

42. ENVIRONMENT

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42. ENVIRONMENT

42.1 AVERAGE GASEOUS COMPOSITION OF DRY AIR IN THE TROPOSPHERE 2010-11

| <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 | 0.035 | 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

42.2 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, Residential Rural & Other Areas | Ecologically Sensitive Area | |
| Sulphur Dioxide (SO ₂) | Annual * | 50 | 20 | Improved West & Geake, Ultraviolet fluorescence |
| | 24 Hours ** | 80 | 80 | |
| Nitrogen Dioxide (NO ₂) | Annual * | 40 | 30 | Modified Jacob & Hochheiser (Na-Arsenite) Chemiluminescence |
| | 24 Hours ** | 80 | 80 | |
| Particulate matter (Size less than 10 μm) or PM ₁₀ | Annual * | 60 | 60 | Gravimetric, TEOM, Beta attenuation |
| | 24 Hours ** | 100 | 100 | |
| Particulate matter (Size less than 2.5 μm) or PM _{2.5} | Annual * | 40 | 40 | Gravimetric, TEOM, Beta attenuation |
| | 24 Hours ** | 60 | 60 | |
| Ozone (O ₃) | 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 or EPM 2000 or equivalent filter paper ED-XRF using Tefon filter |
| | 24 Hours ** | 1 | 1 | |
| Carbon Monoxide (CO) | Annual * | 2 | 2 | Non-dispersive infra Red (NDIR) Spectroscopy |
| | 24 Hours ** | 4 | 4 | |
| Ammonia (NH ₃) | Annual * | 100 | 100 | Chemiluminescence, Indophenol's blue method |
| | 24 Hours ** | 400 | 400 | |
| Benzene (C ₆ H ₆) | Annual * | 5 | 5 | Gas Chromatography based continuous analyser. Adsorption and desorption followed by GC analysis |
| Benzo (a) Pyrene (BaP)-particulate phase only | Annual * | 1 | 1 | Solvent extraction followed HPLC / GC analysis |
| Arsenic (As) | Annual * | 6 | 6 | AAS/ CP method after sampling on EPM 2000 or equivalent filter paper |
| Nickel(N) | Annual * | 20 | 20 | |

Note: * Annual Arithmetic Mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.³

** 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.

- 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.

Source: Tamil Nadu Pollution Control Board, Chennai-32

**42.3 STATE OF AMBIENT AIR QUALITY IN MAJOR CITIES OF
TAMIL NADU 2011-12(ANNUAL AVERAGE)**

(Unit 10⁶ grams per cubic metre)

| <i>City</i> | <i>Category</i> | <i>SO₂</i> | <i>NO_x</i> | <i>RSPM</i> |
|---------------------------------|-----------------|-----------------------|-----------------------|-------------|
| I CHENNAI | | | | |
| 1. Kathivakkam | Industrial | 22 | 27 | 132 |
| 2. Manali | Industrial | 20 | 26 | 70 |
| 3. Thiruvottiyur | Industrial | 20 | 27 | 88 |
| II MADURAI | | | | |
| 4. M/s. Sucee Cars & Truks | Industrial | 10 | 23 | 44 |
| 5. Avvai Girls Hr. Sec. School | Mixed | 11 | 24 | 46 |
| 6. Highways Buildings | Residential | 10 | 24 | 47 |
| III COIMBATORE | | | | |
| 7. G.D.Matric School | Mixed | 5 | 30 | 68 |
| 8. Ponnaiyarajapuram | Residential | 5 | 29 | 68 |
| 9. SIDCO, Kurichi | Industrial | 5 | 35 | 205 |
| IV Salem | | | | |
| 10. Sowdeswari College Building | Mixed | 8 | 21 | 62 |
| V Thoothukkudi | | | | |
| 11. Raja Agencies | Industrial | 7 | 13 | 132 |
| 12. AVM Buildings | Mixed | 7 | 14 | 81 |
| 13. SIPCOT | Industrial | 9 | 15 | 112 |

Source: Tamil Nadu Pollution Control Board, Chennai-32

42.3 (A) STATE OF AMBIENT AIR QUALITY IN CHENNAI CITY 2011-12

| <i>Station</i> | <i>SO₂ µg/m³</i> | <i>NO_x µg/m³</i> | <i>RSPM µg/m³</i> |
|--------------------|--|--|------------------------------|
| 1. Anna Nagar | 9 | 18 | 136 |
| 2. Adyar | 8 | 12 | 63 |
| 3. Kilpauk * | 10 | 20 | 135 |
| 4. T. Nagar * | 11 | 21 | 145 |
| 5. Vallalar Nagar* | 11 | 21 | 168 |

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

Source: Tamil Nadu Pollution Control Board, Chennai-32

**42.4 AMBIENT NOISE STANDARDS AS PRESCRIBED BY
POLLUTION CONTROL BOARD 2011-12**

| 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

42.5 EMISSION LIMITS FOR DIESEL-DRIVEN VEHICLES 2011-12

| Test | Light Absorption Co-efficient 1/m | Standard Smoke Density | |
|------------------------|--------------------------------------|------------------------|-----------------|
| | | Bosch Units | Hartridge Units |
| Free Acceleration Test | 2.45 | -- | 65 |

Source: Tamil Nadu Pollution Control Board, Chennai-32

42.6 NATIONAL AMBIENT AIR QUALITY MONITORING, CHENNAI 2011-12

| Place | Annual Mean Concentrations of Air Pollutants $\mu\text{g}/\text{m}^3$ | | | | | |
|--------------|---|-----------------|------|--------------------|-----------------|------|
| | Industrial | | | Residential/ Mixed | | |
| | SO ₂ | NO _x | RSPM | SO ₂ | NO _x | RSPM |
| Chennai | 21 | 27 | 97 | - | - | - |
| Madurai | 10 | 18 | 44 | 11 | 24 | 47 |
| Coimbatore | 5 | 35 | 205 | 5 | 30 | 68 |
| Salem | - | - | - | 8 | 21 | 62 |
| Thoothukkudi | 8 | 14 | 122 | 7 | 14 | 81 |

Source: Tamil Nadu Pollution Control Board, Chennai-32

42.7 SUMMARY STATUS OF POLLUTION CONTROL IN 17 CATEGORIES OF INDUSTRIES IN TAMILNADU 2011-12

(As on 31-03-2012)

| <i>Category</i> | <i>No. of Units</i> | <i>Comp-lying</i> | <i>Defau- lting</i> | <i>Closed</i> |
|--|---------------------|-------------------|-------------------------|---------------|
| 1. Aluminium Smelting | 1 | 0 | 0 | 1 |
| 2. Basic Drugs & Pharmaceuticals Manufacturing | 25 | 22 | 0 | 3 |
| 3. Chlor Alkali / Caustic Soda | 4 | 4 | 0 | 0 |
| 4. Cement (200 TPD and above) | 18 | 15 | 1 | 2 |
| 5. Copper Smelting | 1 | 1 | 0 | 0 |
| 6. Dyes and Dye Intermediate | 1 | 1 | 0 | 0 |
| 7. Fermentation (Distillery) | 17 | 13 | 3 | 1 |
| 8. Fertilizer | 5 | 5 | 0 | 0 |
| 9. Integrated Iron & Steel | 1 | 1 | 0 | 0 |
| 10. Leather Processing including Tanneries | 13 | 11 | 1 | 1 |
| 11. Oil Refinery | 3 | 3 | 0 | 0 |
| 12. Pesticide Formulation & Manufacturing | 3 | 3 | 0 | 0 |
| 13. Pulp and paper (30 TPD and above) | 2 | 2 | 0 | 0 |
| 14. Petrochemical | 8 | 8 | 0 | 0 |
| 15. Sugar | 42 | 38 | 3 | 1 |
| 16. Thermal Power Plants | 43 | 42 | 0 | 1 |
| 17. Zinc Smelting | 0 | 0 | 0 | 0 |
| TOTAL | 187 | 169 | 8 | 10 |

Source: Tamil Nadu Pollution Control Board, Chennai-32

**42.8 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 |
| 2010-11 | 16238 |
| 2011-12 | 15257 |

Source: Tamil Nadu Pollution Control Board, Chennai-32

**42.9 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 |
| 2010-11 | 1134 | 6031 | 3105 |
| 2011-12 | 1066 | 5627 | 2869 |

Source: Tamil Nadu Pollution Control Board, Chennai-32

**42.10 NUMBER OF GOODS AND TRANSPORT VEHICLES TESTED AND
EMISSION LEVEL RECORDED DURING 2011-12**

| <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 | 1142 | 1117 | 25 |
| Chengalpattu | } ←----- CLOSED -----> | | |
| Kancheepuram | | | |
| Udhagamandalam | | | |
| Katterly | | | |
| Dindigul | | | |
| Palani | | | |
| TOTAL | 1142 | 1117 | 25 |

| <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 | } ←----- CLOSED -----> | | |
| Chengalpattu | | | |
| Kancheepuram | | | |
| Udhagamandalam | | | |
| Katterly | | | |
| Dindigul | | | |
| Palani | | | |
| TOTAL | - | - | - |

| <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 | 1142 | 1117 | 25 |
| Chengalpattu | } ←----- CLOSED -----> | | |
| Kancheepuram | | | |
| Udhagamandalam | | | |
| Katterly | | | |
| Dindigul | | | |
| Palani | | | |
| TOTAL | 1142 | 1117 | 25 |

Note : Since we are not monitoring goods vehicles w.e.f.01.11.2010, hence the data are not available with TNPCC.

Source: Tamil Nadu Pollution Control Board, Chennai-32