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PUNE MUNICIPAL CORPORATION
SHIVAJINAGAR, PUNE 411 005.

ACTION PLAN
FOR
CONTROL OF
AIR POLLUTION
IN
PUNE CITY
2003-2004

SYNOPSIS

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1. OBJECTIVES

The Honourable Supreme court of India in their Order dated 9th May 2002 ordered for preparation of a scheme with regard to improvement of air environment with special reference to vehicular pollution in cities other than Delhi, which are equally or more polluted. In this regard, inter ministerial discussions were made in New Delhi as also in the conference of State Environment Secretaries and Chairpersons of Pollution Control Boards / Committees.

Pune city appeared as one of the four cities, which need further studies in order to prepare an action plan to suit the desire of Honourable Supreme Court of India for air quality improvement.

This report is prepared as an initiation paper with this objective in mind. The Pune city for this purpose is the area under Pune Municipal Corporation, both existing as well as newly acquired, which can be visualized on a map enclosed herewith.

2. METHODOLOGY

The present report is thus limited in its expanse for a spatial area of Pune City and is kept related to air phase of environment.

The present report is based on the Guidelines given by CPCB in their letter dated 02.08.2002.

NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutants	Time Weighted Average	Concentration in Ambient Air		
		Industrial Areas	Residential (Rural & Other) Areas	Sensitive Areas
Sulphur Dioxide (SO ₂)	Annual	80 ug/m ³	60 ug/m ³	15 ug/m ³
	Average 24 hours	120 ug/m ³	80 ug/m ³	30 ug/m ³
Oxides of Nitrogen (Nox)	Annual	80 ug/m ³	60 ug/m ³	15 ug/m ³
	Average 24 hours	120 ug/m ³	80 ug/m ³	30 ug/m ³
Suspended Particulate Matter (SPM)	Annual	360 ug/m ³	140 ug/m ³	70 ug/m ³
	Average 24 hours	500 ug/m ³	200 ug/m ³	100 ug/m ³
Respirable Particulate Matter (RSPM) (Size < 10 um/)	Annual	120 ug/m ³	60 ug/m ³	60 ug/m ³
	Average 24 hours	150 ug/m ³	100 ug/m ³	75 ug/m ³
Lead (pb)	Annual	1.0 ug/m ³	0.75 ug/m ³	0.50 ug/m ³
	Average 24 hours	1.5 ug/m ³	1.0 ug/m ³	0.75 ug/m ³
Carbon Monoxide (CO)	8 Hours	5.0 mg/m ³	2.0 mg/m ³	1 mg/m ³
	1 Hour	10.0 mg/m ³	4.0 mg/m ³	2.0 mg/m ³

- a) The air quality target will be kept the same as is desired by CPCB in its National Ambient air Quality Standards published in June 1997. This is reproduced above for ready reference.
- b) The background of pollution level in Pune is already known, because both PMC and MPCB has undertaken sufficient measures / efforts in the past to judge the same.

AMBIENT AIR QUALITY MONITORING RESULTS IN PUNE

The period of monitoring is from October 2001 to May 2002.

	Near Majur Adda				Near Yashwantrao Chavan Natyagrih			
	PM ₁₀	SPM	No _x	SO ₂	PM ₁₀	SPM	No _x	SO ₂
Maximum	169.42	222.36	96.34	58.72	110.34	-	74.29	49.51
Minimum	103.47	137.79	50.27	20.19	55.16	-	29.33	19.67
Average	132.32	173.05	78.94	40.48	83.57	-	49.68	30.21

From these results, it can be seen that RSPM, Nox near Majur Adda is exceeding the limit and it is mainly because of vehicular traffic in that area. PM10 at Yashwantrao Nhavan Natyagrih are showing slightly higher and whereas Nox are touching the limits. This may also be due to vehicular movement.

The maximum values of RSPM at Majur Adda were observed maximum in February and minimum in April. Similarly near Yashwantrao Natyagrih, the maximum values of RSPM were observed in February and minimum in January. The SPM levels at Site No.1 were maximum in December 2001 and in April it was minimum. Monthwise air quality results are as below:

Month-wise Air Quality results at Majur Adda

Month	PM10	SPM	Nox	SO2
November 01	128	100	106	57
December 01	153	102	103	56
January 02	136	86	92	42
February 02	156	93	114	67
March 02	119	78	107	53
April 02	111	71	91	44
May 02	115	75	76	34
Average	131	87	98	50

Month-wise Air Quality results at Yashwantrao Chavan Natyagrih

Month	PM10	NO _x	SO ₂
December 01	86	89	34
January 02	71	64	34
February 02	100	69	52
March 02	90	59	37
April 02	78	50	36
May 02	75	44	31
Average	83	62	37

The Maharashtra Pollution Control Board has also carried out ambient air quality mainly at Jog Centre Building, Mumbai – Pune Road, Wakadewadi during January 2002 to May 2002 and the results are below:

Air pollution testing at Job Centre Building, Mumbai – Pune Road, Wakhadewadi, Pune-3.

Sr. No.	Date	SO ₂	Nox	SPM
1.	05.01.02	15.62	32.55	218.80
2.	18.01.02	29.15	49.95	450.20
3.	31.01.02	25.00	25.80	173.10
4.	14.02.02	20.75	23.75	123.10
5.	26.02.02	22.25	38.35	222.90
6.	05.03.02	17.90	41.65	978.30
7.	12.04.02	30.15	44.75	149.70
8.	03.05.02	38.95	41.25	366.60

From the above results, the SO₂, Nox levels are observed within the limit, but SPM levels have gone upto 978.3 in March 2003. It is predicted that due to vehicular movement on National Highway No.4, the SPM level has gone high.

It is proposed that when once the Action Plan will be in place, regular monitoring shall be undertaken to measure performance, efficiency. The monitoring programme in future shall be based on area where the particular action plan is related. The monitoring agencies will be PMC/MPCB/University of Pune, which will be decided after due deliberations with CPCB. The parameters monitored will be PM10, SPM, Nox, CO and SO2. The information shall be disseminated to all concerned authorities including Regional Transport Authorities.

- c) The air quality trend is certainly disturbing. This is because approximately 10,000 vehicles are introduced on Pune roads per month (Source RTO – PMC).

This high number when related to slow traffic speed between 15 km/hr to 35 km/hr aggravating the situation by acceleration and deceleration. The direct mal-effect is on the air pollution of the city.

The two-wheelers and the three and six seater rickshaws have shown a steep rise in the last three years. Following table and the figure below indicates the registration of vehicles with RTO, Pune.

Sr. No.	Type of Vehicles	2000	2001	2002	2003
1.	Total Two Wheelers	609,497	665,232	727,641	
2.	Three Seaters	49,478	51,798	54,844	
3.	Six Seaters	3,775	3,972	4,133	
4.	Light Motor Vehicles	97,279	107,376	119,265	
5.	Heavy Vehicles	74,355	79,061	87,000	
	Total	836,384	909,440	994,885	

From the above table, it is noticed that two wheelers are contributing most of the pollution. The percentage of contribution of pollution by different vehicles are as below:

1)	Two Wheelers	-	78%
2)	Cars	-	12%
3)	Three Wheelers	-	5%
4)	Buses	-	2%
5)	Trucks	-	3%

The key traffic and transportation problems can be broadly identified as under:

- (i) A disproportionate rise in the number of vehicles, more particularly in the Two Wheelers;
- (ii) Growth of informal forms of mass transport;
- (iii) A severely impaired Pune Municipal Transport;
- (iv) Heterogeneous traffic conditions with limited road capacities making segregation of traffic impossible;
- (v) Absence of a ring road despite radial expansion of the city;
- (vi) Insufficient road capacities in the congested area;
- (vii) Crowded intersection leading to air and noise pollution;
- (viii) Various encumbrances on road such as encroachments, unauthorized constructions particularly of religious nature etc.,
- (ix) Limitations of DP roads to cater to the transport needs since vast stretches of developable lands in the DP do not have any plans for road networking;
- (x) Absence of parking facilities at important locations leading to street parking;
- (xi) The inadequacy of foot paths, their diversions to other uses and jay-walking leads to obstruction of vehicular traffic;

Inventory of emissions load from vehicles is done in Pune city and is reported by CIRT, i.e., Central Institute of Road Transport, Pune as follows:

Vehicle Type	No. of Vehicles	CO	Nox	SO2	HC	TSP	PM10	Total
Cars	71,771	20.20	2.32	0.034	3.80	0.30	0.20	26.854
2-wheelers	560,259	36.10	0.30	0.058	19.20	0.90	0.70	57.258
Rickshaws	30,785	28.00	0.75	0.036	18.40	0.90	0.70	48.786
Taxis	1,633	2.70	0.25	0.002	0.50	0.03	0.02	3.502
Buses	6,602	9.20	9.72	0.903	1.80	1.42	1.11	24.153
Trucks	10,367	7.50	9.51	0.724	1.20	1.38	1.09	21.404
Total	681,417	103.70	22.85	1.757	44.90	4.93	3.82	181.957
All figures of pollutants are in Tonnes per day								

- d) The study for emissions load from domestic and industrial causes was not undertaken in the past, which too will be now required and hence included in the study under action plan. The proportionate contribution of various sources shall be assessed, though prima facie, it is very certain that vehicular emissional load is disproportionately high in the city.
- e) The steps so far taken are like banning registration of all new diesel public vehicles like six seaters and all models of diesel three seaters rickshaw.

Introduction of LPG is in advanced stage with PMC has made progress to modify the fleet of PMT to make it compatible with environmentally friendly fuels. The authorities are also mindful in Pune to phase out automobiles with two stroke engines into four stroke.

- f) A road map to achieve the aims of air pollution control is designed and is as reflected in the action plan Section No.4 in this report.

Because of introduction of approximately 6,800 vehicles per month, the traffic congestion in the city is increasing alarmingly. About 60%

of Pune Municipal Corporation roads in the heart of the city are congested whereas remaining 40% roads in the fringe area have relatively lower traffic volumes. As a consequence, average speeds on the city roads are greatly impaired and range between 15 km/hour to 35 km/hour. Various initiatives taken by the Pune Municipal Corporation to ease traffic congestion are primarily based on the following objectives:

- (1) Decongest the city roads;
- (2) Reduce accidents on city roads;
- (3) Provide safe, convenient and pollution free atmosphere for vehicular and pedestrian traffic;
- (4) Segregate directional traffic and vehicular and pedestrian movement;
- (5) Provide parking facility to traffic;
- (6) Encourage public transport and discourage personalized modes
- (7) Inculcate basic traffic discipline amongst the citizens

There is a scope for improvement of public transport system in Pune. Due to absence of reliable frequency of PMT buses, it is estimated that approximately 2.0 to 2.5 lakhs commuters have switched over to alternative modes of transportation, i.e., two wheelers. The dwindling commuters support is highlighted in the below table:

TABLE SHOWING NUMBER OF COMMUTERS TRAVELLING BY PMT

No.	YEAR	COMMUTERS
1.	1997-1998	470,844
2.	1998-1999	427,955
3.	1999-2000	385,475
4.	2000-2001	355,557
5.	2001-2002	343,173

However, the Pune Municipal Transport may not in the near future, substantially fulfill the entire transportation requirement of the city population. Presently, the needs of the people are fulfilled primarily by the private vehicles and are supplemented by the Pune Municipal Transport and the other public transportation modes like the three and six seater rickshaws.

Time and On-road restrictions:

(Source – RTO Pune)

As on September 2002, there are 50,023 petrol driven and 9,446 diesel driven three wheelers and also 5,479 Nos. of six wheelers registered with RTO, Pune.

For the betterment of vehicular pollution control, time and road restrictions, improvement in PUC system and compulsory I & M practices for on-road vehicle are already being implemented as quoted below:

- (i) RTO has banned six seaters within PMC area, which is challenged in High Court, Mumbai. The hearing at the admission stage is over and decision is expected soon.
- (ii) Six seaters with overload carrying capacity, stage carriage basis and polluting heavily are declared as unfit to operate, hence no addition of new or old six seaters.
- (iii) Only petrol driven rickshaws are permitted within PMC area.
- (iv) No diesel rickshaw is permitted as a replacer vehicle to the existing one.
- (v) No new rickshaw permits are granted from 26.11.1997.
- (vi) All intent letters rickshaw permits have been cancelled from 29.04.1999.
- (vii) Vehicles are checked regularly for PUC certificates and if found exceeding the limit, the registration is suspended till satisfactory repairs, panel compounding fees are recovered. Renewal of certificate is granted after observing satisfactory performance.

3. AIR POLLUTION OTHER THAN VEHICULAR POLLUTION

3.1 Industrial Pollution

The industrial activity in Pune city is such that majority is in small scale sector and very few in medium and large scale. The status is:

Large Scale	-	11 No.
Medium Scale	-	1 No.
Small Scale	-	876 Nos.

The small scale industries are mainly in service category. It may not be out of place to give the list of large and medium industries as ready reference, as also the break up of small scale industries (SSI) units.

The large and medium scale industries are very few. These industries are not having high air pollution potential (HAPPI). The industries by far have taken measures for emissions control and the efforts will continue further as mentioned in the action plan Section No.4 in this report.

It may thus be seen that a basic inventory of industries in Pune city is already worked out. The water is kept on the pollution control activities in such industries. More frequent power failures in recent years have given rise to higher need of alternative prime mover by way of DG sets. The DG sets due to its essentially make and break type of working creates shock waves of emissions. This normally is found to be a neglected part, because DG sets are only stand-bye and not a regular features. The condition has now changed and the stand-bye arrangement is becoming a routine necessity at least for few hours per day. MPCB has commenced giving very elaborate instructions for DG set generated Pollution control. These conditions are specified for stack height commensurate with KVA installed and for barricading noise.

The compliance is kept under observation and is so included in the framework of Section 4 of action plan of this report.

3.2 Domestic Pollution

The rapid urbanization and industrialization with better job opportunities has attracted migrants from various corners of the country to Pune resulting in expansion of the settlements of Pune. Since the first census of independent India and then onwards upto 1991, the population of the city has shown a constant gradual increase ranging between 60 to 75%. While the city population was 1,33,227 in 1921, it grew to 4,88,419 in 1951 (the first census of independent India). The figures stood at 6,06,777 (1961), 8,56,105 (1971), 12,03,351 (1981) and 15,66,651 in 1991. However, the census of 2001 reveals that the city population has reached phenomenal figure of 25,40,069 indicating record rise by 62.13% from 1991 census. Out of which, 52.28% are male while 47.72% are female. The Pune Municipal Corporation reportedly proposes to launch a massive programme for controlling the population under Integrated Population and Development Project with the assistance of UNFPA from January 2003 to arrest the upward trend. It is indeed difficult to get accommodation to such high no. of residents in decent and healthy houses.

Scarcity of an affordable housing stock has resulted in growth of slums and shanties on unguarded land all around the city. Almost 40% of the city population resides in slums. The city has 503 slums, out of which 353 are declared and 150 being undeclared. The area covered by the declared slums is around 659 hectares. The total population in the slums (declared + undeclared) is 10,50,000 souls. It is necessary to initiate study pertaining to survey of slums in the city, in order to offer them basic civic amenities.

The slum eradication is not possible and hence the slum improvement will have to be undertaken. The organized housing sector are found to rely on non-polluting liquid fuel for cooking. However, the same cannot be said about the slum dwellers. Many of them are suspected to use any fuel which becomes available to them such as wood, bagasse, saw dust, waste paper / boards or any sundry waste. The smoke-less chulha is a concept which has not reached to the depth where it should have. Thus, domestic fuel in slum areas is an area which needs further study, more accurate quantification and a thrust for improvement offering acceptable option. This study is not undertaken so far and hence included in Section 4 in this report.

When in 1817, Pune city was located on area of 5 sq kmtr, in 1997 is spread over 243.96 sq. kmtrs. The chronology of this development is as follows:

AERIAL EXPANSION – PUNE CITY AND PUNE URBAN AREAS

YEAR	PUNE CITY AREA (Sq Mtrs)	Reason for Expansion
1817	5.00	
1860	34.71	Formation of Pune Municipality
1950	125.75	Pune Municipal Corporation formed
1997	243.96	Merging of 38 fringe villages into Pune

PMC will be well advised to take precautions that no more slum or slum like structure get created in the newly 38 merged villages.

3.3 Noise Pollution

The definition of air pollution is given in Section 2 of the Air (Prevention) Act, 1986. The decibel levels at important intersections in the city indicate dominance of diesel operated vehicles such as PMT buses and trucks. Reckless honking of vehicles also adds to the noise levels causing serious health implications. Very rarely any school or medical

establishment in the city is spared from such affliction. Besides, the pollution caused by the informal industries operating in the non-conforming zones is also rising sharply with city assuming the status of a megalopolis.

Noise in the industries can be controlled during the routine vigilance, however, the noise created by the society is a difficult problem

The success can, however, be achieved through:

- (a)
- (b) Loudspeakers to face towards the congregation and not the neighbourhood as is generally the case;
- (c) Programme timing should not inconvenience the neighbourhood

The aspect of Noise will have to be addressed more carefully in future and hence some study in action plan is proposed in Section 4.

4. ACTION PLAN

4.1 Replacement of existing Public Transport Buses by PMC

1. In Pune Municipal corporation area there are 800 buses owned and operated by the Regional Transport authority of Pune. Their year of manufacturing is shown in Annexure-1. The Pune Municipal Corporation is planning to replace 100 vehicles during 2002-2003, 112 buses during 2003-2004, which are fifteen years old. The suggestion of Ministry of Environment & Forests and Ministry of Petroleum, Government of India has been accepted by the Pune Municipal Corporation and the buses which are going to be purchased has agreed to supply the kind of fuel, which is needed in such buses.

2. As to the problem of trucks and other big vehicles coming from outside and presently passing through the heart of Pune city, the Municipal Corporation has plan to divert them to bypass roads. One such bypass road has already been started and another one will also be completed by Maharashtra State Road Development Corporation possibly in the current financial year.
3. The emission from six seater exhausts, the Municipal Corporation has taken action under the provisions of the Pune Municipal Corporation Act to prohibit their plying on certain roads, which are congested ones.

As to 3-wheelers, RTO has banned fresh registration and existing will be switched over to LPG in due course of time depending on the availability of LPG with Public Sector oil companies.

4. The emission from the two wheelers is quite a serious problem. However, reduction in number of two wheelers depend on the switching over the use of public vehicles by the people. The Transport Commissioner has promised to register the two wheelers / three wheelers having 4 stroke which will reduce the existing emission of CO.
5. Fuel : The public sector oil companies have promised to supply diesel having sulphur content 0.05% and also petrol having benzene content 1% reducing from 0.25% and 5% respectively.

Sr. No.	Aspects	Activities	Action Taken	Action / Responsible Agency	Time Frame	
1.	AIRPOLLUTION CONTROL ; VEHICULAR EMISSIONS	VEHICULAR EMISSION INVENTORY:				
		1.1	Inventory of emission load from all categories of vehicles with respect of different pollutants	Commenced	To be reviewed / revised by PMC, RTA	Already done
		1.2	Emission Norms and Vehicles Technology	As per CPCB	RTA & Vehicle manufacturers	Bharat Stage-II to be implemented from 2003. Euro-III equivalent norms to be implemented from 2005. Euro-IV equivalent norms to be implemented from 2010.
		1.3	Notification of vehicle emission norms like Bharat Stage-II, III, IV etc., in consultation with MoRTH, MoEF.	Commenced	To be continued by PMC / RTA	To be implemented as per Road Map enclosed as Annexure-III.
		1.4	Notification of emission norms for in-use vehicles in consultation with NoRTH, MoEF			
		1.5	Retrofitment of after combustion technology like catalytic converters, particulate trap etc.		RTA	Performance checking for cat converters and Conversion kits to be put in place by 01.04.2005.
		1.6	Introduction of clean fuelled vehicles like CNG / LPG / Hybrid, Battery etc.		PMC & RTA	April 2004.
		1.7	Introduction of fuels matching Bharat Stage-II, III & IV etc. In consultation with MoP & NG.	Commenced	Oil companies	Unleaded petrol has already been made available.
		1.8	Availability of 3% Benzene containing petrol		Oil Companies (BPCL / HPCL)	Already started from 2000
			Availability of 1% Benzene containing petrol		Oil Companies (BCPL / HPCL)	Under consideration
		1.9	Availability of low Sulphur Diesel (0.05%)	25% from 2000	Oil Companies	Upto 01.10.2002

Sr. No.	Aspects	Activities	Action Taken	Action / Responsible Agency	Time Frame
		Availability of low Sulphur Diesel (0.035%)		Oil Companies	Upto 2005
		Availability of low Sulphur Diesel (0.005%)		Oil Companies	Upto 2010
		1.10 Ban on supply of loose 2-T oils at petrol pumps	Action started	Oil Companies & RTA	Continuous efforts
		1.11 Checking of fuel adulteration	Action started	Civil Supply & Police Department	Continuous efforts
		1.12 Introduction of alternate fuels like CNG / LPG depending upon availability		Oil Companies (HPCL) & RTA	Two number of auto LPG outlets are being operated on trails basis in Pune. The demand of LPG when matures will be about 1.2 tonnes per day. The above additional facilities will be ready subject to obtaining CCOE and other statutory approvals.
2	AIR POLLUTION CONTROL	INDUSTRIAL			
		2.1 Organisation of the inventories of the polluting industries, i.e., Large, Medium & Small Scale Sectors	Commenced	Completed by MPCB	Continuous efforts for updating
		2.2 Control of industries emission and ensuring compliance of standards	Commenced	To be completed by MPCB	Continuous efforts for updating
		2.3 Identification and closure of clandestine / unauthorized industrial operation or shifting		PMC, MPCB	Within 18 months
		2.4 Round the clock vigilance of industries for identification and control of clandestine emission	Commenced	To be continued by MPCB / PMC	Routine continuous efforts
		2.5 Compliance to standards in DG Sets	Commenced	To be continued by MPCB	Routine continuous efforts
		2.6 Identification of area where industries from non-confirming zones shall be shifted		PMC	Within 12 months

Sr. No.	Aspects	Activities	Action Taken	Action / Responsible Agency	Time Frame
		DOMESTIC			
		2.7	Notification for banning of open burning of garbage		PMC / RTA Routine continuous effort
		2.8	Promotion of use of LPG as domestic fuel instead of burning coal, wood & cowdung during cakes / smoke-less chulha		PMC / RTA Cotinuuous effort
3	OTHER COMMANDS AND MEASURES	3.1	Improvement of public transport system for discouraging of private vehicles		
		3.1.1	Phasing out & replacement 1) Buses (PMT) 2) 2-Wheelers 3) 3-Wheelers 4) 6 Seaters	Commenced	PMT / PMC Detail programme of phasing outlet replacement of PMT buses is enclosed as annexure-1 & II. For 2 wheelrs, 3 wheelers & 6 seaters, Transport Commissioner, Government of Maharashtra has to decide about phasing out the old vehicles.
		3.2	Improvement of existing PUC system		RTA
		3.2.1	Existing PUC Centres Petrol – 89 Nos. Diesel – 13 Nos. Petrol & Diesel 52 Nos.		No addition for new PUC centers are proposed immediately.
		3.2.2	Frequency of PUC Testing A) Petrol (2 W & 3 W) CO < 3% every 6 months CO < 3 to 4% 4 months CO < 4 to 5% 2 months B) Petrol (4 W)		RTA Continuous efforts. Defaulter has to pay Rs.100/- at a time. Proposed that as per Mumbai High Court Order first time defaulter, there should be imposition of ifne. Second time defaulter, cancellation of

Sr. No.	Aspects	Activities	Action Taken	Action / Responsible Agency	Time Frame	
		CO < 1.5% 6 months CO < 1.5 to 2% 4 months CO < 2.5 to 3% 2 months C) Diesel (2W & 3W) Smoke Density in HZ Upto 50 6 months Upto 50 to 60 4 months Upto 60 to 65 2 months			Driving Licence and further defaulters, vehicle is to be banned to ply.	
		3.3	Introduction of compulsory I & M practice for on-road vehicles	RTA	Continuous effort	
		3.4	Phasing cut of grossly polluting vehicles (like 15 years old commercial vehicles, 8 years old buses etc.)	RTA	Transport Commissioner, Government of Maharashtra has to decide about the phase out programme for two wheelers, three wheelers and six seaters and public transport (trucks & ST Buses)	
		3.5	Ban on alteration of petrol vehicles to diesel vehicles	PMC & RTA	With in 12 months	
		3.6	Imposition of ban on registration of new diesel three seater rickshaw in the city	Commenced	RTA	Continuous efforts
		3.7	Provision of flyovers	Commenced & completed	MSRDC & PMC	Already completed
			b) Execution of flyovers:			
			Road flyovers - 15 Nos.	Proposed	MSRDC & PMC	Within three years
			Railway Flyovers - 9 Nos.	Proposed		Within three years
			River Bridge - 1 No.	Proposed		Within one year
			River Bridges - 10 Nos.	Completed		Within one year

Sr. No.	Aspects	Activities	Action Taken	Action / Responsible Agency	Time Frame
		River Bridges - 4 Nos.	Ongoing		Within 1 year
		Railway flyovers - 1 No.	Proposed		Within 1 year
		Road flyovers - 6 Nos.	Proposed		Within 3 years
		3.8 Stagering of office & school hours			
		a) Public discussion		PMC	Within one year
		b) Finalisation		PMC	Within 24 months
		3.9 Study of six / three seaters, diesel / petrol as to its emissions per km by monitoring to prepared basis for future recommendations		CIRT & RTA	Within 6 months
		3.10 The sale of new two wheelers vehicles only of four stroke engines. Control at selling of dealers and RTO registration in Pune.		PMC & RTA	Within three months
4	TRAFFIC MANAGEMENT	4.1 Introduction of synchronized signals with times	Commenced	PMC, RTA	Continuous effort
		4.2 Provision for bicycles pathway	Commenced	PMC (To make it exclusive)	Continuous effort
		4.2.1 Construction of an exclusive cycle tract along with the Mula Left Bank Canal passing through Shivajinagar TP Scheme	Commenced	PMC (To make it exclusive)	Cintinuous effort within one year
		4.3 Bye passing of inter-city interstate traffic	Commenced	MSRDC & PMC	Continuous effort / 3 years
		ROAD & RAIL INFRASTRUCTURE			
		4.4 Increasing road length and improvement of road surface (A) Concretisation of Roads	Commenced Completed – 4 Nos. Ongoing – 6 Nos. Proposed – 5 Nos.	PM	Continuous effort -- Within 18 months With 3 years
		4.5 Augmentation of Railway Network where			PMC / Railways

Sr. No.	Aspects	Activities	Action Taken	Action / Responsible Agency	Time Frame
		possible			
		4.6 Higher road tax for older vehicles		RTA	Within 12 months
		4.7 Structuring parking fees & road tolls	Commenced	PMC	Continuous effort
		4.8 Fiscal incentives for alternate fuels & vehicles		PMC / RTA	24 months
5	AMBIENT NOISE CONTROL	INDUSTRIAL			
		5.1 Control of Noise pollution from industries sources	Commenced	Study by MPCB / PMC	
		a) In confirming Zone			Continuous effort
		b) In non-confirming zone			Within 12 months
		OTHERS			
		5.2 Measure for the control of traffic noise		RTA	Within 6 months
		5.3 Notification for Demarcation of Silence Zones within the city / town area		PMC	Within 6 months
		5.4 Notification for restricted use of Loud Speakers for Social and religious functions	Commenced	Home Department / Police Department	Routine

5. CONCLUSION

The Honourable Supreme Court of India has advised to improve the air qualities in other cities along with Delhi. Pune is identified as one of the four cities, which is required to bring under this purview. A basic action plan is prepared keeping in mind the guidelines given by the CPCB in their circular dated 2nd August 2002. In some aspect, study is already completed and action plan can be taken up in hand immediately without much gestation period. However, there are some aspects which are not studied to a reliable depth and hence such study is proposed to base action plan on it later. The monitoring and further implementation shall be undertaken as a special project under the guidance of CPCB and MoEF. The budget for this can be prepared once the action plan is sanctioned.

6. ABBREVIATIONS

a)	PMC	-	Pune Municipal Corporation
b)	CPCB	-	Central Pollution Control Board
c)	MPCB	-	Maharashtra Pollution Control Board
d)	MoEF	-	Ministry of Environment & Forests
e)	CIRT	-	Central Institute of Road Transport
f)	PMT	-	Pune Municipal Transport
g)	ESR	-	Environmental Status Report
h)	RTA	-	Regional Transport Authority
i)	RTO	-	Regional Transport Officer
j)	ECE	-	Emissions Control Equipments
k)	D.G Set	-	Diesel Generating Set
l)	D.P. Road	-	Development Project Road
m)	I&M Practice	-	Inspection and Maintenance Practice
n)	PUC	-	Pollution Under Control
o)	MoRT	-	Ministry of Road Transport
p)	MoP	-	Ministry of Petroleum

ANNEXURE – I

PHASING OUT AND REPLACEMENT OF PMT BUSES

Total PMT Buses : 800 Nos.

Sr. No.	Year of Manufacture	No. of Buses	Ages as on December 2002	Time frame action	
				Phase Out	Replacement
1.	1984	2	18	-	In 2003 – 2 No.s
2.	1986	41	16	-	In 2003 – 41 Nos.
3.	1987	71	15	-	In 2003-04 – 55 Nos.
4.	1988	29	14	2003	2004 – 45 Nos.
5.	1989	44	13	2004	2004 – (45 + 44) 89 Nos.
6.	1990	53	12	2005	2004 – 23 Nos.
7.	1991	30	11	2006	30 Nos. of buses of 1990 and thereafter every year will be replaced after 15 years age.
8.	1992	111	10	2007	
9.	1993	54	9	2008	
10.	1994	78	8	2009	
11.	1995	101	7	2010	
12.	1997	50	5	2012	
13.	2000	136	2	2013	

ANNEXURE – II

Phasing out and replacement of vehicles other than PMT Buses

Activities	Action / Responsible authority	Time Frame
All types of – 2-Wheelers 3-Wheelers 6 Seaters Heavy Vehicles	RTA	1) All types of vehicles which are not conforming emission norms will be phased out within 2 years. 2) All types of vehicles of 15 years old will be phased out within 2 years.

ANNEXURE – III

ROAD MAP FOR VEHICULAR POLLUTION CONTROL

PUNE

EMISSION NORMS:

- Bharat Stage-II to be implemented from 2003
- Euro-III equivalent norms to be implemented from 2005
- Euro-IV equivalent norms to be implemented from 2010

FUEL QUALITY

- 0.05% Diesel Sulphur from 2003
- 0.035% Diesel Sulphur from 2005
- 0.005% Diesel Sulphur from 2010
- 1% Petrol Benzene from 2005

ROAD MAP FOR IN-USE VEHICLES

- New PUC checking system to be put by 01.04.2004.
- I & M for all categories of vehicles to be put by 01.04.2006.
- Performance checking for cat converters and conversion kits to be put in place by 01.04.2005.
- Augmentation of City public transport system to be completed by 01.04.2005.
- All city buses should conform to 1996 or India 2000 or Bharat Stage-II.
- Norms from 01.04.2004 and India 2000 or Bharat Stage-II or Euro-III equivalent norms from 01.04.2008.
- All taxis should confirm India 2000 or Bharat Stage-II norms from 02.04.2004 and India 2000 or Bharat Stage-II or Euro-III equivalent norms from 01.04.2008.

- All 3-wheelers should conform to India 2000 or Bharat Stage-I or proposed Bharat Stage-II emission norms from 01.04.2004 and from 01.04.2008 they should conform to India 2000 or proposed Bharat Stage-II or proposed Bharat Stage-III emission norms.
- All Inter Stage buses should conform to India 2000 or Bharat Stage-II norms from 01.04.2004 and from 01.04.2004 and from 01.04.2008 they should conform to minimum India 2000 or Bharat Stage-II or Euro-III equivalent norms.