

Government of Puducherry

Department of Science, Technology & Environment
Puducherry Pollution Control Committee



STATUS OF AMBIENT AIR QUALITY

in the U.T. of Puducherry for the year 2022

EIACP HUB NEWSLETTER

Status of Environment & Related Issues in Puducherry

VOLUME XIV-II

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Introduction

Puducherry Pollution Control Committee is carrying out ambient air quality monitoring at the following six locations under the 'National Air quality Monitoring Programme' (NAMP) of Central Pollution Control Board (CPCB). The monitoring of pollutants is carried out for 24 hours (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter) with a frequency of twice a week.

TABLE 1: LOCATION OF NAMP STATIONS

Sl. No.	Location Name	Location Type	Source of Pollution
1.	Local Administrative Department Building (LAD), Suffren Street, Puducherry.	Residential area	Vehicle emission and natural dust from road.
2.	Department of Science Technology and Environment Building (DSTE), Anna Nagar, Puducherry.	Residential-cum-Commercial area	Vehicle emission and natural dust from road.
3.	Electricity Department, Mettupalayam Industrial Estate (PIPDIC), Puducherry.	Industrial area	Industrial Pollution and vehicular pollution.
4.	B.Ed. College, Nehru Nagar, Karaikal.	Residential area	Vehicle emission and natural dust from road.
5.	Govt. Guest House, Kovilpathu, Karaikal.	Residential cum Commercial area	Vehicle emission and natural dust from road.
6.	PPCL, Polagam, T.R. Pattinam, Karaikal.	Industrial area	Industrial Pollution and vehicular pollution.

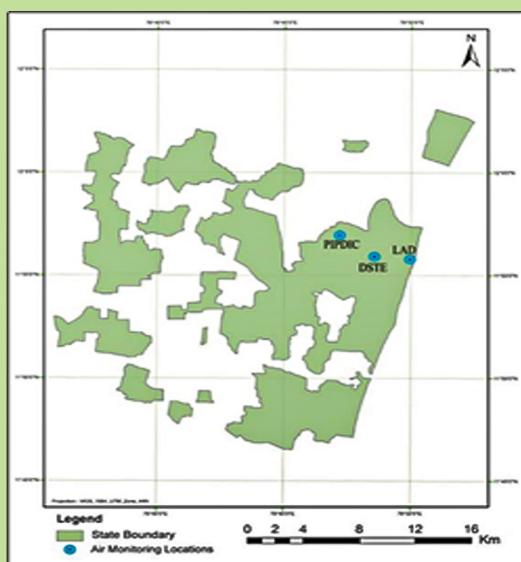


Fig. 1: Puducherry

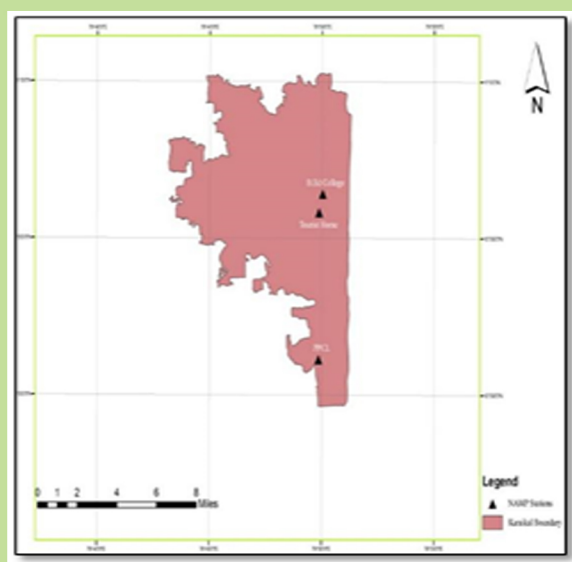


Fig.2: Karaikal

Table 2: Air Pollutants monitored under NAMP

Sl. No.	Air Pollutant	Method of measurement	Possible sources	Effects
1.	Particulate Matter – PM ₁₀ (size less than 10 microns)	Gravimetric	Road traffic emissions particularly from diesel vehicles, Industrial combustion, plants, Commercial and residential combustion.	Visibility reduction cardio-pulmonary problems asthma, bronchitis, and pneumonia in order people.
2.	Nitrogen dioxide	Improved West and Gaeke method	High temperature combustion (internal combustion engines, fossil fuel-fired power stations, industrial), Burning of Bio-mass and Fossil Fuels.	Irritates the nose and throat increase susceptibility to respiratory infections.
3.	Sulphur di Oxide	Modified Jacob and Hochheiser	Combustion of fossil fuel. Combustion process in diesel, petrol.	Respiratory illness, Visibility impairment.

Table 3: Annual average Concentration of Pollutant

Sl.No.	Location	Pollutant in µg/m ³		
		PM ₁₀	SO ₂	NO ₂
1.	LAD	53	4.1	12.8
2.	DSTE	54	3.3	12.3
3.	PIPDIC	40	3.1	12.2
4.	B.Ed college, Karaikal	38	2.1	4.8
5.	Govt. Tourist Home, Karaikal	50	2.4	5.1
6.	PPCL, Karaikal	39	2.1	4.8
	Annual Standard	60	50	40

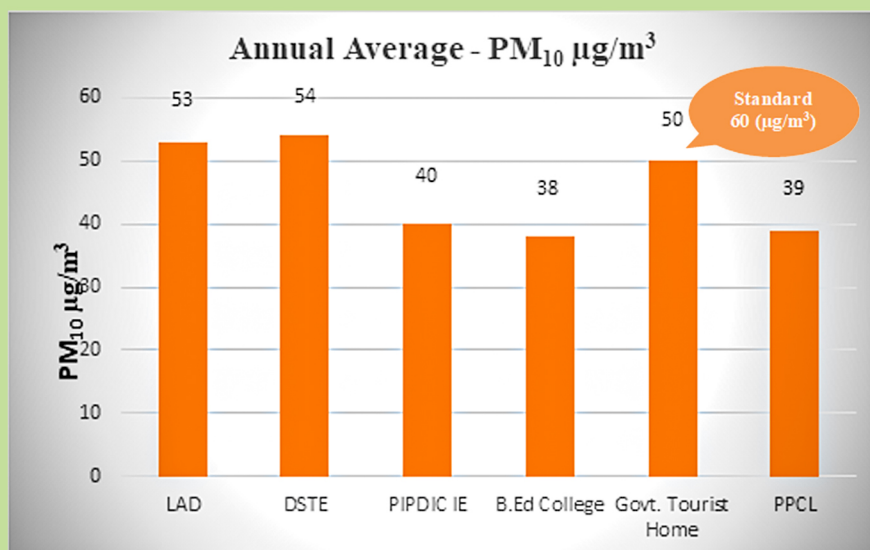


Fig 3: PM₁₀

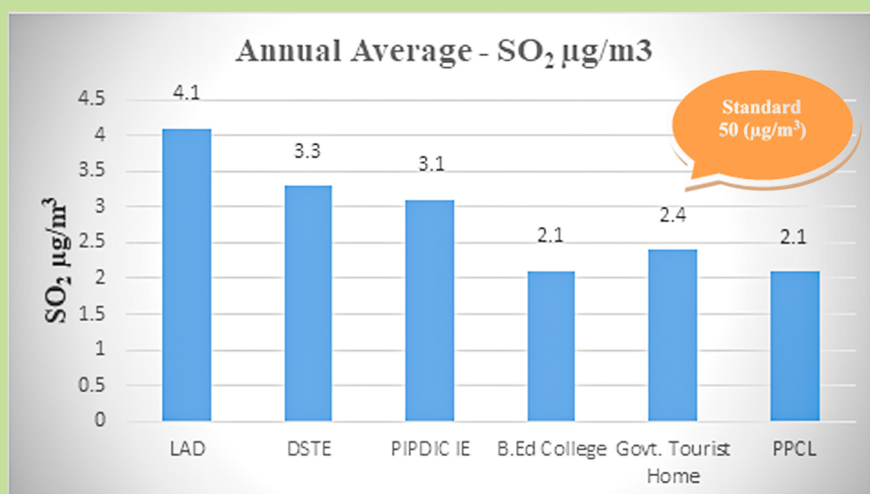


Fig 4: SO₂

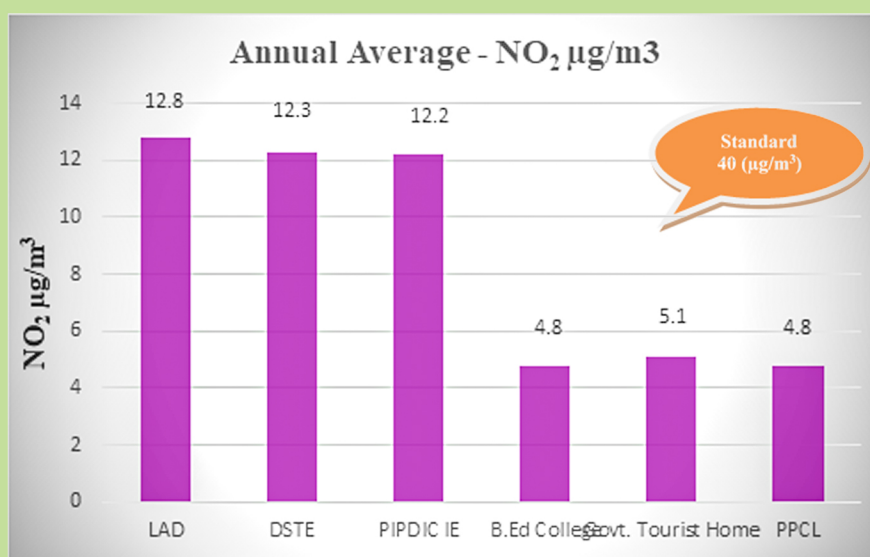


Fig 5: NO₂

Status

- The monitoring results reveals that 24 hourly average concentration of Particulate Matter PM_{10} measured in all the six locations are within the prescribed standard limit of $100 \mu\text{g}/\text{m}^3$. PM_{10} concentration exceeded the prescribed standard limit during the Diwali festival.
- Annual average concentration of PM_{10} measured the six locations are in the ranges from 38 –54 ($\mu\text{g}/\text{m}^3$) which is within the prescribed standard limit of $60 \mu\text{g}/\text{m}^3$.
- The annual average concentrations of SO_2 & NO_2 in all the six locations are within the prescribed standard limit. One of the reasons for low levels of pollution in coastal cities like Puducherry is that it has excellent ventilation effects due to sea and land breezes which dilute the pollution levels.

Continuous Ambient Air Quality Monitoring Station (CAAQMS)

Puducherry Pollution Control Committee is operating one CAAQMS at the terrace of Town and Country Planning Department with the financial assistance of Central Pollution Control Board. Parameters monitored in CAAQMS are given Table.

Parameters monitored in CAAQMS

Parameters Monitored	Meteorological Parameters Monitored
<ul style="list-style-type: none">● Particulates (PM_{10} & $PM_{2.5}$)● Sulfur Dioxide (SO_2)● Oxides of Nitrogen (NO, NO_2, NO_x) and ammonia● Carbon Monoxide (CO)● Ozone (O_3)● Benzene	<ul style="list-style-type: none">● Temperature ($^{\circ}\text{C}$)● Relative Humidity (%)● Barometric Pressure (mm Hg)● Solar Radiation (Watts/m^2)● Wind Direction (Degrees)● Wind Speed (m/sec)

Air Quality Index is a tool for effective communication of air quality status to people in terms, which are easy to understand. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour.

There are six AQI categories, namely Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (known as health breakpoints). Health Breakpoint concentrations for each of the pollutant vary with reference to the AQI category. The sub-indices for individual pollutants are calculated using its 24-hourly measured average concentration value of a pollutant

and health breakpoint concentration range. The sub-index is a linear function of concentration of a particular pollutant (for example, the sub-index for $PM_{2.5}$ will be 51 at concentration $31 \mu\text{g}/\text{m}^3$, 75 at concentration of $45 \mu\text{g}/\text{m}^3$ and 100 at concentration $60 \mu\text{g}/\text{m}^3$).

AQ sub-index and health breakpoints are evolved for eight pollutants (PM_{10} , $PM_{2.5}$, NO_2 , SO_2 , CO , O_3 , NH_3 , and Pb) for which short-term (upto 24-hours) National Ambient Air Quality Standards are prescribed. The worst sub-index among the computed parameters is responsible for the index for that location. All the eight pollutants may not be monitored at all the locations. Overall AQI is calculated only if data are available for minimum three pollutants, out of which one should necessarily be either $PM_{2.5}$ or PM_{10} .

The overall AQI can give clear view about ambient air and the report reveals that PM_{10} is mainly responsible to determine the air quality which can be easier for a common man to understand. The PM_{10} concentration in the Puducherry and Karaikal region is sourced predominantly from the anthropogenic activity, which may be due to the increase in vehicle movement, road dust, bursting of crackers etc.

AQI is an initiative intended to enhance public awareness and involvement in efforts to improve air quality. People can contribute by maintaining vehicles properly (e.g. get PUC checks, replace car air filter, maintain right tyre pressure), following lane discipline & speed limits, avoiding prolong idling and turning off engines at red traffic signals. In addition to above, avoid using private vehicles and instead use public transport/walk/carpool.

Table 4: Status of Category-wise numbers of AQI

AQI Category	AQI Range $\mu\text{g}/\text{m}^3$	Colour Code	Number of AQI Values in different category		Possible Health Impacts
			No of AQI Values	% of AQI Values	
Good	0-50		176	48.2	Minimal Impact
Satisfactory	51-100		167	45.8	Minor breathing discomfort to sensitive people
Moderate	101-200		17	4.7	Breathing discomfort to the people with lung, heart disease, children and older adults
Poor	201-300		3	0.8	Breathing discomfort to people on prolonged exposure
Very Poor	300-400		2	0.5	Respiratory illness on prolonged exposure
Total AQI Values			365	100	

Note:- AQI Calculated for daily ambient air quality data at one station.

The result reveals that during the year 2022 air quality indicates that 48.2% values falls in good category, 45.8% falls under satisfactory category, 4.7% falls under moderate, 0.8% falls under poor category and 0.5% falls under very poor respectively.

Webinar on E-Waste Management



Webinar on E-Waste Reduced under LiFE Mission on the topic 'E-Waste Management – Need of the Hour' delivered by Dr. Brajesh Kr. Dubey, Professor, Environmental Engineering and Management, Chair - School of Water Resources and the Principal Investigator of Sustainable Engineering and Circular Economy Research Laboratory, Department of Civil Engineering, Indian Institute of Technology – Kharagpur (IIT-KGP), India on 27.04.2023.

Youth Parliament Debate Competition



Puducherry EIACP Hub conducted Phase-I Debate Competition for Youth Parliament held on 08.05.2023 at Dr. Abdul Kalam Science Centre and Planetarium, Lawspet, Puducherry on the topic 'Individual Behaviour and habits have an impact on environment and climate change' for the students of Universities/Institutions in the U.T. of Puducherry.

National Technology Day



Puducherry EIACP Hub organized and celebrated "National Technology Day" at Vudhavi Karangal Samuganala Thodar Kalvi Iyakkam for Boys, Puducherry on 11.05.2023. A special lecture was given by N. Sridhar, DEO, Puducherry EIACP PC Hub on E-Waste reduced and also conducted elocution competitions for the students.

Mission LiFE (Jan Bhagidari) & International Day for Biological Diversity (IDBD)



Puducherry EIACP Hub conducted various competition i.e., Colouring, Drawing Competition and Elocution Competition for the school & college students on the occasion of International Day for Biological Diversity (IDB) & Mission LiFE Programme held on 19.05.2023 at Dr. Abdul Kalam Science Centre and Planetarium, Lawspet, Puducherry.

Mega Beach Cleaning



Puducherry Pollution Control Committee in coordination with Puducherry EIACP PC Hub conducted Mega Beach Clean Up Event and Coastal Awareness walkathon Rally held on 21st May, 2023 at Promenade Beach and Manapet Pudukuppam Beach, Puducherry.

Mission LiFE Awareness



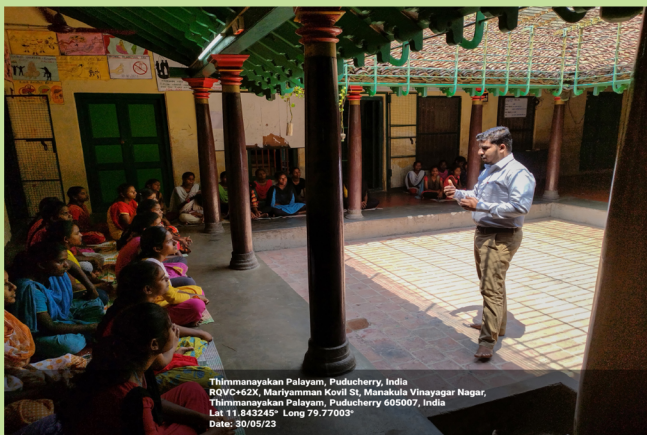
Puducherry EIACP Hub conducted Mission LiFE awareness programme at Sri Manakula Vinayagar Engineering College Puducherry on 22.05.2023. A special lecture on Mission LiFE given by J. Nithiya, Programme Officer, Puducherry EIACP PC Hub.

Workshop on Marine Litters



Puducherry EIACP Hub in coordination with Centre for Pollution Control and Environmental Engineering, Pondicherry University jointly organized workshop on Marine Litters: Assessment Methods and Case Studies held on 25.05.2023 at Centre for Pollution Control and Environmental Engineering, Pondicherry University.

Mission LiFE Awareness



Puducherry EIACP Hub conducted Mission LiFE awareness programme at Vudhavi Karangal Samuganala Thodar Kalvi lyakkam for Girls, Puducherry on 30.05.2023. A special lecture on Mission LiFE was given by N. Sridhar, DEO, Puducherry EIACP PC Hub on E-Waste reduced.

World No Tobacco Day



Puducherry EIACP Hub in coordination with Keep Namma Pondy Clean organisation has jointly organized awareness programme to the waste professionals on 30.05.2023 & 31.05.2023 at 5 different locations.

World Environment Day, 2023:



Department of Science, Technology & Environment, Puducherry Pollution Control Committee (PPCC) along with EIACP Hub and Puducherry Climate Change Cell (PCCC) jointly organized the following activities from 02.06.2023 to 05.06.2023 on the occasion of World Environment Day.

- Drawing & Quiz Competitions.
- Clean-up drive and mangrove rejuvenation activity at Thengaithittu Mangrove Area along the Fishing Harbour Road from 02.06.2023 to 12.06.2023.
- Plastic litter clean-up drive is organized in the mangroves at Arts and Crafts Village, Murugapakkam on 03.06.2023.
- Tamil Pattimandram (Debate) by Kalaimamani Kalakkal Kangeyan and team for popularizing LiFE Mission at Gandhi Thidal, Goubert Avenue, Puducherry.
- Sand Sculpture on Marine Litters.
- Release of Annual Environment Survey Report, Green Budget for the U.T. of Puducherry, Braille Book on Mission LiFE, SUP Free campus logo.
- Launched "One Home One Tree Program" by our Hon'ble Chief Minister, Government of Puducherry.



World Oceans Day, 2023

Puducherry Pollution Control Committee in collaboration with Puducherry EIACP Hub organized Coastal Clean-up drive at Veerampattinam, Puducherry on the occasion of World Oceans Day on 08.06.2023.



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