

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, CHENNAI

ORIGINAL APPLICATION NO. 97 OF 2021

IN THE MATTER OF:

RAVULA Lingaswami & Others

...Applicants

Versus

Union of India & others

...Respondents

INDEX TO THE LIST OF DOCUMENTS

S.NO.	DATE	PARTICULARS	PAGE NOS
1.	Jan 2023	Response filed on behalf of the 6th Respondent to the CPCB report dated 24/08/2022 along with compliance report.	1-8
2.	01/09/2022	Consent for operation for phase-I under expansion from TSPCB Annexure-I.	9-11
3.	---	Photograph Annexure-II	12
4.	05/02/2022	Copy of TSPCB directions Annexure-III.	13
5.	---	Photograph Annexure-IV	14
6.	----	Photograph Annexure-V	15
7.	----	Photograph Annexure-VI	16
8.	-----	Photograph Annexure-VII	17
9.	-----	Photograph Annexure-VIII	18
10.	---	LDAR study report Annexure-IX.	19-52
11.	----	Photograph Annexure X	53
12.	18/07/2022	Copy of submission with TSPCB acknowledgement Annexure-XI.	54-57

CHENNAI

DRAWN AND FILED BY
M/S.K.S.VISWANATHAN
T.HEMALATHA
& S.DEEPIKA
ADVOCATES

T. Hemalatha



DATE: 13/01/2023

COUNSEL FOR SIXTH RESPONDENT

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, CHENNAI



ORIGINAL APPLICATION NO. 97 OF 2021

IN THE MATTER OF:

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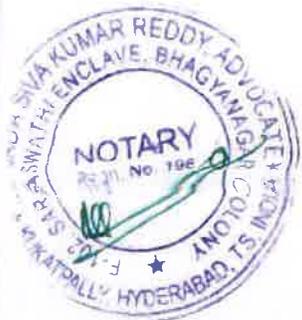
**RESPONSE FILED ON BEHALF OF THE 6TH RESPONDENT TO THE
CPCB REPORT DATED 24/08/2022 ALONG WITH COMPLIANCE
REPORT**

The 6th Respondent above named respectfully submits as follows:

1. It is submitted that the CPCB has filed a report in the matter on 24/08/2022 wherein in Para X the CPCB has suggested the methodology to be adopted for the purpose of controlling pollution including the odour. Similarly, the CPCB as stated in the report that they proposed to issue direction under Sec 18(1) (b) of Water & Air Act of TSPCB to ensure certain measures are implemented by the 6th Respondent for prevention of pollution.

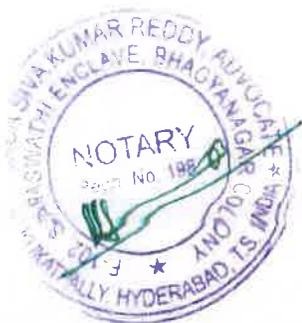
2. The following is the response of the 6th Respondent to Point Nos.1 to 4 in para 10 of the aforesaid CPCB report:

S.No	Observations	Reply by Respondent No.6
1.	The unit is claiming to be as a Zero Liquid Discharge industry, however as per the observations, analysis results of the stagnated water between M/s.Hazelo & Optimus Compound wall and no provisions provided in the production block A extension for	No discharges were observed by CPCB team during their physical inspection at our unit. Based on the analysis results of stagnated water between Hazelo and optimus compound wall, the committee concludes that the unit is

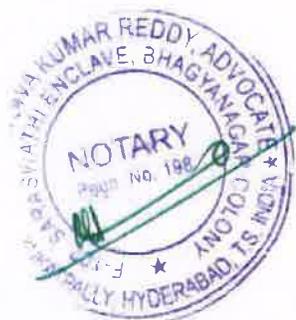


<p>HTDS effluent suggests that the unit is discharging untreated effluent.</p>	<p>discharging untreated effluent.</p> <p>It is submitted that industry is in the downstream of other industries located in this area. Due to rains in the rainy season, the rain runoff from upstream industries is stagnated in the low-lying area between Hazelo & Optimus Compound wall due to no proper drainage system for rainwater disposal in this industrial area. The same was observed by TSPCB officials and directions have been given to Eight Industries located in this area for clearing the stagnated water and send the same to CETP, Jeedimetla for further treatment and disposal.</p> <p>Regarding provisions for HTDS effluent, it is submitted that we have effluent collection tank with three-stage scrubbing system (including online pH meter) for collection of HTDS effluent generated. These effluents are being treated in the zero liquid discharge system and the treated wastewater is being reused in utilities as makeup. Hence, there is no chance of discharging of untreated effluent from the unit.</p> <p>Industry has obtained Consent for operation for phase-I under expansion from TSPCB which is valid up to 31st January 2027. CFO copy is enclosed as Annexure-I.</p> <p>As a part of Phase I expansion, Industry has installed new ZLD system in place of the existing system.</p>
<p>2. The ETP provided by unit for treating LTDS and HTDS effluent is not adequate for meeting the ZLD system. Hence, the ETP shall</p>	<p>Industry has 15 KLD-ZLD system consisting of Stripper, MEE, Bio-ETP followed by Reverse Osmosis to treat the generated effluents in the</p>

2



	<p>be revamped/augmented for effective performance.</p>	<p>unit.</p> <p>At the time of CPCB committee visit the units production levels are 50% only and the generated effluents quantity was 4 KLD including both HTDS & LTDS against the permitted HTDS quantity of 4.52 KLD & LTDS of quantity 3.5 KLD. Hence, the existing ZLD system is adequate to treat the effluents generated.</p> <p>However, industry has installed new Zero Liquid Discharge System (ZLD) of Capacity 200 KLD in place of existing system to treat HTDS and LTDS effluent under Phase-I expansion for which TSPCB granted CFO which is valid up to 31/01/2027.</p>
<p>3.</p>	<p>The scrubbers provided for productions blocks is insufficient and can be changed / rectified for controlling the VOCs emissions into environment. The scrubber shall be provided with adsorption column system with granular activated carbon specific to gaseous adsorption to control odour nuisance.</p>	<p>Industry has provided double stage scrubbers with adsorption column system with granular activated carbon specific to gaseous adsorption for controlling odour nuisance in production blocks.</p> <p>Photograph enclosed as Annexure-II for your reference.</p>
<p>4.</p>	<p>The soil samples collected in front of the unit, between the compound wall of M/s.Optimus, west side of M/s. Chemic Life Sciences confirms the discharge of untreated effluent from M/s.Hazelo Labs and other adjacent units located in the area. Hence, TSPCB shall give directions to all the eight industries to borne the cost for remediation of soil where discharge of untreated effluent was observed.</p>	<p>TSPCB has given directions to all eight industries in this area for disposing the untreated stagnated wastewater to CETP, Jeedimetla for further treatment and disposal. Copy of TSPCB directions enclosed as Annexure-III.</p> <p>It is submitted that the cost of untreated effluent payment was made by all the industries in this area.</p>



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3. It is submitted that the industry has already taken steps to comply with the measures suggested for prevention of pollution by the CPCB in page 33 & 34 of the report.

1.	The unit shall provide provision for collecting and treating the HTDS effluent generated from production block A Extension and shall ensure that no untreated effluent is discharged outside the unit premises. The online meter connected to the scrubber of the Production Block A extensions shall be rectified and connected to TSPCB server.	Regarding production block A extension, industry has made the following provisions for HTDS effluent storage and treatment. a) The generated HTDS effluent from production block A extension is treated in ZLD system consisting of Stripper, MEE, Bio-ETP followed by Reverse Osmosis system and the treated wastewater is being reused in utilities. b) Industry has provided HTDS effluent collection tank along with three-stage scrubbing system (with online pH meter) for collection of HTDS effluent. Photograph enclosed as Annexure-IV Hence, there is no chance to discharge of untreated effluents outside the unit premises. The online pH meter connected to the scrubber of the production block-A extension has been rectified and the same has been connected to TSPCB server. Photograph enclosed as Annexure-V.
2.	The unit shall augment MEE & RO, so as to achieve ZLD system. The flow meters attached to RO & MEE should be rectified so that	The flow meters are installed at RO & MEE flow line to quantify the flow rate and cumulative readings to cross verify the ZLD

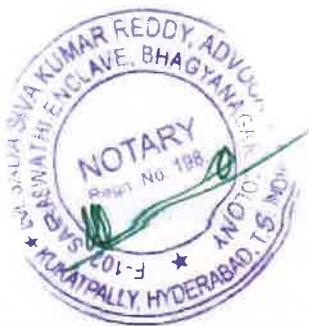


	flow rate and cumulative readings can be generated and noted to cross verify the ZLD system. The flow meters at RO & MEE should be installed in the flow line/connection line rather than placing in the storage tanks outlets.	system. Photograph enclosed as Annexure-VI.
3.	The unit shall provide the adsorption column system with granular activated carbon specific to gaseous adsorption for the scrubbers provided in the production blocks A, A Extension & Block B to control the VOCs emissions as well odour nuisance.	Industry has provided double stage scrubbers with adsorption column system with granular activated carbon specific to gaseous adsorption to control odour nuisance in production blocks. Photograph enclosed as Annexure-VII.
4.	The unit shall make proper arrangement for monitoring of HCL mist and VOCs in the vents of the scrubbers attached to production blocks.	Industry has made arrangements to monitor HCl and VOC emissions in the vents of scrubbers attached to production blocks. Photograph enclosed as Annexure VIII.
5.	The unit shall remove all the flexible hose pipes near the productions blocks A & A extension.	Industry has removed all the flexible hose pipes near the production blocks A & A extension on the same day of committee members inspection.
6.	The industry shall carry out Leak Detection and Repair program at frequent interval of times to assess the solvent losses and shall take appropriate measures to control to arrest the solvent losses and reduce the VOCs in the premises. The records shall be maintained and made available for the inspecting officials.	Industry is carrying out Leak Detection and Repair studies through third party consultant at frequent intervals to assess the solvent losses and take appropriate measures to control and arresting the solvent losses to reduce VOCs in the premises. Latest LDAR study report enclosed as Annexure-IX.
7.	The unit shall ensure that 95% of solvent are recovered from Solvent Recovery Plant (SRP) and shall be reused completely in the process.	Industry has installed two solvent recovery columns of capacities 20 KL and 15 KL for recovery of solvents to reuse the



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	<p>The day-to-day generation, recovered and reused may be recorded and made available for the inspecting officials.</p>	<p>same in process. Further, it is submitted that the columns are provided with double condensers and circulation of chilled water. The condenser vents are connected to two stage scrubbing system and the solvent recovery efficiency is 95%.</p> <p>The day-to-day generation, solvents recovered, and reused records are being maintained.</p>
8.	<p>The unit shall ensure that hazardous wastes shall be disposed within 90 days from the date of generation. Unit shall maintain proper records on disposal of drums.</p>	<p>Industry is disposing hazardous wastes within 90 days from the date of generation as per the Hazardous Waste Management and Handling 2016. Records maintained.</p>
9.	<p>The Agriculture University shall be engaged to determine the extent of pollution and to provided the suitable remediation for effective crop growth.</p>	<p>Industry has approached administrative authorities of Agriculture University for engaging professors to determine the extent of pollution and suitable remediation for effective crop growth. It is under progress.</p>
10.	<p>The contaminated soil/sediment in the untreated effluent discharged land outside the premises as well as inside the unit of M/s.Hazelo shall be removed & disposed properly. The cost of removal shall be borne by all the industries in this area.</p>	<p>As per the TSPCB directions, untreated effluent discharged land outside the premises as well as inside the unit of M/s.Hazelo lab pvt Ltd has been disposed to CETP, JETL, Jeedimetla for further treatment and disposal. The payment for the same has made by all Eight industries in this area.</p>
11.	<p>As per the monitoring results, it is found that M/s.Hazelo Labs and other adjacent pharmaceutical industries have discharged their untreated/partially treated effluent on land as well as contributing to VOC emission in</p>	<p>As per the TSPCB directions, untreated effluent has been disposed to JETL, Jeedimetla for further treatment and disposal. The payment for the same has been made by all Eight industries located in this area.</p>



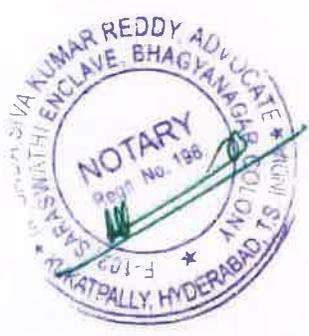
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	<p>Ambient Air. TSPCB shall direct all the pharmaceutical industries in the area to submit the time bound action plan for removal of contaminated sediments/soil and control of VOC emission in Ambient Air as well as adequate pollution control measures to achieve ZLD. TSPCB shall periodically review their action plan & regularly monitor VOC in the area to ensure the effective implementation.</p>	<p>As per the TSPCB directions, industry has installed online VOC meter for monitoring VOC's and the same has been connected to TSPCB server. Photograph enclosed as Annexure-X.</p> <p>In addition to the above, industry is monitoring VOC levels with portable VOC meter periodically and on monthly basis by authorised third party lab within the plant premises. The results of the same are being submitted to Regional Office regularly. Copy of submission with TSPCB acknowledgement enclosed as Annexure-XI.</p>
12.	<p>During the inspection, the expansion work was under progress and the unit representative informed that the expansion work will be completed within two months and will obtain CFO from TSPCB for operation.</p>	<p>The expansion work of ZLD Infrastructure Facility completed and obtained expansion CFO for phase-I from TSPCB with a validity up to 31st January 2027.</p>

It is therefore prayed that this Hon'ble Tribunal may be pleased to pass suitable orders in the above Application based on the compliance report being filed in the above matter as above and thus render justice.



6TH RESPONDENT



81

VERIFICATION

I, V. Jagateeswar Rao, son of Ranga Rao, aged 51 years, Deputy General Manager, M/s. Hazelo Lab Private Limited, Hyderabad, Telegana, do hereby solemnly affirm and verify that the contents of the above Reply are true and correct to my knowledge. No part of it is false and nothing material has been concealed there from.

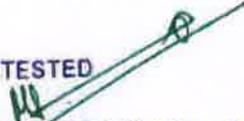
Verified on this day of January 2023 at Hyderabad



6TH RESPONDENT



ATTESTED


M. SADA SIVA KUMAR REDDY, B.Com., B.L.
ADVOCATE & NOTARY
Appointed by Govt., India
G.O. Ms. No. 198, Rev (Regn-II), dt. 11.04.2000
102, Saraswathi Enclave, Bhagyanagar Colony,
Kukatpally, Hyderabad, T.S., India. (Ph: 98480 44395)



TELANGANA STATE POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN, A - 3, INDUSTRIAL ESTATE,
SANATHNAGAR, HYDERABAD - 500 018

Phone: 23887500
 Fax: 040 - 23815631
 Website: tspcb.cgg.gov.in

CONSENT & HWA ORDER (EXPANSION - PHASE-I)
RED CATEGORY

Consent Order No: 220523957956

Date : 01.09.2022

(Consent Order for Existing/New or altered discharge of sewage and/or trade effluents/outlet under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and amendments thereof, Operation of the plant under section 21/22 of Air (Prevention & Control of Pollution) Act 1981 and amendments thereof and Authorisation / Renewal of Authorisation under Rule 6 of the Hazardous Wastes (Management, Handling & Transboundary, Movement) Rules 2016 & Amendments thereof).

CONSENT is hereby granted under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974, under section 21/22 of Air (Prevention & Control of Pollution) Act 1981 and amendments thereof, and Authorisation under the provisions of HW (MH & TM) Rules, 2016 (hereinafter referred to as 'the Acts', 'the Rules') and amendments thereof and the rules and orders made there under to **M/s. Hazelo Lab Pvt Ltd., (Formerly M/s Venlar Labs (P) Ltd.) Dhotigudem (V), Pochampally (M), Yadadri Bhuvanagiri District** (hereinafter referred to as 'the Applicant /Industry') and the Industry is authorized to operate the industrial plant to discharge the Effluents from the outlets and the quantity of Emissions per hour from the chimneys, by operating pollution control equipment, as detailed below,

i) Out lets for discharge of Effluents (Phase-I):

Outlet No.	Description of outlet	Max daily discharge in KLD	Point of Disposal
1.	HTDS Effluents: (Process - 44 KLD + Washings - 3.5 KLD + RO/DM plant Rejects - 7 KLD + Scrubber effluent - 5.3 KLD)	59.8	<ul style="list-style-type: none"> ➤ Shall be stripped off for organics recovery. ➤ Stripper condensate to distillate for separation of organic compounds followed by disposal to cement plants for co-processing & distilled effluents shall be routed to LTDS treatment system. ➤ Stripped effluents for forced evaporation in MEE followed by ATFD ➤ Condensate from MEE & ATFD shall be routed to LTDS treatment system. ➤ ATFD Salts to TSDF.
2.	LTDS Effluents: (Cooling bleed off - 21 KLD + Boiler blow down - 5.3 KLD + Domestic effluents - 3.2 KLD)	29.5	<ul style="list-style-type: none"> ➤ LTDS effluents along with condensate of MEE & ATFD shall be treated in Biological ETP followed by filtration in RO Plant. ➤ RO Permeate water to boiler/cooling tower makeup ➤ RO Rejects to MEE
Total:		89.3 KLD	

ii) Emissions from chimneys(Phase-I):

Chimney No.	Description of Chimney
1	Attached to Coal fired Boiler of capacity 1 x 4 TPH
2	Attached to Coal fired Boiler of capacity 1 x 12 TPH
3	Attached to Thermic Fluid Heater - 1 x 1 Lakh Kcal/hr & 1 x 2 Lakh Kcal/hr.
4	Attached to process emissions
3	Attached to D.G. Set of capacity 1 x 250 kVA & 2 x 1500 KVA

This Consent Order valid for manufacture of the following products along with the quantities only. The Industry shall manufacture any 20 products on worst Case scenario on Campaign basis at any given point of time as per CFE (expansion) order dt. 29.05.2021.

S. No.	Product Name	Capacity (Kg/day)	No.of Stages	Name of Key Raw Material	Key RM quantity Kgs/day
1	Amlodipine Besylate	290.5	I	Phthalimido Amlodipine	370.3
2	Bupropion HCl	640.5	II	m-Chloropiophenone	474.3
3	Clopidogrel Hydrogen Sulfate	115.5	II	Methyl(+)-alpha- amino(2-chlorophenyl)acetatetartaric acid salt	147.5
4	Desvelofloxin Succinate	59.5	II	1-[2-Amino-1-(4-benzyloxyphenyl) ethyl] cyclohexanol	66.0
5	Divolproex Sodium	549.5	II	2,2-Dipropylmalonic acid	755.1
6	Duloxetine HCl	59.5	I	(S)-N-Methyl-N-phenyl oxycarbonyl-3-(1-naphthyloxy)-3-(2-thienyl) propylamine	84.9
7	Esomeprazole Mg Dihydrate	115.5	I	(±) Omeprazole	112.4
8	Glimepiride	59.5	I	4-[2-(3-ethyl-4-methyl-2-oxo-3-pyrrolidine-1-carboxamido) ethyl]benzene sulfonamide	51.0
9	Mesalamine	59.5	I	Aniline	45.2
10	Metoprolol Succinate	350.0	III	4-(2-Methoxy-ethyl)-phenol	187.4
11	Pantoprazole Sodium Sesquihydrate	350.0	I	5-(Difluoromethoxy)-2-[[3,4-dimethoxy-2-pyridinyl) methyl]thio]- 1H-benzimidazole	321.4
12	Pragabalin	350.0	I	3-(Carbamoylmethyl)-5-methylhexanoic acid	572.5
13	Rosuvastatin Calcium	35.0	I	(R)-7-[4-(4-Fluorophenyl)-6-(1-methylethyl)-2-[methyl(methylsulfonyl) amino]-5-pyrimidinyl]-5-pyrimidinyl]-3-hydroxy-5-oxo-6-heptenoic acid methyl ester	40.1
14	Sertraline HCl	115.5	I	4-(3,4-Dichlorophenyl)-3,4-dihydro-N-methyl- 1(2H)-Naphthalenimine	132.6
15	Tramadol	409.5	I	2-[(N,N-Dimethylamino)methyl] cyclohexanone	283.7
16	Valcyclovir Hydrochloride Monohydrate	115.5	II	2-(Acetylamino)-1,9-dihydro-9-[[2-(acetyloxy)ethoxy]methyl]-6H-purin-6-one	173.0
17	4-[4-Chloro-1-oxobutyl]-2,2-dimethyl phenyl acetic acid methyl ester	35.0	III	2-methyl-2-phenylpropan-1-ol	42.9
18	N2-(1-(S)-ethoxy carbonyl-3-phenyl propyl-N6-trifluoroacetyl)-L-lysine	59.5	II	L-Lysine	111.8

By-products(Phase-I) :

S. No	Name of Product	Name of By-Product	Quantity Kg/day
1	Clopidogrel hydrogen sulfate	p-toluene sulfonic acid	63.3
2	1,1-Carbonyl diimidazole	Trichloromethanol	1267.9

This order is subject to the provisions of 'the Acts' and the Rules' and amendments made thereunder and further subject to the terms and conditions incorporated in the schedule A, B and C enclosed to this order.

This order of Consents and Authorization is valid for a period upto 31st January,2027.

Sd/-
MEMBER SECRETARY

To
M/s. Hazelo Lab Pvt Ltd.,
(Formerly M/s Venlar Labs (P) Ltd.)
Dhotigudem (V), Pochampally (M),
Yadadri Bhuvanagiri District

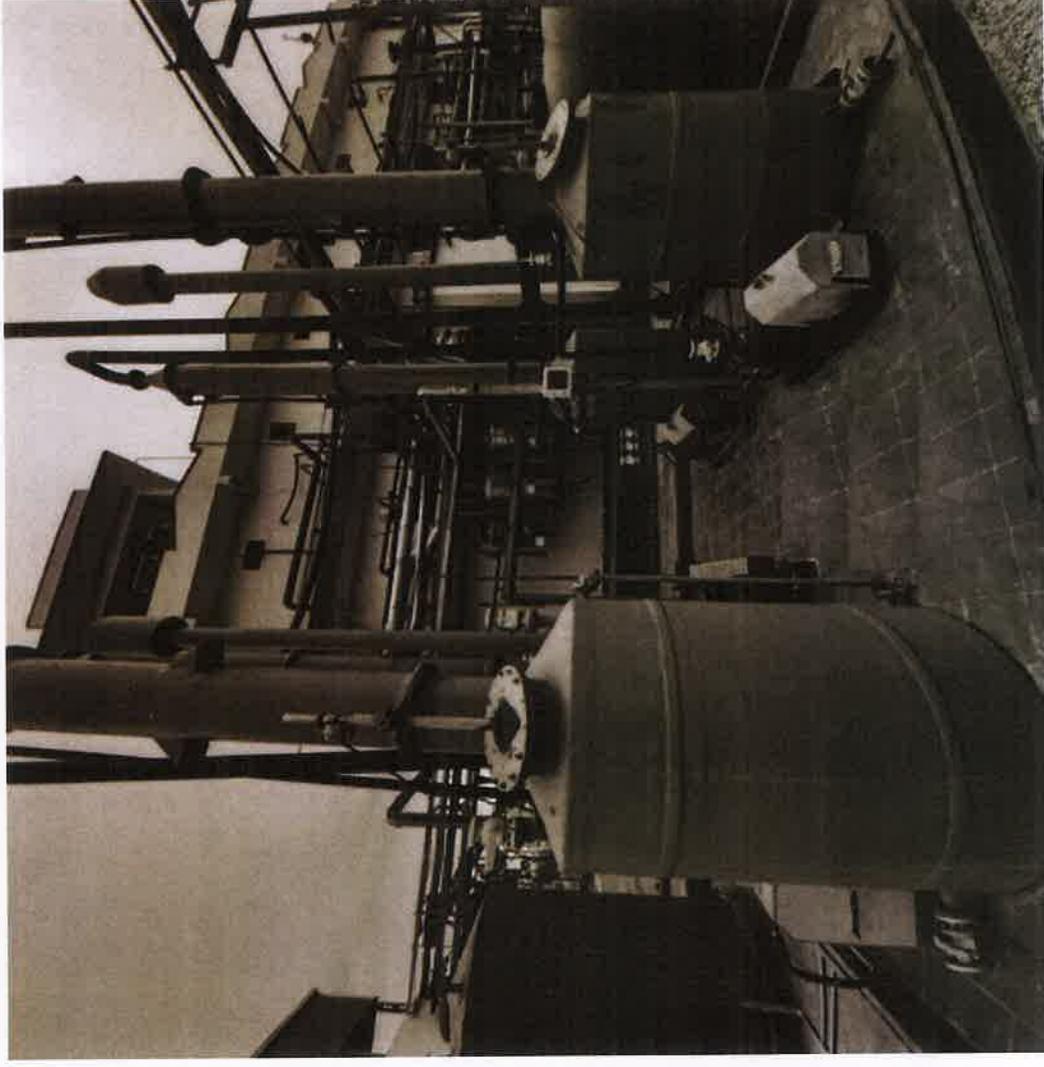
///T.C.F.B.O///

M. Phani
21/9/2022

SENIOR ENVIRONMENTAL ENGINEER
(CFO - UNIT-III)

**M/s.HAZELO LAB PRIVATE LIMITED
(V)Dothigudem, Yadadri Bhuvanagiri Dist**

Annexure-II



Double Stage scrubbers provided at production blocks with online PH meters.



TELANGANA STATE POLLUTION CONTROL BOARD
REGIONAL OFFICE: NALGONDA

10

H.No. 8-15, 1st Floor
Sri Lakshmi Complex
Sri Vinayaka Nagar, Hyderabad Road
Nalgonda-508001, Ph:08682-248005

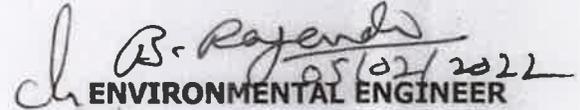
Notice No.72001/PCB/RO-NLG/2022 - 68,

Date: 05.02.2022

Sub : TSPCB, RO – NLG – Accumulation of contaminated rain water / seepages in the industrial cluster of Dothigudem – Lifting of the same to CETP for treatment – Reg.

* * *

Attention is invited to the subject. It is observed that contaminated rainwater /seepages were getting accumulated in the Low Lying areas in the industrial cluster of Dothigudem. To avoid further contamination of the ground water in the area, it is directed to send the same to common effluent treatment plant (CETP) for further treatment and disposal collectively by the cluster units (or) individual units and submit the compliance along with manifest copies.


ENVIRONMENTAL ENGINEER
ENVIRONMENTAL ENGINEER
T.S. Pollution Control Board,
Regional Office, Nalgonda.

To,

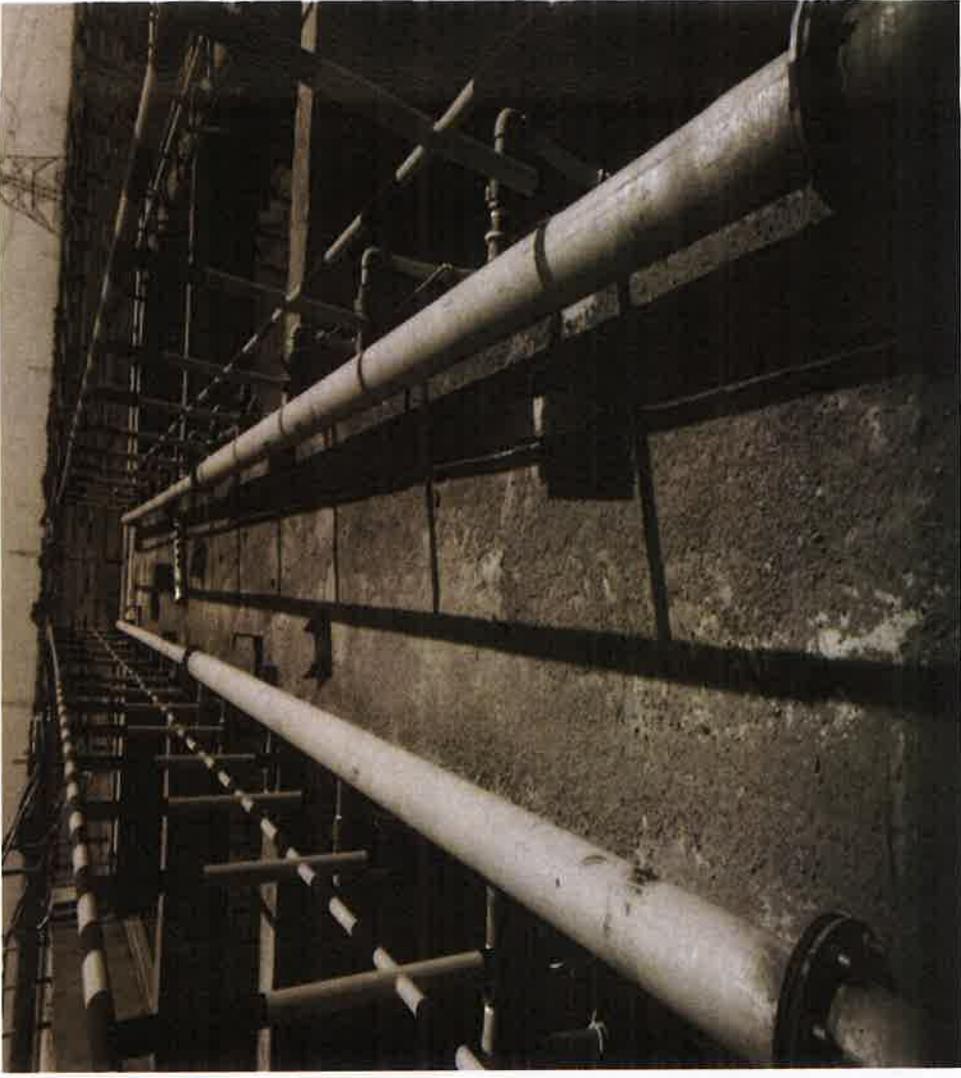
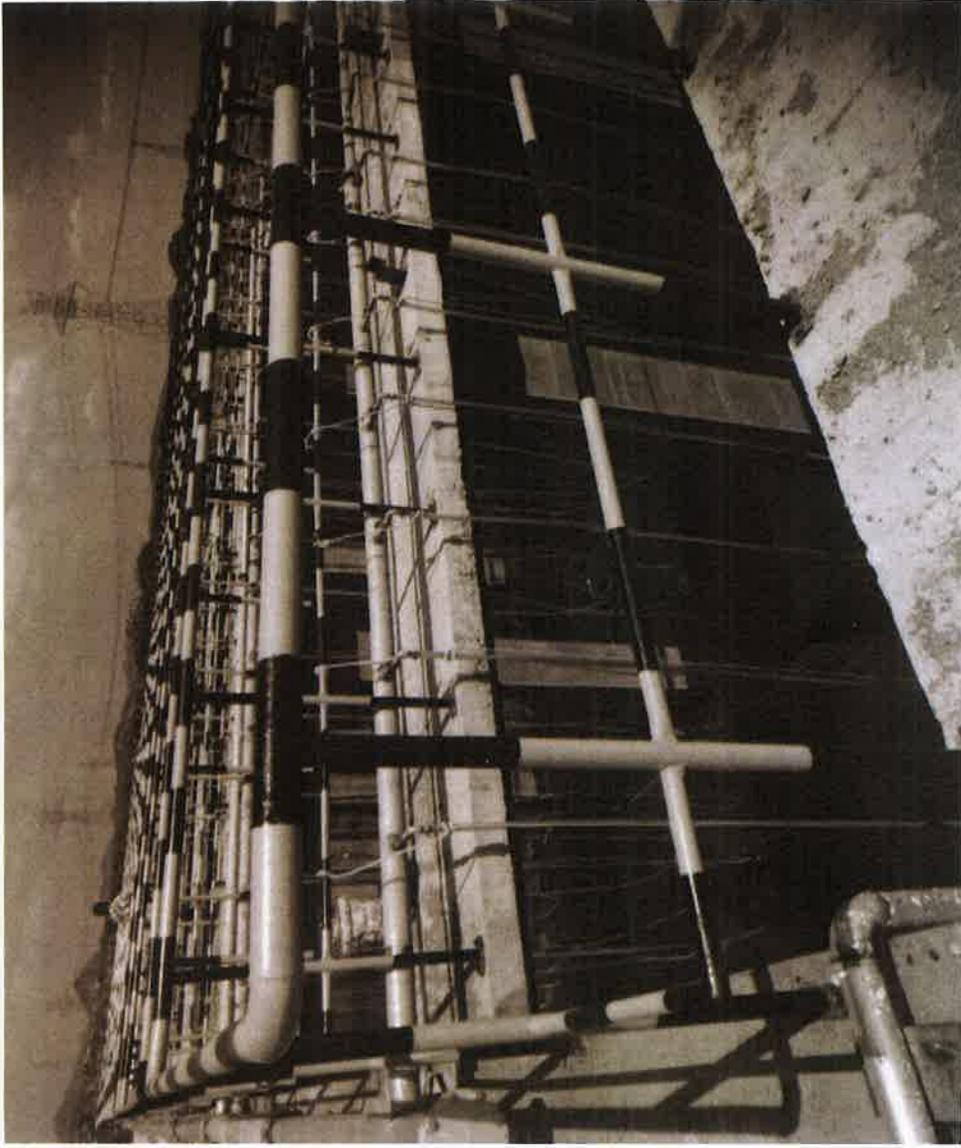
- 1 M/s. Hazelo Lab Pvt Ltd.,
- 2 M/s. V.J. Sai Chem,
- 3 M/s. Ravoos Laboratories Ltd., (Unit II),
- 4 M/s. Optimus Drugs (P) Ltd.
- 5 M/s. Archimedis Laboratories (P) Ltd.,
- 6 M/s. SVR Laboratories (P) Ltd.,
- 7 M/s. Chemic Life Sciences (P) Ltd.,
- 8 M/s. Brundavan Laboratories (P) Ltd.,
Yellagiri (V), Choutuppal (M),
Yadadri Bhavangiri District.

Copy submitted to the JCEE, TSPCB, Zonal Office, RC Puram, Sangareddy District for kind information and necessary action.

Copy submitted to the SEE (Task Force, Board office), TSPCB, Hyderabad for kind information and necessary action.

**M/s.HAZELO LAB PRIVATE LIMITED
(V)Dothigudem, Yadadri Bhuvanagiri Dist**

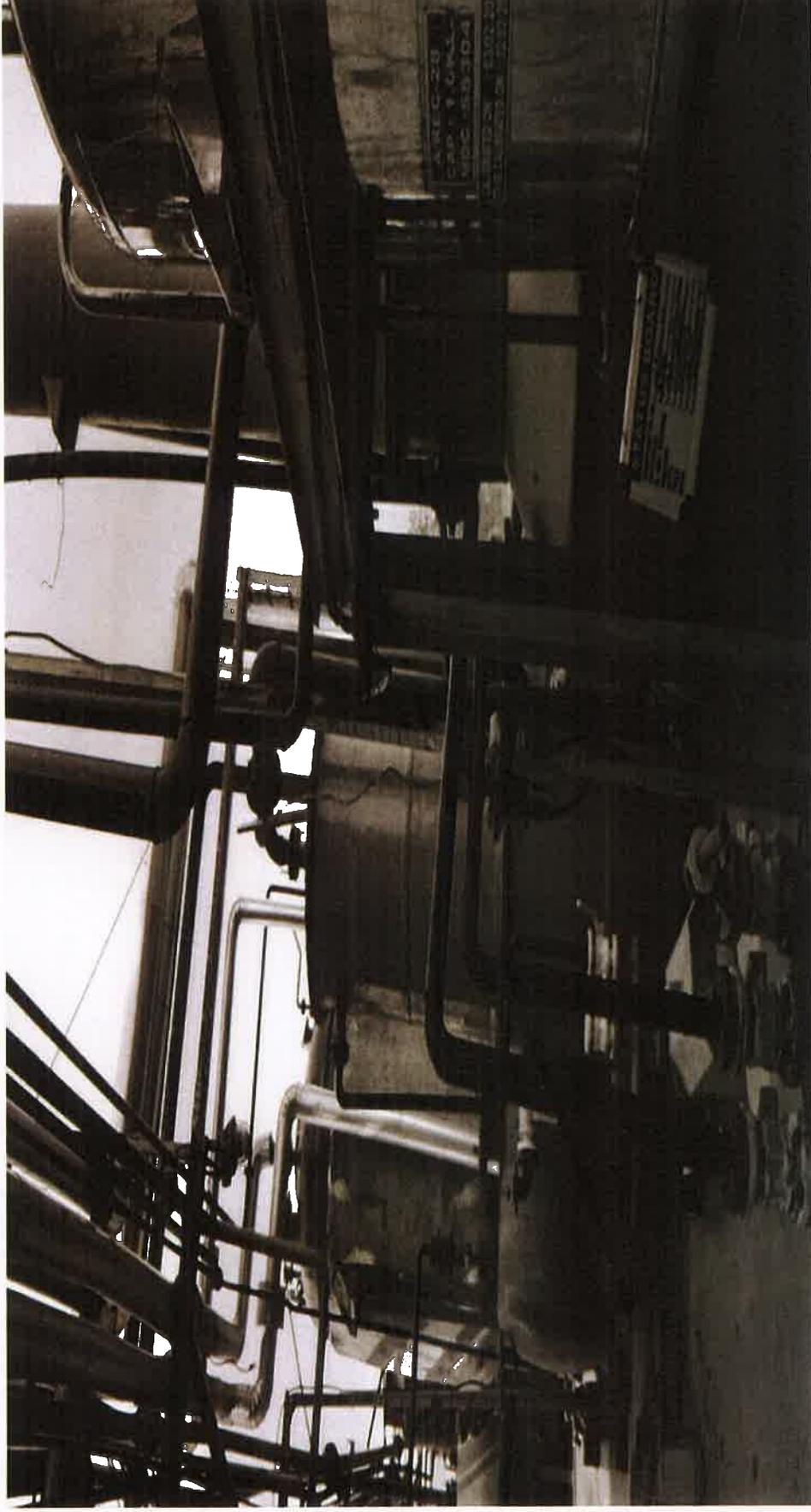
Annexure-IV



HTDS Collection Tanks

**M/s.HAZELO LAB PRIVATE LIMITED
(V) Dothigudem, Yadadri Bhuvanagiri Dist**

Annexure-V



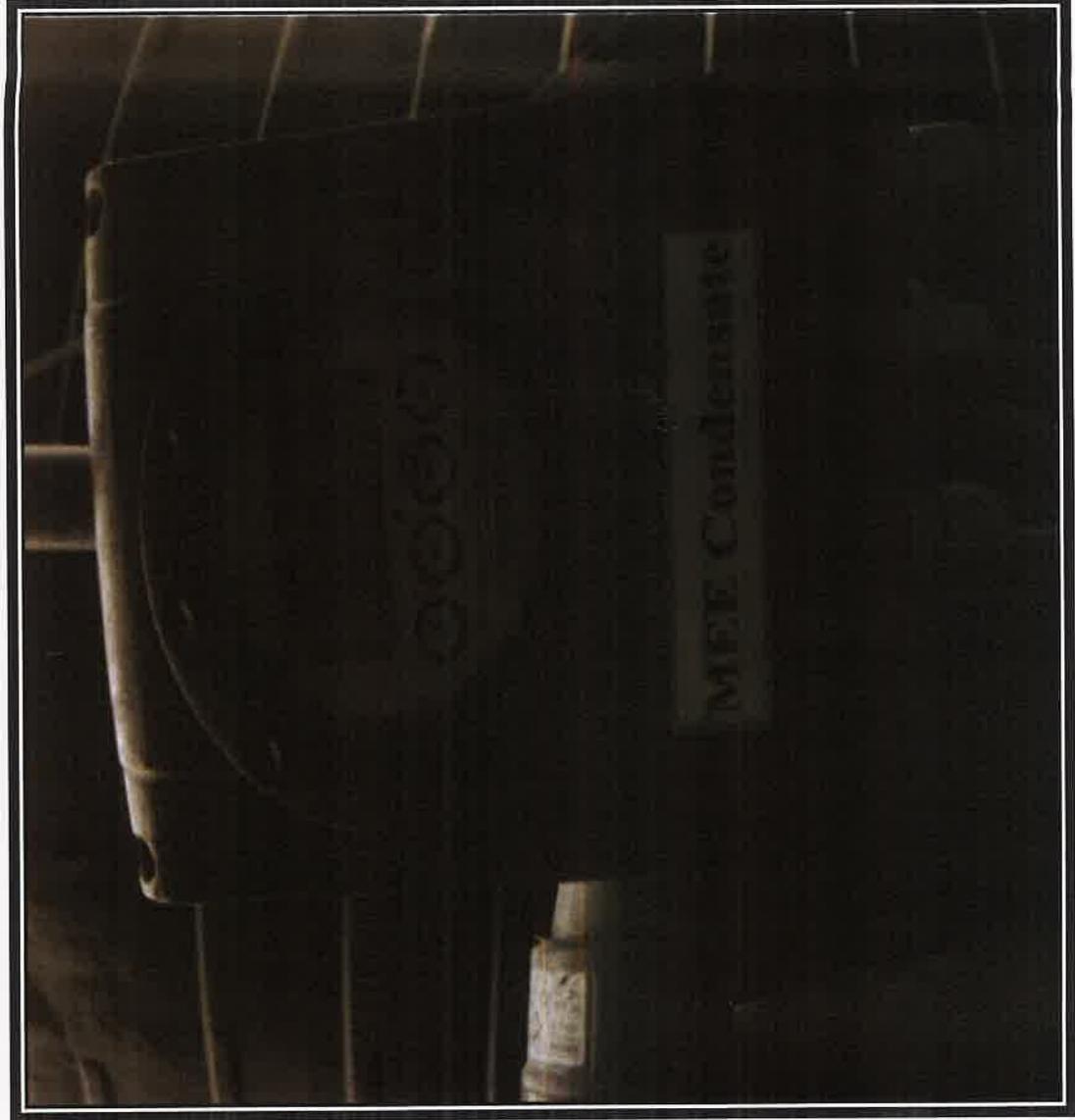
Online pH meter Connected to scrubber to TSPCB Server

M/s.HAZELO LAB PRIVATE LIMITED
(V)Dothigudem, Yadadri Bhuvanagiri Dist

Annexure-VI



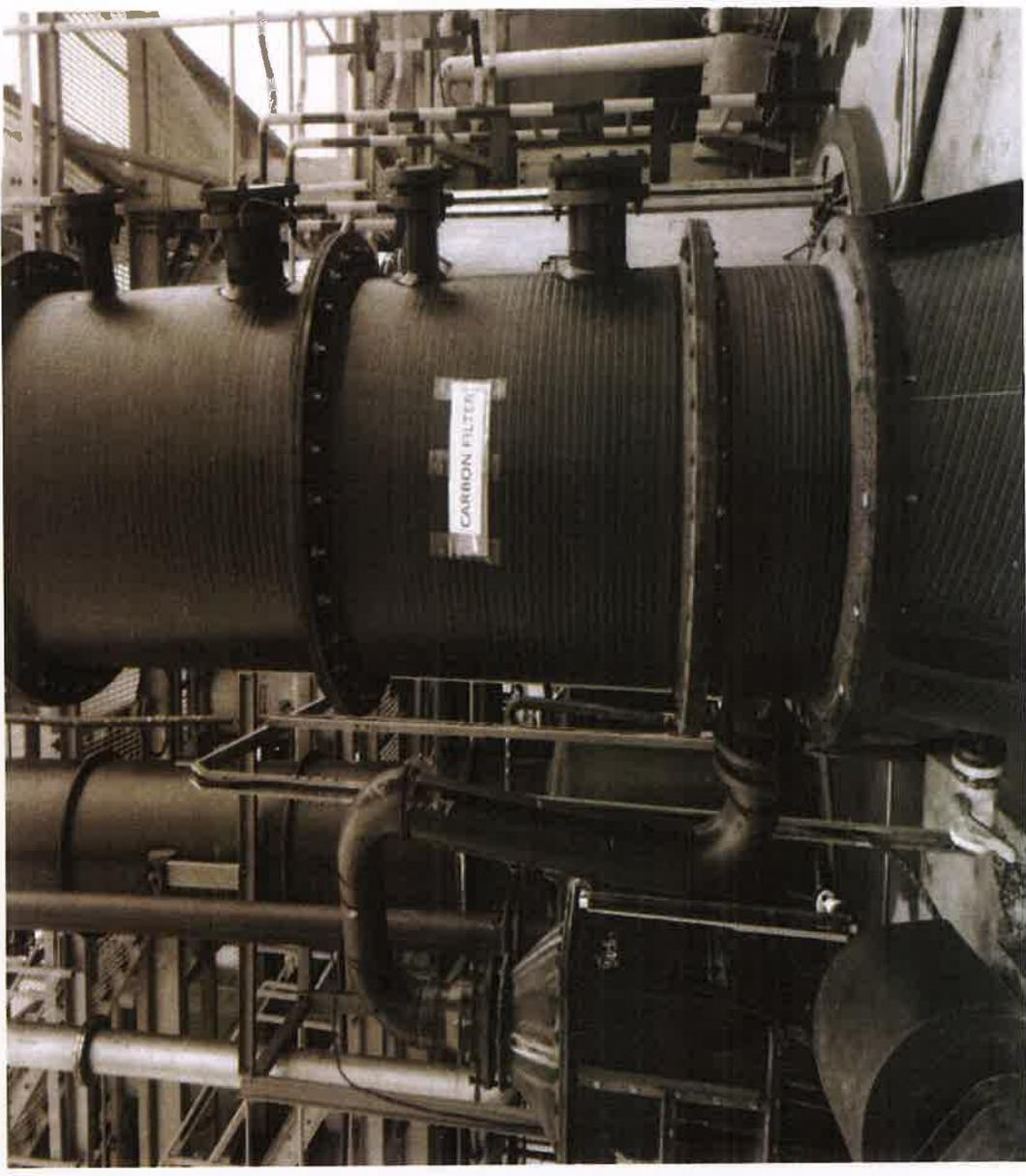
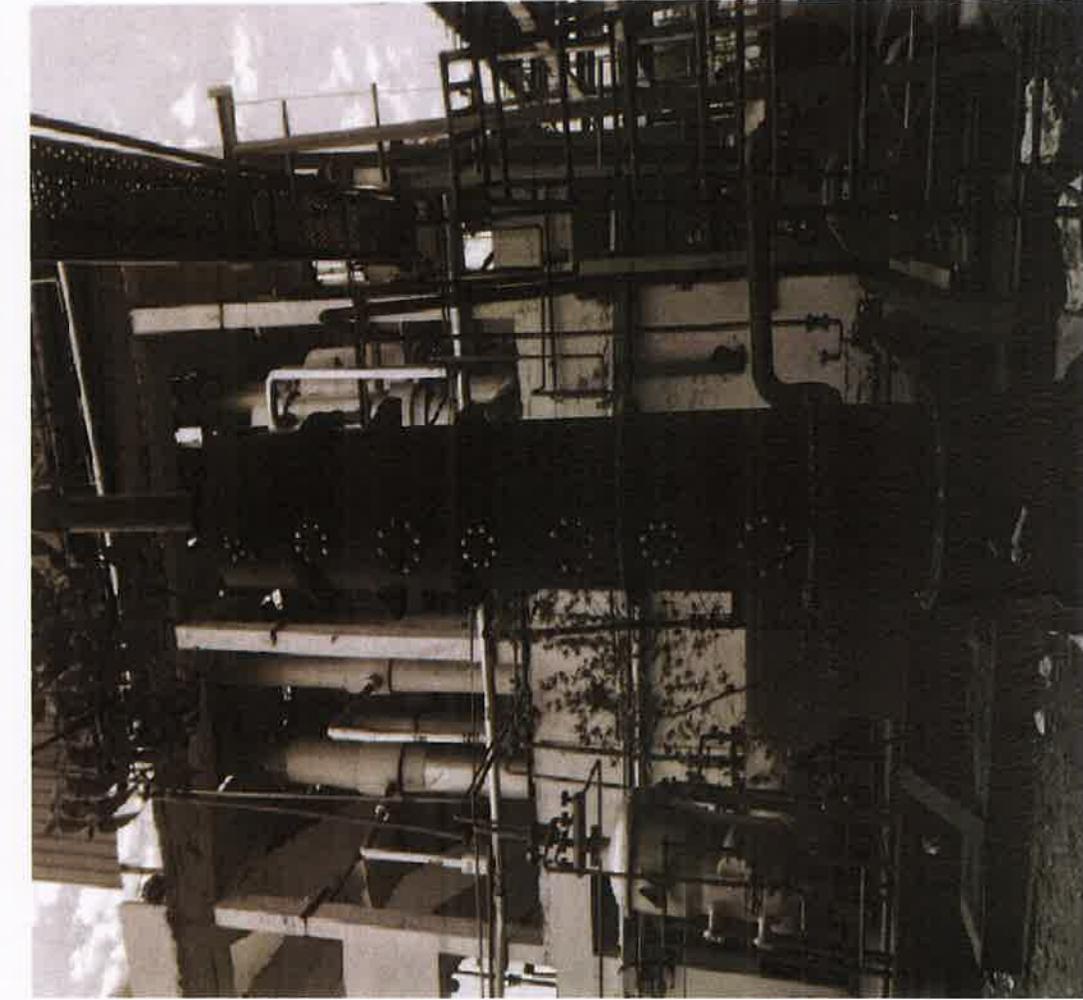
Flow Meters



Flow Meters

**M/s.HAZELO LAB PRIVATE LIMITED
(V)Dothigudem, Yadadri Bhuvanagiri Dist**

Annexure-VII

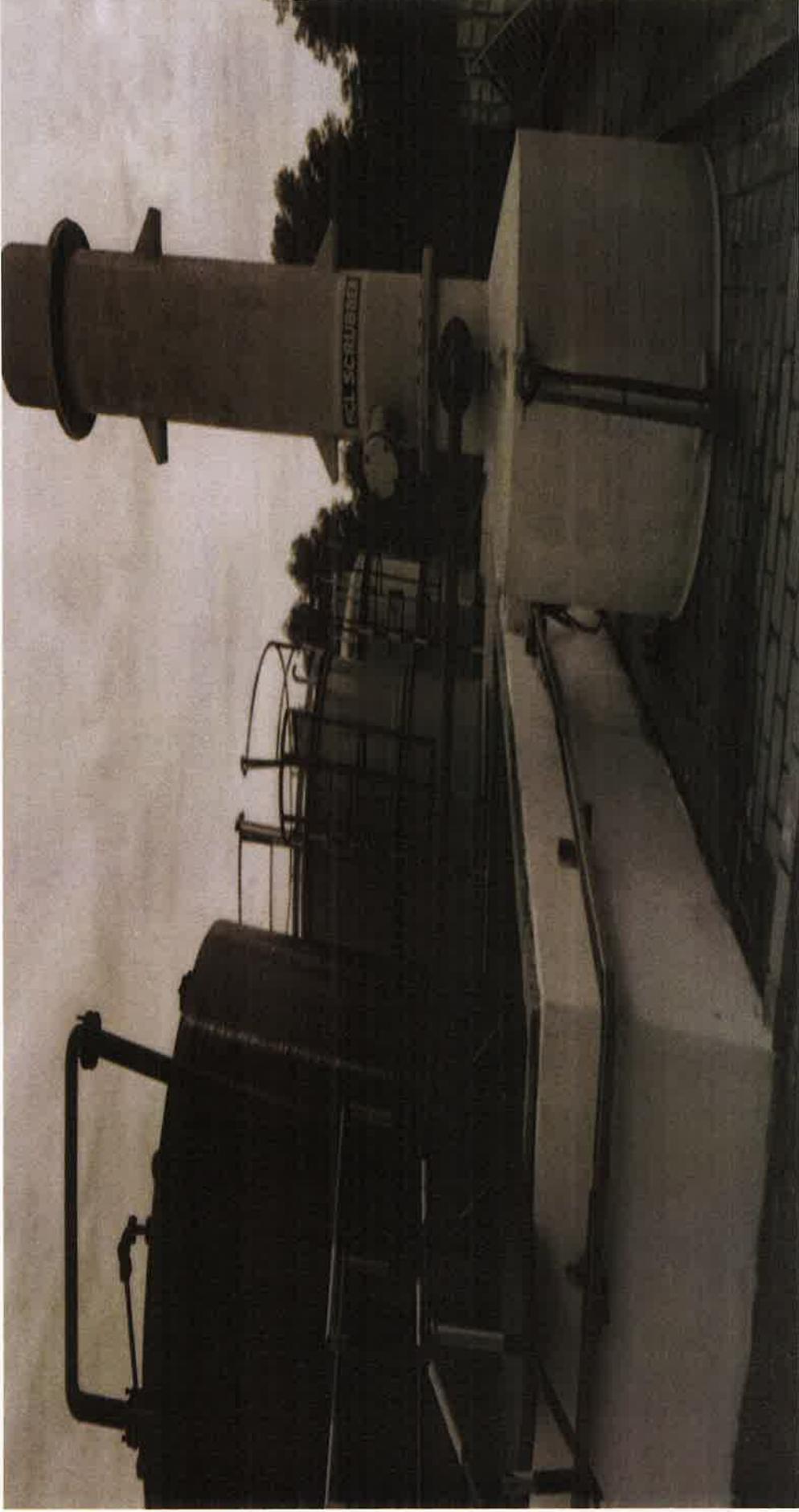


Activated charcoal bed

17

Annexure – VIII

M/s.HAZELO LAB PRIVATE LIMITED
(V)Dothigudem, Yadadri Bhuvanagiri Dist



HCL Scrubber

LEAK DETECTION AND REPAIR (LDAR) REPORT



To
M/s. HAZELO LAB PVT LTD.,
SY.NO. 247,248 & 249, DHOTIGUDEM VILLAGE,
JIBLAKPALLY, BUDHAN,
POCHAMPALLY MANDAL,
YADADRI BHUVNAGIRI DISTRICT,
TELANGANA

Prepared by
M/s. KIWIS ECO LABORATORIES PVT LTD.,
(Recognized by NABL, MoEF, GOI, New Delhi
Certified by ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007)
Plot No. 19, ALEAP Industrial Estate, Sy.No.342
Near Pragathi Nagar, Quthbullapur Mandal
Rangareddy Dist, Hyderabad, Telangana - 500090
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DECLARATION

Leak Detection and Repair (LDAR) for *M/s. Hazelo Labs Pvt. Ltd.*, Sy.No. 247,248 & 249, Dhotigudem Village, Jiblakpally, Budhan, Pochampally Mandal, Yadadri Bhuvnagiri District, Telangana. Report has been prepared by *M/s. Kiwis Eco Laboratory Pvt. Ltd.*, Hyderabad (Recognized by NABL & MOEF, GOI, New Delhi) on behalf of and for the use of the Customer with due consideration and skill as per our general terms and conditions of business and the terms of agreement with the customer.

Authorized Signatory



(Ch. Rajani Kumari)
Managing Director

INDEX

S.No	Description	Page Numbers
1.0	Introduction	3
1.1	About LDAR & About Industry	3
1.2	Affected Sources	4
1.3	Equipment Leak	4
1.4	Minimum Requirements for an Acceptable Organic LDAR Program	4
2.0	Methodology of the Study	5
3.0	Sampling Methodology	7
4.0	Calculation	8
5.0	Result and Discussion	10
6.0	Comprehensive Action taken for VOC Control	13
7.0	Conclusion	14
	Annexure-I (Test Reports)	15
	Annexure-II (Calibration Certificates)	16

1.0 INTRODUCTION

1.1 About LDAR & About Industry

Leak Detection and Repair (LDAR) is a program implemented to comply with environmental regulations for reducing the fugitive emissions of targeted chemicals into the environment. Several standards such as Maximum Achievable Control Technology (MACT) standards, New Source Performance Standards (NSPS), National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Central Pollution Control Board (CPCB) require the monitoring and reporting of these fugitive emissions from processequipment.

In M/s. Hazelo Labs Pvt. Ltd., Sy.No. 247,248 & 249, Dhotigudem Village, Jiblakpally, Budhan, Pochampally Mandal, Yadadri Bhuvnagiri District, and Telangana of about 282 process components points were monitored on 07.12.2021 in the process plant.

A typical chemical unit can emit some tons per year of VOCs from leaking equipment, such as valves, connectors, pumps, sampling connections, compressors, pressure relief devices and open ended lines.

The environmental regulations are prescribed LDAR programs as a means of reducing emissions have very specific standards and applied to a monitoring and repair program. The LDAR study included the following protocols:

Chemical streams that must be monitored

- Types of components (pumps, valves, connectors, etc.) to be monitored
- Measured concentration in ppm that indicates a leak
- Frequency of monitoring
- Method of monitoring
- Actions to be taken if a leak is discovered
- Length of time in which an initial attempt to repair the leak must be performed
- Length of time in which an effective repair of the leak must be made
- Actions that must be taken if a leak cannot be repaired within guideline
- Record-keeping and reporting requirements

VOCs are contributed to the formation of ground level ozone. Many of the areas where Refineries are located do not meet the NAAQ standards for ozone. Ozone can be transported in the atmosphere and contribute to nonattainment in downwind areas.

1.2 Affected Sources:

Each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange and connector that contains or contacts a fluid or gas. That is exceeding more than 5000 ppm of pump and compressor seals and 3000 ppm other components is an affected source.

1.3 Equipment Leak:

A leak is defined as greater than or equal to 3,000 & 5000 ppm as methane, for organic compounds, as determined by EPA Reference Method 21. Most of the emissions are from valves and connectors because these are most prevalent components and can number in the thousands. The major cause of emissions from valves and connectors is seal or gasket failure due to normal wear or improper maintenance. More than 90% of emissions from the leaking equipment with valves are being the most significant source. The open ended lines and sampling connections account for as much as 5 - 10% of total VOC emissions from equipment leaks.

1.4 Minimum Requirements for an Acceptable Organic LDAR Program:

Each affected source is screened initially using Method 21. Sources that are unsafe to monitor is not screened, but documentation is provided to substantiate the unsafe nature. Monthly visual inspections has to be performed by industry on each affected source for signs of leakage (e.g. dripping liquid, spraying, misting, clouding, ice formation, distinctive odors, etc.).

Monitoring of each affected source is to be conducting quarterly using Method 21. All

potential leak points associated with a component must be identified and screened for leaks. The detected leaks by Method 21 test was tagged and repaired. The leak sources are measured after repair and the same is recorded.

2.0 METHODOLOGY OF THE STUDY:

EPA has found significant widespread noncompliance with Leak Detection and Repair regulations and more specifically non compliance with Method 21 requirements.

Step 1: Preparation of LDAR project

- Information exchange meeting
- Project introduction
- Project scoping
- Coding & naming conventions
- Prepare technical information (medium, stream, drawings)
- Stream composition
- Leak definition, repair definition and tag definition per stream
- Detection equipment to use

Step 2: Database preparation:

- Build site structure (unit - sections - drawings - streams)
- Prepare Basic data
- Prepare Customer data

Step 3: Source inventory:

- Project kick-off meeting
- Safety training
- Site visit
- Define monitoring routes
- Start inventory program
- Prepare monitoring phase

Step 4: Unit monitoring phase

- Prepare detection devices and gather relevant information
- Start monitoring program
- Regular status meetings
- Database update

Step 5: First repair attempt

- Prepare tightening lists (sources with leak-rate > repair definition)
- Guide mechanical/ operator to leaking sources
- Perform on-line reparation
- Re-monitoring after repair attempt

Step 6: Reporting

- Consolidate all gathered data
- Prepare lessons learned
- Create LDAR report
- Detail list of all leaking sources
- Repair orders
- Equipment overview per EPA source
- Top leakers (in costs and losses)
- Sort on most leaking equipment (EPA sources)

3.0 SAMPLING METHODOLOGY:

Initial Screening: Screening tests must be conducted initially and include:

1. The type of affected source (e.g. pump, compressor, etc.).
2. Site specific ID of each affected source.
3. Date of the Method 21 test.
4. Type of Method 21 detector.
5. Calibration results of Method 21 detector.
6. Screening results in ppm.

4.0 CALCULATION:

Component Type	Default Zero Factor [Kg/hr]	Correlation Equation [Kg/hr]
Valves	[7.8E-06]	[2.27E-06(SV) ^{0.747}]
Pump Seals	[1.9E-05]	[5.07E-05(SV) ^{0.622}]
Others	[4.0E-06]	[8.69E-06(SV) ^{0.642}]
Connectors	[7.5E-06]	[1.53E-06(SV) ^{0.736}]
Flanges	[3.1E-07]	[4.53E-06(SV) ^{0.706}]
Open-ended Lines	[2.0E-06]	[1.90E-06(SV) ^{0.724}]

The default zero factors apply only when the screening value (SV) corrected for background equals 0 ppm.

The correlation equations apply for actual screening values, corrected for background.

The "other" component type includes instruments, loading arms, pressure relief valves, vents, compressors, dump lever arms, diaphragms, drains, hatches, meters and polished rods stuffing boxes. This "other" component type should be applied for any component type other than connectors, flanges, open-ended lines, pumps or valves.

For example:

The screening value (SV) concentration in Valves is 15.3 ppm

$$= \text{RF}(\% \text{ of VOC Flow}/100) * 0.0000023 * \text{SV}^{0.747}$$

(* RF = 2 (Response Factor))

Response Factors of Different Volatiles	
Iso propanol	2.0
n-Hexane	0.6
Toluene	0.55
Chloroform	0.8
TVOC	1.0
Methanol	2.9
Ethanol	3
Ethyl Acetate	1.4
Acetone	1.7

% of VOC Flow = Material passing on that particular pipe line.

0.00000227 = Correlation factor

SV = Screening Value in ppm

If we will apply all the values in the below formula

$$= RF (\% \text{ of VOC Flow} / 100) * 0.0000023 * SV^{0.747}$$

$$= 2 (100 / 100) * 0.0000023 * 856^{0.747}$$

$$= 0.000018 \text{ kg/hr}$$

Total hours of operation per year are 8760 (24 hours x 365 days)

The volatile emission = 0.154174 Kg/year.

5.0 RESULTS DISCUSSION

At Production Block A:

The maximum Leak was observed to be 0.169 kg/year, minimum Leak was observed to be 0.033 kg/year, average leak was found to be 0.084 kg/year and the total VOC Loss **11.02** kg/year before repair with respect to the only measured 131 Components.

The maximum Leak was observed to be 0.086 kg/year, minimum Leak was observed to be 0.0 kg/year and average leak was found to be 0.015 kg/year and the total VOC Loss 1.99 kg/year after repair with respect to the only measured 131 Components.

At Production Block B:

The maximum Leak was observed to be 0.740 kg/year, minimum Leak was observed to be 0.03 kg/year and average leak was found to be 0.210 kg/year and the total VOC Loss **10.72** kg/year before repair with respect to the only measured 51 Components.

The maximum Leak was observed to be 0.133 kg/year, minimum Leak was observed to be 0.003 kg/year and average leak was found to be 0.049 kg/year and the total VOC Loss 2.53 kg/year after repair with respect to the only measured 51 Components.

At Production Block Extension:

The maximum Leak was observed to be 0.282 kg/year, minimum Leak was observed to be 0.016 kg/year and average leak was found to be 0.087 kg/year and the total VOC Loss **3.06** kg/year before repair with respect to the only measured 35 Components.

The maximum Leak was observed to be 0.071 kg/year, minimum Leak was observed to be 0.003 kg/year and average leak was found to be 0.033 kg/year and the total VOC Loss 1.17 kg/year after repair with respect to the only measured 35 Components.

At Effluent Treatment Plant (ETP) Area:

The maximum Leak was observed to be 1.421 kg/year, minimum Leak was observed to be 0.026 kg/year and average leak was found to be 0.221 kg/year and the total VOC Loss 3.10 kg/year before repair with respect to the only measured 14 Components.

The maximum Leak was observed to be 0.542 kg/year, minimum Leak was observed to be 0.0 kg/year and average leak was found to be 0.101 kg/year and the total VOC Loss 1.43 kg/year after repair with respect to the only measured 14 Components.

At Solvent Storage Area:

The maximum Leak was observed to be 3.12 kg/year, minimum Leak was observed to be 0.02 kg/year and average leak was found to be 0.26 kg/year and the total VOC Loss 13.29 kg/year before repair with respect to the only measured 51 Components.

The maximum Leak was observed to be 0.29 kg/year, minimum Leak was observed to be 0.01 kg/year and average leak was found to be 0.07 kg/year and the total VOC Loss 3.79 kg/year after repair with respect to the only measured 51 Components.

6.0 COMPREHENSIVE ACTION TAKEN FOR VOC CONTROL IN PLANT

- Leak Free Pumps & Valve for transfer of solvents.
- MSW Gaskets in solvent pipelines has used to prevent leakage from flanges.
- Maintained minimum number of flanges, joints and valves in pipelines.
- To eliminate chances of leakages from glands of pumps, double mechanical seal has provided at all solvent pumps.
- All the rotating equipment's like pumps have installed with double mechanical seals to arrest any sort of emissions.
- Flanges have also sealed so less losses would be there; A regular preventive maintenance schedule should be in place to replace or rectify all gaskets and joints to ensure no fugitive emissions would take place.
- Plant have also maintained adequate number of spares and consumables required to repair the leaking device.
- Standby equipment's like Pumps, valves etc would kept basis the criticality and usage.

7.0 CONCLUSION

Based on our LDAR Study the major leakages were found in Solvent Storage Area, Production Block A and Production Block B. The total loss of VOCs was found at 35.13 kg/year and after repair yearly emission of VOC was 8.31 kg/year.

Minimum leaks were found in ETP Area and Production Block Extension. The total loss of VOCs was found at 6.16 kg/year and after repair yearly emission of VOC was 2.60 kg/year.

The results were submitted component wise before and after repair in the enclosed Annexure-I. As per CPCB guidelines no components were detected more than the standard values of 3000 ppm and 5000 ppm.

Based on the calculation and concentrations of VOC in the equipment, we took default value 1, 2, 0.55, 0.6, and 0.8 for TVOC, IPA, Toluene, Hexanes and Chloroform respectively as a Response Factor (RF). M/s. Hazelo Labs Pvt. Ltd., Sy.No. 247,248 & 249, Dhotigudem Village, Jiblakpally, Budhan, Pochampally Mandal, Yadadri Bhuvnagiri District, Telangana, has a yearly emission of VOC before Repair was 41.29 kg/year and after Repair yearly emission of VOC was 10.91 kg/year.

* End of the Report*

**ANNEXURE-I
(Test Reports)**



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TEST REPORT

1 | Page

Location: Production Block A

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
1	S-1	A/SSR-001	Flanges	2.3	1	100	0.000008	0.071447	0.2	0.000001	0.012739
2	S-2	A/SSR-001	Valve	2.6	1	100	0.000005	0.041096	0.3	0.000001	0.008207
3	S-3	A/SSR-001	Flanges	2.2	1	100	0.000008	0.069239	0.1	0.000001	0.007809
4	S-4	A/SSR-001	Valve	2.4	1	100	0.000004	0.038714	0.5	0.000001	0.012013
5	S-5	A/SSR-001	Flanges	2.3	1	100	0.000008	0.071447	0.2	0.000001	0.012739
6	S-6	A/SSR-002	Flanges	2.3	1	100	0.000008	0.071447	0.3	0.000002	0.016961
7	S-7	A/SSR-002	Valve	2.4	1	100	0.000004	0.038714	0.2	0.000001	0.006065
8	S-8	A/SSR-002	Flanges	1.2	1	100	0.000005	0.045134	0.5	0.000003	0.024326
9	S-9	A/SSR-002	Valve	5.6	1	100	0.000008	0.072842	0.1	0.000000	0.003616
10	S-10	A/SSR-002	Flanges	6.1	1	100	0.000016	0.142248	0.3	0.000002	0.016961
11	S-11	A/GLR-003	Flanges	5.6	1	100	0.000015	0.133913	0.1	0.000001	0.007809
12	S-12	A/GLR-003	Valve	3.1	1	100	0.000005	0.046858	1.1	0.000002	0.021633
13	S-13	A/GLR-003	Flanges	2.6	1	100	0.000009	0.077906	0.2	0.000001	0.012739
14	S-14	A/GLR-003	Valve	3.2	1	100	0.000005	0.047982	0.0	0.000000	0.000000
15	S-15	A/GLR-003	Flanges	2.6	1	100	0.000009	0.077906	0.3	0.000002	0.016961
16	S-16	A/GLR-004	Flanges	2.6	1	100	0.000009	0.077906	0.1	0.000001	0.007809
17	S-17	A/GLR-004	Valve	2.3	1	100	0.000004	0.037504	0.5	0.000001	0.012013
18	S-18	A/GLR-004	Flanges	3.4	1	100	0.000011	0.094151	0.2	0.000001	0.012739
19	S-19	A/GLR-004	Valve	2.6	1	100	0.000005	0.041096	0.3	0.000001	0.008207
20	S-20	A/GLR-004	Flanges	2.4	1	100	0.000008	0.073626	0.1	0.000001	0.007809
21	S-21	A/GLR-005	Flanges	6.1	1	100	0.000016	0.142248	0.5	0.000003	0.024326
22	S-22	A/GLR-005	Valve	2.3	1	100	0.000004	0.037504	0.3	0.000001	0.008207

94



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

2 | Page

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
23	S-23	A/GLR-005	Flanges	3.1	1	100	0.000010	0.088207	0.4	0.000002	0.020781
24	S-24	A/GLR-005	Valve	2.5	1	100	0.000005	0.039911	0.2	0.000001	0.006065
25	S-25	A/GLR-005	Flanges	3.1	1	100	0.000010	0.088207	0.6	0.000003	0.027668
26	S-26	A/GLR-007	Flanges	2.3	1	100	0.000008	0.071447	0.2	0.000001	0.012739
27	S-27	A/GLR-007	Valve	2.1	1	100	0.000004	0.035044	0.3	0.000001	0.008207
28	S-28	A/GLR-007	Flanges	2.4	1	100	0.000008	0.073626	0.4	0.000002	0.020781
29	S-29	A/GLR-007	Valve	2.6	1	100	0.000005	0.041096	2.1	0.000004	0.035044
30	S-30	A/GLR-007	Flanges	3.1	1	100	0.000010	0.088207	2.3	0.000008	0.071447
31	S-31	A/SSR-008	Flanges	2.3	1	100	0.000008	0.071447	0.2	0.000001	0.012739
32	S-32	A/SSR-008	Valve	5.2	1	100	0.000008	0.068924	0.1	0.000000	0.003616
33	S-33	A/SSR-008	Flanges	3.1	1	100	0.000010	0.088207	0.1	0.000001	0.007809
34	S-34	A/SSR-008	Valve	2.6	1	100	0.000005	0.041096	0.2	0.000001	0.006065
35	S-35	A/SSR-008	Flanges	3.1	1	100	0.000010	0.088207	0.6	0.000003	0.027668
36	S-36	A/GLR-010	Flanges	2.4	1	100	0.000008	0.073626	0.4	0.000002	0.020781
37	S-37	A/GLR-010	Valve	2.6	1	100	0.000005	0.041096	0.2	0.000001	0.006065
38	S-38	A/GLR-010	Flanges	3.1	1	100	0.000010	0.088207	0.3	0.000002	0.016961
39	S-39	A/GLR-010	Valve	2.8	1	100	0.000005	0.043432	0.1	0.000000	0.003616
40	S-40	A/GLR-010	Flanges	3.1	1	100	0.000010	0.088207	0.2	0.000001	0.012739
41	S-41	A/SSR-012	Flanges	2.6	1	100	0.000009	0.077906	0.1	0.000001	0.007809
42	S-42	A/SSR-012	Valve	3.4	1	100	0.000006	0.050201	0.2	0.000001	0.006065
43	S-43	A/SSR-012	Flanges	3.6	1	100	0.000011	0.098028	0.3	0.000002	0.016961
44	S-44	A/SSR-012	Valve	2.3	1	100	0.000004	0.037504	0.2	0.000001	0.006065
45	S-45	A/SSR-012	Flanges	3.1	1	100	0.000010	0.088207	0.1	0.000001	0.007809
46	S-46	A/GRR-007	Flanges	2.5	1	100	0.000009	0.075779	0.2	0.000001	0.012739

BT



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

3 | Page

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
47	S-47	A/GRR-007	Valve	6.1	1	100	0.000009	0.077640	0.3	0.000001	0.008207
48	S-48	A/GRR-007	Flanges	2.4	1	100	0.000008	0.073626	0.4	0.000002	0.020781
49	S-49	A/GRR-007	Valve	3.1	1	100	0.000005	0.046858	0.2	0.000001	0.006065
50	S-50	A/GRR-007	Flanges	2.6	1	100	0.000009	0.077906	0.1	0.000001	0.007809
51	S-51	A/MT-08	Flanges	3.1	1	100	0.000010	0.088207	0.6	0.000003	0.027668
52	S-52	A/MT-08	Valve	2.4	1	100	0.000004	0.038714	0.2	0.000001	0.006065
53	S-53	A/MT-08	Flanges	3.1	1	100	0.000010	0.088207	0.3	0.000002	0.016961
54	S-54	A/MT-08	Valve	2.6	1	100	0.000005	0.041096	0.1	0.000000	0.003616
55	S-55	A/MT-08	Flanges	5.1	1	100	0.000014	0.125356	0.5	0.000003	0.024326
56	S-56	A/MT-10	Flanges	2.3	1	100	0.000008	0.071447	0.3	0.000002	0.016961
57	S-57	A/MT-10	Valve	2.0	1	100	0.000004	0.033791	0.1	0.000000	0.003616
58	S-58	A/MT-10	Flanges	2.1	1	100	0.000008	0.067002	0.2	0.000001	0.012739
59	S-59	A/MT-10	Valve	2.3	1	100	0.000004	0.037504	0.6	0.000002	0.013764
60	S-60	A/MT-10	Flanges	2.4	1	100	0.000008	0.073626	0.1	0.000001	0.007809
61	S-61	A/MT-12	Flanges	5.6	1	100	0.000015	0.139913	0.3	0.000002	0.016961
62	S-62	A/MT-12	Valve	5.4	1	100	0.000008	0.070892	0.5	0.000001	0.012013
63	S-63	A/MT-12	Flanges	2.3	1	100	0.000008	0.071447	0.5	0.000003	0.024326
64	S-64	A/MT-12	Valve	6.4	1	100	0.000009	0.080472	0.3	0.000001	0.008207
65	S-65	A/MT-12	Flanges	7.7	1	100	0.000019	0.167674	0.1	0.000001	0.007809
66	S-66	A/MT-09	Flanges	7.8	1	100	0.000019	0.169208	0.2	0.000001	0.012739
67	S-67	A/MT-09	Valve	5.6	1	100	0.000008	0.072842	0.4	0.000001	0.010171
68	S-68	A/MT-09	Flanges	5.1	1	100	0.000014	0.125356	0.3	0.000002	0.016961
69	S-69	A/MT-09	Valve	5.3	1	100	0.000008	0.069910	0.1	0.000000	0.003616
70	S-70	A/MT-09	Flanges	3.1	1	100	0.000010	0.088207	0.5	0.000003	0.024326

26



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

4 | Page

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
71	S-71	A/MT-10	Flanges	2.6	1	100	0.000009	0.077906	0.2	0.000001	0.012739
72	S-72	A/MT-10	Valve	6.1	1	100	0.000009	0.077640	0.3	0.000001	0.008207
73	S-73	A/MT-10	Flanges	2.3	1	100	0.000008	0.071447	0.1	0.000001	0.007809
74	S-74	A/MT-10	Valve	6.4	1	100	0.000009	0.080472	0.6	0.000002	0.013764
75	S-75	A/MT-10	Flanges	6.4	1	100	0.000017	0.147152	0.4	0.000002	0.020781
76	S-76	A/GLR-010	Flanges	4.8	1	100	0.000014	0.120104	0.3	0.000002	0.016961
77	S-77	A/GLR-010	Valve	5.6	1	100	0.000008	0.072842	0.1	0.000000	0.003616
78	S-78	A/GLR-010	Flanges	5.1	1	100	0.000014	0.125356	0.5	0.000003	0.024326
79	S-79	A/GLR-010	Valve	2.3	1	100	0.000004	0.037504	0.6	0.000002	0.013764
80	S-80	A/GLR-010	Flanges	3.4	1	100	0.000011	0.094151	0.4	0.000002	0.020781
81	S-81	A/SSR-011	Flanges	5.9	1	100	0.000016	0.138939	0.3	0.000002	0.016961
82	S-82	A/SSR-011	Valve	6.4	1	100	0.000009	0.080472	0.1	0.000000	0.003616
83	S-83	A/SSR-011	Flanges	5.8	1	100	0.000016	0.137272	0.2	0.000001	0.012739
84	S-84	A/SSR-011	Valve	6.4	1	100	0.000009	0.080472	0.3	0.000001	0.008207
85	S-85	A/SSR-011	Flanges	6.2	1	100	0.000016	0.143890	0.5	0.000003	0.024326
86	S-86	A/SSR-012	Flanges	3.1	1	100	0.000010	0.088207	0.1	0.000001	0.007809
87	S-87	A/SSR-012	Valve	2.8	1	100	0.000005	0.043432	0.2	0.000001	0.006065
88	S-88	A/SSR-012	Flanges	6.4	1	100	0.000017	0.147152	0.3	0.000002	0.016961
89	S-89	A/SSR-012	Valve	6.5	1	100	0.000009	0.081408	0.1	0.000000	0.003616
90	S-90	A/SSR-012	Flanges	6.8	1	100	0.000018	0.153587	0.6	0.000003	0.027668
91	S-91	A/SSR-01	Flanges	6.6	1	100	0.000017	0.150384	0.3	0.000002	0.016961
92	S-92	A/SSR-01	Valve	3.2	1	100	0.000005	0.047982	0.4	0.000001	0.010171
93	S-93	A/SSR-01	Flanges	6.9	1	100	0.000018	0.155178	0.2	0.000001	0.012739
94	S-94	A/SSR-01	Valve	5.1	1	100	0.000008	0.067933	0.3	0.000001	0.008207

37



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

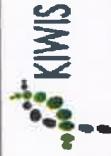
5 | Page

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
95	S-95	A/SSR-01	Flanges	2.6	1	100	0.000009	0.077906	0.5	0.000003	0.024326
96	S-96	A/SSR-02	Flanges	5.2	1	100	0.000015	0.127087	0.3	0.000002	0.016961
97	S-97	A/SSR-02	Valve	6.5	1	100	0.000009	0.081408	0.1	0.000000	0.003616
98	S-98	A/SSR-02	Flanges	5.6	1	100	0.000015	0.133913	0.6	0.000003	0.027668
99	S-99	A/SSR-02	Valve	3.5	1	100	0.000006	0.051299	0.2	0.000001	0.006065
100	S-100	A/SSR-02	Flanges	7.7	1	100	0.000019	0.167674	0.5	0.000003	0.024326
101	S-101	A/MF-01	Flanges	7.2	1	100	0.000018	0.159911	0.3	0.000002	0.016961
102	S-102	A/MF-01	Valve	7.3	1	100	0.000010	0.088771	0.1	0.000000	0.003616
103	S-103	A/MF-01	Flanges	7.5	1	100	0.000019	0.164587	0.3	0.000002	0.016961
104	S-104	A/MF-01	Valve	7	1	100	0.000010	0.086035	0.1	0.000000	0.003616
105	S-105	A/MF-01	Flanges	6.4	1	100	0.000017	0.147152	0.2	0.000001	0.012739
106	S-106	A/MT-13	Flanges	2.3	1	100	0.000008	0.071447	0.6	0.000003	0.027668
107	S-107	A/MT-13	Valve	2.4	1	100	0.000004	0.038714	0.2	0.000001	0.006065
108	S-108	A/MT-13	Flanges	2.1	1	100	0.000008	0.067002	0.3	0.000002	0.016961
109	S-109	A/MT-13	Valve	2.5	1	100	0.000005	0.039911	0.1	0.000000	0.003616
110	S-110	A/MT-13	Flanges	3.1	1	100	0.000010	0.088207	0.3	0.000002	0.016961
111	S-111	A/GLR-004	Flanges	2.5	1	100	0.000009	0.075779	0.2	0.000001	0.012739
112	S-112	A/GLR-004	Valve	2.9	1	100	0.000005	0.044584	0.1	0.000000	0.003616
113	S-113	A/GLR-004	Flanges	3.1	1	100	0.000010	0.088207	0.2	0.000001	0.012739
114	S-114	A/GLR-004	Valve	2.4	1	100	0.000004	0.038714	0.1	0.000000	0.003616
115	S-115	A/GLR-004	Flanges	5.6	1	100	0.000015	0.133913	0.2	0.000001	0.012739
116	S-116	A/GLR-005	Flanges	3.2	1	100	0.000010	0.090207	0.1	0.000001	0.007809
117	S-117	A/GLR-005	Valve	2.6	1	100	0.000005	0.041096	0.5	0.000001	0.012013
118	S-118	A/GLR-005	Flanges	3.4	1	100	0.000011	0.094151	3.0	0.000010	0.086189

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28



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

6 | Page

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
119	S-119	A/GLR-005	Valve	3.3	1	100	0.000006	0.049096	0.5	0.000001	0.012013
120	S-120	A/GLR-005	Flanges	3.6	1	100	0.000011	0.098028	1.1	0.000005	0.042445
121	S-121	A/GLR-006	Flanges	3.5	1	100	0.000011	0.096098	1.2	0.000005	0.045134
122	S-122	A/GLR-006	Valve	5.6	1	100	0.000008	0.072842	1.3	0.000003	0.024504
123	S-123	A/GLR-006	Flanges	5.4	1	100	0.000015	0.130519	0.1	0.000001	0.007809
124	S-124	A/GLR-006	Valve	2.3	1	100	0.000004	0.037504	1.1	0.000002	0.021633
125	S-125	A/GLR-006	Flanges	4.5	1	100	0.000013	0.114755	0.2	0.000001	0.012739
126	S-126	A/ANFD-002	Flanges	4.2	1	100	0.000012	0.109299	1.0	0.000005	0.039683
127	S-127	A/ANFD-002	Valve	4.3	1	100	0.000007	0.059814	0.2	0.000001	0.006065
128	S-128	A/ANFD-002	Flanges	4.8	1	100	0.000014	0.120104	1.1	0.000005	0.042445
129	S-129	A/ANFD-002	Valve	4.6	1	100	0.000007	0.062900	0.2	0.000001	0.006065
130	S-130	A/ANFD-002	Flanges	4.1	1	100	0.000012	0.107455	0.1	0.000001	0.007809
131	S-131	Production Block Out side	**	3.1	1	100	0.000018	0.157390	2.1	0.000008	0.067002

Total VOC Loss in Kg/Year Before repair with respect to the only measured 131 Components 11.02

Total VOC Loss in Kg/Year After repair with respect to the only measured 131 Components 1.99

39



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

7 | Page

Location: Production Block B

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
1	S-1	B/SSR 010/02	Flanges	63.1	1	100	0.000085	0.740326	5.6	0.000015	0.133913
2	S-2	B/SSR 010/02	Valve	2.5	1	100	0.000005	0.039911	2.3	0.000004	0.037504
3	S-3	B/SSR 010/02	Flanges	33.1	1	100	0.000054	0.469462	2.1	0.000008	0.067002
4	S-4	B/SSR 010/02	Valve	2.6	1	100	0.000005	0.041096	0.2	0.000001	0.006065
5	S-5	B/SSR 010/02	Flanges	12.3	1	100	0.000027	0.233386	0.3	0.000002	0.016961
6	S-6	B/PHE 010/03	Flanges	15.6	1	100	0.000032	0.276025	2.1	0.000008	0.067002
7	S-7	B/PHE 010/03	Valve	13.4	1	100	0.000016	0.139654	0.3	0.000001	0.008207
8	S-8	B/PHE 010/03	Flanges	19.2	1	100	0.000036	0.319605	3.1	0.000010	0.088207
9	S-9	B/PHE 010/03	Valve	15.3	1	100	0.000018	0.154174	2.3	0.000004	0.037504
10	S-10	B/PHE 010/03	Flanges	16.2	1	100	0.000032	0.283478	5.1	0.000014	0.125356
11	S-11	B/SHE 010/01	Flanges	25.3	1	100	0.000044	0.388334	2.3	0.000008	0.071447
12	S-12	B/SHE 010/01	Valve	16.2	1	100	0.000018	0.160890	0.2	0.000001	0.006065
13	S-13	B/SHE 010/01	Flanges	13.4	1	100	0.000028	0.247935	3.1	0.000010	0.088207
14	S-14	B/SHE 010/01	Valve	15.6	1	100	0.000018	0.156424	2.5	0.000005	0.039911
15	S-15	B/SHE 010/01	Flanges	18.0	1	100	0.000035	0.305369	1.1	0.000005	0.042445
16	S-16	B/SSR 011/01	Flanges	16.4	1	100	0.000033	0.285945	2.2	0.000008	0.069239
17	S-17	B/SSR 011/01	Valve	15.2	1	100	0.000018	0.153422	2.3	0.000004	0.037504
18	S-18	B/SSR 011/01	Flanges	13.8	1	100	0.000029	0.253138	0.2	0.000001	0.012739
19	S-19	B/SSR 011/01	Valve	14.6	1	100	0.000017	0.148881	0.3	0.000001	0.008207
20	S-20	B/SSR 011/01	Flanges	13.7	1	100	0.000029	0.251841	0.1	0.000001	0.007809
21	S-21	B/SSR 012/01	Flanges	15.4	1	100	0.000031	0.273522	2.1	0.000008	0.067002
22	S-22	B/SSR 012/01	Valve	11.2	1	100	0.000014	0.122166	2.3	0.000004	0.037504
23	S-23	B/SSR 012/01	Flanges	13.5	1	100	0.000028	0.249240	2.1	0.000008	0.067002

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KIWIS ECO LABORATORIES PVT LTD.,

40



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

8 | Page

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
24	S-24	B/SSR 012/01	Valve	10.2	1	100	0.000013	0.113933	2.3	0.000004	0.037504
25	S-25	B/SSR 012/01	Flanges	9.6	1	100	0.000022	0.195923	2.1	0.000008	0.067002
26	S-26	B/SSR 013/01	Flanges	6.1	1	100	0.000016	0.142248	2.3	0.000008	0.071447
27	S-27	B/SSR 013/01	Valve	2.3	1	100	0.000004	0.037504	2.1	0.000004	0.035044
28	S-28	B/SSR 013/01	Flanges	3.5	1	100	0.000011	0.096098	0.2	0.000001	0.012739
29	S-29	B/SSR 013/01	Valve	9.4	1	100	0.000012	0.107198	0.1	0.000000	0.003616
30	S-30	B/SSR 013/01	Flanges	5.6	1	100	0.000015	0.133913	0.2	0.000001	0.012739
31	S-31	B/SSR 016	Flanges	9.8	1	100	0.000023	0.198796	0.3	0.000002	0.016961
32	S-32	B/SSR 016	Valve	13.5	1	100	0.000016	0.140430	0.1	0.000000	0.003616
33	S-33	B/SSR 016	Flanges	16.2	1	100	0.000032	0.283478	2.3	0.000008	0.071447
34	S-34	B/SSR 016	Valve	14.3	1	100	0.000017	0.146593	2.1	0.000004	0.035044
35	S-35	B/SSR 016	Flanges	12.5	1	100	0.000027	0.236059	2.6	0.000009	0.077906
36	S-36	B/SSR 017	Flanges	13.4	1	100	0.000028	0.247935	3.1	0.000010	0.088207
37	S-37	B/SSR 017	Valve	16.2	1	100	0.000018	0.160890	2.6	0.000005	0.041096
38	S-38	B/SSR 017	Flanges	10.6	1	100	0.000024	0.210120	3.1	0.000010	0.088207
39	S-39	B/SSR 017	Valve	13.5	1	100	0.000016	0.140430	2.3	0.000004	0.037504
40	S-40	B/SSR 017	Flanges	14.2	1	100	0.000029	0.258296	2.1	0.000008	0.067002
41	S-41	B/MT 008	Flanges	13.9	1	100	0.000029	0.254431	2.5	0.000009	0.075779
42	S-42	B/MT 008	Valve	14.6	1	100	0.000017	0.148881	3.2	0.000005	0.047982
43	S-43	B/MT 008	Flanges	12.4	1	100	0.000027	0.234724	2.3	0.000008	0.071447
44	S-44	B/MT 008	Valve	15.7	1	100	0.000018	0.157171	2.1	0.000004	0.035044
45	S-45	B/MT 008	Flanges	11.3	1	100	0.000025	0.219824	2.3	0.000008	0.071447
46	S-46	B/MT 009	Flanges	14.6	1	100	0.000030	0.263412	0.2	0.000001	0.012739
47	S-47	B/MT 009	Valve	13.7	1	100	0.000016	0.141979	0.3	0.000001	0.008207

A



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

9 | Page

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
48	S-48	B/MT 009	Flanges	10.3	1	100	0.000024	0.205904	3.1	0.000010	0.088207
49	S-49	B/MT 009	Valve	15.1	1	100	0.000017	0.152668	2.5	0.000005	0.039911
50	S-50	B/MT 009	Flanges	10.8	1	100	0.000024	0.212912	3.1	0.000010	0.088207
51	S-51	Production Block Out side	**	3.8	1	100	0.000020	0.179368	2.6	0.000009	0.077906

Total VOC Loss in Kg/Year Before repair with respect to the only measured 51 Components 10.72

Total VOC Loss in Kg/Year After repair with respect to the only measured 51 Components 2.53

42



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

10 | Page

Location: Production Block B

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
1	S-1	A/SSR-020	Flanges	2.3	1	100	0.000008	0.071447	1.1	0.000005	0.042445
2	S-2	A/SSR-020	Valve	2.5	1	100	0.000005	0.039911	1.2	0.000003	0.023083
3	S-3	A/SSR-020	Flanges	2.1	1	100	0.000008	0.067002	1.5	0.000006	0.052835
4	S-4	A/SSR-020	Valve	3.1	1	100	0.000005	0.046858	3.1	0.000005	0.046858
5	S-5	A/SSR-020	Flanges	2.6	1	100	0.000009	0.077906	2.3	0.000008	0.071447
6	S-6	A/ANFD-003	Flanges	3.4	1	100	0.000011	0.094151	2.0	0.000007	0.064734
7	S-7	A/ANFD-003	Valve	2.5	1	100	0.000005	0.039911	0.1	0.000000	0.003616
8	S-8	A/ANFD-003	Flanges	2.1	1	100	0.000008	0.067002	2.0	0.000007	0.064734
9	S-9	A/ANFD-003	Valve	2.9	1	100	0.000005	0.044584	0.2	0.000001	0.006065
10	S-10	A/ANFD-003	Flanges	3.1	1	100	0.000010	0.088207	0.3	0.000002	0.016961
11	S-11	A/SSR-023	Flanges	2.4	1	100	0.000008	0.073626	0.2	0.000001	0.012739
12	S-12	A/SSR-023	Valve	3.1	1	100	0.000005	0.046858	0.1	0.000001	0.007809
13	S-13	A/SSR-023	Flanges	2.6	1	100	0.000009	0.077906	2.3	0.000008	0.071447
14	S-14	A/SSR-023	Valve	3.4	1	100	0.000006	0.050201	2.1	0.000008	0.067002
15	S-15	A/SSR-023	Flanges	2.8	1	100	0.000009	0.082091	0.3	0.000002	0.016961
16	S-16	A/SSR-024	Flanges	3.1	1	100	0.000010	0.088207	0.1	0.000001	0.007809
17	S-17	A/SSR-024	Valve	2.4	1	100	0.000004	0.038714	0.2	0.000001	0.006065
18	S-18	A/SSR-024	Flanges	2.6	1	100	0.000009	0.077906	0.1	0.000001	0.007809
19	S-19	A/SSR-024	Valve	3.5	1	100	0.000006	0.051299	0.2	0.000001	0.006065
20	S-20	A/SSR-024	Flanges	2.1	1	100	0.000008	0.067002	0.3	0.000002	0.016961
21	S-21	A/SSR-025	Flanges	2.4	1	100	0.000008	0.073626	2.1	0.000008	0.067002
22	S-22	A/SSR-025	Valve	2.6	1	100	0.000005	0.041096	2.3	0.000004	0.037504
23	S-23	A/SSR-025	Flanges	3.1	1	100	0.000010	0.088207	2.1	0.000008	0.067002

Ag



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

11 | Page

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
24	S-24	A/SSR-025	Valve	2.5	1	100	0.000005	0.039911	2.3	0.000004	0.037504
25	S-25	A/SSR-025	Flanges	0.3	1	100	0.000002	0.016961	0.2	0.000001	0.012739
26	S-26	A/SSR-026	Flanges	0.5	1	100	0.000003	0.024326	0.1	0.000001	0.007809
27	S-27	A/SSR-026	Valve	1.3	1	100	0.000003	0.024504	0.2	0.000001	0.006065
28	S-28	A/SSR-026	Flanges	16.1	1	100	0.000032	0.282242	0.6	0.000003	0.026353
29	S-29	A/SSR-026	Valve	20.1	1	100	0.000022	0.188980	0.1	0.000000	0.003616
30	S-30	A/SSR-026	Flanges	13.4	1	100	0.000028	0.247935	0.2	0.000001	0.012739
31	S-31	A/SSR-022	Flanges	10.3	1	100	0.000024	0.205904	2.1	0.000008	0.067002
32	S-32	A/SSR-022	Valve	5.6	1	100	0.000008	0.072842	2.3	0.000004	0.037504
33	S-33	A/SSR-022	Flanges	6.4	1	100	0.000017	0.147152	2.1	0.000008	0.067002
34	S-34	A/SSR-022	Valve	8.9	1	100	0.000012	0.102915	2.3	0.000004	0.037504
35	S-35	A/SSR-022	Flanges	10.8	1	100	0.000024	0.212912	2.1	0.000008	0.067002

Total VOC Loss in Kg/Year Before repair with respect to the only measured 35 Components **3.06**

Total VOC Loss in Kg/Year After repair with respect to the only measured 35 Components **1.17**

AA



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

12 | Page

Location: Solvent Storage Head

S.No	Location/Samples	Sample Name	Type	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
1	ST 001	Methanol	Flanges	3.6	2.9	100	0.000032	0.284282	2.1	0.000022	0.194306
2	ST 001	Methanol	Valve	2.5	2.9	100	0.000013	0.115743	2.1	0.000012	0.101626
3	ST 001	Methanol	Flanges	6.1	2.9	100	0.000047	0.412518	0.2	0.000004	0.036943
4	ST 001	Methanol	Valve	10.1	2.9	100	0.000037	0.327985	0.3	0.000003	0.023799
5	ST 001	Methanol	Connector	2.8	2.9	100	0.000009	0.082928	2.1	0.000008	0.067104
6	ST 002	Ethyl Acetate	Flanges	3.6	1.4	100	0.000016	0.137240	2.6	0.000012	0.109069
7	ST 002	Ethyl Acetate	Valve	2.8	1.4	100	0.000007	0.060805	2.4	0.000006	0.054200
8	ST 002	Ethyl Acetate	Flanges	3.5	1.4	100	0.000015	0.134537	3.1	0.000014	0.123490
9	ST 002	Ethyl Acetate	Valve	61	1.4	100	0.000069	0.605642	5.9	0.000012	0.106027
10	ST 002	Ethyl Acetate	Pump	2.5	1.4	100	0.000126	1.099408	0.2	0.000026	0.228497
11	ST 002	Ethyl Acetate	Connector	2.4	1.4	100	0.000004	0.035740	0.5	0.000001	0.011266
12	ST 003	Toluene	Flanges	21.6	0.55	100	0.000022	0.191025	2.1	0.000004	0.036851
13	ST 003	Toluene	Valve	32.5	0.55	100	0.000017	0.148751	4.2	0.000004	0.032325
14	ST 003	Toluene	Flanges	34.1	0.55	100	0.000030	0.263688	3.5	0.000006	0.052854
15	ST 003	Toluene	Valve	15.6	0.55	100	0.000010	0.086033	2.8	0.000003	0.023888
16	ST 003	Toluene	Connector	21.3	0.55	100	0.000008	0.070024	3.1	0.000002	0.016951
17	ST 004	methyl Chloride	Flanges	2.1	1	100	0.000008	0.067002	0.2	0.000001	0.012739
18	ST 004	methyl Chloride	Valve	2.5	1	100	0.000005	0.039911	0.3	0.000001	0.008207
19	ST 004	methyl Chloride	Flanges	6.1	1	100	0.000016	0.142248	1.1	0.000005	0.042445
20	ST 004	methyl Chloride	Valve	2.7	1	100	0.000005	0.042270	2.1	0.000004	0.035044
21	ST 004	methyl Chloride	Pump	2.5	1	100	0.000090	0.785291	0.2	0.000019	0.163212
22	ST 004	methyl Chloride	Connector	1.6	1	100	0.000002	0.018942	2.3	0.000003	0.024742
23	ST 005	Acetone	Flanges	21.6	1.7	100	0.000067	0.590440	2.1	0.000013	0.113904

AS



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

13 | Page

S.No	Location/Samples	Sample Name	Type	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
24	ST 005	Acetone	Valve	2.6	1.7	100	0.000008	0.069864	0.5	0.000002	0.020423
25	ST 005	Acetone	Flanges	5.8	1.7	100	0.000027	0.233363	2.3	0.000014	0.121459
26	ST 005	Acetone	Valve	8.1	1.7	100	0.000019	0.163084	0.5	0.000002	0.020423
27	ST 005	Acetone	Connector	2.6	1.7	100	0.000005	0.046033	2.1	0.000004	0.039337
28	ST 006	IPA	Flanges	3.7	2	100	0.000023	0.199886	2.6	0.000018	0.155813
29	ST 006	IPA	Valve	10.6	2	100	0.000027	0.234499	3.1	0.000011	0.093717
30	ST 006	IPA	Flanges	25.3	2	100	0.000089	0.776668	5.3	0.000029	0.257615
31	ST 006	IPA	Valve	10.9	2	100	0.000027	0.239432	2.4	0.000009	0.077428
32	ST 006	IPA	Connector	15.6	2	100	0.000023	0.202472	4.2	0.000009	0.077079
33	ST 007	Ethyl Acetate	Flanges	13.4	1.4	100	0.000040	0.347109	3.5	0.000015	0.134537
34	ST 007	Ethyl Acetate	Valve	12.3	1.4	100	0.000021	0.183413	3.1	0.000007	0.065602
35	ST 007	Ethyl Acetate	Flanges	15.4	1.4	100	0.000044	0.382931	2.6	0.000012	0.109069
36	ST 007	Ethyl Acetate	Valve	18.7	1.4	100	0.000029	0.250700	2.3	0.000006	0.052506
37	ST 007	Ethyl Acetate	Pump	13.4	1.4	100	0.000357	3.123916	0.3	0.000034	0.294042
38	ST 008	Hexanes	Flanges	1.6	0.6	100	0.000004	0.033179	2.1	0.000005	0.040201
39	ST 008	Hexanes	Valve	2.5	0.6	100	0.000003	0.023947	2.3	0.000003	0.022503
40	ST 008	Hexanes	Flanges	6.7	0.6	100	0.000010	0.091193	2.4	0.000005	0.044176
41	ST 008	Hexanes	Flanges	5.9	0.6	100	0.000010	0.083363	3.1	0.000006	0.052924
42	ST 008	Hexanes	Valve	6.4	0.6	100	0.000006	0.048283	1.2	0.000002	0.013850
43	ST 008	Hexanes	Flanges	5.8	0.6	100	0.000009	0.082363	1.6	0.000004	0.033179
44	ST 009	Chloroform	Flanges	3.1	0.8	100	0.000008	0.070566	3.1	0.000008	0.070566
45	ST 009	Chloroform	Valve	3.6	0.8	100	0.000005	0.041911	2.5	0.000004	0.031929
46	ST 009	Chloroform	Flanges	4.5	0.8	100	0.000010	0.091804	1.4	0.000005	0.040259
47	ST 009	Chloroform	Flanges	5.6	0.8	100	0.000012	0.107130	1.3	0.000004	0.038206

Ab



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

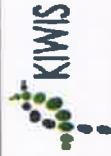
14 | Page

S.No	Location/Samples	Sample Name	Type	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
48	ST 009	Chloroform	Valve	2.3	0.8	100	0.000003	0.030003	2.3	0.000003	0.030003
49	ST 009	Chloroform	Flanges	2.4	0.8	100	0.000007	0.058901	2.1	0.000006	0.053602
50	Solvent WH entrance	TVOC	Open Space	1.8	1	100	0.000013	0.1111497	0.6	0.000006	0.054839942
51	Assembling point	TVOC	Open Space	5.2	1	100	0.000025	0.21963296	2.1	0.000014	0.122571265

Total VOC Loss in Kg/Year Before repair with respect to the only measured 51 Components **13.29**

Total VOC Loss in Kg/Year After repair with respect to the only measured 51 Components **3.79**

AA



KIWIS ECO LABORATORIES PRIVATE LIMITED

TEST REPORT

15 | Page

Location: ETP Plant Area

S.No	Sample Code	Location/Samples	Location Description	Screening Value Before Repair (ppm)	RF	% of VOC	Before Repair Kg/hr	Before Repair Kg/year	Screening Value After Repair (ppm)	After Repair Kg/hr	After Repair Kg/year
1	S-1	MEE	Valve	3.6	1	100	0.000006	0.052388	2.1	0.000004	0.035044
2	S-2	MEE	Connectors	2.5	1	100	0.000003	0.026307	0.2	0.000001	0.012739
3	S-3	MEE	Valve	6.9	1	100	0.000010	0.085116	2.1	0.000004	0.035044
4	S-4	MEE	Connectors	6.1	1	100	0.000006	0.050722	0.0	0.000000	0.000000
5	S-5	Stripper condenser	Valve	7.5	1	100	0.000010	0.090579	0.6	0.000002	0.013764
6	S-6	Stripper condenser	Flanges	6.1	1	100	0.000016	0.142248	1.4	0.000006	0.050323
7	S-7	Stripper condenser	Valve	9.5	1	100	0.000012	0.108047	2.1	0.000004	0.035044
8	S-8	Stripper condenser	Flanges	2.3	1	100	0.000008	0.071447	0.6	0.000003	0.027668
9	S-9	Aeration Tank	Openspace	6.7	1	100	0.000030	0.258442	6.1	0.000028	0.243056
10	S-10	Aeration Tank	Openspace	5.2	1	100	0.000025	0.219633	2.8	0.000017	0.147435
11	S-11	ATFD	Valve	2.1	1	100	0.000004	0.035044	0.5	0.000001	0.012013
12	S-12	HTDS Tank	Openspace	95.3	1	100	0.000162	1.421023	21.3	0.000062	0.542430
13	S-13	LTDS Tank	Openspace	12.4	1	100	0.000044	0.383707	2.9	0.000017	0.150794
14	S-14	Sludge storage Area	Openspace	2.9	1	100	0.000017	0.150967	2.1	0.000014	0.122571

Total VOC Loss in Kg/Year Before repair with respect to the only measured 14 Components	3.10 Kg/year
Total VOC Loss in Kg/Year After repair with respect to the only measured 14 Components	1.43 Kg/year

18

**ANNEXURE-II
(Calibration Certificates)**



SWAN ENVIRONMENTAL PVT. LTD.,

(ISO 9001 : 2015 CERTIFIED)

Plot. No. 922 & 935, Swami Ayyappa Co-Op Society, Madhapur, Hyderabad - 500 081, Telangana, India.

Phone: +91-40-40216184/85, Fax: +91-40-40216183.

Email : info@swanenviron.com Website : www.swanenviron.com

CALIBRATION CERTIFICATE

Certificate Number: SWAN/ION/2021-22/028

Customer: M/s. Kiwis Eco Laboratories Pvt. Ltd, Hyderabad.

Instrument Details

Instrument : VOC Monitor Serial No. : T-113018
Make : Ion Science Ltd, UK Model : Phocheck Tiger
Date of Calibration : 18th June 2021 Due Date : 17th June 2022

Swan Environmental does hereby certify that the above listed product has been calibrated as per the standards.

Test Conditions

Temperature : 25°C Humidity : 55%RH

Calibration Details

Sensor	Blank(Nitrogen)	Applied	Measured
VOC (Isobutylene 101 ppm)	0 ppm	101 ppm	100.7 ppm

Calibration Gas Cylinder Details:

Serial number (N2) : 44075
Expiry Date : Nov-2021
Isobutylene : CAN-2685
Expiry Date : Dec-2021

Accepted Tolerance : $\pm 2\%$

Calibrated By


Technician



Report Checked By


Sr. Service Engineer



Chemtron Science Laboratories Pvt. Ltd.

EL-47, Electronic Zone, Mahape, Navi Mumbai - 400 710 Tel: 022-67847300 To 360
Fax: 91-022-2768 2758 E-mail: sales@chemtron.net.in Website: www.chemtronscience.com

CERTIFICATE OF ANALYSIS

Ref No : CSL-241220-12607-1-1

Date of Analysis : 24-12-20

Customer Details

Name of Party : SWAN ENVIRONMENTAL PRIVATE LIMITED
Purchase Order No. : LPUR-355/2020
Material Code :
Batch No. : 12607
Purchase Order Date : 20-11-20
Filling Pressure (g) : 70 kg/cm²

Cylinder Details

Container No. : CAN-2685 (1807011100)
Capacity/MOC/Valve : 1.60 ltr. W/C Aluminum Canister/C10
Gas Content : 112.00 LTRS
Cylinder Basis : Refilling

Filling Details

Filling Method : Gravimetric Filling method as per ISO 6142

Analysis Details

No	Components	Ord. Con	Units	Cert. Con	PT	CA	Analy. Meth
1	ISO-BUTYLENE	100	PPM(V/V)	101	+/-10%	+/-2%	Gas Chromatography (FID)
2	NITROGEN	BALANCE	%(V/V)	BALANCE	+/-10%	+/-2%	Gas Chromatography (TCD)

Expiry Date : Dec-2021

Traceability : To NIST and International SI units via a chain of valid calibrations, through calibration Certs : MWS/CC/2020/860-001, 003, 009, 018, 025 valid till 22-01-2021.

Precautions

- Observe safety precautions detailed in the MSDS for the cylinder contents.
- Observe safety precautions for compressed gas cylinders.
- For best results use the cylinder up to 1.40 Kg/cm² filling pressure.
- Recommended temperature for storage and use of cylinder content is between 20°C to 35 °C.

For CHEMTRON SCIENCE LABORATORIES PVT. LTD.

Rupali

Analysed By
(QC Chemist)

Son Rajiv

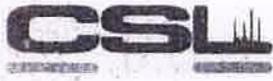
Checked By
(QA Representative)

GSTIN: 27AACCC3596J1ZC

S.S.I.NO. 11/24/81951/PMT/SSI DT. 04-09-92
NSIC No. NSIC/GP/MUM/2017/00/0233 w.e.f. 16-03-17
CIN U24111MH2004PTC144357

MANUFACTURERS OF: Calibration Gas Standards, Gas Mixtures, Gas Regulators, Pollution Monitoring Equipment, Gas Analyser, Gas Chromatographs and

52



Chemtron Science Laboratories Pvt. Ltd.

EL-47, Electronic Zone, Mahape, Navi Mumbai - 400 710 Tel: 022-67847300 To 360
Fax: 91-022-2768 2758 E-mail: sales@chemtron.net.in Website: www.chemtronscience.com

CERTIFICATE OF ANALYSIS

Ref.No. : CSL-281120-11699-3-1

Date of Analysis : 28-11-20

Customer Details

Name of Party	: SWAN TECHNICAL SERVICE PVT. LTD	Purchase Order Date	: 09-10-20
Purchase Order No.	: 157-LPUR-STSP-2020		
Material Code	:		
Batch No.	: 11699	Filling Pressure (g)	: 130 kg/cm2

Cylinder Details

Container No.	: 44075	Cylinder Basis	: Refilling
Capacity/MOC/Valve	: 10.00 ltr. W/C Aluminum Cylinder		

Filling Details

Filling Method : Volumetric Filling method as per ISO 6144

Analysis Details

No	Components	Ord. Con	Units	Cert. Con
1	NITROGEN	99.999	%(V/V)	99.999

Expiry Date : Nov-2021

For CHEMTRON SCIENCE LABORATORIES PVT. LTD,

Checked By
(QA Representative)

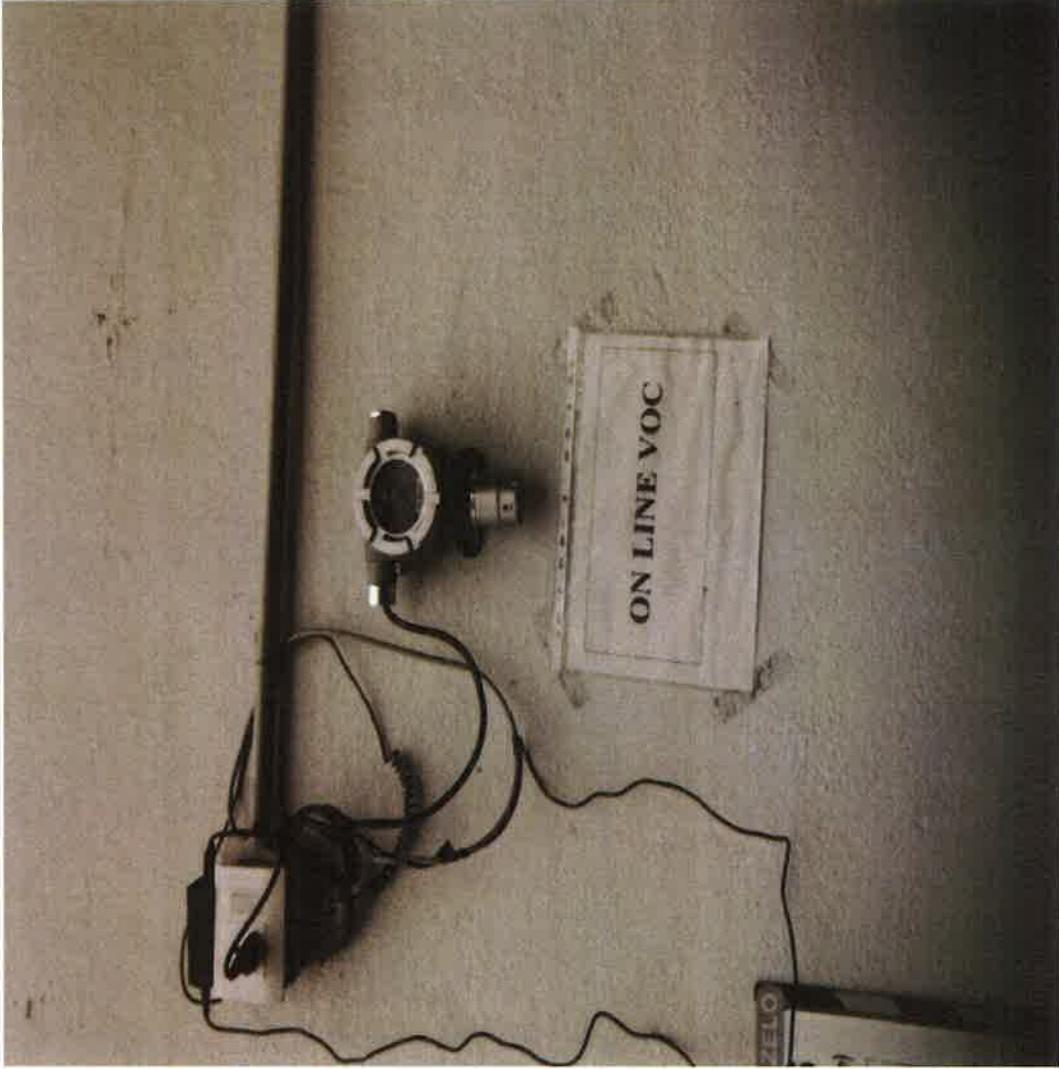
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S.S.I.NO. 11/24/81951/PMT/SSJ DT. 04-09-92
NSIC No. NSIC/GP/MJM/2017/00/Q233 w.o.f. 16-03-17
CIN U24111MH2004PTC144357

HAZELO LAB PRIVATE LIMITED

Annexure-X

(V):Dothigudem, Yadadri Bhuvanagiri Dist



Online VOC

Datto Connect Environmental Monitoring

Hazelo Lab, , I

Device Tree

Hazelo

- Hazelo Lab, [Icon]
- Hazelo Lab [Icon]
 - RO Permeate [Icon]
 - GATE Camera [Icon]
 - Online VOC [Icon]
 - HTDS [Icon]
 - LTDS [Icon]
 - MEE Condensate [Icon]
- Hermes Chemical Company pvt ltd [Icon]
 - HERMES ETP [Icon]
 - HTDS [Icon]

Instantaneous as of
28-09-2022 17:14:00
28-09-2022 17:14:00
02-11-2022 09:55:00
02-11-2022 09:55:00
02-11-2022 09:55:00
02-11-2022 09:54:00
02-11-2022 09:54:00
02-11-2022 09:55:00
02-11-2022 09:55:00

Connected to TSPCB Server

53



ISO 9001:2015
ISO 45001:2018

GLOBAL ENVIRO LABS

Recognised By Ministry of Environment Forest & Climate Change (MoEF & CC) GOI & NABL

2-2-1075/14/A/1, 1st Floor, Tilaknagar 'X' Road, Bagh Amberpet,
Hyderabad - 500 013. Ph : 27407969

E-mail : globalelabs@gmail.com, globalelabs@rediffmail.com

Accredited by :



REF.NO:GEL/HLPL/287/VOC/2022-040

Date :18-07-2022

VOLATILE ORGANIC COMPOUNDS (VOC) DATA

Name of the Industry : **M/s. HAZELO LAB PVT. LTD.,**
Address : Sy.No. 247 & 248, Dothigudem (V),
Pochampally (M), Nalgonda (Dist).

Date of sampling	12-07-2022	12-07-2022	12-07-2022	12-07-2022
Time of monitoring	11:27 a.m.	12:20 p.m.	01:10 p.m	02:00 p.m
Sample Particulars	I	II	III	IV
1. Temperature (°C)	28	29	30	29
2. Relative Humidity %	51	48	45	48
3.T.V.O.C (S.T.E.L) ppm	1.0	1.4	0.5	1.0

VOC Kit Model/SL/No:M00401001587, Next Calibration on: 26-07-2022

Note: Calibration Gas : Isobutylene W.r.f. to Measurement Gas: Isobutylene

Note : I : Near Production Block- A

II: Near Production Block - A - Extension

III: Near Admin

IV: Near Main Gate

for GLOBAL ENVIRO LABS

AUTHORISED SIGNATORY



ISO 9001:2015
ISO 45001:2018

GLOBAL ENVIRO LABS

Recognised By Ministry of Environment Forest & Climate Change (MoEF & CC) GOI & NABL

2-2-1075/14/A/1, 1st Floor, Tilaknagar 'X' Road, Bagh Amberpet,
Hyderabad - 500 013. Ph : 27407969

E-mail : globalelabs@gmail.com, globalelabs@rediffmail.com

55
Accredited by :



REF.NO:GEL/HLPL/287/VOC/2022-050

Date :23-08-2022

VOLATILE ORGANIC COMPOUNDS (VOC) DATA

Name of the Industry : **M/s. HAZELO LAB PVT. LTD.,**
Address : **Sy.No. 247 & 248, Dothigudem (V),
Pochampally (M), Nalgonda (Dist).**

Date of sampling	13-08-2022	13-08-2022	13-08-2022	13-08-2022
Time of monitoring	10:20 a.m.	11:00 a.m.	11:50 a.m	12:40 p.m
Sample Particulars	I	II	III	IV
1. Temperature (°C)	30	31	32	33
2. Relative Humidity %	48	45	41	40
3.T.V.O.C (S.T.E.L) ppm	1.4	1.7	0.4	0.7

VOC Kit Model/SL/No:M00401000786, Next Calibration on: 14-12-2022

Note: Calibration Gas : Isobutylene W.r.f. to Measurement Gas: Isobutylene

Note : I : Near Production Block- A

II: Near Production Block - A - Extension

III: Near Admin

IV: Near Main Gate

for GLOBAL ENVIRO LABS

AUTHORISED SIGNATORY

Scientists & Consultants In Pollution Control



ISO 9001:2015
ISO 45001:2018

GLOBAL ENVIRO LABS

Recognised By Ministry of Environment Forest & Climate Change (MoEF & CC) GOI & NABL

2-2-1075/14/A/1, 1st Floor, Tilaknagar 'X' Road, Bagh Amberpet,
Hyderabad - 500 013. Ph : 27407969

E-mail : globalelabs@gmail.com, globalelabs@rediffmail.com

Accredited by :



REF.NO:GEL/HLPL/287/VOC/2022-060

Date :14-09-2022

VOLATILE ORGANIC COMPOUNDS (VOC) DATA

Name of the Industry : **M/s. HAZELO LAB PVT. LTD.,**
Address : **Sy.No. 247 & 248, Dothigudem (V),
Pochampally (M), Nalgonda (Dist).**

Date of sampling	08-09-2022	08-09-2022	08-09-2022	08-09-2022
Time of monitoring	12:10 p.m.	12:50 p.m.	11:30 a.m	02:20 p.m
Sample Particulars	I	II	III	IV
1. Temperature (°C)	32	33	32	31
2. Relative Humidity %	41	39	34	38
3.T.V.O.C (S.T.E.L) ppm	1.5	2.0	0.3	0.9

VOC Kit Model/SL/No:M00401000786, Next Calibration on: 14-12-2022

Note: Calibration Gas : Isobutylene W.r.f. to Measurement Gas: Isobutylene

Note : I : Near Production Block- A

II: Near Production Block - A - Extension

III: Near Admin

IV: Near Main Gate

for GLOBAL ENVIRO LABS

AUTHORISED SIGNATORY

Scientists & Consultants In Pollution Control

57

APPANACHARYA

From: safety <safety@dasamilab.com>
Sent: 02 November 2022 12:28
To: 'EHS EHS'
Subject: FW: NGT case information

FYI...

From: V.Jagadeeswar [mailto:Jagadeeswar.V@hetero.com]
Sent: 01 November 2022 17:36
To: subbaraju.m@hazelolab.com
Cc: safety@dasamilab.com; Shraavan Kumar Kaveti <ShraavanKumar.K@hetero.com>
Subject: NGT case information

Hi sir,

The following photos & doc. Required for M/s.Hazelo in connection with NGT case

- Annexure-I Latest CFO copy
- Annexure-II Double stage scrubber related to production block
- Annexure-III TSPCB JETL disposal direction copy of eight industries
- Annexure-IV HTDS Effluent collection tank, pH meter & III stage scrubber Photos.
- Annexure-V On line pH meter connected to scrubber to TSPCB server
- Annexure VI Flow meters RO & MEE flow line photographs
- Annexure-VII Activated carbon adsorption system photograph
- Annexure – VIII HCL vent scrubber photo
- Annexure-IX LDR study report of latest
- Annexure- X On line VOC meter connected to TSPCB
- Annexure-XI Third party VOC monitoring report submission ack. of TSPCB
In case no submission ack. at least third party VOC monitoring report copy

Pl treat very urgent.

With regards
V.Jagadeeswar
Corp.office.

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**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
CHENNAI**

ORIGINAL APPLICATION NO. 97 OF 2021

IN THE MATTER OF:

RAVULA Lingaswami & Others

...Applicants

Versus

Union of India & others

...Respondents

**RESPONSE FILED ON BEHALF OF THE 6TH RESPONDENT
TO THE CPCB REPORT DATED 24/08/2022 ALONG WITH
COMPLIANCE REPORT**

M/S. K.S.VISWANATHAN, T.HEMALATHA & S.DEEPIKA

COUNSEL FOR RESPONDENT NO. 6

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
CHENNAI**

ORIGINAL APPLICATION NO. 97 OF 2021

IN THE MATTER OF:

RAVULA Lingaswami & Others

...Applicants

Versus

Union of India & others

...Respondents

**RESPONSE FILED ON BEHALF OF THE 6TH RESPONDENT
TO THE CPCB REPORT DATED 24/08/2022 ALONG WITH
COMPLIANCE REPORT**

**M/S. K.S.VISWANATHAN, T.HEMALATHA & S.DEEPIKA
9840024583, 9940294233**

COUNSEL FOR RESPONDENT NO. 6