

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL  
SOUTHERN BENCH CHENNAI  
Original Application No 186 of 2023(SZ)

IN THE MATTER OF

Ravindranath Shanbhogue, Karnataka : Applicant(s)

Versus

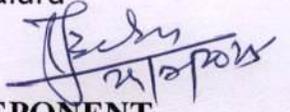
Union of India, Through its Secretary, New Delhi and Ors : Respondent(s)

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Signed and verified on this 24<sup>th</sup> day of February, 2025 at Bengaluru

  
Counsel for  
2<sup>nd</sup> Respondent

  
DEPONENT



J. Chandra Babu  
REGIONAL DIRECTOR  
CENTRAL POLLUTION CONTROL BOARD  
REGIONAL DIRECTORATE - BENGALURU  
(MIN.OF ENV,FOREST & CC, GOVT OF INDIA)  
BENGALURU - 560 079. MOB: 9868278903

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IN THE MATTER OF

**Ravindranath Shanbhogue, Karnataka** : **Applicant(s)**

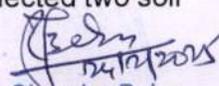
**Versus**

**Union of India, Through its Secretary, New Delhi and Ors** : **Respondent(s)**

INTERIM REPORT OF RESPONDENT NO. 2, CENTRAL POLLUTION CONTROL BOARD (CPCB) IN COMPLIANCE TO HON'BLE NATIONAL GREEN TRIBUNAL (SOUTHERN ZONE) ORDER DATED 18.09.2024

1. The instant matter was originally registered in The Honourable National Green Tribunal, Southern Zone, Chennai. Hon'ble NGT vide order dated 20.12.2023 in OA No. 186 of 2023 directed that "The authorities are directed to file their appropriate reports after making a spot inspection".
2. CPCB is constituted under The Water (Prevention and Control of Pollution) Act, 1974. It performs the functions under The Water (Prevention and Control of Pollution) Act, 1974, The Air (Prevention and Control of Pollution) Act, 1981, The Environment (Protection) Act, 1986.
3. The 2<sup>nd</sup> Respondent that is CPCB, in compliance to the Hon'ble Tribunal order dated 20.12.2023, carried out spot inspection of abandoned well located in cashew plantation area of M/s Plantation Corporation of Kerala Ltd. (M/s.PCK Ltd.) in Minchinpadavu, Kasaragod District on 28.12.2023. CPCB team has collected two soil



  
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samples from abandoned well and also from the chemical mixing area located within Cashew plantation area of the M/s. PCK Ltd. Three groundwater samples (two samples from open wells located within the Cashew plantation area and one sample from the open well located close to the Ishwaramangala Panchayat falling in Karnataka State) were also collected. CPCB filed the spot inspection report dated 01.01.2024 before Hon'ble National Green Tribunal Southern Zone, Chennai.

4. Honourable National Green Tribunal (NGT) vide order dated 18-09-2024 (**Annexure-I**) directed CPCB to coordinate with Central Insecticides Board & Registration Committee (CIB&RC) under the Directorate of Plant Protection, Quarantine & Storage, Department of Agriculture & Cooperation to investigate the method by which the stacked Endosulfan stock at the various estates of The Plantation Corporation of Kerala Ltd., (PCK) can be disposed-off to avoid disasters in future. The compliance to said directions, is submitted in the succeeding paragraphs.
5. Central Insecticides Board and Registration Committee (CIB&RC) was requested to depute a nodal officer to coordinate in the matter of disposal of Endosulfan stock. Subsequently, Dr. Sneha Potdar, Deputy Director (Chemistry), CIB&RC, Faridabad was deputed to coordinate the matter.
6. In order to plan the disposal strategy, a virtual meeting was conducted on 29-10-2024 with the officials of CPCB, CIB&RC, Kerala SPCB and representatives of PCK Ltd. In this meeting, it was suggested that the Endosulfan pile-stock can be disposed safely by controlled incineration. However, prior to disposal, it is required to assess the ground situation of the stored Endosulfan stock piles with respect to storage conditions and the characteristics of the stored material. It was therefore decided to utilize the expertise of officials of M/s. Hindustan Insecticide Limited (HIL) to determine the strength/ specification of Endosulfan stock. Since, the stock pile is under the custody of the District Administrations (Kasaragod and Palakkad Districts, Kerala), the Kerala State Pollution Control Board suggested to include the District administration in the team. Accordingly, it was decided that representatives of the



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24/12/2024

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District administrations shall be made part of the sampling and assessment team. Copy of the minutes of the meeting held on 29-10-2024 is enclosed as **Annexure-II**.

7. In pursuant to the first meeting, another meeting was organized on 08-11-2024 to discuss on the plan for site inspections and sampling of Endosulfan stocks. In the said meeting it was decided that a joint team shall conduct visits during 21-23<sup>rd</sup> November, 2024 and the operators of the Common Hazardous Waste Treatment and Disposal Facilities (TSDFs) shall be invited for sampling the Endosulfan stocks as per the standard protocols. Copy of the minutes of the meeting held on 08.11.2024 is enclosed as **Annexure-III**.
8. As decided in the meeting held on 8-11.2024, the following officials inspected the stock pile stored at the estates of PCK Ltd., in Kasaragod and Palakkad Districts of Kerala during 21<sup>st</sup> to 23<sup>rd</sup> November, 2024:

**Common Team:**

1. Sh. J Chandra Babu, Regional Director, Regional Directorate, CPCB, Bengaluru.
2. Dr. Sneha Potdar, Deputy Director (Chemistry), CIB&RC, Faridabad.
3. Sh. Praveen R, Deputy Manager, M/s. HIL, Udyogamandal, Cochin
4. Dr. V. Deepesh, Scientist C, CPCB, Regional Directorate, Bengaluru.

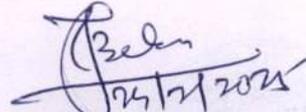
**Team member from Kasaragod, District:**

5. Deputy Collector, Endosulfan Cell, District Administration, Kasaragod.
6. Sh. Dinesh K S, Environmental Engineer, Kerala SPCB, Kasaragod.
7. Sh. U Sajeev, Manager, PCK Ltd, Kasaragod.

**Team member from Mannarkad, Palakkad District:**

8. Tahsildar, Mannarkad, Palakkad, representing Revenue Dept., Kerala
9. Sh. Aurther Xavier, Environmental Engineer, Kerala SPCB, Palakkad.
10. Smt. Fathima Shimji Mohamedali, Manager, PCK Ltd, Mannarkad



  
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**Representatives of Common Hazardous Waste TSDFs**

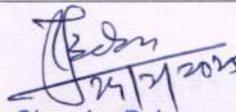
11. M/s Kerala Enviro Infrastructure Ltd.
12. M/s Bharuch Enviro Infrastructure Ltd.
13. M/s Mumbai Waste Management Ltd.
14. M/s Karnataka Waste Management Project.
15. M/s Tamilnadu Waste Management Ltd.

The representatives of the Hazardous Waste TSDFs drawn samples of Endosulfan in liquid emulsion and the contaminated solid stock for analysis in the presence of the joint Team. The collected samples analysed for parameters such as  $\alpha$ -Endosulfan,  $\beta$ -Endosulfan, Endosulfan sulphate, halide content, calorific value, solubility in diesel, etc. Photographs taken during the site visits are annexed as **Annexure-IV**.

9. The details of the stored Endosulfan stock pile and storage condition as observed by the Committee during the site visit i.e., 21 to 23, Nov. 2024 is provided in the table below:

S.No	PCK Estate	Date of Site Visit	Stored Quantity	Storage Conditions
1	Periya Division, Kasaragod Estate. Kasaragod 12° 23' 40.0" N 75° 05' 50.7" E	21-11-2024	Total 12 Poly Propylene (PP) drums (4 empty, 2 partial filled liquid stock, 1 drum with leakage, 6 drums full with liquid stock)	Stored in a sealed building in the estate. No intermittent inspection/maintenance done since the year 2018.
2	Cheemeni, Cheemeni Estate, Kasaragod 12° 14' 11.7" N 75° 13' 41.9" E	21-11-2024	Total 5 PP drums: 1 empty drum, 3 drums filled with contaminated items and 1 drum with	Stored in a shed within the estate. No intermittent inspection/maintenance done.



  
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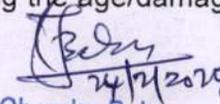
S.No	PCK Estate	Date of Site Visit	Stored Quantity	Storage Conditions
			obsolete solid stock mixed with soil/ saw dust.	Door collapsed while opening and the ceiling is in a deteriorated condition.
3	Panathur, Rajapuram Estate, Kasaragod 12° 27' 32.5" N 75° 22' 58.8" E	22-11-2024	Total 6 plastic drums: 3 drums full with contaminated items and 3 drums with liquid stock.	Stored in a shed within the estate. No intermittent inspection/ maintenance done. Door collapsed while opening.
4	Thenkara, Mannarkad Estate Palakkad. 11° 02' 00.0" N 76° 28' 24.7" E	23-11-2024	Total 10 plastic drums: 8 drums full with contaminated items/ unused chemicals brought for disposal, 2 drums broken/ leaked with liquid stock (1/4 <sup>th</sup> and half filled).	Stored in a room near to the estate office. One key was not traceable and door opened using cutter. Leakage of liquid stock observed.

Note: Apart from above, 20 empty contaminated drums were found lying under a covered shed (in locked room) of Adhur estate (plantation area) of PCK limited at Kasaragod district.

10. During the meeting held on 24-12-2024, the joint team has discussed the storage conditions of the Endosulfan stocks and the analysis results of the samples collected (Copy of the minutes of the meeting is enclosed as **Annexure-V**). Upon deliberations, the team has made the following observations and decisions;

(a) The present storage conditions of Endosulfan in drums of over 200 L capacity may not be suitable or safe for transport as such, considering the age/damaged



  
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conditions of the drums. In order to make the material suitable for transportation, the existing stock piles of Endosulfan need to be transferred into new drums/containers of suitable size, adopting occupational safety precautions by the operators of TSDF. Such transfer activity shall be carried out under the supervision of the officials of Kerala SPCB and CPCB, Endosulfan cell of District Administration and the representative of M/s. HIL, Eloor, Kerala.

- (b) During the transfer of existing material into new transportable drums/containers, detailed inventory (in terms of the quantity and characteristics) of the endosulfan and other contaminated materials/drums/wastes of the stock-piles stored at the estate premises of the Plantation Corporation of Kerala (PCK) Ltd need to be ascertained. Such assessment would help in determining the best options for collection, transportation, handling and disposal in environmentally safe manner as per provisions of HOWM Rules, 2016.
- (c) Being the occupier, the above task shall be carried out by M/s PCK Limited under the supervision of Endosulfan Cell, District Collector (DC), Kasaragod, Kerala State SPCB and technical support from joint team of officials from CPCB, CIB&RC and HIL.

11. Subsequent to the meeting held on 24.12.2024, to initiate necessary further actions, another meeting was held on 24-01-2025 to review (i) Requirements of transferring Endosulfan from the existing drums to the new drums; (ii) Improving storage conditions of the sheds from safety point of view; (iii) Making arrangements for procurement of new drums (iv) to confirm about the arrangements made and schedule for shifting of the Endosulfan to the new drums and (v) A feasibility report including the disposal options based on sample analysis is awaited from the CHTSDF operators. Copy of the approved minutes of the meeting is enclosed as **Annexure-VI**.

12. Based on the analysis results, the joint team has observed that calorific content of the stock pile is fairly high due to the solvent present in the original 35% emulsion



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concentrate Endosulfan formulation and meets the requirement of disposal by incineration option. The halide/chlorine content of the samples were low due to dilute concentrations in technical grade material. The Endosulfan content also was less due to the degradation in over the long storage. The details of stockpiles and analysis results are given below:

S. No.	Particulars of the stored stock pile	No. of drums & Quantity
1	Liquid stock (Endosulfan emulsion concentrate): Fully filled HDPE drums of 200L	10 (2KL)
2	Liquid stock (Endosulfan emulsion concentrate): Partially (about half) filled HDPE drums of 200L	04 (0.4KL)
3	Contaminated materials/ items (Endosulfan contaminated solid waste): Stored in HDPE drums of 200L	14 (2.8MT)
4	Empty HDPE drums	05
<b>Total drums</b>		<b>33</b>

**Analysis results of the preliminary Endosulfan samples collected from Periyar Estate, Cheemani Estate, Rajapuram Estate, Manahhad Estates of M/s. PCK Limited during November 21 to 23, 2024**

S. No.	Parameters	Range
1	Chlorine content	2.7 to 4.9 %
2	Halogen as Cl	3.2 to 11.2 %
3	Endosulfan sulphate	100 to 11994 mg/ Kg
4	Total Sulphur	0.4 to 3.2 %
5	Alpha Endosulfan	BDL to 17415 ppm
6	Beta Endosulfan	BDL to 13820 ppm
7	Calorific value	1666 to 9646 Cal/ gm

13. Considering the test results and site conditions, the joint team has recommended the following in the meeting held on 24-01-2025:

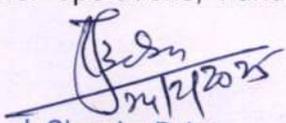


*J. Chandra Babu*  
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- (i) The Endosulfan stock pile need to be transferred to new drums/containers suitable for transportation to common HW disposal facility. Occupational health safety and environmental protection measures shall be adopted during transfer of Endosulfan from existing drums to new drums/containers of adequate size.
- (ii) Packaging, labelling and transportation to be carried out in accordance with the Hazardous and Other Waste (Management & Transboundary Movement) Rules, 2016 as amended as well as CPCB guidelines.
- (iii) Specifications for new drums shall be suggested by the operator of Common Hazardous Waste TSDF selected for the task of collection, handling, transportation from existing place to the TSDF for ultimate disposal of Endosulphan waste by incineration.
- (iv) M/s. PCK Ltd being the occupier of the Endosulfan stocks, shall bear the cost towards procurement of the drums, transfer operations, handling, transportation and ultimate disposal by incineration through the operator of common TSDF in an environmentally sound manner.
- (v) The Endosulfan Cell under the DC, Kasaragod, Government of Kerala, with the help of other associated departments shall extend necessary support to the operator of the TDSF to carry out safe transfer and ultimate disposal of the stock piles.
- (vi) The activity of transferring existing stock piles of Endosulfan to the new drums, its handling and transportation shall be carried out under the supervision of the officials of Kerala SPCB, CPCB, Endosulfan Cell, representative of M/s. HIL, Eloor, Kerala, and State Disaster Response Team.
- (vii) M/s. PCK Ltd shall obtain authorization from Kerala SPCB under HOWM Rules, 2016 for carrying out the activity of transfer operations, handling,



  
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transportation and ultimate disposal by incineration through the operator of common TSDF for safe disposal of Endosulfan stocks.

(viii) The operator of TSDFs shall submit a feasibility report along with standard operating protocols (SoP) for transfer operations, handling, transportation and ultimate disposal by incineration thereafter.

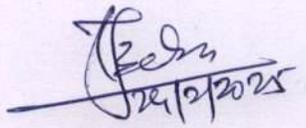
(ix) The occupier (M/s PCK), shall take necessary action for disposal of Endosulfan stock piles under overall supervision of Kerala SPCB and technical support from CPCB.

In view of above, it is humbly prayed that the report with annexures may please be taken on record. It is further submitted that CPCB shall abide by any order or directions passed by this Hon'ble Tribunal.

Dated at Bengaluru on this the 24<sup>th</sup> day of February, 2025.

  
COUNSEL FOR  
RESPONDENT NO. 2



  
DEPONENT

J. Chandra Babu  
REGIONAL DIRECTOR  
CENTRAL POLLUTION CONTROL BOARD  
REGIONAL DIRECTORATE - BENGALURU  
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**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL  
SOUTHERN BENCH, CHENNAI**

**ORIGINAL APPLICATION NO. 186 OF 2023 (SZ)**

**IN THE MATTER OF:**

***Ravindranath Shanbhogue, Karnataka*** : ***Applicant(s)***

***Versus***

***Union of India, Through its Secretary, New Delhi*** : ***Respondent(s)***  
***and Ors***

**AFFIDAVIT**

I, J Chandra Babu, son of late Shri. J Balaramaiah, aged 57 years, having office at the Regional Directorate (Bengaluru), Central Pollution Control Board (CPCB), 1<sup>st</sup> & 2<sup>nd</sup> Floors, Nisarga Bhavan A- Block, Thimmaiah Main Road, 7<sup>th</sup> D Cross, Shivanagar, Bengaluru – 560 079, Karnataka, do hereby solemnly affirm, declare on oath and state as under: -

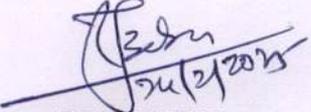
1. That I, the deponent herein is authorized representative to represent the Respondent CPCB in the present case, and as such, I am well conversant with the facts and circumstances of the present case on the basis of the information derived from the official records, and hence, I am competent to verify, sign and swear this affidavit on behalf of the Respondent CPCB.
2. That the accompanying reply in the form a report may be read as part and parcel of the present affidavit.



*J. Chandra Babu*  
*24/7/2023*

**J. Chandra Babu**  
**REGIONAL DIRECTOR**  
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**REGIONAL DIRECTORATE - BENGALURU**  
**(MIN. OF ENV, FOREST & CC, GOVT OF INDIA)**  
**BENGALURU - 560 079. MOB: 9868278903**

3. That the accompanying reply has been drafted and filed under my instructions and authority the contents thereof are true and correct on the basis of the record maintained during ordinary course of business of CPCB and available records and documents and the contents of the same are read over and explained to me and are not repeated herein for the sake of brevity.

  
DEPONENT

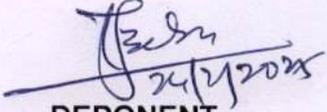
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#### VERIFICATION

Verified at Bengaluru on this day of 24<sup>th</sup> February, 2025 that the contents of the above reply are correct and true on the basis of the record of the cases as mentioned in the day to day affairs of the CPCB. Nothing has been concealed therefrom or mis-stated.



COUNSEL FOR  
RESPONDENT NO. 2

  
DEPONENT

J. Chandra Babu  
REGIONAL DIRECTOR  
CENTRAL POLLUTION CONTROL BOARD  
REGIONAL DIRECTORATE - BENGALURU  
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**Item No.9:-****BEFORE THE NATIONAL GREEN TRIBUNAL  
SOUTHERN ZONE, CHENNAI**

(Through Video Conference)

**Original Application No. 186 of 2023 (SZ)****IN THE MATTER OF:**Ravindranath Shanbhogue,  
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...Applicant(s)

*Versus*Union of India  
Through its Secretary  
New Delhi and Ors.

...Respondent(s)

**Date of hearing: 18.09.2024.****CORAM:****HON'BLE Smt. JUSTICE PUSHPA SATHYANARAYANA, JUDICIAL MEMBER****HON'BLE Dr. SATYAGOPAL KORLAPATI, EXPERT MEMBER**

For Applicant(s): M/s. Gaurav Kumar Bansal &amp; Nadita Dhar.

For Respondent(s): Mr. R. Thirunavukarasu for R2.  
Mr. G. Vignesh represented  
Mr. E.K. Kumaresan for R3.  
Mrs. Niveditha S Menon represented  
Mrs. V.K. Rema Smrithi for R5.  
Mr. Mukesh Kumar for R6.  
Mr. Abraham Markos for R7.

## ORDER

1. The CPCB (Respondent No.2) has filed its report dated 01.01.2024. Along with the report, a communication from the 7<sup>th</sup> Respondent is annexed, wherein it is specifically stated as follows:-

“Please note that we have stocks of endosulfan in Kasargod Estate (700 Lt.), Rajapuram Estate (450 Lt.), Cheemeni Estate (10 Kg. in solid state) and Mannargaht Estate (304 Lt.). The first three estates are in Kasargode District and the last estate is in Palakkad District.

Subsequently, PCK made several attempts to dispose of the stocks with the help of technical experts from Defense Research and Development Organisation (DRDO) and Kerala Agricultural University. However, due to public agitation we could not proceed with further action. Now the stocks are kept under the lock and key and control of district administration.

Recently there have been several communications from the State Govt. directing us to take immediate action to dispose the endosulfan stocks. As per the letter dt.13.10.2023 received from the Govt., we have been directed by the Govt. to get in touch with the District Administration to take further actions to dispose of the balance stock of endosulfan. Hence we have sent letter to the District Collector, Kasargode Estate on 17.10.2023 requesting to constitute a committee at the highest level including Kerala Agricultural University, PCK as well as technical experts from Hindustan Insecticides Ltd. (HIL) or any other similar agencies to chalk out a plan of action for scientific disposal of the chemical.”

2. In view of the content of the above letter, we direct the CPCB to coordinate with the Central Insecticides Board & Registration Committee (CIBRC) under the Directorate of Plant Protection, Quarantine & Storage, Department of Agriculture & Cooperation to investigate the method by which the stacked endosulfan can be disposed of to avoid any major disaster in future.

3. Let the CPCB coordinate not only with the above-referred Board but also with any other appropriate agency to deal with the same and file a detailed report before the date of next hearing.

4. Post the matter on **02.12.2024**.

Sd/-

**Smt. Justice Pushpa Sathyanarayana, JM**

Sd/-

**Dr. Satyagopal Korlapati, EM**

O.A. No.186/2023 (SZ)  
18<sup>th</sup> September, 2024. Mn.





**Central Pollution Control Board**  
**(Ministry of Environment, Forests and Climate Change)**  
**Regional Directorate, Bengaluru**  
**Nisarga Bhavan, Shivanagar**  
**Bengaluru- 560079**

**Minutes of the Meeting held on 29-10-2024 in pursuance to the Honourable NGT order dated 18.09.2024 in OA No. 186/2023 SZ regarding disposal of stacked endosulfan stored at various estates of The Plantation Corporation of Kerala, Ltd.**

Meeting title	<i>Online meeting on the Honourable NGT order dated 18-09-2024 in the matter of OA 186/2024 SZ.</i>
Date	29-10-2024
Meeting Sequence	# 01
Time	11.05 to 11.38 hrs. IST
Platform / Venue	Virtual meeting via Google Meet
Meeting link (online)	<a href="https://meet.google.com/viw-zkzn-nfw">https://meet.google.com/viw-zkzn-nfw</a>
Meeting facilitator	Regional Directorate, CPCB, Bengaluru.

A virtual meeting was organized by the Regional Director, Regional Directorate, CPCB, Bengaluru on 29-10-2024 at 11.00 hrs. IST to discuss on course of action to be taken for compliance to Honourable National Green Tribunal (NGT) order dated 18-09-2024 in OA No. 186/2023 SZ. Following officials attended the meeting:

1. Shri. B Vinod Babu, Scientist-F, DH, WM-II, CPCB, Delhi.
2. Shri. Dinabandhu Gouda, Scientist-F, DH, IPC-I, CPCB, Delhi.
3. Shri. J Chandra Babu, Regional Director, Regional Directorate, CPCB, Bengaluru
4. Dr. Sneha Potdar, Deputy Director (Chemistry), CIB&RC, Faridabad.
5. Shri. Ashbir Singh, Scientist D, IPC-I, CPCB, Delhi.
6. Shri. Dinesh K S, Environmental Engineer, Kerala SPCB, District Office, Kasaragod.



7. Dr. James Jacob, Managing Director, Plantation Corporation-Kerala Limited, Kottayam, Kerala.
8. Shri. Santhosh, General Manager, Plantation Corporation-Kerala Limited, Kasaragod.
9. Dr. V. Deepesh, Scientist C, CPCB, Regional Directorate, Bengaluru.

J Chandra Babu, Regional Director (RD) CPCB Bengaluru welcomed all the officials and the other participants. The meeting started with a formal note on the background of the OA No. 186/2023 SZ by the Regional Director. The directions of Honourable NGT as per the order dated 18-09-2024 was briefly explained by the RD. Thereafter, he requested the representative (s) of The Plantation Corporation-Kerala Limited (PCK Ltd.) to provide the details of stocked endosulfan in their premises. Dr. James Jacob, Managing Director, PCK Ltd., explained on the endosulfan issue and their previous failed attempt to dispose-off the stored endosulfan with the help of DRDO. Shri. Santhosh, General Manager, PCK Ltd., Kasaragod provided the details of the endosulfan stocks stored at Kasaragod and Palakkad districts. It was informed that majority of the endosulfan is stored in liquid form at Kasaragod Estate (700L) and Rajapuram Estate (450 L) in Kasaragod District, Mannarkad Estate (304 L) in Palakkad District and a small quantity of 10 Kg is in powder form stored presently at Cheemeni Estate, Kasaragod District. All these stocks stored in HDPE drums under the safe custody of the District Administration of Kasaragod and Palakkad Districts. The technical specification of the stacked endosulfan stock, details of formulation and active ingredient strength are not known to the representatives of PCK Ltd.

Shri. B Vinod Babu, Director & DH, WM-II insisted that the technical specifications of the stored endosulfan stock is important to decide on the disposal of such stocks through controlled incineration. As it is an organochlorine pesticide, incineration needs to be done carefully after appropriate dilution with fuel (diesel) to avoid chlorinated pollutants including hydrochloric acids emanating in the incineration flue gas. Flue gas from the incinerator shall be scrubbed and scrubber residue needs to be treated and disposed-off scientifically in accordance with the Hazardous and Other Waste (M & TM) Rules, 2016 as amended. He also emphasized that there should be a site visit by the team comprising



representatives of CPCB, Kerala SPCB, 2 to 3 TSDF Operators, CIB&RC and former scientists of M/s. Hindustan Insecticide Limited (HIL) to the locations where endosulfan are presently stored to conduct complete inventory on endosulfan stocks stored at PCK Ltd., premises, the adequacy of the present storage conditions of stocks, technical characteristics of the stocks ( samples to be drawn and analyzed by the TSDF Operators) and to formulate techno-financial proposal for deciding the safe disposal options. Shri. Dinesh, Environmental Engineer, Kerala SPCB, Kasaragod intervened and requested to include the representative of the District Administrations in the committee. Shri. B Vinod Babu, further added that the disposal may be carried out after inviting techno-economic feasibility from various disposal agencies in the form of limited tender. Shri. B Vinod Babu, also requested for opinion of Shri. Dinabandhu Gouda, Director & DH, IPC-I. Shri D.B. Gouda provided details of common incineration facility option located in Baruch for disposal of endosulfan as suggested by the Pesticides Association, Crop Care Foundation of India, Delhi in a meeting held at India Habitat Centre.

Dr. Sneha Potdar, Deputy Director, CIB&RC opined that a site visit should be done and the specification of the technical grade or formulations needs to be ascertained. She also shared her experience with pesticide disposal done at disposal facility located at Taloja, Mumbai.

It was decided to call for another meeting on 6<sup>th</sup> or 8<sup>th</sup> of November, 2024 including representatives from HWTSDF facilities (viz., Bharuch, Taloja and HW Incinerator operators in Tamil Nadu / Karnataka), former official from HIL, District Administration of Palakkad and Kasaragod districts of Kerala to decide on the disposal strategy for Endosulfan lying in the premises of PCK Ltd.

The meeting ended with a vote of thanks to all the participants.

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**Central Pollution Control Board**  
(Ministry of Environment, Forests and Climate Change)  
Regional Directorate, Bengaluru  
Nisarga Bhavan, Shivanagar  
Bengaluru- 560079

**Minutes of the Meeting held on 08-11-2024 in pursuance to the Honourable NGT order dated 18.09.2024 in OA No. 186/2023 SZ regarding disposal of endosulfan stock-pile stored at various estates of The Plantation Corporation of Kerala Ltd.**

Meeting title	<i>Online meeting on the Honourable NGT order dated 18-09-2024 in the matter of OA 186/2024 SZ.</i>
Date	08-11-2024
Meeting Sequence	# 02
Time	15.00 to 15.41 hrs. IST
Platform / Venue	Virtual meeting via Google Meet
Meeting link (online)	<a href="https://meet.google.com/yog-fceq-hds">https://meet.google.com/yog-fceq-hds</a>
Meeting facilitator	Regional Directorate, CPCB, Bengaluru.

A virtual meeting was organized by the Regional Director, Regional Directorate, CPCB, Bengaluru on 08-11-2024 at 15.00 hrs. IST to discuss on course of action to be taken for compliance to Honourable National Green Tribunal (NGT) order dated 18-09-2024 in OA No. 186/2023 SZ. Following officials attended the meeting:

1. Sh. Dinabandhu Gouda, Scientist-F, DH, IPC-I, CPCB, Delhi.
2. Sh. J Chandra Babu, Regional Director, Regional Directorate, CPCB, Bengaluru
3. Dr. Sneha Potdar, Deputy Director (Chemistry), CIB&RC, Faridabad.
4. Deputy Collector, Endosulfan Cell, District Administration, Kasaragod.
5. Add. District Magistrate, District Administration, Palakkad.
6. Sh. Dinesh K S, Environmental Engineer, Kerala SPCB, District Office, Kasaragod.



7. Dr. James Jacob, Managing Director, The Plantation Corporation of Kerala Limited Kottayam, Kerala.
8. Shri. Santhosh, General Manager, The Plantation Corporation of Kerala Limited, Kasaragod.
9. Sh. Santhosh, Unit Head, M/s. HIL, Udyogamandal, Cochin.
10. Representatives of BEIL, Baruch, Gujarat.
11. Representatives of TSDF, Taloja.
12. Representatives of TSDF, Dabaspeta, Karnataka.
13. Representatives of TSDF, Gummidipundi, Tamil Nadu.
14. Dr. N K Pillai, TSDF, Cochin.
15. Dr. V. Deepesh, Scientist C, CPCB, Regional Directorate, Bengaluru.

J Chandra Babu, Regional Director (RD) CPCB Bengaluru welcomed all the officials and the other participants. The meeting started with a formal note on the background of the OA No. 186/2023 SZ by the Regional Director (RD). The directions of Honourable NGT was briefly explained by the RD. Thereafter, he requested Shri. Dinabandhu Gouda, Scientist-F, DH, IPC-I, CPCB, Delhi to sum up the work involved for the disposal of stockpile of endosulfan at The Plantation Corporation of Kerala Limited (PCK Ltd.). Sh. Dinabandhu Gouda briefed about the site visit to be made to assess the storage condition of stocked endosulfan and to draw samples to ascertain the strength of the stock as well as calorific value, as it is containing chlorinated insecticide. It was requested that the TSDF representatives to make arrangements to join the team comprising representative (s) of CPCB, Dr. Sneha Potdar, Deputy Director (Chemistry), CIB&RC, Faridabad, representative of Kerala SPCB and an official from M/s. Hindustan Insecticide Ltd. (HIL) during the site visit tentatively scheduled during 21 to 23.11.2024 and to take samples to assess the present quality of the Endosulfan to enable to prepare a techno-economic proposal for the environmentally sound disposal of the Endosulfan stocks. Details of the storage locations were reiterated by the RD and requested the District Administration as well as officials of The Plantation Corporation of Kerala Ltd., to co-operate and to make necessary arrangements during the site visit of the Team. The representatives of the TSDF operators (Bharuch, Taloja, Dabaspeta and Gummidipundi) shall have to make their own arrangements for travel during the site visit and the sampling team for collection,



transportation of the samples to the respective destinations and analysis of the collected samples to be carried out at their own cost.

To the query of Dr. Sneha Potdar, Deputy Director, CIB&RC regarding the details of technical grade or formulation concentration of the stacked endosulfan stock, Dr. James Jacob, MD, PCK Ltd., informed that the solid stock consists of dry granular grade endosulfan and rest of the stock is in liquid formulation. He also added that the stock is stored for more than 20 years and present strength of the endosulfan stock is not known. Shri. Santhosh, GM, PCK Ltd. Added that the formulations are 35% EC (Emulsion Concentrate).

Representatives of the BEIL, Baruch raised a query on the necessary permissions required for the disposal of endosulfan from the respective SPCBs. RD clarified that all such permissions shall be arranged by the Kerala SPCB. The representatives of the TSDF operators (Bharuch, Taloja, Dabaspeta and Gummadipundi) informed that the details of representative of TSDF and sampling team who will be participating in the site visit will be shared.

The Deputy Collector of the Endosulfan Cell, Kasaragod assured that a team shall be deputed for facilitating the site visit and requested to share the details of the visiting team and visit dates in advance. The RD informed that site visit is planned during 21-23<sup>rd</sup> November, 2024 and requested all concerned to make it convenient to reach Kasaragod by 21-11-2024 (12 Noon). Dr. James Jacob, Managing Director, PCK Ltd., owing to the urgency of the NGT matter, assured that the Estate Manager shall be deputed to coordinate and facilitate the site visit.

The team comprising of CPCB, CIB&RC, Kerala SPCB and a representative of M/s. Hindustan Insecticide Ltd. (HIL) shall be visiting the estates of the PCK at Kasaragod and Palakkad Districts. It was decided to conduct the site visit as proposed during 21-23<sup>rd</sup> November, 2024 and the officials and representatives of the TSDFs are requested to assemble at Mangalore on 21-11-2024 (By 12 Noon). After completing the site visit at



Mannarkkad Estate, Palakkad District, the team members and representatives of TSDf suggested to depart from Coimbatore.

Dr. James Jacob, Managing Director, PCK Ltd., requested to share a note on the site visit along with the requirements in advance to enable to make travel and stay arrangements by PCK Limited from Kasaragod.

Sh. Dinabandhu Gouda requested that the team members shall perform the site visit for the intended purpose during 21 to 23.11.2024 due to time constrains and also clarified that the representatives of the TSDf Operators have to manage their travel plan. Further sample collection and sample transport to their destinations shall be ensured by the TSDf representative as per the standard protocols.

The meeting ended with a vote of thanks to all the participants.

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ANNEXURE-I



Endosulfan stock: Periya Estate



Endosulfan sampling: Periya Estate



Stock of contaminated items: Cheemeni



Team members at Rajapuram Estate.



Stock of contaminated items: Mannarkad



Team members at Mannarkad Estate.





**Central Pollution Control Board**  
 (Ministry of Environment, Forests and Climate Change)  
*Regional Directorate, Bengaluru*  
*Nisarga Bhavan, 1 & 2 Floors, Thimmaiah Road, Shivanagar*  
*Bengaluru- 560079, Karnataka*  
 \*\*\*\*\*

**Minutes of the Meeting held on 24-12-2024 for ensuring compliance to the Honourable NGT order dated 18.09.2024 in OA No. 186/2023 (SZ) regarding disposal of endosulfan stock-pile stored at various estates of The Plantation Corporation of Kerala Ltd.**

Meeting title	<i>Online meeting on the Honourable NGT order dated 18-09-2024 in the matter of OA 186/2024 SZ.</i>
Date	24-12-2024
Meeting Sequence	# 03
Time	15.00 to 16.00 hrs. IST
Platform / Venue	Virtual meeting via Google Meet
Meeting link (online)	<a href="https://meet.google.com/oep-izxr-xbz">https://meet.google.com/oep-izxr-xbz</a>
Meeting facilitator	Regional Directorate, CPCB, Bengaluru.

A virtual meeting was organized by the Regional Director, Regional Directorate, CPCB, Bengaluru on 24-12-2024 at 15.00 hrs. IST to discuss on the analysis results of the endosulfan stock-pile samples collected during the site visit of the committee during 21 to 23<sup>rd</sup> November, 2024; and the present storage condition of the Endosulfan stock-piles at the estate premises of the Plantation Corporation of Kerala (PCK) Ltd as well as to decide further course of action as a part of ensuring compliance to the Hon'ble NGT order in OA No. 186/2023 (SZ). The list of officials attended the online meeting is provided in **Annexure-I**.

J Chandra Babu, Regional Director (RD) CPCB Bengaluru welcomed all the officials and the other participants for the meeting. The meeting started with a formal note on the background of the OA No. 186/2023 (SZ) and directions of Honourable NGT were briefly explained by the Regional Director (RD). Thereafter, the RD presented a brief power point presentation covering the aspects relating to the team members participated in the visit, endosulfan samples collected during 21 to 23<sup>rd</sup> November, 2024 and the present storage condition of the endosulfan stock-



piles at the estate premises of the Plantation Corporation of Kerala (PCK) Ltd at (1) *Periya Division, Kasaragod Estate*; (2) *Cheemeni, Cheemeni Estate, Kasaragod*, (iii) *Panathur, Rajapuram Estate, Kasaragod*, (iv) *Thenkara, Mannarkad Estate, Palakkad*

Details of the stored stockpiles, including its condition, were shared based on the observations made during the site visits. Sample analysis results obtained from two TSDF operators i.e., RE Sustainability and BEIL, were presented. The discussions highlighted the contamination levels observed in the samples. Supporting evidence, such as photographs captured during the visits. Details of analysis results as received from the TSDF operators is enclosed as ***Annexure-II***.

To the query raised regarding the need for TCLP analysis, it was discussed that such an analysis would help in determining the leaching potential of only contaminated soils or other solid materials presently stored in the PP drums and however, TCLP analysis is not required to assess the strength of the endosulfan stock piles.

It was also observed variations in the analysis methods adopted by RE Sustainability and BEIL, the importance of standardizing methods was emphasized and both TSDF operators were asked to re-verify their analysis. There are some discrepancies noted with the endosulfan concentration of the stock pile reported by both the operators. The issue of unit mg/Kg in the analysis result of liquid endosulfan samples by RE Sustainability was highlighted and was asked to re-verify the unit. It was observed that except calorific value all other parameters reported by the two operators have variations.

Shri. Dinabandu Gowda, Director, IPC-I Division, CPCB enquired about the labelling of drums, particularly regarding manufacturing dates. It was clarified that there was no specific labelling had been observed on the drums during the site visit however, the labels on the drums only indicated the name of the operation under which the stock pile was stored and the date of storage. Query was also raised regarding the recyclability of drums and it was suggested that decontaminating and recycling the drums may not be feasible and may has to be destroyed by incineration.

Dr. Sneha Potdar, reiterated that the contaminated solids/ materials shall not be disposed off in



the secured landfills of TSDf without ascertaining the contamination levels of such wastes. It was also highlighted the present drums of over 200 L capacity may not be feasible to transport as such considering the age of the stored drums and it was suggested to transport the materials in small drums of 50 to 100 L and the existing drums shall be destroyed or decontaminated or disposed off in an environmentally sound manner.

The transportation of stockpiles from the storage facilities in remote locations was another concern raised by Dr. Sneha Potdar. It was emphasised that the transportation shall be planned in small truck that can be maneuverer in narrow roads inside the estates. Representatives emphasized the need for ensuring compliance with safety and environmental regulations during transfer of endosulfan from existing drums to new PP drums of adequate size, proper packaging, labelling and transportation in accordance with the CPCB guidelines and Hazardous and Other Waste (Management & Transboundary Movement) Rules, 2016 as amended. During the meeting following were discussed as detailed below:

1. **Calorific Value of Endosulfan stock pile:** It was noted that the calorific value varies in some samples due to differences in the solvent used in Endosulfan formulations. This variability must be accounted for in incineration planning.
2. **Mixing Stockpiles for Incineration:** The option of mixing high calorific value stockpiles with lower-value ones during incineration was discussed to optimize energy usage and for ensuring proper combustion efficiency.
3. **Incineration Gas Capture:** Participants stressed the importance of incorporating gas capture systems to minimize emissions and environmental harm during the incineration process.
4. **Drum Decontamination:** The decontamination of drums before disposal or recycling was considered a viable option to reduce hazardous waste, pending further evaluation.
5. **Transferring Stockpile to Smaller Drums:** It was proposed to transfer stockpiles to 50-100 L drums for ease of handling and safe transportation.
6. **Cost Estimation:** It was agreed to prepare a detailed cost estimation for disposal, transportation, and decontamination processes before initiating the tendering procedure.
7. **Custodianship of Waste:** The PCK and the Endosulfan Cell clarified their roles as custodians of the waste, with responsibilities for safeguarding the stockpile until it is handed over for final disposal.



Upon deliberations following decisions were taken:

- a) Considering the safety, existing stock piles of endosulfan need to be transferred to the new drums of volume preferably 50 to 100 L under the supervision of the officials of CPCB, Kerala SPCB, representatives of the TSDF operators, Endosulfan cell, representative of M/s. HIL, Eloor, Kerala.
- b) Also, detailed inventory of the endosulfan and other contaminated materials/drums/wastes of the stock-piles stored at the estate premises of the Plantation Corporation of Kerala (PCK) Ltd need to be ascertained by way of sampling and the analysis by the TSDF Operators.
- c) The level of contamination of the contaminated materials/drums/wastes of the stock-piles stored at the estate premises of the Plantation Corporation of Kerala (PCK) Ltd need to be ascertained so as to decide safe disposal options of all the materials in accordance with the provisions of the HOW (M & TM) Rules, 2016 as amended.
- d) Endosulfan Cell under the DC, Kasaragod, Government of Kerala shall make necessary arrangements and the requisite provision for transfer of endosulfan from the existing drums to news drums, analysis of all the contaminated materials/drums/wastes and for inventory of the stock piles to decide on the safe disposal options. After, making necessary arrangements, suitable dates be confirmed by Endosulfan Cell under the DC, Kasaragod for completion of the above task under the supervision of the team constituted by CPCB.

The meeting ended with a vote of thanks to all the participants.

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### ***ANNEXURE-I***

#### ***List of Officials Participated in the meeting held on 24.12.2024***

1. Sh. Dinabandhu Gouda, Scientist-F, DH, IPC-I, CPCB, Delhi.
2. Sh. J Chandra Babu, Regional Director, Regional Directorate, CPCB, Bengaluru
3. Dr. Sneha Potdar, Deputy Director (Chemistry), CIB&RC, Faridabad.
4. Smt. Deepti Kapil, Scientist E, WM-II, CPCB, Delhi
5. Representative of District Magistrate, District Administration, Palakkad.
6. Representative of District Magistrate, District Administration, Kasaragod.
7. Assistant Engineer representing Environmental Engineer, Kerala SPCB, District Office, Kasaragod.
8. Shri. Praveen R, Deputy Manager, M/s. HIL, Eloor, Kerala.
9. Representatives of TSDF, Taloja.
10. Dr. Salman, Representatives of TSDF, Dabaspeta, Karnataka.
11. Representatives of TSDF, Gummidipundi, Tamil Nadu.
12. Shri, Parameswaran, Representatives of M/s. BEIL, Bharuch.
13. Dr. V. Deepesh, Scientist C, CPCB, Regional Directorate, Bengaluru.

**ANNEXURE-II****Analysis results of the Endosulfan Samples as received from Re-Sustainability (4 pages)****KARNATAKA WASTE MANAGEMENT PROJECT LABORATORY**

(a Division of Re Sustainability Limited)  
 ISO 9001, 14001 & 45001 Certified Laboratory  
 Accredited by NABL as per ISO/IEC 17025:2017 & Certified by MoEF&CC

**TEST REPORT**

Report Number : KWMP/2024-25/239  
 Name & Address : Regional Directorate (Bengaluru)  
 Nisarga Bhavan, A-Block 1<sup>st</sup> & 2<sup>nd</sup> Floors, Thimmaiah Road,  
 7<sup>th</sup> D Main, Shivanagar, Bengaluru- 560079.  
 Sample Particulars : Endosulfan Stock-Pile Sample  
 Sampling Location : Cheemeni  
 Sampling Date : 21.11.2024  
 Sampling Test Method : Grab  
 Sample Collected by : KWMP Representative  
 Sample Quantity : 50 ml  
 Sample packing : Plastic cans  
 Sample Reg No. and Date : KWMP/2024-25/239 & 27.11.2024  
 Analysis Start Date : 28.11.2024  
 Analysis End Date : 09.12.2024  
 Date of Report : 09.12.2024

S.No	Test Parameters	Unit	Test Method	Test Results
1	Chlorine	%	KWMP/SOP/HW/40	4.29
2	Calorific Value	kcal/kg	KWMP/SOP/HW/03	1666
3	Carbon	%	CHNS Method	26.5
4	Solubility in Diesel	%	-	Not Soluble
5	Endosulfan Sulfate	mg/kg	USEPA 3540C, 3550C, 8270E	100.4
6	α-Endosulfan	mg/kg	USEPA 3540C, 3550C, 8270E	586
7	β-Endosulfan	mg/kg	USEPA 3540C, 3550C, 8270E	0.8

  
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Re Sustainability Limited  
 CIN No. U74140TG1994PLC018833

Registered Office:  
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 Hyderabad Knowledge City, Hitech City Road,  
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 Telangana.

Site Address:  
 Karnataka Waste Management Project  
 Opposite of OM Logistics  
 NH - 207, Near Pemmanahalli  
 Dabaspeta, Nelamangala Taluk  
 Bengaluru Rural District - 56111

Regional Office:  
 Ramky House, Site No. 25-30, 2nd Cross,  
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# KARNATAKA WASTE MANAGEMENT PROJECT LABORATORY

(a Division of Re Sustainability Limited)  
ISO 9001, 14001 & 45001 Certified Laboratory  
Accredited by NABL as per ISO/IEC 17025:2017 & Certified by MoEF&CC



## TEST REPORT

Report Number : KWMP/2024-25/240  
Name & Address : Regional Directorate (Bengaluru)  
Nisarga Bhavan, A-Block 1<sup>st</sup> & 2<sup>nd</sup> Floors, Thimmaiah Road,  
7<sup>th</sup> D Main, Shivanagar, Bengaluru- 560079.  
Sample Particulars : Endosulfan Stock-Pile Sample  
Sampling Location : Kasargod  
Sampling Date : 21.11.2024  
Sampling Test Method : Grab  
Sample Collected by : KWMP Representative  
Sample Quantity : 50 ml  
Sample packing : Plastic cans  
Sample Reg No. and Date : KWMP/2024-25/240 & 27.11.2024  
Analysis Start Date : 28.11.2024  
Analysis End Date : 09.12.2024  
Date of Report : 09.12.2024

S.No	Test Parameters	Unit	Test Method	Test Results
1	Chlorine	%	KWMP/SOP/HW/40	2.7
2	Calorific Value	kcal/kg	KWMP/SOP/HW/03	8859
3	Carbon	%	CHNS Method	6.65
4	Solubility in Diesel	%	-	Not Soluble
5	Endosulfan Sulfate	mg/kg	USEPA 3540C, 3550C, 8270E	11994
6	$\alpha$ -Endosulfan	mg/kg	USEPA 3540C, 3550C, 8270E	434
7	$\beta$ -Endosulfan	mg/kg	USEPA 3540C, 3550C, 8270E	1.82

  
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Sustainability Limited  
N No. U74140TG1994PLC018833

Registered Office:  
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Site Address:  
Karnataka Waste Management Project  
Opposite of OM Logistics  
NH - 207, Near Pemmanahalli  
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# KARNATAKA WASTE MANAGEMENT PROJECT LABORATORY

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## TEST REPORT

Report Number : KWMP/2024-25/241  
 Name & Address : Regional Directorate (Bengaluru)  
 Nisarga Bhavan, A-Block 1<sup>st</sup> & 2<sup>nd</sup> Floors, Thimmaiah Road,  
 7<sup>th</sup> D Main, Shivanagar, Bengaluru- 560079.  
 Sample Particulars : Endosulfan Stock-Pile Sample  
 Sampling Location : Rajapuram Estate  
 Sampling Date : 22.11.2024  
 Sampling Test Method : Grab  
 Sample Collected by : KWMP Representative  
 Sample Quantity : 50 ml  
 Sample packing : Plastic cans  
 Sample Reg No. and Date : KWMP/2024-25/241 & 27.11.2024  
 Analysis Start Date : 28.11.2024  
 Analysis End Date : 09.12.2024  
 Date of Report : 09.12.2024

S.No	Test Parameters	Unit	Test Method	Test Results
1	Chlorine	%	KWMP/SOP/HW/40	4.85
2	Calorific Value	kcal/kg	KWMP/SOP/HW/03	8150
3	Carbon	%	CHNS Method	5.93
4	Solubility in Diesel	%	-	Not Soluble
5	Endosulfan Sulfate	mg/kg	USEPA 3540C, 3550C, 8270E	10667
6	$\alpha$ -Endosulfan	mg/kg	USEPA 3540C, 3550C, 8270E	695
7	$\beta$ -Endosulfan	mg/kg	USEPA 3540C, 3550C, 8270E	24.4

  
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Page 1 of 1

Re Sustainability Limited

CIN No. U74140TG1994PLC018833

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# KARNATAKA WASTE MANAGEMENT PROJECT LABORATORY

(a Division of Re Sustainability Limited)  
 ISO 9001, 14001 & 45001 Certified Laboratory  
 Accredited by NABL as per ISO/IEC 17025:2017 & Certified by MoEF&CC



## TEST REPORT

Report Number : KWMP/2024-25/242  
 Name & Address : Regional Directorate (Bengaluru)  
 Nisarga Bhavan, A-Block 1<sup>st</sup> & 2<sup>nd</sup> Floors, Thimmaiah Road,  
 7<sup>th</sup> D Main, Shivanagar, Bengaluru- 560079.  
 Sample Particulars : Endosulfan Stock-Pile Sample  
 Sampling Location : Mannargaht  
 Sampling Date : 23.11.2024  
 Sampling Test Method : Grab  
 Sample Collected by : KWMP Representative  
 Sample Quantity : 50 ml  
 Sample packing : Plastic cans  
 Sample Reg No. and Date : KWMP/2024-25/242, 27.11.2024  
 Analysis Start Date : 28.11.2024  
 Analysis End Date : 09.12.2024  
 Date of Report : 09.12.2024

S.No	Test Parameters	Unit	Test Method	Test Results
1	Chlorine	%	KWMP/SOP/HW/40	2.76
2	Calorific Value	kcal/kg	KWMP/SOP/HW/03	9646
3	Carbon	%	CHNS Method	5.59
4	Solubility in Diesel	%	-	Not Soluble
5	Endosulfan Sulfate	mg/kg	USEPA 3540C, 3550C, 8270E	9027
6	$\alpha$ -Endosulfan	mg/kg	USEPA 3540C, 3550C, 8270E	290.7
7	$\beta$ -Endosulfan	mg/kg	USEPA 3540C, 3550C, 8270E	12.4

  
 Authorized signatory

Page 1 of 1

Re Sustainability Limited  
 CIN No. U74140TG1994PLC018833

Registered Office:  
 Level 11B, Aurobindo Galaxy,  
 Hyderabad Knowledge City, Hitech City Road,  
 Hyderabad - 500081,  
 Telangana.

Site Address:  
 Karnataka Waste Management Project  
 Opposite of OM Logistics  
 NH - 207, Near Pemmanahalli  
 Dabaspeta, Nelamangala Taluk  
 Bengaluru Rural District - 56111

Regional Office:  
 Ramky House, Site No. 25-30, 2nd Cross,  
 Raghavendranagar, Hennur Ring Road,  
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 Karnataka.  
 T: +91 70220 48893  
 E: niteshkumar.singh@resustainability.com

## ANNEXURE-II

Analysis results of the Endosulfan Samples as received from BEIL (4 pages)


**ANALYTICAL RESEARCH LABORATORY**  
**BEIL INFRASTRUCTURE LIMITED**  
 (Formerly Known as Bharuch Enviro Infrastructure Ltd.)
**TEST REPORT**

Page 1 of 1

Report No: 20241212_1		Report Date: 12-DEC-2024	
Name of Customer :	Kerala Enviro Infrastructure Limited		
Address Of Customer :	Ambalamedu - 682303		
Sample Description :	Periya		
Sample Quantity (UOM) :	100 mL	Sample Received Date :	10-DEC-2024
Sampling Location :	NA	Sample Start Date :	10-DEC-2024
Sample Collected By :	BY Customer	Analysis End Date :	12-DEC-2024

Sr.No.	Parameters	Unit	Results	Permissible Limit	Method Reference
1	Physical State	---	Liquid	-	SOP/HW/21: 2021
2	Appearance	---	Dark Brown	-	SOP/HW/21: 2021
3	pH (10% Solution)	---	1.52	-	APHA* 4500H+-B, 473 to 478, 24th Ed.: 23
4	Gross Calorific Value	cal/gm	8434	-	IS:1448 (Part-6):1984
5	Total Sulphur	%	2.70	-	ASTM D5291 - 10(2015); 2015
6	Halogen (as Cl)	%	5.26	-	SOP/HW/15 Volhard's Method
7	Ash content at 800°C	%	0.12	-	IS 1448 (Part-4) :1984
8	Alpha Endosulfan	ppm	3710	-	USEPA 508
9	Beta Endosulfan	ppm	4528	-	USEPA 508
10	Solubility in Diesel (1:1 Ratio)	--	Miscible but formation of solid particle after half an hour	-	-

Remarks: - Sample has eye irritation so handle with proper Safety Precaution.

----- END OF REPORT -----

For BEIL INFRASTRUCTURE LIMITED

AUTHORISED SIGNATORY

MR. N. B. PATEL

(QUALITY MANAGER)



# ANALYTICAL RESEARCH LABORATORY BEIL INFRASTRUCTURE LIMITED

(Formerly Known as Bharuch Enviro Infrastructure Ltd.)

## TEST REPORT

Page 1 of 1

Report No: 20241212\_2

Report Date 12-DEC-2024

Name of Customer : Kerala Enviro Infrastructure Limited

Address Of Customer : Ambalamedu - 682303

Sample Description : Rajapuram

Sample Quantity (UOM) : 100 mL

Sample Received Date : 10-DEC-2024

Sampling Location : NA

Sample Start Date : 10-DEC-2024

Sample Collected By : BY Customer

Analysis End Date : 12-DEC-2024

Sr.No.	Parameters	Unit	Results	Permissible Limit	Method Reference
1	Physical State	---	Liquid	-	SOP/HW/21: 2021
2	Appearance	---	Dark Brown	-	SOP/HW/21: 2021
3	pH (10% Solution)	---	1.58	-	APHA* 4500H+-B, 473 to 478, 24th Ed.: 23
4	Gross Calorific Value	cal/gm	8106	-	IS:1448 (Part-6):1984
5	Total Sulphur	%	3.16	-	ASTM D5291 - 10(2015): 2015
6	Halogen (as Cl)	%	7.97	-	SOP/HW/15 Volhard's Method
7	Ash content at 800°C	%	0.1	-	IS 1448 (Part-4) :1984
8	Alpha Endosulfan	ppm	17415	-	USEPA 508
9	Beta Endosulfan	ppm	13820	-	USEPA 508
10	Solubility in Diesel (1:1 Ratio)	--	Miscible but formation of solid particle after half an hour	-	-

Remarks: - Sample has eye irritation so handle with proper Safety Precaution.

----- END OF REPORT -----

For BEIL INFRASTRUCTURE LIMITED



AUTHORISED SIGNATORY

MR. N. B. PATEL

(QUALITY MANAGER)

Regd. Office & Works Office : Plot No. 9701-16, GIDC Estate, Post Box No. 82, Ankleshwar - 393 002, Dist. : Bharuch (Gujarat)

Tel. : 9909994996 Web : www.beil.co.in E-mail : patelnb1@beil.co.in,dhaval.upasani@beil.co.in

CIN NO. U45300GJ1997PLC032696



# ANALYTICAL RESEARCH LABORATORY

## BEIL INFRASTRUCTURE LIMITED

(Formerly Known as Bharuch Enviro Infrastructure Ltd.)

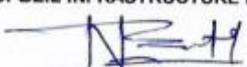
### TEST REPORT

Sr.No.	Parameters	Unit	Results	Permissible Limit	Method Reference
1	Physical State	---	Liquid	-	SOP/HW/21: 2021
2	Appearance	---	Dark Brown	-	SOP/HW/21: 2021
3	pH (10% Solution)	---	1.36	-	APHA* 4500H+-B, 473 to 478, 24th Ed.: 23
4	Gross Calorific Value	cal/gm	9052	-	IS:1448 (Part-6):1984
5	Total Sulphur	%	0.405	-	ASTM D5291 - 10(2015): 2015
6	Halogen (as Cl)	%	3.20	-	SOP/HW/15 Volhard's Method
7	ash content at 800°C	%	< 0.1	-	IS 1448 (Part-4) :1984
8	Alpha Endosulfan	ppm	Nil	-	USEPA 508
9	Beta Endosulfan	ppm	Nil	-	USEPA 508
10	Solubility in Diesel (1:1 Ratio)	--	Miscible but formation of solid particle after half an hour	-	--

Report No: 20241212\_3 Page 1 of 1  
 Name of Customer : Kerala Enviro Infrastructure Limited Report Date 12-DEC-2024  
 Address Of Customer : Ambalamedu - 682303  
 Sample Description : Manarkad  
 Sample Quantity (UOM) : 100 mL Sample Received Date : 10-DEC-2024  
 Sampling Location : NA Sample Start Date : 10-DEC-2024  
 Sample Collected By : BY Customer Analysis End Date : 12-DEC-2024

Remarks: - Sample has eye irritation so handle with proper Safety Precaution.

----- END OF REPORT -----

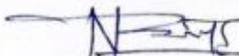
	For BEIL INFRASTRUCTURE LIMITED  AUTHORISED SIGNATORY MR. N. B. PATEL (QUALITY MANAGER)
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## ANALYTICAL RESEARCH LABORATORY BEIL INFRASTRUCTURE LIMITED

(Formerly Known as Bharuch Enviro Infrastructure Ltd.)

### TEST REPORT

Page 1 of 1					
Report No: 20241212_4		Report Date 12-DEC-2024			
Name of Customer :	Kerala Enviro Infrastructure Limited				
Address Of Customer :	Ambalamedu - 682303				
Sample Description :	Cheemeni				
Sample Quantity (UOM) :	50 gm.	Sample Received Date :	10-DEC-2024		
Sampling Location :	NA	Sample Start Date :	10-DEC-2024		
Sample Collected By :	BY Customer	Analysis End Date :	12-DEC-2024		
Sr.No.	Parameters	Unit	Results	Permissible Limit	Method Reference
1	Physical State	---	Solid	-	SOP/HW/21: 2021
2	Appearance	---	Dark Brown	-	SOP/HW/21: 2021
3	pH (10% Solution)	---	2.08	-	APHA* 4500H+-B, 473 to 478, 24th Ed.: 23
4	Gross Calorific Value	cal/gm	2963	-	IS:1448 (Part-6):1984
5	Total Sulphur	%	1.53	-	ASTM D5291 - 10(2015): 2015
6	Halogen (as Cl)	%	11.17	-	SOP/HW/15 Volhard's Method
7	ash content at 800°C	%	9.92	-	IS 1448 (Part-4) :1984
8	Alpha Endosulfan	mg/kg	Nil	-	USEPA 508
9	Beta Endosulfan	mg/kg	Nil	-	USEPA 508
10	Solubility in Diesel (1 % Solution)	--	Not Soluble	-	--
Remarks: - - - -					
----- END OF REPORT -----					
					<b>For BEIL INFRASTRUCTURE LIMITED</b>  <b>AUTHORISED SIGNATORY</b> <b>MR. N. B. PATEL</b> <b>(QUALITY MANAGER)</b>

**Central Pollution Control Board**

(Ministry of Environment, Forests and Climate Change)

REGIONAL DIRECTORATE, BENGALURU

Nisarga Bhavan, 1 &amp; 2 Floors, Thimmaiah Road, Shivanagar

**BENGALURU-560079, KARNATAKA**

\*\*\*\*\*

**Minutes of the Meeting held on 24-01-2025 for ensuring compliance to the Honourable NGT (SZ) order dated 18.09.2024 in OA No. 186/2023 (SZ) in the matter of disposal of endosulfan stock-piles stored at various estates of The Plantation Corporation of Kerala Ltd.**

Meeting title	<i>Online meeting in pursuance to the Honourable NGT order dated 18-09-2024 in the matter of OA 186/2024 SZ.</i>
Date	24-01-2025
Meeting Sequence	# 04
Time	11.30 to 12.20 hrs. IST
Platform / Venue	Virtual meeting via Google Meet
Meeting Link (online)	<a href="https://meet.google.com/iog-sfgk-uxw">https://meet.google.com/iog-sfgk-uxw</a>
Meeting Facilitator	Regional Directorate, CPCB, Bengaluru.

A virtual meeting was organized by the Regional Director, Regional Directorate, CPCB, Bengaluru on 24-01-2025 at 11.30 Hrs. IST to discuss on the following;

- Storage conditions of the endosulfan stock piles,
- analysis results of the stock-pile samples collected during 21 to 23<sup>rd</sup> November, 2024 during the site visit of the Committee members;
- the technical feasibility reports of the TSDF operators.
- to decide further course of action as a part of ensuring compliance to the Hon'ble NGT order in OA No. 186/2023 (SZ).

The list of officials attended the online meeting is annexed as **Annexure-I**.

Sh. J Chandra Babu, Regional Director (RD) CPCB Bengaluru welcomed all the officials and all the other officials participated in the meeting. The meeting started with a formal note on the background of OA No. 186/2023 (SZ) and directions of Honourable NGT Thereafter, the details of the endosulfan stock inspected during November 21 to 23, 2024 in four estates of the



M/as. Plantation Corporation of Kerala (PCK) Ltd., including the storage conditions and the analysis outcome were reiterated and discussed in detail. He also, highlighted decisions taken in the last meeting held on 24.12.2024 for initiating necessary actions by the concerned especially on (i) Requirement of transfer of endosulfan from the existing drums to the new drums; (ii) Storage conditions of the sheds from safety point of view; (iii) For making arrangements for procurement of new drums (iv) to confirm about the arrangements made and suitable dates for shifting of the endosulfan to the new drums and (v) Techno-feasibility and disposal option report awaited from the TSDF operators based on the analysis results of the samples collected. He also shown the photographs captured during the visits as evidence of storage conditions of the stock piles of the endosulfan and the details of analysis results as received from the TSDF operators.

Based on the analysis results, it was observed that, calorific content of the stock pile is fairly high due to the solvent present in the endosulfan formulation and observed that the material is suitable for disposal by incineration through an authorized common HW incinerator. The halide/chlorine content of the samples were in the range of 2.7 to 11.7 % indicating the need for adjusting the feed rate considering the limiting value of chlorine loading on incinerator.

The endosulfan content was also found less than the expected concentration, which is perhaps due to degradation or breaking into other organic compounds during the period of long storage. It was also observed that there are some variations in the analysis methods adopted by TSDF operators viz., M/s. RE Sustainability and M/s. BEIL. With regard to disposal of contaminated drums, committee suggested that the decontaminating and recycling the drums may not be the suitable option and all the contaminated drums need to be disposed by incineration.

The committee emphasized the need for (a) ensuring compliance with safety and environmental regulations during handling/transfer of endosulfan from existing drums to new drums of adequate size, (b) proper packaging and labelling of drums, (c) transportation of drums containing waste pesticide drums in accordance with the Hazardous and Other Waste (Management & Transboundary Movement) Rules, 2016 as amended as well as CPCB guidelines.



The Deputy Collector of the Endosulfan Cell reassured that all the possible support shall be provided for the team to carry out the operation and also requested that the transferring and disposal shall be planned confidentially and need to be executed swiftly to avoid public protest as the issue is very sensitive in Kerala State. The Regional Director (RD), Bengaluru suggested to utilise the services of State Disaster Response Team for the stock pile transferring to the new drums and clean-up operations, if required.

Upon deliberations following decisions were taken:

- a) Specifications for new drums shall be suggested by the TSDF operator's viz., M/s. RE Sustainability and M/s.BEIL considering the chemical nature, material of drums, arrangements for sealing of drums during transit, safety aspects related to transport from the existing place to the TSDF for ultimate disposal.
- b) M/s. PCK Ltd., shall take-up repairing damaged portion of the roof/walls of the storage shed where the waste pesticide is stored temporarily in drums.
- c) M/s. PCK Ltd being the custodian of the endosulfan stocks, shall bear the cost towards procurement of the drums as per specifications to be suggested by the TSDF Operators and for ultimate disposal of the stock piles of endosulfan.
- d) The Endosulfan Cell under the DC, Kasaragod, Government of Kerala with the help of other associated departments shall facilitate the TSDF operators in safe handling, transfer and ultimate disposal of the stock piles in an environmentally sound manner.
- e) M/s. PCK Ltd for making necessary arrangements for transfer of the existing stock piles of endosulfan to the new drums of volume preferably 50 to 100 L under the supervision of the officials of CPCB, Kerala SPCB, representatives of the TSDF operators, Endosulfan Cell, representative of M/s. HIL, Eloor, Kerala, and State Disaster Response Team
- f) M/s. PCK Ltd shall obtain all a formal authorization/ permissions from Kerala SPCB for ensuring ultimate and safe disposal of endosulfan stocks.
- g) The technical feasibility report along with standard operating protocols (SoP) for disposal of the endosulfan stock piles be submitted by the TSDF operators viz., M/s. RE Sustainability and M/s. BEIL considering the above factors along with the analysis results



of the samples collected, preferably on or before 31-01-2025 to enable to apprise Hon'ble NGT SZ Chennai for consideration.

The meeting ended with a vote of thanks to all the participants.

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## **ANNEXURE-I**

### **List of Officials Participated in the meeting held on 24.12.2024**

#### **CPCB Officials**

1. Sh. Vinod Babu B, Scientist-F, DH, WM-II, CPCB, Delhi
2. Sh. J Chandra Babu, Regional Director, Regional Directorate, CPCB, Bengaluru
3. Sh. Vivek K, Scientist E, Regional Directorate, CPCB, Bengaluru
4. Dr. V. Deepesh, Scientist D, CPCB, Regional Directorate, Bengaluru.
5. Sh. Sandeep Kumar, Scientist-B, DH, IPC-I, CPCB, Delhi.

#### **CIB&RC, Faridabad**

6. Dr. Sneha Potdar, Deputy Director (Chemistry), CIB&RC, Faridabad.

#### **Endosulfan Cell, District Administration**

7. The Deputy Collector, Endosulfan Cell, District Administration, Kasaragod.
8. Representative of District Magistrate, District Administration, Palakkad.

#### **KSPCB RO Kasaragod**

9. Sh. Dinesh K S, Environmental Engineer, Kerala SPCB, District Office, Kasaragod.

#### **M/s. HIL, Eloor, Kerala**

10. Shri. Praveen R, Deputy Manager, M/s. HIL, Eloor, Kerala.

#### **PCK Ltd., Kasaragod Division.**

11. The Manager, PCK Ltd., Kasaragod Division.

#### **Representatives of TSDF Operators**

12. Dr. P N Parameswaran, Representatives of M/s. BEIL, Bharuch.
13. Sh. Bupendra Dalwadi, Representatives of M/s. BEIL, Bharuch.
14. Sh. Nitesh Kumar, Representatives of RESustainability.
15. Dr. Salman, Representatives of TSDF, Dabaspeta, Karnataka.
16. Dr. Vipin Narayana, Lab Head, TSDF, Dabaspeta, Karnataka.
17. Dr. N K Pillai, Representatives of M/s. KEIL, Cochin, Kerala.
18. Smt. Rakshita Vyas, Representatives of M/s. BEIL, Bharuch.

**BEFORE THE  
HON'BLE NATIONAL GREEN TRIBUNAL  
SOUTHERN BENCH CHENNAI**

**Original Application No 186 of 2023(SZ)**

**IN THE MATTER OF**

**Ravindranath Shanbhogue, Karnataka**

**Applicant(s)**

**Versus**

**Union of India, Through its Secretary, New Delhi and Ors  
Respondent(s)**

**REPLY ON BEHALF OF CENTRAL  
POLLUTION CONTROL BOARD (CPCB) i.e.  
RESPONDENT NO. 2**

**M/s.R.Thirunavukarasu  
Counsel for the 2<sup>nd</sup> Respondent  
CPCB  
M-9444012986**