7.0 Urban Air Pollution Control

7.1 Review and Implementation of Action Plans for Controlling Air Pollution in Non Attainment Cities

The CPCB is reviewing action plans of seven cities cities out of the sixteen cities namely Agra, Varanasi, Jharia, Patna, Jodhpur, Faridabad & Pune identified by the Hon'ble Supreme Court of India, while other seven cities namely Lucknow, Kanpur, Sholapur, Hyderabad, Chennai, Bangalore, Ahemdabad are reviewed by EPCA while the action plans in two cities i.e. Kolkata and Mumbai are reviewed by the respective High Courts).

7.2 Monitoring and inventory of Volatile Organic Compounds (VOC) in Urban Air of Delhi & Mumbai

This study was executed by NEERI Zonal Laboratory, Mumbai. The study has been completed and the report is being published.

7.3 Inventory of Evaporative Emissions of Hydrocarbons from various sources in Delhi, Kolkata, Mumbai and Chennai

This study was executed by NEERI Zonal Laboratory, Mumbai. The study has been completed and report is being published.

7.4 Estimation of Emission Load from Vehicular Sources under Various Scenarios

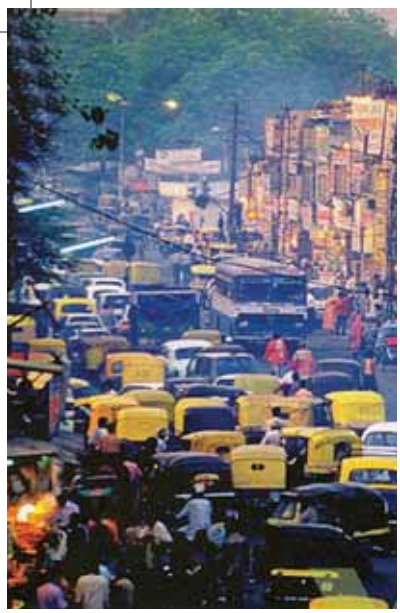
The exercise involves calculation of vehicular emission load in major cities using various scenarios like completely/partially switching over to cleaner alternate fuels, leapfrogging emission norms for new vehicles etc.

7.5 Ambient Air Quality Status of Kolkata with reference to Ozone and VOCs)

The study is being executed by NEERI Zonal Office, Kolkata. The objective of the study is to provide background information to research workers, policy makers and other stakeholders on the following areas:

- Ambient levels of NOx, carbonyls, ozone and speciated VOCs. These levels are characteristics of source emission impacts.

Research undertaken by CPCB indicates that tentacles of vehicular pollution have also extended to small cities and towns



- Provide NOx, Ozone, carbonyls and speciated VOCs concentration data and surface Meterological parameters as initial and boundary condition input to photochemical grid model.
- Identify source categories of VOCs & estimate relative contribution of each source category
- Prepare database to support environmental fate analysis of VOCs, Air toxic deposition and transport modelling.
- Assist in the development and evaluation of air pollutant mitigation strategy
- Assist in identifying the direct health risks (such as deposition and contamination of food and water supplies) and subsequent ingestion.

7.6 Nation-Wide Assessment of Vehicular Pollution Control Measures

The vehicular pollution control has been emphasized in megacities until recently. However, in the recent few years the tentacles of vehicular pollution have also extended to small cities and towns. Thus, the requirement to look upon the problems of vehicular pollution at local level has been visualized to curb this menace throughout the country. The CPCB is attempting to assess the status of vehicular pollution in terms of problems, steps taken and required to be taken in various cities/towns of the country before the vehicular pollution becomes a major problem there.

7.7 Auditing Vehicular Pollution Under Control (PUC) Centres in Delhi and Follow up of Auto Fuel Policy programme

The auditing of PUC centres in Delhi is being undertaken with the objective of assessing the availability of adequate testing facilities with respect to new norms whether the PUC centres have procured adequate testing facilities and also to cross check the procedure and protocols followed during vehicle testing. Further the study shall also help us identify any scope for false passes, if present in the new system. The scope of the study also include the check, whether the testing instruments have been certified by approving agencies and the study to know the status of compliance of the vehicles with new PUC norms.

7.8 Assessment of Aldehydes, Ketones and Methane emissions in Vehicle exhaust, using different fuels (Petrol, Diesel, LPG, CNG, Ethanol in Petrol, Biodiesel and Hythane)"

This study is being undertaken by CPCB in association with iCAT, Manesar with the objective to characterize Aldehydes, Ketones and Methane emissions in vehicle exhaust of 2-wheelers, 3-wheelers, 4-wheeled passenger vehicles, 4-wheeled light duty commercial vehicles & 4-wheeled heavy duty commercial vehicle engines operating on different fuels i.e. Petrol, Diesel, LPG, CNG, Ethanol (5%) in Petrol (BS III) and Biodiesel (10%) in Diesel (BS III) & Hythane*.

7.9 Evaluation of Performance and Durability of Catalytic Converters and Development of Short Test Procedure for checking Performance of such Converters fitted on in-use vehicles

The study is proposed to be undertaken by CPCB in association with suitable executing agency with following objectives and terms of references.

- Evaluation of long term performance & durability of catalytic converters in on-road vehicles
- Development of short test procedure for checking performance of catalytic converters in on-road vehicles
- Improvement in existing PUC procedure to have better co-relation with standards mass emission system.
- To gather technical inputs and create a rational base for imposing mandatory emission warranty and vehicle recall system in India.

Vehicle emission standards are the primary technical policy for controlling emissions from vehicles

7.10 CPCB's Participation in Important Committees related to Vehicular Pollution Control

The CPCB participated in various committees as mentioned below related to vehicular pollution control during 2007-2008:

- Working group on adulteration of petroleum products constituted by Bureau of Indian Standards (BIS).
- Environmental Pollution Control Authority for NCR.
- Standing committee on emissions constituted by MoRT&H.
- Petroleum products sectioned committee constituted by BIS.

7.11 Overview of the Measures undertaken for Vehicular Pollution Control

New Vehicles:

Vehicle emission standards are the primary technical policy for controlling emissions from vehicles. The Motor Vehicles Act, 1988, and the Central Motor Vehicles Rules (CMVR) 1989, are the principal instruments for regulation of motor vehicular traffic/emissions throughout the country. The implementation of various provisions of this Act rests with the state governments. The Ministry of Road Transport and Highways acts as a nodal agency for the formulation and implementation of various provisions of the Motor Vehicle Act and CMVR.

- Bharat Stage-III emission norms have been implemented for all categories of new vehicles (except 2 and 3 wheelers) in 11 mega cities from April 1, 2005.
- Bharat Stage –II emission norms have been implemented for 2 3 wheelers all over the country from April 1, 2005.
- Bhart (Tramp) Stage-II emission norms for tractors notified for implementation from October 2005 .
- New standards to be adopted by every manufacturer during the manufacture of a motor vehicle including construction equipment vehicle in relation to their parts, components and assemblies as notified vide S.O. 1365(E) dated December 13, 2004.

In-Use Vehicles:

- New PUC norms for in-use Petrol/CNG/LPG vehicles was notified by MoRT&H for implementation throughout the country from 1st October 2004. Implementation of the same has been delayed owing to initial problems pertaining to the new analyzers.
- New PUC norms for in-use diesel vehicles have been implemented from 1st October 2004 all over the country as below.

Table 7.11.1 New PUC Norms for Petrol/CNG/LPG Vehicles

Vehicle Type	CO%	HC (ppm)
2 & 3 wheelers (2/4 stroke)(Vehicles manufactured on and before 31st March 2000)	4.5	9000
2 & 3 wheelers (2-stroke)(Vehicles manufactured after 31st March 2000)	3.5	6000
2 & 3 wheelers (4 stroke)(Vehicles manufactured after 31st March 2000)	3.5	4500
Bharat stage-II compliant 4 wheelers	0.5	750
4 wheelers other than Bharat stage –II compliant	3.0	1500

Table 7.11.2 New PUC Norms for Diesel Vehicles

Method of Test	Maximum Smoke Density	
	Light absorption coefficient (1/m)	Hartidge units
Free acceleration test for turbo charged & naturally aspirated engine	2.45	65
Hartidge Smoke Units (HSU) measured by Free Acceleration method.		

Fuel Quality Specifications:

- Auto-fuels commensurate to Euro-II (whole country) and Euro-III (for 11 cities) specifications have been made available in the respective cities from 01.04.2005.
- The Research Octane Number (RON) for premium petrol available in metro cities has been boosted to 95 with lead content being reduced to 0.005 g/l and benzene content of maximum 1%.
- For diesel the Cetane number has been enhanced to 51 with sulphur content reduced to 0.035% in the metro cities.
- Important parameters of diesel and gasoline (petrol) as available in metro cities from 2005 are presented.

Initiatives taken for Alternate Fuels in India

There has been significant developments during 2004-2005, when various organizations namely, Planning Commission, Oil Companies, Auto Sectors, CPCB and other research agencies initiated various demonstration and feasibility studies with alternative fuels like LPG and bio-diesel (B20). Some of the initiatives and developments are presented below:

- Bio-fuels mainly Ethanol and Biodiesel (in B20 form) are the prospective options for India. Pilot studies on ethanol and biodiesel have been completed and many are on-going.

Table 7.11.3	Important parameters of petrol and diesel available in major metr cities from 1st April 2005			
DIESEL SPECIFICATION				
Year	1996	2000	2005	2010
Cetane No, Min	45	48	48	51
Sulphur % W/w, Max	0.50	0.25 0.05 (Metro)	0.05	0.035
Distillation T95	-	370	370	360
Polyaromatic	-	-	-	11
GASOLINE PETROL SPECIFICATION				
RVP at 38deg.c,kpa	35-70	-	35-60	60
Benzene %by Vol.,Max	5.0	5.0 3.0 (metros)	3.0 1.0 (metros)	1.0
Lead G/m3, Max	0.15%(low pb) 0.013% (unleaded)	0.013	0.013	0.005
Sulphur %by Mass, max	0.10(unleaded) 0.20 (leaded)	0.10	0.05	0.015
Aromatics % v/v, Max	-	-	45	42
Oxygen % by Vol., max	-	-	2.0	2.7

Efforts for developing and popularizing electric vehicles also gained momentum during this year

- Efficacy of B20 biodiesel from Jatropha feedstock has been established and experiences are gained through some pilot studies. Introduction of biodiesel starting with lower blends like B5, B10, etc. is a possibility now.
- In Kolkata all three wheelers have been ordered to switch over to LPG mode from September, 2005 vide notification No. 2421-WT/3M-73/2005 dated May 24, 2005.
- Besides Delhi and Mumbai, the supply of CNG as automotive fuel has been extended to the cities of Ankleshwar, Vadodra and Surat in Gujarat. In Delhi more than 1 lakh CNG vehicles are plying on roads.
- Work is on to introduce bio-diesel in the form of B20 as an automotive fuel in India. Several research studies and field trials have been initiated by organizations like –IITs, IOC, Mercedes, Railways, etc. Already "Jatropha Carcus" has been identified and earmarked to be the prominent source of biodiesel in the country.
- Efforts for developing and popularizing electric vehicles also gained momentum during this year. M/s. "Reva Motors" has already commercialized a small electric/battery car. Many two wheeler and three-wheeler manufacturers are also contemplating electric driven OEM for Indian markets.

Other Measures:

- During recent past, various traffic management options have been adopted by many city governments to deal with the increasing vehicle population and to ensure smooth traffic flow. Synchronized traffic lightings with timers, bus-only lanes, parking area demarcation, etc. are few steps already initiated in many metro cities of India.

- BRT (Bus rapid Transit), which aims at segregation of traffic in various lanes according to type of vehicles. Through BRT it is expected that the hindrance caused to speed of fast moving vehicles by speed of slow moving vehicles will overcome and mass transit vehicles i.e. buses will move in optimal way. BRT is at final stage of its implementation (in a phased manner) in Delhi BRT is expected to be implemented by April 1, 2008.
- Road-infrastructure development, management and by-passing of inter- state vehicles, parking restrictions, etc. are other measures being adopted in the cities. Cities like Delhi, Mumbai, Kolkata, Pune, etc. have constructed flyovers and multi-lane roads to ease traffic congestion.
- The Delhi Metro line has been extended to various stretches of Delhi for catering services to more and more people thereby promoting use of mass public transport system. Other cities are also exploring to develop metros and other mass transport systems.
- Interstate trucks which are not destined to Delhi are not allowed to ply within the city limits.