

41. ENVIRONMENT

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41. ENVIRONMENT

41.1 AVERAGE GASEOUS COMPOSITION OF DRY AIR IN THE TROPOSPHERE 2022-23

<i>Gas</i>	<i>Percent by Volume (%)</i>	<i>By Weight Parts Per Million (ppm)</i>
Nitrogen	78.08	780800
Oxygen	20.95	209500
Argon	0.934	9340
Carbon dioxide	0.3978	397.80
Neon	0.001818	18.18
Helium	0.000524	5.24
Methane	0.000181	1.81
Krypton	0.000114	1.14
Hydrogen	0.000055	0.55
Xenon	0.000009	0.09
Ozone	0.02 TO 0.07	0.02-0.07
Nitrous Oxide	0.0000325	0.33
Carbon Monoxide	0.00001	0.10
Ammonia	Trace	Trace
Nitrogen Dioxide	0.000002	0.02
Nitric Oxide	Trace	Trace
Sulphur Dioxide	Trace	Trace
Hydrogen Sulphide	-	-

Source: Tamil Nadu Pollution Control Board, Chennai-32

41.2 NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

Pollutant	Time Weighted Average	CONCENTRATION IN AMBIENT AIR (in $\mu\text{g}/\text{m}^3$)		
		<i>Industrial, Residential Rural & Other Areas</i>	<i>Eco logically Sensitive Area</i>	<i>Methods of Measurement</i>
Sulphur Dioxide (SO₂)	Annual *	50	20	Improved West & Goake, Ultraviolet fluorescence
	24 Hours **	80	80	
Nitrogen Dioxide (NO₂)	Annual *	40	30	Modified Jacob & Hochheister (Na-Arsenite) Chemiluminescence
	24 Hours **	80	80	
Particulate matter (Size less than 10 μm) or PM₁₀	Annual *	60	60	Gravimetric, TOEM, Beta attenuation
	24 Hours **	100	100	
Particulate matter (Size less than 2.5 μm) or PM_{2.5}	Annual *	40	40	Gravimetric, TOEM, Attenuation
	24 Hours **	60	60	
Ozone (O₃)	8 Hours *	100	100	UV photometric, Chemiluminescence chemical method
	1 Hour	180	180	
Lead (P)	Annual *	0.5	0.5	ASS / ISP method after sampling on EPM 2000 or equivalent filter paper ED-XRF using Teflon filter
	24 Hours **	1	1	
Carbon Monoxide (CO)	Annual *	0.2	0.2	Non-dispersive Infra Red (NDIR) Spectroscopy
	24 Hours **	0.4	0.4	
Ammonia (NH₃)	Annual *	100	100	Chemiluminescence, Indophenol's blue method
	24 Hours **	400	400	
Benzene (C₆H₆)	Annual *	0.5	0.5	Gas Chromatography based continuous analyzer. Adsorption and description followed by GC analysis
Benzo (a) Pyrene (BoP)-particulate phase only	Annual *	0.1	0.1	Solvent extraction followed by HPLC / GC analysis
Arsenic (As)	Annual *	0.6	0.6	AAS/ ICP method after sampling on EPM 2000 or equivalent filter paper
Nickel(Ni)	Annual *	20	20	-do-

Note: * Annual Arithmetic Mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 8 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

1. National Ambient Air Quality standard. The levels of an air quality necessary with an adequate margin of safety, to protect the public health, vegetation and property.
2. Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limit specified above for the respective category, it shall be considered adequate reason to institute regular / continuous monitoring and further investigations.

Source: National Ambient Air Quality Standards published by MoEF&CC, Delhi

**41.3 STATE OF AMBIENT AIR QUALITY IN MAJOR CITIES OF
TAMIL NADU 2022-23 (ANNUAL AVERAGE)**

(All values are in $\mu\text{g}/\text{m}^3$)

<i>City</i>	<i>Category</i>	<i>SO₂</i>	<i>NO₂</i>	<i>PM₁₀</i>
I CHENNAI				
1. Kathivakkam	Industrial	12	15	55
2. Manali	Industrial	14	17	58
3. Thiruvottiyur	Industrial	13	17	55
4. Anna Nagar	Residential	11	21	58
5. Adyar	Residential	10	20	50
6. Kilpauk	Commercial	11	21	66
7. Thiyagarayanagar	Commercial	11	21	58
8. Nungambakkam	Commercial	12	22	61
II MADURAI				
9. Hotel Tamil Nadu	Residential	15	17	55
10. Pitchai Pillai Chavadi	Industrial	20	22	79
11. Birla Guest House	Commercial	17	20	64
III COIMBATORE				
12. DCO	Commercial	7	16	47
13. Kavundampalayam	Residential	7	16	51
14. SIDCO,Kurichi	Industrial	9	18	56
IV SALEM				
15. Siva Tower,Meyyanur Main Road	Commercial	8	21	46
V THOOTHUKUDI				
16. Raja Agencies	Industrial	10	13	68
17. AVM Buildings	Commercial	7	11	64
18. SIPCOT	Industrial	7	12	63
VI TRICHIRAPPALLI				
19. Thennur	Commercial	11	14	40
20. Main Guard Gate	Traffic Inter-Section	13	17	64
21. Bishop Heber College	Industrial	10	13	35
22. Golden Rock	Residential	10	14	38
23. Central Bus Stand	Traffic Inter-Section	12	15	47
VII. CUDDALORE				
24. Eachangadu Village	Residential	14	16	42
25. DEE Office	Commercial	16	18	44
26. SIPCOT	Industrial	18	21	47
VIII. METTUR				
27. Raman Nagar	Residential	7	20	38
28. SIDCO	Industrial	13	24	48

		NEW STATION		
I THIRUVANNAMALAI				
01 .O/o,DEE,TVM, Building	Commercial	5	14	52
02 .O/o,Municipal Commissioner,TVM	Commercial	5	14	50
03 .O/o,Joint Director, Animal Husbandary TVM	Residential	6	15	70
SIVAGANGAI				
04 .DEE Office Building,SVG	Commercial	10	13	34
05 .SIDCO	Industrial	11	14	39
06 .Muthu Mahal	Commercial	16	18	57
THENI				
07 .Ragavan Colony	Residential	12	18	45
08 .SIDCO-Complex	Commercial	13	20	56
09 .SAR -Complex, Poothipuram	Industrial	15	21	64
THIRUVARUR				
10 .Thiru.Vi.Ka, Govt .Arts & Science College	Residential	12	15	42
11 .Govt Thiruvarur Medical College & Hospital	Industrial	20	17	44
12 .Bharath Matriculation HSS	Silence	15	17	51
VILLUPURAM				
13 .University College Of Engineering	Residential	15	17	50
14 .Govt. Medical College & Hospital	Sensitive	14	16	47
15 .O/o, DEE.TNPCB, Building	Commercial	14	16	43
PERAMBALUR				
16 .Govt, Head Quarters Hospital	Industrial	10	13	33
17 .Aavin Parlour Building	Commercial	12	15	41
18 .House Top Of Thiru P. Rabi	Industrial	9	14	32
DHARMAPURI				
19 .Mr.S.Fayazutheen Collector Office	Residential	8	23	35
20 .SIDCO Industrial Estate	Industrial	10	25	49
21. Thiru. D.N.Gopal building, Siddha Verrappa Chetty St.	Commercial	9	24	50
NAGERCOIL				
22 .Anna University Campus	Industrial	11	15	47
23 .Scott Christian College	Residential	6	9	45
24 .Aavin Parlour building	Commercial	10	13	48

Source: Tamil Nadu Pollution Control Board, Chennai-32

41.3 (A) STATE OF AMBIENT AIR QUALITY IN CHENNAI CITY 2022-23 (in $\mu\text{g}/\text{m}^3$)

Station	SO_2	NO_2	PM_{10}
1. Anna Nagar	11	21	58
2. Adyar	10	20	50
3. Kilpauk *	11	21	66
4. T. Nagar *	11	21	58
5. Nungambakkam	12	22	61

 SO_2 : Sulphur dioxide NO_x : Oxides of Nitrogen PM_{10} : Respirable Suspended Particulate Matter (<10 Micron size)

* : Traffic intersection areas

Source: Tamil Nadu Pollution Control Board, Chennai-32

**41.4 AMBIENT NOISE STANDARDS AS PRESCRIBED BY
POLLUTION CONTROL BOARD 2022-23**

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

41.5 EMISSION LIMIT FOR DIESEL-DRIVEN VEHICLES 2022-23

Test	Light Absorption Co-efficient 1/m	Standard Smoke Density	
		Bosch Units	Hartridge Units
Full load at a speed of 60% to 70% of maximum engine rated speed declare		Data not available with TNPCB	
Free Acceleration Test			

Source: Tamil Nadu Pollution Control Board, Chennai-32

41.6 NATIONAL AMBIENT AIR QUALITY MONITORING, CHENNAI 2022-23

Place	Annual Mean Concentrations of Air Pollutants $\mu\text{g}/\text{m}^3$					
	Industrial			Residential/ Commercial		
	SO ₂	NO ₂	PM ₁₀	SO ₂	NO ₂	PM ₁₀
Chennai	13	16	56	11	21	54
Madurai	20	22	79	15	17	55
Coimbatore	9	18	56	7	16	51
Salem	13	24	48	7	20	38
Thoothukudi SIPCOT	7	12	63	7	11	64
Trichirappalli	10	13	35	10	14	38
Cuddalore	18	21	47	14	16	42
Mettur	13	24	48	7	20	38
	NEW STATION					
THIRUVANNAMALAI	*	*	*	6	15	70
SIVAGANGAI	11	14	39	16	18	57
THENI	15	21	64	12	18	45
THIRUVARUR	21	17	44	12	15	42
VILLUPURAM	*	*	*	15	17	50
PERAMBALUR	10	13	33	12	15	41
DHARMABURI	10	25	49	8	23	35
NAGERCOIL	11	15	47	6	9	45

Source: Tamil Nadu Pollution Control Board, Chennai-32

41.7 SUMMARY STATUS OF POLLUTION CONTROL IN 17 CATEGORIES OF INDUSTRIES IN TAMILNADU

(As on 31-03-2022)

<i>Category</i>		<i>No. of Units</i>	Complying	Defaul- ting	Closed
1.	Aluminum Smelter	0	0	0	0
2.	Chlor Alkali	3	3	0	0
3.	Cement	25	24	0	1
4.	Copper Smelter	2	0	0	2
5.	Distillery including fermentation industry	18	11	0	7
6.	Dyes and Dye Intermediates	1	1	0	0
7.	Fertilizers	6	6	0	0
8.	Iron & Steel	3	3	0	0
9.	Oil Refineries	6	1	5	0
10.	Pesticides	2	2	0	0
11.	Petrochemicals	8	8	0	0
12.	Pharmaceuticals	22	22	0	0
13.	Pulp & Paper	3	1	1	1
14.	Sugar	43	30	0	13
15.	Thermal Power Plant	78	58	3	17
16.	Zinc Smelter	0	0	0	0
17.	Tanneries	13	11	0	2
TOTAL		233	181	9	43

Source: Tamil Nadu Pollution Control Board, Chennai-32

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

<i>Year</i>	<i>Trade Effluents (Received / Analysed)</i>
2009-10	16605
2010-11	16238
2011-12	15257
2012-13	17374
2013-14	22368
2014-15	17421
2015-16	15453
2016-17	17198
2017-18	15597
2018-19	26730
2019-20	24695
2020-21	22005
2021-22	15497
2022-23	18786

Source: Tamil Nadu Pollution Control Board, Chennai-32

**41.9 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>
2009-10	973	5367	2530
2010-11	1134	6031	3105
2011-12	1066	5627	2869
2012-13	994	5546	2940
2013-14	1156	6991	3644
2014-15	1084	6331	3436
2015-16	1213	7308	3608
2016-17	1233	6866	3597
2017-18	1181	6549	3571
2018-19	1184	6649	3646
2019-20	1272	6996	3509
2020-21	1300	7361	3647
2021-22	1401	8257	4248
2022-23	1475	8737	4708

Source: Tamil Nadu Pollution Control Board, Chennai-32

41.10 NUMBER OF GOODS AND TRANSPORT VEHICLES TESTED AND EMISSION LEVEL RECORDED DURING 2022-23

Station	Diesel		
	Total Vehicles	Within the limit	Exceeding the limit
1	2	3	4
Chennai	The Vehicle monitoring stations monitored by TNPCB are closed and not in operation, hence the data are not available with TNPCB		
Chengalpattu			
Kancheepuram			
Udhagamandalam			
Kattery			
Dindigul			
Palani			
TOTAL			

Station	Petrol		
	Total Vehicles	Within the limit	Exceeding the limit
1	5	6	7
Chennai	The Vehicle monitoring stations monitored by TNPCB are closed and not in operation, hence the data are not available with TNPCB		
Chengalpattu			
Kancheepuram			
Udhagamandalam			
Kattery			
Dindigul			
Palani			
TOTAL	-	-	-

Station	Total (Diesel + Petrol)		
	Total Vehicles	Within the limit	Exceeding the limit
1	8	9	10
Chennai	The Vehicle monitoring stations monitored by TNPCB are closed and not in operation, hence the data are not available with TNPCB		
Chengalpattu			
Kancheepuram			
Udhagamandalam			
Kattery			
Dindigul			
Palani			
TOTAL			

Source: Tamil Nadu Pollution Control Board, Chennai-32