CHAPTER 8

ENVIRONMENTAL CONCERNS

1. This chapter dwells upon the various dimension of pollution including source, past and present status and efforts made to reduce the pollution level in Delhi. With the sustained efforts put in by the Government of Delhi alongwith the cooperation of all stakeholders, Delhi is showing signs of improvement in reducing / controlling the pollution level since past few years.

2. AMBIENT AIR QUALITY STATUS:

Concentration of various pollutants in the ambient air is showing a declining trend, which is evident from the following statement. It is also noted with concern that there has been some reversal in pollution level of certain elements of air quality which have increased level in 2006. This is being watched so that pollution does not get increased.

Statement-1

YEAR WISE ANNUAL MEAN AMBIENT AIR QUALITY LEVELS IN DELHI

Year	Concentration in ambient air (In ?g/m^3)				
	SO_2	Nox	CO	SPM	RSPM
1997	19	45	4810.00	362	-
1998	21	42	5450.00	377	-
1999	19	40	4241.00	375	-
2000	18	42	4686.00	430	-
2001	14	42	4183.00	394	149
2002	11	46	3258.00	455	192
2003	10	56	2831.00	390	169
2004	9.00	57	2581.00	389	164
2005	9.00	49	2541.00	331	139
2006	10.15	55.9	2531.00	433	174

Source: Department of Environment, GNCTD

Statement – 2

NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Time Weighted Average	Concentration in ambient Air		
		Industrial Areas	Residential Rural & other Areas	Sensitive Area
1	2	3	4	5
Sulphur Dioxide (SO_2)	Annual Average* 24 hours**	80 µg/m^3 120 µg/m^3	60 µg/m^3 80 µg/m^3	15 µg/m^3 30 µg/m^3
Oxides of Nitrogen as NO_2	Annual Average* 24 hours**	80 µg/m^3 120 µg/m^3	60 µg/m^3 80 µg/m^3	15 µg/m^3 30 µg/m^3
Suspended Particulate Matter (SPM)	Annual Average* 24 hours**	360 µg/m^3 500 µg/m^3	140 µg/m^3 200 µg/m^3	70 µg/m^3 100 µg/m^3
Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average* 24 hours**	120 µg/m^3 150 µg/m^3	60 µg/m^3 100 µg/m^3	50 µg/m^3 75 µg/m^3
Lead (Pb)	Annual Average* 24 hours**	1.0 µg/m^3 1.5 µg/m^3	0.75 µg/m^3 1.00 µg/m^3	0.50 µg/m^3 0.75 µg/m^3
Carbon Monoxide (CO)	8 hours** 1 hour	5.0 mg/m^3 10.0 mg/m^3	2.0 mg/m^3 4.0 mg/m^3	1.0 mg/m^3 2.0 mg/m^3

* Annual Arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.

** 24 hourly/8 hourly values should be met 98% of the time in a year. However, 2% of the time, it may exceed but not on two consecutive days.

Source – Central Pollution Control Board.

2.1 **Sulphur Dioxide (SO_2):** Statement 1 shows that level of SO_2 has drastically come down in the

ambient air. Annual mean SO_2 level reduced form as 18.03 g/m^3 in the year 2000, to 10.00 g/m^3 in 2006. As such SO_2 level has decreased by 44.4% in 2006 as compared to 1997. This tremendous achievement is mainly attributable to conversion of all city buses / Taxis / Autos in CNG mode. The annual mean of SO_2 level in Delhi satisfy the annual average of National Ambient Air quality standard for residential areas which is 60g/m^3 (Statement-2)

2.2 **Nitrogen Dioxide (NO_2)** Annual average value of NO_2 has decreased significantly (14.00%) in 2005 as compared to previous year but there is an increase in 2006 as compared to 2005. It was 45 g/ m^3 in 1997 and 55.9g/ m^3 in 2006. The annual mean of NO_2 level in Delhi is well within the annual average of National Ambient Air quality standards for residential areas which is 60 g/ m^3 (micro gram/m3).

2.3 **Carbon Monoxide (CO):** As is evident from Statement -1, annual average CO level has gradually been reducing since 2001. It was 4183 g/m^3 in 2001 whereas in 2005 and 2006 it came down to 2541 g/m^3 and 2531g/m^3 respectively. This could be attributed to the stringent implementation of vehicular emission norms, fuel quality up-gradation and better maintenance of engines through all possible measures i.e. promotional, educational and enforcement.

2.4 **Suspended Particulate Matter (SPM):** As may be seen in Statement -1, annual average SPM level has drastically come down from 455g/m^3 in 2002 to 390 g/m^3 in 2003 and 331 g/m^3 in 2005. SPM level was monitored at 433 ug/ m^3 in 2006.

2.5 **Respirable Particulate Matter (RSPM):** Annual average of RSPM level has reduced by 6.8% in the year 2004 as compared to 2003. It was 174 g/m^3 in 2006 as against 139 g/m^3 in 2005.

2.6 **Lead:** Annual average level of lead has significantly reduced after 1996. In 1996, the lead concentration in petrol was brought down from 0.56 g/l to 0.15 g/l. In 1998, lead was totally phased out from petrol. Consequently, this resulted in reduction of lead level in the ambient air.

2.7 Thus ambient air quality has improved significantly which can be gauged from the fact that as compared to 1997 the concentration of Carbon Monoxide has declined by 47% in 2006. Sulphur Dioxide level has reduced by 44% from 1997 to 2006. However, concentration of NOx has been showing slightly increasing trend from 2002. There was tremendous improvement in concentration of particulate matters (SPM & RSPM) in the ambient air in 2006 as compared to 2002 but remain almost constant in 2004 compared to 2003. This may be one of the causes for aggravating the respiratory problems affecting thousands of people in Delhi every year.

Chart – 1

Concentration in ambient air (In g/m^3) - SO_2

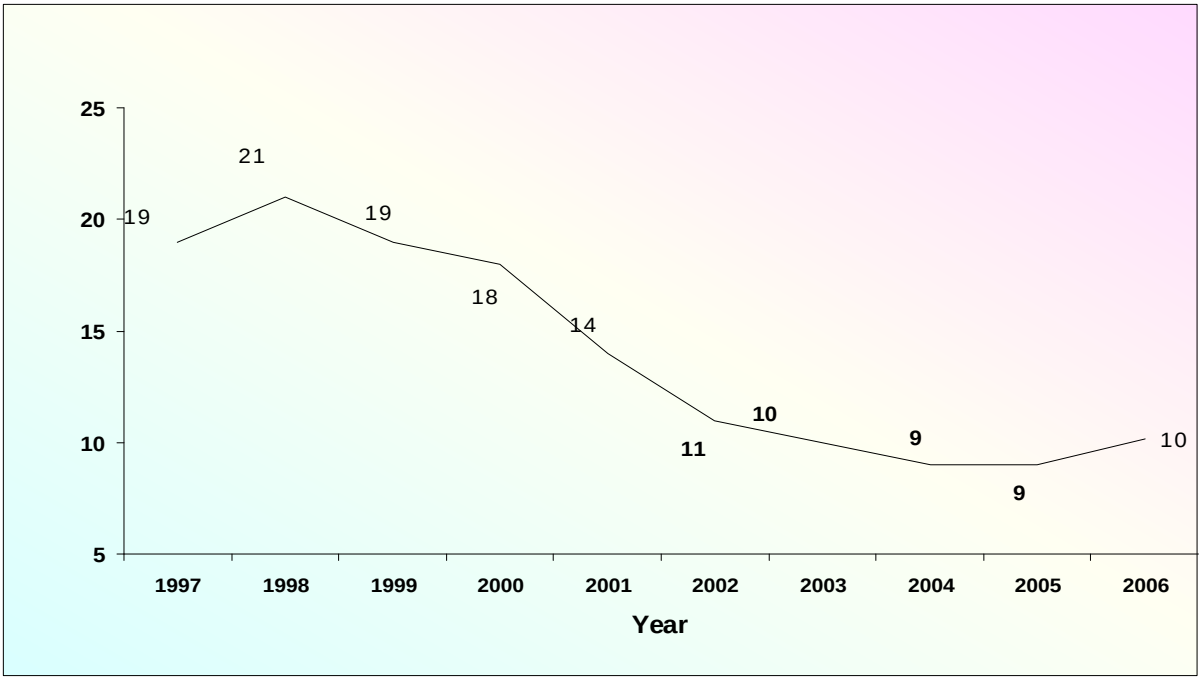


Chart – 2

Concentration in ambient air (In g/m^3) - Nox

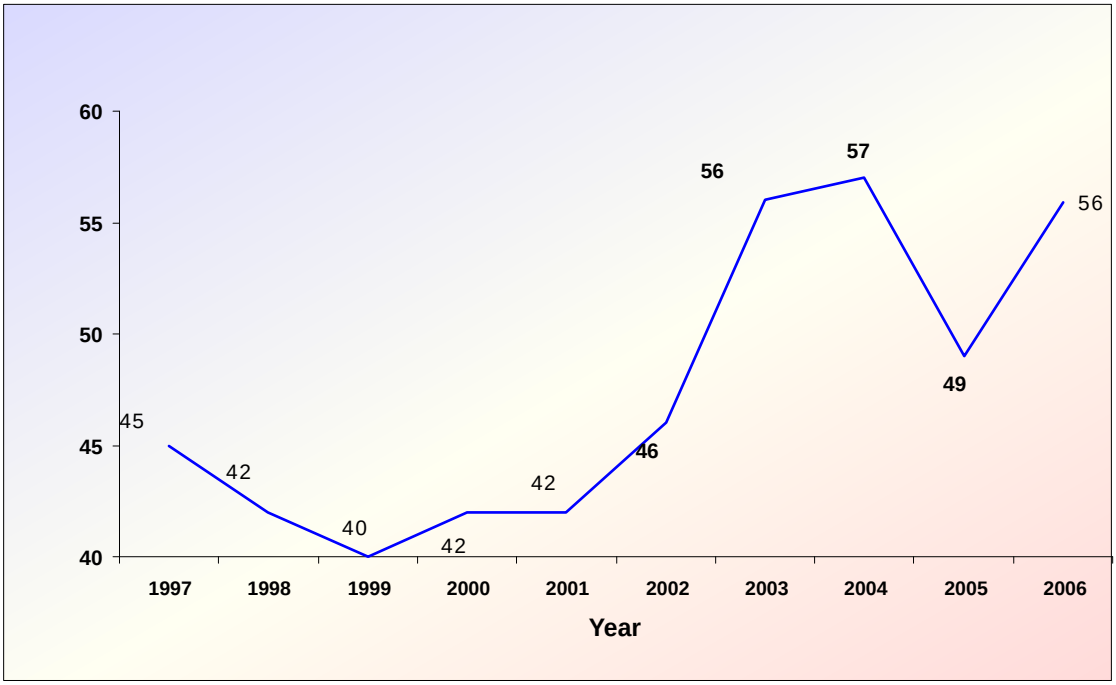


Chart – 3

Concentration in ambient air (In g/m^3) - CO

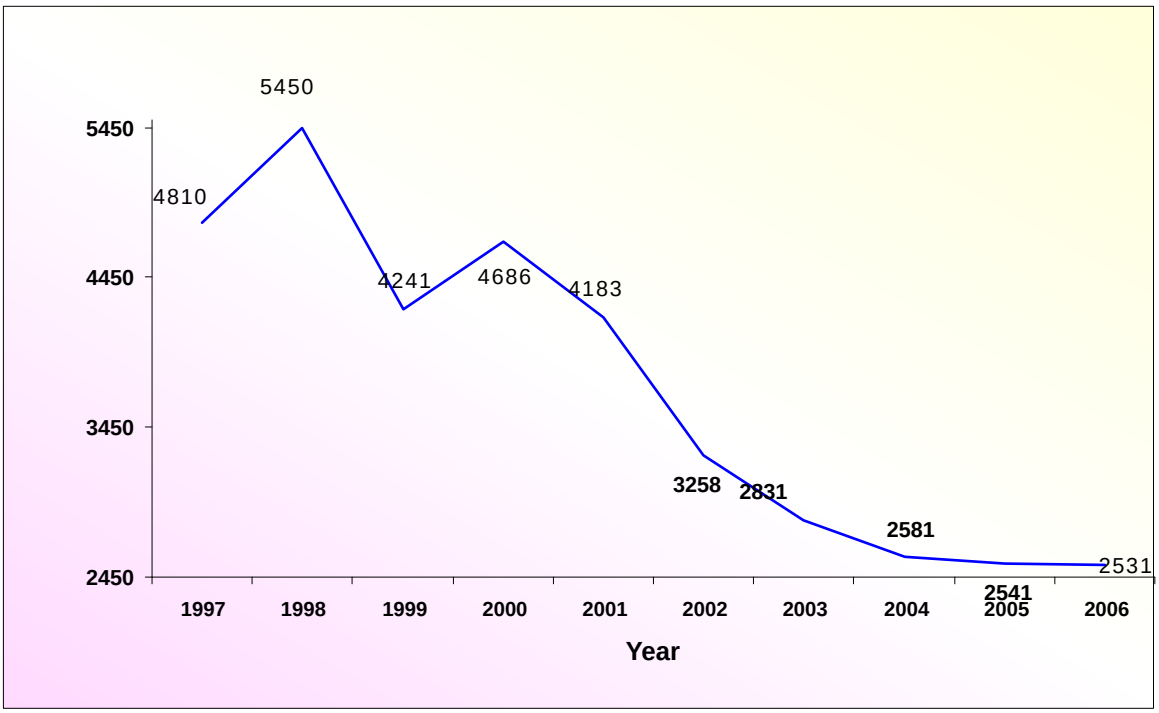


Chart – 4

Concentration in ambient air (In g/m^3) - SPM

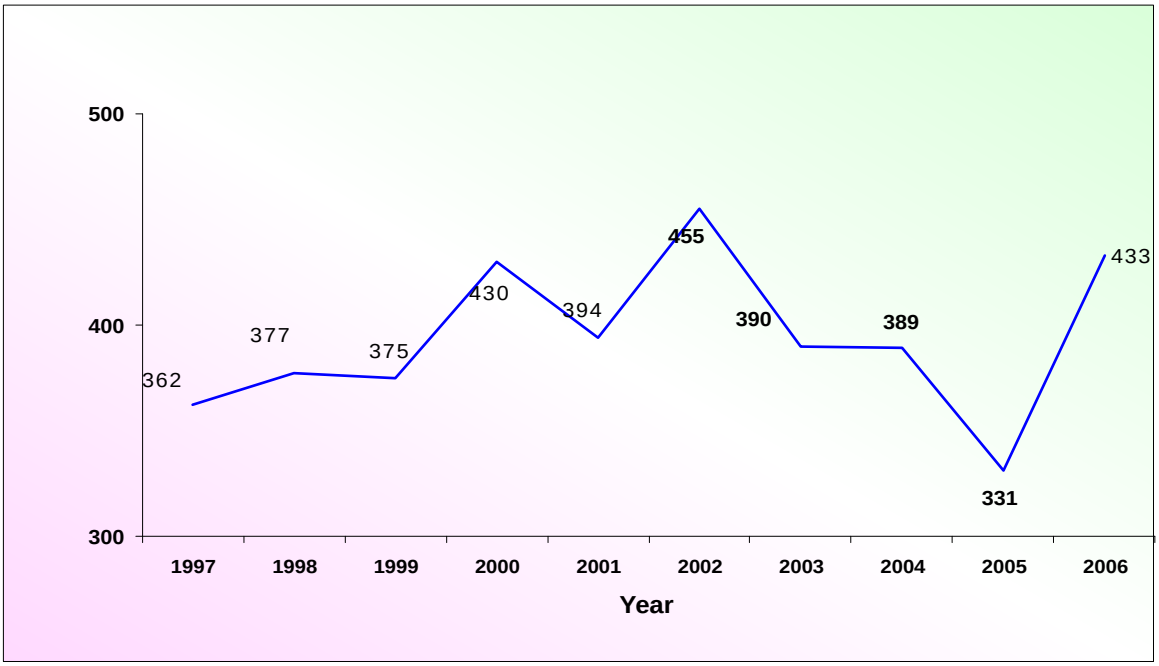
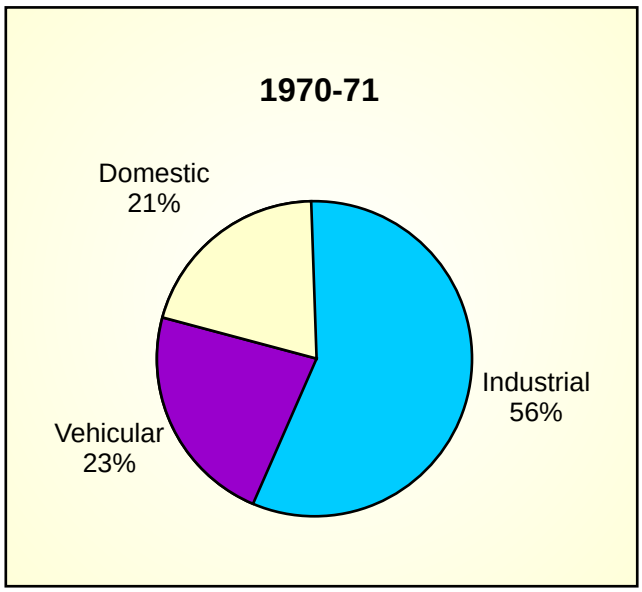
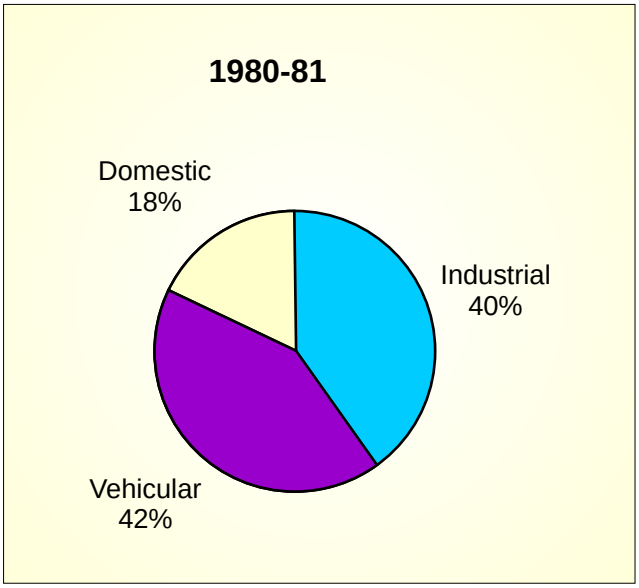
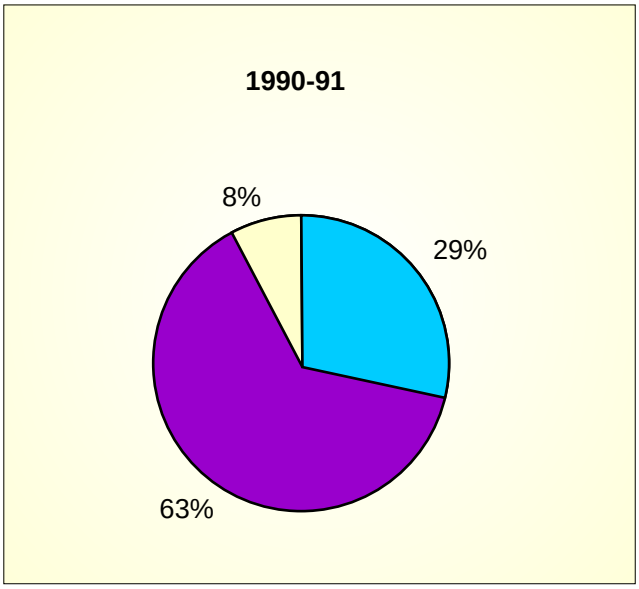


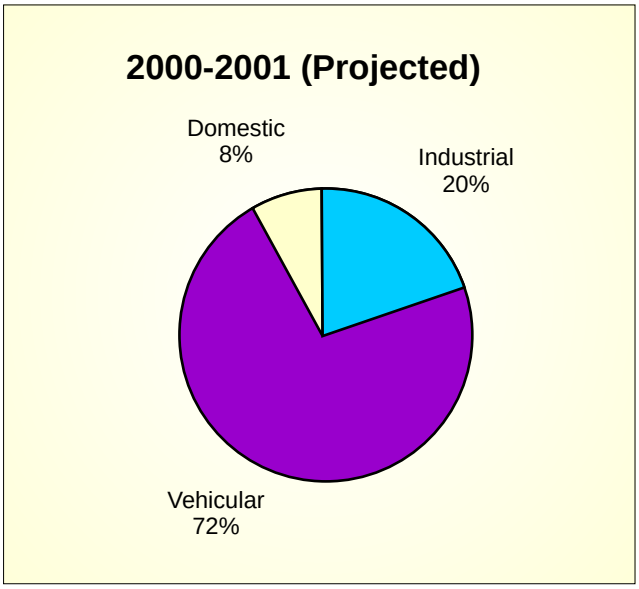
Chart -5

AIR POLLUTION BY SECTOR OF ORIGIN









3. NOISE POLLUTION

The other important cause of air pollution in Delhi is excessive noise. The major contributors to noise pollution are industries, vehicular traffic, festivals, construction activities, Diesel generating sets etc. Noise levels in Delhi exceed permissible levels in all areas except industrial areas according to a study by Delhi Pollution Control Committee in 1996. Following statement indicates the ambient noise levels permitted by Central Pollution Control Board for different areas: -

Statement - 3
PRESCRIBED AMBIENT NOISE STANDARDS

S.No.	Area	Leq/dB (A)	
		Day Time *	Night Time **
1.	Industrial Area	75	70
2.	Commercial Area	65	55
3.	Residential Area	55	45
4.	Silence Zone***	50	40

Notes:

* Day time – 6 AM to 10 PM

** Night Time – 10 PM to 6 AM

*** Silence Zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other areas which is declared as such by competent authority.

Source: The Noise Pollution [Regulation and Control] Rules, 2000, Ministry of Environment and Forest

4. WATER POLLUTION

4.1 The 48 km stretch of the Yamuna River in Delhi is heavily polluted on account of uncontrolled flow of untreated sewage and also of direct discharge of industrial chemical wastewater. The river water upstream of Wazirabad is fit for drinking after treatment. However, after the confluence of the Najafgarh drain and 18 other major drains which in at down stream of Wazirabad barrage, the water quality becomes heavily degraded and is unfit even for animal consumption and irrigation (Table 8.5 & 8.6). These 18 major drains pollute Yamuna river for various reasons including due to overflow of untreated sewage from unsewered areas. DJB has decided to lay interceptor sewers for cleaning

Yamuna river. Engineers India Limited has been appointed as Project Management Consultant [PMC] for this project and an escrow account has been created.

4.2 DOMESTIC WASTE WATER POLLUTION

The increase in population has resulted in a corresponding increase in the volume of domestic wastewater that is generated. Water Supply capacity of DJB is about 800 MGD while the present Sewage Treatment Capacity is about 512.40 MGD. However, waste water being discharged in major drains (Table 8.5) is more than water supplied by DJB. It indicates that sufficient water consumption is through other sources in Delhi. The waste water generated in unplanned area are discharged into drains in the absence of sewerage network. The major cause of concern is non-utilisation of installed capacity of sewage Treatment Plants as at present only about 341.39 MGD sewage is being treated by all STPs against their installed capacity of 512.40 MGD with a view to reduce flow of untreated sewage with yamuna. 17 sewage treatment plants have already been commissioned. However, since unauthorized colonies and JJ clusters are yet to be provided with sewerage systems, wastewater from these areas will continue to be discharged through drains till the time. Delhi Jal Board has prepared a ambitious plan to provide sewerage facilities in unauthorized colonies which are proposed to be regularized shortly. This will, however, be subject to feasibility. In such areas, about 1000 public toilets have been constructed with JBIC funds in addition to public toilets being constructed by Slum Wing under their plan scheme. Decentralized system of waste water treatment is the only possible solution to this problem. DJB is contemplating to prepare a feasible plan for this purpose. MCD has also appointed consultant under YMP-II for this purpose.

4.3 INDUSTRIAL WASTE WATER

The industrial wastewater generated in Delhi is about 40 MGD. More than 1200 industrial units have installed eight ETPs to treat industrial wastewater.

5 VEHICULAR POLLUTION

Vehicular population has increased from 24.32 lac in 1994-95 to 51.39 lac in 2007 till March. Thus, an increase of about 85% has been registered in a period of 10 years. Highest increase was in the category of car / jeeps (140.45%) followed by scooter / motorcycle (74.78%). This has resulted in a corresponding increase in pollutants emitted by vehicles. Petrol consumption has increased from 133 thousand tons in 1980-81 to 639 thousand tons in 2004-05, Diesel (HSDO) consumption has increased from 377 thousand tons to 1214 thousand tons. As such, petrol consumption has increased to about 480% and Diesel consumption to about 322% in the last 25 years.

6. SOLID WASTE

Latest estimates indicate that about 6500-7000 M. Tones of Solid waste is being generated each day in Delhi at present. In addition, industrial hazardous and non-hazardous waste, such as fly ash from power plants, is also generated. MCD and NDMC could manage to clear about 5500 M. Tones of garbage each day resulting in accumulation of garbage in the city area.

7. BIO MEDICAL WASTE

With the increase in the number of hospitals and nursing homes in Delhi, hospital waste has become another area of concern. In-house waste treatment facility in terms of autoclave/incinerators/shredders are available in major hospitals. Small Nursing Homes, Clinics and Dispensaries are disposing off the waste through 'Operator of facility' who collect, treat and transport and dispose off the waste. Two such operators are operating in Delhi at present.

8. MEASURES TO COMBAT POLLUTION

8.1 The main source of air pollution in Delhi is vehicular exhaust. Therefore, a strategy for use of cleaner fuel, reduction in fuel consumption, efficient maintenance of engines and installation of pollution control devices was adopted. Govt. of Delhi initiated the following steps in this direction:

- Mandatory fitting of catalytic converters -April, 1995
- Introduction of Low Sulphur Diesel – April, 1996.
- Introduction of CNG buses – April, 1998.
- Complete removal of leaded petrol – September, 1998.
- Restriction on plying of goods vehicles during day time-December, 1998
- Mandatory premixing of lubricant oil in petrol and ban on sale of loose lubricant Oil-December, 1998
- Amendment of Motor vehicle Act to bring CNG vehicle under permit & Tariff jurisdiction of government – September, 1999.
- Registration of private vehicles only conforming to Euro-II norms – April, 2000.
- Phasing out of Commercial vehicles older than eight years – April, 2000.
- Stricter emission norms (Bharat Stage – II) for registration of new taxis – October, 2001.
- Conversion of entire fleet of buses into CNG fuel mode– November, 2002.
- Euro-III norms mandatory for all four-wheeler w.e.f 1st April 2005.
- Euro-III norms mandatory for all two and three wheelers w.e.f 1st April 2005.

- 0.035% Sulphur in Diesel being supplied in Delhi w.e.f April 2005.
- 0.015% Sulphur in Petrol being supplied in Delhi w.e.f 1st April 2005.
- Stringent Emission Norms for 'in use' vehicles
- All authorized 485 pollution checking centres have been computerized and upgraded to current tail pipe emission norms & procedures.
- Two fully automated vehicles inspection and certification units have been set up in collaboration with ARAI Pune for better and quality inspection of all light & heavy vehicles.

8.2 It is estimated that air pollution generated from industrial activity in Delhi is about 20% of total air pollution. Although several steps have been taken, industrial pollution may be reduced further. More than 1,300 industrial units, that should not have been operating as per the MPD-2001 norms, have been closed. A scheme has been prepared to relocate industrial units that currently operate in residential areas. About 18000 industrial plots have been allotted at new industrial estates being developed at Bawana, Narela and 8048 plots at Bhorgarh industrial estate. Land available within existing industrial estates is also being used to accommodate such industrial units. Anand Parbat, Shahdara and Samaipur Badli area are being developed as industrial estates.

8.3 Unauthorised industrial areas, which meet the norms declared as eligibility criteria for regularization, have been identified. Now these industrial areas may be regularized if association of these areas comes forward to fulfill the norms by developing infrastructure according to eligibility criteria notified.

8.4 All Industries in Delhi using Coal Fired Boilers have been asked to change over to Oil or Gas Fired Boilers in order to reduce air pollution generated from industrial activities. This will also reduce the Fly Ash generated by the approximate 4000-5000 coal fired boilers in the City. All industries are also being advised to control pollution from diesel generating sets. They have been asked to increase the stack height to a level of 2-3 meters above their building height and also take acoustic measures to reduce the noise level from diesel generating sets.

8.5 The main pollutants from coal based thermal power plant are stack emissions, fly ash generation and fugitive emission in coal handling. There are five power plants in Delhi, out of which, two are gas based and three are coal based. All three coal based thermal power plants located in Delhi have installed pollution control systems and are adhering to the national standard of 150 mg/Nm^3. However, DPCC has given new stringent norms for particulate matter emission as 50 mg/ Nm^3 for which all the three Thermal Power Plants are in the process of upgrading their pollution control system. Besides, the Power Plants are using beneficiated coal (ash content less than 34% since 1999).

8.6 I.P. Thermal power plant has completed its life and as such it is now proposed to replace this thermal plant in a phased manner by a Combined Cycle Gas based plant of 1000 MW.

8.7 The Fly Ash notification of Govt. of India, regarding utilization of fly ash with in the radius of fifty kilometer from coal or lignite based thermal power plants, being implemented in Delhi by different departments/user agencies, is being monitored by the Environment Department . The provisions of the Notifications are to restrict the excavation of topsoil for manufacturing the bricks and promoting the utilization of fly ash base building materials in construction activity and use of fly ash/pond ash in construction of roads/flyover/ embankment (as per IRC guidelines)/refilling of soil burrow area and reclamation of low lying area. The quality of fly ash bricks need to be improved as there are complaints by users.

8.8 There are 31 industrial areas in Delhi. Most of the small and tiny industries do not have individual facilities to treat liquid waste. Each unit has been asked to install an Effluent Treatment Plant to ensure neutralization of acidity, removal of oil and grease and removal of total suspended solids to the levels specified for each industry by the Central Pollution Control Board or up to sewage standards wherever specific standards have not been laid down. For management of industrial effluent, 15 CETPs were originally proposed to cater the treatment of effluent generated from the various Industrial units in Delhi. 11 CETPs have been constructed so far and made functional. 2 CETPs are under construction. Empowered Committee constituted by the Supreme Court has recommended not to construct remaining 3 CETPs. Government of Delhi has already invested more than Rs.84 crore as its share of 25% cost of 12 CETPs but Government of India is yet to release its full share of 25%. CETPs societies are to contribute 50% of balance cost and are also liable to maintain these CETPs. 8 CETPs have been handed over to the CETP societies till now.

8.9 YAMUNA ACTION PLAN (PHASE-II)

The Yamuna Action plan (YAP) Phase - I, focused on the treatment of partial wastewater discharge from 15 towns till the year 1998 and the pollution from Delhi was not fully addressed. Hence, the schemes of this project did not contribute fully in improvement of water quality of river Yamuna. Therefore, YAP - II has been formulated by M/o Environment & Forest, Govt. of India to achieve the desired water quality standards for Yamuna River and to improve the sanitary and hygienic conditions of the low - income population. The total cost is Rs.387.17 crore for the schemes under "Yamuna Action Plan Phase - II" in Delhi. The cost of the schemes is to be shared on 85:15 basis between the Govt. of India and Govt. of Delhi. A few study projects are also included in YAP - II, which will be implemented under YAP (Phase-III)

Projects under Yamuna Action Plan Phase -II (YAP-II

Projects finalized by MOEF	Cost (Rs. in Crore)
324 MLD (72 MGD) Keshopur, STP rehabilitation, Pumping station and rising main in Keshopur STP pilot plant for electricity generation from biogas	66.36
Okhla STP augmentation with electricity generation plant for 170 MGD STP	85.27
Ring Road trunk sewer rehabilitation	90.07
Wazirabad road trunk sewer settlement	64.20
Bela Road trunk sewer rehabilitation	17.47
DPR Preparation including Pilot Plant implementation for YAP III	35.00
Misc. e.g. Slum Rehabilitation, Public Participation and Awareness and Capacity Building/PR	28.80
Total	**387.17**

Funds have been released to MCD and DJB by the Government of India to initiate the implementation of schemes. The Selection of Project Management Consultants by the project implementing agencies has been completed and now implementation will be speeded up.

8.10 For control of pollution in River Yamuna in addition to above mentioned programmes, DJB is adopting interceptor sewer concept on 3 major drains.

HAZARDOUS WASTE MANAGEMENT

8.11 Hazardous Waste (Management & Handling) Amendment Rules, 2000, specifies 36 types of hazardous waste generating processes as well as type of hazardous waste. Under the rules, it is the responsibility of all the industrial units who generate specified hazardous waste to ensure that the hazardous waste is properly collected, treated, stored, transported and disposed of in environmentally sound manner.

8.12 Delhi Pollution Control Committee undertook a general census of industrial units, located in all the 31 approved industrial areas of Delhi through M/s. Ramkey. As Per report submitted by Ramkey in 2007, the number of hazardous waste generating units was reported to be 1995. The quantity of the hazardous waste expected to be generated from 31 approved industrial areas in Delhi is reported to be about 5300 MT per year. The National Productivity Council, New Delhi conducted a Environment Impact Assessment study of 3 probable sites for the disposal of hazardous waste.

Department of Environment has decided to prepare the plan for development of its own facility site within Delhi at Gumanhera in Najafgarh Block.

SOLID WASTE MANAGEMENT

8.13 The management of solid waste in Delhi is being improved through various measures adopted by concerned agencies. These measures include the following:

I Construction of dalaos/dustbins & Purchase of Steel frame large Size dustbins.

II Purchase of additional front-end loaders, refuse collectors, mechanical sweepers, tipper trucks, dumper placers, etc;

III Minimizing garbage through segregation between degradable and non-degradable

IV Development of new sanitary land-fill sites;

V Disposal of garbage at the local area level through vermi-composting/compost making.

VI Involvement of NGOs and Resident Welfare Associations in segregation and collection of garbage from houses.

VII The Govt. of India has notified Municipal Solid Waste (Management & Handling) Rules, 2000 with the objective of collection, segregation, storage, transportation and processing and disposal of Municipal Solid Waste (Management & Handling) Rules, 2000. Implementation of these Rules is being taken care of by concerned local bodies in their respective areas.

VIII Besides the above, the Municipal Corporation of Delhi, which is managing the solid waste, has taken the following policy level decision to improve the management system:

a. Private Sector participation in transportation of Solid Waste in six zones has already been awarded and for other four and a half, it is in the process of award.

b. Setting up of processing facilities through private entrepreneurs.

c. Infrastructure development at the local level collection and at the terminal processing level for segregation of wastes.

BIOMEDICAL WASTE MANAGEMENT

8.14 About 8 M.T. Bio-Medical wastes is generated each day in Delhi. Delhi Pollution Control Committee has authorized two operators for collecting the waste from the individual generators and disposing it off at their facilities. With the commencement of facility from two operators, a number of major hospitals, who had installed incinerators, have closed down their incinerators and started availing the services of the operators.

As on date, 11 incinerators, 17 autoclaves and 2 microwaves are in place for effective management of the Bio-Medical Waste (Management & Handling) Rules, 1998. Besides, more than 2000, individual Health Care establishments have made an agreement with the operators who have the facility for the management of Bio-Medical Waste. Extensive training programmes for different hospitals have been conducted by D.P.C.C. with the involvement of NGOs and experts in the field. 3 Committees depending on the bed strength have been constituted for deciding the authorization under BMW Rules and consent under the Air Act.

NOICE POLLUTION

8.15 The growing number of DG sets is categorized as one of the source of noise pollution in Delhi. The guidelines issued on the subject by Government from time to time are as under:-

8.16 NOICE LIMIT FOR GENERATOR SETS RUN WITH DIESEL

A. Noise limit for diesel generator sets (upto 1000 KVA) manufactured on or after the 1st January, 2005.

The maximum permissible sound pressure level for new diesel generator (DG) sets with rated capacity upto 1000 KVA, manufactured on or after the 1st January 2005 shall be 75 dB(A) at 1 metre from the enclosure surface.
The diesel generator sets should be provided with integral acoustic enclosures at the manufacturing stage itself.

B. Noise limit for DG sets not covered by paragraph-A.

Noise limits for diesel generator sets not covered by paragraph A, shall be as follows:

a) Noise from DG set shall be controlled by providing acoustic enclosures or by treating the room acoustically, at the users end.

b) The acoustic enclosure or acoustic treatment of the room shall be designed for minimum 25 dB(A) insertion loss or for meeting the ambient noise standards, whichever is on the higher side (if the actual ambient noise is on the higher side, it may not be possible to check the performance of the acoustic enclosure/acoustic treatment. Under such circumstances the performance may be checked for noise reduction upto actual ambient noise level, preferably, in the night time). The measurement for Insertion Loss may be done at different points at 0.5 m from the acoustic enclosure/room, and then averaged.

c) The DG set shall be provided with proper exhaust muffler with insertion loss of minimum 25dB(A).

d) These limits shall be regulated by the State Pollution Control Boards and the State Pollution Control Committees.

e) Guidelines for the manufacturer/user of Diesel Generator sets shall be as under :-

i) The manufacturer shall offer to the user a standard acoustic enclosure of 25dB(A) insertion loss and also a suitable exhaust muffler with insertion loss of 25 dB(A).

ii) The user shall make efforts to bring down the noise levels due to the DG set, outside his premises, within the ambient noise requirements by proper sitting and control measures.

iii) Installation of a DG set must be strictly in compliance with the recommendations of the DG set manufacturer.

iv) A proper routine and preventive maintenance procedure for the DG set should be set and followed in consultation with DG set manufacturer which would help prevent noise levels of the DG set from deteriorating with use.

8.17 ORDER OF THE LT. GOVERNOR OF DELHI IN RESPECT OF D.G. SETS

a. Generator sets above the capacity of 5 KVA shall not be operated in residential areas between the hours of 10.00 PM to 6.00 AM except generator sets of Group Housing Societies and Multi Storey residential apartments.

b. Generator sets above the capacity of 5 KVA in all areas residential/commercial/industrial shall operate only with the mandatory acoustic enclosures and other standards prescribed in the Environment (Protection) Rules, 1986;

c. Mobile generator sets used in social gathering and public functions have been directed to install the mandatory acoustic enclosures and adhere to the prescribed standards for noise and emission as laid down in the Environment (Protection) Rules, 1986.

PUBLIC AWARENESS COMPAIGNS

8.18 Sustained and concerted efforts of the Government on the environmental front yielded fruitful results on many counts. Public participation specially from Students, Resident Welfare Associations, Market Traders Associations in the Campaigns, has achieved great success with cooperation from all concerned. The Government has notified an area of 100 meters around the hospitals having the capacity of 100 beds or more as silence zones.

FOREST

8.19 Delhi's forest & tree cover has increased from 88 sq.kms in 1999 to 283 sq.kms. in 2005. Thus, jumping from 5.93 per cent in 1999 to 19.08 per cent in 2005. The expansion of forest area is a remarkable achievement in afforestation of Delhi. The total tree cover & forest cover is now 300 sq. Kms, in 2007 which is 20 percent of the total geographical area of Delhi. Delhi is the first Mega City in the country with highest green cover of 20.0% of total area.

8.20 Due to a well coordinated system, efforts of the Nodal Officers and cooperation of the RWAs, plantation programme in last monsoon has been quite successful and more than 5 lakh saplings were distributed free of cost to RWAs, NGOs, Schools and General public etc. In addition to this, more than 4 lakhs saplings were planted by the Forest Department.

8.21 During 10th Five Year Plan, 53.03 lakh trees were planted by the various agencies like Forest Deptt., DDA, NDMC, PWD, etc.

8.22 The Forest Department is implementing a project on rehabilitation of 2500 acres of Bhatti Mines area, which is a part of Asola Bhatti Mines Wild Life Sanctuary, since March, 2007 through Eco-Task Force. The Eco-Task Force had planted 7.99 lakh indigenous trees in Bhatti Mines area during 10th plan. Further 23 Check Dams have been constructed at Asola Wild Life Sanctuary for storing rain water.

8.23 BIO-TECH CENTRE

A Bio Tech Centre at a cost of Rs. 4.91 crore has been constructed at South Campus in collaboration with Delhi University. The Bio-Tech Centre has started functioning.

8.24 OTHER MEASURES:

Several other measures are being taken to control pollution and improve the environment, which are as follows: -

(i) Reuse of treated wastewater for gardening and cooling purposes, which is discharged from Sewage Treatment Plants.

(ii) Making use of bio-degradable kitchen solid waste for Vermi-composting at community level and utilizing compost for gardening purpose.

(iii) The Department of Environment has supported various schools for putting up paper recycling equipment.

(iv) Development and protection of the Ridge area.

(v) Development of wild life sanctuary at Bhatti, Asola.

(vi) Development and preservation of old lakes and other water bodies.

(vii) Bombay Natural History Society (BNHS) has been engaged to perform their activities at Asola Sanctuary for visitors and thus play the role of Environment Resource Centre in Delhi for the public

(viii) Under urban forestry creation of triangular parks with the objective in view, particularly with reference to greening Delhi substantially before the start of Common Wealth Games 2010.