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

OA No.73 of 2021

IN THE MATTER OF:

VISAKHA PAWAN PRAJA KARMIKA SANGAM

……. Applicant

Vs

UNION OF INDIA AND OTHERS

…. Respondents

COMPLIANCE REPORT FILED BY THE APPCB

DATE- 21.03.2025

M/s MADHURI DONTI REDDY
ADVOCATE

STANDING COUNSEL FOR GOVERNMENT OF ANDHRA PRADESH

A.P. POLLUTION CONTROL BOARD

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

Original Application No.73 of 2021

IN THE MATTER OF:

Visakha Pawan Praja Karmika Sangam,
A Registered Labour Association No. 799 of 2016,
Rep by its Secretary Mr. Ganga Raju Kola,
H. No. 60-33-49, Ambedkar Colony,
Maikapuram, Vishakhapatnam,
Andhra Pradesh- 53001.

.....APPLCANT

VERSUS

Union of India and
6 others

...RESPONDENTS

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It is certified that all the documents contained in the above annexure are true copies.

Date:17.03.2025

Place: Visakhapatnam

Environmental Engineer,
APPCB, Regional Office,
Visakhapatnam

Environmental Engineer
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Regional Office, Visakhapatnam

Report on the Hon'ble NGT, Chennai order dated20.10.2022in O.A.No. 73 of 2021 in the matter of Visakha Pawan Praja Karmika Sangham, Malkapuram, Visakhapatnam Vs M/s Hindustan Petroleum Corporation Limited (Visakh Refinery), Malkapuram, Visakhapatnam.

It is to submit that Visakha Pawan Praja Karmika Sangham, Malkapuram, Visakhapatnam has filed application OA No. 73 of 2021 (SZ) against M/s Hindustan Petroleum Corporation Limited (Visakh Refinery), Malkapuram, Visakhapatnamchallenging the activities of HPCL Visakh Refinery in respect of Environment pollution before Hon'ble National Green Tribunal, Southern Bench, Chennai. The Hon'ble NGT appointed a Joint Committee on 25.02.2021. The said committee and APPCB have filed the reports to Hon'ble NGT, Chennai. The Hon'ble NGT, Chennai reviewed the reports of the Joint Committee from time to time and finally disposed the matter on 20.10.2022**(Annexure-I)** with certain directions including the following:

Accordingly,

53.1 HPCL is directed to take all the required initiative and comply with the observations of the Joint Committee, IISC – Bangalore and enquiry report within a period of six months.

53.2 APPCB is to monitor the same and it is not debarred from taking any action against HPCL for any fresh violation under the Water (Prevention and Control of Pollution) Act,

1974 and Air (Prevention and Control of Pollution) Act, 1981 and also initiate appropriate action against the erring officials as per the statutes.

53.3 HPCL is directed to deposit the Environmental Compensation assessed at Rs.8,35,20,000/- (Rupees Eight Crores Thirty-Five Lakhs and Twenty Thousand only)forthwith.

53.4 HPCL is directed to deposit a further sum of Rs.10,00,00,000/- (Rupees TenCrores only) for their wilful negligence being a PSU which can be spent on restoration of environment and public health in the district of Vizag. Such deposit to be made within 2(Two) months from today to CPCB which will draw a plan to that effect.

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53.5 The Joint Committee to ensure the regular monitoring in implementing the plan.

53.6 An independent Compliance Report may be filed by the Joint Committee after inspection as to the status of the compliance by the HPCL after 6 (Six) months i.e. by 15th May, 2023.

54.Accordingly, the Original Application is disposed of. List the matter in May, 2023 for reporting compliance.

The Hon'ble NGT, Chennai heard the matter on 26.09.2024 and issued following order:

"1. The Hindustan Petroleum Corporation Limited (HPCL) has filed a report of compliance. However, the Andhra Pradesh Pollution Control Board has to inspect and file the report.

2. For filing the compliance report, post the matter on 16.12.2024."

Copy of the Hon'ble NGT, Chennai order dated 26.09.2024. **(Annexure-II)**.

In compliance to the Hon'ble NGT Order dated 26.09.2024, the following is submitted:

1. The Board issued CFO to the facility vide order dated 30.11.2022 for refinery crude of capacity 15 MMTPA valid up to 31.12.2025.
2. Compliance status of the conditions stipulated schedule-B of CTO Order dated 30.11.2022 are as follows:

S.No.	Conditions	Compliance
1.	The industry shall submit Bank Guarantee of Rs. 25 Lakhs within 10 days with the following conditions:	The industry submitted BG of Rs. 25 Lakhs which was expired on 05.12.2024. A notice was issued to the industry on 02.01.2025 & 03.02.2025 for revalidation of Bank Guarantee.
	i. The industry shall obtain fire NOC for expansion project and shall commission the expansion operations only after obtaining final NOC ii. The industry shall develop balance green belt in	i. Fire NOC was obtained dt. 16.12.2022. ii. The facility has

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	an area of 52 acres out of 112.5 acres as stipulated in CTE order dated 06.07.2016, by July 2023. iii. The industry shall comply with Hon'ble NGT order in OA No 73. iv. The industry shall comply with the conditions and loads stipulated in EC and CTE orders.	developed greenbelt in VPA area adjacent to refinery. iii. Being complied. iv. Complied.
2.	The industry shall install digital flow meters at inlet and outlet of IETP and data connected to the APPCB website to verify the operational hours and quantity treated	The industry is having 1 no.of OCEMS station at Outlet of IETP (for analyzer of COD, BOD, O&G, pH, TSS, flow). It was observed that the data is not transmitting the APPCB Website from operation of the IETP since Feb-2024.
3.	The industry shall install digital flow meters at RO rejects tank and maintain records for quantity of treated effluents discharged into Meghadrigedda	The facility has not installed RO System and treated in IETP being used for cooling tower makeup.
	Water pollution	
4.	The effluent discharged shall not contain constituents in excess of the tolerance limits mentioned below. Further, the following parameters shall be complied for Process & Wash effluents at the outlets of ETP-I, II, III & IV i.e., before mixing with cooling waste water discharge:	As per the analysis reports of the samples collected from out let of ETP during the last six months the values are meeting the Board standards.
5.	The source of water is GVMC supply, water from Thatipudi, Mindi and Raiwada reservoir, sea. The industry shall take steps to reduce water consumption to the extent possible and	The average water consumption quantity for the period July 2024 to Dec 2024

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<table>
<tr>
<td></td>
<td>consumption shall NOT exceed the quantities mentioned below:
<table>
<tr><th>S. No.</th><th>Purpose</th><th>QuantityinKLD</th></tr>
<tr><td>1.</td><td>Process & Washings, Boiler Feed</td><td>26088</td></tr>
<tr><td>2.</td><td>Industrial cooling (Makeup) / Humidification / Water spraying)</td><td>9852</td></tr>
<tr><td>3.</td><td>Industrial cooling (Sea water) (Re-circulated)</td><td>475008</td></tr>
<tr><td>4.</td><td>Industrial cooling (Sea water) (Once through)</td><td>36000</td></tr>
<tr><td>5.</td><td>Domestic</td><td>972</td></tr>
<tr><td></td><td>Total:</td><td>555192</td></tr>
</table>
Separate meters with necessary pipe-line shall be maintained for assessing the quantity of water used for each of the purposes mentioned above.</td>
<td>given below:
Process & Washings, Boiler Feed – 20609 KLD; Industrial cooling – 7800 KLD; Domestic – 750 KLD; Industrial cooling (Sea water) (Re-circulated) – 72,000KLD.</td>
</tr>
<tr>
<td>6.</td>
<td>AirPollution: The emissions shall not contain constituents in excess of the prescribed limits mentioned below:
<table>
<tr><td>Chimney No.</td><td>Parameter</td><td>EmissionStandardsmg/Nm^3</td></tr>
<tr><td>1to23,25 to 30,32 (30stacks)</td><td>ParticulateMatter</td><td>100</td></tr>
<tr><td>33 to 34 & 36 to</td><td>ParticulateMatter</td><td>50</td></tr>
</table></td>
<td>As per the Real Time Pollution Monitoring System (RTPMS) data from Jul-2024 to Dec-2024 the daily average of the parameters viz, PM is exceeding 164 times, PM10 is exceeding 154 times, PM2.5 is exceeding 67 times, CO is exceeding</td>
</tr>
</table>

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	47			96 times, NOx is exceeding 7 times, PM2.5 is exceeding 67 times & SO2 is exceeding 102 times as against the Board standards.
	24,31 &35	Particulatem atter	10	
7.	The industry shall comply with Standards for Oil Refineries notified by MOEF vide GSR No. 186(E), dt.18.03.2008.			Being followed.
8.	The industry shall comply with ambient air quality standards of PM (Particulate Matter size less than 10 µm) – 100 µg/m^3, PM (Particulate Matter size less than 2.5 µm) – 60 µg/m^3, SO_2 – 80 µg/m^3, NOx - 80 µg/m^3, outside the factory premises at the periphery of the industry. Standards for other parameters as mentioned in the National Ambient Air Quality Standards CPCB Notification No.B-29016/20/90/PCI-I, dated.18.11.2009. Noise levels: Day time (6 AM to 10 PM) – 75 dB(A) Night time (10 PM to 6 AM) – 70 dB(A)			Industry has provided 3 CAAQM stations in the premises and connected to APPCB website. As per the average data, the values are within the limit except PM10. The PM10 value is exceeding the standard at South Gate is 116.54 µg/Nm3, at Store yard is 104.54 µg/Nm3 and at High Lift pump house (HLPH) is 74.53 µg/Nm3 as against the standard of 60 µg/Nm3 for the period from Jul-2024 to Dec-2024. In addition the Board

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		has conducted AAQ monitoring on 19.11.2024 and 20.11.2024 at 8 locations in which 7 locations are exceeding the standards for PM10 & PM2.5. The volatile organic compounds in ambient air were monitored at 8 locations from 18.11.2024 to 20.11.2024. As per results, it is evident that there is leakages from process and same has to be taken care by providing sensors and alert hooters.
9.	The industry shall operate 3 CAAQM stations for monitoring Benzene, Carbon Monoxide, Ammonia, Nitrogen Dioxide, Ozone, PM_{10}, $PM_{2.5}$ and Sulphur Dioxide with recording facility and connected to PCB website.	Industry has provided 3 CAAQM stations in the premises and connected to APPCB website. As per the average data, the values are within the limit except PM10. The PM10 value is exceeding the standard at South Gate

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		is 116.54 µg/Nm3, at Store yard is 104.54 µg/Nm3 and at High Lift pump house (HLPH) is 74.53 µg/Nm3 as against the standard of 60 µg/Nm3 for the period from Jul-2024 to Dec-2024.
10.	The industry shall comply with emission limits for DG sets up to 800 KW as per the Notification G.S.R.520 (E), dated 01.07.2003 under the Environment (Protection) Amendment Rules, 2003 and G.S.R.448 (E), dated 12.07.2004 under the Environment (Protection) Second amendment Rules, 2004. In case of DG sets more than 800 KW should comply with emission limits as per the Notification G.S.R.489 (E), dated 09.07.2002 at serialno.96, under the Environment (Protection) Act, 1986.	Complied.
11.	GENERAL: The industry shall comply with the conditions stipulated in the permission issued by PESO.	The industry obtained PESO license vide order dt.02.11.2023 for storage capacity of 1695519KL (Petroleum class – A – 1108008 KL, class B – 577511 KL, class C – 10000 KL) which is valid upto 31.12.2026.
12.	The industry shall include Oil & Grease parameter in the online continuous effluent monitoring system.	Installed online analyzer for monitoring Oil &

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		Grease and not connected the online connectivity.
13.	The industry shall maintain flow meters preferable Electro Magnetic flow meters with totalizers for water and effluent quantity measurements for different streams of effluents and different categories of water usage stipulated in this order.	Water meters are available on the fresh water and effluent water lines The industry installed Electro Magnetic flow meters at raw water intake, inlet & outlet of IETP.
14.	The industry shall comply with CPCB directions dated 05.02.2014 / 02.03.2015 and guidelines issued regarding online emission and effluent monitoring systems issued from time to time. The online monitoring system shall be calibrated periodically as per equipment suppliers manual /CPCB guidelines before starting the production	Online emission & effluent monitoring systems are available with connectivity to APPCB. The data of Effluent monitoring system is yet to be transmitted.
15.	Dyke walls to be maintained around storage tanks. Spillage / oil water mixture if any, shall be contained in the dykes and dykes and treated in the existing ETP and the oil shall be taken to storage tank. The treated waste water confirming to onland for irrigation standards only shall be used for gardening purpose within the premises.	Complied. Dyke walls are provided for all the storage tanks and the collected water from the dyke is being routed to ETPs for treatment. Dyke walls are provided for all the storage tanks and the collected water from the dyke is being routed to IETP for treatment.

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16.	The industry shall inform the breakdown, shutdowns, and non operations of pollution control systems and startup & shutdown periods of process units to APPCB duly taking alternate measures.	Complied.
17.	Odour control systems should be improved at the Merox plants and ETP areas. The industry shall not cause any odour nuisance problem.	In Merox unit, mercaptans are removed from product LPG by absorption in caustic (Sodium Hydroxide) solution. Mercaptans get converted to mercaptides upon absorption into caustic solution and thus no free mercaptans are present in the spent caustic. Moreover, spent caustic is handled in a closed system before being routed to IETP for treatment. Thus, there is no chance for emanation of any odorous compounds in Merox unit or in IETP.
18.	The off-gases of Bitumen Blowing Unit should be treated before emitted into the atmosphere.	The off gases of Bitumen Blowing Unit are routed to furnace.
19.	The flare stack shall be improved to flare off all hydrocarbons by ensuring complete combustion without any black smoke.	Flare stacks are adequately designed. The industry has implemented staged

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		flaring system in which complete combustion takes place without any black smoke.
20.	The stripped off VOCs / Ammonia / Mercaptans from the ETP system shall not be allowed to escape into the atmosphere	APIs and TPIs in IETP is provided withcovers to minimize VOC emissions. VOC emissions are monitored periodically and controlled as part of LDAR survey. Free mercaptans are not present in spent caustic. The residual Ammonia in the stripped water in IETP is very less and the stripped-off Ammonia will get dispersed within a few meters. Thus, there is absolutely no chance for any odorous compounds to get carried over beyond the refinery boundary.
21.	In the plant area, values of VOC (non-methane hydrocarbons) shall be monitored as per EPA notification.	Being complied. LDAR is a regular activity in the refinery.
22.	In case of bad weather conditions and inversions, the industry shall run the process units with low Sulphur crude only.	Refinery emissions are primarily governed by the fuels used rather

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		than the types of crudes processed. Low Sulphur Fuel oil (LSHS), desulphurised Fuel Gas and Naphtha (of very low Sulphur content) are the fuels used in the refinery, the Sulphur contents of which remain in the same range irrespective of thetype of crude processed. The quality of these fuels is continuously monitored and controlled so as to maintain the refinery emissions within the stipulated limits
23.	The industry shall take measures to improve the combustion efficiencies of furnaces to at least 95% so as to control the generation of un-burnt hydrocarbons and particulates.	State-of-the-art technology is adopted for all furnace designs to achieve the maximum possible efficiencies. There will not be any unburnt hydrocarbon in flue gases.
24.	The industry shall maintain the drainage system properly. Storm water shall be collected and be treated before disposing into the drains.	Segregated collection and routing facilities are available for storm water, cooling water and process water.

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		The industry is collecting the storm water and other runoff water into drain routed to collection pit for treatment and disposal.
25.	The oil generation shall be prevented at the sources (process units) so that excessive oil does not reach the ETPs above the designed capacities.	Closed Blow Down (CBD) systems areprovided in all process units to route the drained oil directly for re-processing without routing to ETPs.
26.	No further Expansion is allowed without obtaining EC and CFE.	Complied.
27.	The pollution loads shall not exceed the following: a) Effluentloads: i. Theoilandgrease-12.26TPD ii. Sulphides-1.66TPD iii. Phenol-0.67TPD iv. TSS-1.25TPD v. BOD-4.6TPD vi. COD-17.2TPD b) AirPollution: i. SO2emissions-11.5TPD ii. SPM -1.11TPD iii. Hydrocarbonemission-2.5TPD iv. NOxemissions -6.5TPD	As per the effluentloads furnished by the industry, they are within the limits and average emission loads for the period July 2024 to December 2024 are given below: **Emissions TPD** SO_2 8.00 SPM 0.89 HC 0.80 NOx 2.51
28.	The industry shall ensure that the pollution loads are not increased at any point of time and maintain online analyzers for SO2, NOX, CO and PM for stack	Complied.

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	emissions.	
29.	The stack and online AAQ monitoring analyzers shall be regularly calibrated so as to record the actual values of air pollutants.	Analysers are regularly calibrated
30.	The industry should comply with Noise Pollution (Regulation & Control) Rules 2000.	Complied.
31.	The industry shall provide Sulphur recovery in the Sulphur recovery unit with tail gas treatment facility with 99.9% efficiency in order to maintain the overall emission load for SO2 emissions less than 11.5 TPD even after expansion.	The industry submitted that sulphur recovery efficiency in SRUs is >99.5%.
32.	Sulphur recovery efficiency shall be calculated on monthly basis, using quantity of Sulphur in the feed to SRU and quantity of Sulphur recovered.	Sulphurrecovery efficiency is beingcalculated regularly basis quantity of Sulphur in the feed to SRU and quantity of Sulphur produced in SRU.
33.	The industry shall construct sheds for storage of hazardous waste.	Complied.
34.	The industry shall comply with Task Force directions issued by the Board from time to time.	Being followed.
35.	The industry shall maintain the following records and the same shall be made available to the inspecting officers of the Board: a. Daily production details (ER-1 Central Excise Returns). b. Quantity of Effluents generated, treated, recycled/reused. c. Log Books for pollution control systems. d. Sulphur content in raw material. e. Characteristics of effluents, emissions and ambient air.	Maintained.

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	f. Hazardous/non hazardous solid waste generated and disposed. g. Inspection book. h. Manifest copies hazardous waste.	
36.	The industry shall ensure that reduced Sulphur compounds and other odorous compound emissions are within odour detection threshold.	Sulphur compounds & H2S are handled in a closed system. Thus, chances for emanation of any odorous compounds from the refinery are very remote. The values of odorous compounds monitored by APPCB at different locations in HPCL-Visakh Refinery were below odour threshold levels.
37.	The industry shall carry out the Leak Detection and Repair Program (LDAR) at the specific regular intervals to identify the emission of VOCs, Volatile Hazardous Air pollutants from any leaking equipment, process equipment, etc preferably every month and the records shall be submitted to the APPCB officials during inspection.	Leak Detection and Repair (LDAR) survey is being carried out regularly by MoEF recognized third party laboratory. Survey reports are being maintained.
38.	VOCs shall be monitored at vulnerable locations periodically inside the plant. The sporadic odorous emissions shall also be placed on record and necessary measures to stop reoccurrences shall be taken.	VOCs within the refinery premises at vulnerable locations are monitored periodically & controlled as part of LDAR survey. All the

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		gaseous vents from the units are connected to flare header and hence, any sporadic emission will be routed to flare stack only. APIs and TPIs in ETPs are provided with covers to minimize VOC emissions.
39.	Gas detection systems shall be in place to detect process leakages.	Elaborate and extensive gas detection systems (HC-632 nos. H_2S-217 nos& H_2-111 nos) are available in the refinery to detect any process leakages.
40.	Sulphur recovery units shall have continuous systems for monitoring of SO2. Manual monitoring for all the emission parameters shall be carried out once in a month. Data on Sulphur Dioxide emissions (mg/Nm3) shall be reported regularly.	Being complied. The industry is having 3 SRU Trains of each capacity 65 TPD and DHT SRU of 300 TPD were in operation and installed another 2 new SRU trains- of each capacity 450 TPD in VRMP project to recover sulphur.
41.	The industry shall extend the PLI policy which includes Environmental Relief Fund(ERF) and submit copy to RO, Visakhapatnam on yearly base.	The industry obtained PLI policy No. 0210002724P100273 049, valid till

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		31.03.2025.
42.	The industry shall update the information in OCEMS - Industry Information Data Entry Software for Compliance Reporting Protocol in PART-II (Sections F & G) Every Quarter on 1st January, 1st April, 1st July and 1st October through this software system.	Updated the information in OCEMS.
43.	The industry shall comply with OSD guidelines and their amendment from time to time.	Refinery is complying with all the relevant OISD guidelines and their amendments from time to time.
44.	The industry shall install digital display boards at publicly visible places at the main gate indicating the products manufactured Vs permitted quantities, Treated effluent concentrations Vs discharge standards, Stack emission & AAQ concentrations Vs standards, hazardous waste generation, disposed, stock Vs permitted quantities and validity of CTO; and exhibit the CTO order at a prominent place in the factory premises, as per Hon'ble Supreme Court order.	Provided digital display Board at the main gate.
45.	The industry shall submit Half yearly compliance reports to all the stipulated conditions in Environmental Clearance (EC), Consent to Establishment (CTE) and Consent to Operation (CTO) through website i.e., https//pcb.ap.gov.in by 1st of January and 1st July of every year. The first half yearly compliance reports shall be furnished by the industry and second half yearly compliance reports shall be the audited through MoEF&CC recognized and National Accreditation Board for Laboratory Testing (NAVL) accredited third party	Complied
46.	Any other directions / circulars / notices issued by	

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	CPCB, MoEF&CC and APPCB shall be followed from time to time.	
47.	The conditions are stipulated without prejudice to the rights and contentions of this Board in any Hon'ble Court of Law.	---
48.	**Special conditions:** The industry shall prepare a safety report and carry out an independent safety audit report of the respective industrial activities including chemical storages / isolated storages by an expert not associated with such industrial activity as required under Rule 10 of MSIHC Rules, 1989 and get it approved by the Factories Dept., and submit the compliance along with copy of the safety report, safety audit report and safety certificate at concerned Regional Office, APPCB.	Third Party External Safety Audit of Refinery is carried out annually as per the rule 10 of MSIHC rules and recommendations are complied with. The latest third-party external safety audit of refinery was carried out during 29-01-2024 to 02-02-2024. The latest Refinery Safety Report was prepared in April 2024.
49.	The industry shall identify major accident hazard chemicals & list out the hazardous chemicals endangered to human health & environment, and the details shall be furnished to the Factories Department and the Regional Office, APPCB time to time duly certifying the same by the industry. Further, the industry shall extend training to the working personnel while handling hazardous chemicals for the prevention of accidents and necessary antidotes to ensure safety, as per the MSIHC Rules, 1989.	Hazardous chemicals are identified as per MSIHC Rules 1989 and MSDS of these chemicals are maintained. Training on the safe handling of hazardous chemicals is imparted to refinery employees as part of Emergency preparedness training program. Training program on safe

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		handling of hazardous chemicals is included in the safety induction training module imparted to contractor workers.
50.	The industry shall carryout calibration of safety equipment and leak detection systems at regular intervals and shall certify the same with the Factories Department. That certified copy shall be submitted to the APPCB, Regional Office. The industry shall install fluorescent Wind Vane at the highest point in the industry premises	Safety equipment and leak detection systems are checked and calibrated regularly as per schedule. Windsocks are installed at 62 elevated locations in refinery for indication of wind direction.
51.	The industry shall inventory the hazardous wastes and its quantities stored within the industry premises as per the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 (HOWM Rules, 2016) and shall furnish the details to Regional Office, APPCB on a monthly basis duly certifying the same by theindustry.	The industry is maintaining inventory.
52.	The industry shall submit Risk analysis and risk assessment covering worst scenario clearly describing impact within the industry premises and outside the industry premises and emergency response system	QRA (Quantitative Risk Analysis) of refinery was submitted to APPCB. ERDMP (Emergency Response and Disaster Management Plan) of refinery, which is certified by PNGRB (Petroleum & Natural Gas Regulatory Board)

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		approved third party is in place. Latest revision of ERDMP was done in June 2024.
53.	The industry shall inventorize the storage quantities of hazardous chemicals (raw materials), products, as per the hazard nature of reactivity / toxicity / flammability / explosive stored/handling in the premises as defined in the Management of Storage, Import of Hazardous Chemicals (MSIHC) Rules, 1989 and the details shall be furnished to the Factories Department and to the Regional Office, APPCB on monthly basis duly certifying the same.	Hazardous chemicals (raw materials, products) are identified as per MSIHC Rules 1989 and MSDS of these chemicals are maintained. Details of hazardous chemicals (crude oil) identified as per MSIHC Rules 1989.
54.	The industry shall submit the copy of the safety audit report and On-Site / Off Site Emergency Plans as applicable after being certified by the Factories Department to the APPCB, Regional Office from time to time, if the storage quantity of hazardous chemicals is equal to or, in excess of the threshold quantities specified in schedule 2 & 3 of MSIHC Rules, 1989.	The facility has updated Onsite Emergency Plan and offsite Emergency Plans in the month of June-2024.
55.	The industry shall provide VOC meters with data logger near the production blocks and near the chemical storage tanks	All the gaseous vents from the units are connected to flare header.
56.	The industries and isolated storages that are storing hazardous chemicals less than the threshold quantities mentioned under MSIHC Rules, 1989 shall submit safety certificate to the concerned Regional Office, APPCB	HPCL-VR engaged M/s ERDMP Academy LLP, a third-party agency, for updating Safety Report. The latest

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		Refinery Safety Report was prepared in April 2024

3. Compliance status of the conclusions and recommendations of the Joint Committee report dated 14.12.2023:

S.No.	Conclusions and Recommendations	Compliance
a)	The effluent treatment systems is not been operated regularly and the waste mineral oil separation from the process effluents is not properly carried out. All the units including, primary clarifier, aeration tanks, final clarifiers, etc. of ETP — 1. & 4 are found with floating black waste oil. Presence of waste mineral oil in aeration tanks / activated sludge process tanks inhibits the bacterial growth thereby the reduction of COD / BOD is affected. It is evident from the analysis results obtained for the treated effluent of ETP — 4, where the BOD, oil & grease, sulphide and ammonical nitrogen are exceeding the CTO standard limits.	The industry has constructed Integrated ETP (IETP) with state-of-the-art technology having capacity of treating 1000 KL/Hour and commissioned in Feb-24. Further, the existing ETPs were non-operation and diverting the effluents to new integrated ETP. The treated effluent from IETP being used for cooling tower makeup. APPCB collected samples from outlet of IETP and as per the analysis, the values are within the standards.
b)	The Committee felt that the presently operating ETP — 1 & 4 performances is not sufficient to handle the oily effluents being generated by the refinery. Hence, the refinery shall adopt suitable	The industry has constructed Integrated ETP (IETP) with state-of-the-art technology having capacity of treating 1000 KL/Hour and commissioned in Feb-24. Further, the existing

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	treatment techniques to ensure complete oil separation from the process effluents for proper treatment to comply with the standards stipulated.	ETPs were non-operation and diverting the effluents to new integrated ETP. The treated effluent from IETP being used for cooling tower makeup. APPCB collected samples from outlet of IETP and as per the analysis, the values are within the standards.
c)	The new Integrated Effluent Treatment Plant (IETP) of 1,000 M3/hour capacity shall be commissioned & stabilized immediately to ensure proper treatment of refinery process effluents.	
d)	HPCL shall install OCEMSs (Online Continuous Effluent Monitoring System) along with the electronic flow measurement equipment at the final outlets of ETPs (at the outlets of guard ponds) to ensure exact assessment of quality of the treated effluent and quantity of effluents discharged by the industry.	The industry has installed online effluent monitoring system at the outlet of IETP for the parameters viz., flow, pH, TSS, BOD & COD connected to APPCB website. The valves of Effluent monitoring system is yet to be established.
e)	The measuring principle of COD / BOD of online effluent water quality monitoring stations installed at the outlets of ETPs is UV light absorption / scanning technique. Suitability of the technique may be reviewed by the refinery and APPCB for measuring COD / BOD in the treated effluents by taking the CPCB Guidelines of Online Continuous Effluent Monitoring	The industry is following UV-Visible Absorption Technique for measuring of COD/BOD of ETP.

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	Systems (OCEMS), July, 2018 in to consideration.	
f)	The storm water drains in the process and as well as in ETP areas are found flowing with black waste mineral oil, which shows that there are leakages of crude oil from	Spillages were observed near tank forms and oil traces was observed in storm water drains.
g)	Huge deposits of oil scum was observed in the skimming ponds provided for the once-through cooling sea water, which can be attributed to joining of considerable amounts of crude and other petroleum products into the cooling water system through leakages. Hence, the refinery shall identify and arrest such leakages of crude and other petroleum products into the tanks of once through cooling water system.	The scum collected in the skimming pond is removed and bioremediated periodically.
h)	The refinery shall ensure that all the high oily sludge is disposed off as per the APPCB CTO terms & conditions as early as possible to prevent odour nuisance in the surroundings, water / soil pollution through spillages and from possible fire accidents.	The industry is recovering oil from high oil sludge and low oily sludge after bioremediation being used within premises for filling low lying areas.
i)	The refinery shall identify the sources of dust pollution within the premises and shall take appropriate steps to comply with	APPCB has conducted comprehensive manual monitoring for the stacks & ambient air for the period from

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	the National Ambient Air Quality Standards in respect of PM10 & PM2.5.	18th to 20th November-2024 and the analysis reports are enclosed as **Annexure-III**. The Board has conducted AAQ monitoring on 19.11.2024 and 20.11.2024 at 8 locations in which 7 locations are exceeding the standards for PM10 & PM2.5. The volatile organic compounds in ambient air were monitored at 8 locations from 18.11.2024 to 20.11.2024. As per results, it is evident that there is leakages from process and same has to be taken care by providing sensors and alert hooters.
j)	One of the APPCB CFO conditions is that the refinery shall recover sulphur with 99.9% efficiency in order to maintain the overall emission load of SO2 less than 11.5 tons per day even after expansion unit.	The industry is maintaining inventory for Sulphur Recovery, as per the data, the sulphur recovery is 99.9% efficiency. APPCB has conducted comprehensive manual monitoring for the stacks &ambient air for the period from 18th to 20th November-2024 and the analysis reports are enclosed as **Annexure-III**.
k)	The Joint Committee has carried out material balance studies on sulphur recovery & SO2 emission loads during its inspections during March, 2021 and September, 2023. Similarly, APPCB may also verify sulphur recovery efficiency through material balances studies during inspection of the industry on half-	

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	yearly basis.	
l)	The refinery and APPCB as well shall ensure regular calibration of the online effluent, emission and ambient air quality monitoring systems as per the laid down protocols. Records shall be maintained. APPCB shall ensure that these monitoring systems are not tampered with.	Calibration of the online ambient air quality monitoring systems in the premises of APPCB Officials and manufacturer supplier on 24.07.2024 & 25.07.2024. During the inspection, the APPCB Officials verified the data, calibration and functioning of the analysers. The findings of the calibration are as follows: 1. All the analysers except NOx and NH3 analysers at CAAQMs -2 are functioning properly. 2. There are no dedicated span gas cylinders for calibration at all the stations. Only one set of cylinders are being used for calibration at all the stations. 3. The cylinder used for NH3 calibration is expired. Hence NH3 calibration could not be done at all the stations. 4. The hoods attached to the PM10 and PM2.5 sampling probes are almost in damaging condition which are to be replaced. 5. The configuration of the NOx ,NO analyser has to be

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A.P. Pollution Control Board
Regional Office, Visakhapatnam

		changed at CAAQMs -2. There is no correlation between the NOx and NO values indicating that the analysers are not functioning properly.
m)	Performance Audit on functioning of CAAQM stations & CEMSs installed to various stacks shall be carried out once in a year by the CPCB empanelled third party independent laboratory other than already engaged for routine calibration & data verification.	Not submitted.
n)	APPCB may be directed to constitute the Odour Squad for Visakhapatnam city to address the odour complaints as recommended by the IISc, Bengaluru.	An emergency response team was available in APPCB Office from 09:00 PM to 06:00 PM to attend the complaints if any during night time.

4. As per the report, the following non-compliances was observed:
   i. As per the Real Time Pollution Monitoring System(RTPMS) data from 01-10-2024 to 10-10-2024 the following parameters are exceeding at
      - South gate PM10 exceeding – 171.71(STD:100 ug/m3);
      - Store yard PM10 exceeding – 133.09&PM 2.5 – 78.61 (STD: 60 ug/m3);
      - HLPH-PM10 exceeding – 238.71 (STD: 100 ug/m3).

   ii. As per the Real Time Pollution Monitoring System(RTPMS) data from Jul-2024 to Dec-2024 the daily average of the parameters viz, PM is exceeding 164 times, PM10 is exceeding 154 times, PM2.5 is exceeding 67 times, CO is exceeding 96 times, NOx is exceeding 7 times, PM2.5 is exceeding 67 times & SO2 is exceeding 102 times as against the Board standards.

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iii. The industry is required to discharge the once through cooling water and cooling tower blow down water into the sea through scientifically designed marine pipeline instead of discharging into open drains duly obtaining required statutory permissions like CRZ clearance, Environment clearance and other statutory clearances.

iv. VOCs shall be monitored at vulnerable locations periodically inside the plant. The sporadic odorous emissions shall also be placed on record and necessary measures to stop reoccurrences shall be taken.

v. Refinery shall maintain the inventory of unrecoverable volatile organics flaring off.

vi. The industry should take periodic calibration and maintenance of analyzers to avoid the exceedances in standards.

vii. The housekeeping at the sludge processing area has to be improved. The treated sludge shall be analysed for Total Petroleum Hydrocarbon (TPH) and the sludge with less than 1 % of TPH only shall be used as manure or direct landfill.

5. The industry has connected online effluent monitoring systems to APPCB website even after operation of IETP from Feb-2024. The valves of Effluent monitoring system is yet to be established.
6. APPCB has conducted comprehensive manual monitoring for the stacks & ambient air for the period from 18th to 20th November-2024 at 8 locations in which 7 locations are exceeding the standards for PM10 & PM2.5 in Ambient Air. The volatile organic compounds in Ambient Air were monitored at 8 locations from 18.11.2024 to 20.11.2024. As per results, it is evident that there is leakages from process and same has to be taken care by providing sensors and alert hooters.

The status will be submitted to the Head Office for review before Task Force Committee for taking necessary action.

This report is submitted for kind consideration. The APPCB will abide by all such directions as the Hon'ble Tribunal may deem fit and appropriate.

Date:17..03.2025

Place: Visakhapatnam

Environmental Engineer,
APPCB, Regional Office,
Visakhapatnam.

Environmental Engineer
A.P. Pollution Control Board
Regional Office, Visakhapatnam

Annexure-I

BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI

(Through Video Conference)

Original Application No.73 of 2021 (SZ)

IN THE MATTER OF

Visakha Pawan Praja Karmika Sangam,
A Registered Labour Association No. 799 of 2016,
Rep by its Secretary Mr. Ganga Raju Kola,
H. No. 60-33-49, Ambedkar Colony,
Maikapuram, Vishakhapatnam,
Andhra Pradesh- 53001.

...Applicant(s)

Versus

1. **Union of India**
Rep by its Secretary,
Ministry of Environment, Forest and Climate Change,
Indira Paryavaran Bhavan,
Jorbagh, New Delhi- 110003

2. **Union of India**
Rep by its Secretary,
Ministry of Petroleum and Natural Gas,
Sashtri Bhavan, New Delhi-1

3. **Central Pollution Control**
Rep by its Chairman,
Parivesh Bhavan,
East Arjun Vihar, New Delhi- 110032

4. **State of Andhra Pradesh**
Rep by its Chief Secretary,
Government Complex,
Velagapudi, Guntur District,
Andhra Pradesh- 522503

5. **Andhra Pradesh Pollution Control Board**
Rep by its Members Secretary,
D. No. 33-26-14/D2,
Near Sunrise Hospital, Pusha Hotel Center,
Chalamvari Street, Kasturibaipet,
Vijayawada, Andhra Pradesh- 520010.

6. **District Collector and Magistrate**
Main Road, Krishna Nagar,
Maharani Peta, Vishakhapatanam,
Andhra Pradesh- 530002.

7. **M/s Hindustan Petroleum Corporation Limited.**
Rep by its Chairman and Managing Director,
Malkapuram Post, Vishakhapatnam,
Andhra Pradesh- 530011.

...Respondent(s)

For Applicant(s): Mr. Sravan Kumar.

For Respondent(s): Mr. G.M. Syed Nurullah Sheriff for R1.
Mr. A.R. Sakthivel for R2.
Mrs. MadhuriDonti Reddy for R4 to R6.
M/s. King & Partridge for R7.

Judgment Reserved on: 26th August, 2022.

Judgment Pronounced on: 20th October, 2022.

CORAM:

HON'BLE Smt. JUSTICE PUSHPA SATHYANARAYANA, JUDICIAL MEMBER
HON'BLE Shri. SAIBAL DASGUPTA, EXPERT MEMBER

JUDGMENT

Delivered by* Justice Smt. Pushpa Sathyanarayana*, Judicial Member

1. The applicant is challenging the activities of Hindustan Petroleum Corporation Limited (for short 'HPCL') as they are violative of the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Biodiversity Act and also the direction issued by the Andhra Pradesh Pollution Control Board and the conditions imposed by the MoEF&CC.

2. As the authorities, namely, MoEF&CC, the Andhra Pradesh Pollution Control Board and the CRZ have not taken any action against the 'HPCL' which is the 7th respondent, the above application is filed seeking a Committee to be appointed consisting of experts from the Pollution Control Board to conduct a site inspection and get factual findings and also assess air and water pollution etc., and direct the 7th respondent to implement the recommendations of the Indian Institute of Science, Bangalore with respect to the odour nuisance caused in Visakhapatnam.

3. The 7th respondent refinery was established in Visakhapatnam in the year 1957 and the capacity of the plant was increased from 0.65 MMTPA to 8.3MMTPA in the course of time. The industry has been causing smoke, odour nuisance and water pollution for several years. This has resulted in inconvenience and health hazards to the residents of the area. The local residents have made several complaints and given representation to the authorities on the pollution caused by the refinery. In response to those complaints, the Andhra Pradesh Pollution Control Board had also conducted several inspections in the unit and found large number of deficiencies and directed the unit to take precautions.

4. It is further alleged that the bad smell that emanates from the 'HPCL' plant creates nausea, breathlessness, lung, heart, eye and skin diseases to the residents, particularly to the women, children and elderly people. It is alleged that the water samples tested by the Public Health lab confirmed that the ground water was severely contaminated due to untreated water discharge from the industry. The Indian Institute of Science, Bangalore also had made certain recommendations regarding the odour pollution.

5. It is pointed out that the MoEF&CC compliance report found violation in the unit that the mandatory green belt of 33% in the unit was not developed. The conclusion of the monitoring report also stated that the capacity of the unit must be reduced to 70% of the original capacity. In the year 2017, the unit had proposed to extend its capacity from 8.5 MMTPA to 15 MMTPA. Several representations given to the authorities, requesting not to expand the capacity of the unit. Andhra Pradesh Pollution Control Board also conducted an inspection and issued directions on the violations noticed in the unit including directing the unit to submit a bank guarantee of Rs. 64 lakh.

6. It is now complained by the applicant that even the recommendations of the Indian Institute of Science, Bangalore was not implemented. Even during pendency of the application, a major accident occurred due to lack of requisite mandatory maintenance of the plant. On the directions of the Tribunal, a Joint Committee was constituted who had inspected and filed a report. It was recommended that the unit has to pay Rs.24,36,696/- (Rupees Twenty Four Lakhs Thirty Six Thousand Six Hundred and Ninety Six only) as environmental compensation. The

Joint Committee also confirmed the violations raised by the applicant like odour, lack of maintaining 33% of green belt etc. Therefore, the applicant had sought for the above directions in the application.

7. **The 1st respondent, which is the Ministry of Environment, Forests and Climate Change** has filed its counter affidavit stating that apart from causing odour pollution, there are lot of violations committed in respect of the conditions imposed in the Environmental Clearance granted by them as well as the 'consent to operate' granted by the Pollution Control Board. The operation of the unit with the said violations resulted in serious environmental degradation. As the MoEF&CC is engaged only in policy formulation for abetment, control and prevention of pollution prescribing the environmental standards and they are implemented only through the Central Pollution Control Board and State Pollution Control Board, who are the enforcement authorities. The Pollution Control Boards or the Pollution Control Committees are empowered to take all such measures expedient for the purpose of protection and implementing the quality of the environment as well as prevention.

8. **The 3rd respondent, who is the Central Pollution Control Board**, has filed its reply stating that the Environment Impact Assessment, Notification mandates the requirement of prior Environmental Clearance to the project listed in the schedule of the said notification. The Environmental Clearance is granted to the project proponent by the MoEF&CC under the said notification and they are also monitored periodically.

9. It is alleged that for grant of Environmental Clearance for expansion to the 7th respondent, 'HPCL' the public hearing was not conducted when there were various complaints made by the applicant-Association and others regarding the functioning of the 7th respondent. Already Indian Institute of Science, Bangalore has submitted its report on odour nuisance and submitted a report to the State Pollution Control Board regarding the marine pollution. There are already the conditions and precautions for preservation and protection of the marine environment published by the Indian Coast Guard. The applicant had alleged that the 7th respondent is discharging the untreated water into the sea causing water pollution which has to be addressed only by the State Pollution Control Board.

10. **The State Pollution Control Board, who is the 5th respondent**, had in its report stated that a report was called for from it regarding the accident that took place on 25.05.2021 in the 7th respondent unit. The total area of the unit is about 1880 acres which was leased from the Visakhapatnam. The 7th respondent, 'HPCL' is surrounded by various other industries on all the four sides and the green belt developed in the unit is about 45 acres and in an addition the industry has planted about 06 lakh saplings in Greater Visakhapatnam Municipal Corporation limits.

11. The industry was issued with 'Consent for Operation' and hazardous waste authorization by the Board on 09.03.2021 which has got the capacity of 10 million metric ton per annum of crude oil. There was an accident on 25.05.2021 and Andhra Pradesh Pollution Control Board had inspected the site along with the scientific staff of the zonal lab, Vishakhapatnam and monitored the ambient air quality and submitted the monitoring report. It is also observed that contaminated waste water was generated due to fire fighting, sea cooling water is used in the fire water network and the fire water used for fire fighting operations collected in surface drains was routed to effluent treatment plant for treatment along with other waste waters. Water samples were collected during fire fighting operations from the drain where analysed and a report was given by the State Pollution Control Board. The industry was also directed to dispose of the oily sludge generated during fire incident to authorised agencies/treatment storage disposal facility for safe disposal.

12. The 7th respondent had also informed that the oily sludge generated will be mechanically treated for oil recovery and the recovered oil pumped to slop tanks for processing along with crude oil. The residual low oily sludge will be bio-remediated within the industry. As per the information given by the 7th respondent to the Andhra Pradesh Pollution Control Board about Rs. 25 Crore worth of works have been undertaken immediately to replace the pipelines and machinery and about 78 metric ton of hydrocarbon was burnt in the fire accident

13. **The 6th respondent, who is the District Collector and Magistrate,** also had constituted a Committee on the date of accident and a copy of proceedings was also issued. As per the proceedings, the Committee to enquire and submit a report to find out the cause of

outbreak of fire in the factory, whether sufficient measures have been taken by the management of the factory, whether any negligence or lapses are noticed in avoiding the mishap on the part of the management and whether any departmental failure is noticed were to be discreetly enquired and submitted.

14. **The report submitted by the Enquiry Committee constituted** by the District Collector and District Magistrate was also submitted to the Andhra Pradesh Pollution Control Board. The report also had identified the lapses and had given the recommendations to the unit to avoid such incidents in future.

15. **The 7th respondent, who is the refinery unit,** had filed its reply through its Dy. General Manager-Technical. The 7th respondent has specifically stated that it has got the name plate capacity of 8.33 Million Metric Tonnes and also a valid 'Consent for Operation' for 10 MMTPA. But the refinery is operating only in the range of 09 to 9.78 MMTPA. The refinery also had obtained all the necessary environmental consents to operate its refinery and complies with conditions imposed upon it by the environmental authorities. A very detailed reply is filed by the refinery unit setting out in detail the response for all the allegations made in the application.

16. The refinery unit/7th respondent also filed its objection to the Joint Committee report dated 03.12.2021 and reply to the allegations dated 03.10.2021 with respect to the Joint Committee report dated 23.02.2022. There is yet another objection to the report of the Joint committee dated 17.06.2021 filed by the refinery on 16.09.2021.

17. The Learned Counsel appearing for the refinery unit confined his argument only with the following issues, namely, (i) provision of 33% of the green belt, (ii) odour nuisance and (iii) the fire accident.

Odour Nuisance:

18. Pursuant to the complaints received from public of odour problems from several parts of Vizag City, Andhra Pradesh Pollution Control Board (APPCB) and District Administration of Vizag engaged IISC Bangalore to identify the root cause of odour nuisance. The major observation of the IISC is that the compounds responsible for odour

problem in Vizag City could be the cumulative effect of odorous organic and inorganic like unburnt hydrocarbons, BTX solvents, sulphides, amino compounds etc. from the industrial establishment, domestic sewage, municipal solid waste and vehicular exhausts and it is difficult to pinpoint any one industry. Thus the IISC had recommended the following measures for mitigating the pollution from the industries:

> *"i. Even if industries follow good practices and maintain crisis within the limits, there are possibilities of episodic odour issues. In such cases, it is the responsibility of each and every industry in the region towards community to cooperate and participate in taking the order problem in Visakhapatnam area.*
>
> *ii. APPCB being the model agency, should form an odour squad comprising members from APPCB, each stakeholder industry, prominent community members and experts in environmental field. The task of the squad should include:*
>
> - *In case of any episode, the APPCB nominate to inform all members about the compliant and location.*
> - *The squad to visit the site and take ambient air samples in Tedler bags which should be stored under appropriate conditions and transported immediately (for GC-MC analysis) to recognized laboratory.*
> - *Upon receiving the complaints firm the squad, each industry should check for abnormal emissions or operating conditions if any, in their industry and report to APPCB and take necessary actions.*
>
> *iii. APPCB should initiate a community medical study to correlate the mortality rate before and after the odour episode for compare the data during non-episodal to evaluate the hazard.*
>
> *iv. Use of respiratory masks must be encouraged wherever odor is experienced.*
>
> *v. Public education is an important concept in odor management. The odor squad should strive to impress upon people of Visakhapatnem that the common odor one might smell from the industries or any other sources will not have serious impact on average person's health if released in small amounts. It is important to maintain public decorum and take steps to mitigate the panic among the general public regarding proper education."*

19. The Joint Committee had observed that the unit had not provided closed collection system to handle the odorous effluent streams. The oil-water separators and equalization tanks are not covered to trap the VOCs. Hence there was a strong odour of VOCs sensed in the ETP I & IV near bio-remediation ponds.

20. However, the 7th respondent had replied that the odour was localised and intermittent and it was not felt beyond ETP area. VOC recovery system is being implemented in the IETP as part of VRMP which is under mechanical completion stage. The existing ETPs will be non-operational post commissioning of IETP.

21. In its reply, the 7th respondent has stated that a purchase order has been placed by the respondent on M/s. Glens Innovation Labs Private limited, Chennai for conducting odour study at the 7th respondent refinery which will be reviewed and vetted by IIT Madras and that the work will commence in April 2021. The status of the same is not furnished by the 7th respondent.

22. A brief compliance report was also furnished by the refinery unit in which it is stated that despite following good practices and maintaining the emissions within the limits, there are possibilities of episodic odour issues. In such cases, it is the responsibility of the unit to cooperate and participate in tackling the odour problem. It is admitted by the 'HPCL' that checks were carried out inside the refinery and no abnormalities were observed and it was promptly communicated to the complainants and the authorities as applicable. It is also stated that an odour squad comprising members from Andhra Pradesh Pollution Control Board and stakeholders from the industry and prominent community members and experts in environmental area were constituted. The squad would visit the site and take air samples in Tedier bags which would be stored under appropriate conditions and transported to a recognised lab. The unit has stated that as and when complaints were received, the plants were checked for any abnormality and no abnormalities were found. As per the odour squad's recommendation the use of respiratory masks are encouraged.

23. Though the smell from the industries may not have any serious impact on an average person health, the public also should be properly educated on the same as per the recommendation of the odour squad.

24. Albeit, odour control is a major issue in any oil refinery as there is plenty of scope for unpleasant emissions which are inevitable. The 7th respondent refinery is a large scale refinery having the potential to generate odour that can be detected over large distances requiring a high performance odour control measures to minimize the odour impact. The odour impact besides being annoying also impacts the health. Stable petrochemical production may be associated with low but long-term exposure to industrial emissions. Nevertheless, accidents in the plants, such as the one happened in this case may temporarily cause high level of exposure in the population living near the plants.

25. The APPCB in its observation has not specified any well defined sources for the odour:-

> *"a. The unit is not complying with the majority of conditions stipulated in Environmental Clearances granted to Visakha Refinery.*
>
> *b. The unit is not complying with the majority of consent & authorization conditions issued by APPCB on March 9, 2021; these are the same conditions given by APPCB at the time of consent & authorization renewal.*
>
> *c. APPCB had issued 16 points directions for non-compliance on March 19, 2020; the unit is not complying for 6 points and partially complied for one point even after one year.*
>
> *d. The committee had monitored stack emission at five stacks, manual ambient air quality monitoring at three locations and CAAQM using mobile van at two locations. The stack emissions are meeting the prescribed standards, the ambient air quality for PM10, PM2.5 parameter is exceeding at all the five locations, at one point near the ETP-IV area the concentration value of $S0_2$ is exceeding the standards.*
>
> *e. The effluent discharge standards for the ETP outlet of I & IV are not meeting however due to mixing of one time cooling water with the treated effluent at the final discharge point, the prescribed discharge parameters are meeting the standards.*
>
> *f. The committee calculated the prescribed pollution load for efficiency & emission in CFO and are meeting the prescribed standards.*
>
> *g. The committee calculated environmental compensation for violation &non compliance of the directions issued by APPCB and levied Rs. 89,04,000 (Rupees eighty nine lakhs and four thousand orly). M/s. HPCL, Visakha Refinery has to pay Rs. 89,04,000/- to APPCB.*
>
> *h. The unit has to ensure self-monitoring, self-compliance and comply with statutory guidelines, safety measures, and directions issued by MOEF & CC, CPCS, APPCB, Directorate of Factories and other Regulatory Authorities.*
>
> *i. The sulfur content in the crude oil id found to be less than the sulfur content in the all products."*

26. From the above report of the APPCB, it can be inferred that most of the odours encountered during the observations were due to normal operations and diffuse emissions.

27. To ascertain the source of pollution, the Joint Committee along with the scientist of APPCB Zonal Laboratory carried out Ambient Air Quality Monitoring at 5 locations (Manual monitoring at 3 locations and Mobile van with CAAQMS at 2 locations) in and around the industrial premises.

> *"**5.0 Monitoring of ambient air quality and stack emission in HPCL:***
>
> *To ascertain the source of pollution, committee along with scientist of APPCB, Zonal Laboratory carried out ambient air quality monitoring at 5 locations (Manual monitoring at 3 locations & Mobile van with CAAQMS at 2 locations) in and around the industry premises.*

Table 4: Details of ambient air quality monitoring locations

S. No.	***Location***	***Latitude***	***Longitude***	***Date of monitoring***	***Parameters***
I	***Manual Stations***				
1	*North-east side of the industry (near industry CAAQM stations at HLPH)*	*17.696921*	*83.251094*	*25.03.2021 and 26.03.2021*	*PM 10, PM 2.5, SO2, NO2 & NH3.*
2	*South-west to industry (Yarada park housing colony – S10 building)*	*17.688231*	*83.240756*		
3	*South-east side of the industry (near industry CAAQM station)*	*17.688419*	*83.250038*		
II	***Mobile Continuous Ambient Air Quality Monitoring Station (CAAQMS)***				
1	*North-west corner of the industry near ETP – 4*	*17.700329*	*83.237126*	*25.03.2021 and 26.03.2021*	*PM10, PM2.5, SO2, NO2, NH3, O3, CO, Benzene and VOCs.*
2	*South-east side of the industry (near industry CAAQM station)*	*17.688419*	*83.250038*	*26.03.2021 and 27.03.2021*	

The parameters monitored are PM_{10}, $PM_{2.5}$, SO2, NO2, NH3, O3, CO, Benzene and VOCs between 25.03.2021 and 27.03.2021. The monitoring results are depicted in table 5 below:

Table 5: Ambient air quality monitoring results

S. No.	***Location***	***PM 10***	***PM 2.5***	***SO_2***	***NO_x***	***NH_3***	***O_3***	***CO***	***Benzene***
I	***Manual Stations***								
1	*North-east side of the industry (near industry CAAQM stations at HLPH)*	***267***	***92***	*44*	*33*	*29*	*-*	*-*	*-*
2	*South-west to industry (Yarada park housing colony – S10 building)*	***115***	***69***	*19*	*17*	*27*	*-*	*-*	*-*
3	*South-east side of the industry (near industry CAAQM station)*	***248***	***83***	*48*	*36*	*30*	*-*	*-*	*-*
II	***Mobile Continuous Ambient Air Quality Monitoring Station (CAAQMS)***								
1	*North-west corner of the industry near ETP – 4*	***320***	***89***	***84***	*39*	*40*	*57.7*	*1.4*	*2.7*
2	*South-east side of the industry (near industry CAAQM station)*	***298***	***94***	*52*	*42*	*35*	*66.2*	*1.7*	*3.3*
24 Hour average standard		*100*	*60*	*80*	*80*	*400*	*100 (8 hours)*	*4 (1 hour)*	*-*
Annual average standard		*60*	*40*	*50*	*40*	*100*	*180 (1*	*2 (8*	*5*

						hour)	*hours)*	
All values are expressed in µg/m^3, except CO. CO values are expressed in mg/m^3.								
Analysis result of other 49 VOCs is annexed (Annexure – 16).								

The results show that the values of PM_{10}& $PM_{2.5}$ values are exceeding the 24 hour average standards. The SO_2 value at the North-west corner of the industry near ETP – 4 is exceeding the standard. The values of SO_2&NOx, though not exceeding the standard limits found far higher than the values obtained at the locations elsewhere in Visakhapatnam city. This indicates that there are leaks in the process systems through which, PM_{10}, $PM_{2.5}$, SO_2, NOx, etc. are find their way into the ambient air as fugitive emissions. Higher values of PM_{10}& $PM_{2.5}$ in the ambient air could also be attributed due to the expansion works going on within the premises of the refinery.

*M/s. HPCL Refinery has installed three CAAQM stations within the periphery of the industry for continuously monitoring the ambient air quality on real-time basis. The data from these stations is transferred to APPCB & CPCB servers. Data pertaining to the monitoring for the period from January, 2020 to March, 2021 is enclosed (**Annexure – 17)**. From the results it is observed that the value of PM_{10} and $PM_{2.5}$ are exceeding the standard. During February 15 to March 15, 2021 in the CAAQMS station at the southern side of the industry, there is a spike in the SO_2 value.*

The Joint Committee requested Zonal Laboratory, APPCB, Visakhapatnam to carry out ambient air quality monitoring using mobile CAAQM Station for three days during May 3-6, 2021 and 06.05.2021 in the residential area of Malkapuram at Ajanta colony which lies south-east direction of M/s. HPCL Refinery to verify the impact of emissions from the refinery. The results obtained are tabulated as below:

Table 6: results of the ambient air quality monitored at Malkapuram in Ajanta colony

S. No.	***Date***	***PM_{10}***	***$PM_{2.5}$***	***SO_2***	***NO_2***	***NH_3***	***O_3***	***CO***	***Benzene***
1	*03.05.2021 to 04.05.2021*	*91*	*25*	*33*	*25*	*16*	*41.2*	*0.9*	*1.5*
2	*04.05.2021 to 05.05.2021*	*72*	*17*	*25*	*22*	*15*	*29.7*	*1.0*	*0.6*
3	*05.05.2021 to 06.05.2021*	*67*	*16*	*37*	*24*	*23*	*55.1*	*0.9*	*0.7*
24 Hour average standard		*100*	*60*	*80*	*80*	*400*	*100 (8 hours)*	*4 (1 hour)*	*-*
Annual average standard		*60*	*40*	*50*	*40*	*100*	*180 (1 hour)*	*2 (8 hours)*	*5*
All values are expressed in µg/m^3, except CO. CO values are expressed in mg/m^3.									
Analysis result of other 49 VOCs is enclosed (Annexure – 16).									

From the table above, it is observed that the all the parameters are well within the standards for all the three days.

28. Regarding emissions of stacks, the report of the committee is as follows:

"5.1 Monitoring of emission in stacks

Committee carried out monitoring of flue gas emissions from five important stacks for PM, SO_2 and NOx during the period of inspection during March 25-27, 2021. Details of stacks monitored and the results are tabulated below:

Table 7: Analysis results of stacks monitored

S. No.	***Stack identity***	***Date of monitoring***	***Parameter***	***Value (mg/NM3)***	***Standard***
1	*Stack attached to DHDS Reformer-61F11*	*25.03.2021*	*PM*	*39.0*	*100*
			SO_2	*63.5*	*--*
			NOx	*35.7*	*--*
2	*Stack attached to combined feed heater and product fractionators reboilers-90F01, 90F02*	*26.03.2021*	*PM*	*24.9*	*100*
			SO_2	*184.7*	*--*
			NOx	*204.9*	*--*
3	*Stack attached to Flue gas desulphurization unit FGD-II*	*26.03.2021*	*PM*	*36.0*	*50*
			SO_2	*147.5*	*--*
			NOx	*112.8*	*--*
4	*Stack attached to continuous catalytic reforming unit (CCR) 74F1, F2, F3, F4*	*26.03.2021*	*PM*	*22.0*	*100*
			SO_2	*25.1*	*--*
			NOx	*117.4*	*--*
5	*Stack attached SRU Train – III Incinerator 79F302*	*27.03.2021*	*PM*	*23.0*	*100*
			SO_2	*32.5*	*--*
			NOx	*35.7*	*--*
Analysis reports enclosed (Annexure -18).					

From the results, all the parameters are meeting the prescribed standard by APPCB for all the five stacks monitored.

The Visakha Refinery has installed Online Continuous Emission Monitoring Systems (OCEMS) to 32 stacks to monitor the flue gas emissions for Particulate Matter (PM), Sulfur dioxide (SO2), Nitrogen dioxide (NO2) and Carbon monoxide (CO) on real-time basis and connected to APPCB & CPCB server. Analysis data obtained from these stacks for the period from 01.01.2020 to 30.04.2021 has been collected and enclosed (Annexure – 18). There are few exceedances noticed during March, 2021

According to the CFO conditions issued by APPCB has prescribed stipulated standards for pollutant emission loads from the stacks for PM, SO2, NOx& hydrocarbons. The Joint Committee calculated pollutant emission load for compliance verification as tabulated below.

Table 8: Emission Load calculation statement for PM, SO2 and NOx as per the data obtained from the CEMS connected to stacks - From 01.01.2020 to 30.04.2021

S. No.	***Stack ID***		***SPM (TPD)***	***NOx (TPD)***	***SO2 (TPD)***
	S. No. as per CFO order	***As per CEMS***	***Actual as per CEMS***	***Actual as per CEMS***	***Actual as per CEMS***

1	*Stack 4*	*Stack 01_CDU_I_2F1*	*0.028*	*0.058*	*0.283*
2	*Stack 6*	*Stack02_CDU_I_2F2-*	*0.008*	*0.043*	*0.182*
3	*Stack 5*	*Stack03_CDU_I_2F4-*	*0.016*	*0.055*	*0.275*
4	*Stack 1*	*Stack04_CDU_II_11F1-*	*0.068*	*0.173*	*0.543*
5	*Stack 2*	*Stack05_CDU_II_12F1-*	*0.015*	*0.066*	*0.166*
6	*Stack 12*	*Stack06_CDU_III_42F1-*	*0.057*	*0.133*	*0.552*
7	*Stack 13*	*Stack07_CDU_III_42F2-*	*0.01*	*0.04*	*0.15*
8	*Stack 14*	*Stack08_VBU_46F1-*	*0.006*	*0.062*	*0.137*
9	*Stack 15*	*Stack09_FCCU_I_4F51-*	*0.015*	*0.02*	*0.116*
10	*Stack 16*	*Stack10_FCCU_I_4F52-*	*0.094*	*0.045*	*0.146*
11	*Stack 35*	*Stack11_FCCU_I_FGD1-*	*0.063*	*0.42*	*0.184*
12	*Stack 3*	*Stack12_FCCU_II_14F1-*	*0.012*	*0.023*	*0.139*
13	*Stack 9*	*Stack13_FCCU_II_14F3-*	*NA*	*0.029*	*0.093*
14	*Stack 34*	*Stack14_FCCU_II_FGD2-*	*0.111*	*0.31*	*0.098*
15	*Stack 8*	*Stack15_PP_I_WIL8-*	*NA*	*NA*	*NA*
16	*Stack 27*	*Stack16_PP_1_IBH-*	*0.01*	*0.203*	*0.273*
17	*Stack 21*	*Stack17_DHDS_60F1-*	*0.002*	*0.045*	*0.108*
18	*Stack 19*	*Stack_18_DHDS_REFORMER-*	*NA*	*0.042*	*0.054*
19	*Stack 20*	*Stack19_DHDS_HGU_61F1*	*NA*	*NA*	*NA*
20	*Stack 22*	*Stack20_DHDS_SRU_65F001-*	*NA*	*0.02*	*0.042*
21	*Stack 26*	*Stack21_DHDS_SRU_79F302-*	*NA*	*0.008*	*0.176*
22	*Stack 24*	*Stack22_CCR_74_F1toF4-*	*0.021*	*0.135*	*0.042*
23	*Stack 23*	*Stack23_NHT_72_F1F2-*	*0.003*	*0.017*	*0.02*
24	*Stack 25*	*Stack24_FCCNHT_75F1-*	*0.001*	*0.004*	*0.006*
25	*Stack 17*	*Stack25_CPP_HRSGIII-*	*0.083*	*0.978*	*0.047*
26	*Stack 18*	*Stack26_CPP_HRSGIV-*	*0.103*	*0.575*	*0.06*
27	*Stack 28*	*Stack27_CPP_HRSGV-*	*0.058*	*0.648*	*0.192*
28	*Stack 29*	*Stack28_CPP_HRSGVI-*	*0.064*	*0.74*	*0.176*
29	*Stack 30*	*Stack_29_DHT_FEED_90F01_02-*	*0.054*	*0.092*	*0.138*
30	*Stack 32*	*Stack_30_DHT_HGU_NAPTHA_HEATER_91F01-*	*0*	*0.002*	*0.001*
31	*Stack 31*	*Stack_31_DHT_HGU_91M20-*	*0.063*	*0.079*	*0.071*
32	*Stack 33*	*Stack_32_DHT_SRU_92M22-*	*0.004*	*0.018*	*0.051*
Total (as calculated from the results obtained from CEMS connected to 32 stacks)			***0.969***	***5.083***	***4.521***
Total emission load (as stipulated to each stack in the CFO Order against the 32 stacks)			***5.609***	---	---
Total emission load (as stipulated to each stack in the CFO Order against all the 36 stacks)			***6.72***	---	---
Total emission load prescribed as per CFO Order			***1.11***	***6.5***	***11.5***
Stack monitoring data obtained from the Continuous Emission Monitoring Systems (CEMS) connected to 32 stacks for the period from 01.01.2020 to 30.04.2021. (Annexure – 19).					

From the above calculations, the parameters PM, SO_2 and NO_2 are meeting the prescribed standard for pollution emission loads."

29. As far as the waste water generation and treatment is concerned, there are three Effluent Treatment Plants in HPCL. Treatment effluent along with the ones-through cooling water is discharged into Megadrigedda surplus overflow channel through two numbers of Main Hay Filters, which finally joins the sea of Bay of Bengal.

30. During inspection, the Joint Committee collected treated effluents from three outlets of ETPs and the two final outlets discharged into Megadrigedda surplus overflow channel for compliance verification on 26.03.2021.

31. The Joint Committee had done the **domestic waste water** treatment analysis and observed that all the parameters are meeting the standards.

Groundwater Quality Monitoring:

"HPCL has installed six piezometer wells inside the unit premises to regularly monitor the groundwater quality. During the inspection, it was informed to the committee that four of the wells are dried up and the Joint Committee collected groundwater samples from two piezometer wells located within the industry premises.

Results shows that dissolved solids content in the groundwater within the premises of the refinery are very high exceeding the drinking water standard limits. This may either be attributed to the intrusion of sea water or be attributed to the seepage of sea water drawn by the refinery for cooling purpose."

Sulphur Balance Studies:

"The Joint Committee carried out sulphur balance studies for verification of compliance of stipulated standards. For the study, committee collected Sulphur related data of crude processed and petroleum products produced during the year 2020 (January to December).

Further, the refinery has used three types of fuels viz., fuel gas, low sulphur heavy stock (LSHS) fuel oil and CPP Naphtha for crude distillation, capital power generation, etc. purposes, which again is also having sulphur concentrations. The quantities of various fuels used and their sulphur content have also been verified by the Joint Committee while carrying out sulphur balance studies.

From the analysis sulphur balance studies, it appears that the refinery is not exceeding the sulphur dioxide emission load of 11.5 tons per day stipulated in the APPCB CFO order dated 18.12.2019.

In support of the claim of the refinery that is recovering sulphur from the crude and its products, it has provided the quantity of recovered sulphur for past five years from 2016-17 to 2020-21."

32. After the above analysis, the Joint Committee has observed as follows:-

"9.0 Observations of the committee:

i. Committee inspected HPCL known as Visakha Refinery during March 25-27, 2021. During inspection the unit was operational, however, FCCU-I, SRU train 1&2, Merox unit were not in operation. It was informed that FCCU-I is currently shutdown due to low catalyst circulation rate, and the unit is having four SRU Trains

and total design feed rate of these SRUs is higher than the generated feed gas. Generally, two SRU trains will be in operation. Thus SRU Train-3 and DHT SRU were in operation.

ii. The unit has three ETPs for treating the different streams of effluents generated. ETP -I is of the capacity 3,240 KLD, ETP – II (7,800 KLD) and ETP – IV of 4320KLD capacity. During inspection, ETP I & ETP-IV were fully operational, but, ETP -II was partially operational and was diverted to ETP -IV for further operation. It may be noted that the design capacity of ETP-IV is smaller compared to ETP-II, hence, complete treatment cannot be achieved. This is also reflected in the analysis results of ETP-IV outlet (Table 13). The chance of bypass is highly possible, however, during inspection no by-pass of effluents was observed.

iii. In the ETP-II area, the TPI was broken down and the thick black slurry like effluent was spilled all over and was filled in the drains. The drains near ETP-II section was filled with water and white sand like material.

iv. The storm water drains near the final outlets I & II was filled with water and when enquired, it was told that rain water. The small tank is constructed near the guard pond and it was observed that about four inches oily mark was visible. The water filled in this tank is transported to the rain water harvesting tanks through tankers.

v. The unit has not provided closed collection system to handle the odours effluent streams. The oil-water separators and equalizations tanks are not covered to trap the VOCs. Hence, during inspection a strong odour of VOCs was sensed by the committee members in the ETP I & IV, near bio-remediation ponds and at guard pond.

vi. The guard pond is filled with the treated effluent of ETP-I & II and ones through cooling water. It was observed that the oil was floating on the surface of the guard pond near the inlet of ETP treated water.

vii. The hazardous waste generated by the refinery as per the authorization is stored in a separate shed under lock & key. The different types of wastes are kept separately with demarked. The wastes are disposed accordingly mentioned in the authorization.

viii. Sludge generated from Crude/Product tanks is shifted to Sludge lagoons and is called as high oily sludge. Processing of this sludge to recover the oil is carried out through a temporary facility (Decanter, Centrifuge, RO Tank) installed by external agency. When 3000 to 5000 m3 of sludge is accumulated, tender is placed for processing of sludge. The third party by installing temporary facility such as Decanter, Centrifuge & RO Tank. The recovered oil generated is pumped to slop oil tanks for further reprocessing in CDUS. Low oily residual sludge generated out of sludge processing is taken to Bins for Bio Remediation process.

ix. During inspection, it was noticed spillages in the sludge processing area and scatter of sludge near the sludge lagoon ponds. The sludge lagoon ponds were not covered and the VOC measured by hand held instrument showed 8 - 9 PPM. In this area strong VOC was sensed by the committee members. The industry representative informed that it is only local and is not carried to other area of the refinery.

x. In the bio-remediation process of low oily sludge, 10 bins of 100m of each is constructed and filled with low oil sludge, the oil zapper bacteria at 5 kgs/m' and nutrients of 250g/m' is mixed along with the sludge. Periodic tilling has to be carried out. After two months the sludge has to be tested for the oil content and if required additional oil zapper bacteria and nutrients have to be added. After 10-12 months, the oil sludge will be completely degraded and can be used as manure.

xi. However, during inspection it was noticed that the 5 bins were empty and the remaining bins was filled with sludge, but on top of the sludge high oil sludge along with biofilms was dumped. The sludge was too dried and appears that it was not tilled and aerated for the growth of bacteria for the treatment.

xii. It was informed that the 1st batch was processed in bin no. 2, 5 & 6 and completed in March, 2020. The treated sludge was utilized for garden soil and road repair works in project Site.

xiii. It has been observed that project had display board at the main entrance gate. However, the critical parameters viz., stack emission, ambient air quality monitoring, water, noise, VOC, etc. data are not being displayed.

xiv. Thick black smoke emissions from the flare stacks were observed during inspection of the refinery. APPCB officials have also recorded in their reports during inspection of the refinery on 16.07.2020 and 30.11.2020, which indicate escape of incomplete and unburnt aromatic and aliphatic hydrocarbon emissions into the atmosphere.

xv. Refinery does not have the inventory of unrecoverable volatile organics venting through the flare stacks for burning.

xvi. It has been observed that, vide EC dated 03.02.2004 and 02.09.2009 project was under expansion from 7.5 to 10.0 MMTPA. As per EC dated 11.02.2016, project is under expansion from 8.33 MMTPA to 15.0 MMTPA. However, during inspection, no information has been provided for expansion of project from 7.5 to 8.33 MMTPA.

xvii. It has been observed that the PAs are submitting the six monthly compliance reports with respect to latest EC dated 11.02.2016 only. However, compliance status of earlier granted EC's and monitored data of air, water, noise, etc. are not being submitted.

xviii. Compliance of standards/norms in terms of fugitive emissions and VOC emissions monitoring at ETP area are not being implemented as per Oil Refinery Industry notified under the Environment (Protection) Rules, 1986 vide G.S.R. 186(E) dated 18th March, 2008.

xix. The project had not provided a mobile laboratory with adequate facility to monitor ambient air quality outside the refinery premises. The condition has been imposed in the EC dated 30.05.1995. However, till date mobile laboratory was not provided.

xx. As per CFO, there were 35 stacks were present in the project. However, continuous on line stack monitoring facilities were provided for 32 stacks only.

xxi. Monitoring of process emissions viz., SO2, NOx, HC (Methane & Non-methane), VOCs and Benzene from various units is not being done.

xxii. The monthly Sulphur balance sheet of the refinery along with six monthly compliancereports.

xxiii. Facilities for monitoring of HS, mercaptan, non-methane-HC and Benzene at all CAAQ monitoring stations is not being provided.

xxiv. The comprehensive water audit reports on annual basis are not being submitted toMinistry's Integrated Regional Office.

xxv. It has been observed that the PAs are in process of developing green belt in and around the plant premises. However, it has been observed that the plantation around the project area is not satisfactory.

xxvi. Uploading of environmental statement for each financial year ending 31st March in Form-V on company's website is not being done.

10.0 Suggested remedial measures to mitigate pollution.

The committee suggests the following measures:

i. The unit should comply with the all the conditions mentioned in the CFO and hazardous waste authorization and also the directions issued by APPCB for effective and safe operation of the refinery so as to mitigate the pollution to possible extent.

ii. The unit should take necessary steps to reduce the PM10 & PM2.5 values in ambient air within the industry premises, the values in the CAAQMS in all the three locations shows the exceedances throughout the year 2020. The unit should spray water on the road and to plan the timings for the movement of vehicles inside the industry to control the fugitive emissions.

iii. The five stacks monitored are meeting the prescribed standards, however, two stacks which were not monitored due to some issue in the stack monitoring platform has to be rectified.

iv. Refinery has provided OCEMS in 32 stacks to monitor PM, SO2, NOx& CO and remaining 4 stacks has to be installed. The OCEMS data are connected to CPCB & APPCB servers. CEMS for

measuring Hydrocarbons are yet to be installed. A few exceedances were observed during March, 2021. The industry should take periodic calibration and maintenance of analysers to avoid the exceedances in standards.

v. The unit should rectify and repair the ETP -II components for effective treatment, the effluent spilled near the TPI area should be cleaned. The storm water drains near the ETP-II and final outlets have to be cleared for free flowing and to avoid stagnations. The small pump has to be installed in the tank constructed to collect the rain water near the guard pond to avoid manual transportation of the rain water to the ETP.

vi. The ETPs should be operated regularly and effectively for meeting the prescribed discharge standards. The unit should install covers either floating /fixed types in the oil water separator and equalization tanks to trap the VOCs for eliminating the odours. The trapped off-gas has to be treated to remove at least 90% of VOCs.

vii. The unit should recycle the treated water to the maximum extent to reduce the fresh water consumption instead of fully discharging into sea along with cooling water.

viii. At present the unit is monitoring the LDAR program annually through third party laboratory. According to the standards for equipment leaks and good practices it is advised to conduct the quarterly monitoring of LDAR for pump seals, compressor seals, pressure relief devices & heat exchangers and annually monitor the process drains & components that are difficult to monitor.

ix. The high oily sludge from the crude and products tanks stored in the sludge lagoons has producing VOCs, the unit has to take necessary steps to eliminate the VOCs odour in the area.

x. The housekeeping at the sludge processing area has to be improved, the unit may take necessary action against the third party laboratory for causing spillages during sludge processing and advise to avoid spillages.

xi. The bio-remediation of the low oily sludge has to be carried out technically and avoid dumping of unwanted waste in the bins. Before using the treated sludge as manure, it is required to analyse to check that the oily sludge is completely degraded. The oil contents in terms of Total Petroleum Hydrocarbon (TPH) after bioremediation are less than 1%.

xii. To develop 33 % of total area as a green belt along the industry premises to stop the odour issues as well as to eliminate the fugitive emissions. The unit may plant the odour eliminating plants suitable for refinery industry.

xiii. Refinery shall work out mass & material balance studies and maintain the inventory of unrecoverable volatile organics venting through the flare stacks for burning. Records to this effect shall be produced before the regulatory officials as and when required.

xiv. Suggested that the refinery shall procure, install and operate one Continuous Ambient Air Quality Monitoring station (CAAQMS) with PM 10, PM2.5, CO, O3, SO2, NO2, NH3, Benzene, H2S and Mercaptans parameters at an appropriate location in the residential areas of Malkapuram to assess the impact of refinery activities.

11.0 Concluding remarks:

a. The unit is not complying the majority of condition stipulated in Environmental Clearances granted toVisakha Refinery.

b. The unit is not complying with the majority of consent &authorisation conditions issued by APPCB on March 9, 2021; these are the same conditions given by APPCB at the time of consent &authorisation renewal.

c. APPCB had issued 16 points directions for non-compliance on March 19, 2020; the unit is not complying for 6 points and partially complied for one point even after one year.

d. The committee had monitored stack emissions at five stacks, manual ambient air quality monitoring at three locations and CAAQM using mobile van at two locations. The stack emissions are meeting the prescribed standards, the ambient air quality for PM10, PM2.5 parameter is exceeding at all the five locations, at one point near the ETP - IV area the concentration value of SO2 is exceeding the standards.

e. The effluent discharge standards for the ETP outlet of I & IV are not meeting, however due to mixing of one time cooling water with the treated effluent at the final discharge point, the prescribed discharge parameters are meeting the standards.

f. The committee calculated the prescribed pollution load for effluent & emission in CFO and are meeting the prescribed standards.

g. The committee calculated environmental compensation for violation & non-compliance of the directions issued by APPCB and levied Rs. 89,04,000/- (Rupees eighty nine lakhs and four thousand only). M/s. HPCL, Visakha Refinery has to pay Rs. 89,04,000/- to APPCB.

h. The unit have to ensure self-monitoring, self-compliance and comply with statutory guidelines, safety measures, and directions issued by MOEF & CC, CPCB, APPCB, Directorate of Factories and other Regulatory Authorities."

33. Therefore, the 7th respondent has decided to follow the specific directions recommended by the EAC (Expert Advisory Committee) to comply with the same.

Greenbelt:

34. Vegetation around the industry or the greenbelt is to mitigate the air pollution as the plants serve as a sink for pollutants and also reduce noise level. Greenbelt development is beneficial in several ways leading in conservation of bio-diversity, retention of soil moisture, recharge of groundwater, improving aesthetics of local environment and maintaining pleasant atmosphere of the region.

35. It would be relevant to advert to the order passed by the Hon'ble High Court of Andhra Pradesh in **W.P. No.259 of 2017** dated 23.09.2019 wherein a direction was given to the HPCL to comply with the CFO conditions including the recommendations of Andhra Pradesh Pollution Control Board (APPCB) of its report dated 25.04.2019 and further directing the Board to monitor the refinery and take appropriate action if necessary. In the said order, the Andhra Pradesh Pollution Control Board (APPCB) had recommended that besides the completion of plantation of 6,50,000 saplings, there was further scope for development of greenbelt in the vacant areas.

"The Board has stipulated Load based standards for the stack emissions. Whereas the Industry is measuring the emissions for concentrations. But the industry is generating load based data randomly duly taking volumetric flow data from third party monitored reports. The industry may be recommended to develop a methodology to correlate the concentration based result to convert to load based values to verify the compliance.

The industry may be recommended to improve housekeeping near ETP-IV.

The industry may be recommended to store used chemical drums in closed sheds.

There is further scope for development of Green Belt in the vacant areas.

There is scope for improvement of Bio-remediation pond management as certain spillages on ground were observed.

The industry may be recommended to comply with CFO conditions."

36. Condition No. 16 of Schedule - B of the CFE Expansion Order dated 06.07.2016 speaks about the greenbelt:

"the total area of the industry after expansion is 860 acres. Green belt is existing in an area of 45.0 acres. The area of the green belt after expansion is 112.5 acres. The industry vide mail dt. 06.07.2016 informed that being a brown field project, there is no adequate space available within the refinery for provision of additional green belt. Further, plantation of trees is not recommended inside the plant area due to safety considerations and development of green belt along the boundary is prohibited considering the associated security risk. The industry under "Green VisakhaProgramme" about 4,50,000 saplings were planted till 2015. Additional plantation of 2,00,000 saplings is to be undertaken up and completed during 2016-17. The major areas of plantation are Autonagar, Vadlapudi, Parawada, Sheelanagar, Aganampudi, Denkada etc., and the total acreage of block plantation in these areas is approximately 700 acres."

37. From the above it appears that the industry had complied with the greenbelt requirement.

38. Development of greenbelt consisting of 3 tier along the periphery of the project with native species is most important guideline for any type of industry. Green vegetation cover is beneficial in many ways leading to conservation of bio-diversity. The greenbelt species should be selected based on the type/category of the industry and climate conditions. Setting trees around an industry may not serve the purpose of greenbelt without considering the above aspects.

39. Therefore, the APPCB may consult the Andhra Pradesh Forest Department and NEERI in this regard for the delineation of the optimal width of a greenbelt in and around the industry based on pollution attenuation coefficient of selected place species. The 7th respondent may consider contributing to the greenery of the Vizag city.

Fire Accident:

40. It is not a secret that an oil refinery or petroleum product industry is a dangerous job. There is always something that could go wrong. One of the serious risks in these industries is the potential for fire and explosions. It is therefore important to conduct fire risk assessment. The management also put in place several rules and practices and train the employees how to recognize the hazards.

41. On 25.05.2021, there was a fire accident at Crude Distillation Unit III of the 7th respondent. A report was called for in this regard from Andhra Pradesh Pollution Control Board (APPCB) which was submitted along with the detailed report from the enquiry committee submitted to the Collector & District Magistrate. The cause of the outbreak was found to be the hole that developed on the 6″ SR pipeline carrying Bitumen due to corrosion or erosion. The report further observed the following lapses of HPCL during inspection.

> *"1. Deviation in implementing preventive maintenance schedules as per the Standard Operating Procedures (SOP) within the time. During inspection, it was observed that industry was not conducted the Ultra sonic test for 6 inch pipeline in CDU-3 (fire incident was taken place) for which the due date for testing is August 2020.*
>
> *2. Industry has conducted of hydro-test to the pipelines in August, 2012, and not conducted afterwards this test should be which will be conducted every 4 years which is serious lapse on account of HPCL.*
>
> *3. Failure in identifying corrosion / erosion of the pipelines carrying hydrocarbons at higher temperatures*
>
> *4. Preventive maintenance schedules are not implemented properly."*

42. The report also furnished the recommendations suggested by the committee as follows:

> *"In view of the fire incident that occurred at HPCL-Visakha Refinery on 25.05.2021 at 3.10 PM the committee has suggested the following recommendations to avoid such incidents in future:*
>
> *1. Industry shall conduct timely Hydro Testing of all pipelines for its efficacy and also shall start the Hydro testing of all pipelines of the other two crude distillation units existing in the same premises immediately by the management to avoid this type of fire incidents.*
>
> *2. Industry shall ensure hydrant pressure of 7 kg / cm² at any point of time in the fire hydrant network*
>
> *3. Industry shall ensure the operability of Diesel operated pump dedicated to fire hydrant network. A standby Diesel pump may be installed.*
>
> *4. Industry shall conduct the audit of Foam availability in the plant premises regularly.*
>
> *5. Industry shall strengthen the mutual aid agreement with the nearby industries*

6. Industry shall conduct periodical mock drills and find out any lapses in the mitigation of defined scenario.

7. Industry shall mark the flow directions on the pipelines by indicating arrow marks for easy identification.

8. Industry shall conduct HARA study and implement the recommendations therein from time to time.

9. Industry shall clear accumulated trash and scrap regularly as the industry is under expansion.

10. A detailed metallurgical / micro-structural analysis of the failed pipeline elbow to be carried out to establish the nature of failure by external qualified agency.

11. The management shall follow the directions to be issued by Hon'ble NGT in OA No. 73/2021 which is filed case on the fire incident.

12. HPCL should purchase Hydraulic platform and made it available for any fire mishaps at heights, since most of the pipeline elevated structures are upto 30 meters and above

13. Escape signage boards should be displayed in the entire premises."

43. The report of the HPCL / 7th respondent on CDU-3 fire accident on 25.05.2021 is as follows:-

"2.1.1 Ambient Air Quality:

There was no increase in the ground level concentrations of ambient air quality parameters recorded in the two of the three Continuous Ambient Air Monitoring (CAAM)stations during the fire incident. In the third CAAM station located at south gate, even though there was slight increase in NOx emissions for short duration (15:45 hrs to 16:45 hrs), the 24-hour average value was well within the stipulated limit of National Ambient Air Quality Standards (NAAQS).

Since the wind direction was predominantly towards south east during the incident, the average recorded values of the ambient air quality in CAAMS-1 (South Gate) which is located at south-east in the downwind direction during the incident are provided below:

CAAMS – 1 (South Gate)								
	Nox	So2	CO	PM 10	PM 2.5	Benzene	Ozone	NH3
	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
Average value observed during incident	66	8	1	240	40	0.4	9	0.1
24 hour Average value (8 AM to 8 AM)	27	8	0.8	177	39	0.8	13	0.1
Stipulated limit	80	80	2	100	60	5	100	400

As can be seen from the above table, all the ambient air quality parameters were within the stipulated limits, except PM10, which has been higher before, during & after the incident due to the ongoing construction activities in the area including the approved refinery modernization project. 15-minute average data recorded in the CAAMS-1 (South Gate) from 14:00 hrs to 17:00 hrs of 25.05.2021 is provided in Annexure-I, which shows that the ambient air quality parameters were within stipulated limits

2.1.2 Liquid Effluent

Sea cooling water is the medium used in the fire water network of HPCL-Visakh Refinery. The fire water was mainly used to extinguish fire during the incident besides dry chemical powder (DCP) and aqueous foam. The fire water used for fire-fighting gets

collected in surface drains of CDU-3 and is routed to API separators of ETP-I (as per design) where the traces of oil (if any) will get removed. This fire water (after oil removal) along with sea water cooling tower blow down is routed back to sea through the normal outlet channel of Refinery at MHF-1 (Main Hay Filter).

The fire water samples from CDU-3 surface drain and the final outlet after treatment in the API separators were collected for analysis. The samples were analyzed by MoEF recognized third party laboratory, M/s SV Enviro Labs & Consultants, and it was found vide reports dated 15.06.2021 that the parameters of final outlet were within the stipulated limits of sea cooling water discharge. Analysis reports are provided in Annexure-ll.

3. CONCLUSIONS

From the above, following inference can be drawn:

a) The Refinery operations are carried out as per stipulated norms. There is no violation of Consent For Operation (CFO) granted by the environmental authorities. The emissions and discharges resulting from the fire incident in CDU-3 are within the prescribed parameters.

b) The fire incident has not impacted the environment or surrounding habitation and the ambient air quality was within stipulated limits."

44. In its objections to the Joint Committee report, the 7th respondent had stated that *"the hydrotest and other testing activities are carried out during unit shutdown period stretching about one month. During the shutdown, each equipment will be dismantled, tested and refitted and thereafter Hydro testing will be conducted. For carrying out these activities, more than 1000 workers have to be assembled and they work round the clock for about one month. In view of the Nationwide lockdown due to COVID situation prevailing during the mentioned period, the above said activities could not be taken up as a planned activity. However, the UTG (Ultrasonic Thickness Gauging) of the pipelines was initiated in 2020 and the same was in progress till the onset of the COVID lockdowns. UTG of the balance pipelines and hydro test of all the pipelines were completed during the shutdown. In addition, various established alternate testing methods such as on stream inspections (OSI), Visual Inspection (VI) and in house Remaining Life Assessment (RLA) were carried out for all hydrocarbon (HC) circuits to ensure healthiness and longevity of the pipelines."*

45. Regarding the environmental damage assessment for contribution of emission into atmosphere, the Joint Committee proposed to levy environmental damage compensation as per the European Union "Environmental Prices Handbook" EU 28 Version, wherein prices are expressed in Euros/kg pollutant emitted into the environment. The committee had used the document as a reference to calculate the

prices of the pollutants emitted into the environment, as the documents indicates 3 types of pricing viz., lower, central and upper, depending upon magnitude of emissions.

46. As the quantities of pollutants emitted were in considerable quantity, but there was no significant damage to the surrounding environment injury or causalities reported, the committee had used central limit environmental prices assigned to So_2 & Co_2 while calculating the damages. This was objected to by the 7th respondent contending that *"The Environmental PricesHandbook (EU-28 Version) which contains the standards applicable to the European Union and does not apply to India. Furthermore, as per Clause 3.2 of the Environmental Prices Handbook (EU-28 Version) it is stated that "the damage cost of environmental pollution can vary widely according to local circumstances and nature of environmental emission. Prices make no allowance for these differences". For these reasons, these environmental prices cannot simply be applied to specific cases of environmental pollution, for pollution in other countries or for pollution by non-average emission The Joint sources. Committee appears to have failed to consider the above. Without above, prejudice is further submitted that the Joint Committee Report applies central limit environmental prices even after finding that there was no significant damage to the surrounding environment, injury or casualties reported. Hence, this methodology of estimating the compensation is not applicable. Refinery SO_2 emission on the day of incident (25.05.2021) was 5.6 TPD. Even after considering the SO_2 emissions from hydrocarbon burnt during the fire incident (which was 2.3 MT as reported by the joint committee), overall $S0_2$ emission from the Refinery was 7.9 TPD, which is less than maximum prescribed limit of 11.5 TPD. Thus, the Refinery has not exceeded the prescribed SO_2 emission limit. The tons CO_2 of equivalent emissions per ton of crude (tCO_2e / MT) processed is in the range of 0.200 to 0.213 for HPCL - Visakh Refinery. The estimated increase in tCO_2e / MT due to 211 MT of CO_2 as reported by the joint committee is 0.004 tCO_2e / MT, which is insignificant. Finally, the committee observed that there is no significant damage to the surrounding environment, the environmental compensation that is linked to the damage, should not have been ascertained. HPCL denies any liability to pay any compensation."*

47. The 7th respondent also disputed the liability of payment of compensation.

48. In this regard, it is useful to refer to the report of enquiry committee on the fire accident wherein the following lapses were identified by the committee:-

> ***"9.0 IDENTIFICATION OF LAPSES***
>
> *The following lapses of HPCL are observed during the inspection and document verification:*
>
> *1. Deviation in implementing preventive maintenance schedules as per the Standard Operating Procedures (SOP) within the time. During inspection, it was observed that industry was not conducted the Ultra sonic test for 6 inch pipeline in CDU-3 (fire incident was taken place) for which the due date for testing is August 2020.*
>
> *2. Industry has conducted of hydro-test to the pipelines in August, 2012, and not conducted afterwards this test should be which will be conducted every 4 years which is serious lapse on account of HPCL.*
>
> *3. Failure in identifying corrosion / erosion of the pipelines carrying hydrocarbons at high temperatures*
>
> *4. Preventive maintenance schedules are not implemented properly."*

49. The above report clearly indicates that the 7th respondent had admittedly not conducted hydro test after 2012, though it should have been conducted every 4 years. It is only in 2020 as admitted the Covid-19 disabled them from conducting the hydro test. There is no clear answer given by the unit in this regard.

50. The conspectus of the above facts based on the reports of the Joint Committee constituted by the Tribunal and the enquiry committee headed by the District Magistrate on fire accident dated 25.05.2021, the HPCL/7th respondent has complied with most of the directions issued by the APPCB, IISC - Bangalore and the Joint Committee but not completely.

51. In fact, the recommendations of the IISC, Bangalore were not complied with at the time of inspection of Joint Committee. The committee also found that the directions issued by APPCB for non-compliance of Consent for Operation and Consent for Establishment conditions and also for odour nuisances. The APPCB had issued directions to the unit under Section 33 (A) of the Water (Prevention and Control of Pollution) Act, 1974 and Section 31 (A) of the Air (Prevention and Control of Pollution) Act, 1981 for non-compliances

from 14.12.20211 till 19.03.2020. **Therefore, the committee observed that there were repeated violations by the unit from 2011 onwards** and decided to consider the number of violations from 2011 and recommended levying environmental compensation at Rs.8,35,20,000/ (Rupees Eight Crores Thirty Five Lakhs and Twenty Thousand only). The conclusions and recommendations of the Joint Committee are as follows:-

> *"(i) The unit after expansion consists of 860 acres and 112.5 acres is used for greenbelt development within the premises. At present the unit has no space for developing green belt inside the refinery. However, the unit has developed green belt outside the premises and major areas of Visakhapatnam city viz. Autonagar, Vadlapudi, Parawade, Sheelanagar. Aganampudi, Denkada etc.*
>
> *(ii) The recommendations made by IISC, Bengaluru pertaining to M/s HPCL, Visakhapatnam (7 respondents) have been complied.*
>
> *(iii) The committee revisited the no. of days of violations by M/s. HPCL and takes the violations date as the date of directions issued by APPCB on 14/12/2011 till 23/06/2021 the day of committee inspected and observed the non-compliances. Hence, for the repeated violations committed by HPCL, Rupees Eight Crores Thirty Five Lakhs and Twenty Thousand of EC has been calculated and levied.*
>
> *(iv) M/s. HPCL may be directed to deposit Rs.8,35,20,000/- with APPCB.*
>
> *(v) M/s HPCL may be directed to comply with all conditions of Environmental Clearance, Consent For Establishment & Consent For Operate and submit the compliance report to APPCB.*
>
> *(vi) APPCB may be directed to verify compliance submitted by M/s HPCL, and take necessary actions for non-compliances.*
>
> *(vii) APPCB may be directed to constitute the odour squad as per the recommendations of IISC, Bengaluru to initiate action and resolve the odour episodes. The APPCB and industries shall jointly organize awareness programmes for public on odour and pollution matters."*

52. There is merit in the recommendations of the Joint Committee that HPCL had failed to take effective steps despite the long period between 2011 and 2020. HPCL being a CPSE industry carrying out public utility services has to be a model unit of compliance with the environmental norms which was unfortunately not there in this case for more than a decade.

53. Accordingly,

53.1 HPCL is directed to take all the required initiative and comply with the observations of the Joint Committee, IISC – Bangalore and enquiry report within a period of six months.

53.2 APPCB is to monitor the same and it is not debarred from taking any action against HPCL for any fresh violation under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 and also initiate appropriate action against the erring officials as per the statutes.

53.3 HPCL is directed to deposit the Environmental Compensation assessed at **Rs.8,35,20,000/- (Rupees Eight Crores Thirty Five Lakhs and Twenty Thousand only)** forthwith.

53.4 HPCL is directed to deposit a further sum of **Rs.10,00,00,000/- (Rupees TenCrores only)** for their wilful negligence being a PSU which can be spent on restoration of environment and public health in the district of Vizag. Such deposit to be made **within 2 (Two) months** from today to CPCB which will draw a plan to that effect.

53.5 The Joint Committee to ensure the regular monitoring in implementing the plan.

53.6 An independent Compliance Report may be filed by the Joint Committee after inspection as to the status of the compliance by the HPCL after 6 (Six) months i.e. by **15th May, 2023**.

54. Accordingly, the Original Application is disposed of. List the matter in May, 2023 for reporting compliance.

Sd/-

Smt. Justice Pushpa Sathyanarayana, J.M.

Sd/-

Shri. Saibal Dasgupta, E.M.

Internet – Yes/No
All India NGT Reporter – Yes/No

O.A. No.73/2021(SZ)
20th October, 2022. AM & Mn.

Annexure-II

Item No.09:

BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI

(Through Video Conference)

Original Application No. 73 of 2021 (SZ)

IN THE MATTER OF:

Visakha Pawan Praja Karmika Sangam,
Andhra Pradesh

...Applicant(s)

Versus

Union of India and Ors.

...Respondent(s)

Date of hearing: 26.09.2024.

CORAM:

HON'BLE Smt. JUSTICE PUSHPA SATHYANARAYANA, JUDICIAL MEMBER

HON'BLE Dr. SATYAGOPAL KORLAPATI, EXPERT MEMBER

For Applicant(s): Ms. Pranali Tayade.

For Respondent(s): Mr. A.R. Sakthivel for R2.
Mrs. Madhuri Donti Reddy for R4 to R6.
Mr. M. Chandru represented
M/s. King & Partridge for R7.

ORDER

1. The Hindustan Petroleum Corporation Limited (HPCL) has filed a report of compliance. However, the Andhra Pradesh Pollution Control Board has to inspect and file the report.

2. For filing the compliance report, post the matter on **16.12.2024.**

Sd/-
Smt. Justice Pushpa Sathyanarayana, JM

Sd/-
Dr. Satyagopal Korlapati, EM

O.A. No.73/2021(SZ)
26th September, 2024. AD.

Annexure-III

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony,
Visakhapatnam - 530018

LiFE Lifestyle for Environment

e-mail: zovsplab-ses2@appcb.gov.in

Form No: APPCB/ZL/VSP/Cl.7.8/FM39 A

VOLATILE ORGANIC COMPOUNDS IN AMBIENT AIR (VOCs) MONITORING REPORT

Analysis Report No.	:	**VSPA202411213**
Name & Address of the Industry	:	**M/s Hindustan Petroleum Corporation Limited,** (Visakha Refinery – After Expansion), Malkapuram Srihari Puram, Visakhapatnam and its surroundings.
Monitoring Location	:	Volatile Organic Compounds in Ambient Air (VOCs) Monitoring Collected nearby: 1) Near Tank- 01 Ex- Towards South-west side of the industry 2) Near CAAQM Store Yard - Towards west side of the industry 3) Near Fabrication Yard - Towards North-west side of the industry 4) Near HGU Unit - Towards North side of the industry 5) Near New Cooling tower -Towards North- East side of the industry 6) Near CDU -4 - Towards East side of the industry 7) Near Ware House - Towards South-East side of the industry 8) Near Block -A Building Area - Towards South side of the industry
Sample collected on	:	18.11.2024 to 20.11.2024
Sample received on	:	21.11.2024
Monitoring conducted by	:	JSO, & Analyst (OS), Z.O, Visakhapatnam
Purpose of monitoring	:	Comprehensive Monitoring
Report issued	:	30.11.2024
Sample conditions	:	Intact and fit for analysis
Instrument Used	:	1) Pho check TIGER VOC Analyzer, Make: ION Sciences, SL. No: L-109260. 2) For CO: CO Monitor used. Make: Uniphos, S. No: B220259 3) For Methane : Methane Analyzer, Make : SENSIT GOLD G2, Sl.No: G2 49862

It is to certify that the aforementioned samples were analyzed on the same day by using the Pho check TIGER VOC, CO Monitor & Methane Analyzer and declare the analysis results as follows:

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
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1) **Near Tank- 01 Ex- Towards South-west side of the industry:**

Sl.NO	Parameter	Value in PPM on 19.11.2024, Time: 9.00 AM to 10.25 AM				Average (PPM)
		1	2	3	4	
1	Ammonia	1.0	1.0	0.8	0.9	**0.93**
2	Kerosine	0.1	0.1	0.2	0.1	**0.13**
3	Turpentine	0.0	0.0	0.1	0.1	**0.05**
4	Hydrogen Sulfide	0.2	0.3	0.1	0.1	**0.18**
5	TVOC	0.1	0.1	0.0	0.1	**0.08**
6	Methyl Mercaptan	0.0	0.0	0.1	0.0	**0.03**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
Value in PPM on 19.11.2024, Time: 3.00 PM to 4.35 PM						
1	Ammonia	1.0	1.1	1.2	1.1	**1.10**
2	Kerosine	0.1	0.1	0.1	0.1	**0.10**
3	Turpentine	0.0	0.0	0.1	0.0	**0.03**
4	Hydrogen Sulfide	0.5	0.2	0.1	0.3	**0.28**
5	TVOC	0.1	0.1	0.0	0.1	**0.08**
6	Methyl Mercaptan	0.1	0.1	0.1	0.1	**0.10**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
Value in PPM on 19.11.2024, Time: 8.40 PM to 10.40 PM						
1	Ammonia	0.0	0.0	0.1	0.0	**0.03**
2	Kerosine	0.0	0.0	0.0	0.1	**0.03**
3	Turpentine	0.0	0.0	0.0	0.0	**0.00**
4	Hydrogen Sulfide	0.1	0.2	0.0	0.0	**0.08**
5	TVOC	0.0	0.0	0.0	0.0	**0.00**
6	Methyl Mercaptan	0.0	0.0	0.0	0.0	**0.00**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
Value in PPM on 20.11.2024, Time: 9.00 AM to 11.20 AM						
1	Ammonia	0.0	0.1	0.2	0.0	**0.08**
2	Kerosine	0.0	0.0	0.0	0.0	**0.00**
3	Turpentine	0.0	0.0	0.0	0.0	**0.00**
4	Hydrogen Sulfide	0.1	0.1	0.2	0.1	**0.13**
5	TVOC	0.0	0.0	0.0	0.0	**0.00**
6	Methyl Mercaptan	0.1	0.1	0.0	0.1	**0.08**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**

(P.T.O)

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2) **Near CAAQM Store Yard - Towards west side of the industry**

Sl.NO	Parameter	Value in PPM on 19.11.2024, Time: 9.00 AM to 10.25 AM				Average (PPM)
		1	2	3	4	
1	Ammonia	1.2	1.1	0.2	0.5	**0.75**
2	Kerosine	0.0	0.0	0.0	0.0	**0.00**
3	Turpentine	0.0	0.0	0.0	0.0	**0.00**
4	Hydrogen Sulfide	0.1	0.2	0.0	0.3	**0.15**
5	TVOC	0.0	0.1	0.0	0.1	**0.05**
6	Methyl Mercaptan	0.1	0.2	0.1	0.1	**0.13**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 3.00 PM to 4.35 PM					
1	Ammonia	0.3	0.4	0.3	0.4	**0.35**
2	Kerosine	0.0	0.1	0.1	0.0	**0.05**
3	Turpentine	0.1	0.0	0.1	0.0	**0.05**
4	Hydrogen Sulfide	0.1	0.2	0.1	0.1	**0.13**
5	TVOC	0.0	0.0	0.1	0.1	**0.05**
6	Methyl Mercaptan	0.1	0.0	0.1	0.2	**0.10**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 8.40 PM to 10.40 PM					
1	Ammonia	2.0	1.9	2.0	1.8	**1.93**
2	Kerosine	0.1	0.1	0.1	0.2	**0.13**
3	Turpentine	0.1	0.1	0.2	0.1	**0.13**
4	Hydrogen Sulfide	0.8	0.7	0.5	0.3	**0.58**
5	TVOC	0.2	0.1	0.1	0.2	**0.15**
6	Methyl Mercaptan	0.1	0.1	0.0	0.1	**0.08**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 20.11.2024, Time: 9.00 AM to 11.20 AM					
1	Ammonia	2.0	2.1	2.0	1.9	**2.00**
2	Kerosine	0.1	0.2	0.1	0.1	**0.13**
3	Turpentine	0.1	0.2	0.1	0.2	**0.15**
4	Hydrogen Sulfide	1.0	1.0	0.9	1.2	**1.03**
5	TVOC	0.1	0.2	0.1	0.1	**0.13**
6	Methyl Mercaptan	0.1	0.1	0.1	0.1	**0.10**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**

(P.T.O)

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LiFE Lifestyle for Environment

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3) Near Fabrication Yard - Towards North-west side of the industry

Sl.NO	Parameter	Value in PPM on 19.11.2024, Time: 9.00 AM to 10.25 AM				Average (PPM)
		1	2	3	4	
1	Ammonia	1.2	1.1	0.8	0.5	**0.90**
2	Kerosine	0.1	0.1	0.2	0.3	**0.18**
3	Turpentine	0.1	0.2	0.2	0.2	**0.18**
4	Hydrogen Sulfide	0.8	0.5	0.5	0.9	**0.68**
5	TVOC	0.2	0.1	0.2	0.1	**0.15**
6	Methyl Mercaptan	0.0	0.1	0.1	0.1	**0.08**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 3.00 PM to 4.35 PM					
1	Ammonia	2.9	2.8	2.7	2.4	**2.70**
2	Kerosine	0.2	0.1	0.2	0.2	**0.18**
3	Turpentine	0.1	0.2	0.1	0.1	**0.13**
4	Hydrogen Sulfide	0.8	0.7	1.1	0.5	**0.78**
5	TVOC	0.2	0.1	0.1	0.1	**0.13**
6	Methyl Mercaptan	0.1	0.1	0.1	0.0	**0.08**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 8.40 PM to 10.40 PM					
1	Ammonia	0.4	0.7	0.3	0.5	**0.48**
2	Kerosine	0.0	0.0	0.1	0.1	**0.05**
3	Turpentine	0.0	0.1	0.1	0.0	**0.05**
4	Hydrogen Sulfide	0.1	0.2	0.0	0.1	**0.10**
5	TVOC	0.0	0.0	0.1	0.0	**0.03**
6	Methyl Mercaptan	0.0	0.0	0.0	0.0	**0.00**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 20.11.2024, Time: 9.00 AM to 11.20 AM					
1	Ammonia	1.7	1.9	1.6	1.2	**1.60**
2	Kerosine	0.1	0.1	0.2	0.1	**0.13**
3	Turpentine	0.1	0.1	0.0	0.1	**0.08**
4	Hydrogen Sulfide	0.9	0.8	0.7	1.0	**0.85**
5	TVOC	0.2	0.1	0.2	0.1	**0.15**
6	Methyl Mercaptan	0.1	0.1	0.1	0.1	**0.10**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**

(P.T.O)

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e-mail: zovsplab-ses2@appcb.gov.in

4) **Near HGU Unit - Towards North side of the industry**

Sl.NO	Parameter	Value in PPM on 19.11.2024, Time: 9.00 AM to 10.25 AM				Average (PPM)
		1	2	3	4	
1	Ammonia	2.1	1.2	1.5	1.4	**1.55**
2	Kerosine	0.1	0.1	0.2	0.1	**0.13**
3	Turpentine	0.1	0.1	0.2	0.1	**0.13**
4	Hydrogen Sulfide	0.8	0.4	0.6	1.0	**0.70**
5	TVOC	0.2	0.1	0.1	0.1	**0.13**
6	Methyl Mercaptan	0.1	0.2	0.1	0.1	**0.13**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 3.00 PM to 4.35 PM					
1	Ammonia	2.3	2.4	2.3	2.5	**2.38**
2	Kerosine	0.2	0.2	0.1	0.0	**0.13**
3	Turpentine	0.1	0.2	0.1	0.1	**0.13**
4	Hydrogen Sulfide	1.1	1.0	1.1	0.9	**1.03**
5	TVOC	0.2	0.1	0.1	0.1	**0.13**
6	Methyl Mercaptan	0.2	0.2	0.1	0.0	**0.13**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 8.40 PM to 10.40 PM					
1	Ammonia	0.6	0.5	0.3	0.4	**0.45**
2	Kerosine	0.0	0.1	0.0	0.0	**0.03**
3	Turpentine	0.1	0.1	0.1	0.1	**0.10**
4	Hydrogen Sulfide	0.2	0.3	0.1	0.2	**0.20**
5	TVOC	0.0	0.0	0.0	0.1	**0.03**
6	Methyl Mercaptan	0.0	0.0	0.0	0.0	**0.00**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 20.11.2024, Time: 9.00 AM to 11.20 AM					
1	Ammonia	2.2	2.1	2.0	2.3	**2.15**
2	Kerosine	0.2	0.3	0.1	0.1	**0.18**
3	Turpentine	0.1	0.1	0.1	0.1	**0.10**
4	Hydrogen Sulfide	1.0	1.0	0.6	0.8	**0.85**
5	TVOC	0.2	0.2	0.1	0.1	**0.15**
6	Methyl Mercaptan	0.1	0.1	0.0	0.1	**0.08**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony,
Visakhapatnam - 530018

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5) Near New Cooling tower -Towards North- East side of the industry

Sl.NO	Parameter	Value in PPM on 19.11.2024, Time: 9.00 AM to 10.25 AM				Average (PPM)
		1	2	3	4	
1	Ammonia	5.5	4.8	6.8	6.4	**5.88**
2	Kerosine	0.4	0.5	0.3	0.6	**0.45**
3	Turpentine	0.1	0.2	0.0	0.1	**0.10**
4	Hydrogen Sulfide	2.8	6.2	5.5	3.4	**4.48**
5	TVOC	0.3	0.3	0.2	0.3	**0.28**
6	Methyl Mercaptan	0.2	0.5	0.7	0.4	**0.45**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
Value in PPM on 19.11.2024, Time: 3.00 PM to 4.35 PM						
1	Ammonia	6.2	7.8	6.6	7.2	**6.95**
2	Kerosine	0.3	0.4	0.4	0.2	**0.33**
3	Turpentine	0.1	0.2	0.1	0.4	**0.20**
4	Hydrogen Sulfide	3.0	3.3	2.9	3.4	**3.15**
5	TVOC	0.3	0.3	0.3	0.3	**0.30**
6	Methyl Mercaptan	0.2	0.7	0.8	0.5	**0.55**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
Value in PPM on 19.11.2024, Time: 8.40 PM to 10.40 PM						
1	Ammonia	1.8	1.2	0.9	1.4	**1.33**
2	Kerosine	0.1	0.1	0.0	0.0	**0.05**
3	Turpentine	0.0	0.0	0.0	0.0	**0.00**
4	Hydrogen Sulfide	0.5	0.4	0.2	0.1	**0.30**
5	TVOC	0.1	0.1	0.1	0.1	**0.10**
6	Methyl Mercaptan	0.1	0.1	0.1	0.1	**0.10**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
Value in PPM on 20.11.2024, Time: 9.00 AM to 11.20 AM						
1	Ammonia	2.2	2.3	2.4	2.5	**2.35**
2	Kerosine	0.2	0.2	0.2	0.2	**0.20**
3	Turpentine	0.1	0.1	0.1	0.1	**0.10**
4	Hydrogen Sulfide	1.0	1.1	1.0	1.1	**1.05**
5	TVOC	0.2	0.1	0.1	0.0	**0.10**
6	Methyl Mercaptan	0.1	0.1	0.1	0.1	**0.10**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony,
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e-mail: zovsplab-ses2@appcb.gov.in

6) Near CDU -4 - Towards East side of the industry

Sl.NO	Parameter	Value in PPM on 19.11.2024, Time: 9.00 AM to 10.25 AM				Average (PPM)
		1	2	3	4	
1	Ammonia	2.5	2.1	2.0	1.8	**2.10**
2	Kerosine	0.1	0.2	0.1	0.1	**0.13**
3	Turpentine	0.1	0.1	0.1	0.2	**0.13**
4	Hydrogen Sulfide	1.1	1.1	1.2	1.0	**1.10**
5	TVOC	0.3	0.2	0.3	0.1	**0.23**
6	Methyl Mercaptan	0.1	0.1	0.2	0.1	**0.13**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 3.00 PM to 4.35 PM					
1	Ammonia	2.8	2.7	2.5	2.4	**2.60**
2	Kerosine	0.2	0.1	0.1	0.2	**0.15**
3	Turpentine	0.1	0.1	0.1	0.1	**0.10**
4	Hydrogen Sulfide	1.2	1.1	1.5	0.4	**1.05**
5	TVOC	0.3	0.3	0.2	0.3	**0.28**
6	Methyl Mercaptan	0.2	0.1	0.1	0.2	**0.15**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 8.40 PM to 10.40 PM					
1	Ammonia	2.4	2.5	2.2	1.9	**2.25**
2	Kerosine	0.1	0.1	0.1	0.0	**0.08**
3	Turpentine	0.1	0.0	0.0	0.0	**0.03**
4	Hydrogen Sulfide	0.8	0.4	0.5	0.7	**0.60**
5	TVOC	0.1	0.1	0.1	0.1	**0.10**
6	Methyl Mercaptan	0.1	0.1	0.1	0.1	**0.10**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 20.11.2024, Time: 9.00 AM to 11.20 AM					
1	Ammonia	2.5	2.4	2.6	2.4	**2.48**
2	Kerosine	0.2	0.1	0.0	0.0	**0.08**
3	Turpentine	0.1	0.1	0.0	0.0	**0.05**
4	Hydrogen Sulfide	1.2	1.4	1.1	1.0	**1.18**
5	TVOC	0.3	0.2	0.4	0.3	**0.30**
6	Methyl Mercaptan	0.2	0.2	0.2	0.1	**0.18**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony,
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7) Near Ware House - Towards South-East side of the industry

Sl.NO	Parameter	Value in PPM on 19.11.2024, Time: 9.00 AM to 10.25 AM				Average (PPM)
		1	2	3	4	
1	Ammonia	2.3	2.1	2.1	2.0	**2.13**
2	Kerosine	0.1	0.1	0.2	0.0	**0.10**
3	Turpentine	0.1	0.1	0.0	0.1	**0.08**
4	Hydrogen Sulfide	0.8	1.0	1.1	1.0	**0.98**
5	TVOC	0.2	0.2	0.1	0.3	**0.20**
6	Methyl Mercaptan	0.2	0.1	0.0	0.1	**0.10**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 3.00 PM to 4.35 PM					
1	Ammonia	2.3	2.4	2.1	2.0	**2.20**
2	Kerosine	0.2	0.1	0.1	0.2	**0.15**
3	Turpentine	0.1	0.1	0.2	0.1	**0.13**
4	Hydrogen Sulfide	1.1	1.2	0.9	0.7	**0.98**
5	TVOC	0.3	0.2	0.1	0.2	**0.20**
6	Methyl Mercaptan	0.2	0.1	0.2	0.2	**0.18**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 19.11.2024, Time: 8.40 PM to 10.40 PM					
1	Ammonia	1.5	1.6	1.2	1.8	**1.53**
2	Kerosine	0.1	0.1	0.2	0.1	**0.13**
3	Turpentine	0.1	0.2	0.1	0.0	**0.10**
4	Hydrogen Sulfide	0.7	0.6	0.7	0.5	**0.63**
5	TVOC	0.0	0.1	0.0	0.0	**0.03**
6	Methyl Mercaptan	0.1	0.0	0.0	0.0	**0.03**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
	Value in PPM on 20.11.2024, Time: 9.00 AM to 11.20 AM					
1	Ammonia	2.7	2.8	2.6	2.4	**2.63**
2	Kerosine	0.2	0.1	0.1	0.2	**0.15**
3	Turpentine	0.1	0.0	0.0	0.0	**0.03**
4	Hydrogen Sulfide	1.2	1.1	1.0	0.9	**1.05**
5	TVOC	0.3	0.3	0.2	0.1	**0.23**
6	Methyl Mercaptan	0.2	0.2	0.0	0.0	**0.10**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**

8) Near Block -A Building Area - Towards South side of the industry

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony,
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Sl.NO	Parameter	Value in PPM on 19.11.2024, Time: 9.00 AM to 10.25 AM				Average (PPM)
		1	2	3	4	
1	Ammonia	2.1	2.0	2.8	2.5	**2.35**
2	Kerosine	0.2	0.1	0.0	0.1	**0.10**
3	Turpentine	0.1	0.1	0.1	0.1	**0.10**
4	Hydrogen Sulfide	1.1	1.0	0.5	0.6	**0.80**
5	TVOC	0.3	0.1	0.2	0.2	**0.20**
6	Methyl Mercaptan	0.2	0.1	0.2	0.0	**0.13**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
Value in PPM on 19.11.2024, Time: 3.00 PM to 4.35 PM						
1	Ammonia	2.8	2.5	2.9	2.7	**2.73**
2	Kerosine	0.2	0.1	0.2	0.1	**0.15**
3	Turpentine	0.1	0.0	0.1	0.0	**0.05**
4	Hydrogen Sulfide	1.2	1.1	0.8	1.2	**1.08**
5	TVOC	0.3	0.2	0.1	0.3	**0.23**
6	Methyl Mercaptan	0.2	0.1	0.2	0.1	**0.15**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**
Value in PPM on 19.11.2024, Time: 8.40 PM to 10.40 PM						
1	Ammonia	1.3	1.5	1.2	1.1	**1.28**
2	Kerosine	0.1	0.0	0.0	0.0	**0.03**
3	Turpentine	0.0	0.0	0.0	0.0	**0.00**
4	Hydrogen Sulfide	0.6	0.5	0.7	0.2	**0.50**
5	TVOC	0.1	0.1	0.2	0.1	**0.13**
6	Methyl Mercaptan	0.1	0.1	0.0	0.0	**0.05**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
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Value in PPM on 20.11.2024, Time: 9.00 AM to 11.20 AM						
1	Ammonia	3.0	2.9	2.8	3.0	**2.93**
2	Kerosine	0.2	0.2	0.2	0.2	**0.20**
3	Turpentine	0.1	0.1	0.1	0.0	**0.08**
4	Hydrogen Sulfide	1.3	1.2	1.1	0.9	**1.13**
5	TVOC	0.3	0.3	0.2	0.2	**0.25**
6	Methyl Mercaptan	0.2	0.0	0.0	0.0	**0.05**
7	Corban Monoxide	0.0	0.0	0.0	0.0	**0.00**

Note: 1) Result is related to sample as received and tested
2) This report shall not be reproduced except in full without the prior approval of Laboratory

Authorized Signatory

STATE BOARD ANALYST
(M. RAVI)
Sr. Env. Scientist / Quality Manager,
Zonal Laboratory, Visakhapatnam

*****END OF THE REPORT*****

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony, Visakhapatnam – 530018
e-mail: zovsplab-ses2@appcb.gov.in
TC–14351

Form No: APPCB/ZL/VSP/Cl.7.8/FM40

FORM – IV
REPORT BY THE STATE BOARD ANALYST
[See Rule-14]

Report No. VSPA202411215 to 217 **Date: 28.11.2024**

I hereby certify that I, M. Ravi, State Board Analyst duly appointed under sub-section (2) of Section 26 of the Air (Prevention and Control of Pollution) Act, 1981, received on the day of **19.11.2024** from Junior Scientific Officer, Zonal Laboratory, Visakhapatnam, the following stack emission sample for analysis is from:

1) **VSPA202411215** : Stack attached to FCCU-II, Feed Heater, 14 F1
2) **VSPA202411216** : Stack attached to CDU-III, Crude Oil Heater, 42 F1
3) **VSPA202411217** : Stack attached to CDU-III, Reduced Crude Oil Heater, 42 F2

of **M/s. Hindustan Petroleum Corporation Ltd., (Visakha Refinery), Malkapuram (P.O), Visakhapatnam District** collected on **18.11.2024** was received in a condition fit for analysis as reported below:

I further certify that I have analyzed the above-mentioned sample from **22.11.2024 to 28.11.2024** and declare the result of the analysis to be as follows:

S.No.	Report No.	Parameter	Result (mg/Nm^3)	Result (TPD)	CTO Standard (mg/Nm^3)	Test Method
1.	VSPA202411215	Particulate Matter (PM)	82.1	0.075	100.0	IS:11255 (Part 1)
2	VSPA202411216		91.5	0.213		
3	VSPA202411217		41.07	0.042		

The condition of the seals, fastening and container on receipt was intact.

Signed this on: 28.11.2024

Address:

Authorized Signatory

STATE BOARD ANALYST
(M. RAVI)
Sr. Env. Scientist / Quality Manager,
Zonal Laboratory, Visakhapatnam

*****END OF THE REPORT*****

Page 1 of 1

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony,
Visakhapatnam - 530018

LiFE Lifestyle for Environment

FORM – IV
REPORT BY THE STATE BOARD ANALYST
[See Rule-14]

Report No. VSPA202411215 to 217 **Date: 28.11.2024**

I hereby certify that I, M. Ravi, State Board Analyst duly appointed under sub-section (2) of Section 26 of the Air (Prevention and Control of Pollution) Act, 1981, received on the day of **19.11.2024** from Junior Scientific Officer, Zonal Laboratory, Visakhapatnam, the following stack emission sample for analysis is from:

1) **VSPA202411215** : Stack attached to FCCU-II, Feed Heater, 14 F1
2) **VSPA202411216** : Stack attached to CDU-III, Crude Oil Heater, 42 F1
3) **VSPA202411217** : Stack attached to CDU-III, Reduced Crude Oil Heater, 42 F2

of **M/s. Hindustan Petroleum Corporation Ltd., (Visakha Refinery), Malkapuram (P.O), Visakhapatnam District** collected on **18.11.2024** was received in a condition fit for analysis as reported below:

I further certify that I have analyzed the above-mentioned sample from **22.11.2024 to 28.11.2024** and declare the result of the analysis to be as follows:

S.No.	Report No.	Parameter	Result (mg/Nm^3)	Result (TPD)	Test Method
1.	VSPA202411215	Sulphur Di-Oxide (SO_2)	173.88	0.158	IS:11255 (Part 2)
2	VSPA202411216		104.68	0.244	
3	VSPA202411217		61.97	0.064	

The condition of the seals, fastening and container on receipt was intact.

Signed this on: 28.11.2024

Address:

Authorized Signatory

STATE BOARD ANALYST
(M. RAVI)
Sr. Env. Scientist / Quality Manager,
Zonal Laboratory, Visakhapatnam

*****END OF THE REPORT***** **Page 1 of 1**

ANDHRA PRADESH POLLUTION CONTROL BOARD
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TC–14351

Form No: APPCB/ZL/VSP/Cl.7.8/FM40

FORM – IV
REPORT BY THE STATE BOARD ANALYST
[See Rule-14]

Report No. VSPA202411218 to 224 Date: 28.11.2024

I hereby certify that I, M. Ravi, State Board Analyst duly appointed under sub-section (2) of Section 26 of the Air (Prevention and Control of Pollution) Act, 1981, received on the day of **20.11.2024** from Junior Scientific Officer, Zonal Laboratory, Visakhapatnam, the following stack emission sample for analysis is from:

1) VSPA202411218 : Stack attached to VBU, Feed Heater, 46 F1
2) VSPA202411219 : Stack attached to FCCU-I, Feed Heater, 4 F 51
3) VSPA202411220 : Stack attached to IBH Boiler (2 X 75 TPH)
4) VSPA202411221 : Stack attached to Flue Gas De-Sulphurization Unit (FGD-1)
5) VSPA202411222 : Stack attached to NHT (Charge Heater Splitter re- boiler), 72 F1/ F2
6) VSPA202411223 : Stack attached to FCCNHT HDS reactor Feed Heater (75 F1)
7) VSPA202411224 : Stack attached to Continuous Catalytic Reforming Unit (CCR), 74 F1

of **M/s. Hindustan Petroleum Corporation Ltd., (Visakha Refinery), Malkapuram (P.O), Visakhapatnam District** collected on **19.11.2024** was received in a condition fit for analysis as reported below:

I further certify that I have analyzed the above-mentioned sample from **22.11.2024 to 28.11.2024** and declare the result of the analysis to be as follows:

S.No.	Report No.	Parameter	Result (mg/Nm³)	Result (TPD)	CTO Standard (mg/Nm³)	Test Method
1)	VSPA202411218	Particulate Matter (PM)	25.92	0.015	100.0	IS:11255 (Part 1)
2)	VSPA202411219		37.60	0.065		
3)	VSPA202411220		28.15	0.052		
4)	VSPA202411221		29.12	0.040	50.0	
5)	VSPA202411222		17.22	0.010	100.0	
6)	VSPA202411223		4.67	0.001	10.0	
7)	VSPA202411224		17.62	0.061	100.0	

The condition of the seals, fastening and container on receipt was intact.

Signed this on: 28.11.2024

Address:

Authorized Signatory

STATE BOARD ANALYST
(M. RAVI)
Sr. Env. Scientist / Quality Manager,
Zonal Laboratory, Visakhapatnam

END OF THE REPORT

Page 1 of 2

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony,
Visakhapatnam - 530018

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FORM – IV
REPORT BY THE STATE BOARD ANALYST
[See Rule-14]

Report No. VSPA202411218 to 224 **Date: 28.11.2024**

I hereby certify that I, M. Ravi, State Board Analyst duly appointed under sub-section (2) of Section 26 of the Air (Prevention and Control of Pollution) Act, 1981, received on the day of **20.11.2024** from Junior Scientific Officer, Zonal Laboratory, Visakhapatnam, the following stack emission sample for analysis is from:

1) **VSPA202411218** : Stack attached to VBU, Feed Heater, 46 F1
2) **VSPA202411219** : Stack attached to FCCU-I, Feed Heater, 4 F 51
3) **VSPA202411220** : Stack attached to IBH Boiler (2 X 75 TPH)
4) **VSPA202411221** : Stack attached to Flue Gas De-Sulphurization Unit (FGD-1)
5) **VSPA202411222** : Stack attached to NHT (Charge Heater Splitter re- boiler), 72 F1/ F2
6) **VSPA202411223** : Stack attached to FCCNHT HDS reactor Feed Heater (75 F1)
7) **VSPA202411224** : Stack attached to Continuous Catalytic Reforming Unit (CCR), 74 F1

of **M/s. Hindustan Petroleum Corporation Ltd., (Visakha Refinery), Malkapuram (P.O), Visakhapatnam District** collected on **19.11.2024** was received in a condition fit for analysis as reported below:

I further certify that I have analyzed the above-mentioned sample from **22.11.2024** to **28.11.2024** and declare the result of the analysis to be as follows:

S.No.	Report No.	Parameter	Result (mg/Nm^3)	Result (TPD)	Test Method
1)	VSPA202411218	Sulphur Di-Oxide (SO_2)	51.13	0.030	IS-11255 (Part-2)
2)	VSPA202411219		150.06	0.258	
3)	VSPA202411220		36.08	0.067	
4)	VSPA202411221		116.05	0.160	
5)	VSPA202411222		136.56	0.083	
6)	VSPA202411223		55.08	0.013	
7)	VSPA202411224		66.03	0.227	

The condition of the seals, fastening and container on receipt was intact.

Signed this on: 28.11.2024

Address:

Authorized Signatory

STATE BOARD ANALYST
(M. RAVI)
Sr. Env. Scientist / Quality Manager,
Zonal Laboratory, Visakhapatnam

*****END OF THE REPORT*****

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony, Visakhapatnam – 530018
e-mail: zovsplab-ses2@appcb.gov.in

TC–14351

Form No: APPCB/ZL/VSP/Cl.7.8/FM40

FORM – IV
REPORT BY THE STATE BOARD ANALYST
[See Rule-14]

Report No. VSPA202411233 to 237 **Date: 28.11.2024**

I hereby certify that I, M. Ravi, State Board Analyst duly appointed under sub-section (2) of Section 26 of the Air (Prevention and Control of Pollution) Act, 1981, received on the day of **21.11.2024** from Junior Scientific Officer, Zonal Laboratory, Visakhapatnam, the following stack emission sample for analysis is from:

1) **VSPA202411233** : Stack attached to FCCNHT 2nd HDS Feed Heater (75 F51 N)
2) **VSPA202411234** : Stack attached to Combined Feed Heater & Product Fractionators Reboiler (90 F01& 02)
3) **VSPA202411235** : Stack attached to CDU-II, Reduced Crude Oil Heater, 12 F1
4) **VSPA202411236** : Stack attached to SRU Incinerator FG Firing – 92 F02
5) **VSPA202411237** : Stack attached to CPP Heat Recovery Steam Generator -III (HRSG-III)

of **M/s. Hindustan Petroleum Corporation Ltd., (Visakha Refinery), Malkapuram (P.O), Visakhapatnam District** collected on **20.11.2024** was received in a condition fit for analysis as reported below:

I further certify that I have analyzed the above-mentioned sample from **22.11.2024 to 28.11.2024** and declare the result of the analysis to be as follows:

S.No.	Report No.	Parameter	Result (mg/Nm³)	Result (TPD)	CTO Standard (mg/Nm³)	Test Method
1)	VSPA202411233	Particulate Matter (PM)	6.68	0.003	10.0	IS:11255 (Part 1)
2)	VSPA202411234		55.93	0.160	100.0	
3)	VSPA202411235		59.30	0.034		
4)	VSPA202411236		9.29	0.006	10.0	
5)	VSPA202411237		28.93	0.082	100.0	

The condition of the seals, fastening and container on receipt was intact.

Signed this on: 28.11.2024

Address:

Authorized Signatory

STATE BOARD ANALYST
(M. RAVI)
Sr. Env. Scientist / Quality Manager,
Zonal Laboratory, Visakhapatnam

*****END OF THE REPORT*****

Page 1 of 1

(P.T.O)

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony,
Visakhapatnam - 530018

LiFE Lifestyle for Environment

FORM – IV
REPORT BY THE STATE BOARD ANALYST
[See Rule-14]

Report No. VSPA202411233 to 237 Date: 28.11.2024

I hereby certify that I, M. Ravi, State Board Analyst duly appointed under sub-section (2) of Section 26 of the Air (Prevention and Control of Pollution) Act, 1981, received on the day of **21.11.2024** from Junior Scientific Officer, Zonal Laboratory, Visakhapatnam, the following stack emission sample for analysis is from:

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4) VSPA202411236 : Stack attached to SRU Incinerator FG Firing – 92 F02
5) VSPA202411237 : Stack attached to CPP Heat Recovery Steam Generator -III (HRSG-III)

of **M/s. Hindustan Petroleum Corporation Ltd., (Visakha Refinery), Malkapuram (P.O), Visakhapatnam District** collected on **20.11.2024** was received in a condition fit for analysis as reported below:

I further certify that I have analyzed the above-mentioned sample from **22.11.2024 to 28.11.2024** and declare the result of the analysis to be as follows:

S.No.	Report No.	Parameter	Result (mg/Nm^3)	Result (TPD)	Test Method
1)	VSPA202411233	Sulphur Di-Oxide (SO_2)	94.40	0.042	IS:11255 (Part 2)
2)	VSPA202411234		585.77	1.674	
3)	VSPA202411235		735.94	0.418	
4)	VSPA202411236		980.53	0.621	
5)	VSPA202411237		134.17	0.380	

The condition of the seals, fastening and container on receipt was intact.

Signed this on: 28.11.2024

Address:

Authorized Signatory

STATE BOARD ANALYST
(M. RAVI)
Sr. Env. Scientist / Quality Manager,
Zonal Laboratory, Visakhapatnam

END OF THE REPORT Page 1 of 1

ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY: VISAKHAPATNAM
39-33-20/4/1, Madhavadhara VUDA Colony, Visakhapatnam – 530018
e-mail: zovsplab-ses2@appcb.gov.in

TC–14351

Form No: APPCB/ZL/VSP/Cl.7.8/FM39

AMBIENT AIR QUALITY MONITORING ANALYSIS REPORT

Analysis Report No. : **VSPA202411225 to 232**
Name of the Customer : Regional Office, Visakhapatnam
Name & Address of the Industry : **M/s. Hindustan Petroleum Corporation Ltd., (Visakha Refinery), Malkapuram (P.O), Visakhapatnam District**
Monitoring Location :

Report No	Location: Ambient Air quality monitoring carried out at
VSPA202411225	Tank -01 Ex (Towards South West side of the industry)
VSPA202411226	Near CAAQM Storage Yard (Towards West side of the industry)
VSPA202411227	Near Fabrication Yard (Towards North West side of the industry)
VSPA202411228	Near HGU Unit (Towards North side of the industry)
VSPA202411229	Near New Cooling Tower (Towards North East side of the industry)
VSPA202411230	Near CDU – 04 (Towards East side of the industry)
VSPA202411231	Near ware house (Towards South East side of the industry)
VSPA202411232	Near Block – A Building (Towards South side of the industry)

Sample collected on : 19.11.2024 to 20.11.2024 Sample received on: 21.11.2024
Sample Group : Atmospheric pollution Ambient Air
Monitoring conducted by : JSO, & Analyst (OS), Z.O, Visakhapatnam
Purpose of monitoring : Complaint Verification
Report issued : 28.11.2024 No. of Samples received: 24 No'
Sample conditions : Intact and fit for analysis

It is to certify that the aforementioned samples were analyzed from 23.11.2024 to 28.11.2024 and declare the analysis results as follows:

Period of monitoring	Para meter	Report No. 225	226	227	228	229	230	231	232	NAAQM Standards (µg/m³) For 24 Hrs.	Test Method
		Results in µg/m³ (24 Hrs. Average)									
19.11. 2024 to 20.11. 2024 (24hrs)	PM_{10}	111	139	116	181	141	92	135	124	100.0	IS:5182(Part23)
	$PM_{2.5}$	76	94	78	122	90	52	84	74	60.0	IS:5182(Part24)
	SO_2	6	18	17	17	08	5	10	04	80.0	IS:5182(Part2/Section 1)
	NO_2	11	27	41	35	23	17	32	17	80.0	IS:5182(Part6)

Note: 1) Result is related to sample as received and tested
2) This report shall not be reproduced except in full without the prior approval of Laboratory
3) This laboratory is Accredited by NABL under ISO/IEC 17025:2017 with the certificate number: TC-14351.
4) Weather is clear during the monitoring. Wind speed was calm.
5) No, vehicular movement was observed near the AAQM Station during the monitoring.

Authorized Signatory

STATE BOARD ANALYST
(M. RAVI)
Sr. Env. Scientist / Quality Manager,
Zonal Laboratory, Visakhapatnam

*****END OF THE REPORT*****