

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE AT CHENNAI

Original Application No. 64 of 2025

S.Subramani,
S/o. Samikannu,
No. 118, Ambedkar Street,
Vengathur, Manavala Nagar,
Thiruvallur Taluk & District - 602 002.

.....Applicant

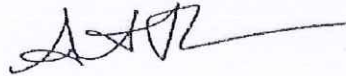
-Vs-

The Secretary to Government of Tamil Nadu
Environment Climate Change Department,
St. George Fort, Chennai- 600 009 and Others.

... Respondents

INDEX

S.No	Description	Page No.
1.	Report filed on behalf of The Fourth Respondent – Tamil Nadu Pollution Control Board	1-7



Advocate for Respondent: TNPCB
Thiru.S.Sai Sathya Jith,
Advocate, Chennai.

Status Report submitted to the Hon'ble National Green Tribunal, SZ by the Second and Third Respondents - TAMIL NADU POLLUTION CONTROL BOARD (TNPCB) in Original Application No. 64 of 2025 which is filed by filed by S.Subramani, S/o Samikannu, No.118, Ambedkar Street, Vengathur Taluk & Manavala Nagar, Thiruvallur Taluk & District against the The Member Secretary, Tamil Nadu Pollution Board, Chennai and 7 others.

The Hon'ble National Green Tribunal (SZ) has directed , the Tamil Nadu Pollution Control Board on 09.04.2025, stating that to file a report indicating whether any penalty was imposed on the unit for operating without obtaining the requisite consent and to comply the Hon'ble Order, the Joint Chief Environmental Engineer, Tamil Nadu Pollution Control Board, Chennai submits the report on behalf of the 4th respondents herein.

A. The above direction the status report pertaining to the 6th Respondent unit M/s. J M Constructions comprising the Hot Mix Plant and the Paver Blocks & Hollow Blocks is submitted as follows:

The applicant has filed with the following prayers:

- i) To remove the garbage yard in the open space in S.No.180 of Vengathur Village, Thiruvallur Taluk and District which belongs to Highway Department and adjacent to Poonamallee - Tirupathi National Highway since the Village people have been affected in many ways due to the illegal dumping of solid waste.*

ii) *Directing the 8th Respondent to make alternative space for disposal of solid waste.*

iii) *Pass such further or other orders as this Honourable Tribunal may deem fit and thus render justice.”*

B. On 09.04.2025, stated that an Order was passed by the Hon’ble NGT (SZ), Chennai stating that,

“The Tamil Nadu Pollution Control Board (TNPCB) is directed to inspect the land in question and file a report stating whether the waste has been dumped by the Thiruvallur Municipality in violation of the Solid Waste Management Rules, 2016. If the dumping is found to be illegal, the report shall also indicate whether the waste dumped has been removed and whether any action has been initiated against the concerned authorities in accordance with law.”

C. In the year 2022, the DEE, TNPCB, Thiruvallur addressed a letter to the Block Development Officer, Kadambathur Panchayat Union vide Letter No. DEE/TNPCB/TLR/F-Tech-0050/SWM/2022, Dated: 21.11.2022 to comply with the provisions of the Solid Waste Management Rules, 2016 and to comply with the order dated 02/07/2020 of the Hon’ble NGT (PB), New Delhi in OA No. 606 of 2018, based on the observation of dumping of solid waste indiscriminately at several places including burning and causing environmental pollution and to furnish the compliance report in this regard.

D. As per the reporting by the DEE, TNPCB, Thiruvallur, the Block Development Officer of the Kadambathur Panchayat Union had not furnished action plan on the management of municipal solid wastes generation in the jurisdiction of Kadambathur Panchayat union.

E. A complaint dated 14.07.2023 was received regarding dumping of solid waste in Vengathur Village, Tiruvallur adjacent to Chennai – Tiruvallur Highway causing health hazards to the public. Based on the complaint, the waste dump site at Vengathur Village was inspected on 17.07.2023 by the TNPCB Officials in the O/o DEE, Thiruvallur and reported the following observations

- i. Un-segregated municipal solid waste including plastics generated in and around Kadambathur Panchayat Union was disposed adjacent to Chennai – Tiruvallur Highway in Vengathur, Tiruvallur thereby polluting the environment and also creating nuisance and health hazard to the public.
- ii. The leachate generated from the dump yard will reach nearby land thereby polluting ground water
- iii. The Block Development Officer, Kadambathur Panchayat Union has not taken effective steps to comply with the Solid Waste Management Rules, 2016 and solid wastes were disposed in indiscriminate manner.
- iv. Local body has not obtained Authorization under the Solid Waste Management Rules, 2016 for the management of municipal solid waste generation in their jurisdiction.

- v. Local body has not provided any collection centre for collection of e-waste from the public.

F. Based on the inspection & observation, DEE, TNPCB, Thiruvallur had issued a Show Cause Notice vide Proceeding dated: 17.07.2023 for contravention of Section 24 of the Water (Prevention and Control of Pollution) Act, 1974 as amended to the Block Development Officer, Kadambathur Panchayat Union for which no reply was received from the Kadambathur Panchayat Union for the Show Cause Notice issued.

G. The said complaint site was again inspected by the TNPCB officials of DEE, Tiruvallur on 22.07.2024 and reported that that the local body was found continue to dispose the unsegregated solid waste in indiscriminate manner in Chennai-Tirupathi National Highway in Vengathur village and polluting the environment and also creating nuisance and health hazard to the public.

H. Based on the order passed by the Hon'ble NGT (SZ) dated 09.04.2025, the waste dump site at Vengathur Village was again inspected by the TNPCB officials of DEE, Tiruvallur on 20.05.2025 and again on 04.07.2025 and reported the following observations,

- i. Unsegregated Municipal Solid Waste generated in and around Vengathur village, Kadambathur Panchayat union were dumped haphazardly in Chennai-Tirupathi National Highway in Vengathur village.
- ii. The local body has failed to ensure segregation, collection, and scientific disposal of municipal solid waste as mandated under Rule 15 of SWM Rules, 2016.

- iii. No fencing, signage, or buffer measures have been provided to prevent repeated disposal or protect nearby communities.
- iv. The unsegregated solid waste was dumped in an open area causing environmental pollution and posing health hazards to the public.
- v. The local body has failed to comply with the orders passed by the Hon'ble NGT in O.A.No. 606 of 2018.

I. The alleged site at Vengathur Village was again inspected on 20.09.2025 by the TNPCB officials in the O/o DEE, Tiruvallur and reported that the local body has removed all the dumped municipal solid waste and has provided fencing and signage board to prevent further dumping of municipal solid waste in that location.

J. Based on the recommendations made by the District Environmental Engineer, Thiruvallur, TNPC Board vide Board Proc. No. T5 / TNPCB / SWM / F.034777/2025 dated: 02.01.2026 has issued the following directions to the Kadambathur Panchayat Union under Section 5 of the Environment (Protection) Act, 1986 to comply with.

- I. The Local Authority shall comply with the provisions of Solid Waste Management Rules, 2016 as amended from time to time for the management of municipal solid waste generated within the jurisdiction
- II. The Local Authority shall sensitize the public about source segregation of Municipal Solid Waste and shall ensure the proper management of Municipal Solid Waste including 100% collection of segregated municipal solid waste at source itself as biodegradable

(wet) waste, non-biodegradable (dry) waste and domestic hazardous waste.

- III. The Local Authority shall establish and process the wet waste in the processing facilities such as bio-methanation/ microbial composting/ vermin - composting/ anaerobic digestion or any other appropriate processing for bio-stabilization of biodegradable wastes.
- IV. The Local Authority shall establish and process the dry waste in the processing facilities such as Material Recovery Facilities (MRF) or by the provisions of SWM Rules, 2016
- V. As per Rule 15y of SWM Rules, 2016, the Local Authority shall make an application in Form-I for grant of authorisation for setting up waste processing, treatment or disposal facility, if the volume of waste is exceeding five metric tonnes per day including sanitary landfills from the State Pollution Control Board (DEE, TNPCB, Tiruvallur office)
- VI. The Local Authority shall immediately process and dispose of any dumped solid waste available within the processing facilities, as per the provisions of the Solid Waste Management Rules, 2016
- VII. As per Rule 15z of SWM Rules, 2016, the Local Authority shall submit application for renewal of authorisation at least sixty days before the expiry of the validity of authorisation;
- VIII. The Local Authority shall ensure that no solid waste is dumped or burned in the unauthorized locations or public places within its jurisdiction.
- IX. The Local Authority shall immediately remove the dumped solid waste from the unauthorized locations or public places within its jurisdiction.

- X. The Local Authority shall complete the biomining of legacy waste as per the provisions of the Solid Waste Management Rules, 2016
- XI. The Local Authority shall comply with the conditions imposed in Directions issued vide Board's Proceedings dated: 07.07.2022 to the Commissioner of Municipal Administration, Chennai.
- XII. The Local Authority shall dispose the segregated plastics waste accumulated in the premises to plastic re-processors / recyclers authorized by the Tamil Nadu Pollution Control Board.
- XIII. The Local Authority shall collect the E-wastes separately and send it to the authorised E-Wastes Recyclers.
- XIV. The Local Authority shall comply with the "Guidelines for Management of Sanitary Waste" for the safe disposal of sanitary wastes.
- XV. The Local Body shall prepare and submit a time-bound Action Plan for compliance with the above directions, clearly specifying the activities, implementation timeline, and responsible officials.

This report is submitted to the Hon'ble National Green Tribunal (Southern Zone) in compliance of the directions passed by the Hon'ble Tribunal. The TAMIL NADU POLLUTION CONTROL BOARD (TNPCB) will abide by all such directions, as the Hon'ble Tribunal may deem fit and appropriate.

Dated at Chennai, on this the 6th day of April 2026.


JOINT CHIEF ENVIRONMENTAL ENGINEER
TAMIL NADU POLLUTION CONTROL BOARD
76, MOUNT SALAI, GUINDY,
CHENNAI - 600 032.

BEFORE THE HON'BLE NATIONAL
GREEN TRIBUNAL SZ AT CHENNAI
Original Application No.64 of 2025

IN THE MATTER OF:

S.Subramani,
S/o. Samikannu,
No. 118, Ambedkar Street,
Vengathur, Manavala Nagar,
Thiruvallur Taluk & District - 602 002.

With

The Secretary to Government of Tamil Nadu
Environment Climate Change Department,
St. George Fort,
Chennai- 600 009 and Others.

...Respondents.

**Report filed on behalf of the Fourth Respondent –
Tamil Nadu Pollution Control Board.**

Date of filing : 21.05.2026

Date of hearing : 12.06.2026

Thiru.S.Sai Sathya Jith,
Advocate for 4th Respondent: TNPCB

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 311

LECTURE 10

THE HARMONIC OSCILLATOR

The harmonic oscillator is a fundamental system in physics. It is a system that can be approximated by a simple harmonic oscillator in many cases. The potential energy of a harmonic oscillator is given by $V(x) = \frac{1}{2}kx^2$, where k is the spring constant and x is the displacement from equilibrium.

The equation of motion for a harmonic oscillator is $m\ddot{x} = -kx$, where m is the mass and \ddot{x} is the acceleration. The solution to this equation is $x(t) = A\cos(\omega t + \phi)$, where A is the amplitude, ω is the angular frequency, and ϕ is the phase constant.

$$\omega = \sqrt{\frac{k}{m}}$$
$$T = \frac{2\pi}{\omega} = 2\pi\sqrt{\frac{m}{k}}$$

The total energy of a harmonic oscillator is constant and is given by $E = \frac{1}{2}kA^2$. The energy is shared between kinetic and potential energy, with the total energy being the sum of the two.

The probability density function for a harmonic oscillator is given by $P(x) = \frac{1}{\sqrt{\pi}x_0}e^{-x^2/x_0^2}$, where $x_0 = \sqrt{\frac{\hbar}{m\omega}}$ is the characteristic length scale.

The expectation value of the position is $\langle x \rangle = 0$, and the expectation value of the momentum is $\langle p \rangle = 0$. The expectation value of the energy is $\langle E \rangle = \frac{1}{2}\hbar\omega$.

$$\langle x^2 \rangle = \frac{1}{2}x_0^2 = \frac{\hbar}{2m\omega}$$
$$\langle p^2 \rangle = \frac{1}{2}\hbar m\omega$$

The uncertainty principle is satisfied, with $\Delta x \Delta p = \frac{\hbar}{2}$. The ground state of the harmonic oscillator is a Gaussian wave function centered at the origin.

The excited states of the harmonic oscillator are given by $\psi_n(x) = \frac{1}{\sqrt{2^n n!}} \left(\frac{m\omega}{\hbar}\right)^{1/4} e^{-\frac{1}{2}\alpha x^2} H_n(\alpha x)$, where $\alpha = \frac{m\omega}{\hbar}$ and H_n is the Hermite polynomial of order n .

The energy levels of the harmonic oscillator are $E_n = \left(n + \frac{1}{2}\right)\hbar\omega$, where $n = 0, 1, 2, \dots$. The energy levels are equally spaced, with a spacing of $\hbar\omega$.