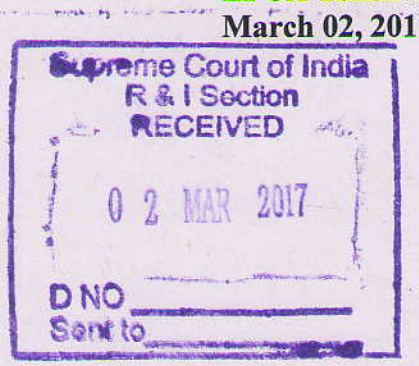
ENVIRONMENT POLLUTION (PREVENTION & CONTROL) AUTHORITY
for the National Capital Region

Dr Bhure Lal
Chairman

EPCA-R/2017/L-11
March 02, 2017



To:

The Registrar General
Hon'ble Supreme Court of India
New Delhi

Sub: Submission of Report on Air pollution in the matter of Writ Petition (C) No 13029 of 1985; M.C. Mehta v/s UOI & others

Dear Sir,

This is with reference to the Hon'ble Supreme Court Order dated February 06, 2017 in W. P. (C) No 13029 of 1985 M. C. Mehta v/s UoI & Others.

I am hereby enclosing the report of the Environment Pollution (Prevention & Control) Authority for the National Capital Region (EPCA), on Air pollution.

Kindly arrange to place the report before the Hon'ble Court.

Thanking you,

(Bhure Lal)
Chairman, EPCA

Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar, Near Karkardooma Courts, Shahdara, Delhi 110 032
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Environment Pollution (Prevention and Control) Authority for the National Capital Region

Report No. 70

Hon'ble Supreme Court in its order dated 6.2.2017 had directed that it would be appropriate for all the concerned authorities, namely EPCA, government of Delhi as well as the governments of NCR i.e. governments of Haryana, Rajasthan and Uttar Pradesh along with CPCB hold a joint meeting within a period of two weeks from today and thereafter come up with one comprehensive plan merging all plans.

EPCA held meetings on February 10 and February 20 2017 with representatives from CPCB, environment department of NCT Delhi, governments of Haryana, Rajasthan and Uttar Pradesh regarding the preparation of the plan. It was agreed that CPCB, EPCA and Delhi government would merge their existing plans and that this document would be sent to the states of Haryana, Uttar Pradesh and Rajasthan for their review and finalization.

Based on this decision, the draft comprehensive action plan for air pollution control has been prepared, which merges all the previous plans. It has been sent to the governments of Haryana, Uttar Pradesh and Rajasthan for their review. A meeting will be convened by EPCA at the end of March 2017 to finalize the plan with these governments.

DRAFT

Comprehensive Action Plan for air pollution control

with the objective to meet ambient air quality standards in the National Capital Territory of Delhi and National Capital Region, including states of Haryana, Rajasthan and Uttar Pradesh

March 2, 2017

1. Combating air pollution in Delhi and the National Capital Region

The Hon'ble Supreme Court, in its order dated 06.02.2017, has directed that:

"In our opinion, it would be appropriate if all the concerned authorities namely the EPCA, the Government of Delhi as well as the Governments of NCR i.e. Governments of Haryana, Rajasthan and Uttar Pradesh along with CPCB hold a joint meeting within a period of two weeks from today and thereafter come up with one comprehensive plan merging all three plans. We direct accordingly."

In view of this, the Environment Pollution (Prevention and Control) Authority (EPCA) has drafted a comprehensive action plan for Delhi and the National Capital Region (NCR) in consultation with the Central Pollution Control Board (CPCB) and the Delhi Pollution Control Committee (DPCC) of the Delhi government. It has been agreed jointly that the Draft Action Plan, as prepared by EPCA, CPCB and DPCC would be sent to state governments of Haryana, Rajasthan and Uttar Pradesh for their review and adoption. This draft is based on the 2012-2013 action plan of the Delhi government, and has been updated based on the orders of the Hon'ble Supreme Court related to air pollution control in Delhi and NCR. It includes the 42 action point directions given by the Central Pollution Control Board in 2015 for Delhi and NCR; the Delhi Decongestion Plan drawn up by the Ministry of Urban Development; the revised Delhi Master Plan of 2021, and other relevant government plans and policies.

The overall objective is to present a pollution source-wise action plan to be implemented in a time-bound manner with adequate stringency, monitoring and compliance system to meet the clean air targets. This comprehensive plan identifies short-term priority action as well as those to be implemented in a medium to longer time frame. The new generation action is more complex in nature, but important for the desired stringency and effectiveness.

Guiding principles for the comprehensive action plan

Meet clean air standards in a time-bound manner: Air quality monitoring in Delhi and limited air quality monitoring in the NCR show the extent of non-compliance with the air quality standards. According to the 2009 National Ambient Air Quality Standards notified under the Air (Prevention and Control of Pollution) Act, 1981 the daily and hourly standards for pollutants must be met 98 per cent of the time in a year and they should not exceed the standards on two consecutive days. Delhi and NCR will have to strive towards meeting these standards over time. The global practice is to take the average concentration of a pollutant for three years to assess the percentage reduction needed to meet the clean air standards. This shows Delhi will have to reduce PM10 levels by 74 per cent, PM2.5 by 70 per cent, and nitrogen dioxide by 37.5 per cent to meet the standards. Similarly, key NCR cities and towns need significant reductions to meet the clean air standards (*see Table 1: Reduction needed in annual average concentration in selected NCR cities to meet the clean air standards*). This must be kept in view to decide on the stringency of action.

Table 1: Reduction needed in annual average concentration in selected NCR cities to meet the clean air standards

City	**PM10** levels (in micro-gramme per cubic metre, or cu m)	Percentage reduction in **PM10** required to meet the annual average standard (i.e. 60 microgramme per cu m)	**NO2** levels (in micro-gramme per cu m)	Percentage reduction in **NO2** required to meet the annual average standard (i.e. 40 microgramme per cum)	**PM2.5** levels (in micro-gramme per cu m)	Percentage reduction in **PM2.5** required to meet the annual average standard (i.e. 40 microgramme per cu m)
Delhi	232	74%	64	37.5%	132	69.7%
Faridabad	166	63.9%	41	2.5%	NA	NA
Ghaziabad	247	75.7%	35	Within standard	NA	NA
Noida	138	56.5%	31	Within standard	NA	NA
Meerut	149	59.7%	47	14.9%	NA	NA

Note: Annual data for consecutive years for Gurugram is not available
NA: Not available
Source: Based on data reported on CPCB website

Take action on all sources of pollution to meet clean air targets: Given the very high levels of pollution, it is important to take action on all sources to control particulate pollution as well as to prevent the trend in toxic gases from worsening. In 2015, a source inventory and source apportionment study was carried out by the Indian Institute of Technology (IIT), Kanpur under the aegis of the Delhi government. The study assessed 13 key pollution sources and their relative contributions to different pollutants (*see Annex 1: Relative contribution of pollution sources to pollution load in Delhi*). These include dust sources such as road dust and construction dust as well as a large number of combustion sources including vehicles, power plants, industries and waste burning. Such an assessment has not been done in the NCR

Reduce integrated exposure to protect public health: The Union Ministry of Health and Family Welfare in its Report of Steering Committee on Air Pollution and Health-Related Issues in 2015 has stated that it is more important to know how close people are to pollution sources, what are they inhaling, and how much time they spend close to the pollution source than what occurs generally in the ambient air that is influenced by climate and weather. While ambient concentration of pollution helps measure the change in pollution trends over time and space, human exposures are heavily influenced by nearby sources (such as stoves, vehicles and neighbourhood trash burning) and less by general ambient concentrations. Take action to control pollution from all sources across micro-environments to protect public health.

Public health risk from air pollution is grave and growing: The Global Burden of Disease estimates for 2017 have shown that early deaths related to PM2.5 in India are the second highest in the world and ozone-related deaths, though lower than PM2.5, are the highest in the world. Not only the tiny particulates, but also the toxic gases that come entirely from combustion sources pose a very serious health risk. The 2012 epidemiological study on children in Delhi (CPCB and the Chittaranjan National Cancer Institute of Kolkata) covered 11,628 school-going children from 36 schools. It showed that every third child has reduced lung function. Sputum of Delhi's children contains four times more iron-laden macrophages than those from cleaner environs, indicating pulmonary hemorrhage. The Health Effects Study of Boston in 2010 has

shown that there are at least 3,000 early deaths in Delhi every year due to air pollution-related diseases that the Hon'ble Supreme Court has reinterpreted to be 8 deaths a day. Several other studies over time have established the serious health impacts and diverse health outcomes of air pollution in this region. This demands urgent and strong action.

Address quantum vs toxicity: Yet another principle that has been established is the setting of priorities according to what is more toxic and dangerous. Recent global studies have authoritatively assessed differentiated health risks according to the source of particulates. A study by the Health Effects Institute, published recently in *Environmental Health Perspectives*, has found that particles from coal and diesel are more harmful than wind-blown dust, as they can lead to an increase in ischemic heart disease-related deaths. Similarly, particles from diesel combustion are very toxic and have been classified by the WHO as a class I carcinogen for strong links with lung cancer, putting them in the same bracket as tobacco smoking and asbestos. This suggests that we must prioritise the more harmful particulates for action. Combustion sources -- vehicles, power plants and industry -- need more stringent and priority action.

Adopt a regional approach for a common air-shed: Local pollution control will have to be supported by regional action. Satellite imagery shows how the entire north Indian belt which is landlocked stays polluted during winter. Landlocked plains trap air and pollution from biomass *chulhas*, industries and power plants, traffic and open fires. The seasonal incidents of farm fires in Punjab and Haryana have brought the matter of trans-boundary movement of pollution to the forefront, catalysing inter-state coordination. The farm fires greatly contribute to pollution in NCR towns during the season (roughly October 25-November 15). This pollution source has been taken up for action by the Hon'ble NGT as well as Hon'ble Delhi High Court and clear directions have been issued to the Punjab and Haryana state governments. This demands a regional action plan to address more dispersed pollution sources. Recognising this, the Hon'ble Supreme Court has provided that all actions to combat pollution must be applicable to the National Capital Region.

Enforce emergency action to control and minimize exposure on a daily basis: In 2016, the Hon'ble Supreme Court intervened to direct the Union government to frame and implement a graded response action plan, which lays out the measures and actions to be taken based on the levels of daily pollution to prevent peaking of pollution. This graded response action plan also, for the first time, provides for actions that need to be taken when pollution reaches a public health emergency level. This plan provides a model for other cities to emulate and should be enforced nationwide (*see Annex 2: Graded Response Action Plan*).

Addressing both consistent and seasonal sources of pollution: The pollution source assessment done by the Indian Institute of Technology, Kanpur in 2015 shows that combustion sources like vehicles, industry and power plants are the most consistent and dominant sources of pollution that emit throughout the year. Most other sources like waste and paddy burning and construction activities are variable and intermittent. Biomass and municipal solid waste burning are important sources, but they are variable. To get the average levels down, strong focus must remain on consistent sources such as vehicles, power plants and industry that also emit toxic gases, which are hazardous to health.

Address secondary particulates that are formed in the air by gases: The IIT Kanpur study of 2015 put the spotlight on the problem of secondary particulates that are formed in the air from gases that come from combustion sources. Nitrate particles formed from nitrogen oxides and sulphate particles formed from sulphur dioxides can be 25 per cent of the PM2.5 load in the city. This means the relative contribution of power plants, traffic, industry and open burning to particulate levels becomes even bigger and needs stronger control. The study has also pointed to seasonal variations in the relative contributions to ambient pollution: winter experiences relatively higher contribution from combustion sources. During summer, the contribution of dust is higher.

2. Source-wise clean air action plan and compliance strategy for Delhi and NCR to meet clean air standards

2.1 Air quality monitoring

S. No.	Action points	Agency responsible	Target date from the date of approval
	Short-term priority action		
2.1.1	**DPCC setting up 20 more real time monitoring stations:** The grid plan should be representative of population distribution and land use including residential, commercial, industrial, roadside and sensitive areas. Delhi currently has 28 real time air quality monitoring stations that are operated by Central Pollution Control Board (CPCB), Delhi Pollution Control Committee (DPCC), and Ministry of Earth Sciences (MOES) with continuous relay of information. These include 10 manual stations and 18 real time stations.	Department of Environment (DOE), Delhi Pollution Control Committee (DPCC)	October 2017
2.1.2	**NCR-wide air quality monitoring expansion:** The SC order of 2.12.2016 has directed CPCB to expand monitoring in the NCR. Accordingly, CPCB has submitted a plan to the Hon'ble Court. This includes – 1. Uttar Pradesh has 10 manual and 1 real time monitoring stations, with one each in Ghaziabad and Noida. Real time stations will be set up by March 2017. The UP State Pollution Control Board will set up 6 manual and 8 real time stations. 2. Haryana has 4 real time stations and will set up 13 more real time and 22 manual stations. 3. Rajasthan has 9 manual stations; 2 real time stations are under installation, which will be completed by March 2017. The Hon'ble SC, vide its order dated 06.02.3017, has directed utilization of Rs 2.5 crore from the fund created from Environment Protection Charge on big diesel cars for installing monitoring stations and a Central Control Room for operational control and reporting in Delhi NCR. This is as per the plan submitted by CPCB.	Central Pollution Control Board (CPCB) State pollution control boards in NCR	March-July 2017 (*See Annexure 3 for list of monitoring stations in NCR*)
2.1.3	**Enforce Graded Response Action Plan** as directed by the Hon'ble Supreme Court and notified by the Ministry of Environment, Forests and Climate Change (*Plan annexed*)	EPCA, Task Force under CPCB	Ongoing
	Medium to long-term action		
2.1.4	Undertake satellite-based monitoring for tracking and enforcing agriculture waste burning	State governments	
2.1.5	**Research studies including air pollution inventory, source apportionment, health impact studies, exposure impacts and other relevant studies:** Govt. to support research works / scientific studies by academic / research institutions. Expertise will be sought from various institutions to develop protocols for assessment of the research proposals.	CPCB, environment departments and state boards in NCR	*List of studies in Annexure 4*

2.2 Action to reduce vehicular emissions

	Action points	Agency responsible	Target date from the date of approval
	EMISSION AND FUEL QUALITY FOR NEW VEHICLES		
Short-term priority action			
2.2.1	**Ensure on-schedule implementation of BS VI fuel and emission standards, including early delivery of BS VI fuel for vehicles to modify technologies. Ensure registration of only BS IV vehicles from April 1, 2017 and only BS VI-compliant vehicles from April 2020**	State transport departments, Ministry of Road Transport and Highways (MORTH) and Ministry of Petroleum and Natural Gas (MOPNG)	April 1, 2017 and April 1, 2020
2.2.2	**Action on dieselization**: The SC order dated 12.8.2016 has imposed an environment pollution charge of 1% on registration of diesel vehicles with 2,000 cc and above. A fund has been created from this revenue to fund pollution control efforts. Tax measures are needed to nullify incentives for diesel cars over petrol cars.	CPCB	Ongoing
2.2.3	**Expand CNG programme across NCR:** The SC orders dated 16.12.2015, 5.1.2016 and 10.5.2016 have directed CNG stations to be set up across NCR and taxis to convert to CNG. NCR to expand CNG bus and auto fleets (*see agenda on public transport*).	MOPNG, GAIL / IGL	Ongoing
Medium-term action			
2.2.4	**Introduce battery-operated vehicles in targeted segments of two-wheelers, three-wheelers and buses.** Plan infrastructure for charging and battery disposal. **Identify and notify commercial areas in cities with high footfalls and good public transport and goods transport connectivity that can be pedestrianized, supported by zero emission battery-operated vehicles:** Priority may be accorded to battery-operated para-transit as feeders and for last mile connectivity in such areas.	DOE & DPCC, Transport Dept, municipal bodies	3 months
2.2.5	**Install vapour recovery systems in fuel refueling outlets to reduce benzene emissions in NCR.**	MOPNG, Transport Dept., state boards, DOE	6 months from date of approval One year from date of approval

	ON-ROAD VEHICLES		
Short-term priority action			
2.2.6	**Auditing of Pollution under Control (PUC) certification centres** The SC orders dated 25.11.2016, 2.12.2016, 17.1.2017 and 06.02.2017 have directed the government and EPCA to audit stations in Delhi-NCR and suggest improvements.	State departments of transport in NCR	EPCA report on PUC will review the current state and suggest a way ahead
2.2.7	**Tighten PUC norms for post-2000 vehicles.** **Upgrade in-use emissions testing for diesel vehicles.**	Ministry of Road Transport and Highways	
2.2.8	**Implement an on-board diagnostic system fitted in new vehicles for vehicle inspection. Improve facilities for its implementation.**	Ministry of Road Transport and Highways Department of Transport, NCR	
2.2.9	**Link PUC certificates with annual vehicle insurance to ensure 100 per cent compliance.**	MORTH, EPCA, Transport Department, IRDA (Insurance Regulatory and Development Authority)	Immediately from date of approval
2.2.10	**Enforcement of law against visibly polluting vehicles: impose penalty, launch extensive awareness drive against polluting vehicles.**	Ministry of Road Transport and Highways Department of Transport	3 months
Medium-term action			
2.2.11	**Delhi to review and upgrade the Burari commercial vehicle testing centre.**	Transport Department, Delhi	
2.2.12	**Ensure requisite infrastructure for hydro testing of CNG cylinders in Delhi and NCR.**	State transport departments Ministry of Petroleum and Natural Gas	

	TRANSIT TRUCK TRAFFIC		
Short-term priority action			
2.2.13	**Divert truck traffic:** SC orders dated 9.10.2015, 16.12.2015 and 5.1.2016 directing diversion of non-destined trucks and imposition of ECC on incoming trucks. **SC order for installation of RFID system in Delhi**: As per the orders dated 9.10.2015, 5.1.2016 and 22.8.2016, the SDMC is tendering for RFID for 13 entry points, which account for 80% of commercial traffic into Delhi. The system will be commissioned before next winter.	Delhi Transport Department and Municipal Corporation of Delhi	
2.2.14	**Check overloading:** The SC order dated 5.1.2016 directing for weigh-in-motion bridges / machines (WIM) at entry points to Delhi. NHAI has commissioned 60 WIM at 6 toll plazas for entry into Delhi. However, implementation of its penalty, which is 10 times of applicable rate for over-loaded vehicles, is lagging.	State transport departments in Delhi and NCR / traffic police and all municipal bodies	Immediate
Medium to long-term action			
2.2.15	**Fast track construction of Western and Eastern Peripheral Expressways**: Take steps to expedite early completion of the Expressways and submit a completion schedule. SC orders dated 11.2.2005, 11.3.2005, 1.8.2005 and 31.3.2016 on building / upgrading alternative bypass roads. The EPE is on schedule for completion in July 2018 and one stretch of WPE has been commissioned. The EPCA has given a report on existing alternative routes that need upgradation. This is also being pursued with MoRTH and NHAI.	EPCA to monitor with concerned state governments and Central government departments	Ongoing
2.2.16	**Inter-state freight transport plan**: Submit plan for inter- and intra-state transport sector for short term, mid-term and long term action points to improve rail-based freight traffic to reduce dependence on trucks.	Transport Department to coordinate with NCRPB and Railway Ministry	6 months from date of approval
2.2.17	**Fuel quality:** Prepare an action plan to check fuel adulteration and random monitoring of fuel quality data. The MoPNG has set up a fuel testing laboratory, based on previous SC directions. To review its operations and to ensure that fuel testing is done across NCR for all combustion fuels.	MOPNG	Report on review of working of Fuel Testing Laboratory (FTL) in Noida within 3 months

2.3 Strategies to reduce vehicle numbers on roads

	PUBLIC TRANSPORT STRATEGIES		
	Short-term priority action		
2.3.1	**Improvement in bus numbers and services.** SC orders dated 27.7.1998 and 5.1.2016 directing Delhi government to abide by SC direction to augment to 10,000 buses by 2000 and the Union to provide land for bus depots.	Delhi Transport Department, DTC, DIMTS, DDA	
2.3.2	Implement the recommendations of Route Rationalization Report of GNCTD. Improve availability by rationalizing routes and fleet enhancement.	Delhi Transport Department, DTC and DIMTS	
2.3.3	Reform of DTC and Cluster Bus Operations – modernize fleet and crew scheduling process of DTC, install GPS units on DTC buses and create a traffic control cell for monitoring bus movement, rationalize scheduling of buses under DTC and cluster scheme.	Delhi Transport Department, DTC and DIMTS	
2.3.4	IT system in buses, bus-stops and control centre and passenger information systems for reliability of bus services, and service monitoring.	Delhi Transport Department, DTC and DIMTS	
2.3.5	Bus parking should be made integral to urban planning. Multi-level bus parking to be provided in depots to more efficiently use available land area. Multi-modal, multi-use bus depots to be developed to provide high-class bus services and terminal experience to passengers. Should include well equipped maintenance workshops.	Delhi Transport Department, DTC and DIMTS	
2.3.6	Need bus fare policy to ensure that it is affordable and remains competitive *vis-a-vis* the operational cost of two-wheelers.		
2.3.7	Enforce bus lanes and keep them free from obstruction and encroachment.		
2.3.8	**Augmenting the service of Metro for carrying more passengers:** SC order dated 5.1.2016 directing for augmentation of service / coaches. Metro has submitted to EPCA its plan for inducting 486 additional coaches by December 2017 for existing lines. Of this, 270 have been procured. In addition, Metro has submitted proposal for 602 coaches, which is being examined by the Delhi govt.	DMRC	
2.3.9	**Three-wheelers** Implement electro-mobility for three-wheelers to make them zero emission as efficient feeder system for last mile connectivity and integration with bigger public transport systems. Organise their services for efficient deployment.	State transport departments	

Medium to long-term action			
2.3.10	BRTS / LRTS to be implemented in targeted high frequency routes and complemented with bus services with proper integration of routes, stations and terminals. Explore feasibility of BRT / LRTS connectivity between Delhi and other NCR cities.	Delhi Transport Department, DTC and DIMTS	
2.3.11	Fare integration and common ticketing; bring ETVMs into all DTC buses. Common mobility cards to be the mandatory access card for buses.	Delhi Transport Department, DTC and DIMTS	
2.3.12	Implementation of multi-modal integration plan for bus-Metro-IPT-NMT at key / all interchange points.	Delhi Transport Department, DTC and DIMTS	
2.3.13	Demarcation and development of Influence Zones around Metro stations as per MPD-2021 to improve access to the public transport system.	Transport Department, PWD, DDA /UTTIPEC, DMRC, DTC, DIMTS	
2.3.14	Proper regulations and organization including providing driver-training, certification, etc. for cab and auto-rickshaw drivers	DDA, MCD, PWD	
2.3.15	**NCR connectivity for public transport – need bus and Metro plans.** Rationalise routes and augment public transport in NCR on CNG mode.	Ministry of Urban Development, NCR Planning Board, state governments	
2.3.16	**Rationalize entry taxes in NCR under the NCR reciprocal agreement to lower costs of travel by public transport.**	Ministry of Urban Development, NCR Planning Board, state governments	
2.3.17	Integrate ITS in bus systems in cities in NCR (automated vehicle location, passenger information system, fare collection system).	Ministry of Urban Development, NCR Planning Board, state governments	
2.3.18	Regional Rapid Transit System (RRTS) integrated with local transit systems should be implemented to provide seamless connectivity between regional and sub-regional centres of NCR.	Ministry of Railways and state governments	
2.3.19	Integrated passenger terminals to be created with mixed use and multi-modal facilities for passenger comfort, integrating regional and local public transit systems.	Ministry of Railways and state governments	
2.3.20	Implement traffic impact assessment of infrastructure project for planning and management.	Municipal govts, planning departments of cities, DDA in Delhi	

2.4 Non-motorized transport (NMT) network

	Action points	Agency responsible	Timeline from date of approval
	Short-term priority action		
2.4.1	**Prepare and implement zonal plans for developing an NMT network.This should include the following action points with appropriate timelines for implementation:**	PWD, MCD, NDMC, DDA, Traffic Police, UTTIPEC	3 months
	• Implement network plan for footpaths on all roads, as per the IRC codes and Street Design Guidelines. Target specific kilometers of footpaths and cycle tracks to be completed in a phased manner and cover the entire city. Identify roads where dedicated and wide footpaths and cycle tracks (two-way) can be created on either side of the street, as per Street Design Guidelines.		
	• Implement a network plan for more secondary street networks and ungated streets to provide direct shortest routes for pedestrians and cyclists. Vehicular traffic can also be redistributed from major junctions through multiple routes to decongest. Signal-free corridors should be avoided as more road-space only attracts more traffic and impedes people's movement. • Plan and upgrade pedestrian / NMT crossings at least every 250 m, with pedestrian signals and signages. These should preferably be at-grade. Reduce block sizes to reduce walking and cycling distances.		
	• Synchronization of signals should be implemented on a priority basis with an integrated IT-based traffic management system so that inspite of having frequent at-grade pedestrian crossings, traffic can move swiftly across signals.		
	• Cycle sharing systems being introduced as feeders to public transport to be expanded to cover entire Delhi.		
	• Identify and notify key commercial areas with high footfalls and good public transport connectivity to create pedestrian plazas.		
	• Make safety and walkability audits of walking and cycling infrastructure mandatory.		
	• Encroachment of NMT lanes to be made punishable offence under the current provision of law.		

2.5. Parking policy to reduce congestion and pollution

	Action points	Agency responsible	Timeline after the date of approval
2.5.1	**Parking policy and enforcement measures to be prepared and finalized for implementation in Delhi and NCR. To include – i) Enforcement strategies ii) Parking pricing policy and iii) Parking management strategies.** **Delhi Master Plan 2021 has provided for a Parking District Management Plan.**	**Delhi:** DOE, UTTIPEC, all municipal agencies, traffic police, transport dept. **NCR:** All state governments, transport departments, urban development departments	
2.5.2	**ENFORCEMENT AND MANAGEMENT**		
	Short-term priority action		
	• Physically demarcate legal parking areas. Equip them with metering systems, proper signages, IT for information on parking availability to reduce cruising time and on-street management. • Existing / planned public parking facilities and on-street and off-street parking (including multi-level) facilities should be bundled for management by a single agency/ operator. New stand-alone parking only sites are mostly not required since parking is permitted in all use zones.	Municipal corporations in Delhi and NCR Urban development department	
	• Parking facilities within developments (e.g. commercial/ residential/ institutional) should be shared and priced for enabling use by different types of users during different times of the day, thus bringing down total parking space demand.		
	Plan and implement parking provision for buses, commercial vehicles and IPT-NMT modes, and for the differently-abled.		
2.5.3	**PARKING PRICING AND PENALTY**		
	Short-term priority action		
	• Introduce and further upgrade variable time-based pricing, as per market demand. Coordinated off-street and on-street / surface pricing in commercial and residential areas, and parking permits in residential areas. Parking should be charged as per duration, location in city and size of the vehicle.		

	• Take steps to prevent parking of vehicles in the non-designated areas. Penalties related to parking should be charged 10 times the parking fee along with impounding of vehicles after a certain level of violation. • Strict penalty for violation of parking regulations and walkway encroachment. Parking on footpaths should be made a cognizable offence under the Delhi Municipal Corporation Act and Police Act.		
	• Reform parking lease agreements to increase parking revenue for local area development and public transport improvement.		

2.6 Traffic management

	Action points	Agency responsible	Timeline from date of approval
2.6.1	• Introduce early alarm system during traffic congestion for the benefit of commuters on major routes, to facilitate route diversion.	PWD, MCD, NDMC, DDA, Traffic Police, UTTIPEC	
2.6.2	• Consider introducing plan for flexi / staggered timings to minimize peak movement of vehicles on roads.		
2.6.3	• Synchronize traffic movements / introduce intelligent traffic systems for lane-driving.		
2.6.4	• Formulate action plan for controlling decongestion of fuel stations including increasing the number of dispensing machines.		
2.6.5	• Electronic monitoring of traffic violations.		
2.6.6	• Examine existing framework for removing broken down buses / trucks from roads and create a system for speedy removal and ensuring minimal disruption to traffic from such buses / trucks.		
2.6.7	• Conduct audit of traffic intersections and install functional traffic signals at all major intersections in all NCR cities.		
2.6.8	• Conduct review of traffic signaling system at all intersections in Delhi / Noida and Gurugram and other NCR towns that are traffic hotspots and bring requisite changes to reflect the traffic movement pattern at intersections.		
2.6.9	• Enforce lane driving through heavy fining as in Mumbai.		

2.7 Power plants and industries

	POWER PLANTS		
Short-term priority action			
2.7.1	The SC order 21.1.2016 has directed SG to examine the EPCA report on power plants, which has recommended permanent closer of Badarpur power plant after a substation is set up within 6 months. There is a need to move to full utilization of the cleaner natural gas-based Bawana station for power supply to Delhi. The existing flyash pond behind Badarpur power plant needs to be urgently cleared so that it is made usable for other public purposes or restored as green area.	Ministry of Power, NTPC and DPCC	
Medium to long-term action			
2.7.2	Progressively close the older and more polluting thermal power plants in NCR and to move to cleaner natural gas. Change the merit order dispatch policy of the Union government so as to incentivize cleaner plants to operate in the region.	Ministry of Power and state governments	
	INDUSTRIES		
Short-term priority action			
2.7.3	**Urgent ban on unacceptable and dirty industrial fuels**: These are pet coke and furnace oil that have sulphur levels as high as 72,000 ppm and 23,000 ppm, respectively. SC order of February 6, 2017 directed the Central government to examine the EPCA recommendation of banning pet coke and furnace oil that are being widely used by industry in NCR.	MoEFCC	Immediate
2.7.4	Strict enforcement of air pollution control measures in all industries, includes those located in unauthorized areas.	DPCC and all state pollution boards	
2.7.5	Ensure calibration and working of Continuous Emission Monitoring System (CEMS) in all industries in NCR and provide information of pollution levels on an open platform.	CPCB, DPCC and all state boards	
	BRICK-KILNS		
2.7.6	Convert all brick kilns to zigzag technology -- natural draft kilns to induced--draft kilns (zigzag technology).	MOEFCC	
	INCINERATORS		
Medium to long-term action			
2.7.7	Implementation of strict emission norms for incinerators and examining the feasibility of less polluting alternatives.	Department of Environment, DPCC, EPCA	
2.7.8	Implement CEMS for incinerators and provide data on emissions on an open platform.		

2.7.9	Develop a siting policy for biomedical incinerators.		
	WASTE-TO-ENERGY PLANTS		
2.7.10	Strict implementation of emission norms and linkage of emission data to DPCC.		
2.7.11	Develop a siting policy.	DPCC	

2.8. Generator sets

	Action points	Agency responsible	Timeline after date of approval
Short-term priority action			
2.8.1	• Ensure that only those DG sets that meet the standards are allowed to operate.	CPCB, DPCC and Department of Environment	
2.8.2	• Operating time of DG sets should be regulated according to graded action plan.		
2.8.3	• Only approved fuel should be allowed.		
2.8.4	• Non-usage of DG sets in social events as per graded action plan.		
Medium to long-term action			
2.8.5	• Alternate power systems should be promoted in cell towers, and use of DG sets may be discouraged.		

2.9. Open burning (including solid waste and agricultural residues)

	Action points	Agency responsible	Timeline from date of approval
Short-term priority action			
2.9.1	SC order dated 16.12.2015 has directed a complete ban on garbage burning in the entire NCR region. This is being monitored by Delhi and NCR state governments. Take stringent action against open burning of biomass / leaves / tyres etc to control such activities and submit periodic status reports.	Department of Environment, DPCC, municipal bodies, DPGS	
2.9.2	Ensure proper collection of horticulture waste (biomass) and composting-cum-gardening approach; municipal zonal offices should be responsible for controlling burning of leaves and garbage on roads / parks. All horticulture agencies should have compost pits in parks.		

2.9.3	**Implement the Hawa Badlo app** -- reporting of garbage / municipal solid waste burning through mobile-based applications and other social media platforms linked with Central and state-level control rooms for accountability. Build an awareness campaign through RWAs, Eco Clubs and municipal authorities.		
	REGIONAL PROBLEM OF BIOMASS BURNING		
2.9.4	Ensure strict enforcement of ban on burning of agriculture waste and crop residues in Punjab and Haryana.		
2.9.5	To increase subsidy for purchase of equipment that eliminates the need for burning stubble and straw.		
2.9.6	Enforce the series of directives from the Hon'ble Supreme Court and NGT on ban on agricultural burning and recycling and reuse of this waste.		
	EPISODIC EVENTS		
2.9.7	**Fire crackers --** SC order of November 25, 2016 has banned sale of fire crackers in Delhi and NCR. Monitor its implementation and enforcement.	**Department of Environment, DPCC, DCP**	

2.10. Domestic chulha burning and open eateries

	Action points	Agency responsible	Timeline for implementation from the date of approval
Medium to long-term action			
2.10.1	Slums and low-income neighbourhoods, as well as roadside eateries etc use biomass and coal widely. Promote the use of LPG instead of these fuels in restaurants / dhabas / road-side eateries.	Department of Environment, DPCC	
2.10.2	Prohibit use of coal in hotels and restaurants, eliminate use of kerosene for cooking in NCR and incentivize move to LPG.	MoPNG and state governments	
2.10.3	A targeted programme can be developed with the Union Ministry of Petroleum and Natural Gas for wider distribution of LPG.	MoPNG and state governments	

2.11. Control measures for road dust

	Action points	Agency responsible	Timeline since the approval
	Medium to long-term action		
2.11.1	SC direction dated December 16, 2016 has directed repair and building of pavements and vacuum cleaning of roads. This needs to be expedited and implemented across NCR. **Based on this, the following may be carried out:** • Implement street design guidelines for footpaths and cycle tracks with adequate vegetative buffers and paving of roads. Take steps for blacktopping / pavement of road shoulders to avoid road dust. • Phase-in mechanical / vacuum-based street sweeping wherever feasible; introduce wet / mechanized vacuum sweeping of roads. • Implement truck loading guidelines; use of appropriate enclosures for haul trucks; gravel paving for all haul routes. • Sprinkling of recycled water (without compromising other uses); introduce water fountains at major traffic intersections, wherever feasible. • Maintain pot hole-free roads for free flow of traffic to reduce emissions and dust. • Increase green cover in Delhi. Undertake greening of open areas, gardens, community places, schools and housing societies.	Department of Environment, DPCC, municipal bodies, DDA, PWD, CPWD, DSIIDC, DTTDC Road-owning agencies, Police Dept. Road-owning agencies Municipal bodies, Transport Dept. Road-owning agencies Forest Department	**Immediate**
2.11.2	• Enforcement of air pollution control in concrete batching (use of water spray and wind breakers, bag filter at silos and enclosures, hoods, curtains etc)		

2.12. Control measures for construction dust

	Action points	Agency responsible	Timeline after the date of approval
Short-term priority action			
2.12.1	SC order dated 16.12.2015 directed the Delhi govt to ensure measures are taken to mitigate dust pollution from construction. The EPCA has given a concise check list for inspection of construction sites. This should be implemented. Undertake control measures for fugitive emissions from material handling, conveying and screening operations through water sprinkling, curtains, barriers and dust suppression units. Penalties have also been enhanced. Needs enforcement.	Municipal bodies, PWD, CPWD, DSIIDC, DTTDC, road-owning agencies	
Medium-term action			
2.12.2	For material handling and construction demolition, it should be obligatory on part of the developers to provide evidence of debris disposal at designated sites. Promote recycling of construction material.	Municipal bodies, PWD, CPWD, DSIIDC, DTTDC, road-owning agencies	

3. Institutional arrangement for implementation

The following institutional arrangement is proposed for implementation of the Comprehensive Action Plan. The aim is not to create new institutions but to make the current institutional arrangements mandated by the Hon'ble Supreme Court for implementation of the Graded Response Action Plan and by the Hon'ble National Green Tribunal for air pollution control in the region responsible for implementation of the action plan. The institutions are as follows:

Central-level Committee under the Secretary, Ministry of Environment, Forests and Climate Change to oversee implementation at the NCR level

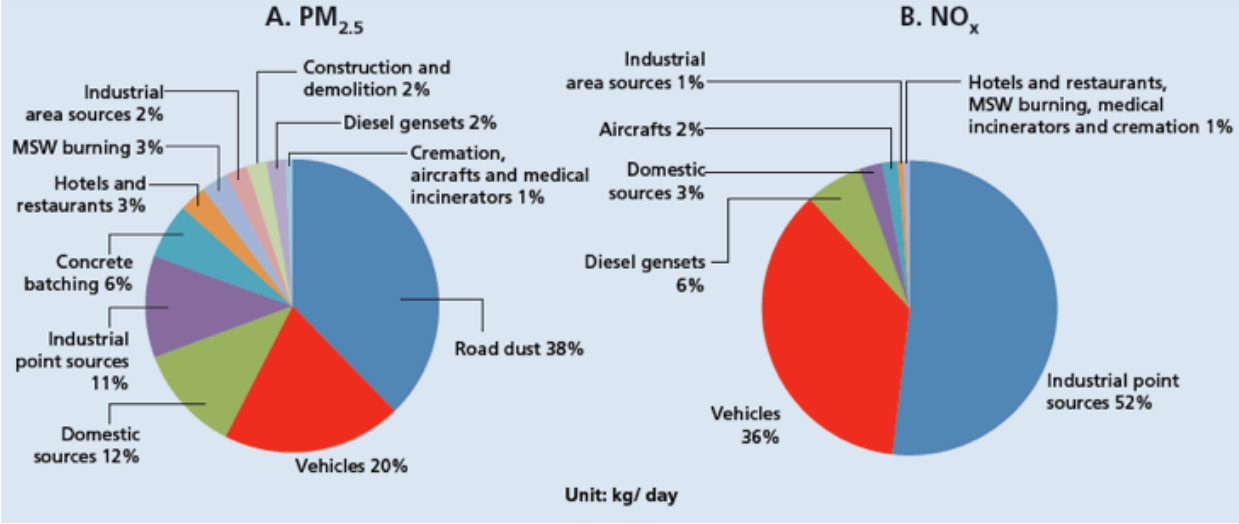
State-level committees under the Chief Secretary to oversee implementation at the state level

CPCB-Task Force to monitor air quality and to inform Central, state committees and the EPCA about the need for implementation of measures under the Graded Response Action Plan.

Directions under the Graded Response Action Plan; monitoring of key milestones in comprehensive action plan and preparation of special reports on key to guide action by EPCA. Regular compliance reports to the Hon'ble Supreme Court.

Annexure 1: Relative contribution of pollution sources to pollution load in Delhi

Contribution to PM 2.5 load (kg/day) | **Contribution to NOx load (kg/day)**



Source: IIT Kanpur study, 2015

Annexure 2

Graded Response Action Plan according to pollution levels in Delhi and NCR to inform public action and to take effective steps to combat public health emergencies

Table: Graded Response Action Plan for reducing air pollution

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.

Severe + or Emergency **When $PM_{2.5}$ levels cross 300 µg/m³ or PM_{10} levels cross 500 µg/m³ (5 times above the standard) and 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 **When $PM_{2.5}$ levels are above 250 µg/m³ or** **PM_{10} levels are above 430 µg/m³**	
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
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	
When $PM_{2.5}$ levels are between 121-250 µg/m^3 or	
PM_{10} levels are between 351-430 µg/m^3	
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	
Poor – When $PM_{2.5}$ levels are between 91-120 µg/m^3 or	
PM_{10} levels are between 251-350 µg/m^3	
Moderate – When $PM_{2.5}$ is between 61-90 µg/m^3 or	
PM_{10} is between 101-250 µg/m^3	
Stringently enforce/stop garbage burning in landfills and other places and impose heavy fines on person responsible	Municipal Commissioner
	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
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
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

Note: * IIT Kanpur Report finds high fly ash in air during summer months. Therefore, action is necessary during this period. But long term action has to be removal of this source of pollution from Delhi and its vicinity through the reuse and removal of all fly ash dumps.

Action to be taken by public

While the CPCB headed Task Force will use the AQI and health advisory to inform people about the dangers of exposure, people are also expected to take precautionary measures to protect themselves. Suggested actions by public are listed below:

Level according to Air quality index	Action
Very poor, severe and emergency	Those suffering from heart diseases, asthma, and other respiratory disease may consider avoiding undue and prolonged exposure
	Schools to suspend all outdoor activities and sport events during Severe and Very Poor conditions

	Report visible emissions from vehicles, industries, power plants, garbage burning, and other non compliances to the respective control rooms
	Do not use diesel and kerosene generators
	Maintain vehicles properly (PUC certificate, replace car air filter, maintain right tyre pressure)
	Minimize unnecessary travel, use public transport and avoid using private vehicles

Annexure 3: Air quality monitoring stations to be set up in Delhi and NCR

Plan for strengthening of Air Quality Monitoring Stations

1. Haryana State Pollution Control Board (HSPCB)

State	S. No.	Name of District HQ town	Existing Stations		Stations Planned/ Proposed	
			Manual	Real Time	Manual	Real Time
Haryana	1	Faridabad	2	1 (CPCB)	NIL	2 (CPSU* + HSPCB**)
	2	Gurugram	NIL	1 (HSPCB) +1 (IITM)	NIL	1 (HSPCB) **
	3	Mahendragagh	NIL	NIL	**2**	1 (HSPCB) **
	4	Bhiwani	NIL	NIL	**2**	1 (HSPCB) **
	5	Mewat	NIL	NIL	**2**	1 (HSPCB) **
	6	Rohtak	NIL	1 (HSPCB)	**2**	NIL
	7	Sonepat	NIL	NIL	**2**	1 (HSPCB) **
	8	Rewari	NIL	NIL	**2**	1 (HSPCB) **
	9	Jhajjar	NIL	NIL	**2**	1 (HSPCB) **
	10	Panipat	NIL	NIL	**2**	1 (HSPCB) **
	11	Palwal	NIL	NIL	**2**	1 (HSPCB) **
	12	Jind	NIL	NIL	**2**	1 (HSPCB) **
	13	Karnal	NIL	NIL	**2**	1 (HSPCB) **
Total			**2**	**4**	**22 #**	**Total =13** (1=CPCB + 12=HSPCB)

Notes:

* The Procurement is underway

** The tender document being finalized

\# No proposal received

2. Uttar Pradesh Pollution Control Board (UPPCB)

State	S. No.	Name of District HQ town	Existing Stations		Stations Planned	
			Manual	Real Time	Manual	Real Time
UP	1	Meerut	2	NIL	NIL	3 (CPSU)*
	2	Ghaziabad	2	NIL	NIL	1 (CPCB)**
	3	Gautam Buddh Nagar	2 (Noida)	1(IITM-Noida)	2 (Gr. Noida)	1 (CPCB in Noida)** 1 (UPPCB in GN) #
	4	Bulandsahar	2	NIL	Nil	1 (UPPCB Khurja) #
	5	Baghpat	NIL	NIL	2	1 (UPPCB) #
	6	Hapur	2	NIL	Nil	1 (UPPCB) #
	7	Muzzafarnagar	NIL	NIL	2	1 (UPPCB) #
Total			**10**	**1**	**6 ##**	**10**

Notes:
* The Procurement is underway
** The analyzers procured; commissioning is under progress
# Proposal waiting for approval (delayed due to Assembly Election)
No Proposal received

3. Rajasthan State Pollution Control Board (RSPCB)

States	S. No.	Name of District HQ town	Existing Stations		Stations Planned	
			Manual	Real Time	Manual	Real Time
Rajasthan	1	Alwar	6 (3 in Alwar& 3 in Bhiwadi)	NIL	NIL	1(CPCB at Bhiwadi)* 1 (RSPCB at Alwar) *
	2	Bharatpur	3	NIL	NIL	NIL
Total			**9**	**0**	**0**	**2**

Notes: * Stations commissioned, data connectivity will be established soon

4. Delhi Pollution Control Committee (DPCC)

States	S No.	Name of District HQ town	Existing Stations		Stations Planned	
			Manual	Real Time	Manual	Real Time
Delhi	1	Delhi	10 (CPCB)	6 (CPCB) + 4 DPCC + 8 (IMD	NIL	20 (DPCC)*
Total			**10**	**18**	**0**	**20**

Notes: * The establishment of proposed station is under progress expected to be completed in time

Annexure 4: List of studies by CPCB

CPCB has submitted a list of thrust areas for project proposals studies for utilisation of EPC funds to Supreme Court (Source: January 2016, Concept Note on Utilization of Environment Protection Charge (EPC) Funds by CPCB, Ministry of Environment, Forest and Climate Change):

a) Utilization of EPC funds to sponsor projects addressing reduction air pollution.

b) The project proposals submitted by various organisations / institutions that shall be identified for financing under EPC funds shall be broadly classified under the following FIVE broad categories:

   i. Capacity building w.r.t. infrastructure enhancement

   ii. Monitoring of environmental pollutants (ambient air & noise) : Besides impact from vehicular emissions it was also observed that due to increase in vehicular traffic there has been significant increase in ambient 'noise levels' too. Hence a need to expand the continuous ambient air quality (CAAQM) network and continuous noise monitoring network particularly in 22 NCR towns.

   iii. Mass awareness on air pollution : Talk shows and various electronic media - LED displays , TV , radio websites

   iv. R & D proposals: Specific Research proposals that shall focus on reduction in vehicular pollution.

   v. Health impact studies: To augment verifiable database on health impacts attributed to vehicular pollution (emission & noise) , various institutions ex. ICMR shall be involved.

c) Identification and sanction of specific Projects to control pollution in Punjab, Delhi and NCR.