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AIR POLLUTION IN SHOLAPUR CITY



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Short Profile

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ABSTRACT:

Pollution is the presentation of contaminants into the regular habitat that cause antagonistic change. Contamination can take the type of substance substances orenergy, for example, commotion, warmth or light. Pollution, the parts of contamination, can be either outside substances/ energies or normally happening contaminants. Contamination is regularly classed as point source or nonpoint source contamination.

KEYWORDS

Air pollution , environment , antagonistic change , contaminants.

Definition:-the presence in or introduction into the environment of a substance which has harmful or poisonous effects.

“harmful or poisonous substances introduced into an environment”

“The act or process of polluting or the state of being polluted, especially the contamination of soil, water, or the atmosphere by the discharge of harmful substances.”

INTRODUCTION :-

Solapur city is the region under Solapur Municipal Corporation, both existing and additionally recently procured. The present report is along these lines constrained in its breadth for an uncommon zone under Solapur Municipal Corporation and covers just the Air period of environment in Solapur city. Solapur city is a critical locale head quarter in western Maharashtra, and is popular for its Bed sheet weaving industry (Chadder), Handlooms, Power weavers Beedi making Industries. The material items, particularly the chadders and handlooms, fabricated in Solapur have an incredible request in nations abroad and along these lines those are sent out to a few nations. This area is likewise a joining connection in the middle of Maharashtra and Karnataka state. It is arranged at a separation of 410 Kms. from Mumbai, the State capital of Maharashtra, and is very much associated by street and rail. It is one of the critical rail head on Mumbai-Chennai and Mumbai-Hyderabad railroad courses. The closest household air terminal is Pune and the International airplane terminal is Mumbai. Solapur is at a surmised separation of 245 kms from Pune. The National parkways viz. NH-9, NH-13 and NH-211 go through Solapur city, making it an extremely occupied city on the business guide of India.

I. Air Quality of Solapur City

Maharashtra Pollution Control Board is observing the surrounding air quality in Solapur city month insightful at two areas viz. Ashok Chowk & Saat Rasta (Chitale Hospital) since the year 2000 under the National Ambient Air Quality Monitoring Program (NAAQM). This is a proceeding with action of the Board. The air quality parameters, being measured amid most recent three years, incorporate Sulfur dioxide (SO₂), Oxides of nitrogen (NO_x), Suspended particulate matter (SPM) and Respirable suspended particulate matter (RSPM).

Solapur Action Plan -2004 Maharashtra Pollution Control Board

The yearly normal estimations of the above parameters for most recent three years (2000, 2001 & 2002) are given in the table beneath.

AIR POLLUTION IN SHOLAPUR CITY

	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	NO _x	SPM	RSPM	SO ₂	NO _x	SPM	RSPM	SO ₂	NO _x	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	NO _x	SPM	RSPM	SO ₂	NO _x	SPM	RSPM	SO ₂	NO _x	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

Maharashtra Pollution Control Board had done the Ambient Air Quality checking at the accompanying observing stations(3) amid October 2003- November 2003 to reconsider the RSPM values in Solapur city.

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

The aftereffects of the air quality observing at the above areas is given under
[At Shivaji Chowk \(Residential & Commercial Area\)](#)

Sr. No.	Date	So ₂ (in µg/m ³)	NO _x (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	So2 (in µg/m3)	NOx (in µg/m3)	RSPM (in µg/m3)
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	So2 (in µg/m3)	NOx (in µg/m3)	RSPM (in µg/m3)
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 NO_x levels were inside of as far as possible then again; RSPM levels surpassed the breaking points amid the checking period. The watched contamination burden is inferable from the vehicular development on National interstate No. 9 which goes through Solapur city.

The aftereffects of Ambient Air Quality at the accompanying stations under NAAQM amid the period Jan 2003 - April 2004. The outcomes 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 completing the Ambient Air Quality checking under National Air Monitoring Project (prior NAAQM Project) at the accompanying two observing stations amid the period May 2004- June 2004. The levels of SPM, RSPM, and SO2 & NOx in Solapur city concerning the bearings of the Supreme Court of India were recorded amid the above period.

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

Month	So ₂ (in µg/m ³)	NO _x (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)	NO _x (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 checking results that SO₂ and NO_x levels are inside of as far as possible notwithstanding, RSPM & SPM levels are surpassing the cutoff points.

The watched contamination burden is ascribed principally because of the expanded vehicular development at the above areas in Solapur city.

There are 17 commercial enterprises in Solapur who use Furnace oil, HSD, LDI, Coal and Bagasse as powers for different modern operations. MPCB has completed Stack checking for air contaminating commercial ventures in Solapur City and the aftereffects of the observing are given beneath .

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 observing of the air contaminating commercial enterprises Solapur did by MPCB shows that levels of SO₂ discharges are inside of as far as possible.

On the other hand, SPM levels have surpassed the breaking points.

II. Wellsprings of air contamination in the City

It might be seen from the information on the AAO in the previous pages that the major contributory wellsprings of air contamination in Solapur city are principally:

1. Vehicular Pollution
2. Industrial Pollution

1. Vehicular Pollution:

a] It is seen from the assembled information that the Air quality pattern in Solapur city

is aggravating. This is for the most part on account of substantial vehicular development through Solapur

City, re-suspension of the dust on city Roads because of winning climatic conditions and awful fixes of untarred/ unconcretized streets in the city and the incessant dust storms. The movement and transportation issues in Solapur city can be comprehensively inferable from the components as under.

- i] A precarious ascent in number of vehicles particularly the bikes.
- ii] Heterogeneous activity conditions with restricted street limits which make the isolation of movement extremely troublesome
- iii] Absence of a ring street regardless of outspread extension of the city.

- iv] Insufficient street carriageway limits in the congested territory.
- v] Crowded convergences prompting expanded air and commotion contamination.
- vi] Various encumbrances on streets, for example, infringements, unapproved developments especially of religious nature and so forth.
- vii] Limitations of DP streets to coddle the vehicle needs following immense extends of developable grounds in the DP don't have any arrangements for street organizing.
- viii] Absence of stopping offices at critical areas prompting road stopping of the vehicles
- ix] The insufficiency of pathways, their redirections to different uses and bliss walking leading to block in the vehicular movement.
- x] notwithstanding vehicular contamination, the zone being draft inclined, dry climatic conditions are continually overall
- XI] Poor upkeep of tar streets in the city results into larger amount of RSPM.
- XII] Bad fixes between the city streets and pathways coming about into higher dust discharges.
- XIII] Incidence of tempest dust are every now and again watched, coming about into high RSPM and TSPM.

b) Emissions Load Inventory from vehicles in Solapur city

Vehicle Type	No. of vehicles	CO	NOx	SO2	HC	TSP	PM10	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 mechanical action in Solapur city and encompassing ranges is for the most part limited to little scale segment and there are a not very many medium and expansive scale commercial ventures situated in Solapur city. The stock of the commercial enterprises arranged by MPCB, it is watched that there are add up to 633 businesses in Solapur city. Out of this 7 are expansive scale, 4 are medium scale and 622 are little scale commercial ventures, separately. Furthermore, according to the arrangement of the commercial enterprises there are 157 businesses of the Red class (exceedingly contaminating), 74 Orange classification (medium dirtying) and 402 Green class commercial enterprises (Non-polluting). Solapur is the home of Handloom & Power weaver weaving industry. The principle generation is Chadders, Towels & Napkins and these commercial ventures are either family or medium or expansive size and are spread through out Solapur city.

III. Status of Public Health

There is one medicinal composition and aggregate 170 doctor's facilities in Solapur city.

Shri Chhatrapati Shivaji Medical College and General Hospital, Solapur has directed an overview on the effects of air contamination on the soundness of populace dwelling inside Solapur city limits. The aftereffects of this study are given in the table beneath.

Number of patients with respiratory tract diseases conceded in SCSM General Hospital, Solapur (from 1998 to 2004) is as beneath .

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

Sr.	Type of Vehicles	2001	2002	2003
No.				
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

The above figures on the wellbeing status of the neighborhood populace are taking into account the auxiliary data contributed by the District and Municipal Health Authorities inside Solapur city limits. The patterns seen from the above data does not unmistakably demonstrate that the reported respiratory illnesses are not singularly because of the current 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 SRTTO 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

It is seen from the above Table that the quantity of bikes has steeply expanded in Solapur city which may be somewhat in charge of the disintegration of the air quality in the city.

The quantity of different vehicles in Solapur has likewise expanded amid most recent ten years however the street advancement has not kept pace with these expanded vehicles. Plus, the current streets are having tight carriageways and thus not

equipped for taking up this expanded activity volume. This outcomes in the pace lessening of the vehicles and resulting increment in the contamination load. The overview uncovers that the vehicles need to necessarily keep running at a low speed amid the crest activity hours because of movement clogging. The overwhelming movement thickness likewise helps in further exasperating the effectively expanded air contamination in the city.

The Two wheelers and Auto Rickshaws have demonstrated a precarious ascent in the most recent three years according to the RTO enrollment. The table beneath demonstrates the rate commitment of air contamination made by the distinctive classes 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 advised by the Ministry of Environment and Forest, Govt of India under the procurements of Environment (Protection) Act 1986.

CONCLUSION :-

The modern action in Solapur city and encompassing zones is for the most part bound to little scale segment and there are a not very many medium and huge scale commercial ventures situated in Solapur city.

Shri Chhatrapati Shivaji Medical College and General Hospital, Solapur has directed an overview on the effects of air contamination on the soundness of populace dwelling inside Solapur city limits.

REFERENCE:-

1. <http://mpcb.gov.in/images/pdf/actionplansolapur11.pdf>
2. <http://dictionary.reference.com/browse/pollution>
3. <http://mpcb.gov.in/envtdata/directions.php>
4. http://www.numbeo.com/pollution/city_result.jsp?country=India&city=Solapur

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