

43. ENVIRONMENT

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43.1 AVERAGE GASEOUS COMPOSITION OF DRY AIR IN THE TROPOSPHERE 2008-09

<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.

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43.3 STATE OF AMBIENT AIR QUALITY IN MAJOR CITIES OF TAMIL NADU 2008-09 (ANNUAL AVERAGE)

(Unit 10⁶ grams per cubic metre)

City	Category	SO ₂	NO _x	TSPM	RSPM
I CHENNAI					
1. Kathivakkam	Industrial	14	25	140	61
2. Manali	Industrial	14	25	151	81
3. Thiruvottiyur	Mixed	14	24	128	66
II MADURAI					
4. M/s. Sucee Cars & Truks	Industrial	12	26	94	65
5. Avvai Girls Hr. Sec. School	Mixed	10	23	103	34
6. Highways Buildings	Residential	9	23	98	37
III COIMBATORE					
7. District Collector's Office	Mixed	10	32	88	44
8. Ponnaiyarajapuram	Residential	9	32	87	44
9. SIDCO, Kurichi	Industrial	11	40	230	102
IV Salem					
10. Sowdeswari College Building	Mixed	7	33	69	42
	Industrial	80	80	360	120
	Residential	60	60	140	60
V Thoothukudi					
11. Raja Agencies	Industrial	18	17	125	90
12. AVM Buildings	Mixed	18	18	116	78
13. Fisheries College	Industrial	17	17	90	63

Source: Tamil Nadu Pollution Control Board, Chennai-32

43.3 (A) STATE OF AMBIENT AIR QUALITY IN CHENNAI CITY 2008-09

Station	SO ₂ µg/m ³	NO _x µg/m ³	RSPM µg/m ³	SPM µg/m ³
1. Anna Nagar	8	18	102	232
2. Adyar	7	13	40	84
3. Kilpauk *	8	19	107	242
4. T. Nagar *	9	21	86	220
5. Vallalar Nagar *	10	22	100	267

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
 Dr. Chandra Sekhar
 www.jeywin.com

43.4 AMBIENT NOISE STANDARDS AS PRESCRIBED BY POLLUTION CONTROL BOARD 2008-09

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 2008-09

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 2008-09

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	H
Madurai	L	L	L	L	L	M
Coimbatore	L	L	M	L	L	M
Salem	-	-	-	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 2008-09

(As on 31-03-2008)

<i>Category</i>	<i>Total No. of Units</i>	<i>Status (No. of Units)</i>		
		<i>Closed</i>	<i>C #</i>	<i>Defaulter ##</i>
1. Aluminium	1	--	--	--
2. Caustic Soda	3	--	--	--
3. Cement	20	--	--	--
4. Copper	1	--	--	--
5. Distillery	13	--	--	--
6. Dyes and Dying Industries	1	--	--	--
7. Fertilizer	6	--	--	--
8. Iron and Steel	1	--	--	--
9. Tannery	59	--	--	--
10. Pesticide	1	--	--	--
11. Petrochemicals	6	--	--	--
12. Pharmaceuticals	23	--	--	--
13. Pulp and paper	3	--	--	--
14. Refnery	2	--	--	--
15. Sugar	37	--	--	--
16. TPP	10	--	--	--
17. Zinc	0	--	--	--
TOTAL	182	--	--	--

Having adequate facilities to comply with the standards

Not having adequate facilities to comply with the standards

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>
1995-96	13483
1996-97	13904
1997-98	17136
1998-99	19212
1999-00	17269
2000-01	17646
2001-02	15489
2002-03	17385
2003-04	15490
2004-05	15499
2005-06	15563
2006-07	15109
2008-09	14821

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>
1995-96	284	1521	448
1996-97	376	2027	572
1997-98	427	2213	590
1998-99	412	2290	584
1999-00	466	2594	631
2000-01	466	2459	671
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	862	4166	1860

Source: Tamil Nadu Pollution Control Board, Chennai-32
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43.10 NUMBER OF GOODS AND TRANSPORT VEHICLES TESTED AND EMISSION LEVEL RECORDED DURING 2008-09

<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	38118	37225	893
Chengalpattu	} ←----- CLOSED ----->		
Kancheepuram			
Udhagamandalam			
Kattery			
Dindigul			
Palani			
TOTAL	38118	37225	893

<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	773	762	11
Chengalpattu	} ←----- CLOSED ----->		
Kancheepuram			
Udhagamandalam			
Kattery			
Dindigul			
Palani			
TOTAL	773	762	11

<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	38891	37987	904
Chengalpattu	} ←----- CLOSED ----->		
Kancheepuram			
Udhagamandalam			
Kattery			
Dindigul			
Palani			
TOTAL	38891	37987	904