

43. ENVIRONMENT

- 43.1Average Gaseous Composition of Dry Air in the Troposphere**
- 43.2National Ambient Air Quality Standards (NAAQS)**
- 43.3State of Ambient Air Quality in Major Cities of Tamil Nadu**
- 43.3(a) State of Ambient Air Quality in Chennai City**
- 43.4Ambient Noise Standards as prescribed by Pollution Control Board**
- 43.5Emission Limits for Diesel Driven Vehicles**
- 43.6National Ambient Air Quality Monitoring, Chennai**
- 43.7Summary Status of Pollution Control in 17 Categories of Industries in Tamil Nadu**
- 43.8Analytical Output (Water) of Tamil Nadu Pollution Control Board Laboratories**
- 43.9Number of Industries visited for Air Survey and Number of AAQS/SM Samples Collected**
- 43.10Number of Goods and Transport Vehicles Tested and Emission level Recorded**

43. ENVIRONMENT**43.1 AVERAGE GASEOUS COMPOSITION OF DRY AIR
IN THE TROPOSPHERE 2009-10**

<i>Gas</i>	<i>Percent by Volume (%)</i>	<i>By Weight Parts Per Million (ppm)</i>
Nitrogen	78.084	780840
Oxygen	20.947	209470
Argon	0.934	9340
Carbondioxide	0.036	360
Neon	0.0018	18.18
Helium	0.0005	5.24
Methane	0.00017	1.70
Krypton	0.00011	1.14
Hydrogen	0.000053	0.53
Xenon	0.0000087	0.087
Ozone	0.0008	8.0

Source: Tamil Nadu Pollution Control Board, Chennai-32

43.2 NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

Pollutant	Time Weighted Average	CONCENTRATION IN AMBIENT AIR (in $\mu\text{g}/\text{m}^3$)			Method of Measurement
		Industrial Area	Residential Rural & Other Areas	Sensitive Area	
Sulphur Dioxide (SO_2)	Annual Average *	80	60	15	Improved West & Geake Method –Ultraviolet Fluorescence
	24 Hours **	120	80	30	
Oxides of Nitrogen (as NO_x)	Annual Average *	80	60	15	Jacob + Hochheiser Modified method (Na-Arsenitel) Method
	24 Hours **	120	80	30	Gas Phase Chemiluminescence
Suspended Particulate matter (SPM)	Annual Average *	360	140	70	High Volume sampling (Average flow rate not less than $1.1 \text{ m}^3 / \text{minute}$)
	24 Hours **	500	200	100	
Respirable Particulate matter (size less than 10 μ)	Annual Average *	120	60	50	Respirable particulate matter sampler
	24 Hours **	150	100	75	
Lead (Pb)	Annual Average *	1.0	0.75	0.5	ASS method after sampling using EPM 2000 or equivalent filter paper
	24 Hours **	1.5	1.0	0.75	
Ammonia ¹	Annual Average *	0.1	0.1	0.1	-
	24 Hours **	0.4	0.4	0.4	
Carbon Monoxide (CO)	8 Hours *	5.0 mg/m^3	2.0 mg/m^3	1.0 mg/m^3	Non-dispersive infra Red (NDIR)
	1 Hour	10.0 mg/m^3	4.0 mg/m^3	2.0 mg/m^3	Spectroscopy

Note: * 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 consecutive days.

1. National Ambient Air Quality Standard. The levels of air quality necessary with an adequate margin of safety to protect the public health, Vegetation and property.
2. Whenever and wherever two consecutive values exceeds the limit specified above for the respective category, it would be considered adequate reason to institute regular / continuous monitoring and further investigations.
3. The State Government / State Board shall notify the sensitive and other areas in the respective states within a period of six months from the date of Notification of National Ambient Air Quality Standards.

**43.3 STATE OF AMBIENT AIR QUALITY IN MAJOR CITIES OF TAMIL NADU 2009-10
(ANNUAL AVERAGE)**

(Unit 10⁶ grams per cubic metre)

<i>City</i>	<i>Category</i>	<i>SO₂</i>	<i>NO_x</i>	<i>TSPM</i>	<i>RSPM</i>
I CHENNAI					
1. Kathivakkam	Industrial	11.7	19.3	181	78
2. Manali	Industrial	13.0	19.7	174	83
3. Thiruvottiyur	Industrial	14.6	21.7	218	108
II MADURAI					
4. M/s. Sucee Cars & Truks	Industrial	11	25	81	36
5. Avvai Girls Hr. Sec. School	Mixed	10	24	104	48
6. Highways Buildings	Residential	10	25	97	46
III COIMBATORE					
7. G.D.Matric School	Mixed	5	23	121	60
8. Ponnaiyarajapuram	Residential	5	23	98	51
9. SIDCO, Kurichi	Industrial	7	27	231	100
IV Salem					
10. Sowdeswari College Building	Mixed	8.5	24	133	85
V Thoothukudi					
11. Raja Agencies	Industrial	15	12	254	135
12. AVM Buildings	Mixed	15	13	97	47
13. SIPCOT	Industrial	17	11	138	70

Source: Tamil Nadu Pollution Control Board, Chennai-32

43.3 (A) STATE OF AMBIENT AIR QUALITY IN CHENNAI CITY 2009-10

<i>Station</i>	<i>SO₂ µg/m³</i>	<i>NO_x µg/m³</i>	<i>RSPM µg/m³</i>	<i>SPM µg/m³</i>
1. Anna Nagar	9.0	22.0	92.0	207.0
2. Adyar	8.0	16.0	40.0	78.0
3. Kilpauk *	10.0	32.0	110.0	240.0
4. T. Nagar *	12.0	30.0	143.0	285.0
5. Vallalar Nagar *	12.0	35.0	136.0	315.0

SO₂ : Sulphurdioxide
 NO_x : Oxides of Nitrogen
 RSPM : Respirable Suspend Particulate Matter (<10 Micron size)
 SPM : Suspended Particulate Matter
 * : Traffic intersection areas

Source: Tamil Nadu Pollution Control Board, Chennai-32

**43.4 AMBIENT NOISE STANDARDS AS PRESCRIBED BY
POLLUTION CONTROL BOARD 2009-10**

Area	Log dB (A)	
	Day Time * dB (A)	Night Time ** dB (A)
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40

* Day Time : 06.00 Hours to 22.00 Hours (16 Hours)

** Night Time : 22.00 Hours to 06.00 Hours (08 Hours)

Source: Tamil Nadu Pollution Control Board, Chennai-32

43.5 EMISSION LIMITS FOR DIESEL-DRIVEN VEHICLES 2009-10

Test	Light Absorption Co-efficient 1/m	Standard Smoke Density	
		Bosch Units	Hartridge Units
Free Acceleration Test	2.45	--	65.0

Source: Tamil Nadu Pollution Control Board, Chennai-32

43.6 NATIONAL AMBIENT AIR QUALITY MONITORING, CHENNAI 2009-10

Place	Annual Mean Concentrations of Air Pollutants $\mu\text{g}/\text{m}^3$					
	Industrial			Residential/ Mixed		
	SO ₂	NO _x	SPM	SO ₂	NO _x	SPM
Chennai	L	L	L	L	L	-
Madurai	L	L	L	L	L	M
Coimbatore	L	L	M	L	L	M
Salem	L	L	L	L	L	M
Thoothukudi	L	L	L	L	L	M

L: Low

M: Moderate

H: High

C: Critical

Source: Tamil Nadu Pollution Control Board, Chennai-32

43.7 SUMMARY STATUS OF POLLUTION CONTROL IN 17 CATEGORIES OF INDUSTRIES IN TAMILNADU 2009-10

(As on 31-03-2010)

<i>Category</i>	<i>No. of Units</i>	<i>Complying</i>	<i>Defaulting</i>	<i>Closed</i>
1. Aluminium Smelting	1	0	0	1
2. Basic Drugs & Pharmaceuticals Manufacturing	27	22	2	3
3. Chlor Alkali / Caustic Soda	3	3	0	0
4. Cement (200 TPD and above)	19	12	0	1
5. Copper Smelting	1	1	0	0
6. Dyes and Dye Intermediate	1	1	0	0
7. Fermentation (Distillery)	17	15	0	2
8. Fertilizer	6	6	0	0
9. Integrated Iron & Steel	2	2	0	0
10. Leather Processing including Tanneries	55	54	6	1
11. Oil Refinery	3	3	0	0
12. Pesticide Formulation & Manufacturing	1	1	0	0
13. Pulp and paper (30 TPD and above)	3	3	0	0
14. Petrochemical	12	12	0	0
15. Sugar	41	40	0	1
16. Thermal Power Plants	41	40	1	0
17. Zinc Smelting	0	0	0	0
TOTAL	233	215	9	9

Source: Tamil Nadu Pollution Control Board, Chennai-32

**43.8 ANALYTICAL OUTPUT (WATER) OF
TAMIL NADU POLLUTION CONTROL BOARD LABORATORIES**

<i>Year</i>	<i>Trade Effluents (Received / Analysed)</i>
2000-01	17646
2001-02	15489
2002-03	17385
2003-04	15490
2004-05	15499
2005-06	15563
2006-07	15109
2008-09	14776
2009-10	16605

Source: Tamil Nadu Pollution Control Board, Chennai-32

**43.9 NUMBER OF INDUSTRIES VISITED FOR AIR SURVEY AND
NUMBER OF AAQS/SM SAMPLES COLLECTED**

<i>Period of Monitoring</i>	<i>No. of Industries</i>	<i>Number of Samples Collected</i>	
		<i>AAQS</i>	<i>SM</i>
2001-02	574	3113	1098
2002-03	606	3375	1305
2003-04	687	3785	1447
2004-05	659	3727	1507
2005-06	823	4320	1879
2006-07	783	4224	1938
2008-09	927	5147	2486
2009-10	973	5367	2530

Source: Tamil Nadu Pollution Control Board, Chennai-32

**43.10 NUMBER OF GOODS AND TRANSPORT VEHICLES TESTED AND
EMISSION LEVEL RECORDED DURING 2009-10**

<i>Station</i>	<i>Diesel</i>		
	<i>Total Vehicles</i>	<i>Within the limit</i>	<i>Exceeding the limit</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Chennai	21718	21219	499
Chengalpattu	} ←----- CLOSED ----->		
Kancheepuram			
Udhagamandalam			
Katterly			
Dindigul			
Palani			
TOTAL	21718	21219	499

<i>Station</i>	<i>Petrol</i>		
	<i>Total Vehicles</i>	<i>Within the limit</i>	<i>Exceeding the limit</i>
<i>1</i>	<i>5</i>	<i>6</i>	<i>7</i>
Chennai	294	285	9
Chengalpattu	} ←----- CLOSED ----->		
Kancheepuram			
Udhagamandalam			
Katterly			
Dindigul			
Palani			
TOTAL	294	285	9

<i>Station</i>	<i>Total (Diesel + Petrol)</i>		
	<i>Total Vehicles</i>	<i>Within the limit</i>	<i>Exceeding the limit</i>
<i>1</i>	<i>8</i>	<i>9</i>	<i>10</i>
Chennai	22012	21504	508
Chengalpattu	} ←----- CLOSED ----->		
Kancheepuram			
Udhagamandalam			
Katterly			
Dindigul			
Palani			
TOTAL	22012	21504	508

Source: Tamil Nadu Pollution Control Board, Chennai-32