REVISED ACTION PLAN

FOR

CONTROL OF AIR POLLUTION

IN

SOLAPUR

Maharashtra Pollution Control Board
Kalpataru Point, 3rd Floor
Sion (East), Mumbai 400 022

PART A

Scale & Magnitude of the air pollution problem
Status of actions taken so far

Introduction

The Hon'ble Supreme Court of India is considering a Public Interest Writ Petition regarding the control of air pollution in some cities in India (W.P. No. 13029/1985). Solapur city subsequently got included under the purview of this Writ petition and as a sequel a time bound action plan which inter-alia should also include a multi pronged strategy for air pollution control in this city needs to be prepared and submitted to Environment Protection Control Authority, appointed by Hon,ble Supreme Court of India to oversee the implementation of the Action Plan.

In the order dated 14th August, 2003, Hon'ble Supreme Court had observed that in Solapur city SPM / RSPM levels are alarming and further directed the Maharashtra state to draw a plan for lowering the RSPM levels in the Solapur city. Accordingly, MPCB had prepared Action Plan for Solapur and submitted it to the Ministry of Environment and Forests Govt. of India on 5th December 2003. The directives of the Apex Court in respect of implementation of Solapur action plan have to be complied with by various authorities including MPCB. MPCB is in touch with CPCB and other plan implementing agencies to and has activated the implementation of the pollution reduction strategy in Solapur.

The action plan for Solapur submitted by MPCB earlier to MoEF has been reviewed by Bhurelal Authority (Environment Pollution Control Authority), appointed to oversee the compliance on the action plans for various cities as directed by the Apex Court. Since the action plans prepared by the state governments were in varied formats, EPCA had directed all the states that the final action plan be submitted in a format prepared by EPCA to ensure uniformity in the action plans for the cities identified by the Apex Court and ease in review and report the compliance to the Apex Court. Govt. of Maharashtra has appointed Member Secretary, MPCB to act as a Co-coordinator to facilitate the preparation of Solapur Action Plan and to follow up its implementation. MPCB has already been following up the compliance of the directives of the Apex Court with the concerned agencies/ authorities.

In the interim period, Bhurelal Authority had also made some observations/suggestions on Solapur Action Plan submitted by MPCB. The plan

implementing agencies / authorities have been appraised of these observations/suggestions of EPCA. Based on the information received from them, MPCB has revised Solapur action plan.

A. Brief Description of Solapur

Solapur city is the area under Solapur Municipal Corporation, both existing as well as newly acquired. The present report is thus limited in its expanse for a special area under Solapur Municipal Corporation and covers only the Air phase of environment in Solapur city.

Solapur city is an important district head quarter in western Maharashtra, and is famous for its Bed sheet weaving industry (Chadder), Handlooms, Power looms and Beedi making Industries. The textile products, especially the chadders and handlooms, manufactured in Solapur have a great demand in countries abroad and therefore those are exported to several countries. This district is also a connecting link between Maharashtra and Karnataka state.

It is situated at a distance of 410 Kms. from Mumbai, the State capital of Maharashtra, and is well connected by road and rail. It is one of the important rail head on Mumbai-Chennai and Mumbai-Hyderabad railway routes. The nearest domestic airport is Pune and the International airport is Mumbai. Solapur is at an approximate distance of 245 kms from Pune. The National highways viz. NH-9, NH-13 and NH-211 pass through Solapur city, making it a very busy city on the commercial map of India.

Geographical Information:

Solapur city, which is a district head quarter, is geographically located between 17.10 to 18.32 degrees north latitude and 74.42 to 76.15 degrees east longitude. The city is situated on the south east fringe of Maharashtra State and lies in the Bhima and Sina river basins and it is drained either by Bhima river or its tributaries.

Solapur district is bounded on the north by Ahmednagar and Osmanabad districts, on the east by Osmanabad and Gulbarga (Karnataka State) districts, on the south by Sangli and Bijapur (Karnataka State) and on the west by Satara and Pune districts.

The Solapur district head quarter i.e. Solapur city is situated at about 550 m from mean sea level. Solapur is the only city in the district with a Municipal Corporation.

Socio-Economic Profile of Solapur City:

Agro climatically entire district and Solapur city comes under rain shadow area. Rainfall is uncertain and scanty. The monsoon period is from second fortnight of June to end of September, bringing rains from south-west monsoon. The average rainfall for the district is 620.57 mm as per the available information. Due to scanty and non-uniform rains, scarcity conditions prevailing in the area adversely affects the socio-economic condition of peoples. Solapur city receives water from Ujani dam and the famous sanctuary for the Great Indian Bustard (Maldhok) is located at Nannaj, close to Solapur city. This is a unique bird species on the verge of extinction and is therefore highly protected. The sanctuary is located at Nannaj.

The population of Solapur city is 8, 73,037 and the area is about 180 Sq. kms. There are about 4783 industries in Solapur district. The major industries in Solapur are Textiles, Oil mills, Bidi factories & sugar factories.

Religious Importance:

Shri Siddheshwar is the presiding deity of Solapur city and the temple is located at the heart of the city. A fair popularly known as Gadda Jatra is organized every year in January for a fortnight during Makar Sankranti. This annual festival brings in a large floating population in Solapur city. Besides, the famous temples of Vitthal and Rakhumaai are located in Pandharpur near Solapur city. These temples are also known as the Southern Kashi of India and Vitthala is the presiding deity and Kuldaivat of Maharashtra State. It is located at a distance of 72 kms by road from Solapur District headquarters. Chandrabhaga (Bhima) river flows through the City. Large number of devotees from all over Maharashtra and surrounding states gather

at Pandharpur mainly to celebrate the Aashadhi and Kartiki Ekadashis every year. In addition the city experiences the regular rush of devotees and tourists practically everyday and especially on the holidays. The Palaquins (Palakhis) of the various Saints, originating from different locations in Maharashtra, also gather at Wakhari, five kms. from Pandharpur.

Akkalkot is another holy place having mutt of famous saint Shri Swami Samarth Maharaj. It is located at a distance of 38 kms by road from Solapur district head quarters. The devotees of this religious place throng the city during the temple festivals and on week days.

Some other important religious places include Shri. Baghavant Mandir at Barshi, Nagnath Mandir at Wadval, Old Shiv Temple of Shri. Sidheshwar at Manchur, Devi Temples at Karmala & Madha. Since all the above religious places are in the close vicinity of Solapur city , which is almost centrally located, there is always a presence of floating population in the city, which provides the facilities for lodging , boarding and transportation to the devotees who arrive in the city from different parts of the Maharashtra and other states. The genesis of some of the air pollution related problems in Solapur city lies in the vehicular movements which bring the floating population.

I. Air Quality of Solapur City

Maharashtra Pollution Control Board is monitoring the ambient air quality in Solapur city month wise at two locations viz. Ashok Chowk & Saat Rasta (Chitale Hospital) since the year 2000 under the National Ambient Air Quality Monitoring Program (NAAQM). This is a continuing activity of the Board. The air quality parameters, being measured during last three years, include Sulphur dioxide (SO2), Oxides of nitrogen (NOx), Suspended particulate matter (SPM) and Respirable suspended particulate matter (RSPM).

The annual average values of the above parameters for last three years (2000**,** 2001 & 2002) are given in the table below.

	Near Ashok Chowk 2000 (in µg/m^3**)**				**Near Ashok Chowk 2001 (**in µg/m^3**)**				**Near Ashok Chowk 2002 (**in µg/m^3**)**			
	SO_2	**NOx**	**SPM**	**RSPM**	**SO_2**	**NOx**	**SPM**	**RSPM**	**SO_2**	**NOx**	**SPM**	**RSPM**
Max.	20	49	207	503	21	50	214	502	21	49	198	478
Min.	16	42	180	253	18	44	167	319	19	46	157	379
	Near Saat Rasta 2000				**Near Saat Rasta 2001**				**Near Saat Rasta 2002**			
	SO_2	**NOx**	**SPM**	**RSPM**	**SO_2**	**NOx**	**SPM**	**RSPM**	**SO_2**	**NOx**	**SPM**	**RSPM**
Max.	21	49	207	503	21	49	223	460	20	50	219	436
Min.	18	44	178	378	19	44	171	394	19	41	161	379

It is seen from the above results that the SPM & RSPM values are exceeding the prescribed limits for these parameters at both the monitoring locations. The reasons for this can be attributed to the heavy vehicular traffic in that area, floating dust, re-suspension of the dust due to arid and dry climatic conditions prevailing in the city, lack of adequate public transport within the city, bad road conditions and thorough passage of the heavy vehicles in the city.

It is also seen from the monitoring results that the maximum values of RSPM were recorded in the months of February and March and the minimum values were noticed in the months of July and August.

In addition to the AAQ monitoring stations set up under NAAQM program, Maharashtra Pollution Control Board had carried out the Ambient Air Quality monitoring at the following monitoring stations(3) during October 2003- November 2003 to re-examine the RSPM values in Solapur city.

- Shivaji Chowk,
- Saat Rasta Chowk
- Near M.I.D.C. Akkalkot Road (New).

The results of the air quality monitoring at the above locations is given below.

At Shivaji Chowk (Residential & Commercial Area)

Sr. No.	**Date**	**So_2** (in µg/m^3)	**NOx** (in µg/m^3)	**RSPM** (in µg/m^3)
1	22-10-2003	18.30	25.50	436.70
2	29-10-2003	18.18	24.00	367.60
3	04-11-2003	18.78	38.15	387.20
4	12-11-2003	20.60	33.85	322.40
	Limit	80.00	80.00	100.00

At Saat - Rasta Chowk (Residential & Commercial Area)

Sr. No.	**Date**	**So_2** (in µg/m^3)	**NOx** (in µg/m^3)	**RSPM** (in µg/m^3)
1	19-10-2003	20.85	30.65	413.50
2	28-10-2003	18.95	22.90	280.30
3	05-11-2003	15.10	32.75	268.30
4	13-11-2003	18.85	31.45	267.90
	Limit	80.00	80.00	100.00

At Akkalkot Road M.I.D.C. (Residential & Industrial Area)

Sr. No.	Date	So_2 (in µg/m^3)	NOx (in µg/m^3)	RSPM (in µg/m^3)
1	21-10-2003	15.75	25.50	317.90
2	01-11-2003	17.50	25.50	184.80
3	03-11-2003	18.10	37.90	212.60
4	11-11-2003	14.55	40.55	346.30
	Limit	120.00	120.00	150.00

It is seen from the above air quality results that SO2 and NOx levels were within the prescribed limits however; RSPM levels exceeded the limits during the monitoring period. The observed pollution load is attributable to the vehicular movement on National highway No. 9 which passes through Solapur city.

The results of Ambient Air Quality at the following stations under NAAQM during the period Jan 2003 - April 2004. The results are as under

Station :1. Chitale Hospital at Saat Rasta, Solapur

Month	SO2	NOx	RSPM	SPM
Jan 2003	19	48	190	416
Feb 2003	20	47	188	408
Mar 2003	20	47	185	414
April 2003	20	47	182	415
May 2003	21	48	175	410
June 2003	19	46	184	400
July 2003	20	45	185	416
Aug 2003	20	44	152	382
Sept 2003	19	44	153	357
Oct 2003	19	44	158	379
Nov 2003	20	44	155	372
Dec 2003	19	45	159	385
Jan 2004	19	42	143	356

Feb 2004	18	41	162	395
Mar 2004	19	41	152	393
April 2004	18	41	150	391

Station: 2. W.I.T Campus Ashok Chowk Solapur

Month	SO2	NOx	RSPM	SPM
Jan 2003	20	47	176	414
Feb 2003	20	47	178	404
Mar 2003	20	48	176	412
April 2003	21	47	170	399
May 2003	21	48	175	408
June 2003	20	46	190	423
July 2003	20	44	160	409
Aug 2003	19	43	156	372
Sept 2003	19	43	150	362
Oct 2003	19	43	141	358
Nov 2003	19	42	140	388
Dec 2003	20	44	146	390
Jan 2004	18	43	142	381
Feb 2004	18	39	158	384
Mar 2004	18	39	141	376
April 2004	19	41	148	369

Walchand Institute of Technology (WIT) is carrying out the Ambient Air Quality monitoring under National Air Monitoring Project (earlier NAAQM Project) at the following two monitoring stations during the period May 2004- June 2004. The levels of SPM, RSPM, and SO2 & NOx in Solapur city with respect to the directions of the Supreme Court of India were recorded during the above period.

The Results are as under;

At W.I.T. Campus, Ashok Chowk, Solapur

Month	So_2 (in µg/m^3)	NOx (in µg/m^3)	RSPM (in µg/m^3)	SPM (in µg/m^3)
May 2004	17.25	41.25	151.12	383.62
June 2004	18.66	41.11	149.22	360.33
Limit	80.00	80.00	100.00	200.00

At Chitale Clinic, Saat Rasta, Solapur

Month	So_2 (in µg/m^3)	NOx (in µg/m^3)	RSPM (in µg/m^3)	SPM (in µg/m^3)
May 2004	18	42.22	153.44	372.66
June 2004	17.37	41.75	153.37	367.00
Limit	80.00	80.00	100.00	200.00

It is seen from the above AAQ monitoring results that SO2 and NOx levels are within the prescribed limits however, RSPM & SPM levels are exceeding the limits. The observed pollution load is attributed mainly due to the increased vehicular movement at the above locations in Solapur city.

There are 17 industries in Solapur who use Furnace oil, HSD, LDI, Coal and Bagasse as fuels for various industrial operations. MPCB has carried out Stack monitoring for air polluting industries in Solapur City and the results of the monitoring are given below .

Sr. No.	Name of Industry	SPM mg/Nm^3	SO_2 mg/Nm^3
1	Kirloskar Oil Engines. Shinshakti, Kumthe	473.89	40.53
2	Siddheshwar SSK ltd. ,Kumthe	285.58	194.13
3	S.M. Rubber Industries.Hotgi Road Ind. Estate	657	155.73
4	Laxmi Foundry 16,17, Hotgi Road Ind. Estate	695.45	139.73
5	Banda Dyeing. E-105, MIDC Akk. Road	280.29	145.06
6	Precision Cam Shaft ltd. E-90, MIDC Akk. Road	199.37	110.4

7	Aditi Pharmaceuticals. E- MIDC Akk. Road	294.37	12.66
8	Su-vi Chemicals B-10 MIDC Akk. Road	26.83	112.3
9	Smurthi Organics 273, MIDC Akk. Road	247.9	158.93
10	Gujarat Reclaim & Rubber Ind. C 10/1, MIDC Akk. Road	508.84	128.53
11	Laxmi- Narayan Sizing Works	221.8	148.31

The stack monitoring of the air polluting industries Solapur carried out by MPCB indicates that levels of SO2 emissions are within the permissible limits. However, SPM levels have exceeded the limits.

MPCB has in addition also carried out Benzene monitoring at Solapur city on 10th Jan 2004 and 9th April, 2004. Analysis reports of benzene monitoring are enclosed as **Annexure I.**

II. Sources of air pollution in the City

It may be seen from the data on the AAQ in the foregoing pages that the major contributory sources of air pollution in Solapur city are mainly:

1. Vehicular Pollution
2. Industrial Pollution

1. Vehicular Pollution:

a] It is seen from the gathered data that the Air quality trend in Solapur city is disturbing. This is mainly because of heavy vehicular movement through Solapur

City, re-suspension of the dust on city Roads due to prevailing climatic conditions and bad patches of untarred / unconcretized roads in the city and the frequent dust storms. The traffic and transportation problems in Solapur city can be broadly attributable to the factors as under.

i] A steep rise in number of vehicles especially the two wheelers.

ii] Heterogeneous traffic conditions with limited road capacities which make the segregation of traffic very difficult

iii] Absence of a ring road despite radial expansion of the city.

iv] Insufficient road carriageway capacities in the congested area.

v] Crowded intersections leading to increased air and noise pollution.

vi] Various encumbrances on roads such as encroachments, unauthorized constructions particularly of religious nature etc.

vii] 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.

viii] Absence of parking facilities at important locations leading to street parking of the vehicles

ix] The inadequacy of footpaths, their diversions to other uses and joy-walking leading to obstruction in the vehicular traffic.

x] In addition to vehicular pollution, the area being draught prone, dry climatic conditions are always prevailing

XI] Poor maintenance of tar roads in the city results into higher level of RSPM.

XII] Bad patches between the city roads and footpaths resulting into higher dust emissions.

XIII] Incidence of storm dust are frequently observed, resulting into high RSPM and TSPM.

b) **Emissions Load Inventory from vehicles in Solapur city**

Vehicle Type	No. of vehicles	CO	NOx	SO_2	HC	TSP	PM_{10}	Total
Cars	6,204	1.750	0.200	0.00290	0.328	0.025	0.017	**2.322**
2 Wheelers	93,710	6.037	0.050	0.00969	3.210	0.150	0.117	**9.573**
Rickshaws	5,547	5.045	0.135	0.00648	3.315	0.162	0.126	**8.789**
Taxis	114	0.188	0.017	0.00013	0.034	0.002	0.001	**0.242**
Buses	302	0.420	0.444	0.04130	0.082	0.065	0.050	**1.082**
Trucks	4,074	1.800	2.283	0.17380	0.288	0.331	0.261	**5.138**
Total	**109,951**	**15.240**	**3.129**	**0.23430**	**7.257**	**0.735**	**0.572**	**27.146**

(The values of the pollutants are in tons/ day)

2. Industrial Pollution:

The industrial activity in Solapur city and surrounding areas is mostly confined to small scale sector and there are a very few medium and large scale industries located in Solapur city. The inventory of the industries prepared by MPCB , it is observed that there are total 633 industries in Solapur city. Out of this 7 are large scale, 4 are medium scale and 622 are small scale industries, respectively. Besides, as per the categorization of the industries there are 157 industries of the Red category (highly polluting), 74 Orange category (medium polluting) and 402 Green category industries (Non-polluting).

Solapur is the home of Handloom & Power loom weaving industry. The main production is Chadders, Towels & Napkins and these industries are either household or medium or large size and are spread through out Solapur city.

III. Status of Public Health

There is one medical collage and total 170 hospitals in Solapur city. Shri Chhatrapati Shivaji Medical College and General Hospital, Solapur has conducted a survey on the impacts of air pollution on the health of population residing within Solapur city limits. The results of this survey are given in the table below.

Number of patients with respiratory tract infections admitted in SCSM General Hospital, Solapur (from 1998 to 2004) is as below .

Code No	Diseases	1998	1999	2000	2001	2002	2003	2004
009	Pulmonary Tuberculosis	770	675	754	703	759	856	210
045	Malignant neoplasm of lip, oral cavity & pharynx	002	056	044	046	048	47	--
111	All other diseases of the upper respiratory tract	219	191	239	139	165	191	--
112	Acute bronchitis & bronchiolitis	023	054	121	082	096	136	--
113	Pneumonia	449	351	423	325	315	329	119
114	Influenza	--	--	--	--	--	--	--
115	Bronchitis, chronic & unspecified emphysema & asthma	410	426	500	446	315	291	--
116	Pleurisy	001	009	004	--	--	--	--
117	All other diseases of the respiratory system	042	086	116	101	099	109	60
	Total	**1916**	**1848**	**2201**	**1842**	**1797**	**1959**	**389**

The above figures on the health status of the local population are based on the secondary information contributed by the District and Municipal Health Authorities within Solapur municipal limits. The trends seen from the above information does not clearly indicate that the reported respiratory diseases are not solely due to the existing air quality in Solapur.

IV. Details with Regard to Different Sources of Pollution

A Vehicles:

Solapur city has a Sub-Regional Transport Office which keeps record of the vehicle registrations in the city.

1. Number & Percentage share of vehicles:

The information provided by the SRTO Solapur is given in the table below shows the numbers, different categories and their percentage share in the total number of vehicles in Solapur the city in the years 2001, 2002 and 2003 respectively.

Registration of vehicles with RTO Solapur

Sr. No.	Type of Vehicles	2001	2002	2003
1	2 Wheelers	1,62,371	1,79,715	1,98,118
2	Auto Rickshaws	6,403	6,978	7,498
3	Light Motor Vehicles	16,042	17,895	18,967
4	Heavy Vehicles	28,387	30,255	31,594
	TOTAL	**2,13,203**	**2,34,843**	**2,56,177**

It is seen from the above Table that the number of two wheelers has steeply increased in Solapur city which may be partly responsible for the deterioration of the air quality in the city.

The number of other vehicles in Solapur has also increased during last ten years however the road development has not kept pace with these increased vehicles. Besides, the existing roads are having narrow carriageways and hence not

capable of taking up this increased traffic volume. This results in the speed reduction of the vehicles and consequent increase in the pollution load. The survey reveals that the vehicles have to compulsorily run at a low speed during the peak traffic hours due to traffic congestion. The heavy traffic density also aids in further aggravating the already increased air pollution in the city.

The Two wheelers and Auto Rickshaws have shown a steep rise in the last three years as per the RTO registration. The table below shows the percentage contribution of air pollution made by the different categories of vehicles in Solapur city.

Sr. No.	Type of Vehicles	% Contribution
1	2 Wheelers	77.33%
2	Auto Rickshaws	2.93%
3	Light Motor Vehicles	7.40%
4	Heavy Vehicles	12.33%

2. Present status of vehicular emission control programme

The National Ambient Air Quality Standards (NAAQS) have been notified by the Ministry of Environment and Forest, Govt of India under the provisions of Environment (Protection) Act 1986.

National Ambient Air Quality Standards

Pollutants	**Time weighted Average**	**Connection in Ambient Air**		
		Industrial Areas	**Residential (Rural & Other) Areas**	**Sensitive Areas**
Sulphur di-Oxide (SO_2)	Annual Average	80 ug/m^3	60 ug/m^3	15 ug/m^3
	24 hours	120 ug/m^3	80 ug/m^3	30 ug/m^3
Oxides of Nitrogen (NOX)	Annual Average	80 ug/m^3	60 ug/m^3	15 ug/m^3
	24 hours	120 ug/m^3	80 ug/m^3	30 ug/m^3
Suspended Particulate Matter (SPM)	Annual Average	360 ug/m^3	140 ug/m^3	70 ug/m^3
	24 hours	500 ug/m^3	200 ug/m^3	100 ug/m^3
Respirable Particulate Matter (RSPM) size <10mm	Annual Average	120 ug/m^3	60 ug/m^3	50 ug/m^3
	24 hours	150 ug/m^3	100 ug/m^3	75 ug/m^3
Lead (PB)	Annual Average	1.0 ug/m^3	0.75 ug/m^3	0.50 ug/m^3
	24 hours	1.5 ug/m^3	1.0 ug/m^3	0.75 ug/m^3
Carbon Monoxide (CO)	8 hours	5.0 ug/m^3	2.0 ug/m^3	1.0 ug/m^3
	1 hours	10.0 ug/m^3	4.0 ug/m^3	2.0 ug/m^3

About 60% of roads within Solapur Municipal Corporation area are within the city and are highly congested due to heavy traffic. The remaining 40 % roads in the fringe area have relatively lower traffic volume. As a consequence, average vehicular speed on the city roads are greatly impaired. Solapur Municipal Corporation has taken a series of initiatives to reduce the traffic congestion in the city and these include:-

1] Decongest the city roads.

2] Ensure safety in vehicular and pedestrian traffic.

3] Segregate directional traffic

4] Provide enough parking lots so that vehicles are not parked in the carriageway

5] Encourage public to use the Municipal transport wherever available

6] Remove encroachment and constructions near the carriageway and control the menace of stray cattle

7] Awareness programs about the basic traffic discipline amongst the citizen.

Due to unreliable frequency of SMT buses, it is estimated that approximately 50,000 to 80,000 commuters have switched over to alternative of mode of transport. i.e. The two wheelers. However, there is still scope for further improvement of public transport system in Solapur.

Solapur Municipal transport has a fleet of 127 buses out of which 25 buses have been scrapped. Currently there are 102 buses with SMT. About 60 buses are in good running condition. The city bus service is thus very inadequate and this can be further improved by identification of the heavy traffic routes which can also earn profits for SMT. A proper planning, public transport demand survey and addition of the vehicles in SMT in future will help cater to the transport need of the local population and it may also help reduce the vehicular emissions in the city.

In order to reduce vehicular emissions several steps need to be taken in an integrated manner like the time and road restrictions, improvement in pollution control systems in the vehicles, retrofitting of the buses, introduction of better and cleaner vehicular fuels and compulsory inspection and maintenance practices for the on road vehicles. Some of the steps that have been already taken include:

1] Six seater Auto rickshaws primarily running on diesel have been banned from 15.07.2002 in Solapur Municipal Corporation Area

2] Only petrol run auto rickshaws are currently permitted and no diesel run autorikshaw is permitted as replacer vehicle (for permit holder by RTO).

3] Vehicles are inspected regularly for renewal of fitness certificates. Special checking drives are organized in all parts of the city to check and report Motor vehicles defaulting in renewal of fitness certificate. Penal action is taken against erring vehicles as per provision of Motor Vehicle Act 1988. Similarly, for the convenience of public MV inspector tours the city & organizes camps so as to facilitate Motor Vehicle owners from far away places for producing their Motor vehicles for Inspection for renewal of fitness certificate. Such programme is declared in news papers well in advance.

The present pollution control norms are given in the table below :

- **Pollution Under Control (PUC) Norms from 1.10.2004**
- **Norms For CO**

Sr.No	Vehicle Type	Present Norms CO%	New Norms CO%
1.	2 Wheelers & 3 Wheelers(Manufactured prior to 31/03/2000)	4.5	4.5
2.	4 Stroke 2 Wheeler & 3 Wheeler vehicles fitted with catalytic converters (Manufactured after 31/03/2000)	4.5	3.5
3.	4 Wheeler vehicles (Manufactured after 31/03/2000) (Petrol/ CNG / LPG)	3.0	3.0
4.	Bharat Stage –II compliant passenger cars / CNG buses / LPG (fitted with 3 way closed loop cat. Converters)	3.0	0.5

- **Norms For HC**

Sr. No	Type of Vehicle	Permissible HC limit (In PPM)
1.	2 Stroke 2 wheelers	6000
2.	4 Stroke 2 Wheelers	4500
3.	3 Wheelers	4500
4.	2 Wheelers & 3 Wheelers manufactured prior to 01/04/2000	9000
5.	Bharat Stage – II compliant motorcar fitted with 3-way cat. Converters	750
6.	Other motor cars	1500

4] There are 8 PUC centers for checking petrol vehicles, 5 for diesel vehicles & 4 PUC centers for checking both petrol & diesel vehicles. There is no restriction on opening of new PUC center. During every renewal of permission of PUC center thorough inspection of the center is carried out by RTO. The enforcement squads carry out checking of vehicles for pollution and a fine of Rs. 100/- is recovered for non production of PUC certificate or non compliance. Also defaulter who does not rectify pollution level within 7 days from checking is prosecuted in the court of Law or has to pay a fine of Rs. 500/- each (Owner/Driver). Similarly registration of MV stands suspended till PUC level is brought within norms. Also new and in use vehicles are strictly inspected at the time of registration, during renewal of certificate of fitness & renewal of registration of compliance of PUC norms.

5] National Highway Nos. 13 & No. 9 were earlier passing through Solapur city. However, a bypass has been construction on NH 13 at Mohol- Kamti- Mandrup. Therefore, majority of the traffic is using this by-pass. This has resulted in the direct traffic not entering the city and consequent reduction in air pollution.

Institutional plan for introduction of gaseous fuel in Solapur city:

The program on the introduction of LPG as a vehicular fuel in Solapur by the Petroleum companies is in the advanced stages of implementation. However currently there is no LPG outlet in the city for vehicles. The fuel supplied by the two oil companies viz. Indian Oil Corp Ltd and Hindustan Petroleum corp. Ltd includes Diesel(0.05 % sulphur) and petrol (3 % Benzene, unleaded and 0.05% sulphur)

Oil companies are preparing plans to set up of infrastructure facility for dispensing of gas fuels to the vehicles based on the demand in Solapur.

Since there is no CNG outlet or network or the infrastructure available for bringing in CNG in Solapur, there is no proposal under consideration of the oil companies at this stage to supply CNG to the vehicles in the city.

Vehicle Taxation in Solapur:

Taxes are levied as per the Bombay Motor Vehicle Tax Act & Rules and also under Bombay Motor Vehicle Passengers Tax Act and Rule. The basis for levy of tax is ad-valorem for Non-Transport vehicles (Two wheelers, four wheelers and cars for personal use). Principally the tax structure is based on the laden weight or unladen weight of the vehicle. In case of transport vehicles, the basis for taxation is Gross Vehicle Weight for the goods vehicles and seating capacity for the passenger vehicles. One time tax has been made compulsory for the light motor vehicles (LMV), which is seven times more than the annual rate of the tax for the vehicles. The two wheelers are taxed at 7% of the cost of the vehicle and it is levied at the time of initial registration. Similarly for cars it is 4% of the vehicle cost and is levied at time of initial registration. For the buses the tax is based on the sitting capacity and is levied annually. For the small vehicles like auto rickshaws etc. which are used for carrying passengers, the tax is based on the carriage capacity and is levied annually.

There is a scope for rationalization of the tax levy structure for the motor vehicles which may help in the reduction of number of vehicles and thus indirectly abate pollution from these sources. Government proposes to introduce one time tax levy in respect of all types of motor vehicles. The number of vehicles has also

increased as a result of the soft loans that have become available to the buyers through various banks.

B. Industry:

Solapur is an industrial hub and houses several industries as mentioned earlier in this report. The category wise status of the industries in Solapur city is given in the table below.

Type	Red	Orange	Green	Total
Large Scale	4	2	1	7
Medium Scale	3	-	1	4
Small Scale	150	72	400	622
Total	**157**	**74**	**402**	**633**

The large and medium scale industries are very few. These industries are not having high Air Pollution Potential (HAPPI) and they are complying with the conditions of the consents granted by MPCB and have taken measures for emission control. The industrial source is not major contributor to the air emissions in Solapur. However, efforts are continued by MPCB to regularly monitor the emissions from the industries in Solapur. Due to power staggering and load shedding effected by MSEB in the state of Maharashtra, the use of DG sets in Solapur city and in the industries has increased substantially. This has become the another source of air emissions in Solapur city.

There are about 29 units (industrial as well as commercial) in the Solapur city who are using the D.G.Sets as alternative source of power. MPCB has already imposed very elaborate conditions for controlling the pollution from the usage of D.G. sets in accordance with E (P) Rules and has been monitoring the emissions from this source.

The information of Air polluting industries regarding source of emission, type of fuel used & air pollution control equipment provided by them is annexed at as-

Annexure II.

MPCB has also taken a series of measures to control pollution from the industrial source. These include:

[i] Declaration of River Regulation Zone (RRZ) policy for siting of industries as declared by Government of Maharashtra, vide Govt. Resolution No. MMV-2000/326/22/TB-3 dated 15-07-2000. Accordingly the river catchments have been categorized in 4 categories. The abstract of the restriction is as under.

Classes	**No. Development zone for any type of industries**	**Only green & orange category of industries with pollution control devices**	**Any type of industries with pollution control devices.**
A-I	3 Km on the either side of river	From 3 Km to 8 Km from river (H.F.L.) on either side	Beyond 8 Km from river (H.F.L.) on either side.
A-II	1 Km on the either side of river	From 1 Km to 2 Km from river (H.F.L.) on either side	Beyond 2 Km from river (H.F.L.) on either side.
A-III	0.5 Km on the either side of river	From 0.5 Km to 1 Km from river (H.F.L.) on either side	Beyond 1 Km from river (H.F.L.) on either side.
A-IV	0.5 Km on the either side of river	From 0.5 Km to 1 Km from river (H.F.L.) on either side	Beyond 1 Km from river (H.F.L.) on either side.

[ii] Siting criteria for stone crushers: The Board has laid down the distance criteria for the existing and new stone crushers. It was then accordingly decided that No stone crushers should be allowed within 500 mtrs from National Highway, 200 mtrs from State Highway and 100 mtrs from other Roads viz. MDR, ODR or V.R.

C. Power Plants:

There is no thermal power plant within Solapur Municipal Corporation limits and therefore there is no pollution or emissions from this source. There is no

proposal to set power plant in Solapur under consideration of MSEB or through private participation. The MSEB caters to the power needs of industrial, agricultural and domestic sector in Solapur city.

D. Other Sources

Domestic Pollution:

The rapid urbanization and industrialization in and around Solapur city has attracted many migrants from various parts of the state to Solapur. This has resulted in expansion of the settlements in Solapur city. Since the first census of independent India & then onwards up to 1991, the population of the city has shown a constant and gradual increase ranging between 15% to 20%. While the city population was 338000 in 1951 (The first census of independent India), the figures were 334000 (1961) 388000 in (1971) 514000 in (1981) & 621000 in (1991) respectively. However, the census of 2001 reveals that the city population has reached phenomenal figure of 873047 indicating a steep rise in the population of Solapur city as compared to earlier census figures starting from 1951.

Out of the total population of 873037, 444885 are male and 428152 are female respectively.

High property prices has resulted in growth of slums and shanties on the unprotected land in the city. Nearly 25% of the city population is dwelling in the slums. The city has 220 slums pockets out of which 158 are declared and 62 are undeclared. The total populations in the slums, comprising of both declared and undeclared, is 2, 18,905. There is no systemic survey of the slum pockets in the city done by any agency to identify the infrastructural needs and basic civic amenities of the slum pockets and therefore such a study is necessary.

The majority of the household in the organized housing sectors are found to rely on non-polluting liquefied petroleum gas as a fuel for cooking and other domestic needs. However, slum dwellers cannot afford LPG and it is neither readily available to them. Therefore, the slum dwellers mostly depend on any cheap fuel that becomes readily available to them such as wood, bagasse, saw dust, waste paper / boards or

any sundry waste. Since the slum dwellers use any kind of available fuel, it contributes to the air pollution from the household sources. Therefore, there is an urgent need to study and quantify the domestic fuel requirements in the slum areas. A more accurate quantification of fuel needs and thrust on the improvement will be able to reduce the air pollution load from this sector.

Not allowing the development of new slum pockets within the expanded Solapur municipal limits will be a better option, however, it still may be a daunting task to prevent the slum proliferation. A precautionary approach and vigilance by SMC and the Revenue Authorities may be necessary to safeguard the vacant areas within the city form encroachment by slum dwellers.

Air Pollution from Incinerators

There are no incinerators in Solapur except the Incinerator set up by M/s Bio-clean Systems Pvt. Ltd Solapur for the purpose of Bio-Medical waste treatment. This is set up under BOT agreement by Solapur Municipal Corporation in the year 2003. MPCB has granted Authorization to this incinerator on 21.4.2004 and is operational since then. The incinerator uses about 25to 30 kgs of LDO and/or HSD on an hourly basis. The pollution control measures include vertical type wet scrubber, filtration tank, dust collection system and a stack of 30 m height. The facility treats about 15 tons of Bio medical waste on a monthly basis. The facility caters to the Bio medical waste treatment and disposal need of 64 health care establishments in Solapur and vicinity.

Generator Sets

There are 29 industrial and commercial establishments who have set up generating sets to meet their power requirements. This has been necessitated as a result of frequent power failures and load shedding in Solapur city. The D.G. sets are of varying capacity. MPCB has granted consents to set up such D.G.sets and the air emissions from this source are regularly monitored. The smaller commercial establishments and household have also been using the DG sets which run mostly on Kerosene and this is an additional source of pollution due to un-burnt hydrocarbons and carbon monoxide in Solapur city. However, such smaller DG sets

do not require the permissions from the local authorities and MPCB. Hence practically there is no control over the air pollution generated by these proliferating non point sources. Directions are therefore necessary to control air emissions from this source. The manufacturers may be given the responsibility to design the engines which while running on Kerosene will not generate air emissions beyond the stipulated standards.

Extent of Bio-mass burning

The tree leaves and other biomass collected while street sweeping is being burnt regularly in the city. Besides the rag pickers at the Solapur municipal waste dumping site and those in the city also resort to burning of the plastics, wires etc for extraction of the metals and this causes air pollution in the city. The Biomass burning in the agricultural farms in the vicinity of Solapur city also result in air pollution in the city due to transportation of the smoke and emission in the direction of wind and prevailing atmospheric conditions in the city. Biomass, rubber tyres and paper burning increases during the winter months for warming which results in the higher SPM and other air emissions. The emissions from these sources is more detrimental for the human health due to prevailing thermal inversions during the period.

Any other Sources

MPCB is making a concerted effort to identify the other sources of air emissions in Solapur. The data gathered by MPCB will be added in the future revision of the Action Plan for Solapur. Solapur Municipal Corporation is also making efforts in this direction. Necessary directions have been issued by MPCB to Solapur Municipal Corporation to prevent and control the burning of the municipal wastes at the dumping grounds by the rag pickers. MPCB had issued public notices in the newspapers appealing people not to resort to the biomass burning or burning of the street sweeping wastes in open in order to reduce the air pollution due to such indiscriminate burning of the wastes. Environmental awareness programs are also undertaken by the local colleges through out the year.