BEFORE THE HON'BLE NATIONAL GREEEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

EXECUTION APPLICATION NO. 39/2023

IN

ORIGINAL APPLICATION NO. 400/2019

In the matter of:

Social Action for Forest & Environment (SAFE) **Applicant**

Versus

Union of India & Ors. **Respondents**

INDEX

S. No.	Particulars	Pages
1.	Additional Status Report on behalf of Central Pollution Control Board (CPCB) alongwith supporting affidavit.	
2.	**Annexure-I** Copy of Hon'ble NGT order dated 01.05.2025.	
3.	**Annexure- II** A copy of SoP.	
4.	**Annexure-III** A copy of e-mail dated 19.01.2024.	
5.	**Annexure-IV** A copy of letters dated 20.03.2024.	
6.	**Annexure-V** A copy of compliance status by TPO units in States and Union Territories.	
7.	**Annexure-VI** A copy of minutes of the meeting dated 11.03.2024 including Typical proposed Tyre Pyrolysis Oil Specification as proposed by the fuel quality experts.	
8.	**Annexure-VII** A copy of BIS email dated 03.09.2025.	

Filed by Adv. Suman Arora
On behalf of Central Pollution Control Board

Place: Delhi
Dated:03.09.2025

BEFORE THE HON'BLE NATIONAL GREEEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

EXECUTION APPLICATION NO. 39/2023

IN

ORIGINAL APPLICATION NO. 400/2019

In the matter of:

Social Action for Forest & Environment (SAFE) **Applicant**

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SUBMISSIONS ON BEHALF OF CENTRAL POLLUTION CONTROL BOARD (CPCB) TO THE DIRECTIONS OF THE HON'BLE NGT DATED 01.05.2025

Most respectfully showeth:

1. That the Hon'ble National Green Tribunal, Principal Bench (hereinafter referred to as the "Hon'ble NGT") vide Order dated 01.05.2025 has sought further submissions on behalf of Central Pollution Control Board (hereinafter will be referred as CPCB). Thus submissions are being made in the succeeding paras. A copy of the Hon'ble NGT Order dated 01.05.2025 is annexed herewith as **ANNEXURE – I.**

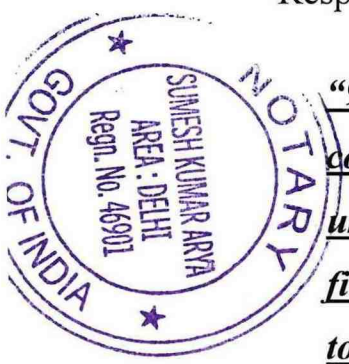
2. That CPCB is a statutory Board constituted under the Water (Prevention and Control of Pollution) Act, 1974. It performs the functions under the Water (Prevention and Control of Pollution) Act, 1974 (hereinafter referred to as "Water Act, 1974"), the Air (Prevention and Control of Pollution)

Act, 1981 (hereinafter referred to as "Air Act, 1981") and the Environment (Protection) Act, 1986.

3. That the State Pollution Control Boards/Pollution Control Committees (hereinafter referred to as "SPCB/PCCs") have been constituted in States/Union Territories under the Water Act, 1974 and the Air Act, 1981 and are empowered to perform functions and implement the provisions of these Acts in respect of their territorial jurisdictions. Under Section 21 of the Air Act, 1981, it is mandatory that no person shall, without the previous consent of the State Board/PCC establish or operate any industrial plant in an air pollution control area.

BACKGROUND :

4. The Present Execution Application No. 39/2023 has been filed in Original Application of 400 of 2019 titled "*SAFE vs Union of India & Others*", wherein the applicant had raised the issue of the absence of proper management of End-of-Life- Tyers/Waste Tyers in accordance with the applicable rules. The Hon'ble National Green Tribunal (hereinafter will be referred as Hon'ble NGT) while reviewing this matter disposed off the said Original Application on 07.11.2022 and passed directions to this answering Respondent i.e CPCB:



"9. Accordingly, we direct that non-compliant units be closed till compliance expeditiously. CPCB may finalize the classification of the units so that application norms can be enforced. Revised SOP may be finalized by the CPCB and MoEF&CC in light of discussion in today's hearing and above observations within one month. SOP may also provide for certifying the fuel quality standards of pyro-oil as per norms of the Petroleum Ministry ."

5. That the said matter was last heard on 01.05.2025, where CPCB submitted its affidavit providing status of actions taken by CPCB in compliance of the directions issued by CPCB time to time. The Hon'ble NGT vide its directions dated 01.05.2025 has made certain observations and has directed Member Secretary, CPCB to file his affidavit disclosing the timeline within which the order of the Tribunal will be fully complied with. Accordingly, the submissions on behalf of CPCB over the observations made by the Hon'ble NGT in its order dated 01.05.2025 are as follows;

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SUBMISSIONS ON FURTHER ACTION TAKEN:

6. That CPCB has duly complied with the directions issued by the Hon'ble NGT while disposing the matter on 07.11.2022. The actions taken by CPCB were submitted vide its affidavit dated 18.01.2024. Further, current status on action taken by CPCB on directions passed by Hon'ble Tribunal is as tabulated below:-

S. No	NGT order	CPCB's submission	Status of compliance of the NGT order
1.	**Point 2 of the order:** Tribunal order dated 07.11.2022 had disposed of the	CPCB has duly complied with the directions issued by the Hon'ble NGT while disposing the matter on 07.11 .2022. In this regard CPCB has revised Standard Operating Procedure (SOP) on "Recycling of	**Complied**

	OA by directing as under: - *"9. Accordingly, we direct that non-compliant units be closed till compliance expeditiously. CPCB may finalize the classification of the units so that application norms can be enforced. Revised SOP may be finalized by the CPCB and MoEF&CC in light of discussion in today's hearing and above observations*	Waste Tyre Scrap for the recovery of Tyre Pyrolysis Oil, Pyro Gas and Char in Tyre Pyrolysis Oil (TPO) Units. Said SOP stipulates the following clauses for operation of TPO: **1.** Siting Criteria 1.1 Siting Criteria for Advanced Batch Automated Process (ABAP) type TPO Units: 1.2 Green belt requirement 1.3 Movement of Fire-Tenders **2.** Carrying Capacity of the area for siting of ABAP type TPO Units **3.** Threshold limits for tyre pyrolysis oil (TPO) Units (New TPO Units and expansion in Existing TPO Units) **4.** Standard Operating Procedure(SOP) of ABAP type TPO Units 4.1 Minimum Requirement for environmentally sound operation	

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	within one month. SOP may also provide for certifying the fuel quality standards of pyro-oil as per norms of the Petroleum Ministry."	4.2 Safety Measures to be adopted **5.** Standard Operating Procedure(SOP) of Continuous Process (New & Existing) 5.1 Minimum Requirement for environmentally sound operation 5.2 Safety Measures to be adopted **6.** General conditions applicable to all plants (Batch & Continuous) 7. Further CPCB stated that the Fuel Quality of TPO will be as per the specifications of BIS as and when the same gets notified. CPCB circulated the revised SOP to all SPCBs/PCCs vide email dated 19.01.2024 and 20.03.2024 for its implementation. Copy of said SoP is given at **Annexure II** and CPCB said letters are given at **Annexure-III & IV**). With regard to certifying the fuel quality standard of pyrolysis oil as per norms of MoPNG/BIS, the status	

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		is given at S.No. 5 of the Table below, may kindly be referred.	
2.	**Point 3 of the order:** *"First direction in the above paragraph 9 was to expeditiously close the noncompliant units till compliance is done. Learned Counsel for the CPCB has referred to various documents and argued for about half an hour but, none of those documents are found to be relevant and at the end he has referred to*	CPCB issued directions dated 29.04.2025 under Section 5 of the Environment (Protection) Act, 1986 and letter dated 10.07.2025 seeking compliance of revised SOPs for "Recycling of Waste scrap for the recovery of tyre pyrolysis oil, pyro gas and char in tyre pyrolysis oil (TPO) Units" and directed State Pollution Control Boards/Pollution Control Committees to: • Ensure implementation of Revised SOPs for "Recycling of Waste scrap for the recovery of Tyre Pyrolysis Oil, Pyro Gas and Char in Tyre Pyrolysis Oil (TPO) Units" dated 16/01/2024. • Immediately submit compliance status on verification of TPO Units operating in your State/UT including actions taken in accordance with aforesaid communications dated	Partially Complied by SPCBs/PCCs

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	annexure 4 on page no. 518 which is a communication sent by Waste Management Division to Member Secretaries of all the State PCBS/PCCs on 30.11.2023 to comply with the Tribunal's order and take action of closure against non-compliant units and thereafter no efforts on the part of CPCB has been shown to ascertain the status concerning the action taken in	19/01/2024 and 20/03/2024 made by CPCB. • Ensure at least yearly compliance verification of TPO Units as TPO units are under orange category and submission of compliance report to CPCB The status of compliance by TPO units in States and Union Territories is given at **Annexure V**. It is also to submit that 32 no. of SPCBs/PCCs has reported that there are presently 475 Tyre Pyrolysis Oil (TPO) units, out of which 335 units are complying, 140 are non-complying and out of the 140 non-complying units, 19 Units are self-closed and 32 have been closed by respective SPCB/PCC. As reported, actions have been initiated/under process against 89 remaining non-complying units by respective SPCB/PCC.	

	compliance of the order of the Tribunal or in compliance of the communicatio n dated 30.11.2023 sent by CPCB		
3.	**Point 4 of the order:** *Second direction of the Tribunal was that CPCB will finalize the classification of the units so that applicable norms can be enforced.*	CPCB issued direction dated 07.11.2022 and 12.02.2025 to State Pollution Control Board and Pollution Control Committees under section 18(1)(b) of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 regarding harmonization of classification of industrial sectors under Red, Orange, Green, White and Blue categories. As per said classification, Tyre Pyrolysis Units have been categorised as "Orange Category". CPCB vide letter dated 30.11.2023 requested all the SPCBs/PCCs directing for adoption and implementation of uniform categorization for TPO units.	Complied

4.	**Point 5 of the order:** *"The third direction of the Tribunal was to finalize the revised SOP"*	In compliance with the Hon'ble NGT directions, CPCB revised the Standard Operating Procedures (SOPs) for Tyre Pyrolysis Oil (TPO) Units after conducting extensive study of seven (07) Tyre Pyrolysis Oil Units (TPO) Units comprising of three (03) advance batch automated tyre pyrolysis units, three (03) existing batch TPO units and one (01) continuous tyre pyrolysis unit under the guidance of expert committee comprising of experts from NEERI and IIT Delhi. Findings of study carried out by SPCBs in 70 TPO units were also incorporated. The suggestions made by the petitioner & directions issued by the Hon'ble NGT vide its order dated 07-11-2022, were included. The Standard Operating Producers (SOPs) were placed in public domain	Complied

		on the website of the CPCB on 27-10-2022 for seeking comments and the relevant comments have been incorporated in the SOP. The SOP after incorporating comments of the stakeholder was further sent to expert for their comments. After incorporating their comments, the SOPs were finalized. The revised SOP has been forwarded to SPCBs/PCCs for its implementation. The copy of revised SOPs is annexed as **ANNEXURE-II**. The revised SoP stipulates the concept of Advanced Batch Automated Process (ABAP) for the improvement in Environmental performance of the Tyre Pyrolysis Oil Units. As per the revised SOPs, the TPO Unit having cumulative maximum batch capacity up to 60 tonnes per day (TPD) only	

		be allowed within a premises and this is applicable for new ABAP type Units /expansion in existing batch type TPO Unit. Further, beyond the cumulative batch capacity of 60 TPD, only continuous process type TPO unit be allowed in case of setting up of new ABAP type units or expansion in existing TPO Unit in a single premises.	
5.	**Point 6 of the order:** *Fourth direction was to provide for certifying the fuel quality standards of pyro-oil as per norms of the Petroleum Ministry in the SOP. Nothing has been pointed out to show that this direction has*	• That the CPCB in its revised SoP has already mentioned that the TPO will comply with the fuel quality specifications as and when specified by BIS & MoPNG. • Further, CPCB is pursuing the matter related to Fuel quality specification before MoPNG & BIS. And has sent letters and reminder letters dated 13.12.2023 & 20.03.2024 to both BIS & MoPNG.	Complied

	been complied with by CPCB except writing on 13.12.2023 to the Ministry of Petroleum and Natural Gas Regulatory Board (MO PNGRB) seeking the details	• CPCB convened a meeting through virtual mode on 11.03.2024 and was attended by Expert Member from NEERI, Oil sector expert (Former Scientist 'F' CSIR-IIP Dehradun), officials from MoEF&CC, MoPNG, BIS, SPCBs/PCCs & CPCB, whereby, discussions were concluded over usage of Tyre Pyrolysis Oil and status of its inclusion in the list of approved fuels as issued by SPCBs/PCCs. The experts and other participants in the meeting were of the opinion that Tyre Pyrolysis Oil can be compared with Furnace Oil (FO) and can be used as its substitute in those industries where FO has been permitted. It was also observed that Tyre Pyrolysis Oil has lower carbon number, lower Sulphur content and hence emissions (PM and SOx) from usage of tyre pyrolysis oil (TPO) are	

			expected to be lower than that of emissions from FO. Hence, SPCBs/PCCs may consider permitting Tyre Pyrolysis Oil also in such industries where FO has been permitted and adequate air pollution control system has been installed to meet the specified emission norms. The minutes of the meeting dated 11.03.2024 including Typical proposed Tyre Pyrolysis Oil Specification as proposed by the fuel quality experts at **Annexure VI.** • That MoPNG vide its letter dated 08.04.2024 has informed that BIS has moved a proposal or framing specifications for Pyrolysis Oil produced from waste tyres, Plastics & Biomass. As per discussions held in the technical committee of "Petroleum and their related products of synthetic or biological or natural origin - PCD 03	

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		(Petroleum, Coal, and Related Product Development) of BIS", a study has been proposed for framing the specifications of Pyrolysis Oil produced from all the three sources involving all the stakeholders. • CPCB has again written to BIS on 06.05.2025 seeking status on finalisation of specifications of Tyre Pyrolysis Oil for regulating its usage for industrial processes. CPCB also shared Typical proposed Tyre Pyrolysis Oil Specification as proposed during meeting held on 11.03.2024. • BIS vide its email dated 28.05.2025 informed that an R&D project (Project ID: PCD 0256) has been awarded to the National Institute of Technology, Tiruchirappalli. The project, titled *"Study on Pyrolysis Oil for Determination of Correlation*	

		Amongst Feedstock Composition, Manufacturing Technology, and Performance Characteristics," **commenced on 18 February 2025 and is scheduled for completion within four months.** Based on the outcomes of the study, the fuel quality standards for TPO will be specified. • Further BIS vide its email dated 03.09.2025 informed that the said R&D project for development of fuel quality standards for pyrolysis oil is still in progress. NIT Tiruchirappalli has requested an extension of the project duration, and it is now expected to be completed by the end of November 2025 (Copy of BIS email dated 03.09.2025 is given at Annexure VII).	

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7. That in view of the above submissions, it is humbly submitted that this answering Respondent has complied with all the directions passed by Hon'ble Tribunal and in the light of the above submissions, it is respectfully

submitted that this Answering Respondent, i.e., CPCB, shall further abide by any order(s) or direction(s) passed by this Hon'ble National Green Tribunal in the instant Original Application.

(Bharat Kumar Sharma)
Member Secretary
Central Pollution Control Borad

BEFORE THE HON'BLE NATIONAL GREEEN TRIBUNAL,
PRINCIPAL BENCH, NEW DELHI

EXECUTION APPLICATION NO. 39/2023

IN

ORIGINAL APPLICATION NO. 400/2019

In the matter of:

Social Action for Forest & Environment (SAFE) **Applicant**

Versus

Union of India & Ors. **Respondents**

AFFIDAVIT

I, **Bharat Kumar Sharma, Member Secretary, Central Pollution Control Board,** do hereby solemnly affirm and declare on oath and state as under:

1. That I, the deponent herein is 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 may be read part and parcel of the present affidavit as I am competent to swear this affidavit.

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

NOTARY
SUMESH KUMAR ARYA
AREA : DELHI
Regn. No. 46901
GOVT. OF INDIA

over and explained to me and are not repeated herein for the sake of brevity.

DEPONENT

भरत कुमार शर्मा / Bharat Kumar Sharma
सदस्य सचिव / Member Secretary
केंद्रीय प्रदूषण नियंत्रण बोर्ड
Central Pollution Control Board
(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)
(M/o Environment, Forest & Climate Change, Govt. of India)
परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली–110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032

VERIFICATION

03 SEP 2025

Verified at Delhi on this day of _____ 2025 that the contents of the above reply are correct and true on the basis of the records of the case as mentioned in the day-to-day affairs of the CPCB. Nothing has been concealed therefrom or mis- stated.

भरत कुमार शर्मा / Bharat Kumar Sharma
सदस्य सचिव / Member Secretary
केंद्रीय प्रदूषण नियंत्रण बोर्ड
Central Pollution Control Board
(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)
(M/o Environment, Forest & Climate Change, Govt. of India)
परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली–110032
Parivesh Bhawan, East Arjun Nagar, Delhi-110032

DEPONENT

NOTARY
SUMESH KUMAR ARYA
AREA : DELHI
Regn. No. 46901
GOVT. OF INDIA

ATTESTED
NOTARY PUBLIC, DELHI
GOVT. OF INDIA

03 SEP 2025

Annexure-I

Item No. 20 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Execution Application No. 39/2023
In
Original Application No. 400/2019
(I.A. Nos. 469/2024, 470/2024, 139/2024 & 341/2025)

Social Action for Forest & Environment (SAFE) Applicant

Versus

Union of India & Ors. Respondent(s)

Date of hearing: 01.05.2025

CORAM: HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICAL MEMBER
MEMBERHON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER

Applicant: Mr. Sanjay Upadhyay, Senior Advocate with Mr. Saumitra Jaiswal & Ms. Gitanjali Sanyal, Advs. for Applicant in E.A No. 39/2023
Respondent: Mr. Raj Kumar, Adv. for CPCB
Mr. Pradeep Misra & Mr. Daleep Dhyani, Advs. for UPPCB (Through VC)
Dr. Swati Jindal Garg, Ms. Vartika Sharma & Ms. Ritika Sharma, Advs. for R - 1

ORDER

1. By this execution application, applicant is seeking compliance of order dated 07.11.2022 passed in OA No. 400/2019. In the OA, applicant had raised the issue of the absence of proper management of End-of-Life-Tyers/Waste Tyers (ELTs) in accordance with the applicable rules.

2. Tribunal order dated 07.11.2022 had disposed of the OA by directing as under:-

> *"9. Accordingly, we direct that non-compliant units be closed till compliance expeditiously. CPCB may finalize the classification of the units so that application norms can be enforced. Revised SOP may be finalized by the CPCB and MoEF&CC in light of discussion in today's hearing and above observations within one month. SOP may also*

provide for certifying the fuel quality standards of pyro-oil as per norms of the Petroleum Ministry."

3. First direction in the above paragraph 9 was to expeditiously close the non-compliant units till compliance is done. Learned Counsel for the CPCB has referred to various documents and argued for about half an hour but, none of those documents are found to be relevant and at the end he has referred to annexure 4 on page no. 518 which is a communication sent by Waste Management Division to Member Secretaries of all the State PCBS/PCCs on 30.11.2023 to comply with the Tribunal's order and take action of closure against non-compliant units and thereafter no efforts on the part of CPCB has been shown to ascertain the status concerning the action taken in compliance of the order of the Tribunal or in compliance of the communication dated 30.11.2023 sent by CPCB.

4. Second direction of the Tribunal was that CPCB will finalize the classification of the units so that applicable norms can be enforced. Counsel for the CPCB has referred to annexure 1 page 499 filed along with report, which shows that Tyre Pyrolysis Oil (TPO) industries applicable for the advanced batch automated process/continuous TPO units are placed in the 'orange category**'.** He is not in a position to disclose if, this categorization was done prior to order of the Tribunal or incompliance of Tribunal's order. However, we find that letter dated 30.11.2023 (page 497) has identified Tyre Pyrolysis category as orange which was done through a committee on 23.10.2023.

5. The third direction of the Tribunal was to finalize the revised SOP. Referring to annexure-3 page 504, Learned Counsel for CPCB has pointed out that this direction has been complied with and revised SOP (dated 16.01.2024) has been prepared and issued for Recycling of Waste Tyre

Scrap for recovery of Tyre Pyrolysis Oil, Pyro Gas and Char in Tyre Pyrolysis Oil (TPO) units.

6. Fourth direction was to provide for certifying the fuel quality standards of pyro-oil as per norms of the Petroleum Ministry in the SOP. Nothing has been pointed out to show that this direction has been complied with by CPCB except writing on 13.12.2023 to the Ministry of Petroleum and Natural Gas Regulatory Board (MO PNGRB) seeking the details.

7. Thus, we are of the view that directions issued by the Tribunal contained in paragraph 9 of the order dated 07.11.2022 have not been fully complied with by CPCB, though about two and a half years have passed after passing of the order, which is sought to be complied with in this EA.

8. Though Learned Counsel for CPCB submits that a fresh status will be filed within three months, on a query put by the Tribunal, he submits that he cannot state if the order of the Tribunal will be complied with within three months.

9. Hence, we direct Member Secretary, CPCB to file his personal affidavit within four weeks disclosing the timeline within which the order of the Tribunal will be fully complied with.

10. List on 04.09.2025.

Prakash Shrivastava, CP

Sudhir Agarwal, JM

Dr. A. Senthil Vel, EM

May 01, 2025
Execution Application No. 39/2023
JG..

Standard Operating Procedure(SOP) for Recycling of Waste Tyre Scrap for the recovery of Tyre Pyrolysis Oil, Pyro Gas and Char in Tyre Pyrolysis Oil (TPO) Units

January 16, 2024

Central Pollution Control Board

(Ministry of Environment, Forest & Climate Change, Government of India)

Parivesh Bhawan, East Arjun Nagar, Shahdara, Delhi – 110032

CP-22/139/2021-WM-III-HO-CPCB-HO

CPCB

STANDARD OPERATING PROCEDURE
for
Recycling of Waste Tyre Scrap for the recovery of Tyre Pyrolysis Oil, Pyro Gas and Char in Tyre Pyrolysis Oil (TPO) Units

1.0 Background

In the matter of OA No. 400 of 2019 and in compliance of the Hon'ble NGT order dated 06-01-2020, seven (07) Tyre Pyrolysis Oil (TPO) Units comprising of three (03) advance batch automated tyre pyrolysis plants, three (03) existing batch units and one (01) continuous tyre pyrolysis plants were studied under the guidance of experts from NEERI and IIT Delhi. Further study of 70 TPO units were carried out with the help of SPCBs. As per the study advanced batch automated process (ABAP) and continuous tyre pyrolysis process had demonstrated compliance with regard to work zone limits and no significant impact on ambient air quality.

The study further observed that existing batch TPO Units need additional features such as PLC based control arrangement, bypass arrangement for pyro gas from reactor door to primary condenser, installation of gas sensors, pressure, temperature gauges at reactor & storage tank, gas /fire alarm system, flaring of entire pyro gas during emergency, arrangement for re-circulation of pyro gas for reactor's heating, provision for flaring of pyro gas, suction hoods over the gate of reactor and char bagging area, water sprinkler system and mechanized arrangement for removal of char and steel scrap and arrangement of Nitrogen gas (N_2) purging to address environmental and safety concerns.

In the same matter, the Hon'ble NGT vide its order dated 25.10.2021 directed to issue appropriate SoP covering siting criteria, threshold limit of a plant, carrying capacity, standards for effluents, emissions and hazardous or other waste, safety aspects to prevent accidents and for protection of public health. Accordingly, in consultation with expert members from NEERI & IIT-Delhi, the existing SoP was revised w.r.t Recycling of Waste Tyre Scrap for the recovery of Tyre Pyrolysis Oil, Pyro Gas and Char in Tyre Pyrolysis Oil (TPO) Unit.

1.1 Pyrolysis process

Pyrolysis is a thermal degradation process carried out in the absence of oxygen /air in a vessel or a chamber, so that the combustion of material does not take place. It is a process in which organic materials are thermally decomposed into simpler compounds in the temperature range of 400 – 500 °C in an oxygen-free environment. **Fig. 1** shows the

schematic diagram of waste scrap tyre pyrolysis process. Since the products of thermal decomposition are released at different temperature having varying molecular structure, the products are in all phases i.e. solid, liquid and gas. Pyrolysis of tyres and rubber products produce pyrolysis oils, pyrolysis gas (pyro-gas), char and steel. The products generated in tyre pyrolysis are as follows:

A) **Pyro Gas**: 20 to 35 percent of a tyre's energy content is typically converted into a combustible gas (Pyro Gas) that is used to fuel the pyrolysis process or is combusted in a flare before it is released. Typically, the components of pyro gas are H_2, H_2S, CO, CO_2, CH_4, C_2H_4, C_3H_6 and other light hydrocarbons.
B) **Pyro Oil**: 35 to 50 percent of the output from the process is transformed into a liquid product that varies in quality from saleable fuel oil to lower-value oil blend stock.
C) **Char**: The residual solid product (referred as char constitutes 25 to 40 percent of the output and contains a mixture of carbon, silica, titanium dioxide, zinc, steel etc.
D) **Steel**: The thin wire, which is used for reinforcement of tyre is extracted out during pyrolysis and is collected at the end, sold in the market as scrap steel.

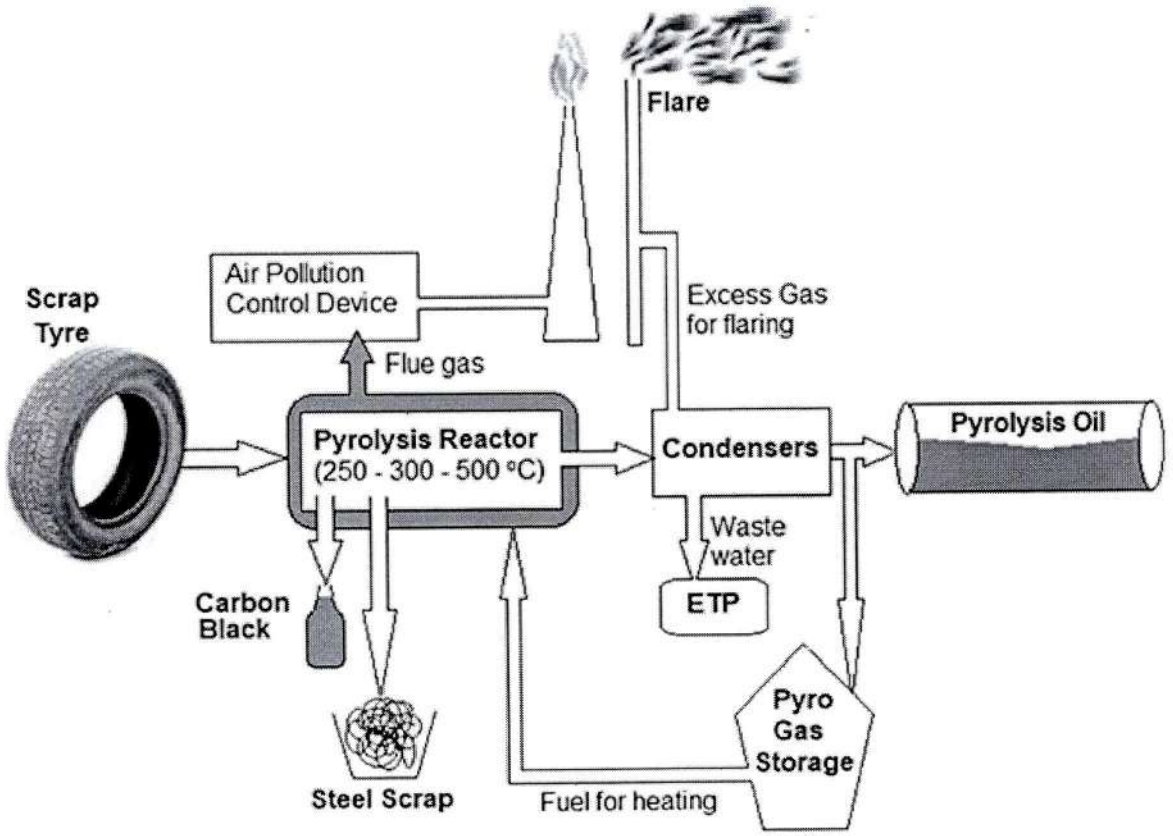

Fig. 1: Schematic diagram of waste tyre pyrolysis process

The quantity and quality of each product depends on many process variables, including temperature, pressure, and residence time. A preferred quality trye pyrolysis oil would have molecular weight little above its boiling temperature under normal temperature and pressure. This would help in efficient combustion, and less of soot formation. Waste tyre pyrolysis plant operators are expected to have a control on rate of heating and condensation so as to produce high-quality oils with high calorific values comparable with diesel and gasoline type fuels.

Two types of Pyrolysis process are in operation in India. Batch Type and Continuous Pyrolysis process. In both type of pyrolysis processes, the final product remains the same. Most of the tyre pyrolysis units in the country are based on batch processes technology having different types of process control, safety mechanism, raw material, finish product and waste handling facilities. There is a need to standardize the operations and facilities at Tyre Pyrolysis Oil (TPO) Units to achieve environmentally sound and safe operation of these units.

From the study carried out, it was observed that Advanced Batch Automated Process (ABAP) and continuous tyre pyrolysis process had no significant impact on ambient air quality. Therefore, for standardizing the batch type pyrolysis operations, Advanced Batch Automated Process (ABAP) type TPO Unit shall only be allowed.

2.0 Siting Criteria, Carrying Capacity and Standard Operating Procedures (SoP) for Advanced Batch Automated Process (ABAP) type TPO units:

2.1 Siting Criteria for ABAP type TPO Units

The siting criteria is applicable only to new /proposed units. New ABAP type TPO unit shall be allowed only in the industrial areas/land.

(I) **Siting criteria for ABAP type TPO Units:**

The criteria for siting of ABAP type TPO units depends on the following facts:

i) There are no organized continuous process emissions in tyre pyrolysis process.
ii) The air pollutant emission in ABAP type TPO unit is from burning of fuel for heating purpose and intermittent flaring of excess pyro gas or its emergency release;
iii) The plot area of the TPO Unit carries more weightage as the emission from TPO unit does not affect far away community, instead it is the immediate neighbourhood that is affected. Char, being large size particle if spilled in the plant premises during its handling cannot travel to larger distance under the influence of wind;
iv) The environmental concern from TPO Unit is spillage of Char in the work zone while removing it from the reactor and its subsequent packing into the

bags. The influence zone due to this spillage is limited within the premise of the unit;

v) The odour from TPO Unit are localized and confined to premises and adjacent areas.

Followings are the criteria for site consideration for new units:

i) New ABAP type TPO Unit having individual reactor capacity of 10 tonnes to 20 tonnes should only be allowed;

ii) Considering the possible impacts in neighbourhood, TPO Unit having cumulative maximum batch capacity up to 60 tonnes per day (TPD) only be allowed within a premises and this is applicable for new ABAP type Units /expansion in existing batch type TPO Unit.

iii) Beyond cumulative batch capacity of 60 TPD, only continuous process type TPO unit be allowed in case of setting up of new ABAP type units or expansion in existing TPO Unit in a single premises.

iv) For new ABAP type TPO Unit the minimum plot area shall be 3000 square meters for a single reactor of 10 to 12 tonnes capacity and the area will increase by 750 square meters for every additional reactor of capacity 10 to 12 tonnes and will increase up to 6000 square meters.

v) For new proposed ABAP type TPO unit the minimum plot area shall be 4000 square meters for a single batch reactor of 20 tonnes capacity and the area will increase by 1000 square meter for every additional reactor and will increase up to 6000 square meters.

vi) For new proposed continuous TPO unit the minimum plot area should be 7000 square meters irrespective of number of reactors.

(II) Green Belt Requirement

The green belt should be as per consent conditions or as per the guidelines of Central and State Government and in no case less than 5% of the total area of the plot.

(III) Movement of Fire-Tenders

Paved road to be provided for movement of the fire-tenders. No material is allowed to be stored (no obstruction) on this paved road. SPCBs /PCCs to ensure this requirement, while issuing new CTE/CTO.

2.2 Carrying Capacity of the area for siting of ABAP type Tyre Pyrolysis Oil (TPO) Units

The committee constituted by the Hon'ble NGT in the is of the view that carrying capacity may not be required in case of individual Tyre Pyrolysis Units of capacity 10 - 60 TPD, since these are small pyrolytic operations with no process emissions and there are only flue gas emissions due to combustion of fuels for reactors or in flare stacks.

In order to minimize impact on adjacent areas, the minimum plot area as stipulated in section 2.1 is required by the unit.

2.3 Threshold Limits for Tyre Pyrolysis Oil (TPO) Units (New TPO Units and expansions in Existing TPO units)

The threshold limit is applicable to new /proposed units or expansion in the existing units. Followings are the threshold limits for the TPO units:

i) New ABAP type TPO units or expansion in existing units having cumulative batch capacity up to 60 TPD only shall be allowed.
ii) Beyond cumulative batch capacity of 60 TPD for new units or expansion in existing units, only continuous type TPO unit shall be allowed.

2.4 Standard Operating Procedure (SoP) of ABAP type TPO Units

A) Minimum Requirement for Environmentally Sound Operation:

2.4.1	Unit should have a valid Consent to Establish (CTE), Consent to Operate (CTO) under Water and Air Act and Authorization under the Hazardous and Other Waste (M & TM) Rules, 2016 issued by SPCB / PCC & Fire Safety Certificate issued by the concerned department.
2.4.2	Unit to comply with emission & effluents standards as prescribed by the concerned SPCBs/ PCCs in consent to operate (CTO) under Air and Water Act. Further the management of Hazardous waste generated has to be done as per the conditions prescribed in the authorization issued by the SPCBs / PCCs under the Hazardous and Other Waste (M & TM) Rules, 2016.
2.4.3	The feed to ABAP type reactor has to be in the form of used tyre scrap – whole tyres /cut tyres / chips / shred /mulch /granules etc.
2.4.4	Initial heating of the reactor has to be done either by using pyro gas stored during previous cycle or by use of pyro water / purge water (oil mix water) / oil water emulsion, or by tyre pyrolysis oil or any other fuel approved by concerned SPCBs /PCCs. After generation of pyro gas, the same is to be used for the purpose of heating reactor. The flue gas should be vented out to the environment through an alkaline scrubber with mist eliminator attached to a chimney of at least 30 meters height. Plants to install adequate air pollution control devices (APCDs) for controlling flue gas emissions.

2.4.5	A compressor / air blower has to be installed for mixing of air with pyro water for ensuring proper burning while using pyro water/purge water during initial heating.
2.4.6	In order to control fugitive emissions from the reactor shell during operation, its proper sealing should be ensured.
2.4.7	ABAP type TPO units to construct or install a sufficient capacity suction hood / industrial dust collector attached to a bag filter at feeding door and same should must be operational at the time of removal of steel scrap wire and char from the reactor.
2.4.8	Suction hoods also to be installed at all the transfer points across the work zone such as at char bagging area etc. to control fugitive emissions. All suction hood to be connected to a common manifold leading to alkaline scrubber with mist eliminator attached with stack of 30 m height (installed for venting out flue gas emissions).
2.4.9	Unit to ensure no spillage of char during removal/ unloading of steel scrap from the reactor. The flooring should be paved/ concretized along with proper slope and drains for movement of steel scrap. This operation to be made cleaner by use of vacuum cleaner after each batch operation.
2.4.10	Unit to install water sprinkling system for prevention of fugitive emission at the all transfer points for arresting fugitives.
2.4.11	The removal of char should be through a mechanized system. The unloading of char from the reactor is to be done under controlled conditions in such a manner that the material inside the reactor is not open to the atmosphere at any point of time. The char shall be bagged in the HDPE bags with proper sealing. It should be ensured that no spillage take place during the collection of the char in the bags. The removal of char should be started only after Nitrogen purging.
2.4.12	A permanent arrangement should be made for Nitrogen purging. Pre-filled nitrogen gas cylinders will not be allowed to use for purging. All units to have PLC based Nitrogen generator as per the following requirement:

Number of Reactors	Nitrogen Generator capacity (Nm^3/h)	Storage Tank Capacity (Liters)
1	3	1000
2	5	1500
3	7	2000
4	10	3000
> 4	12	4000

2.4.13	Excess pyro gas if any should be flared through properly designed flaring system of adequate capacity considering the emergency situation

	in which the entire gas may have to be flared. The flaring should be done at a minimum height of 30 meter.
2.4.14	Unit to install Programme Logic Controller (PLC) based system for control of temperature and pressure inside the reactor.
2.4.15	Unit to install Programme Logic Controller (PLC) based auto activation for stopping of gas supply to the burner and for switching off the burners in case of increase of pressure and temperature inside the reactor.
2.4.16	Unit to install PLC based auto activation of bypass arrangements for bypassing the pyro gas from reactor to first separator tank in case of blocking /chocking of outlet vent inside the reactor or direct bypass for flaring
2.4.17	Unit to install PLC based carbon monoxide (CO) gas sensors connected with sirens (hooters) in case of release of CO.
2.4.18	The collection of the oil from the condensers should be in closed vessel and storage also should be in closed metallic tanks. (Oil / Liquid is stored at atmospheric pressure in metallic tank. Since this is not pressureized tank, there is no need of vent. The presence of vent releases low molecular weight HC into the air and creates odour, which is objected by the neighbourhood.) There should be no manual handling of oil. Transfer of oil should be carried out through pumps.
2.4.19	Unit to connect first separator tank with the oil storage tank for storing heavy oil fraction. There should not be any release valve at the first separator tank.
2.4.20	At the end of the pyrolysis process the reactor has to be cooled before the removal of char. During cooling process, the reactor should be purged with Nitrogen gas.
2.4.21	The removal of char should be started after the reactor temperature comes down to below 50 ^{o}C or first separator tank temperature comes down to 40 ^{0}C.
2.4.22	The inside temperature of the reactor should not exceed 500 ^{0}C and the first separator tank temperature should not exceed 450 ^{0}C during the entire batch operation.
2.4.23	Waste water (Pyro water/Purge water/Oil mixed water/oil water emulsion) generated during the process should not be discharged anywhere and:

i)	Should be treated in suitable ETP of sufficient capacity. Oily sludge should be disposed through TSDF or can used to make char briquettes, for subsequent transfer /sale to the cement manufacturing plants or other such industries having authorization for co – processing or;

a. ETP discharge may be used for briquettes manufacturing. The briquettes so manufactured shall be disposed through processing in cement kiln

b. ETP sludge may be used for briquettes manufacturing. The briquettes so manufactured shall be disposed through processing in cement kiln.

ii)	Pyro water/Purge water /Oil mixed water/oil water emulsion may be used for briquettes manufacturing in a briquetting plant by mixing it with sawdust and char in suitable proportions. These briquettes so manufactured using the pyro water/purge water/oil mixed water/oil water emulsion and char are to be utilized only in processes where temperature is 1000 ^{0}C or more to avoid emissions of obnoxious gases; or
iii)	Pyro water/Purge water/ oil mix water/oil water emulsion should be used for Initial heating of the reactor.

2.4.24	Unit to ensure that treated water be re-used in unit itself & there is zero effluent discharge.
2.4.25	Unit to have a covered /closed separate storage tank for storage of pyro water /purge water /oil mix water/ oil water emulsion. The pyro water be transferred from final storage tank to pyro water / purge water / oil mix water / oil water emulsion storage tank in closed loop through pumps.
2.4.26	Unit should carry out stack and ambient air quality monitoring for SO_2, PM and CO at least once in six months from a recognized laboratory at identified monitoring location. The unit shall maintain a log book for recording the plant, operation, monitoring of the stack emissions and ambient air quality, generation & utilization of wastewater & sale of various products and by-products.
2.4.27	The transportation of Char should be done in bags (small or jumbo) in closed vehicles to ensure that there is no spillage of char during their transportation.
2.4.28	The transportation of Tyre Pyrolysis Oil (TPO) should strictly be done in closed tankers to ensure that there is no spillage of TPO during their transportation.
2.4.29	The char generated in the process shall be utilized either in co-processing in the cement industry or its quality be upgraded to Recovered Carbon Black (RCB). RCB may be used as raw material for manufacture of new tyre and other processes.
2.4.30	The Tyre Pyrolysis Oil and char shall be stored in areas separate / distinct from the processing area (shed where the reactors are installed). Tyres shall be stored in earmarked area / open area on a paved platform.

B. Safety Measure to be adopted

2.4.31	Automatic control systems such as Programmed Logic Control (PLC) shall be adopted for measurement and control of temperature and pressure along with safety inter-locks in case of increase of temperature or pressure to cut off heating of the reactor should be provided. It should be ensured that the reactor is under positive pressure at all the time.
2.4.32	A sensor for CO gas to be installed in the working area to ensure that concentration of CO in the working area does not exceed the prescribed limits for occupational safety and health as per Factory Act 1948. It will also be coupled with a warning /alarm system so that the plant operator can take adequate steps to rectify the situation.
2.4.33	Sensors along with alarm system should be provided at all the transfer points throughout the plant to detect any leakage of flammable vapours from the system.
2.4.34	Fire detectors, sprinklers and fire hydrant with necessary pumping system and water storage should be provided in the process area, product and raw material storage area.
2.4.35	Unit to install fire hydrant system connected directly to the water tank and DG set for direct electric supply. Unit should also have ABC type fire extinguisher cylinders & fire buckets filled with sand and water.
2.4.36	The safety instruction for safe operation of plant will be displayed at the gate, plant working area and other critical places. Further, training will be imparted to the workers for safe operation of these plants.
2.4.37	On site emergency plan, as per the requirements under the Factories Act, 1948, will be made and implemented to handle any accident, fire/ leakage or any other emergency situation. All such measures shall include raw material storage, product storage and handling thereof.
2.4.38	The plant will be operated under the continuous supervision of a qualified person having experience of running such units.
2.4.39	All the persons /workers in the premises should wear an air filter mask to avoid inhaling of the fine char particles.
2.4.40	Unit will maintain good house-keeping and will ensure that no raw material products and wastes get spilled inside or outside the plant.
2.4.41	Unit to carry out annual health check-up of all the employees working in the unit & submit its report to concerned SPCBs/PCCs on annual basis.
2.4.42	Workers should be trained to handle fire. Workers should be given mock drill exercise for fire hazard incident. Assuming fire at the hatch door due to leakage of pyro-gas, what action, the workers should do? Training to use CO_2 type fire extingushers. Regular visit and inspection to check the training to workers.

2.5 Continuous Process (New & Existing):

A. Minimum Requirement for Environmentally Sound Operation:

2.5.1	Unit should have a valid Consent to Establish (CTE) and Consent to Operate (CTO) under Water and Air Act and Authorization under the Hazardous & Other Waste (M&TM) Rules, 2016 issued by SPCB /PCC & Fire Safety Certificate issued by the concerned department.
2.5.2	Unit to comply with emission & effluents standards as prescribed by the concerned SPCB/PCC in consent to operate (CTO) under Water and Air Act. Further the management of Hazardous Waste generated to be done as per the conditions prescribed in the authorization issued by the SPCB/PCC under the Hazardous Waste (M&TM) Rules, 2016.
2.5.3	The feeding system should be provided with an air-lock arrangement so that no air enters the reactor during feeding.
2.5.4	Initial heating of the reactor to be done either by using pyro gas stored during previous cycle itself or by use of purge water (oil mix water)/oil water emulsion, or by tyre pyrolysis oil or any other fuel approved by concerned SPCBs/PCCs. After generation of pyro gas, the same is to be used for the purpose of heating reactor. The flue gas should be vented out into the environment through alkaline scrubber with mist eliminator attached with a chimney of at least 30 meters height. Plants to install adequate air pollution control devices (APCDs) for controlling flue gas emissions.
2.5.5	A compressor or any other suitable arrangement has to be made /installed for mixing of air with pyro water for ensuring proper burning while using pyro water/purge water during initial heating.
2.5.6	In order to control fugitive emissions from the reactor during operation, proper sealing should be ensured.
2.5.7	Excess pyro gas if any should be flared through properly designed flaring system of adequate capacity considering the emergency situation in which the entire gas may have to be flared. The flaring should be done at a minimum height of 30 m.
2.5.8	The collection of the oil from the condensers should be in a closed vessel and storage also should be in closed tanks with suitable vents. There should be no manual handling of oil. Transfer of oil should be through pumps.
2.5.9	The removal of char should be through a mechanized system. The unloading of char from the reactor is to be done under controlled conditions through a pneumatic /screw conveyor system in such a manner that the contents of the reactor are not open to the atmosphere at any point of time. The end of the conveyor system shall be attached to a bagging plant where all the char will be bagged in the HDPE bags with proper sealing. It should be ensured that no spillage taken place during the collection of the char in the bags. Moreover, an air-lock should be provided to ensure no entry of air into the reactor.

2.5.10	Water sprinklers to be installed at the transfer points for arresting fugitives.
2.5.11	The char generated in the process shall be utilized either in co-processing in the cement industry or its quality be upgraded to Recovered Carbon Black (RCB). RCB may be used as raw material for manufacture of new tyre and other processes.
2.5.12	Waste water (Pyro water/Purge water/Oil mixed water/oil water emulsion) generated during the process should not be discharged anywhere and:

i)	Should be treated in suitable ETP of sufficient capacity. Oily sludge should be disposed through TSDF or can used to make char briquettes, for subsequent transfer /sale to the cement manufacturing plants or other such industries having authorization for co – processing or;

a. ETP discharge may be used for briquettes manufacturing. The briquettes so manufactured shall be disposed through processing in cement kiln

b. ETP sludge may be used for briquettes manufacturing. The briquettes so manufactured shall be disposed through processing in cement kiln.

ii)	Pyro water/Purge water /Oil mixed water/oil water emulsion may be used for briquettes manufacturing in a briquetting plant by mixing it with sawdust and char in suitable proportions. These briquettes so manufactured using the pyro water/purge water/oil mixed water/oil water emulsion and char are to be utilized only in processes where temperature is 1000 ^{0}C or more to avoid emissions of obnoxious gases; or
iii)	Pyro water/Purge water/ oil mix water/oil water emulsion should be used for Initial heating of the reactor.

2.5.13	TPO Units to ensure that treated water be re-used in the unit itself & there is zero effluent discharge.
2.5.14	The transportation of Char and Tyre Pyrolysis Oil (TPO) should strictly be done in closed vehicles to ensure that there is no spillage of char or oil during their transportation.
2.5.15	The generation, transportation and disposal of char to the cement manufacturing plants shall be recorded
2.5.16	The Tyre Pyrolysis Oil (Product) and char shall be stored in areas separate / distinct from the processing area (shed where the reactors are installed). Tyres shall be stored in earmarked sheds/open area on a raised cement concrete platform.

2.5.17	The unit should carry out stack and ambient air quality monitoring for SO2, PM, and CO at least once in six months from a recognized laboratory at identified monitoring location. The unit will maintain a log book for recording the plant operation, monitoring of the stack emissions and ambient air quality, generation & utilization of wastewater & sale of products and wastes.

B. Safety Measure to be adopted

2.5.18	Automatic control systems such as Programmed Logic Control (PLC) shall be adopted for measurement and control of temperature and pressure along with safety interlocks in case of increase of temperature or pressure to cut off heating of the reactor should be provide.
2.5.19	A sensor for CO gas to be installed in the working area to ensure that concentration of CO in the working area does not exceed the prescribed limits for occupational safety and health as per Factory Act 1948. It will also be coupled with a warning/alarm system so that the plant operator can take adequate steps to rectify the situation.
2.5.20	Sensors along with alarm system should be provided at all the transfer points throughout the plant to detect any leakage of flammable vapors from the system.
2.5.21	Excess pyro gas if any should be flared through properly designed flaring system of adequate capacity considering the emergency situation in which the entire gas may have to be flared. The flaring should be done at a minimum height of 30 meters.
2.5.22	Fire detectors, sprinklers and fire hydrant with necessary pumping system and water storage should be provided in the process area, product and raw material storage area.
2.5.23	The TPO unit shall possess fire clearance certificates issued by concerned departments.
2.5.24	The safety instruction for safe operation of plant will be displayed at the gate, plant working area and other critical places. Further, training will be imparted to the workers for safe operation of these plants. On site emergency plan, as per the requirements under the Factories Act, 1948, will be made and implemented to handle any accident, fire/ leakage or any other emergency situation. All such measures shall include raw material storage, product storage and handling thereof.
2.5.25	The plant will be operated under the continuous supervision of a qualified person having experience of running such units. All the persons/workers in the premises should wear an air filter mask to avoid inhaling of the fine char particles.
2.5.26	Units will maintain good house-keeping and will ensure that no raw material products and wastes get spilled inside or outside the plant.

2.5.27	Units to carry out annual health check-up of all the employees working in the unit & submit its report to concerned SPCBs /PCCs on annual basis.
2.5.28	Units operators shall have insurance cover for workers, plant & machinery and materials.
2.5.29	Workers should be given mock drill exercise for fire hazard incident.

C. General conditions applicable to all plants (Batch & Continuous):

2.5.30	The Tyre Pyrolysis Units (Continuous and Advanced Batch Automated Pyrolysis) are categorized into Orange category. Unit to register on the Waste Tyre EPR Portal of CPCB.
2.5.31	The Tyre Pyrolysis Oil unit to fulfill fuel quality as specified by Ministry of Petroleum and Natural Gas / Bureau of Indian Standards as and when the same gets notified.
2.5.32	In line with the policy adopted by MoEF&CC, Unit shall not to import waste tyres for the purpose of TPO production. Unit to use only indigenous generated waste tyre (i.e. Waste tyre generated in India only). Also unit to sell its products to Actual Users only.
2.5.33	Unit to maintain record on consumption of waste tyre along with details of its procurement source, Details & quantity of products, details of actual users to whom products have been sold.
2.5.34	Unit to submit its annual report on the EPR Portal and also to the concerned SPCB providing details on annual production of TPO, Char, Steel & other products including details of sources of purchasing waste tyre and also details of actual users to whom products have been sold within the time frame as prescribed on the Portal. The annual report to be supported with electricity bills of the financial year for which annual return has been submitted.
2.5.35	Units have to report daily waste generation, disposal data on National Hazardous Waste Tracking system as and when such system gets implemented by CPCB.

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Fwd: Implementation of Revised Standard Operating Procedure (SOP) for Recycling of Waste Tyre Scrap for the Recovery of Tyre Pyrolysis Oil, Pyro Gas, Steel and Char in Tyre Pyrolysis Oil (TPO) Units

Me Anand Kumar <wm3.cpcb@gov.in>
Fri, 19 Jan 2024 4:46:56 PM +0530 •

To "TARUN DARBARI" <tarundarbari.cpcb@gov.in>

Cc "Anshul Singh" <anshuls.cpcb@gov.in>

Sir,
Please find the trailing mail for your reference.

From: "Anand Kumar" <wm3.cpcb@gov.in>
To: chairman@uppcb.com, msukpcb@gmail.com, mscellbspcb@gmail.com, ranchijspcb@gmail.com, chairman@ospcboard.org, chairman@wbpcb.gov.in, dstandamans@gmail.com, chairman-gpcb@gujarat.gov.in, gpcbchairman@gmail.com, "Secretary Health DNH and DD" <secy-health@daman.nic.in>, "Chairman GSPCB" <chairman-gspcb.goa@nic.in>, "Chairman Karnataka State Pollution Control Board" <chairman@kspcb.gov.in>, "CHAIRMAN KSPCB" <chn.kspcb@gov.in>, "kps iitm" <kps.iitm@gmail.com>, "Director, S&T" <lk-dst@nic.in>, "chairman chairmanoffice" <chairman-mppcb@mp.gov.in>, "Chairperson" <chairperson@rpcb.nic.in>, hocecb@gmail.com, chairman@pcbassam.org, arunachalspcb@gmail.com, "tchandy abc" <tchandy.abc@gmail.com>, spcbsikkim@gmail.com, radhakishore888@gmail.com, cpmarak@yahoo.com, "MPCB" <mpcb@mizoram.gov.in>, rusoviljohn@yahoo.co.in, bagarwala00@gmail.com, tnpcbchairman@gmail.com, chairman@pcb.ap.gov.in, "pa chairman" <pa_chairman@pcb.ap.gov.in>, "Rajiv Sharma" <chief.advisor@telangana.gov.in>, "Mr A Nedunchezhiyan IAS" <secyfy.pon@nic.in>, "Pondicherry Pollution Control Committee Pondicherry" <ppcc.pon@nic.in>, "CHAIRMAN DPCC" <chdpcc@nic.in>, "Chandigarh Pollution Control Committee" <cpcc-chd@nic.in>, chairman87jkspcb@gmail.com, "Prabodh Saxena" <envsecy-hp@nic.in>, "Chairman PPCB" <chairman.ptl.ppcb@punjab.gov.in>, hspcbho@gmail.com, chairman@mpcb.gov.in, ms@uppcb.com, msukpcb@yahoo.com, wbpcbnet@wbpcb.gov.in, ms@wbpcb.gov.in, membersecretary@ospcboard.org, membersecretarygpcb@gmail.com, ms-gpcb@gujarat.gov.in, "Pollution Control Committee" <pcc-dnhdd@ddd.gov.in>, pccdddnh@gmail.com, "Member Secretary Karnataka State Pollution Control Board" <memsecy@kspcb.gov.in>, "Sheela A.M" <ms.kspcb@gov.in>, "Member Secretary GSPCB" <ms-gspcb.goa@nic.in>, "ms msoffice" <ms-mppcb@mp.gov.in>, "Member Secretary" <member-secretary@rpcb.nic.in>, "Dr. Buddhaprakash Jyothi" <ms-tspcb@telangana.gov.in>, "Member Secretary APPCB" <membersecy@appcb.gov.in>, "PA to Member Secretary, APPCB" <pa-ms@appcb.gov.in>, "MS TNPCB" <memsec@tnpcb.gov.in>, membersecretary@pcbassam.org, "Pollution Control Board" <pcb-man@nic.in>, "Member Secretary of Meghalaya State Pollution Control Board" <memsecy.spcb-meg@gov.in>, mizorampcb@gmail.com, npcb2@yahoo.com, drgopalpradhan@gmail.com, bishuk5@gmail.com, hspcbms@gmail.com, "mspcb-hp" <mspcb-hp@nic.in>, membersecretaryjkspcb@gmail.com, membersecretarylpcc@gmail.com, "Member Secretary PPCB" <msppcb@punjab.gov.in>, "Dr. K.S Jayachandran" <msdpcc@nic.in>, ms@mpcb.gov.in
Cc: "Anand Kumar" <anand.cpcb@nic.in>
Sent: Tuesday, January 16, 2024 8:00:47 PM
Subject: Implementation of Revised Standard Operating Procedure (SOP) for Recycling of Waste Tyre Scrap for the Recovery of Tyre Pyrolysis Oil, Pyro Gas, Steel and Char in Tyre Pyrolysis Oil (TPO) Units

Sir/Madam,

Please find attached the revised Standard Operating Procedure (SOP) for Tyre Pyrolysis Oil (TPO) units. The revised SOP has been approved by the Chairman, CPCB.

Central Pollution Control Board has revised the existing Standard Operating Procedure (SOP) for Tyre Pyrolysis Oil (TPO) units after conducting an extensive study of seven (07) TPO units comprising of three (03) existing batch TPO units and one (01) continuous tyre pyrolysis unit under the guidance of expert committee comprising of experts from NEERI and IIT Delhi. The findings of the study carried out by SPCBs in seventy (70) TPO units were also incorporated into the SOP.

You are requested to implement the revised SOP for TPO units.

Thanks & Regards,

Anand Kumar
Director & Div. Head
WM -III Division,
Central Pollution Control Board
e-mail Id - wm3.cpcb@gov.in

1 Attachment(s) • Download as Zip

SOP for Tyre Pyrolysis Oil Unit (R… .pdf
10.2 MB •

ANNEXURE IV

File No. CP-22/139/2021-WM-III-HO-CPCB-HO-Part (2) 11043-11087 March 20, 2024

To,

The Member Secretary
(All SPCBs/PCCs)

Subject: Standard Operating Procedures (SOPs) for "Recycling of waste tyre scrap for the recovery of tyre pyrolysis oil, pyro gas, and char in tyre pyrolysis oil (TPO) units"- Regarding implementation of SOP

Sir,

In the matter of OA No. 400 of 2019 before the Hon'ble NGT, PB - New Delhi, regarding management of waste tyres, the Hon'ble NGT, vide its order date 07/11/2022, directed CPCB for revision of the existing SOP for the tyre pyrolysis oil unit. In compliance, CPCB has revised SOP for 'Recycling of waste tyre scrap for the recovery of tyre pyrolysis oil, pyro gas and char in tyre, pyrolysis oil (TPO) units'. The SOP was circulated to all SPCBs/PCCs vide email dated 19.01.2024 for its implementation and a copy is also enclosed for ready reference.

In view of the observations of Hon'ble NGT (PB) in it's order dated 19-01-2024 followings are required to be carried out by SPCBs/PCCs-

1. Implementation of revised SOP of TPO;
2. Ensuring Zero Liquid Discharge (ZLD) and general gaseous emission standards while issuing Consent to Establish & Operate under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981.

Encl.: As above

Yours faithfully,
Anand Kumar 20/03/2024
(Anand Kumar)
Director & D.H.
WM-III Division

Copy to:

i. All Regional Directorates, CPCB : For Information and n/a, please

Anand Kumar 20/03/2024
(Anand Kumar)

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत.....
दिनांक....21.03.24....

F. No. B-29016/1(NGT)/400(19)/23-24/WM-III Div. 11030 March 20, 2024

To

Shri Sunil Kumar
Joint Secretary (Refinery Division)
Ministry of Petroleum & Natural Gas(MoPNG),
Room No. 216-A
Shastri Bhawan, New Delhi - 110001

Sub: In the NGT matter of OA 400 of 2019, SAFE Vs UoI & Ors- Regarding compliance of NGT order dated 07.11.2022 & 19.01.2024 in the said matter.

Sir,

In the NGT matter of OA 400of 2019 before PB-New Delhi, CPCB vide its letter of even number dated 13.12.2023 requested MoPNG to provide details on fuel quality specification of Tyre Pyrolysis Oil (TPO) for regulating its usage in the industrial processes. A copy of letter is enclosed for ready reference. The response of MoPNG in the said context is still awaited.

The matter was last heard on 19.01.2024, where the Hon'ble NGT issued directions (Copy enclosed for ready reference) seeking clarification about utilization of TPO as fuel by industries. Hence, it is again requested to kindly provide fuel quality specifications of TPO. The matter is next listed on 22.03.2024.

Yours faithfully,

Anand Kumar 20/03/2024

(Anand Kumar)
Director & D.H.
WM-III Division

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत.....
दिनांक...20/03/24...

Encl.: As above

F. No. B-29016/1(NGT)/400(19)/23-24/WM-III Div. 11031 March 20, 2024

To

The Head of Department
Petroleum, Coal & Related Products Department
Bureau of Indian Standards, Manak Bhawan
9, Bahadur Shah Zafar Marg, ITO
New Delhi 110002

Sub: In the NGT matter of OA 400/2019, SAFE Vs UoI & Ors- Regarding compliance of NGT order dated 07.11.2022 & 19.01.2024 in the said matter.

Sir,

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(Anand Kumar)
Director & D.H.
WM-III Division

Encl.: As above

D/C

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत.....
दिनांक 20/03/24

Annexure-V

Compliance Status Report in the NGT matter of OA 400/2019

In response to CPCB directions dated 29.04.2025 and follow-ups thereafter, 32 SPCBs/PCCs out of the 36 SPCBs/PCCs, namely Arunachal Pradesh, Andaman & Nicobar, Assam, Bihar, Chandigarh, Chhattisgarh, Daman & Diu Dadra & Nagar Haveli, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Ladakh, Lakshadweep, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Puducherry, Punjab, Sikkim, Tamil Nadu, Telangana, Tripura, Uttar Pradesh, and West Bengal, have submitted the compliance status report.

The remaining 04 SPCBs/PCCs, namely Andhra Pradesh, Maharashtra, Rajasthan and Uttarakhand, have not submitted their compliance status report.

Among the 32 SPCBs/PCCs who submitted their reports, 17 SPCBs/PCCs (Arunachal Pradesh, Andaman & Nicobar, Bihar, Chandigarh, Delhi, Daman & Diu Dadra & Nagar Haveli, Goa, Gujarat, Ladakh, Lakshadweep, Manipur, Meghalaya, Mizoram, Puducherry, Sikkim, Tripura and West Bengal) informed that there is no TPO unit in their State/UT.

State-wise status of operation of TPO Units and action taken against non-complying TPO Units, as informed by SPCBs/PCCs is given below:

S.No	Name of the SPCB/PCC	Total Number of TPO units in State/UT	Total Number of complying units	Total number of non-complying units	Total number of closed TPO units in state	Action taken by SPCB/PCC
1	Andaman & Nicobar Islands	Nil	Nil	Nil	Nil	-
2	Andhra Pradesh	Report not submitted				
3	Arunachal Pradesh	Nil	Nil	Nil	Nil	-
4	Assam	04	04	Nil	Nil	During verification all 04 units found complied
5	Bihar	Nil	Nil	Nil	Nil	-
6	Chandigarh	Nil	Nil	Nil	Nil	-
7	Chhattisgarh	28	19	09	05	During the verification, Environment Compensation (EC) of Rs. 1,30,000/-, Rs.1,30,000/-, Rs. 92,000/-, and Rs. 75,000/- (cumulative total of Rs. 4,27,000/-) has been imposed against 04 non-complying entities

S.No	Name of the SPCB/PCC	Total Number of TPO units in State/UT	Total Number of complying units	Total number of non-complying units	Total number of closed TPO units in state	Action taken by SPCB/PCC
						and has been recovered.
8	Dadra & Nagar Haveli & Daman & Diu	Nil	Nil	Nil	Nil	-
9	Delhi	Nil	Nil	Nil	Nil	-
10	Goa	Nil	Nil	Nil	Nil	-
11	Gujarat	Nil	Nil	Nil	Nil	-
12	Haryana	91	71	20	16	16 units have been closed by the HSPCB. In respect to remaining Units, Show Cause Notices have been issued to 03 units and action is under process against 01 Unit.
13	Himachal Pradesh	02	02	Nil	Nil	During verification unit found complied
14	Jammu & Kashmir	06	01	05	03	Closure Order issued to 2 units, 1 unit is self-closed.
15	Jharkhand	12	09	Nil	03	01 unit is closed by the Jharkhand SPCB while 02 units are self-closed.
16	Karnataka	31	13	18	10	06 units have been closed by the board while 04 are found self-closed during the verification. Show Cause Notices have been issued against 08 non-complying Units.
17	Kerala	01	01	Nil	Nil	-
18	Ladakh	Nil	Nil	Nil	Nil	-
19	Lakshadweep	Nil	Nil	Nil	Nil	-
20	Madhya Pradesh	73	53	20	07	04 units have been closed by MPPCB while 03 units are self-closed. Show Cause Notices have been issued to 13 units.
21	Maharashtra	Report not submitted				
22	Manipur	Nil	Nil	Nil	Nil	-
23	Meghalaya	Nil	Nil	Nil	Nil	-

S.No	Name of the SPCB/PCC	Total Number of TPO units in State/UT	Total Number of complying units	Total number of non-complying units	Total number of closed TPO units in state	Action taken by SPCB/PCC
24	Mizoram	Nil	Nil	Nil	Nil	-
25	Nagaland	01	01	Nil	Nil	During verification unit is found complying.
26	Odisha	14	07	07	04	04 units are self-closed; 02 units have been issued letters for improvement and direction have been issued to 01 unit.
27	Puducherry	Nil	Nil	Nil	Nil	-
28	Punjab	As informed there are 19 TPO Units, however the verification of the same is under process.				
29	Rajasthan	Report not submitted				
30	Sikkim	Nil	Nil	Nil	Nil	-
31	Tamil Nadu	17	17	Nil	Nil	During verification units are found complying.
32	Telangana	65	14	51	03	Closure Order issued to 03 units; Show Cause Notices have been issued against 33 Units and Directions have been issued against 15 remaining units for non-compliance
33	Tripura	Nil	Nil	Nil	Nil	-
34	Uttar Pradesh	130	123	07	Nil	Directions issued to 02 units; Show Cause Notices issued to 04 units; 01 unit recommended for closure.
35	Uttarakhand	Report not submitted				
36	West Bengal	Nil	Nil	Nil	Nil	-
Total		**475**	**335**	**140**	**51**	**89**

Annexure-VI

Minutes of the meeting held on 11.03.2024 for discussion on the Hon'ble NGT matter OA No. 400/2019 and EA 39/2023.

A meeting was convened with Expert member from CSIR-NEERI, Nagpur, Oil sector expert, official form MoEF & CC, MoPNG, BIS, SPCBs/PCCs and CPCB RDs for utilization of tyre pyrolysis oil (TPO) in industries and its consideration as approved fuel in compliance of the directions dated 19-01-2024 issued by the Hon'ble NGT in the aforesaid matter. The Hon'ble NGT vide its directions dated 19.01.2024 has directed for ensuring compliance of Revised SOPs w.r.t Recycling of Waste Tyre in the Tyre Pyrolysis Units. In the same order, the Hon'ble NGT has also sought clarification regarding the use of Tyre Pyrolysis Oil (TPO) by Industries and its consideration as "Approved Fuel" under the Air (Prevention & Control of Pollution) Act 1981. The list of participants is enclosed in Annexure-I. The agenda of the meeting was as below:

Agenda: Utilization of tyre pyrolysis oil (TPO) in Industries and its consideration as "Approved Fuel".

Followings are the record of discussion:

- A presentation on characteristic of TPO such as Acidity on Burning Tip, Ash Content, Conradson Carbon Residue, Calorific Value, Density, Flash Point, Kinematic Viscosity, Sediments, Sulphur Content, Water Content, and Pour Point as obtained from samples of TPO collected during studies conducted by CPCB was made. The characteristics of TPO were compared with Furnace Oil, Diesel, & waste oil derived fuel.
- Expert from oil sector observed that characteristics of TPO are somewhat better than furnace oil characteristics except for the flash point which was found to be 30, 52,54, 68 and 73 ^{0}C in different samples (results are enclosed). It is well known that that flash point is of concern during transportation, handling and storage of any fuel.
- Expert from NEERI also observed that TPO can be compared with furnace oil and can be used as its substitute.
- It has been observed that TPO has lower carbon number, lower sulphur content and hence emissions (PM, SO_x etc.) from TPO are expected to be lower than that of emissions from Furnace oil (FO).
- Based on analysis report of different samples a typical proposed specification of TPO are given in Table – 1 as at Annexure - II
- SPCBS /PCCs officials present in the meeting informed that all the states have list of approved fuels, however TPO has so far not yet been considered as approved fuel.
- BIS informed that they have conceived a project on the development of TPO fuel quality standards. However, the project is at a very nascent stage. BIS asked CPCB to share the results of TPO analysis.
- The experts and other participants in the meeting were of the opinion that TPO can be used in those industries where FO has been permitted. Hence, TPO may be permitted by SPCBs/PCCs in those industries where air pollution control system has been installed to meet the specified emission norms.

(Anand Kumar) (Dr. G. S. Dang) (Dr. K.V George)

The List of Participants in the meeting held on 11.03.2024 for discussion on the Hon'ble NGT matter OA No. 400/2019 and EA 39/2023.

1. Shri Ved Prakash Mishra, MoEF & CC
2. Dr. Vinod K Singh, MoEF & CC
3. Shri P Somakumar, MoPNG
4. Shri Anand Kumar, Divisional Head, WM-III, CPCB
5. Shri Gurbax Singh Dang, IIP, Dehradun
6. Ms. Kreeti, BIS
7. Dr. K. V. George, CSIR-NEERI, Nagpur
8. Official of WM-III Division, CPCB
9. Representatives from Regional Directorates, CPCB
10. Representatives from SPCBs /PCCs

Table - 1

Typical Tyre Pyrolysis Oil Specification

S.No.	Parameter	Value/Range
1.	Ash Content, %wt.	Max 0.1
2.	Conradson Carbon Number, % wt.	Less than 4
3.	Calorific Value, Kcal/kg	8500 - 10500
4.	Density, Kg/L	0.90 - 0.95
5.	Flash Point , ^{0}C	52 - 70
6.	Kinematic Viscosity @40^{0}C, cSt	4 - 6
7.	Sediments, %wt.	Less than 0.01
8.	Sulphur Content, % wt.	Less than 1
9.	Water Content, % wt.	Less than 0.5
10	Pour Point, ^{0}C	Less than 0
11	Carbon Number	$C_5 - C_{30}$
12	Boiling Rang, ^{0}C	70 to 300

Re: Status on formulation of Indian Standard on Pyrolysis Oil - reg

4 emails

Petroleum Coal Related Department < pcd@bis.gov.in >

Wed, 03 Sep 2025 10:46:06 AM +0530

To "MEETU PURI"<mpuri.cpcb@nic.in>

Cc "Youthika Puri"<youthika.cpcb@nic.in>,"Head PCD" <hpcd@bis.gov.in>,"PcdTCThree Petrochemical"<pcd3@bis.gov.in>

Dear Ma'am,

This is in continuation of our earlier communication dated 28 May 2025.

The R&D project (Project ID: PCD 0256), undertaken by the National Institute of Technology, Tiruchirappalli, is still in progress. NIT Tiruchirappalli has requested an extension of the project duration, and it is now expected to be completed by the end of November 2025.

Upon receipt of the final R&D report, the outcomes will be deliberated in the Sectional Committee PCD 3.

Regards,

हरिमोहन मीना / Hari Mohan Meena

वै॰ सी & उपनिदेशक / Sc C & Deputy Director
सदस्य सचिव (पीसीडी 3) / Member Secretary (PCD 3)
पेट्रोलियम, कोयला एवं संबंधित उत्पाद विभाग
Bureau of Indian Standards /भारतीय मानक ब्यूरो
9, B.S. Zafar Marg, New Delhi – 110002
011 23608323

From: MEETU PURI <mpuri.cpcb@nic.in>
To: "pcd"<pcd@bis.gov.in>
Cc: "Youthika Puri"<youthika.cpcb@nic.in>, "Head PCD"<hpcd@bis.gov.in>, "PcdTCThree Petrochemical"<pcd3@bis.gov.in>
Date: Wed, 03 Sep 2025 09:46:55 +0530
Subject: Status on formulation of Indian Standard on Pyrolysis Oil - reg

Sir,
This is in reference with NGT matter of EA 39/2023 under OA 400 /2019(SAFE v. UOI and Ors.). In the said matter CPCB sought status of formulation of fuel quality specifications for tyre pyrolysis oil by BIS. In response as per the trailing email, CPCB was informed that a project has been initiated for the same by BIS. Further, as per your trailing email the project was initiated in Feb 2025 and its duration was four months. Now, BIS is requested to kindly convey the status of the aforesaid project and share fuel quality specifications of tire pyrolysis oil as required by the hon'ble NGT.

With regards,

मीतू पुरी | Meetu Puri
वैज्ञानिक 'ग ' | Scientist 'C'
अपशिष्ट प्रबंधन (तृतीय) प्रभाग | Waste Management-III Division
केंद्रीय प्रदूषण नियंत्रण बोर्ड | Central Pollution Control Board
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय | Ministry of Environment, Forest and Climate Change
परिवेश भवन, पूर्वी अर्जुन नगर | Parivesh Bhawan, East Arjun Nagar
दिल्ली - 110032 | Delhi - 110032
दूरभाष | Telephone - 011-43102329
ईमेल | Email : mpuri[dot]cpcb[at]nic[dot]in

From: Petroleum Coal Related Department <pcd@bis.gov.in>
To: "youthikacpcb"<youthika.cpcb@nic.in>, "mpuricpcb"<mpuri.cpcb@nic.in>
Cc: "Head PCD"<hpcd@bis.gov.in>, "PcdTCThree Petrochemical"<pcd3@bis.gov.in>
Date: Wed, 28 May 2025 17:20:18 +0530
Subject: Status on formulation of Indian Standard on Pyrolysis Oil - reg

Kind attn:
Ms Youthika
Additional Director & Divisional Head
VVM-III Division, CPCB

Dear Ma'am,

This is with reference to the CPCB letter Ref: F. No. B-29016/1(NGT)/400(19)/25-26/VVM-III Div dated 06.05.2025, addressed to the Head of Department, Petroleum, Coal & Related Products Department, Bureau of Indian Standards, seeking information regarding the formulation of an Indian Standard on Pyrolysis Oil (copy enclosed).

We wish to inform you that an R&D project (Project ID: PCD 0256) has been awarded to the National Institute of Technology, Tiruchirappalli. The project, titled *"Study on Pyrolysis Oil for Determination of Correlation Amongst Feedstock Composition, Manufacturing Technology, and Performance Characteristics,"* commenced on 18 February 2025 and is scheduled for completion within four months (copy enclosed).

Upon receipt of the R&D report, the outcomes will be deliberated in the Sectional Committee PCD 3.

Regards

हरिमोहन मीना / Hari Mohan Meena
वै° सी & उपनिदेशक / Sc C & Deputy Director
सदस्य सचिव (पीसीडी 3) / Member Secretary (PCD 3)
पेट्रोलियम, कोयला एवं संबंधित उत्पाद विभाग
Bureau of Indian Standards /भारतीय मानक ब्यूरो
9, B.S. Zafar Marg, New Delhi – 110002
011 23608323

MEETU PURI < mpuri.cpcb@nic.in >

Wed, 03 Sep 2025 10:16:36 AM +0530

To "Head PCD"<hpcd@bis.gov.in>

Sir,
This is in reference with NGT matter of EA 39/2023 under OA 400 /2019(SAFE v. UOI and Ors.). In the said matter CPCB sought status of formulation of fuel quality specifications for tyre pyrolysis oil by BIS. In response as per the trailing email, CPCB was informed that a project has been initiated for the same by BIS. Further, as per your trailing email the project was initiated in Feb 2025 and its duration was four months. Now, BIS is requested to kindly convey the status of the aforesaid project and share fuel quality specifications of tire pyrolysis oil as required by the hon'ble NGT.

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वैज्ञानिक 'ग ' | Scientist 'C'
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पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय | Ministry of Environment, Forest and Climate Change
परिवेश भवन, पूर्वी अर्जुन नगर | Parivesh Bhawan, East Arjun Nagar
दिल्ली - 110032 | Delhi - 110032
दूरभाष | Telephone - 011-43102329
ईमेल | Email : mpuri[dot]cpcb[at]nic[dot]in

From: Petroleum Coal Related Department <pcd@bis.gov.in>
To: "youthikacpcb"<youthika.cpcb@nic.in>, "mpuricpcb"<mpuri.cpcb@nic.in>
Cc: "Head PCD"<hpcd@bis.gov.in>, "PcdTCThree Petrochemical"<pcd3@bis.gov.in>
Date: Wed, 28 May 2025 17:20:18 +0530
Subject: Status on formulation of Indian Standard on Pyrolysis Oil - reg

Kind attn:
Ms Youthika
Additional Director & Divisional Head
VVM-III Division, CPCB

Dear Ma'am,

This is with reference to the CPCB letter Ref: F. No. B-29016/1(NGT)/400(19)/25-26/VVM-III Div dated 06.05.2025, addressed to the Head of Department, Petroleum, Coal & Related Products Department, Bureau of Indian Standards, seeking information regarding the formulation of an Indian Standard on Pyrolysis Oil (copy enclosed).

We wish to inform you that an R&D project (Project ID: PCD 0256) has been awarded to the National Institute of Technology, Tiruchirappalli. The project, titled *"Study on Pyrolysis Oil for Determination of Correlation Amongst Feedstock Composition, Manufacturing Technology, and Performance Characteristics,"* commenced on 18 February 2025 and is scheduled for completion within four months (copy enclosed).

Upon receipt of the R&D report, the outcomes will be deliberated in the Sectional Committee PCD 3.

Regards

हरिमोहन मीना / Hari Mohan Meena
वै॰ सी & उपनिदेशक / Sc C & Deputy Director
सदस्य सचिव (पीसीडी 3) / Member Secretary (PCD 3)
पेट्रोलियम, कोयला एवं संबंधित उत्पाद विभाग
Bureau of Indian Standards /भारतीय मानक ब्यूरो
9, B.S. Zafar Marg, New Delhi – 110002
011 23608323

MEETU PURI < mpuri.cpcb@nic.in >

Wed, 03 Sep 2025 9:46:57 AM +0530

To "pcd"<pcd@bis.gov.in>

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वैज्ञानिक 'ग ' | Scientist 'C'
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परिवेश भवन, पूर्वी अर्जुन नगर | Parivesh Bhawan, East Arjun Nagar
दिल्ली - 110032 | Delhi - 110032
दूरभाष | Telephone - 011-43102329
ईमेल | Email : mpuri[dot]cpcb[at]nic[dot]in

From: Petroleum Coal Related Department <pcd@bis.gov.in>
To: "youthikacpcb"<youthika.cpcb@nic.in>, "mpuricpcb"<mpuri.cpcb@nic.in>
Cc: "Head PCD"<hpcd@bis.gov.in>, "PcdTCThree Petrochemical"<pcd3@bis.gov.in>
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Performance Characteristics," commenced on 18 February 2025 and is scheduled for completion within four months (copy enclosed).

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Regards

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वै॰ सी & उपनिदेशक / Sc C & Deputy Director
सदस्य सचिव (पीसीडी 3) / Member Secretary (PCD 3)
पेट्रोलियम, कोयला एवं संबंधित उत्पाद विभाग
Bureau of Indian Standards /भारतीय मानक ब्यूरो
9, B.S. Zafar Marg, New Delhi – 110002
011 23608323

Petroleum Coal Related Department < pcd@bis.gov.in >

Wed, 28 May 2025 5:20:25 PM +0530

To "youthikacpcb"<youthika.cpcb@nic.in>,"mpuricpcb"<mpuri.cpcb@nic.in>

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पेट्रोलियम, कोयला एवं संबंधित उत्पाद विभाग
Bureau of Indian Standards /भारतीय मानक ब्यूरो
9, B.S. Zafar Marg, New Delhi – 110002
011 23608323

2 Attachment(s)

1003

ANNEXU

PCD 0256 - RD Letter to NIT.pdf
522.3 KB

NGT matter of EA 39 of 2023 u…
2.7 MB