430 µg/m ³ respectively)	Agency responsible/Implementing Agency
Close brick kilns, Hot Mix plants, Stone Crushers	Chairpersons Delhi Pollution Control Committee, State Pollution Control Boards of Haryana, Rajasthan, and Uttar Pradesh
	Superintendent of Police and Deputy Commissioner of respective districts
Shut down Badarpur power plant and maximize generation of power from existing natural gas based plants to reduce operation of coal based power plants in the NCR.	Chairpersons Delhi Pollution Control Committee, State Pollution Control Boards of Haryana, Rajasthan, and Uttar Pradesh

Intensify public transport services. Introduce differential rates to encourage off-peak travel.	Secretary cum Commissioner of Transport Department, NCT of Delhi, and Transport Commissioners of NCR towns Chairperson, Delhi Metro Rail Corporation (DMRC) Chairpersons, State Transport Corporations
Severe (ambient PM_{2.5} or PM₁₀ concentration value is more than 250 µg/m³ or 430 µg/m³ respectively)	Agency responsible/Implementing Agency
Increase frequency of mechanized cleaning of road and sprinkling of water on roads. Identify road stretches with high dust generation.	All road owning agencies including Municipal Corporations of NCT of Delhi and NCR towns, Public Works Departments and National Highway Authority of India
Very Poor (ambient PM_{2.5} or PM₁₀ concentration value is between 121-250 µg/m³ or 351-430 µg/m³ respectively)	Agency responsible/Implementing Agency
Stop use of diesel generator sets	Chairpersons Delhi Pollution Control Committee, State Pollution Control Boards of Haryana, Rajasthan, Uttar Pradesh
Enhance parking fee by 3-4 times	Municipal Commissioner Municipal Corporations of NCT of Delhi and NCR towns
Increase bus and metro services by augmenting contract buses and increasing frequency of service	Principal Secretary, Department of Transport of NCT of Delhi Delhi Transport Corporation (DTC) Delhi Integrated Multi-modal Transit System Ltd (DIMTS) Delhi Metro Rail Corporation (DMRC) State Transport Corporations in NCR towns
Stop use of coal/firewood in hotels and open eateries	Municipal Corporations of NCT of Delhi and NCR towns
Residential Welfare Associations and individual house owners to provide electric heaters during winter to security staff to avoid open burning by them	Resident Welfare Associations
Alert in newspapers/TV/radio to advise people with respiratory and cardiac patients to avoid polluted areas and restrict outdoor movement.	Chairpersons, Delhi Pollution Control Committee, State Pollution Control Boards of Haryana, Rajasthan, and Uttar Pradesh
Moderate to poor (ambient PM_{2.5} or PM₁₀ concentration value is between 61-120 µg/m³ or 101-350 µg/m³ respectively)	Agency responsible/Implementing Agency
Stringently enforce/stop garbage burning in	Municipal Commissioner

landfills and other places and impose heavy fines on person responsible	Municipal corporations of Delhi and NCR towns
Close/stringently enforce all pollution control regulations in brick kilns and industries	Chairpersons, Delhi Pollution Control Committee, State Pollution Control Boards of Haryana, Rajasthan, and Uttar Pradesh
Moderate to poor(ambient PM_{2.5} or PM₁₀ concentration value is between 61-120 µg/m³ or 101-350 µg/m³ respectively)	Agency responsible/Implementing Agency
Stringently enforce pollution control in thermal power plants through PCB monitoring	Plant in-charge of power plants in NCR, and Delhi Pollution Control Committee and State Pollution Control Boards of Haryana, Rajasthan and Uttar Pradesh
Do periodic mechanized sweeping on roads with heavy traffic and water sprinkling also on unpaved roads every two days	Municipal Commissioner, Municipal Corporations of NCT of Delhi and NCR towns Commissioners, Traffic Police of Delhi and NCR towns to identify roads with heavy traffic and provide information to respective Municipal Commissioners Chief Engineers of officers in charge of CPWD, PWD of Delhi and NCR towns to identify unpaved roads with heavy traffic and provide information to respective Municipal Commissioners
Strict vigilance and no tolerance for visible emissions – stop plying of visibly polluting vehicles by impounding or heavy fine.	Commissioner or Officer in Charge, Transport Department and Traffic Police of NCT Delhi and NCR towns
Strict vigilance and enforcement of PUC norms	
Stringently enforce rules for dust control in construction activities and close non-compliant sites	Commissioner or Officers in charge of Police Departments of Delhi and NCR towns
Deploy traffic police for smooth traffic flow at identified vulnerable areas	Commissioners Traffic Police of Delhi and NCR Towns
Strictly enforce Supreme Court order on diversion of non-destined truck traffic and ensure only trucks registered after 2005 are allowed entry into Delhi	Municipal Corporations of NCT of Delhi and NCR towns Traffic Police of NCT of Delhi and NCR towns
Strictly enforce Supreme Court ban on firecrackers	Chief Controller of Explosives Petroleum and Explosive Safety Organizations (PESO)

	Commissioner of Officer in charge of licensing in the police departments of Delhi and NCR
Ensure fly ash ponds* are watered every alternate day during summer months (March – May).	Plant in charge of Power Plants in Delhi and NCR towns
Moderate to poor(ambient PM_{2.5} or PM₁₀ concentration value is between 61-120 µg/m³ or 101-350 µg/m³ respectively)	Agency responsible/Implementing Agency
Information dissemination Social media, mobile Apps should be used to inform people about the pollution levels, contact details of control room, enable them to report polluting activities/sources to the concerned authorities, and actions that will be taken by government based on the level of pollution.	Chairpersons, Delhi Pollution Control Committee, State Pollution Control Boards of Haryana, Rajasthan, and Uttar Pradesh

Source Apportionment of Delhi

CPCB Study (2010)				
Source	% contribution (PM ₁₀): Range for 10 monitoring locations			
	Vehicles	8.7-20.5		
Road dust	14.5-29.0			
Construction	22-23.1			
Industries	6.3-9.3			
Garbage burning	10.5-24.4			
Domestic	2.7-9.4			
DG sets	6.8-12.3			
IIT Kanpur Study (2015)				
Source	Average for six monitoring locations			
	% contribution (PM ₁₀)		% contribution (PM _{2.5})	
	Winter	Summer	Winter	Summer
Vehicles	19.7	6.4	25.1	8.5
Secondary particulates	24.6	10.15	29.9	14.9
Biomass burning	16.7	6.8	25.8	12.2
Industries	0.65	1.05	0.8	1.2
Coal and Fly Ash	12.1	37.2	4.8	25.95
Construction material	3.1	4.1	1.5	3.0
Soil and road dust	14.4	26.5	4.3	27.1
Soil Waste burning	8.75	7.75	7.75	7.2

Annexure VII

Non-Attainment cities with respect to Ambient Air Quality India (2011-2015)

State Sl. No	State	Cities Sl. No	Cities	Status	Major Sources of Pollution
1	Andhra Pradesh	1	Guntur	PM ₁₀	i) Vehicular Emissions ii) Road Dust/Re-suspension of dust and other fugitive emission iii) Air Pollution from Bio-Mass Burning iv) Industrial Air Pollution v) Air Pollution from Construction and Demolition Activities vi) DG sets vii) LPG instead of coal in restaurants/ dhabas/ road side eateries
		2	Kurnool	PM ₁₀	
		3	Nellore	PM ₁₀	
		4	Vijaywada	PM ₁₀	
		5	Vishakhapatnam	PM ₁₀	
2	Assam	6	Guwahati	PM ₁₀	
		7	Nagaon	PM ₁₀	
		8	Nalbari	PM ₁₀	
		9	Sibsagar	PM ₁₀	
10	Silchar	PM ₁₀			
3	Chandigarh	11	Chandigarh	PM ₁₀	
4	Chattisgarh	12	Bhillai	PM ₁₀	
		13	Korba	PM ₁₀	
5	Delhi	14	Delhi	PM ₁₀ , NO ₂	
6	Gujarat	15	Surat	PM ₁₀	
7	Himachal Pradesh	16	Baddi	PM ₁₀	
		17	Damtal	PM ₁₀	
		18	Kala Amb	PM ₁₀	
		19	Nalagarh	PM ₁₀	
		20	Paonta Sahib	PM ₁₀	
		21	Parwanoo	PM ₁₀	
22	Sunder Nagar	PM ₁₀			
8	Jammu & Kashmir	23	Jammu	PM ₁₀	
9	Jharkhand	24	Dhanbad	PM ₁₀	
10	Karnataka	25	Bangalore	PM ₁₀	
		26	Devanagere	PM ₁₀	
		27	Gulburga	PM ₁₀	
		28	Hubli-Dharwad	PM ₁₀	
11	Madhya Pradesh	29	Bhopal	PM ₁₀	
		30	Dewas	PM ₁₀	
		31	Indore	PM ₁₀	
		32	Sagar	PM ₁₀	
		33	Ujjain	PM ₁₀	
12	Maharashtra	34	Akola	PM ₁₀	
		35	Amravati	PM ₁₀	
		36	Aurangabad	PM ₁₀	
		37	Badlapur	PM ₁₀ , NO ₂	
		38	Chandrapur	PM ₁₀	
		39	Jalgaon	PM ₁₀	
		40	Jalna	PM ₁₀	
		41	Kolhapur	PM ₁₀	
42	Latur	PM ₁₀			

State Sl. No	State	Cities Sl. No	Cities	Status	Major Sources of Pollution
		43	Mumbai	PM ₁₀	i) Vehicular Emissions ii) Road Dust/Re-suspension of dust and other fugitive emission iii) Air Pollution from Bio-Mass Burning iv) Industrial Air Pollution v) Air Pollution from Construction and Demolition Activities vi) DG sets vii) LPG instead of coal in restaurants/ dhabas/ road side eateries
		44	Nagpur	PM ₁₀	
		45	Nashik	PM ₁₀	
		46	Navi Mumbai	PM ₁₀	
		47	Pune	PM ₁₀ , NO ₂	
		48	Sangli	PM ₁₀	
		49	Solapur	PM ₁₀	
		50	Ulhasnagar	PM ₁₀ , NO ₂	
13	Meghalaya	51	Byrnihat	PM ₁₀	
14	Nagaland	52	Dimapur	PM ₁₀	
		53	Kohima	PM ₁₀	
15	Orissa	54	Angul	PM ₁₀	
		55	Balasore	PM ₁₀	
		56	Bhubneshwar	PM ₁₀	
		57	Cuttack	PM ₁₀	
		58	Rourkela	PM ₁₀	
		59	Taicher	PM ₁₀	
16	Punjab	60	Dera Bassi	PM ₁₀	
		61	Gobindgarh	PM ₁₀	
		62	Jalandhar	PM ₁₀	
		63	Khanna	PM ₁₀	
		64	Ludhiana	PM ₁₀	
		65	Naya Nangal	PM ₁₀	
		66	Pathankot/Dera Baba	PM ₁₀	
		67	Patiala	PM ₁₀	
17	Rajasthan	68	Alwar	PM ₁₀	
		69	Jaipur	PM ₁₀	
		70	Jodhpur	PM ₁₀	
		71	Kota	PM ₁₀	
		72	Udaipur	PM ₁₀	
18	Tamilnadu	73	Tuticorin	PM ₁₀	
19	Telangana	74	Hydrabad	PM ₁₀	
		75	Nalgonda	PM ₁₀	
		76	Patancheru	PM ₁₀	
		77	Agra	PM ₁₀	
20	Uttar Pradesh	78	Allahabad	PM ₁₀	
		79	Anpara	PM ₁₀	
		80	Bareilly	PM ₁₀	
		81	Firozabad	PM ₁₀	
		82	Gajraula	PM ₁₀	
		83	Ghaziabad	PM ₁₀	
		84	Jhansi	PM ₁₀	
		85	Kanpur	PM ₁₀	
		86	Khurja	PM ₁₀	
		87	Lucknow	PM ₁₀	
		88	Muradabad	PM ₁₀	
		89	Noida	PM ₁₀	
		90	Raebareli	PM ₁₀	
		91	Varanasi	PM ₁₀	
		21	Uttarakhand	92	Kashipur
93	Rishikesh			PM ₁₀	

State Sl. No	State	Cities Sl. No	Cities	Status	Major Sources of Pollution
22	West Bengal	94	Kolkata	PM ₁₀ , NO ₂	

Note: Based on the data generated during 2011 – 2015 under National Ambient Air Quality Monitoring Network (NAMP), 94 cities & towns are identified as non-attainment. All 94 cities are exceeding the PM₁₀ standard, while 05 cities are exceeding the NO₂ standard continuously for five years (2011-2015).

