



**ENVIRONMENT, CLIMATE CHANGE AND  
FORESTS DEPARTMENT**

**ENVIRONMENT AND CLIMATE CHANGE**

**POLICY NOTE  
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**DEMAND No.15**

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**Minister for Environment - Climate Change and  
Youth Welfare and Sports Development**

# TAMIL NADU POLLUTION CONTROL BOARD

## INDEX

<b>Sl. No.</b>	<b>Content</b>	<b>Page No.</b>
1	Introduction	87
2	Consent mechanism	95
3	Environmental Quality Monitoring for Water, Air and Noise	102
4	Waste Monitoring Mechanism	116
5	Legal Enforcement Mechanism	143
6	Miscellaneous Activities	145
7	New initiatives taken up during 2021-22.	147
8	Sustainable Development Goals	152

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## **TAMIL NADU POLLUTION CONTROL BOARD**

புறந்தூய்மை நீரா னமையும் அகந்தூய்மை  
வாய்மையால் காணப் படும்

(குறள் 298)

Outward purity the water will bestow:  
inward purity from truth alone

### **1.0. Introduction:**

Government of Tamil Nadu established Tamil Nadu Prevention and Control of Water Pollution Board vide G.O.No.340, Health and Family Welfare Department, dated 19.02.1982 under section 4 (1) of the Water (Prevention and Control of Pollution) Act, 1974 (Central Act 6). The notification was issued in the Tamil Nadu Government Gazette on February 27<sup>th</sup>, 1982 and on the same day, the Board came into existence. Subsequently, after framing the Tamil Nadu Water (Prevention and Control of Pollution) Rules, 1983, the Board was

renamed as Tamil Nadu Pollution Control Board (TNPCB).

TNPCB functions under the Environment, Climate Change and Forest Department. It is the statutory organisation responsible for abatement and control of environmental pollution in the State by enforcing the Central Acts. As per the Section 4 of the Water (P&CP) Act, 1974, the Board comprises the Chairman, the Member Secretary, five officials to represent the State Government, five persons to represent the local authorities, three non-officials to represent the interests of agriculture, fishery or industry or trade and two persons to represent the companies or corporations owned by the State Government.

TNPCB enforces the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981 and the Environment (Protection) Act,

1986, besides the following Rules and Notifications made there under:

- The Tamil Nadu Water (Prevention and Control of Pollution) Rules, 1983
- The Tamil Nadu Air (Prevention and Control of Pollution) Rules, 1983
- The Environment (Protection) Rules, 1986
- Manufacture, Storage and Import of Hazardous Chemical Rules, 1989.
- The Fly Ash Utilization Notification, 1999
- The Noise Pollution (Regulation and Control) Rules, 2000
- The Batteries (Management and Handling) Rules, 2001
- The Environment Impact Assessment Notification, 2006

- The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016
- The Bio-Medical Waste Management Rules, 2016
- The Solid Waste Management Rules, 2016
- The Plastic Waste Management Rules, 2016
- The E-Waste Management Rules, 2016
- The Construction and Demolition Waste Management Rules, 2016

**Mission:**

To enforce the provisions of the Water (P&CP) Act,1974, Air (P&CP) Act,1981 and the Environment (Protection) Act,1986.

## **Objectives of the Organization:**

- Plan comprehensive programmes for prevention, control and abatement of water and air pollution in the State.
- Advise the State Government on any matter concerning the prevention, control or abatement of water and air pollution.
- Inspect sewage and trade effluent plants for the treatment of sewage and trade effluents and to review plans, specifications or other data relating to plants set up for the treatment and the system for the disposal of sewage and trade effluents.
- Collaborate with the Central Pollution Control Board (CPCB) in organising the training of personnel engaged or to be engaged in programmes relating to prevention, control or abatement of water

and air pollution and to organise mass education programmes relating thereto.

- Encourage, conduct and participate in investigations and research relating to problems of water and air pollution and the prevention, control or abatement of water and air pollution.
- Establish or recognise laboratories to enable the Board to perform its functions efficiently, including the analysis of air or samples of water from any stream or well or samples of any sewage or trade effluents.
- Perform such other functions as may be prescribed or as may, from time to time entrusted to it by the CPCB or the State Government.



## **Organisational Set-up**

For effective and efficient functioning of the organisation, the Board has a three-tier system consisting of (i) Head Office in Chennai, (ii) Eight Zonal Offices, (iii) Thirty-Eight District Environmental Engineer Offices. In addition, the Board has also established five Flying Squad offices and three Assistant Environmental Engineer offices.

The TNPCB has established eight Advanced Environmental Laboratories (AEL) and eight District Environmental Laboratories (DEL) for sampling and analysis of effluent and air quality in the industries and the environmental quality survey in the State.

The Head Office is located at Chennai headed by the Chairman. Eight Zonal offices are headed by Joint Chief Environmental Engineer (Monitoring), and thirty-eight District offices are headed by District Environmental Engineers.

Apart from this, there are five flying squads at Erode, Tiruppur, Chennai, Salem and Vellore headed by Environmental Engineers.

The offices of Joint Chief Environmental Engineer (M) Cuddalore and Flying Squads at Chennai, Salem and Vellore were formed during the year 2021-22. Further, three Assistant Environmental Engineer (AEE) offices were formed in industrial hot spot areas viz Manali, Mettur and Ranipet during the year 2021-2022.

### **Activities of the TNPCB**

- Consent Mechanism
- Environmental Quality Monitoring of Water, Air and Noise.
- Waste Monitoring Mechanism
- Legal Enforcement Mechanism
- Miscellaneous
- New Initiatives taken up during 2021-22
- Sustainable Development Goals

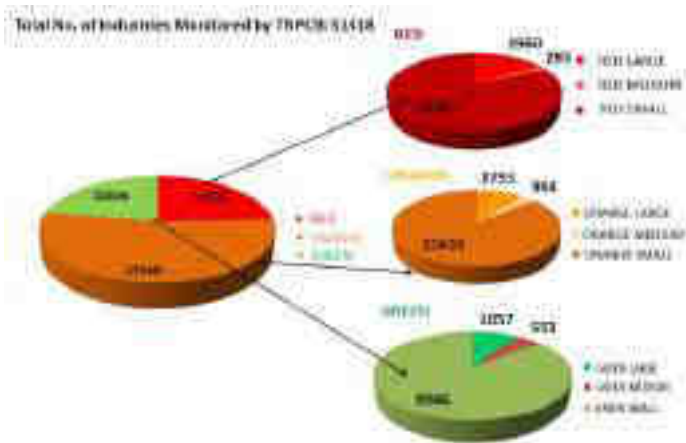
## 2.0. Consent Mechanism.

### 2.1. Categorisation of Industries in Tamil Nadu

Based on the CPCB direction, industries are classified as Red, Orange, Green and White primarily based on the Pollution Index Score. Following the above categorisation and based on the Gross fixed Assets (GFA) industries are categorised as follows:

Category based on GFA	GFA (Rs in crores)	Category based on polluting potential			
		Red	Orange	Green	White
Large	> 10	Highly Polluting	Medium Polluting	Less Polluting	Non-Polluting
Medium	5 - 10				
Small	< 5				

The number of industries under the consent mechanism of the Board as on 28.02.2022 is given below:-



## 2.2. Criteria for issue of Consent to Industries

Consent to Establish and Consent to Operate are being issued by TNPCB in order to monitor industries in respect of air and water pollution. Consents are issued to industries in two stages. In the first stage, the 'Consent to Establish' (CTE) is issued after duly assessing amongst others the siting criteria. For e.g. There

is a siting criteria of one km distance from river margin for highly polluting industries as per the G.O. (Ms.) No.213, Environment and Forests Department, dated 30.03.1989 and 5 km distance as per the G.O.(Ms.) No.127, Environment and Forests Department, dated 08.05.1998 with the prime objective of protecting precious water bodies. During the second stage, the 'Consent to Operate' (CTO) is issued to operate industrial units after ensuring the unit's compliance of the conditions stipulated in the Consent to Establish.

For efficient and effective implementation of the Acts and Rules and for quality monitoring, the TNPCB has constituted various committees at Head Office, Zonal and District office levels. These committees conduct meetings at regular intervals and decide on the issue of consent.

As per G.O. (Ms.) No.21, Environment and Forests (EC.3) Department, dated 24.02.2020

concerning Tamil Nadu Protected Agricultural Zone (TANPAZ), TNPCB is strictly prohibiting zinc smelter, iron copper smelter, aluminum smelter, bone meal, processing of animal horn and other body parts, tannery, exploration, drilling and extraction of oil and natural gas including coal bed methane, shale gas and similar hydrocarbons, ship breaking industries in the Cauvery Delta region.

### **2.3. Consent through the online portal**

As part of the E-governance initiative of the Government of Tamil Nadu and to provide a healthy and proactive interface between the regulatory authority and industries, TNPCB has introduced the facility of "Online Consent Management and Monitoring System (OCMMS)" from 19.01.2015. This system brings transparency and promptness to consent management, facilitating industries for online submission of applications for Consent to

Establish / Consent to Operate / Renewal of Consent, submission of documents, online remittance of consent fees, online submission of clarifications, besides knowing the status of applications. TNPCB operates the 'Care Centre' in the Head Office and all District offices to assist industries in submitting the application through OCMMS.

Apart from Consent to Establish and Consent to Operate, the Authorization for management of Hazardous & Other Wastes, Bio-medical Waste, Solid Waste, E-Waste, Construction and Demolition (C&D) Waste and Registration for Plastic Waste & Battery Waste Handling to the industries are also issued Online, and the data is uploaded on TNPCB Web site.

- TNPCB issues Consent to Establish (CTE) to industries with seven years validity in case of Environmental Impact Assessment (EIA) attracting projects and five years

validity in case of non-EIA attracting projects.

- The Consent to Operate (CTO) is issued for eligible industries with validity upto 5 years, 10 years and 14 years for Red, Orange and Green category industries, respectively.
- As per B.P No. 1 dated 13.01.2020, TNPCB issues CTO-Direct without the requirement of Consent to Establish (CTE) to the Green Category Industries proposed to be located in Industrial Use Zone / Industrial Estate as labeled through the Directorate of Town and Country Planning (DTCP) / Chennai Metropolitan Development Authority (CMDA) / Local Planning Authority (LPA).
- As per the Announcement on the floor of the House by the Hon'ble Minister for Environment - Climate Change and Youth



Welfare and Sports Development, the Consent to Operate (CTO)/Renewal of Consent Order (RCO) to the industries are issued as a block instead of issuing consent every year under the Ease of Doing Business as per G.O. (Ms.) No.144, Environment, Climate Change and Forest (EC.1) Department, dated 08.10.2021.

#### **2.4. Auto Renewal**

The Board introduced a concept of 'Auto Renewal' of Consent for Red-Small and all Orange and Green category industries. Accordingly, consent is renewed for the industries without prior inspection, for which the industry has to furnish self-certification. This ensures grant of renewal consent within seven days on receipt of application through Online Consent Management and Monitoring System (OCMMS). TNPCB is issuing CTE extension also through auto-renewal.

**Industries issued with CTE/CTO/RCO from 1.4.2021 to 31.3.2022**

<b>CATEGORY</b>	<b>RED</b>	<b>ORANGE</b>	<b>GREEN</b>	<b>TOTAL</b>
CTE	249	519	235	1003
CTO	3365	5856	2062	11283

**3.0. Environmental Quality Monitoring for Water, Air and Noise:**

Environmental Quality monitoring and data generation are vital for abatement of pollution and policy changes. As per the mandate given in the Water and Air Acts, TNPCB monitors the quality of water, Air and Noise through various initiatives and programmes.

**3.1. Care Air Centre and Water Quality Watch**

**Care Air Centre** is functioning at the Head Office in Chennai. The purpose of this Centre is to monitor industrial stack emissions

and the Ambient Air Quality of surrounding areas on real time basis (24x7). Major air polluting industries such as Cement, Oil Refinery, Petrochemicals, Thermal Power Plants, Fertilisers, Iron & Steel industries etc. are connected to the Care Air Centre. In case standards are exceeded, auto-generated SMS and e-mail messages are sent immediately to the industry and the concerned Joint Chief Environmental Engineers (M) and District Environmental Engineers to rectify defects. Besides, this system ensures self-monitoring and rectification by industries. So far, 405 industrial units are connected for stack monitoring and 154 industrial units for Ambient Air quality monitoring to this Centre.

Following the success of this Scheme, the Board has expanded its network incorporating the Water Quality Watch Centre. Major water-polluting industries such as Tanneries,

Distilleries, Sugar factories, Pharmaceuticals, Pesticides, Textile Processing and Common Effluent Treatment plants (CETPs) etc. are connected to this Centre. The quality of treated effluents is monitored on a real-time basis. 360 industrial units are connected to this Centre and real-time monitoring data are displayed on the Board's website.

### **3.2. Water Pollution Monitoring Mechanism**

TNPCB is monitoring the activities of the industries, Common Effluent Treatment Plants (CETPs), Sewage Treatment Plants (STPs) and disposal of sewage/trade effluent in achieving the prescribed standards before discharge into the land, water bodies and sea.

#### **3.2.1. Common Effluent Treatment Plants (CETPs)**

Taking into consideration the key functions performed by Micro, Small, and Medium

Enterprises (MSME) and the constraints in complying with wastewater discharge standards by the individual units, the TNPCB initiated an innovative scheme to ensure their growth in an environmentally sustainable manner. This Scheme promotes common facilities for the treatment of effluents. The TNPCB plays a supportive role in establishing Common Effluent Treatment Plants (CETPs) for clusters of small-scale industries in various parts of the State. The Board assists in the technical scrutiny of proposals for CETPs. In Tamil Nadu, CETPs schemes have been formulated in the following sectors:

<b>S. No.</b>	<b>Industrial Sector</b>	<b>No. of CETP Schemes</b>
1.	Tanneries	13
2.	Textile Bleaching & Dyeing Units	19
3.	Electroplating Units	2

4.	Hotels & Lodges	1
5.	Pharmaceutical Industries	1
	<b>Total</b>	<b>36</b>

Apart from the 19 CETPs for textile bleaching and dyeing units, there are 10 CETPs to be constructed with funding from the Government of India in Erode and Namakkal Districts for which CTE has been issued by TNPCB.

The Hon'ble Minister for Environment, Climate Change and Youth Welfare and Sports Development has met the Hon'ble Minister for State, Ministry of Jal Sakthi, Government of India on 31.03.2022 and sought funding for Common Effluent Treatment Plants under "Nadanthaai Vaazhi Cauvery" Project from Union of India.

### **3.2.2. Status of Sewage Treatment Plants**

All Sewage Treatment Plants (STP) provided by the Urban Local Bodies (ULBs) have been classified as Red category. As per data received from Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), Directorate of Town Panchayat (DTP) and Commissionerate of Municipal Administration (CMA), TNPCB has submitted the report to National Mission for Clean Ganga. There are 76 STPs under operation, 39 STPs under construction and 37 STPs at the proposal stage. Of which 59 STPs are issued with Consent to Operate (CTO), 41 STPs are issued with Consent to Establish (CTE).

Directions have been issued to CMWSSB, DTP, CMA to complete the Underground sewage system for unsewered areas and ensure that no untreated sewage is discharged. Further Directions have been issued to install Online

Continuous Effluent Monitoring systems and Mobile app as per instructions of CPCB.

### **3.3. Monitoring of Water Bodies**

#### **3.3.1. National Water Quality Monitoring Programme**

The Board is monitoring the water quality of inland water bodies in Tamil Nadu under the National Water Quality Monitoring Programme (NWQMP) with partial funding from the Central Pollution Control Board (CPCB) in four major rivers viz. Cauvery, Tamirabarani, Palar and Vaigai and eight lakes located in Udthagamandalam, Kodaikanal, Yercaud, Veeranam, Porur, Poondi, Pulicat and Redhills. Water quality monitoring stations have been increased from 58 Stations to 72 stations during the year 2021-22. Monthly samples are collected and analyzed. The results are displayed on the TNPCB website.



The TNPCB has initiated monitoring of the groundwater quality from 2020 onwards in 18 stations covering Erode, Namakkal, Salem, Karur, Tirunelveli, Thoothukudi, Trichy, and Tiruvallur districts in the vulnerable areas of groundwater contamination. The samples are collected monthly / half-yearly basis and data generated is analysed and results are uploaded on the TNPCB website.

### **3.3.2. National Rivers Conservation Plan (NRCP)**

The CPCB has identified 51 stations for monitoring River water quality in the State under the National Rivers Conservation Plan (NRCP) to assess the pollution caused to the rivers. The data generated is analysed, and results are uploaded on TNPCB website.

### **3.3.3. Chennai City Waterways Monitoring Programme**

Chennai city comprises four major waterways (viz.,) Adyar River, Cooum River, Buckingham Canal, and Otteri Nallah. The TNPCB monitors the water quality of these water bodies at 19 locations every month. The Government have formed a special monitoring committee viz. Chennai River Restoration Trust (CRRT), through which these rivers are being rejuvenated.

### **3.3.4. Polluted River Stretches**

Based on the National Water Quality Monitoring Programme (NWQMP) data, the CPCB has declared 351 river stretches in the country as polluted river stretches. Six river stretches fall in Tamil Nadu, namely Cauvery, Bhavani, Sarabanga, Thirumanimutharu, Vasishta, and Tamirabarani.

In all these river courses, pollution is mainly caused due to the discharge of sewage and the dumping of solid waste. As per the Guidelines issued by the CPCB, an action plan for restoration of the above river stretches was prepared and approved by the CPCB. The action plan includes the construction of the Underground Drainage Sewerage System (UGDSS), Sewage Treatment Plants (STPs), Solid waste management facilities, and Eviction of encroachments. The Action plan is being implemented through the departments of Commissionerate of Municipal Administration, Directorate of Town Panchayats, Public Works Department, Municipal Administration & Water Supply Department and Rural Development & Panchayat Raj Department.

TNPCB proposes to restore the existing 14 Real-time Water Quality Monitoring Stations (RTWQMS) 3 each at Cauvery, Tamirabarani,

Noyyal, Kalingarayan canal and 2 at Bhavani river. Since the rivers in Tamil Nadu are not perennial except river Tamirabarani, TNPCB decided to continue the RTWQMS in 3 locations in Tamirabarani and monitor other places manually.

### **3.4. Air Pollution Monitoring Mechanism**

#### **3.4.1. National Air Quality Monitoring Programme**

Under the CPCB funded National Air Quality Monitoring Programme (NAMP), the TNPCB monitors ambient air quality in major cities and industrial clusters at 28 stations in the State. These stations are located at Chennai (8), Coimbatore (3), Madurai (3), Salem (1), Tiruchirapalli (5), Thoothukudi (3), Mettur (2) and Cuddalore (3) for parameters like Particulate matter  $PM_{10}$  and  $PM_{2.5}$ , Sulphur dioxide ( $SO_2$ ) and Nitrogen dioxide ( $NO_2$ ) are monitored twice a week to have 104 observations in a year as

per the CPCB protocol. Based on the observations Air Quality Index (AQI) is arrived and uploaded on the TNPCB website regularly for public view.

To monitor other towns in districts under the NAMP, the Board has established additional 24 stations from October 2021, covering 8 districts with three stations in each district. The Districts are Dharmapuri, Kanyakumari, Permabalur, Sivagangai, Thiruvavarur, Theni, Villupuram and Thiruvannamalai. Hence under the NAMP project, in total, TNPCB has established 52 stations in the State.

### **3.4.2. Continuous Ambient Air Quality Monitoring (CAAQM) Stations**

Urbanisation and industrialisation have a direct and significant impact on air quality. Therefore, to strengthen the AAQ monitoring network in the State and arrive at the Air Quality Index (AQI) on a real-time basis, TNPCB has

installed 34 Continuous Ambient Air Quality Monitoring Stations (CAAQMS). The parameters including PM<sub>10</sub>, PM<sub>2.5</sub>, Sulphur dioxide, Nitrogen dioxide, Ammonia, Ozone, Carbon monoxide, Benzene, Toluene and Xylene are monitored.

The concentration levels and the AQI are displayed at the respective stations, besides the data being uploaded on the Board's website. The Board is also operating one mobile CAAQMS to monitor the air quality at different places during the festival season like Deepavali and Bhogi to carry out the survey based on public complaints, Court directions, etc.

The TNPCB has also proposed to establish 25 new CAAQMS in the year 2022-23 in the remaining District headquarters and Million-plus cities.

### **3.4.3. Non-Attainment Cities**

Based on the NAMP data, the CPCB has identified 132 cities in the country as non-attainment cities, where the PM<sub>10</sub> level exceeded the annual average standard of 60 µg/m<sup>3</sup>. High levels of particulate matter are due to movement of vehicles, re-suspension of road dust, burning of solid waste, use of fuels in domestic and commercial establishments, industrial emissions etc. In Tamil Nadu, Thoothukudi, Trichy, Madurai and Chennai have been identified as non-attainment cities. The action plans to improve the air quality in these cities have been approved by CPCB and are under implementation by the line departments like Greater Chennai Corporation (GCC), Municipal Administration and Water Supply Department, Transport Department and Public Works Department. Under National Clean Air Programme (NCAP), the Government of India

provides funding to ULBs to improve air quality in the country's non-attainment cities and in the million-plus cities.

### **3.5. Noise Monitoring Mechanism**

Under the National Ambient Noise Monitoring Network Programme, CPCB has established Real-Time Ambient Noise Monitoring Stations at ten locations in Chennai City and the stations are located in Egmore, T.Nagar, Perambur, Guindy, Triplicane, Pallikaranai, Velachery, Washermanpet, Anna Nagar and Sowcarpet. The data is uploaded on the CPCB website.

### **4.0. Waste Monitoring Mechanism**

#### **4.1. Bio-Medical Waste Management**

Bio-Medical waste is the waste generated during the diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining thereto or in the production or testing in biological labs. The Bio-Medical



Waste Management Rules prescribe the responsibility of the waste generators and the operators of the Common Bio-Medical Waste Treatment and Disposal facilities (CBMWTFs) for the safe handling and disposal of the bio-medical waste. The TNPCB issues Authorisation to Health Care Facilities (HCFs) and CBMWTFs online and monitors the compliance of various provisions of Rules. The Government has constituted a State Level Advisory Committee to oversee the implementation of the Rules.

In the State of Tamil Nadu, as on date, 26827 Private and Government hospitals, including bedded and non-bedded clinics, veterinary institutions, pathological labs, blood banks and research institutions, have been issued with Authorisation under BMWM Rules, 2016. The validity of the Authorisation is synchronised with Consent validity.

#### **4.1.1. Common Bio-medical Waste Treatment Facilities**

CBMWTFs are functioning for the collection, transport, treatment and scientific disposal of bio-medical waste. The daily average generation of BMW in the State during 2020 was 36 Tons. In Tamil Nadu, 10 CBMWTFs are in operation. The total installed capacity of the 10 CBMWTFs in operation is 90.35 TPD (Incinerator: 56.5 TPD & Autoclave: 33.85 TPD).

#### **4.1.2. COVID-19 Bio-Medical Waste Management**

COVID-19 Bio-Medical Waste generated from Health Care Facilities, Testing Centres, Labs and Urban Local Bodies are collected, treated scientifically, and disposed of through 10 CBMWTFs located in Tamil Nadu as per the Guidelines issued by the CPCB for COVID-19 waste management. Based on the CPCB revised Guidelines for COVID waste management, the TNPCB issued instructions to all CBMWTFs to

operate their facilities for extra hours to treat the increased quantity of COVID-19 BMW completely.

TNPCB has issued permission to the Treatment Storage Disposal facility (TSDF), Gummidipoondi to utilise the existing Hazardous Waste incinerator to incinerate COVID-19 bio medical waste as per the CPCB Guidelines.

The daily collection and disposal of COVID-19 Bio-Medical Waste are uploaded on the TNPCB website. Average daily generation of COVID-19 waste during the period January 2021 to January 2022 is 9.5 Tons.

#### **4.2. Solid Waste Management (SWM)**

Solid waste consists of biodegradable and non-biodegradable waste generated from domestic, commercial and industrial activities. The Solid Waste Management Rules prescribe responsibilities of local bodies for proper

collection, treatment and disposal of municipal solid waste. In Tamil Nadu, 219 Authorizations as per the SWM Rules have been issued covering Corporations, Municipalities and Town Panchayats which generate more than 5 tons of solid wastes per day.

To prevent the dumping of solid waste near the water bodies, the Hon'ble NGT in its order dated 31.3.2022 in O.A. No. 95 of 2021 & 30 of 2020 has directed the Chief Secretary to Government, State of Tamil Nadu, Additional Chief Secretary for Environment, Climate Change and Forest Department, Additional Chief Secretary for Municipal Administration and Water Supply Department and Principal Secretary for Rural Development & Panchayat Raj Department to personally review and to submit the action plan for the implementation of the Solid Waste Management Rules, 2016 in the State of Tamil Nadu in an effective manner.

To prevent dumping of solid waste into water bodies and to enhance vigil and monitoring, flying squads have been formed in Chennai, Vellore and Salem Districts.

#### **4.2.1. Bio-mining of legacy waste**

Solid Waste Management Rules mandate Local Bodies to carry out Bio-mining of old dumpsites and reclamation of land. Accordingly, the Bio-mining of legacy waste has been initiated by Local Bodies in 144 dumpsites in the State, of which 49 sites have been completed. In the remaining 95 sites, work is in progress.

#### **4.3. Plastic Waste Management**

Rapid increase in population, urbanisation, economic levels and industrial growth has led to massive increase in the plastic waste generation. Average estimated plastic waste generation from 21 Corporations, 138 Municipalities and 505 Town Panchayats of Tamil Nadu during 2020-21

is 1178 tons/day. The plastic waste collected is segregated by the respective urban Local Bodies; the recyclable plastic waste is sold to recyclers and non-recyclable plastic waste is sent for co-incineration in cement plants.

The Board has issued registration to 29 compostable plastic manufacturing units and 230 plastic waste recycling units under Plastic Waste Management Rules.

#### **4.3.1. Ban on Single Use Plastics (SUP)**

The Government vide G.O.(Ms) No.84, Environment and Forests (EC.2) Department, dated 25.06.2018 have issued orders to ban certain types of one-time use and throwaway plastic items including plastic carry bags irrespective of thickness and size. The ban is in effect from January 2019.

### **4.3.2. Implementation of Ban on SUP**

In coordination with line departments, the Board has taken action for effective implementation of the ban on plastic, which includes awareness programmes through regional conferences, district environmental committee meetings, rallies at district headquarters, messages through social media and display board in National Highway toll gates etc.

### **4.3.3. Enforcement of Ban on SUP**

Closure direction and disconnection of power supply were issued to 170 industries (January 2019 to March 2022) involved in the manufacture of banned plastic manufacturing items, including non-woven carry bags, plastic carry bags, water pouches, etc.

TNPCB has issued a press release on 23.11.2021 to seek the cooperation of the public

by way of appreciation and rewards for their information about the illegal banned plastic manufacturing units to the respective jurisdictional District Environmental Engineers, TNPCB through e-mail / letter / phone calls / Whatsapp, as their contribution to protect the environment. Based on the information received from the public, 53 numbers of plastic units manufacturing banned plastic items were identified and closed by TNPCB.

From January 2019 to March 2022, regular raids were conducted throughout the State by the urban local bodies and 1682 tons of banned SUPs were seized, also a fine of Rs. 1041 Lakhs was imposed.

#### **4.3.4. Awareness Activities on SUP Ban Iconic Week celebrations**

In view of the Iconic Week (04<sup>th</sup> to 10<sup>th</sup> October 2021) celebrations to mark 2022 as the 75th year of independence and to phase out



single use plastic by 2022, the following activities were taken up by the TNPCB:

- TNPCB has uploaded the publicity and awareness creation materials on phasing out of the SUP on the TNPCB website, <https://tnpcb.gov.in>.
- A public notice (Appeal to the public) to stop using single use plastics and to use eco-friendly materials has been displayed on the home page of TNPCB <https://tnpcb.gov.in>
- Posters of more than 1000 numbers have been displayed in the District Collectorates, District offices of TNPCB, Government offices, schools, colleges, commercial establishments, etc., throughout the State.
- Circulars / notices / pamphlets on the banned plastic items, their ill effects

and alternatives to banned plastics have been issued to the public by the TNPCB officials at all the districts in coordination with the District Administration.

- TNPCB has issued Press Release in both English and Tamil on the ill effects of single use plastics. The Government's effort to enforce the ban on SUP was elaborated, and the people's cooperation and support to eliminate the same were sought.
- All the District officials of TNPCB have conducted awareness campaigns during the second week of December 2021 in coordination with the District Collectors vested with the responsibility of ensuring the prevention of storage, supply, transport, sale, and use of banned plastic items. The awareness

campaign carried out in various districts includes viz., vehicle campaign, distribution of pamphlets to the public, display of posters in public gathering areas such as hospitals, hotels, industrial estates, Malls, Bus stands, Railway stations, theatres etc. A compendium on the awareness campaign carried out in each district of Tamil Nadu by the TNPCB was also prepared.

#### **4.3.5. Implementation of People's Campaign ("Meendum Manjappai" Campaign)**

The Government of Tamil Nadu has issued a G.O. (Ms) No. 116 of Environment, Climate Change & Forest (EC.2) Department dated 27.11.2021 notifying the following four-pronged strategy to be adopted to fight plastic pollution and eliminate single use plastics:-

- Support people's movement against plastic through communication that is impactful and innovative.
- Design a framework for effective monitoring and reporting on implementation of the plastic ban across the State.
- Coordinate and interface with stakeholders to design and popularise sustainable eco-friendly alternatives.
- Work with Industry, Micro, Small and Medium Enterprises and other stakeholders to create a road map for large scale production of eco-friendly alternatives to plastic packaging through workshops, seminars and knowledge sharing.

#### **4.3.6. Meendum Manjappai Campaign at State level**

Meendum Manjappai campaign aims to raise awareness among public to eliminate the usage of banned single used plastics and revive the use of traditional eco-friendly alternatives viz., Manjappai (Yellow cloth bag)

The Hon'ble Chief Minister of Tamil Nadu inaugurated a mega event titled "Meendum Manjappai campaign" on 23.12.2021 at the Kalaivanar Arangam, Chepauk, Chennai and launched the "Manjappai" logo for the campaign. The Hon'ble Chief Minister also inaugurated an exhibition of stalls displaying various eco-friendly alternatives along with the machinery for the production of eco-friendly alternatives such as banana leaf products, fibre/rice bran/rice husk / agricultural products, areca leaves products, edible cutlery products, coconut shell products, coir products, pottery products,

palm products, cloth/jute products, compostable carry bags/cutlery products, cloth banners, including a stall demonstrating activities undertaken under Extended Producer Responsibility initiatives in the State (EPR). An awareness short film on the ill effects of single use plastic was screened and an appeal was also made to the public to use traditional cloth bags (Manjappai) and avoid single use plastics.

#### **4.3.7. Meendum Manjappai Campaign at District level**

The "Meendum Manjappai" campaign is being conducted at the District level in all districts of Tamil Nadu to create a People's movement against throwaway plastic involving all stakeholders from various sectors like Traders Association, Merchants Association, Social clubs, Local Bodies, Schools, Colleges and Industries.

#### **4.3.8. "Meendum Manjappai" - Awareness activities**

- A teaser and short film Part I & II were produced with a celebrity actor to create massive awareness among the public.
- Massive awareness was made in the leading Tamil and English Newspapers throughout the State with advertisements about the launch of the "Meendum Manjappai" campaign.
- The advertisement teaser was released in the leading TV channels a week before the launch of the campaign.
- The short film Part-I was released on the leading TV channels from 23.12.2021.
- Short Film II was released after Pongal festival to review the progress in

awareness created on the usage of Manjappai.

- Around 3000 Manjappai's were distributed to the Press people and participants during the State level campaign.
- Awareness audio messages to use cloth bags/alternatives to single use plastics were broadcast on leading FM radios from 23.12.2021.
- Social media campaign was also launched through Facebook, Instagram, Twitter and LinkedIn well ahead of the campaign for creating massive awareness among the youth on the use of cloth bags/alternatives to single use plastics.



- An exclusive "Meendum Manjappai" page was created on Facebook, Instagram, Twitter and LinkedIn.

#### **4.3.9. State Level Special Task Force (STF)**

The Government vide G.O(Ms)No.25, E,CC&F Department, dated 07.02.2022 have constituted a State level Special Task Force (STF) under the Chairmanship of Chief Secretary, District level task force under the Chairmanship of District Collector and under the Chairmanship of the Commissioner for Greater Chennai Corporation area for monitoring the implementation of Single use plastic (SUP) ban. The first meeting of the STF was held on 05.03.2022. All the nodal departments have been addressed to implement the action points and make the initiatives for massive success in the State of Tamil Nadu.

#### **4.3.10. State Action Plan for the elimination of banned Single Use Plastics**

The State Action Plan has been prepared by the Government for the elimination of banned Single-use plastic, and implementation of activities under Plastic Waste Management Rules, 2016 as amended and submitted to the MoEF&CC, GoI.

#### **4.4. Construction and Demolition Waste Management**

Construction and Demolition (C&D) waste consists mainly of inert and non-biodegradable material such as concrete, plaster, metal, wood, plastics etc., which have the recycling value. The Construction and Demolition Waste Management Rules prescribe that the local bodies shall ensure proper management of construction and demolition waste. Large Corporations such as Chennai, Madurai, Coimbatore, Tiruchirapalli and Tiruppur have proposed to set up such processing facilities. In

Greater Chennai Corporation, two facilities of 400 TPD capacity each are in operation, one at Kodungaiyur and another at Perungudi dumpsite. The Greater Chennai Corporation has established collection centres in 15 zones for receiving Construction and Demolition Waste.

#### **4.5. E-Waste Management**

The producers of the electrical and electronic equipment shall be responsible for the collection and channelisation of e-waste generated from the 'end-of-life' of their products under Extended Producers Responsibility (EPR) as per the E-Waste Management Rules, 2016. The CPCB issues EPR authorisation to the producer, and the TNPCB monitors the compliance of the provisions of the E-Waste Management Rules, 2016. The TNPCB grants Authorisation to manufacturers, dismantlers, recyclers and refurbishers and details are uploaded on the TNPCB website.

The National Productivity Council (NPC), Chennai had carried out the E-Waste inventorisation in the State of Tamil Nadu and submitted a list of inventory of manufacturers, dismantlers, recyclers and refurbishers in the State.

In the study carried out by the NPC, Chennai, the total generation of E-Waste on weight basis is estimated to be 4,00,482 MT for the year 2020 and for the year 2030 it is projected to 5,78,356 MT for the entire state of Tamil Nadu.

About 8831 stakeholders (manufacturers, sellers, producers, bulk consumers, refurbishers, collection centers and recyclers) have been identified and directory of stake holders have been prepared. Action is being taken to inventorize all the stakeholders (as per the list) and to bring them under the purview of TNPCB for the scientific disposal of E-Waste.

## **4.6. Hazardous Waste Management**

Hazardous waste is managed as per the provisions of the Hazardous and Other Wastes (Management and Transboundary Movement) (HOWM) Rules, 2016. In 2020-21, 7.95 lakhs tons of hazardous waste was generated, of which 0.85 lakhs tons (10.69%) were found to be fit for landfill, 1.24 lakhs tons (15.59%) recyclable, 5.76 lakhs tons (72.52%) utilisable and 0.095 lakhs tons (1.19%) incinerable. The Board is taking effective steps in handling, management, treatment and disposal of hazardous waste in an environmentally safe manner.

### **4.6.1. Co-processing of Hazardous Waste in Cement Industries**

Utilisation of hazardous waste by co-processing in cement plant is considered as an environmentally sustainable option. Based on the CPCB guidelines, the Board has permitted the use of hazardous and other waste in cement

kilns either as alternate raw material for co-processing or as alternate fuel. Subject to the compliance criteria specified, Authorisation under HOWM Rules, 2016 has been granted to 12 cement industries to process 18.52 lakhs Tons of utilisable wastes in cement kilns for co-processing annually. During 2020-21, about 1.7 lakhs Tons of Effluent Treatment Plant (ETP) sludge has been utilised in various cement industries of Tamil Nadu for co-processing.

#### **4.6.2. Hazardous Waste pre-processing facilities**

In order to encourage co-processing of hazardous waste in cement kilns for beneficial purposes, 4 hazardous waste pre-processing facilities have been authorised for pre-processing of hazardous and other waste to make a homogenised mixture of materials suitable for co-processing in the cement kilns for direct use either as raw material substitution or

fuel supplementary. These facilities have pre-processed 0.32 lakh Tons of hazardous and other waste during 2020-2021 and sent for co-processing in cement industries.

#### **4.6.3. Remediation of Hazardous Waste Contaminated Site**

- M/s. Tamil Nadu Chromates and Chemicals Limited, SIPCOT Ranipet, Ranipet district closed its operations in 1995. The chromium sludge about 2.2 lakhs tones which was generated during the operation of unit was dumped within the unit's premises in an area of 2 hectares. In order to avoid ground water pollution due to this dumpsite, a detailed project report was prepared through the CPCB for secured capping of the dumpsite at a project cost of Rs. 12 crores. The Board is taking action to implement the project.

- M/s. Hindustan Unilever Limited, Kodikannal is carrying out the soil remediation of mercury contaminated area in the unit's premises since March 2021. The activity is being carried out under the supervision of National Environmental Engineering Research Institute (NEERI). Until March 2022, 1755 sq.metre area of the site was remediated. The Board has instructed the unit to complete the balance area of 16097 sq.metre before March 2024.
- In 2013, there was an oil leakage in petroleum product conveying underground pipeline owned by M/s. Bharath Petroleum Corporation Limited in Tondiarpet area, Chennai. As a result, the ground water got contaminated. In order to remediate the contamination in the groundwater, the BPCL has started the remediation works



the work is on for the past six years. Now the remediation is nearing completion. In the meantime, as per the directions of the Hon'ble National Green Tribunal, the Indian Council for Medical Research have commenced health study in the above area so as to assess the health impact on the general public living in that area.

#### **4.6.4. Steps taken to recover and reuse the Mixed Salt generated from the Zero Liquid Discharge (ZLD) system of Textile and Tannery units**

In Tamil Nadu, about 82,000 tonnes and 1,09,374.5 tonnes of mixed salt generated from the Zero Liquid Discharge (ZLD) system of Tannery units located in Vellore, Ranipet, Tiruppathur, Trichy, Erode, Kanchipuram, Tiruvallur, Dindigul Districts and Textile processing units located in Tiruppur and Erode Districts respectively is stored in their premises.

In this regard, steps are being taken to separate sodium chloride from the mixed salt generated in CETPs of tannery units and trial run is being carried out to utilize the same in the fertilizer units.

The CPCB in its letter dated 03.08.2017 accepted the proposal to conduct trial run for the recovery of mixed salt from Textile Processing industries for industrial use through Salt Pans at Vedharanyam, Nagapattinam District. Based on this, the CPCB has issued Standard Operating Procedure (SOP) during June 2021 for utilization of mixed salt generated from textile units so as to recover salts for industrial use. TNPCB is taking effective steps.

#### **4.6.5. Integrated Environmental Monitoring Studio**

TNPCB is in the process of establishing an Integrated Environmental Monitoring Studio, including a Waste Management Cell for tracking

Hazardous Waste and Bio-Medical Waste, and monitoring Online Consent Management, Care Air Centre, Water quality Watch, Online Legal case Monitoring and Management System (OLMMS), Online Grievances Petition redressal (OLGPRS) system under one roof.

## **5.0. Legal Enforcement Mechanism**

The Board is empowered to file complaints in the court of law, issue closure directions and stoppage of Power supply against defaulting/erring units under the various Environmental Acts.

### **5.1. Appellate Authority**

Appellate Authority at Chennai has been functioning since 2000 and deals with appeals preferred by industries against the orders of the TNPCB.

## **5.2. National Green Tribunal**

The Southern Bench of the National Green Tribunal has been functioning in Chennai since 2012. Any person aggrieved by the orders of the Appellate Authority and by the order passed by TNPCB / State Government can prefer an appeal before the NGT within 30 days of the order passed by the Board / State Government / Appellate Authority. The Board has developed a software module to track the legal cases.

## **5.3. Online Legal Case Management and Monitoring System (OLMMS)**

TNPCB has developed an Online Legal Case Management and Monitoring System (OLMMS) for monitoring/tracking legal cases filed in various Courts viz. Hon'ble Supreme Court of India, Hon'ble High Court of Madras, Madurai bench of Hon'ble High Court of Madras, Hon'ble NGT and Appellate Authority.

## **6.0. Miscellaneous Activities**

### **6.1. ECOmmute Day**

TNPCB has set an example to reduce carbon footprint by observing "Weekly Pollution-free Office Commute Day" called "ECOmmute" every Wednesday that other Government organisations and private institutions can follow. All employees of TNPCB use either non-polluting transport mode or public transport mode to commute between their home and office every Wednesday. Several District Collectors and Private industries inspired by this concept have started to observe ECOmmute day in their Districts/organisations. Its economic, health and environmental benefits will be visible when it becomes a mass movement.

## **6.2. Environmental Training Institute**

The Environmental Training Institute (ETI) of TNPCB functions in the Head office of TNPCB and provides training to the Board staff, industrial representatives, executives of Municipalities, Corporations, line departments and NGOs on pollution control and environmental protection.

## **6.3. Environmental Awareness Programme**

To create awareness among the public and to take positive action to protect the environment, the Board conducts various environmental awareness programmes every year through rallies, environmental quiz competitions, planting tree saplings, campaigns through auto-rickshaws, distribution of pamphlets, display boards, broadcasting in FM Radio and screening of short films through visual media etc. In addition, during Deepavali and Bhogi festival season, the Board conducts a

special air quality survey. The Board also monitors the water quality of the water bodies before and after the immersion of Vinayagar idols, and reports are sent to CPCB.

#### **6.4. Online Grievance Petition Redressal System (OLGPRS)**

To redress the environmental pollution-related public complaints, the Board has established an online Grievance Petition Redressal Mechanism for filing complaints. An "OPEN HOUSE SESSION" (OHS) is conducted on 5<sup>th</sup> of every month at TNPCB offices to make Board's functions more transparent and generate confidence and trust among the stakeholders.

#### **7.0. New initiatives taken up during 2021-22**

- Consent to Operate (CTO) / RCO to Red, Orange and Green Category Industries are issued as a block instead of issuing every

year as per Ease of doing business policy of the Government.

- TNPCB is in the process of issuing Green Champion Awards of Rs.1 Lakh each for 100 individuals / Organizations / Industries every year for those who have participated proactively and made exemplary contributions to environment protection involving the District Collectors at a cost of Rs.1 Crore. Tamil Nadu Pollution Control Board has taken steps to award Green Champion Award, on June 5<sup>th</sup> of every year.
- Considering the need for Monitoring Industries at Hotspots & vulnerable areas and enhanced supervision and handling of investigation/ Complaints within the stipulated time, three new Assistant Environmental Engineer (AEE) Offices at Manali, Ranipet and Mettur have been set up



at a cost of Rs.2.55 crores and they started functioning.

- TNPCB has decided to form Flying Squads at Chennai, Vellore and Salem, to have improved vigil and monitoring of water bodies from the disposal of industrial waste, sewage and municipal solid waste at a cost of Rs.1.72 crore and they are also started functioning.
- To improve the efficiency in the monitoring mechanism and to closely monitor the Chemical industries located in the SIPCOT industrial complex Cuddalore and Thermal power plants in Neyveli, a Joint Chief Environmental Engineer, JCEE (M), Cuddalore office has been set up at a cost of Rs.5 crores and a new office it is functioning.
- Establishment of permanent water quality monitoring stations along major rivers in a

phased manner over the next three years and online monitoring of sewage treatment plants on a real-time basis at a cost of Rs.2.0 crores has been undertaken. The works relating to Real-time Water Quality Monitoring Station (RTWQMS) at 3 locations in Tamirabarani and the manual monitoring stations are in progress.

- Information Technology (IT) Wing has been decided to be formed as per the e-governance policy of Tamil Nadu for maintaining various IT Applications viz Online Consent Management and Monitoring System (OCMMS), Online Grievance Petition Redressal System (OLGPRS), Continuous Ambient Air Quality Monitoring Stations (CAAQMS), Water Quality Watch, Continuous Water Quality Monitoring Stations, Online Bio-Medical Waste Tracking Module, Online Legal Case Management and Monitoring

System and Online Hazardous Waste Manifest Monitoring System at a cost of Rs.7.5 crores. At present the said wing has been formed and is functioning.

- Setting up of Integrated Environment Monitoring studio is being initiated by TNPCB for monitoring of all online modules of Consent, Authorization, Care Air Centre, Water Quality Watch, Hazardous waste and Bio-Medical waste Tracking system, Geo-spatial information system (GSS), Online Legal module and forecasting air quality on a real-time basis with an early warning system under one roof at a cost of Rs.64 crores.
- A Green park in Thousand light area at cost of Rs.2.0 crores is proposed to be established through Greater Chennai Corporation.

- Purchase of 50 vehicles at a cost of Rs.7.5 crores for the use of Board and Lab and the purchase is under progress.
- In order to facilitate setting up of industries to produce ethanol for automobile use, Government have relaxed the ban for setting up such industries in their existing locations near water bodies.

### **8.0. Sustainable Development Goals**

The Sustainable Development Goals (SDGs) are an inter-governmental agreed set of targets relating to international development to end poverty, protect the planet and ensure that all the people enjoy peace and prosperity. The SDGs cover 17 goals and 169 targets resolved in UN Summit held in September 2015. India is a signatory of the 2030 Agenda, committed to achieve SDGs. The Goals, Targets and Indicators pertaining to TNPCB are as follows:

## **Goal - 6, 'Clean Water and Sanitation'**

set a target - 6.3, by 2030, to improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

This Goal comes under Working Group-2 'Health Care and Sanitation'. Though this Goal is not directly linked to TNPCB but linked indirectly through the Indicator 6.3.2. "Percentage of industries complying with waste water treatment"

Further, this indicator is monitored at the National level, under the National Indicator Framework. The SDG India Index 2.0 (2019) value for this indicator is 99.1, and score for the indicator is 98. The SDG India Index 3.0 (2020) value for this indicator is 98.23 and score for the indicator is 96. The TNPCB emphasises all the

highly polluting industries to achieve Zero Liquid Discharge (ZLD) of trade effluent thereby recycling the treated waste water and reducing the consumption of 87 MLD of raw water for industrial purpose.

**Goal - 9, 'Industries innovation and infrastructure'** set a target - 9.2, to promote inclusive and sustainable industrialisation and by 2030, significantly raise industries share of employment and gross domestic product in line with national circumstances and double its share in least developed countries.

This Goal comes under Working Group-5 'Innovation, Industrialisation and Sustainable Development'. Though this Goal is not directly linked to TNPCB but linked indirectly through the Indicator 9.2.3. "Number of locations, where PM<sub>2.5</sub> exceeds normal level."

The TNPCB monitors ambient air quality at 87 stations covering the district headquarters and major industrial clusters. The TNPCB has proposed to establish furthermore 25 CAAQMS in the State during the year 2022-23 to monitor the air quality in the cities / urban / rural areas of Tamil Nadu. Four cities were identified as non-attainment cities with reference to particulate matter level. Action is being taken to improve the air quality in these cities. Further, this indicator is monitored at the State level under the State Indicator Framework.

**Goal - 12, 'Responsible Consumption and Production'** set a target 12.4, by 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to

minimise their adverse impacts on human health and the environment.

This Goal comes under Working Group-6 'Sustainable Consumption and Production'. Though this Goal is not directly linked to TNPCB but linked indirectly through the Indicator 12.4.2. Environmental quality monitoring by introduction of monitoring stations across the State. The TNPCB monitors water quality of inland surface water bodies in 143 stations, ground water quality in 22 stations, coastal water quality in 34 stations and ambient air quality at 87 stations in the State. In Chennai city ambient noise level is monitored at 10 locations. The datas are uploaded on TNPCB website.

**Goal - 13, 'Climate Action'** set a target - 13.3, to improve education, awareness raising and human and institutional capacity on



climate change mitigation, adaptation, impact reduction and early warning.

This Goal comes under Working Group-7 'Sustainable Environment and Climate Change'. Strengthening of institutional, systemic and individual capacity building to implement adaptation, mitigation and technology transfer and development actions in the State (Indicator No.13.3.2) is set as one of the Indicator and this comes under TNPCB. The TNPCB conducts training programme through the Environmental Training Institute (ETI) and awareness programme through the District Environmental Engineers on regular basis.

During the year 2021-22, 10 training programmes were conducted by the Environmental Training Institute of TNPCB and 5 training programmes were attended by TNPCB officials. Further, during the year 2021-22, 197

awareness programmes were conducted during festival seasons throughout Tamil Nadu by the District Environmental Engineers of TNPCB.

The TNPCB officials observe ECOmmute Day every Wednesday by travelling to & fro from Board offices through public transport system and eco-friendly means to reduce carbon print. Use of personal / Board vehicles powered by fossil fuels is avoided by the Board employees for their commute to the office every Wednesday. Several District Collectors have begun to observe ECOmmute day in their districts. The Board has also requested other Government Departments to observe ECOmmute Day.

The ECOmmute concept is also encouraged among school students and TNPCB has proposed to award certification to schools as

"ECOmmute School" on meeting the criteria prescribed by TNPCB, with attractive awards and citations. Students will also be awarded certificates.

**Siva. V.Meyyanathan**

**Minister for Environment- Climate Change  
and Youth Welfare and Sports Development**



Hon'ble Chief Minister launching Meendum Manjappai Campaign on 23.12.2021



Hon'ble Chief Minister addressing during Meendum Manjappai Campaign inauguration.



Hon'ble Chief Minister visits stall displaying eco alternatives for single use plastics(SUP)



www.kendriyamahilasamithi.org

### Meerutun Manjapal Awararissa Program Aawararissitt



Multiple Effect Evaporator of a Textile CETP, Tiruppur with recovered salt





Aerial view of textile CETP at Tiruppur



Meendum Manjappai Campaign at Madurai



Aerial view of Sewage Treatment Plant at an Educational Institution in Erode



Atomic Absorption Spectrometer (AAS) In TNPCB Advanced Environmental Laboratory, Chennai



Mobile Continuous Ambient Air Quality Monitoring Station.



Reverse Vending Machine for collection of Plastic bottles for recycling.



E-Waste segregation for recycling in a factory at Oragadam.



Aerial View of capping of hazardous waste secured landfill facility at Gummidipoondi.





Multiple Effect Evaporator with Crystallizer in Textile CETP at Tiruppur



Meendum Manjappal Awareness Programme at Erode