

**41. ENVIRONMENT****41.1 AVERAGE GASEOUS COMPOSITION OF DRY AIR  
IN THE TROPOSPHERE 2020-21**

<i>Gas</i>	<i>Percent by Volume (%)</i>	<i>By Weight Parts Per Million (ppm)</i>
Nitrogen	78.084	75.47
Oxygen	20.947	23.20
Argon	0.934	1.28
Carbon dioxide	0.0350	0.062
Neon	0.0018	0.0012
Helium	0.0005	0.00007
Methane	1.79	0.000179
Krypton	0.0001	0.0003
Hydrogen	0.00005	53
Xenon	8.7 x10 <sup>-6</sup>	0.087
Ozone	Trace to 0.0008	8
Nitrous Oxide	0.000031	0.5ppm
Carbon Monoxide	Trace to 0.000025	0 to trace
Ammonia	Trace to 0.0000003	0 to trace
Nitrogen Dioxide	Trace to 0.000002	0.02ppm
Nitric Oxide		
Sulphur Dioxide	Trace to 0.000002	1ppm
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 $\mu\text{g}/\text{m}^3$ )		
		Industrial, Residential Rural & Other Areas	Ecologically Sensitive Area	Methods of Measurement
Sulphur Dioxide (SO <sub>2</sub> )	Annual *	50	20	Improved West & Goake, Ultraviolet fluorescence
	24 Hours **	80	80	
Nitrogen Dioxide (NO <sub>2</sub> )	Annual *	40	30	Modified Jacob & Hochheister (Na-Arsenite) Chemiluminescence
	24 Hours **	80	80	
Particulate matter (Size less than 10 $\mu\text{m}$ ) or PM <sub>10</sub>	Annual *	60	60	Gravimetric, TOEM, Beta attenuation
	24 Hours **	100	100	
Particulate matter (Size less than 2.5 $\mu\text{m}$ ) or PM <sub>2.5</sub>	Annual *	40	40	Gravimetric, TOEM, Attenuation
	24 Hours **	60	60	
Ozone (O <sub>3</sub> )	8 Hours *	100	100	UV photometric, Chemiluminescence chemical method
	1 Hour	180	180	
Lead (Pb)	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)mg/m <sup>3</sup>	Annual *	0.2	0.2	Non-dispersive Infra Red (NDIR) Spectroscopy
	24 Hours **	0.4	0.4	
Ammonia (NH <sub>3</sub> )	Annual *	100	100	Chemiluminescence, Indophenol's blue method
	24 Hours **	400	400	
Benzene (C <sub>6</sub> H <sub>6</sub> )	Annual *	0.5	0.5	Gas Chromatography based continuous analyzer. Adsorption and desorption 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 2020-21 (ANNUAL AVERAGE)**

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

<i>City</i>	<i>Category</i>	<i>SO<sub>2</sub></i>	<i>NO<sub>2</sub></i>	<i>PM<sub>10</sub></i>
<b>I CHENNAI</b>				
1. Kathivakkam	Industrial	13	15	49
2. Manali	Industrial	14	16	50
3. Thiruvottiyur	Industrial	13	15	48
4. Anna Nagar	Residential	10	20	56
5. Adyar	Residential	9	18	44
6. Kilpauk	Commercial	9	19	45
7. Thiyagarayanagar	Commercial	10	20	59
8. Nungambakkam	Commercial	10	19	49
<b>II MADURAI</b>				
9. Hotel Tamil Nadu	Residential	12	16	55
10. Pitchai Pillai Chavadi	Industrial	15	18	62
11. Birla Guest House	Mixed	14	17	59
<b>III COIMBATORE</b>				
12. DCO	Mixed	7	17	52
13. Ponnaiyarapuram	Residential	6	16	49
14. SIDCO	Industrial	9	19	54
<b>IV SALEM</b>				
15. Siva Tower	Mixed	8	21	35
<b>V THOOTHUKKUDI</b>				
16. Raja Agencies	Industrial	5	9	103
17. AVM Buildings	Mixed	4	7	75
18. SIPCOT	Industrial	4	7	73
<b>VI TRICHY</b>				
19. Thennur	Commercial	11	15	36
20. Main Guard Gate	Traffic Inter-Section	14	18	54
21. Bishop Heber College	Industrial	10	14	33
22. Golden Rock	Residential	10	14	32
23. Central Bus Stand	Traffic Inter-Section	13	17	48
<b>VII. CUDDALORE</b>				
24. Eachangadu Village	Residential	13	18	52
25. DEE Office	Commercial	15	23	62
26. SIPCOT	Industrial	12	18	49
<b>VIII. METTUR</b>				
27. Raman Nagar	Residential	7	22	33
28. SIDCO	Industrial	7	23	40

Source: Tamil Nadu Pollution Control Board, Chennai-32

Statistical Hand Book of Tamil Nadu-2020-21

## 41.3 (A) STATE OF AMBIENT AIR QUALITY IN CHENNAI CITY 2020-21

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

<i>Station</i>	<i>Category</i>	<i>SO<sub>2</sub></i>	<i>NO<sub>2</sub></i>	<i>PM<sub>10</sub></i>
1. Anna Nagar	Residential	10	20	56
2. Adyar	Residential	9	18	44
3. Kilpauk *	Commercial	9	19	45
4. T. Nagar *	Commercial	10	20	59
5. Nungampakkam	Commercial	10	19	49

SO<sub>2</sub> : Sulphur dioxide  
 NO<sub>x</sub> : 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 2020-21

<i>Area</i>	<i>Log dB (A)</i>	
	<i>Day Time * dB (A)</i>	<i>Night Time ** dB (A)</i>
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 2020-21

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	3.1	5.2	75
Free Acceleration Test	2.45	--	65

Source: Tamil Nadu Pollution Control Board, Chennai-32

## 41.6 NATIONAL AMBIENT AIR QUALITY MONITORING, CHENNAI 2021-22

Place	Annual Mean Concentrations of Air Pollutants $\mu\text{g}/\text{m}^3$					
	Industrial			Residential/ Mixed		
	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>
Chennai	13	15	49	10	19	50
Madurai	15	18	62	13	17	57
Coimbatore	9	19	54	7	17	51
Salem	-	-	-	8	21	35
Thoothukudi	5	8	88	4	7	75
Trichy	-	-	-	10	14	33
Cuddalore	12	18	49	13	18	52
Mettur	7	23	40	7	22	33

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>	<i>Comp-lying</i>	<i>Defau- lting</i>	<i>Closed</i>
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
	<b>TOTAL</b>	<b>233</b>	<b>181</b>	<b>9</b>	<b>43</b>

*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 / Analyzed)</i>
2006-07	15109
2008-09	14776
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

*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>
2006-07	783	4224	1938
2008-09	927	5147	2486
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

*Source: Tamil Nadu Pollution Control Board, Chennai-32*

**41.10 NUMBER OF GOODS AND TRANSPORT VEHICLES TESTED AND  
EMISSION LEVEL RECORDED DURING 2020-21**

<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	} The Vehicle monitoring stations monitored by TNPCB are closed and not in operation, hence the data are not available with TNPCB		
Chengalpattu			
Kancheepuram			
Udhagamandalam			
Katterly			
Dindigul			
Palani			
<b>TOTAL</b>			

<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	} The Vehicle monitoring stations monitored by TNPCB are closed and not in operation, hence the data are not available with TNPCB		
Chengalpattu			
Kancheepuram			
Udhagamandalam			
Katterly			
Dindigul			
Palani			
<b>TOTAL</b>	-	-	-

<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	} The Vehicle monitoring stations monitored by TNPCB are closed and not in operation, hence the data are not available with TNPCB		
Chengalpattu			
Kancheepuram			
Udhagamandalam			
Katterly			
Dindigul			
Palani			
<b>TOTAL</b>			

Source: Tamil Nadu Pollution Control Board, Chennai-32