

HARYANA STATE POLLUTION CONTROL BOARD
C-11, SECTOR-6, PANCHKULA
Ph-0172-577870-73, Fax No. 2581201
E-mail: hspcbhazardouswaste@gmail.com

HSPCB/YMN/2021/ Dated: 12/11/2021

To

The Director General,
Information, Public Relations & Cultural Affairs Department,
Haryana, Chandigarh.

Subject: Regarding conducting of Public hearing for Environmental Clearance for "Capacity Expansion for Formaldehyde Manufacturing unit with the existing production capacity 100 TPD to 200 TPD at Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Distt. Yamuna Nagar, Haryana by M/s Chemwood Industries.

I have been directed to enclose herewith an advertisement regarding Public hearing to be held on 20.12.2021 at 11.00 AM at M/s Chemwood Industries situated at Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Distt. Yamuna Nagar, Haryana regarding conducting of Public hearing for Environmental Clearance for "Capacity Expansion for Formaldehyde Manufacturing unit with the existing production capacity 100 TPD to 200 TPD at Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Distt. Yamuna Nagar, Haryana by M/s Chemwood Industries in compliance with EIA notification dated 14th September, 2006 for publication in the following leading newspapers on DAVP rates:-

1. One major national daily newspaper.
2. One Regional vernacular daily Newspapers in Hindi.

This advertisement should appear on or before **17.11.2021** in the above said two newspapers only and bills of above two newspapers on DAVP rates may be sent to this office at the earliest, the bill payment of above said notice will be made for two newspapers only.

Endst. No. HSPCB/YMN/2021/ Dated: 12/11/2021

A copy of the above is forwarded to the following for information and necessary action:-

1. The Deputy Commissioner, Yamuna Nagar.
2. The Chairman Zila Parishad, Yamuna Nagar.
3. The Joint Director, District Industries Centre, Yamuna Nagar
4. The Secretary, Municipal Committee, Jagadhri, Distt. Yamuna Nagar.

Endst. No. HSPCB/YMN/2021/ Dated: 12/11/2021

A copy of the above is forwarded to the following for information and necessary action:-

1. Regional Officer, Haryana State Pollution Control Board, Yamuna Nagar.

I/75372/2021

You are asked to send the copy of EIA report and Executive Summary and CD to the concerned authorities mentioned above to place the same in their offices for consultation of the general public during office hours.

2. M/s Chemwood Industries, Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Distt. Yamuna Nagar, Haryana.
3. Sr. EE (IT), to ensure that the notice is uploaded on the website of the Board.

Endst. No. HSPCB/YMN/2021/ Dated: 12/11/2021

A copy of the above is forwarded to the following for information please:-

1. The Additional Chief Secretary to Govt. of Haryana, Environment and Climate Change Department, Haryana, Chandigarh.
2. The Director, Environment and Climate Change Department, Haryana.

Endst. No. HSPCB/YMN/2021/ Dated: 12/11/2021

A copy of the above is forwarded to the following for information please:-

1. Administrative Officer-cum-P.S to Chairmperson.
2. PA to Member Secretary.

DA/Advertisement

Signed by Naveen Gulia
Date: 12-11-2021 16:51:23
Reason: Approved

**Sr. Environmental Engineer (HQ)
For Member Secretary**

HARYANA STATE POLLUTION CONTROL BOARD
C-11, SECTOR-6, PANCHKULA
Ph- 0172 -2577870-73, Fax No. 2581201
E-mail: hspcbhazardouswaste@gmail.com

Notice for Public Hearing

It is for the information of all concerned regarding conducting the Public Hearing for considering grant of Environmental Clearance for the existing unit named M/s Chemwood Industries situated at Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Distt. Yamuna Nagar, Haryana, established for manufacturing of Formaldehyde under the violation category, as the unit was established without necessary prior Environmental Clearance, thus violating the provisions of EIA Notification, 2006, and for considering its expansion from 100 TPD to 200 TPD.

The project is covered under the category A of item 5 (f) "Synthetic Organic Chemicals" of the schedule to the EIA notification dated 14th September 2006, issued by Ministry of Environment, Forests and Climate Change, Govt. of India, New Delhi, requiring prior EC from Expert Appraisal Committee, MoEF&CC, and thus Environmental Clearance is mandatory for the project and its expansion. The project proponent will be liable to comply with the conditions / penalty / prosecution action, as imposed / provided by Government of India or any competent agency in this regard.

The project proponent has applied to the authority for Environmental Clearance for the existing unit under violation category and for expansion as mentioned above, and the public hearing has been fixed on 20.12.2021 at 11.00 AM onwards at the factory site.

Copies of executive summary of the project report and EIA study report, submitted by the project proponent, are available in the Head Office of the Board and website of the Board i.e <https://hspcb.gov.in/>, as well as in the following offices, which can be perused during office hours, on any working day:-

1. Deputy Commissioner, Yamuna Nagar.
2. Regional Officer, Yamuna Nagar, Haryana State Pollution Control Board, SCO 131/ 17, HUDA Jagadhari.
3. Chairman Zila Parishad, Yamuna Nagar.
4. Executive Officer, Municipal Council, Yamuna Nagar.
5. Joint Director, District Industries Centre, Yamuna Nagar.

Notice is hereby given to all concerned to file suggestions, views, comments and objections, if any, on the above said proposed project, to the Chairman, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula as well as Regional Officer, Yamuna Nagar, Haryana State Pollution Control Board, SCO 131/ 17, HUDA Jagadhari within 30 days of the publication of this notice. Besides, a Public Hearing will also be held on the Date, Time & Venue mentioned above at the proposed site of the project, which can be attended by any person including Environmental Groups, bonafide residents and others, located at the project site/sites of displacement/sites likely to be affected. Oral/Written suggestions, if any can also be made during the Public Hearing.

No TA/DA will be admissible for attending the Public Hearing.

S Narayanan, IFS
Member Secretary

Chemwood Industries

Kharwan road, Village Bhagwanpur, Distt. Yamunanagar, Haryana, INDIA
 +91 9453648788
 GSTIN: 06ABFN1801681ZV



Date: 03 Sep 2021

To
 The Member Secretary,
 National State Pollution Control
 Board, Sector 14, Chandigarh, India

Subject: Issuance of Discharge Consent for Capacity Expansion of
 Chemicals Manufacturing Unit at Kharwan Road, Existing production capacity
 100 TPD to 200 TPD, Distt. Yamunanagar, Kharwan Road, Distt.
 Yamunanagar, Haryana. Reference: Consent No. M/s Chemwood
 Industries-Reg. Punjab/2019/100

Reference: E&R Letter No. 100/2021/Estt.Br dated 26/08/2021.

Respected Sir,

As per the request of Board of Directors, we have prepared
 and submitted Final report of
 consent to be granted for Expansion
 of capacity at Kharwan Road,
 Yamunanagar, your kind attention
 is requested for consent No. E&R/100/2021/Estt.Br
 dated 26/08/2021.

The consent you have granted
 for expansion of capacity
 of 100 TPD to 200 TPD
 is hereby enclosed for your
 reference and record.

As per the request of Board of Directors, we have
 prepared and submitted Final
 report of consent to be granted for
 Expansion of capacity at Kharwan Road,
 Yamunanagar, your kind attention
 is requested for consent No. E&R/100/2021/Estt.Br
 dated 26/08/2021.

Yours faithfully,
 Director, Yamunanagar
 (Signature)
 Director Yamunanagar

Project Planning for Esst
Bank, HDCC, BANK, etc.
Be in a March/April Day

075959 - dated 02. 09 2021

and State Bank of India

Yours therefore requested that
Report may kindly be taken
public hearing at the earliest in

along with Draft EIA / EMP
schedule for conducting

M/S CHENWOOD INDUSTRIES

Yours truly


PARTNER

M/s Chenwood Industries

Authorized Signatory

1128649/2021/Estt.Br


 PAYEE ONLY
 NOT NEGOTIABLE

DEMAND DRAFT
 VALID FOR 3 MONTHS ONLY
 PAYABLE AT PAR AT ALL BRANCHES OF HDFC BANK LTD

02092021

 ON DEMAND PAY HARYANA STATE POLLUTION CONTROL BOARD Or Order

या के अर्थ में या उसके आदेश में

 Rupees FIFTY THOUSAND ONLY.

₹ 50,000

CHEMWOOD INDUSTRIES

FOR VALUE RECEIVED

 NIRANKARI BHAWAN JAGADRI ROAD
 YAMUNA NAGAR - 135001

AUTHORISED SIGNATORIES

Branch use only

REF. No. 0210200993

⑈075559⑈ ⑈3524002⑈ 999990⑈ 16



CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

DRAFT EIA
REPORT

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT
FOR
CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING
UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO
200 TPD
AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI,
DISTRICT YAMUNA NAGAR, HARYANA**

STUDY PERIOD: 1ST MARCH 2020 TO 31ST MAY 2020

AREA: 6800 SQ. METRE (0.68 HECTARRES)

MONITORING DONE

BY

M/S VARDAN ENVIROLAB

(NABL ACCREDITATION TC- 6299 MOEF&CC NO. S.O. 1783(E))

APPLICANT: M/S CHEMWOOD INDUSTRIES

.....
ENVIRONMENT CONSULTANT



Vardan EnviroNet

(QCI/NABET ACCREDITATION NUMBER NABET/EIA/1922/RA 0166)

Plot No 82-A, Sec-5, IMT Manesar, Gurgaon-122051, Haryana

E-Mail: industry@vardanenvironet.com

Contact: 0124-4343750, (+91)-9953147268



Document No.: 2019_VI_076

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADIRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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REVIEW AND REVISION HISTORY

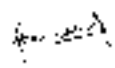
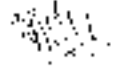

History of revisions of the present report:

Table 0-1: History of the Revisions

Rev.	Date	Description	Review-1	Approval
Rev. 00	January, 2020	Draft EIA Report	Dr. Ashok Kumar Rathore	Mr. R.S. Yadav
				

Document no. 2020_VI_007

Table II: Record of Review

Rev.	Date	Description	Review-1	Review-2	Approval
Rev.00	August, 2021	EIA/ EMP Report	Mr. Pawan Kumar	Mr. Ashok Rathore	Mr. R.S. Yadav
					

This Report has been prepared by Vardan EnviroNet on behalf of and for the use of the M/s Chemwood Industries with due consideration and skill as per our general terms and conditions of business and terms of agreement with M/s Chemwood Industries.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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DECLARATION BY EXPERTS CONTRIBUTING TO THE CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

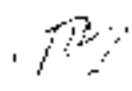
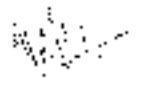
EIA coordinator: Dr. Ashok Kumar Rathore

Period of involvement: January, 2021 to present

Contact information: Vardan Environet, Plot No 82A, Sec 5, IMT Manesar, Gurgaon-122051, Haryana

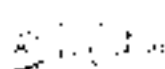
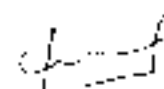

Contact no & E-mail address: 0124-4343750, industry@vardanenvironet.com

Functional Area Experts (FAEs):

S. No.	Functional Areas	Name of the expert/s	Involvement during	Signature
1.	AP	FAE: Mr. K.M. Khare	a) Identifying the sources of emissions and mitigation measures. b) Site-specific micro meteorology monitoring. c) Ambient Air Quality (AAQ) monitoring Impact predictions and mitigations. d) Impact identification	
2.	WP	FAE: Dr. Ashok Kumar Rathore	a) Selection of sampling locations b) Ground water quality monitoring and assessment, impacts on water environment and mitigations.	

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KILARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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			<p>c) Identification, characterisation of effluent and treatments there of</p> <p>d) Water balance and conservation measures</p>	
3.	SHW	<p>FAE: Mrs. Neeraj Parihar</p>	<p>a) Identification of haz, solid waste generation and their disposal and mitigation measure.</p> <p>b) Recycling and disposal</p>	
4.	SE	<p>FAE: Mrs. Shilpa Mishra</p>	<p>a) Determination of demographic profile including socio economy & livelihood</p> <p>b) Assessing the changes in socio economic pattern</p>	
5.	EB	<p>FAE: Nitesh Kumar</p>	<p>a) Study of Biological environment status in respect of terrestrial fauna and aquatic eco system</p> <p>b) Impact on ecological environment and preparation of conservation plan</p>	
6.	HG	<p>FAE: Mr. R.S. Yadav</p>	<p>a) Ground water resource assessment</p> <p>b) Impact on ground water potential and mitigation measures for avoiding ground water contamination.</p>	
7.	AQ	<p>FAE: Ms. Surbhi Makhwana</p>	<p>a) Processing of site specific macro-</p>	

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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			<p>meteorological data.</p> <p>b) Collection and use of data for modelling.</p> <p>c) Air dispersion modelling for prediction of GLCS due to PM₁₀, SO₂ and Nox</p>	<i>Shrivastava</i>
8.	N	<p>FAE: Mr. K.M. Khate</p>	<p>a) Analysis of ambient noise quality data</p> <p>b) Impact due to plant noise and abatement measures</p>	<i>PM</i>
9.	LU	<p>FAE: Mr. Ankur Agrawal</p>	<p>a) Analysis of data related to land use pattern</p> <p>b) Land use map development.</p> <p>c) Impact on land environment in respect to land form change</p>	
10.	RH	<p>FAE: Mrs. Ashwini Ganvir</p>	<p>a) Identification of hazardous prone areas</p> <p>b) Environment risk evaluation</p> <p>c) On-site and Off-site emergency planning</p>	<i>Shrivastava</i>
11.	SC	<p>FAE: Mr. Sameer Deshpande</p>	<p>a) Monitoring, analysis and characterisation of soil</p> <p>b) Assessment of impact on soil quality and mitigation measure.</p>	<i>Shrivastava</i>

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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CHAPTER NO.	NAME
1.	Introduction
2.	Project Description
3.	Description of Environment
4.	Prediction of Impacts and Mitigation measures
5.	Analysis of Alternative (Technology & Sites)
6.	Environmental Monitoring Plan
7.	Additional Studies
8.	Project Benefits
9.	Environmental Cost Benefit analysis
10.	Environmental Management Plan
11.	Summary and Conclusion
12.	Disclosure of Consultant
13.	Damage assessment, remediation plan and Natural & community resource augmentation plan (ncrap)

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

DRAFT EIA REPORT

LIST OF ANNEXURES

S.NO.	ANNEXURE	DOCUMENT
1	Annexure 1	Certificate of Accreditation
2	Annexure 2	Land Documents
3	Annexure 3	CLD Certificate
4	Annexure 4	CTE Letter
5	Annexure 5	Forest Diversion
6	Annexure 6	Partnership Deed
7	Annexure 7	Legal status of Violation
8	Annexure 8	Lab Results
9	Annexure 9	Environmental Policy
10	Annexure 10	MSDS
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CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRİ, DISTRICT YAMUNA NAGAR, HARYANA BY M/S, CHEMWOOD INDUSTRIES

DRAFT EIA
REPORT

TOP LETTER



F. No. IA-J-11011/108.2021-IA-001
Government of India
Ministry of Environment, Forest & Climate Change
Impact Assessment Division

Indira Paryavaran Bhavan,
Vijaya Vihar, Aligarh,
Ice Bugh Road, New Delhi-110 005

Dated: 20th July, 2021

To,
M/s Chemwood Industries
Village Bhagwanpur, Kharwan Road,
Tehsil Jagadhri, District Yamuna Nagar,
Haryana

Email: chemwoodindustries2019@gmail.com

Subj: Capacity Expansion for Formaldehyde Manufacturing Unit with the existing production capacity 100 TPD to 200 TPD at Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamuna Nagar, Haryana by M/s Chemwood Industries - Terms of Reference - reg.

Sir,

This has reference to your online proposal No. IA-IR-IND3:204922-2021 dated 1st June, 2021 for Terms of Reference to the above mentioned project.

2. The proposal is for Terms of Reference (ToR) for Capacity Expansion for Formaldehyde Manufacturing Unit with the existing production capacity 100 TPD to 200 TPD at Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamuna Nagar, Haryana by M/s Chemwood Industries, established on 20th December 2018 without prior Environmental clearance thus violating the provisions of the EIA Notification, 2006.

3. The said project/activity is covered under category "A" of item 4(i) "Synthetic Organic Chemicals" of the Schedule to the EIA Notification, 2006, and requires prior EC from Expert Appraisal Committee, MoEF & CC.

4. The chronology of events and the actions taken on the instant proposal are as under:
The plant was setup with the consent to establish dated 20th December 2018 from the Haryana State Pollution Control Board (HSPCB). The chronology of events is as under:

Signature
TOE for M/s Chemwood Industries

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CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD AT VILLAGE BHAGWANPUR, KHARWAK ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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Annexure-I

Standard I/OH for EIA category

A. STANDARD TERMS OF REFERENCE

1) Executive Summary

2) Introduction

- a) Name of the EIA consultant including VADP registration number
- b) Information about the project proposed
- c) Importance and benefits of the project

3) Project Description

- a) Location of project including its completion
- b) Product with capacity of the proposed project
- c) Existing project details of existing products with capacities and where it adds plant level's details for expansion reference number by state
- d) Details of existing products and production capacity along with present product production details in tabular format to verify the compliance of the EIA to the laws
- e) List of raw materials needed and their source along with mode of transportation
- f) Emission and effluent details with quantities and source, types etc.
- g) Details of Effluents, effluents, effluents, waste generation and their management
- h) Risk related to water pollution with set of supply sources approval, water table, surface water pollution, ground water and canal etc.
- i) Details of land use, existing crops, existing and existing, etc.
- j) Process description along with input equipment and technology, process flow, water consumption, energy, materials, products to be produced
- k) Hazard identification and details of proposed safety systems
- l) Expertise/assistance to be provided
 - 1) Copy of P.E. Environmental clearances including VADP registration number referred to the project from MOEF, MUV, Jharkhand, Orissa, Assam, Arunachal Pradesh, Jharkhand, Madhya Pradesh, Karnataka, Kerala, Gujarat, Rajasthan, Odisha, Uttar Pradesh, Punjab, Haryana, Himachal Pradesh and Chhattisgarh as per circular dated 30th May, 2012 on the status of compliance of conditions stipulated in all the existing environmental clearances issued by States/UTs shall be provided in addition copy of the state EIA report and consent to issue to the state for the ongoing existing operations or proposed from SPCB and the state shall send to MOEF, Govt.
 - 2) Details of existing process or set of raw material, quantity, nature, etc. and taking by under the provision of the EIA Notification 1986 and EIA Notification 2002 and provide copies of Consent to Issue to the state for the ongoing existing operations or proposed from SPCB and the state shall send to MOEF, Govt.

TOB for M/s Chemwood Industries

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CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006 obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the SPCB shall be submitted.

4) Site Details

- (i) Location of the project site covering Village, Taluka, Tehsil, District and State. Justification for selecting the site, whether other sites were considered.
- (ii) A top sheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet (including all eco-sensitive areas and environmentally sensitive places).
- (iii) Details with option analysis for selection of site.
- (iv) Co-ordinates (lat-long) of all four corners of the site.
- (v) Google map/Earth download of the project site.
- (vi) Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, process area, utilities etc. If located within an Industrial area/Estate Complex, layout of Industrial Area/Industry location or area within the Industrial area/Estate.
- (vii) Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, if applicable.
- (viii) Land-use break-up of total land of the project site (identified and acquired), government/private - agricultural, forest, wasteland, water bodies, settlements, etc shall be included (not required for industrial area).
- (ix) A list of major industries with name and type within study area (10km radius) shall be incorporated. Land use details of the study area.
- (x) Geological features and Geo-hydrological status of the study area shall be included.
- (xi) Details of Drainage of the project upto 5km radius of study area. If the site is within 1 km radius of any major river, peak and lean season, river discharge as well as flood occurrence frequency based on peak rainfall data of the past 50 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects).
- (xii) Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land. Documents related to conversion of land for industrial purpose.
- (xiii) R&R details in respect of land in line with state Government policy.

5) Forest, wildlife and CRZ related issues (if applicable):

- i) Permission and approval for the use of forest land (forestry clearance) if any and recommendations of the State Forest Department (if applicable).

Pennings

TOR for M/s Chemwood Industries

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- ii) Land-use map based on High resolution satellite imagery of the proposed site delineating the forestland on *state of nature* involving forest land mosaic in *state of use*.
- iii) Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.
- iv) The project to be located within 10 Km of the National Parks, sanctuaries, Biosphere Reserves, Migratory Corridors or Wild animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features as well as the project location and the recommendations or comments of the Chief Wildlife Warden thereon.
- v) Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area.
- vi) Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife.
- vii) Recommendations and NOC from the concerned State Hill/Forest/Zoo Management Authority or CRZ angle.

6) Environmental Status

- vi) Determination of atmospheric inversion level at the project site and site-specific meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.
 - a) AQI data (except meteorological) for PM10, PM2.5, SO₂, NO_x, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the predominant wind direction, height above zone and sensitive receptors including reserved forests. Study should indicate minimum maximum value at different parameters for the period of months collected. Collected data should be supported by the relevant data of other CPCB or SPCB AQI and & GIS of polluters from which emissions should suggest technology measures. Best Practiced Technology (BPT) indicating best achieved results.
- vii) Raw data of all AQI measurements for 12 weeks of all stations as per frequency given in the NAAQM Notification of Nov. 2009 along with - min, max, average and 98% values for each of the AQI parameters from data of all AQI stations should be provided as an annexure to the EIA Report.
- viii) Surface water quality in nearby River/DBE upstream and downstream of discharge points and other surface drains at eight locations as per CPCB MFL&C guidelines.
- ix) Wetland sites are taken care to polluted stretch of river identified by the CPCB MFL&C, at respective details.
- x) Groundwater monitoring at minimum at 8 locations shall be included.
- xi) Noise level monitoring at 8 locations within the study area.
- xii) Soil Characteristics as per CPCB guidelines.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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- (viii) Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.
- (ix) Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and finished.
- (x) Socio-economic status of the study area.

7) Environment Impact and Environment Management Plan

- i) Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modelling shall be done taking into account the specific terrain characteristics for determining the potential impacts of the project on the AQI. Cumulative impact of all sources of emissions (including transportation) on the AQI of the area shall be assessed. Details of the model used and the input data used for modelling shall also be provided. The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.
- ii) Water Quality Modelling in case of discharge in water body.
- iii) Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-assisted transport shall be evaluated.
- iv) A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment (characteristics of untreated and treated effluent to meet the prescribed standards of discharge under ETP) Rules.
- v) Details of stack emission and action plan for control of emissions to meet standards.
- vi) Measures for fugitive emission control.
- vii) Details of hazardous waste generation and their storage, utilization and management. Copies of MCH regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste-minimization, recycle/reuse/recover techniques, energy conservation, and natural resource conservation.
- viii) Proper utilization of fly ash shall be ensured as per the Awa Notification, 2009. A detailed plan of action shall be provided.
- ix) Action plan for the green belt development plan at 30% area to be laid with net area less than 1,500 trees per ha. Giving details of species, width of plantation, planting schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated.

Jaswanjan
TOR for M/s Chemwood Industries

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CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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- v. Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.
- vi. Land capture cost and recurring cost/amount for environmental pollution control measures shall be included.
- vii. Action plan of post-project environmental monitoring shall be submitted.
- viii. Onsite and Offsite Disaster Control and Management Preparedness and Emergency Management Plan including Risk Assessment and damage control. Disaster management plan should be linked with District Disaster Management Plan.

8) Occupational health

- i. Plan and fund education to ensure the occupational health & safety of all contract and casual workers.
- ii. Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed form (chest x rays, Audiometry, Spirometry, Vision testing (far & Near vision, colour vision) and any other regular defects) FCG. During the placement and periodical examinations give the details of the same. Details regarding last month analyzed data of above mentioned parameters as per age, sex, duration of exposure and department wise.
- iii. Details of existing Occupational & Safety hazard. What are the exposure levels of hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved.
- iv. Annual report of health status of workers with special reference to Occupational Health and Safety.

9) Corporate Environment Policy

- i. Does the company have a well laid down Environment Policy approved by its Board of Directors? If so it may be detailed in the EIA report.
- ii. Does the Environment Policy prescribe its standard operating process/procedures to bring into focus any malfunction, deviation, violation of the environmental or forest laws / regulations? If so, it may be detailed in the EIA.
- iii. What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.
- iv. Does the company have system of reporting of non-compliance / violations or environmental issues to the Board of Directors of the company and / or Shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BIJAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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- v. Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.

10) Corporate Environmental Responsibility (CER)

- i. Adequate funds, as per the Ministry's OM Guidelines, shall be earmarked towards the Corporate Environmental Responsibility based on Public Hearing issues/ socio-economic issues and item-wise details along with time bound action plan shall be included. CER activities shall be related to environmental socio-economic development activities need to be elaborated upon for the projects where public hearing is not conducted, CER plan shall be provided based on socio-economic study of the area.

10) Additional studies/Measures to be considered

- (i) Provide latest and ecofriendly technology for product manufacturing
- (ii) Emphasize on Green chemistry, Clean Manufacturing
- (iii) Provide CAS No. of products along with product list
- (iv) Provide details of amount of carbon sequestered in their unit through greenbelt/other modes, in case of expansion project.
- (v) Life structure and sustainability for earth and water foot print.
- (vi) Detailed pollution load estimation
- (vii) Transportation of Hazardous substance, effluents etc shall be carried out through authorized and GPS enable vehicles/trucks only.
- (viii) Category of Hazardous Waste, shall be mentioned in the EIA EMP report and in presentation
- (ix) Details of greenhouse gases and emissions shall be provided
- (x) Greenbelt shall be developed in the first year of the project and work breaks shall be greened.
- (xi) Study area map shall be overlapped with all the associated features
- (xii) Emphasize on green fields.
- (xiii) The project from SCR shall not use Coal as fuel. Further, PP shall avoid use of Coal in the CPAs and elsewhere also if alternatives are available.
- (xiv) Provide the Cost-Benefit analysis with respect to the environment due to the project.

11) Any litigation pending against the project and/or any direction order passed by any Court of Law against the project, if so, details thereof shall also be included. If so, the unit received any notice under the Section 8 of Environment Protection Act, 1986 or relevant Sections of Air and Water Acts, if so, details thereof and compliance ATR to the notices and present status of the case.

12) A tabular chart with index for point wise compliance of above TOCs and its details needs to be submitted in the EIA EMP Report.

Signature
TOC for M/s Chemwood Industries

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CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHACWANPUR, KHARWAK ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOD INDUSTRIES

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B. SPECIFIC TERMS OF REFERENCE FOR EIA STUDIES FOR SYNTHETIC ORGANIC CHEMICALS INDUSTRY

1. Details on systems to be used, measures for solvent recovery and for emissions control
2. Details of process emissions from the proposed unit and its arrangement to control
3. Ambient air quality data should include VOC's, other process specific pollutants like NH₃, chloroac², HCN, HBr, H₂S, H₂O, etc. (if applicable)
4. Work zone monitoring arrangements for hazardous chemicals
5. Detailed effluent treatment scheme including segregation of effluent streams for water adopting Zero liquid discharge
6. Action plan for risk control to be attached.
7. A copy of the Memorandum of Understanding signed with consent municipalities indicating clearly that they do process organic solv. hazardous waste get created
8. Authorization Membership for the disposal of liquid effluent in CLTP and solid hazardous waste in (SDF), if any
9. Action plan for utilization of SDF dyes & solis
10. Material Safety Data sheet for all the Chemicals are being used will be need
11. Authorization Member ship for the disposal of solid hazardous waste in (SDF)
12. Details of inventory to be installed
13. Risk assessment for storage and handling of hazardous chemical's solvents. Action plan for handling & safety system to be incorporated
14. Arrangements for ensuring health and safety of workers engaged in handling of toxic materials

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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TOR COMPLIANCE

S.No	ToR Point	Action to be taken	Chapter & Heading
I	Executive Summary	Project: Capacity Expansion of Formaldehyde Manufacturing Unit within the existing production capacity 100 TPD to 200 TPD at village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Yamunanagar, Haryana by M/s Chemwood Industries. Total area of project is 0.68 ha. Total cost of project after expansion is 700 Lakhs. Total Water requirement is 200 KLD for which application will be submitted to concerned authority. Power requirement & Supply / Source after expansion: 500 KVA. Source: Ultra Haryana Bijli Vitran Nigam. Total 15 workers appointed locally in the unit.	
2	Introduction		
I.	Details of the EIA Consultant including NABET accreditation	Vaidan EnviroNet is an accredited organization by Quality Council of India/NABET Certificate No. NABET/EIA/1922/RA0166 and NABET accreditation certificate incorporated in the EIA.	Annexure 1
II.	Information about the project proponent	Name of Applicant: Mr. Raghav Garg Designation: Partner Mob. No.: 9953688768 Address: Village Bhagwanpur, Kharwan Road, Jagadhri, District Yamunanagar, HR	
		Importance The project is developed to meet the demand supply gap of domestic & international market	
III.	Importance and benefits of the project	Benefits Socio-economic benefit to the locals as it has provided both direct employment and indirect employment The project activity and the management supported the local Govt bodies and provide other form of assistance for the development of public amenities in this region The development of green belt in and around the plant premises will improve the aesthetics of the area. Moreover, it will help in reducing	

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD AT VILLAGE DIAGWANPUR, KHARWAN ROAD, TEHSILJAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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		<p>the noise levels within the plant boundary. It attracted generation of additional revenue to the Government by means of Taxes and duties. The implementation of Rain Water Harvesting Scheme helped in increasing the ground water level of the area. Details of importance and benefits of the project are incorporated in the EIA.</p>								
3	<p>Project Description</p>									
I.	<p>Cost of project and time of completion.</p>	<p>Cost of the project: Rs. 7.0 Crores Cost for EMP: Rs. 12.90 Lakhs</p>								
II.	<p>Products with capacities for the proposed project.</p>	<table border="1" style="width: 100%;"> <thead> <tr> <th>Product</th> <th>Quantity (Existing)</th> <th>Quantity (Proposed)</th> <th>Quantity (Total)</th> </tr> </thead> <tbody> <tr> <td>Formaldehyde</td> <td>210 TPD</td> <td>100 TPA</td> <td>200 TPD</td> </tr> </tbody> </table> <p>Existing capacity of the project: 100 TPD Formaldehyde Manufacturing. CTE for existing unit is enclosed as Annexure-4. Existing land: 0.68 ha</p>	Product	Quantity (Existing)	Quantity (Proposed)	Quantity (Total)	Formaldehyde	210 TPD	100 TPA	200 TPD
Product	Quantity (Existing)	Quantity (Proposed)	Quantity (Total)							
Formaldehyde	210 TPD	100 TPA	200 TPD							
III.	<p>It expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.</p>	<p>Adequate area is available within existing unit for expansion. No additional land will be required. The land is in the ownership of M/s. Chemwood Industries. Land ownership document is enclosed as Annexure-2. CLU certificate is enclosed as Annexure-3. Permission for Forest Diversion has been received and copy of the same is enclosed As annexure-4.</p>								
IV.	<p>Details of existing products and production, if any, along with present product/production details in tabular format to verify the compliance</p>	<p>Existing capacity of the project: 100 TPD Formaldehyde Manufacturing Existing project was developed without securing prior Environmental Clearance as per EIA Notification 2016 hence attracts Violation of said Notification. The project was developed in Year 2019 after getting CTE vide application no. 119/CB/Consent/ 313262118/YAMCTE5758449 dated 20/12/2018 from Haryana State Pollution Control Board. The unit had started the production of 100 TPD formaldehyde in 2019. Now the</p>								

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWA ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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company is proposing capacity expansion of Formaldehyde manufacturing from 100 TPD to 200 TPD.

V. of the EIA Notifications

List of raw materials required and their source along with mode of transportation
Other chemicals and materials required with quantities and storage capacities

S.No.	Raw Materials	Quantity (Existing)	Quantity (Proposed)	Quantity (Total)	Supply Source	Storage Area
1	Methanol	50 TPD	50 TPD	100 TPD	Import	Warehouse

No other Chemicals are required

VII. Details of emission effluent, hazardous and waste generation and their management

Particulate	Emission	Effluent/Solid waste	Hazardous Waste
Sources	1. Boiler (Existing) 2. Circuit of 325 KVA (Existing) D.C. set 500 KVA. Processed & fugitive emissions from manufacturing process	There will be no solid waste generated in the process. It is based on Zero Liquid Discharge	
Control/Treatment	Boiler - Sack height 30 m, DG set sack height 6 m & fugitive emission from manufacturing process. Wet Scrubber will be installed		Used oil will be sold to vendors authorized by State Pollution Control Board

The details of emission effluent, hazardous waste generation and their management are incorporated in EIA

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPIR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M.S. CHEMWOOD INDUSTRIES

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	<p>Water Requirement:</p> <p>Total water requirement for Project after expansion will be 200 KL/D which will be sourced from Ground Water. Application will be submitted to JVVRA for permission for extraction of ground water</p> <p>Power Requirement:</p> <p>Maximum power requirement for the plant will be 500 W (Existing, 250 KW, Proposed: 250 KW). The power will be supplied by UHBYN, 1 DG Set of capacity 325 KVA has been already installed and additional One DG Set of 560 KVA will be required for the expansion unit. 1 transformer of capacity 500 KW has been already installed One Boiler of capacity 900 Kg/hr is also provided in existing unit.</p> <p>Manpower requirement:</p> <p>About 15 (Existing: 13, Expansion: 5) persons have been employed to the industry. Indirect employment was also generated during construction period of the project.</p>
VIII.	<p>Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract)</p>
IX.	<p>Details of boiler/ gensets (including stacks/ exhausts) and fuels to be used</p> <p>Boiler of 900 kg/hr is used to generate steam for the manufacturing process and fuel used is High Speed Diesel. 30 m height of stack has been provided.</p>
X.	<p>Process description along with major equipments and machineries, process flow sheet (quantitative) from raw material to products to be provided</p> <p>The Formaldehyde Manufacturing Industry will use Methanol (99.9% pure) and water as raw material along with the silver granular which act as catalyst in the production of Formaldehyde. Out of two important methods of manufacture Formaldehyde in large scale, methanol process route is optimized and established for industrial production. The commercial production of Formaldehyde is manufactured from oxidation dehydrogenation using a silver catalyst involving either the complete or incomplete conversion of methanol. Detailed Manufacturing process along with material balance is given in EIA Report. Major equipment list is also mentioned in EIA report.</p>

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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XI.	Hazard identification and details of proposed safety systems are incorporated in the EIA.	Chapter-7.
XII.	<p>Expansion/modernization proposals:</p> <p>Copy of all the Environmental Clearance(s) including Amendments thereto obtained for the project from MOEF shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Integrated Regional Office of the Ministry of Environment, Forest and Climate Change as per circular dated 30th May, 2012 on the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, copy of the latest CTO and status of compliance of Consent to Operate for the ongoing/existing operation of the project from SPCB shall be attached with the EIA-FMP report.</p> <p>Existing capacity of the project: 100 TPD Formaldehyde Manufacturing. Existing project was developed without securing prior Environmental Clearance as per EIA Notification 2006 hence attracts Violation of said Notification. The project was developed in Year 2019 after getting CTE vide application no. HSPCB/Consent/ 3132S2118YAMCTE578449 dated 2012.2018 from Haryana State Pollution Control Board. The unit had started the production of 100 TPD formaldehyde in 2019. Now the company is proposing capacity expansion of Formaldehyde manufacturing from 100 TPD to 200 TPD. CTE of existing unit is enclosed as Annexure-4.</p>	

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA VAGAH, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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In case the existing project has not obtained environmental clearance reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted.

Existing capacity of the project: 100 TPD Formaldehyde Manufacturing Existing project was developed without securing prior Environmental Clearance as per EIA Notification 2006 hence attracts Violation of said Notification. The project was developed in Year 2019 after getting CTE vide application no. HSPCB/Consent/: 31A982115Y/AMCTE/5784449 dated 20.12.2018 from Haryana State Pollution Control Board. The unit had started the production of 100 TPD formaldehyde in 2019. Now the company is proposing capacity expansion of formaldehyde manufacturing from 100 TPD to 200 TPD. Certified copy of Compliance of CTO will be submitted in Final EIA Report.

This project was developed after EIA Notification 2006 without securing Environmental Clearance; hence the project has violated the conditions of said Notification. Now in this situation the Environmental Clearance will be granted from Expert Appraisal Committee for the proposal involving violation of EIA Notification, 2006.

4

Site Details

I. Location of the project site covering village, Taluka/ Tehsil, District and State, Justification for selecting the site, whether other sites were considered

The project site is located at Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamunanagar, Haryana. Project site is well connected with road, rail and Air communication system. There are number of plywood and associated industries are present in the area. Formaldehyde is widely used in Ply manufacturing process hence the project can fulfill the local requirement as well.

Chapter-1.

II. A top-sheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale

Top-sheet No: H43L7 & H43L8 of SOI Incorporated in the EIA report.

Chapter-1.

CAPACITY EXPANSION IN FORMAL DEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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<p>on an A3/A2 sheet (including all eco-sensitive areas and environmentally sensitive places)</p>	<p>No alternative sit is considered. The project site is located at Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamunanagar, Haryana. Project site is well connected with road, rail and Air communication system. There are number of plywood and associated industries are present in the area. Formaldehyde is widely used in Ply manufacturing process hence the project can fulfill the local requirement as well.</p>	<p style="text-align: center;">Points</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Points</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>30°12'25.12"N</td> <td>77°22'27.83"E</td> </tr> <tr> <td>B</td> <td>30°12'25.08"N</td> <td>77°22'29.14"E</td> </tr> <tr> <td>C</td> <td>30°12'21.40"N</td> <td>77°22'27.78"E</td> </tr> <tr> <td>D</td> <td>30°12'21.48"N</td> <td>77°22'27.70"E</td> </tr> </tbody> </table>	Points	Latitude	Longitude	A	30°12'25.12"N	77°22'27.83"E	B	30°12'25.08"N	77°22'29.14"E	C	30°12'21.40"N	77°22'27.78"E	D	30°12'21.48"N	77°22'27.70"E	<p>Chapter-5</p>														
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<p>III. Details w.r.t option analysis for selection of site</p>	<p>Google map-Earth downloaded of the project site is incorporated in the EIA</p>	<p>Chapter-2</p>																														
<p>IV. Co-ordinates (lat-long) of all four corners of the site.</p>	<p>The project is set up in an area of 0.68 ha area. Land bifurcation is given below:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>S.No.</th> <th>Details</th> <th>Area (Sq. Mt.)</th> <th>Area (Ha.)</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Mean Impking area</td> <td>1210.00</td> <td>0.121</td> <td>17.79</td> </tr> <tr> <td>2</td> <td>Road & Pathway</td> <td>2362.00</td> <td>0.2362</td> <td>34.74</td> </tr> <tr> <td>3</td> <td>Area for expansion</td> <td>670.00</td> <td>0.067</td> <td>9.85</td> </tr> <tr> <td>4</td> <td>Green area</td> <td>2558.00</td> <td>0.2558</td> <td>37.62</td> </tr> <tr> <td>Total</td> <td></td> <td>6800.00</td> <td>0.68</td> <td>100</td> </tr> </tbody> </table>	S.No.	Details	Area (Sq. Mt.)	Area (Ha.)	Percentage	1	Mean Impking area	1210.00	0.121	17.79	2	Road & Pathway	2362.00	0.2362	34.74	3	Area for expansion	670.00	0.067	9.85	4	Green area	2558.00	0.2558	37.62	Total		6800.00	0.68	100	<p>Chapter-2,</p>
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<p>V. Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, grabbelt area, utilities etc. If located within an Industrial area/ Estate/ Complex, layout of Industrial Area indicating location of unit within the Industrial area/ Estate.</p>	<p>This is an expansion project within the existing unit. No additional land will required for the expansion project.</p>																															

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEJESIL JAGADIRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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VII.	Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/ greenbelt, in particular.	Photographs of the project site are incorporated in the EIA report.	Chapter -2.
VIII.	Landuse break-up of total land of the project site (identified and acquired), government/private agricultural, forest, wasteland, water bodies, settlements, etc shall be included (not required for industrial area).	As per reply no. VI. Land use pattern of the project site is Industrial use.	Chapter - 2.
IX.	A list of major industries with name and type within study area shall be incorporated. Land use details of the study area	<p>Karniya enterprises Royal wood products Global automobiles private limited Rajay brick kiln Skr cookware Pvt. Ltd Mahatma food industries Littwel engineers. K.s.h engg. Works Shree balaji industries Yamuna automotive components Sunrise plywood ind Aggarwal plywood industries Ar Ganesh plywood Shiv shambhu plywood pvt ltd Nee kanth agro industries are the industries located around the project site. Land Use Pattern of the Study Area is given below:</p>	

CAPACITY EXPANSION INFORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES.	DRAFT EIA REPORT
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complete, stage of the document is enclosed as Annexure-2. CLU certificate is enclosed as acquisition process and Annexure-3. Permission for Forest Diversion has been received and copy of expected line of complete possession of the land. Documents related to conversion of land for Industrial purpose.

R&R details in respect of land in line with state Government policy. Not applicable as the plot is under the ownership of M/s Chemwood Industries. No displacement involved in the project.

5. Forest and wildlife related issues

Permission and approval for the use of forest land (forestry clearance), if any, and Not Applicable

recommendations of the State Forest Department (if applicable)

Land use map based on High resolution satellite imagery (GPS) of the proposed site delineating the forest land (in case of projects involving forest land more than 40 ha)

Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.

The projects to be located

Not applicable

Not applicable

Not applicable

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	<p>within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors or Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden-thereto.</p>		
V	<p>Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area</p>	<p><i>Papio cristatus</i> is listed in the Schedule I under Wildlife Protection Act, 1972 are found within the study area. Conservation plan will be prepared and submitted to Concerned Authority for approval.</p>	
VI	<p>Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife.</p>	<p>Not Applicable</p>	
6	<p>Environmental Status Determination of atmospheric inversion</p>		<p>Chapter-3,</p>

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level at the project site and site-specific meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall

Month	Temperature		Relative Humidity (%)		Average wind speed (km/hr)	Rainfall (mm)
	Max. °C	Min. °C	Max.	Min.		
March 2020	33	22	79	41	100	7.8
April 2020	40.5	13.3	51	31	16.3	5.2
May 2020	43.9	15.4	2	32	16	24.3

AAQ data (except monsoon) at 8 locations for PM10, PM2.5, SO2, NOX, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests. Study should indicate minimum, maximum value at different parameters for the period (3 months) collected. Collected data should be supported by the reference data of either CPCB or STCD. AAQ data & GLC of pollutants from stack emissions should suggest technology/measures. Best Practiced Technology (BPT)

The monitoring stations selected are based on CPCB guidelines. Nearest populated habitat, water body, protected/reserved forest are also been considered. AAQ data was collected from 8 locations in 10 km radius of the project site. Following are the location identified for AAQ Monitoring.

Stations	Name	Latitude	Longitude	Distance (km)	Direction
01	Perpetree	30°12'51.11"N	77°27'27.91"E	11.0	Core
02	Bhagwanpur	30°22'23.71"N	77°34'40.37"E	0.3	E
03	Dudhpur Chasani	30°23'26.77"N	77°27'25.41"E	1.4	E
04	Balohala	30°09'24.95"N	77°37'33.37"E	7.3	SW
05	Khadri	30°13'42.71"N	77°34'47.59"E	3.0	SE
06	Karwas	30°20'04.71"N	77°19'04.30"E	1.21	WSW
07	Budhri	30°11'42.25"N	77°21'40.27"E	3.11	SW
08	Balawan	30°13'47.54"N	77°31'35.25"E	2.46	SW

Chapter - 3

4.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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	indicating best achieved results.	
II.	Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAAQM Notification of Nov. 2019 along with - non., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.	Raw data of AAQ parameters PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , CO, HC & VOC of 8 locations for 12 weeks of all stations measured twice a week are attached with EIA report as an Annexure 8. Summary of AAQ Monitoring Results are given below: PM ₁₀ : 60.1 µg/m ³ and 92.1 µg/m ³ PM _{2.5} : 32.5 µg/m ³ and 55.8 µg/m ³ NO _x : 16.2 µg/m ³ and 32.1 µg/m ³ SO ₂ : 9.1 µg/m ³ and 19.3 µg/m ³ CO: 0.55 mg/m ³ and 1.98 mg/m ³ All results found well within the NAAQS
III.	Whether the site falls near to polluted stretch of river identified by the CTCB/ MoEF&CC, it yes give details	Surface water quality data of 5 locations is incorporated in EIA. Surface water monitoring report is attached as Annexure 8. Summary is given below: pH varies from 7.51 to 7.72 Total Hardness varies from 271.11 to 315.71 mg/l Total COD varies from 32.0 to 43.45 mg/l Total BOD varies from 11.01 to 15.0 mg/l Total DO varies from 5.71 to 6.1 Total Dissolved Solids varies from 461 to 571.0 mg/l
IV.	Ground water monitoring at minimum 8 locations shall be included	No polluted stretch nearby the project site.
V.	Ground water samples from 8 different locations & the results are incorporated in EIA report. Ground water monitoring reports are attached as Annexure 8. Summary of the same is given below:	Ground water samples from 8 different locations & the results are incorporated in EIA report. Ground water monitoring reports are attached as Annexure 8. Summary of the same is given below:

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<p>VI.</p> <p>Noise levels monitoring at 8 locations within the study area.</p>	<p>pH varies from 7.56 to 7.88</p> <p>Total Hardness varies from 214 to 281.48 mg/l</p> <p>Fluoride varies from 0.45 to 0.74 mg/l</p> <p>Total Dissolved Solids varies from 574 to 568 mg/l</p> <p>Evoh is absent in all the location.</p> <p>Noise levels monitoring at 8 locations within the study area are incorporated in EIA report and noise levels monitoring report is attached as Annexure 8. Summary of the same is given below:</p> <p>Minimum and maximum noise levels recorded during the day time were from 48.7 to 72.5 dB (A) respectively and minimum and maximum level of noise during night time were 39.7 to 61.9 dB (A) respectively.</p> <p>For studying the soil types and soil characteristics, 8 sampling locations were selected to assess the existing soil conditions representing various land use conditions and geological features and soil quality monitoring report is attached as Annexure 8. Summary of the same is given below:</p> <p>The analysis results show that soil is slightly toxic in nature as p11 value ranges from 7.45 to 7.87 with organic matter 0.34%-0.51%. The concentration of Nitrogen (185 Kg/ha to 241 Kg/ha.) Phosphorus (15.76 Kg/ha. to 24.55 Kg/ha.) and Potassium (164 Kg/ha. to 242 Kg/ha.) has been found to be in <u>good amount</u> in the soil samples.</p>	<p>Chapter 3.</p>
<p>VII.</p> <p>Soil Characteristic as per CPCB guidelines</p>	<p>Detailed traffic study of the area along with type & frequency of the heavy vehicles and additional traffic due to proposed project has been carried out and incorporated in EIA report.</p>	<p>Chapter-3.</p>
<p>VIII.</p> <p>Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project.</p>	<p>There is no Bio-sphere Reserve, National Parks, Wildlife Sanctuary, Tiger Reserve and Elephant Reserve within 10 km radius of the project site. Some protected area like protected forests and reserve forests are present within the 10 km radius study area from the formaldehyde manufacturing unit at village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamuna Nagar, Haryana. <u>Pavo cristinus</u> is listed in</p>	<p>Chapter 3.</p>
<p>IX.</p> <p>Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered</p>		

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species. If Scheduled fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished

the Schedule I under Wildlife Protection Act, 1972 are found within the study area. No any flora species found in the study area which falls any conservation category. There is no forest land involved in the project site.

Chapter 3.

X. Socio-economic status of the study area.

Sr.No.	Parameter	Study Area
1.	No. of Villages	95
2.	Household	25,192
3.	Household Ratio	1:6
4.	Total Population	132212
5.	Male Population %	70937(53.65)
6.	Female Population %	61275(46.02)
7.	Population (0-6 Years)%	16540(12.50)
8.	Sex Ratio	869
9.	Child Sex Ratio	836
10.	Scheduled Caste %	42570(32.19)
11.	Scheduled Tribes %	Nil
12.	Literates %	57029(65.52)
13.	Main Workers %	33697(26.99)
14.	Marginal Workers %	10115(7.67)
15.	Non Workers %	90855(68.71)

7 Impact and Environment Management Plan

Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features

Air Quality Modeling
 U.S. EPA AERMOD (dispersion model, 1996 - 2018 Lakes Environmental Software, Version 9.5.0 has been used for this report. The details are incorporated in EIA report. Summary of Air modeling is given below

Cumulative impact of all sources of

- The maximum cumulative G.L.C. concentration of PM2.5 viz 55.80 ug/m³ was predicted inside the study area
- The maximum cumulative G.L.C. concentration of SO₂ viz. 19.30

Chapter 4.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPURI, KOTARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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<p>emissions (including transportation) on the AAQ of the area shall be assessed</p>	<p>ug./m³ was predicted inside the study area.</p> <ul style="list-style-type: none"> The maximum cumulative CO_2 concentration of NO_2 viz. 92.15 ug./m³ was predicted inside the study area The maximum cumulative CO_2 concentration of PM_{10} viz. 92.23 ug./m³ was predicted inside the study area. 	
<p>II. Water Quality modelling - in case of discharge in water body Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided.</p>	<p>Not Applicable</p>	
<p>III. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-cum-rail transport shall be examined.</p>	<p>The LOS value from the project will be same as earlier value "Excellent" for all highways. So the additional load on the carrying capacity of the concern roads is not likely to have any significant adverse effect.</p>	<p>Chapter-3</p>
<p>IV. A note on treatment of wastewater from plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated</p>	<p>There is no process effluent generated from the process. Total input water is get consumed 100% by recycling and reuse of water. Domestic waste water is treated through Septic Tank followed by Soak pits. There is no discharge of effluent/waste water out side the plant premises.</p>	<p>Chapter 2</p>

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efficient to meet the prescribed standards of discharge under E (P) Rules.

Stack attached to	Fuel	Stack Height	Stack Dia	PM10	PM2.5	SO2	NO2
01/27 kg/hr	EISD	30	0.2	0.002	0.00080	0.011	0.011
J DG 325 KVA	115D	4	0.2	0.001	0.0004	0.00362	0.0021
J DG 650 KVA	115D	4	0.3	0.002	0.0008	0.00524	0.0021

V. Details of stack emission and action plan for control of emissions to meet standards.

Chapter 2,

Boiler has been provided with Pollution controlling equipment along with 30 m Stack DG sets are provided with Acoustic enclosures with 6 m height of stack. Green belt will also be developed within the unit covering 33% of total plot area

In order to avoid fugitive emissions from different sources, dust collectors will be provided at material transfer points. The roads within the premises are concreted / paved to avoid vehicular emissions.

All transportation vehicles shall carry a valid PUC (Pollution under Control) Certificate.

Proper servicing and maintenance of vehicles will be carried out

Regular sweeping of all the roads and floors is done

Adequate green belt is developed in the plant area. Green belt act as surface for settling of dust particle and thus will reduce the particulate matter in air

Ambient air quality will be regularly monitored and effective control exercised, so as to keep emission within the limits

All the Solid & hazardous waste generated, will be collected, stored separately and disposed off as per the guidelines issued by CPCB & Haryana State Pollution Control Board Waste oils given to local

VI. Measures for fugitive emission control

Chapter 2,

VII. Details of hazardous waste generation and their storage, utilization

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<p>and management. Copies of AOC regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste minimization, recycle/ reuse/ recover techniques, energy conservation and natural resource conservation</p>	<p>recyclers. No other haz. waste generated from the unit.</p>
<p>VIII. Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided. Action plan for the green belt development plan in 33 % area Giving details of species, width of plantation, planning schedule etc shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated</p>	<p>Not applicable as no burning of such fuel which may generated Ash involved in the project.</p> <p>Green belt will be developed over 37.62 % area of the total plant area out of the 0.68 ha of the plant area i.e., 0.2558 Ha of the total land. This greenbelt will serve as a buffer between the peripheries and the industry, there by controlling the air emissions and noise levels. PP has already done some plantation work which will be continue to cover 37.62 % of area. A budget of approx. Rs. 1.40 Lakh has been kept for Green belt development. Total 400 trees will be planted to cover 37.62% of total plot area under Green Belt.</p>
<p>X. Action plan for rainwater harvesting measures at plant site shall be</p>	<p>Rain water harvesting arrangement has been provided by M/s Chemwood Industries in the project site. Drainage system has been developed to channelize Storm water and connected to under ground</p> <p>Chapter 4.</p>

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	<p>submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.</p>	<p>The same is being used for other purpose. Separate drainage line for waste water is provided which stops mixing of waste water into storm water. Waste water is treated through Septic Tank.</p>
<p>XI.</p>	<p>Total capital cost and recurring cost/annum for environmental pollution control measures shall be included</p>	<p>The total capital investment on environmental control measures is envisaged to be about Rs 42.90 Lakhs out of a total project cost of Rs. 70 Crore. Component wise plan with cost estimation is given in the EIA Report.</p> <p style="text-align: right;">Chapter 10</p>
<p>XII.</p>	<p>Action plan for post-project environmental monitoring shall be submitted</p>	<p>Post project Environmental monitoring plan is given in the EIA report. This is being a Category "A" Project, after grant of environmental clearance by the Expert Appraisal Committee (Industry III), MoEFCC, New Delhi; the copy of the clearance will be made available to the public along with its conditions so that people are aware of the obligation of project proponent. This shall also be given in the local newspaper for the knowledge of public and stakeholders. The environmental clearance granted will also be placed in official website of the state government in concerned department. Copies of the environmental clearance will also be submitted to municipal bodies and other relevant department. The half yearly compliance reports shall be submitted to the concerned State level departments on 1st June and 1st December of each calendar year with respect to EC conditions.</p> <p style="text-align: right;">Chapter-6</p>
<p>XIII.</p>	<p>Onsite and Offsite Disaster Preparedness and Emergency Management Plan</p>	<p>Disaster management plan is prepared with an aim of taking precautionary step to control the hazard propagation, avert disaster, take action after the disaster which limits the damage to the minimum and follow the on-site & off-site emergency planning</p> <p style="text-align: right;">Chapter 7</p>

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	<p>including Risk Assessment and damage control Disaster management plan should be linked with District Disaster Management Plan</p>	
<p>8</p>	<p>Occupational health Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers</p> <p>I. Details of exposure specific health status evaluation of worker. If the workers health is being evaluated by pre designed format chest x rays Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during pre-placement and periodical examinations give the details of the same Details regarding last month analyzed data of above mentioned parameters as per age, sex, duration of exposure</p>	<p>Rs. 5.0 Lakhs will be kept to ensure safety of all employees including contract & casual workers. Industry has already provided all mechanicals arrangements for safety of plant and workers. PPFs will be provided as per requirement</p> <p>II. Camps for regular health checkup will be conducted for all the workers. Health check of worker before appointment and during operation will be conducted. Other than the normal health checkup, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) FCC will be done for all the workers</p>

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<p>and department wise. Details of existing Occupational & Safety Hazards. What are the exposure levels of above mentioned hazards and whether they are within Permissible Exposure level (PEL), what measures the company has adopted to keep them within PEL, so that health of the workers can be preserved.</p>	<p>Industry has already provided all mechanicals arrangements for safety of plant and workers. PPEs will be provided as per requirement. Personal protective equipment are provided to the workers working at the production area, boiler, near storage tank, control room etc. PPEL summary is incorporated in Chapter 7 of the EIA Report.</p>
<p>IV. Annual report of health status of workers with special reference to Occupational Health and Safety.</p>	<p>Annual report of health status of workers with special reference to Occupational Health and Safety will be maintained at the unit.</p>
<p>9. Corporate Environment Policy Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.</p>	<p>Environment Policy is attached with EIA report as Annexure 9</p>
<p>11. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the</p>	<p>Yes All the Environmental policy is followed for SOPs and procedures so that any further violation regarding environmental or forest norms will be avoided. For that scheduled internal audits and management review meeting shall be done.</p>

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<p>environmental or forest areas / conditions? If so, it may be detailed in the EIA.</p> <p>What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given</p>	<p>III</p> <p>Hierarchical system of the company is shown in Environmental Policy, attached as an Annexure 9</p>
<p>Does the company have system of reporting of non compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders at large? This reporting mechanism shall be detailed in the EIA report</p>	<p>IV.</p> <p>The system of reporting of Non-compliances/ violation of any Environmental Law/Policy will be as per quality management system. The internal audit will be conducted on periodic basis and any Non-compliances/ violation to Environmental Law/Policy will be closed and discussed during Management Review Meetings of board of directors/partners and Environment Policy for this is attached as Annexure 9</p>
<p>Details regarding infrastructure facilities such as sanitation, fuel restroom etc. to be provided to the labour force during construction as well as to the casual</p>	<p>V</p> <p>Industry has been developed with plant component along with rest room, sanitation facility, drinking water facility, Canteen, arrangement for fuel storage, Washing facility etc.</p>

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<p>workers includes truck drivers during operation phase.</p>	<p>10 Corporate Environmental Responsibility (CER)</p> <p>Adequate funds, as per the Ministry's OM/ Guidelines, shall be earmarked towards the Corporate Environmental Responsibility based on Public Hearing issues/ socio-economic issues and item-wise details along with time bound action plan shall be included (CER plan shall be included (CER activities shall be related to environment). For the project where public hearing is not conducted, CER plan shall be provided based on socio-economic study of the area." Considering the ToR Points a sum of Rupees 7.00 Lakhs (1% of total project cost for brownfield project) has been proposed for social and environmental development activities. Details of activities will be defined based on the issues and requirement raised from local public during public hearing. Activity wise action plan will be included in the Final EIA Report</p>
<p>11 Additional studies/Measures to be considered</p> <p>i) Provide latest and ecofriendly technology for product manufacturing</p>	<p>Additional studies/Measures to be considered</p> <p>Today there are two main routes: oxidation-dehydrogenation using a silver catalyst involving either the complete or incomplete conversion of methanol; or the direct oxidation of methanol to formaldehyde using metal oxide catalysts in the silver catalyzed route, vapourised methanol</p>

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with air and steam is passed over a thin bed of silver-crystal catalyst at about 650°C. Formaldehyde is formed by the dehydrogenation of methanol. The other route involves the oxidation of methanol over a catalyst of molybdenum and iron oxide. A mixture of air and methanol is vaporized and passed into catalyst-packed reactor tubes. The reaction which takes place at 350°C is highly exothermic and generates heat to provide steam for turbines and process heating. Oxidation-dehydrogenation route is still the most prevalent and widely used in International and Indian. The process does not involve any kind of emission except the emission from Boiler operation and DG set. To control the fugitive emission scrubber are provided.

Emissions can only be generated through LUSD used in boiler. PP is committed to shift towards cleaner fuel is the LPG pipeline connection once it will be easily available at the project site.

Chapter 7,

CAS No. as tabulated in EIA Report

ii)	Emphasize on Green chemistry/ Clean Manufacturing	with air and steam is passed over a thin bed of silver-crystal catalyst at about 650°C. Formaldehyde is formed by the dehydrogenation of methanol. The other route involves the oxidation of methanol over a catalyst of molybdenum and iron oxide. A mixture of air and methanol is vaporized and passed into catalyst-packed reactor tubes. The reaction which takes place at 350°C is highly exothermic and generates heat to provide steam for turbines and process heating. Oxidation-dehydrogenation route is still the most prevalent and widely used in International and Indian. The process does not involve any kind of emission except the emission from Boiler operation and DG set. To control the fugitive emission scrubber are provided.	Chapter 7,
iii)	Provide CAS No. of products along with product list		
iv)	Provide details of amount of carbon sequestered in their unit through greenbelly/ other modes, in case of expansion project	We will provide the data till submission of Final EIA Report	
v)	Life structure and sustainability for carbon and water foot print	We will provide the data till submission of Final EIA Report	
vi)	Detailed pollution Load estimation	We will provide the data till submission of Final EIA Report	
vii)	Transportation of Hazardous substance, effluents etc. shall be carried out through authorized and GPS enable vehicles/ Trucks	All the chemical involved in the project will be handled as per MSDS and transported by designed trucks as per direction.	

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viii)	<p>only Category of Hazardous Wastes shall be mentioned in the EIA/EEMP report and in presentation</p>	<p>Used oil is the only hazardous waste which comes under 5.3 of Schedule-I as per Hazardous and Other Waste Management Rules 2016 and will be sent to authorize recyclers.</p>
ix)	<p>Details of greenhouse gases and emissions shall be provided</p>	<p>Water vapour, carbon dioxide, methane, nitrous oxide, ozone and some artificial chemicals such as chlorofluorocarbons (CFCs) are the Green house gases. None of above is involved in the process not even emitted from the project. The commercial production of Formaldehyde is manufactured from oxidation-dehydrogenation using a silver catalyst involving either the complete or incomplete conversion of methanol. Out put from the process is Formaldehyde and Water. Water is recycled in the process upto 100% consumption. No other gases emitted from the project. Scrubber has been provided for controlling the Formaldehyde residue from the unit. No other emission present from the process. Other emission will be from FSD based boiler and D/G sets. Air pollution equipment along with required height of Stack has been provided as Air Pollution Controlling Equipment. Green belt will be developed over 37.62% area of the total plant area out of the 0.65 ha of the plant area i.e., 0.2558 Ha of the total land. This greenbelt will serve as a buffer between the peripheries and the industry, there by controlling the air emissions and noise levels. PP has already done some plantation work which will be continue to cover 37.62% of area. A budget of approx. Rs 1.40 Lakh has been kept for Green belt development. Total 400 trees will be planted to cover 37.62% of total plot area under Green Belt.</p>
x)	<p>Greenbelt shall be developed in the first year of the project and wind breaks shall be erected</p>	<p>Green belt will be developed over 37.62% area of the total plant area out of the 0.65 ha of the plant area i.e., 0.2558 Ha of the total land. This greenbelt will serve as a buffer between the peripheries and the industry, there by controlling the air emissions and noise levels. PP has already done some plantation work which will be continue to cover 37.62% of area. A budget of approx. Rs 1.40 Lakh has been kept for Green belt development. Total 400 trees will be planted to cover 37.62% of total plot area under Green Belt.</p>
xi)	<p>Study area map shall be overlapped with all the associated features</p>	<p>Toposheet Map for the same is prepared and is incorporated in the EIA Report Chapter I</p>
xii)	<p>Emphasize on green fuels.</p>	<p>Emissions can only be generated through FSD used in boiler. PP is committed to shift towards cleaner fuel is the LPG pipeline connection once it will be easily available at the project site.</p>

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 240 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADPUR, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CITEMWOOD INDUSTRIES

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xiii)	<p>The project from NCR shall not use Coal as fuel. Further, PP shall avoid use of Coal in the CP As and elsewhere also if alternatives are available.</p>	<p>Project is outside the Limit of NCR. Whereas Coal is not used in the plant as fuel. The Boiler and DG sets are HSD based</p>
xiv)	<p>Provide the Cost-Benefit analysis with respect to the environment due to the project.</p>	<p>We will provide the details till submission of Final EIA Report</p>
F2	<p>Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ A TR to the notice(s) and present status of the case.</p>	<p>Chronology of legal orders is incorporated in EIA Report and all show Chapter-3 case notices are attached as Annexure-7</p>
F3	<p>A tabular chart with index for point wise compliance of above TOR.</p>	<p>Have been Completed.</p>

SPECIFIC TERMS OF REFERENCE

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAR ROAD, TEHSIL JAGADHERI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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I.	Details on solvents to be used, measures for solvent recovery and for emissions control	<p>There is no solvent used in the manufacturing process, the major raw material is methanol and hence no solvent recovery system is provided.</p> <p>Scrubber has been provided with unit to control the process emission. In order to avoid fugitive emissions from different sources, dust collectors will be provided at material transfer points. The roads within the premises are concreted / paved to avoid vehicular emissions</p> <p>All transportation vehicles shall carry a valid PUC (Pollution under Control) Certificate.</p> <p>Proper servicing and maintenance of vehicles will be carried out.</p> <p>Regular sweeping of all the roads and floors is done.</p> <p>Adequate green belt is developed in the plant area. Green belt act as surface for settling of dust particle and thus will reduce the particulate matter in air.</p> <p>Ambient air quality will be regularly monitored and effective control exercised, so as to keep emission within the limits</p>	
II.	Details of process emissions from the proposed unit and its arrangement to control	<p>Ambient air quality data should include VOC, other process-specific pollutants like NH₃, chlorine, HCl, HBr, H₂S, HF etc. (as applicable)</p>	
III.	Work zone monitoring for hazardous chemicals	<p>Ambient air quality data include the VOC and other process-specific pollutants like HC. The results are incorporated in the EIA and Air results are attached as Annexure 8</p>	
IV.	Detailed effluent treatment scheme including segregation of effluent streams for units adopting 'Zero' liquid discharge	<p>Work place monitoring to be done regularly & detectors will be installed. Hazardous chemicals will be stored separately</p>	Chapter 7
V.		<p>There will be no hazardous waste generated in the project. It is based on Zero Liquid Discharge. Although, septic tank is already provided for the treatment of domestic waste</p>	

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWA VPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CLEMWOOD INDUSTRIES

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<p>VI. Action plan for odour control to be submitted</p>	<p>Wet scrubber system has been provided. All the unit works in closed system hence no major odour generated. Development close to the site are avoided. A reasonable "buffer zone" around each section has been provided. Operation is carried out under the best management practices. Nozzles, sprayers and atomizers that spray ultra-fine particles of water or chemicals can be used along the boundary lines of area sources to suppress odours. Bushes with mild but active fragrance will be planted along with green belt development.</p>
<p>VII. A copy of the Memorandum of Understanding signed with manufacturers indicating clearly that they co-process organic solid/hazardous waste generated</p>	<p>Not applicable for this project.</p>
<p>VIII. Authorization/Membership for the disposal of liquid effluent in CETP and solid/hazardous waste in TSDF, if any.</p>	<p>Not applicable for this project. No effluent generation from the project which may be discharged to CETP. No haz. Waste generated which may require disposal into TSDF. Waste oil is being sent to authorize recyclers</p>
<p>IX. Action plan for utilization of MFE/ dryers salts.</p>	<p>Salt from single stage evaporator will be sent to TSDF Site</p>
<p>X. Material Safety Data Sheet for all the chemicals are being used/will be used</p>	<p>Material safety data sheet for all the chemicals are attached as Annexure 'H'</p>
<p>XI. Authorization/Membership for the disposal of solid/hazardous waste</p>	<p>Industry has provided adequate storage facility for waste generated from the unit. There is no Haz. Waste generated from the unit. Waste Oil is stored and sent to authorize recycler which is locally available in the</p>

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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XII.	<p>in ISDI industrial area</p> <p>Details of incinerator to be installed</p>	<p>Not Applicable as no such component involved in the unit.</p>	
XIII.	<p>Risk assessment for storage and handling of hazardous chemicals/solvents. Action plan for handling & safety system to be incorporated.</p>	<p>Risk assessment for storage and handling of hazardous chemicals and Action plan for handling & safety system is incorporated in the EIA.</p>	Chapter 7
XIV.	<p>Arrangements for ensuring health and safety of workers engaged in handling of toxic materials</p>	<p>Various arrangements have been provided for ensuring the health and safety of worker engaged in handling of toxic materials are mention in the EIA report. Required PPEs are also made available. Mock drill and training have been provided to the worker for handling of toxic chemical.</p>	Chapter 7
ADDITIONAL POINTS			
(i)	<p>The project proponent will be liable to pay the penalty for the period of violation, as may be determined by Ministry, arisen due to constructing and/or operating the project without prior EC. An undertaking in this regard shall be submitted by PP along with EC proposal. The project proponent shall also submit the details on the cost incurred on establishment of the project and year-wise total turnover till date.</p>	<p>The damage assessment study has been done as per MoEF&CC O.M No. 19-125/2019-IA.III, dated 05.03.2020 and is incorporated in Chapter 13 of EIA Report. PP has given an undertaking regarding bank Guarantee for remediation measures as decided by the EAC.</p>	

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S CHEMWOOD INDUSTRIES

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- The Directions of the Honble NCT shall be implemented vide its Orders dated 03.06.2021, in the matter of Dastak NGO vs Synexchem Pyramids Pvt. Ltd & ors in OA No. 287 of 2020; Vineet Nagar Vs. Central Ground Water Authority & Ors. in OA No. 298 of 2020, and Ayush Garg vs Union of India & Ors. in OA No. 549 of 2019]. Implementation Report may be submitted by the project proponent at the time of submission of EIA/EMP Report.
- The State Government/SPCB to take action against the project proponent under the provisions of section 19 of the Environment (Protection) Act, 1986, and further no consent to operate to be issued till the project is granted EC. Rajasthan PCB may assess and recover compensation for illegal operation of the Units on 'Polluter Pays' principle. Implementation

As per the direction issued from NCT vide order dated 03.06.2021, the unit is not in operation phase any more. Implementation report for the same is under process and will submit till final EC Presentation.

No Consent to Operate is issued by Haryana State Pollution Control Board.

Implementation report for the same is under process and will submit till final EC Presentation.

CAPACITY EXPANSION INFORMAL DEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPDR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CIEMWOOD INDUSTRIES

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	<p>Report may be submitted by the SPCB at the time of submission of EIA/EEMP Report by the project proponent.</p>		
(v)	<p>Assessment of ecological damage with respect to air, water, land and other environmental attributes. The collection and analysis of data shall be done by an environmental laboratory duly notified under the Environment (Protection) Act, 1986, or an environmental laboratory accredited by NABL, or a laboratory of a Council of Scientific and Industrial Research (CSIR) institution working in the field of environment. The cost for assessment of environmental damage may be guided by the Ministry of Environment, Forest and Climate Change O.M. No. 19-125/2019-IA.III, dated 05.03.2020.</p>	<p>The damage assessment study has been done as per MoEF&CC O.M No. 19-125/2019-IA.III, dated 05.03.2020 and is incorporated in Chapter 13 of EIA Report.</p>	
(vi)	<p>EIMP shall be prepared comprising remediation plan and natural and community resource</p>	<p>Separate Ecological Assessment Plan is incorporated in Chapter 13.</p>	

CAPACITY EXPANSION INFORMAL DEHYDRIDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CEDERWOOD INDUSTRIES

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augmentation plan corresponding to the ecological damage assessed and economic benefits derived due to violation

The remediation plan and the natural and community resource augmentation plan to be prepared as an independent chapter in the EIA report by the accredited consultants.

The project proponent shall be required to submit a bank guarantee equivalent to the amount of remediation plan and natural and community resource augmentation plan with the SPCB prior to the grant of EC. The quantum shall be recommended by the FAC and finalized by the regulatory authority. The bank guarantee shall be released after successful implementation of the EMP, followed by recommendations of the FAC and approval of the regulatory authority.

The separate chapter for remediation plan and the natural and community resource augmentation plan has been prepared as Chapter 13 in EIA Report.

PP has given an undertaking regarding bank Guarantee for remediation measures as decided by the FAC. Copy of the same is enclosed as Annexure-11

(vii)

(viii)

**CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING
PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD,
TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES**

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(ix) Budget of remediation plan and natural and community resource augmentation plan corresponding to the ecological damage shall be completed within three years and to be prepared accordingly.

Remediation Plan corresponding to the ecological damage is prepared and the budget for same has been allocated. The details are provided in Chapter 13 Chapter 13

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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EXECUTIVE SUMMARY

(a) Project Details

M/s Chemwood Industries has established a Formaldehyde manufacturing unit at village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Yamunanagar, Haryana in 2019 after getting CTE vide application no. HSPCB/Consent/: 313282118YAMICTE5784449 dated 20.12.2018 from Haryana State Pollution Control Board. The unit had started the production of 100 TPD formaldehyde in 2019. Now the company is proposing capacity expansion of Formaldehyde manufacturing from 100 TPD to 200 TPD.

(b) Category of the Project

As per EIA Notification 2006 and its subsequent amendments the project falls under schedule 5 (f) "Synthetic Organic chemical Project". As this project was already established and is in the operation phase without securing Environmental Clearance; the project attracts the violation of EIA Notification 2006. Considering this, we are applying our proposal to Expert Appraisal Committee under Violation.

(c) Project Proponent

Name of Applicant: Mr. Raghav Garg

Designation: Partner

Mob. No.: 9953688768

Address: Village Bhagwanpur, Kharwan Road, Jagadhri, District Yamunanagar, HR

(d) Terms of Reference

MoEF&CC has issued ToR for the proposed expansion project vide file No. IA-J-11011/108/2021-IA-II (I) on dated 20th July, 2021 to Environmental studies and preparation of EIA Report which is mandatory document for securing Environmental Clearance.

S. No.	Particulars	Details
1.	Project	Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD
	Project Proponent	M/s Chemwood Industries
2.	Location details	
	Village / Town / Plot No.	Bhagwanpur, Kharwan Road
	Tehsil	Jagadhri
	District	Yamuna Nagar
	Slate	Haryana
3.	Latitude and Longitude	Latitude- 30°12'25.1" N & Longitude- 77°22'27.9" E
4.	Toposheet No.	H43L7 & H43L8
5.	Total Project Area	0.68 ha
6.	Project Cost	Existing: 486 Lakhs
		Proposed: 214 Lakhs
		Total: 700 Lakhs

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAH ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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S. No.	Particulars	Details
7	Water requirement	200 KLD Source: Ground Water- Permission Status: Application will be submitted to HWRDA.
8	Manpower	Existing: 10 Proposed: 5 Total: 15 Source: Preference will be given to local public
9	Power requirement & Supply / Source	Existing: 250 KW Proposed: 250 KW Total: 500 KW Source: UJ3VN (Uttar Haryana Biji Vitran Nigam) DC Sets: Existing: 325 KVA Proposed: 650 KVA Total: 500-975 KVA Fuel: HSD from local Vendor
10	Working Days	Approximately 300 days

(e) Baseline study

Baseline study has been conducted from 1st March to 31st May 2020 covering on non-monsoon season (Pre-Monsoon). Following observations has been made after study:-

Parameters	Baseline Status	Standard
Ambient Air Quality		
PM ₁₀	60.1 µg/m ³ and 92.1 µg/m ³	100 µg/m ³
PM _{2.5}	32.5 µg/m ³ and 55.8 µg/m ³	60 µg/m ³
SO ₂	9.1 µg/m ³ and 19.3 µg/m ³	80 µg/m ³
NO _x	16.2 µg/m ³ and 32.1 µg/m ³	50 µg/m ³
CO	0.57 mg/m ³ and 3.98 mg/m ³	2 mg/m ³
Noise Level Monitoring		
Day Time (6:00 a.m. to 10:00 p.m.)	48.7 to 72.5 dB(A)	75 (Ind) 55 (Resi)
Night Time (10:00 p.m. to 6:00 a.m.)	39.7 to 61.9 dB (A)	70 (Ind) 45 (Resi)
Soil Quality and Characteristics		
pH	7.45 to 7.81	-
Organic Matter	0.34%-0.51%	-
Nitrogen	183 Kg/ha. to 241 Kg/ha.	-
Phosphorus	15 to Kg/ha. to 24.55 Kg/ha	-
Potassium	164 Kg/ha. to 212 Kg/ha.)	-
Ground Water		

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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Parameters	Baseline Status	Standard
pH	7.56 to 7.88	6.5-8.5
Total Hardness	214 to 251.46 mg/l	≤200 mg/L
Total Dissolved Solids	314 to 368 mg/l	≤500 mg/L
Fluoride	0.48 to 0.74 mg/l	≤1.0 mg/L
Surface Water		
pH	7.51 to 7.72	6.5-8.5
Total Hardness	221.0 to 315.21 mg/l	≤200 mg/l
Total Dissolved Solids	460 to 571.0 mg/l	≤500 mg/L
The concentrations were found to be within permissible limits.(Compared with IS 10500:2012)		

(f) Public Hearing

Public hearing for the project will be conducted as per procedure specified in EIA Notification, 2006 and amendments thereof

(g) Environmental Management Plan

Environmental Management plan is important part of EIA studies. As per project, project activities and environmental aspects, following Environmental Management Plan are proposed.

- Air Pollution Management Plan
- Water and Waste Water Management Plan
- Solid & Hazardous Waste Management Plan
- Fire Safety Plan
- Green Belt Development Plan
- Environmental Monitoring Plan
- Rain Water Harvesting Plan
- Occupational Health and Safety Plan
- Activities under CER initiative including Public Hearing Commitment

Total capital investment on environmental control measures is envisaged to be about Rs 50 Lakhs out of a total project cost of Rs.200 Lakhs. Recurring cost for the same will be 16 Lakhs/year



CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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CHAPTER 1: INTRODUCTION

1.1 PURPOSE OF THE PROJECT

As per the EIA Notification dated 14th September 2006, as amended from time to time it is mandatory to have the Environmental Clearance for any new industry or the expansion of the industry from Ministry of Environment, Forests and Climate Change (MoEF&CC)/SEAC, Government of India, New Delhi for which EIA is required to be conducted as per the guidelines of MoEF&CC, New Delhi. The purpose of this report is to assess the environmental impacts due to capacity expansion in Formaldehyde manufacturing unit with the existing production capacity 100 TPD to 200 TPD at Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamuna Nagar, Haryana by M/s. Chemwood Industries.

1.2 IDENTIFICATION OF THE PROJECT AND PROJECT PROPONENT

1.2.1 Project Details

M/s Chemwood Industries has established a Formaldehyde manufacturing unit at village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Yamunanagar, Haryana in 2019 after getting CTL vide application no. HSPCB/Consent/: 313282118YAMCTL578449 dated 20.12.2018 from Haryana State Pollution Control Board. The unit had started the production of 100 TPD formaldehyde in 2019. Now the company is proposing capacity expansion of Formaldehyde manufacturing from 100 TPD to 200 TPD.

1.2.2 Screening Category

As per EIA Notification 2006 and its subsequent amendments the project falls under schedule 5 (f) "Synthetic Organic chemical Project." As this project was already established and is in the operation phase without securing Environmental Clearance, the project attracts the violation of EIA Notification 2006. Considering this, we are applying our proposal to Expert Appraisal Committee under Violation.

1.2.3 Identification of Project Proponent

Name of Applicant: Mr. Raghav Garg

Designation: Partner

Mob. No.: 9953688768

Address: Village Bhagwanpur, Kharwan Road, Jagadhri, District Yamunanagar, HIR

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1.3 BRIEF DESCRIPTION OF THE NATURE, SIZE, LOCATION OF THE PROJECT

The Brief description about the nature, size and location of the project is given in Table 1.1

Table 0-1: Project Detail and Environment Setting

S. No.	Particulars	Details															
1.	Nature and size of the Project	Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD															
	Location details																
	Village/Town/Plot No.	Bhagwanpur, Kharwan Road															
	Tehsil	Jagadhri															
	District	Yamuna Nagar															
2.	State	Haryana															
	Latitude and Longitude	<table border="1"> <thead> <tr> <th>Points</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>30°12'25.12"N</td> <td>77°22'27.83"E</td> </tr> <tr> <td>B</td> <td>30°12'25.08"N</td> <td>77°22'29.14"E</td> </tr> <tr> <td>C</td> <td>30°12'21.40"N</td> <td>77°22'27.78"E</td> </tr> <tr> <td>D</td> <td>30°12'21.48"N</td> <td>77°22'27.79"E</td> </tr> </tbody> </table>	Points	Latitude	Longitude	A	30°12'25.12"N	77°22'27.83"E	B	30°12'25.08"N	77°22'29.14"E	C	30°12'21.40"N	77°22'27.78"E	D	30°12'21.48"N	77°22'27.79"E
Points	Latitude	Longitude															
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B	30°12'25.08"N	77°22'29.14"E															
C	30°12'21.40"N	77°22'27.78"E															
D	30°12'21.48"N	77°22'27.79"E															
	Toposheet No.	1143L7 & 1143L8 of SOI															
3.	Area Details																
	Total Project Area	0.68 ha															
	Environmental Setting Details (with approximate aerial distance and direction from the project site)																
	Nearest major settlement	Village Bhagwanpur at distance of 0.4 kms in East direction.															
	Nearest Highway	NH-73A at 3.2 Kms in NW SH-1 at 7.5 Kms in W NH-73 at 8.3 Kms in SE															
	Nearest Railway Station	Yamunanagar Railway station at 12.9Km in SW direction															
4.	Nearest Airport	Chandigarh Airport at 75 kms in NW direction															
	National Parks/ Wild Life Sanctuaries/ Biosphere Reserves/ RF and PF within 10km radius	No National Park/Wildlife Sanctuary within 10 km radius of the Project Site.															
	Reserve Forest	Bir Ganauli PF - 6.4 Kms in NW direction. Bir Chachrauli PF - 5 Kms in N direction Urjani-II PF - 2.1 Kms in N direction. Balachaur PF - 1.7 Kms in NE direction. Amrali RF - 5.9 Kms in W direction. Manakpur RF - 5.2 Kms in WSW direction.															

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S. No.	Particulars	Details
	Inter state boundary	Jaranda RF - 6.7 Kms in WSW direction. Udhanagath RF - 5.1 kms in WSW direction. Sugh PF - 7 kms in SSW direction. Haryana-Uttar Pradesh inter state boundary at a distance of approx. 9.5 kms in South-East direction.
	Nearest Water Bodies	Western Yamuna Canal at 750 metres in SE direction Somb Nadi at 1.8 Kms in SE direction Pathala Nadi at 2.1 Kms in NE direction Yamuna River at 8.3 Kms in SSE direction
	Seismic Zone	Zone IV
	Cost Details	
	Project Cost	Existing: 486 Lakhs Proposed: 214 Lakhs Total: 700 Lakhs
5.	Cost for CER	Rs. 7.0 Crores
	Cost for EMP	Rs. 0.50 Crores (Capital Cost) Rs. 0.10 Crore (Recurring)
	Cost for OH&S	Rs. 0.10 Crores
6.	Basic Requirements of the Project	
	Fresh Water	Existing: 200 KLD Proposed: 250 KLD Total: 450 KLD Source: Ground Water Permission Status: Application will be submitted to HWRA.
	Manpower	Existing: 10 Proposed: 5 Total: 15 Source: Preference will be given to local public
	Power requirement & Supply / Source	Existing: 250 KW Proposed: 250 KW Total: 500 KW Source: UHBVN (Uttar Haryana Biji Vittan Nigam) DG Sets: Existing: 325 KVA Proposed: 650 KVA Total: 975 KVA
	Boiler Capacity	Fuel: HSD from local Vendor 1 Boiler of capacity: 900 Kg/1tr (HSD Based)

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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S. No.	Particulars	Details
	Running Days	Approximately 300 days

Route Map and Location of proposed project is showing on Toposheet of survey of India and same has been furnished here from Figure 1.1 to Figure 1.2.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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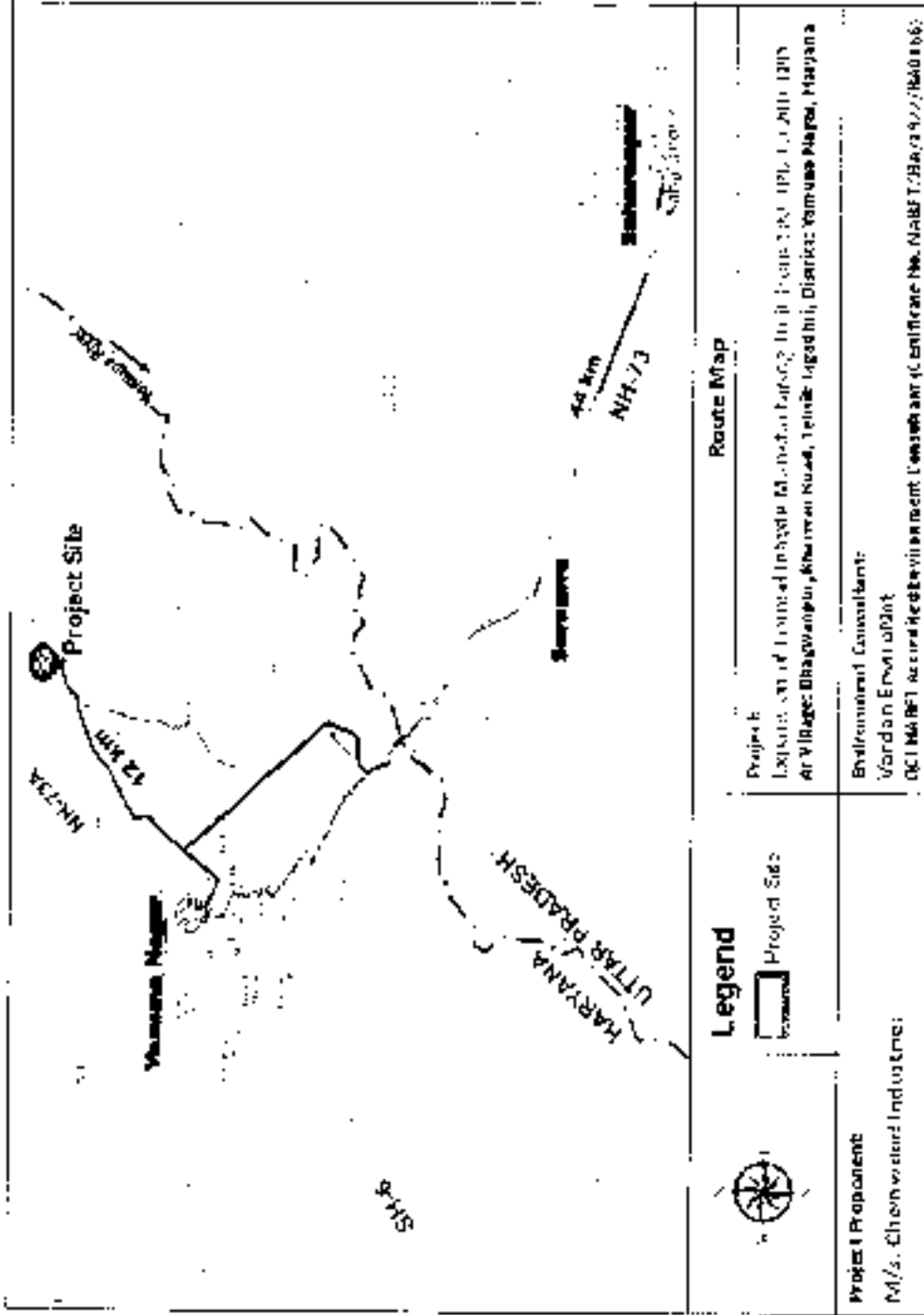


Figure 0-1: Route Map

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CIEENWOOD INDUSTRIES

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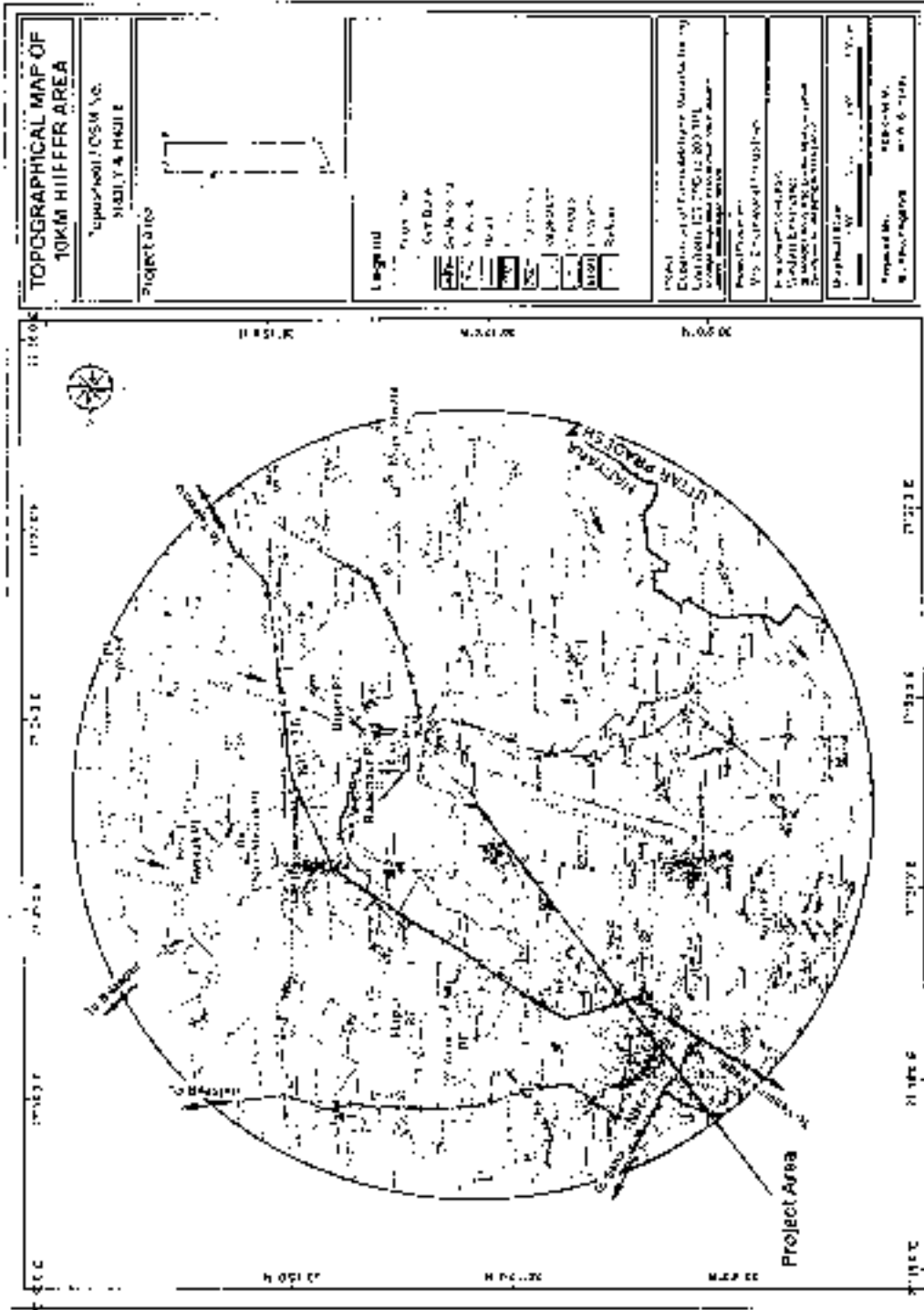


Figure 0-2: Key Plan – 10 KM Study Area

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADJIRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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1.4 IMPORTANCE TO THE COUNTRY AND REGION

The formaldehyde segment (about 45% of the methanol market) is expected to grow at a CAGR of 10-13 per cent during the same period, led by growth in the enduser industries, mainly construction and automobiles.

Formaldehyde

Unlike methanol, production of its derivative formaldehyde in India is sufficient to meet the domestic demand. The production of formaldehyde has increased, at a similar pace as has its demand, at a CAGR of 3% from 0.25 mmtpa in FY06 to 0.30 mmtpa in FY11. (Source: CMIF report).

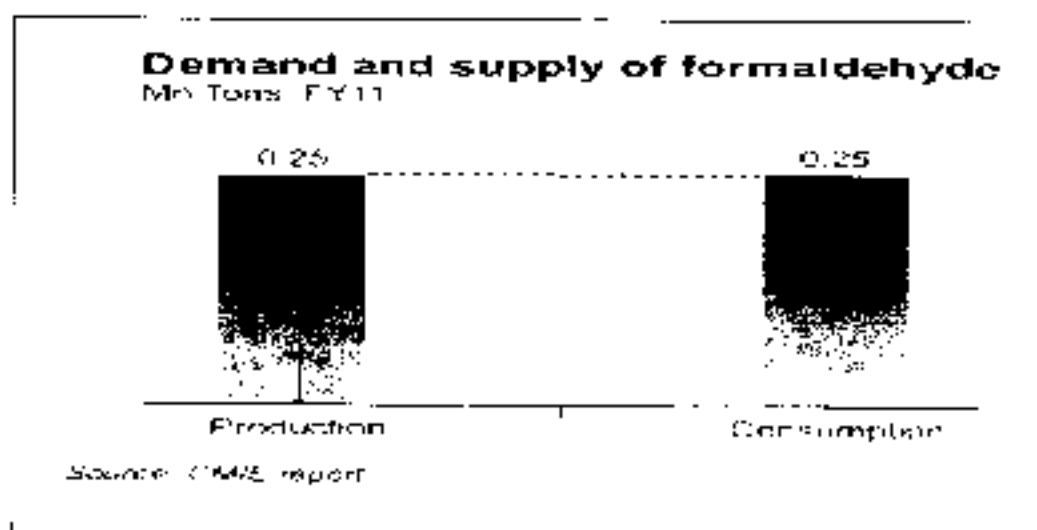


Figure 0-3 Demand and Supply of Formaldehyde

The Formaldehyde is used by plywood and sunmica laminated sheets manufacturers, who make adhesives like Urea Formaldehyde, Phenol Formaldehyde, and Melamine Formaldehyde.

Plywood Boards and sun mica sheets market is growing very fast in India. The market is expected to continue to grow at the minimum rate of 10 to 15% per year.

During the last decade, India has built a very strong position as sun mica sheets and plywood boards for domestic consumption and for Exports to South Asian countries & Middle East.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPDR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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The proposed expansion project of formaldehyde manufacturing plant will play an important role in upliftment of the socio economic condition of the region particularly nearby villages

1.4.1 Demand-Supply Gap

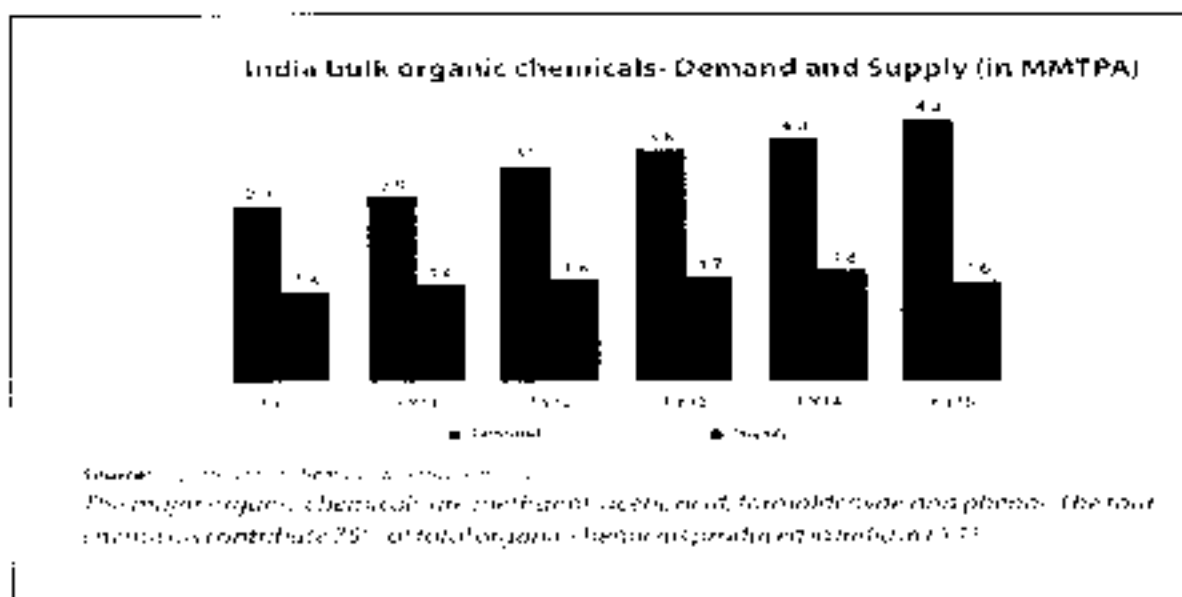


Figure 14-1 India Bulk Organic Chemicals-Demand & Supply

The project is envisaged to meet the demand supply gap in the domestic market, as the gap is created due to increase in growth of Formaldehyde for meeting increased demand of PLYWOOD and SUN MICA industries.

Domestic demand for formaldehyde and methanol is estimated to be 0.25 million tonnes each.

Both these segments have been growing at a moderate pace with formaldehyde showing growth rate of 3%. Formaldehyde is used largely in the laminate sector. It is also used for production of caprolactam and bisphenol-A which have wider application base. Formaldehyde demand is expected to grow at 8% during 12th Five Year Plan period to reach 0.4 million tonnes by end of the plan period while demand for formaldehyde is expected to reach 0.3 million tonnes

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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1.4.2 Employment generation due to the project

The manpower requirement during operation phase will be 15 (Existing: 10 and Proposed 5) and preference shall be given to locals based on their education and skills. Some temporary man power will be hired from local areas during construction phase. Local workers were engaged in the existing unit

1.5 SCOPE OF THE STUDY- DETAILS OF REGULATORY SCOPING CARRIED OUT (AS PER TOR)

The Project Proponent has submitted online Application on 20/03/2021 to MoEFCC Vide Proposal No. JA/HR/IND3/201922/2021. Committee further considered proposal for ToR Presentation on 13th Meeting of Expert Appraisal Committee (Industry-III) dated 02.07/2021 for consideration of ToR. Baseline Environmental studies were earlier conducted during 1st March 2020 to 31st May 2020. Based on the issued ToR, EIA report is prepared & the reply of the Conditions is given as ToR Compliance

Structure of the Report

Chapter 1 – Introduction

The chapter provides description of project background, site and surroundings, objectives, scope and organization of the study and format of this report.

Chapter 2 – Project Description

This chapter deals with all the details pertaining to the proposed expansion project. These include technical details of the process, products, by-products & the raw material details alongwith the utilities in proposed expansion plant. This section also include the existing status of project and its operation.

Chapter 3 – Description of the Environment

This chapter deals with the methodology and findings of field studies undertaken with respect to ambient air, meteorology, water, soils, noise levels, ecology to define the various existing environmental status in the area of the project. Once the affected environmental parameters are identified, a monitoring network is set up for each environmental parameter to establish its background quality. For Air Environment, ambient air quality monitoring stations were set up at key points to establish the representative background levels of criteria for air pollutants like Suspended Particulate Matter (SPM), Respirable Dust (RD) and Carbon Monoxide (CO). A micro meteorological station was also set up at dispatch terminal to have hourly wind speed, wind direction data profiles and ambient temperature. The data for other environmental components

such as Noise, Water, Land, Socio-economic were also collected in the study area. The detailed description on the above is covered in the relevant chapter of this report. Baseline data in terms of above environmental parameters had been collected by M/s. Vardan EnviroLab, Gurgaon, an NABL and MoEF approved Laboratory. Population statistics of villages in the study area was collected from census data available from the National Informatics Centre. Similarly, the baseline status of flora and fauna had been collected by Field Area Expert (Ecology & Biodiversity). Land Use/ Land Cover study was also done

Chapter 4 - Anticipated Environmental Impacts and Mitigation Measures

In this part of the report the sources of emissions (Gaseous, Liquid, Solid, Noise) due to the proposed expansion project are identified and their emission load and characteristics are estimated. Predictions were then carried out to know the quantitative/qualitative effect on various environmental parameters. Parts of the predictions are qualitative in nature also, especially in cases where such predictive techniques are not available. These predictions are subsequently superimposed on the background quality of various environmental components and their individual and synergistic impact is evaluated using the 'Cause and Effect' relationship matrix. The resultant matrix attempts to give an objective assessment to help the Assessment Agency in the decision-making process.

Chapter 5 - Analysis of Alternatives

Analysis of Alternatives (Technology and Site) identifies the description of each alternative. As this is expansion project hence Analysis of Alternatives (Technology & site) was not performed

Chapter 6 - Environment Monitoring Programme

This chapter will include ascertaining the environmental impacts; state of pollution at proposed expansion site and in its vicinity; planning for predictive or corrective actions in respect of pollution to keep it within permissible limits.

Chapter 7 - Additional Studies

This chapter includes risk assessment, social impact assessment studies conducted for the proposed expansion project. Public Hearing will be included in this section once conducted.

Chapter 8 - Project Benefits

This chapter deals with improvements in the physical infrastructure, social infrastructure, employment potential and other tangible benefits due to proposed project activity. The requirement raised during public hearing will be included in this section. As this is part of EMP hence all the activities mentioned in this section will be one of the part of EMP.

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Chapter 9 - Environmental cost benefit analysis

This chapter provides detailed assessment on total cost required to set up the entire project and recurring cost. It also provides timeline required for full repayment of the entire cost.

Chapter 10- Environment Management Plan

In order to mitigate or minimize the negative impacts of the proposed expansion project, an effective EMP is called for. Therefore, this chapter deals with the planning and implementation of various pollution abatement strategies including the proposed monitoring/surveillance network.

Chapter 11 - Summary and Conclusion

This will constitute the summary of EIA Report.

Chapter 12 - Disclosure of Consultant

This will include the names of the consultants and experts engaged in preparation of EIA and nature of consultancy rendered.

Chapter 13 is Assessment of the Ecological Damage, Remediation Plan and Natural and Community Resource Augmentation Plan. This is additional Chapter required to be incorporated for all the EC proposals involving Violation of EIA Notification 2006.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHENWOOD INDUSTRIES

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1.6 APPLICABLE LEGISLATION

Legislation	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
The Environment (Protection) Act/1986/ Rules 1986 The Environmental Impact Assessment (EIA) Notification, 2006	MoEF, CPCB, SPCB	Protection and Improvement of the Environment	<ol style="list-style-type: none"> 1. Prevent discharge or emission of environment pollutants in excess of the prescribed standards 2. Submit 'Environmental Statement' every year. 3. Obtain prior 'Environmental Clearance' from MoEF&CC in case of new project or for Modernisation / Expansion.
The Water (Prevention & Control of Pollution) Act/1974/ Rules/1975	CPCB, SPCB	The prevention, control and abatement of air pollution	<ol style="list-style-type: none"> 1. Not to discharge any effluent, not conforming to standards, prescribed by CPCB into any stream, well, sewers or land 2. Not to discharge air pollutant(s) in excess of standards, prescribed by the State PCB 3. Obtain 'Consent to Establish' prior to establish any process, operation or treatment system 4. Obtain 'Consent to Operate' prior to operation of system which is likely to discharge effluent. 5. Apply for renewal of the 'Consent to Operate' before the expiry 6. Comply with conditions as prescribed under consents.
The Air (Prevention & Control of Pollution) Act/1987/ Rules/1982	CPCB, SPCB	The prevention and control of water pollution and also maintaining or restoring the	

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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Legislation	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
		wholesomeness of water	
Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	MoEF, CPCB, SPCB, DCFT	Management & Handling of hazardous wastes in line with the Basel convention	<ol style="list-style-type: none"> 1. It is the responsibility of the occupier to identify the hazardous wastes in their units and ensure proper handling and disposal. 2. Obtain authorization from PCB and comply with the conditions. 3. Maintain records of Hazardous Waste generated in Form-3 and submit yearly return for generation, treatment, recycling, disposal etc., to SPCB 4. Used Oil to be send / sold to the registered recycler, re-processor, registered authorized facility 5. Shall be transported in accordance with the rule. 6. Site storage is allowed for 90 days only
Factories Act, 1948 (as amended in 1987)	Ministry of Labour, DGFASLI and Directorate of Industrial Safety and Health/Factories Inspectorate	Control of workplace environment, and providing good health and safety of workers	<ol style="list-style-type: none"> 1. Obtain and renew factory license and obtain permission for the site from State Government or the Chief Inspector of Factories in case of new or extension of any Factory 2. Ensure health, safety and welfare of all workers while they are at work in the Factory as far as reasonably practicable 3. Ensure effective and adequate ventilation of work place and adequate measures to be taken to protect workers particularly in the processes involving excessive temperature 4. Ensure effective and adequate ventilation of work place and adequate measures to be taken to protect workers particularly in the processes involving excessive temperature.
The Central Motor	Ministry of	To consolidate	1. Ensure compliance to safety provisions in the transport

CAPACITY EXPANSION IN FORMAL DEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 300 TPD TO 200 TPD AT VILLAGE BHAGWANPURI, KHARWAN ROAD, TEHSIL JALAIKHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHESTWOOD INDUSTRIES	DRAFT EIA REPORT
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Legislation	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
Vehicle Rules, 1989	Road Transport and Highways	and amend the law relating to motor vehicles includes regulate the transportation of dangerous goods with a view to prevent loss of life or damage to the environment.	the vehicle carrying dangerous and hazardous substances inside works 2. Display of emergency information panels at front, back and both side of vehicle 3. Every transporter to ensure safe transportation of dangerous/hazardous goods. 4. Earthing chain for grounding, any prevalent static charge. 5. All motor vehicle entering the works shall have properly maintained brakes, lights, signal system for brakes, blinkers and registration number displayed, and valid Pollution under Control Certificate.
The Solid Waste Management Rules, 2016	CPCB, SPCB	To manage/ utilize the generated solid waste without damaging the environment and surroundings.	1. Segregate waste in to three streams, Wet (Biodegradable), Dry (Plastic, Paper, metal, wood, etc.) and domestic hazardous wastes (diapers, napkins, empty containers of cleaning agents, mosquito repellents, etc.) and handover segregated wastes to authorized rag-pickers or waste collectors or local bodies.
Batteries (Management and Handling) Rules, 2001.	SPCB, CPCB and MoEF&CC	To control the hazardous waste generation (lead waste) from used lead acid batteries	<ol style="list-style-type: none"> It is the responsibility of the generator to ensure used batteries are not disposed of in any manner other than depositing with dealer, manufacturer, importer, or conditioner (eg: used recycler or at designated collection centre) Submit half yearly return for disposal of used batteries to State PCB by 30th June & 31st December, every year In case of auction, ensure batteries are auctioned to the registered recycler only File half yearly return for the auction Maintain record for such auction

CAPACITY EXPANSION IN FORMAL DEHYDRATE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHENWOOD INDUSTRIES

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Legislation	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
E-Waste (Management) Rules, 2016	SPCB, CPCB and MoEF&CC	To recycle/mange the electronic waste from the industry	<ol style="list-style-type: none"> 1. Shall make provisions for collection of e-waste generated from 'end of life' of their products and shall ensure that such e-wastes are channelized to registered dismantler or recycler, in line with the principle of 'Extended Producer Responsibility'. 2. Set-up of collection centres or take back systems either individually or collectively. 3. Finance and organize a system to meet costs involved in the environmentally sound management of e-waste generated from the 'end of life' of its own products. 4. Create Awareness
The Boiler Acts 1923 & Rules 1950	State Government, District Magistrate	To register the boilers used in industry	<ol style="list-style-type: none"> 1. Ensure availability and effective functioning of steam vents, safety valve, drain valve, monitoring instruments of critical parameter through regular checks and maintain records for the same. 2. Obtain authorization for boilers and their renewal prior to due date and / or when an accident occurs to the boiler / when any structural alteration / addition / renewal is made. 3. Ensure mandatory registration of boilers. 4. Ensure to obtain prior approval before taking any alteration and renewals to steam pipes after submitting plan and report. 5. Ensure to obtain prior approval before taking structural alteration, addition and renewal to boilers from Chief Boiler Inspectors. 6. Ensure prior examination of boiler by Inspector during & after any repair/shut down and maintain record for the same. 7. Report accident / incident or any severe damage to property, human life within 24 hours giving details of occurrence.
Noise	CPCB, SPCCB,	To maintain the	1. Noise Quality Monitoring & submission of reports on

CAPACITY EXPANSION JK FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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Legislation	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
(Regulation and Control) Rules, 2010 and its amendments	MoEF&CC	noise levels with respect to the place/equipment/industry	weekly/monthly basis. 2. Providing Ear plugs and Muffs to the workers working in noise prone areas. 3. Dampening the source noise level or making the noise characteristics less annoying by providing suitable enclosures and barriers.
The Municipal Solid Waste (Management and Handling) Rules, 2016	CPCB, SPCB	To maintain solid waste generated in accordance with the provisions of the Rule relating to collection, segregation, storage, transportation, processing and disposal.	1. Application for authorization to CPCB/SPCB Annual report for management of MSW inside the work premises. 2. Monitoring compliance of air and water quality 3. Collection, Segregation, Storage, disposal of MSW.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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CHAPTER 2: PROJECT DESCRIPTION

2.1 TYPE OF THE PROJECT

This is an expansion of existing formaldehyde manufacturing project from 100 TPD to 200 TPD. The existing unit is located at village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Yamunanagar, Haryana. Proposed expansion will be done within the existing unit. No additional land will be required for expansion unit.

As per EIA Notification 2006 and its subsequent amendments the project falls under schedule 5 (i) "Synthetic Organic chemical Project". The project is located outside Notified Industrial area hence categorised as Cat. A Project. As this project was already established and is in the operation phase without securing Environmental Clearance; hence the project attracts the violation of EIA Notification 2006. Considering this, we are applying our proposal to Expert Appraisal Committee, MoEFCC under Violation. This chapter deals with various features of the project viz raw material, process details, utilities, methodology, details of products and by-products etc.

2.2 DETAILS OF VIOLATION

This is an expansion proposal of existing unit. The existing unit was developed without securing prior Environmental Clearance as per EIA Notification 2006 hence attracts Violation of said Notification. Haryana State Pollution Control Board (HSPCB) issued closure under Section 5 of EPA, 1986 and Preservation under section 15 vide Letter No. HSPCB/YR/2019/17420 and Letter No. HSPCB/YR/2019/17418 respectively dated 10.06.2019. Further Show cause notice by HSPCB for refusal of Consent to Operate vide letter no. O19YAMCTDA/WSCN6681779 dated 29.06.2019. Again Show cause notice by HSPCB for closure under Water Act, 1974 & Air Act, 1981 vide letter no HSPCB/YR/2020/5250 dated 13.05.2020. In between Haryana Govt. had issued a letter dated 11.11.2020 that the unit can operate for 6 months in line subjected to secure Environment Clearance.

Finally NCT has ordered on dated 03.06.2021 for the Original Application No. 840/2019 concluded "no further direction appears to be necessary except that the State PCB may ensure that the unit does not re-start functioning without requisite statutory clearance". NCT also ordered on 03.06.2021 for Original Application No. 287/2020 concluded "Since prior EC is statutory mandate, the same must be complied. We have no doubt that the stand of the private respondents will be duly considered by the concerned regulatory authorities, including the MoEF&CC on merits and in accordance with law but till compliance of statutory mandate, the units cannot be allowed to function for past violations, the concerned authorities are free to take appropriate action in accordance with polluter pays principle, following due process."

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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Considering above and looking to the market requirement PP has proposed to expand the production capacity with securing EC as per EIA Notification for total 200 TPD capacity which include 100 TPD existing unit as well as 100 TPD additional Expansion.

2.3 NEED FOR THE PROJECT

M/s. Chemwood Industries is operating 100 MT/month Manufacturing Unit at village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Yamunanagar, Haryana. The future of Formaldehyde will be positive in our country due to growing consumption of formaldehyde by multiple end user industries including constructions, furniture, paints & coatings, textiles, fertilizers & pesticides, etc., and is expected to increase at a CAGR of 3.9% during the forecasted period of 2019 to 2023.

2.4 PROJECT LOCATION

The total land required for existing and proposed expansion project is **0.68 Ha**, which is already in possession by proponent and no additional land is required for the project. The centre geographical co-ordinates of the project site are mentioned below:

Table 0-1: Latitude-Longitude of the Project

Points	Latitude	Longitude
A	30°12'25.12"N	77°22'27.83"E
B	30°12'25.68"N	77°22'29.14"E
C	30°12'21.40"N	77°22'27.78"E
D	30°12'21.48"N	77°22'27.79"E

Location Map, Copordinate Map and Plant Layout are shown in **Fig. 2.1, 2.2 and 2.3** respectively.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KIJARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHESTWOOD INDUSTRIES

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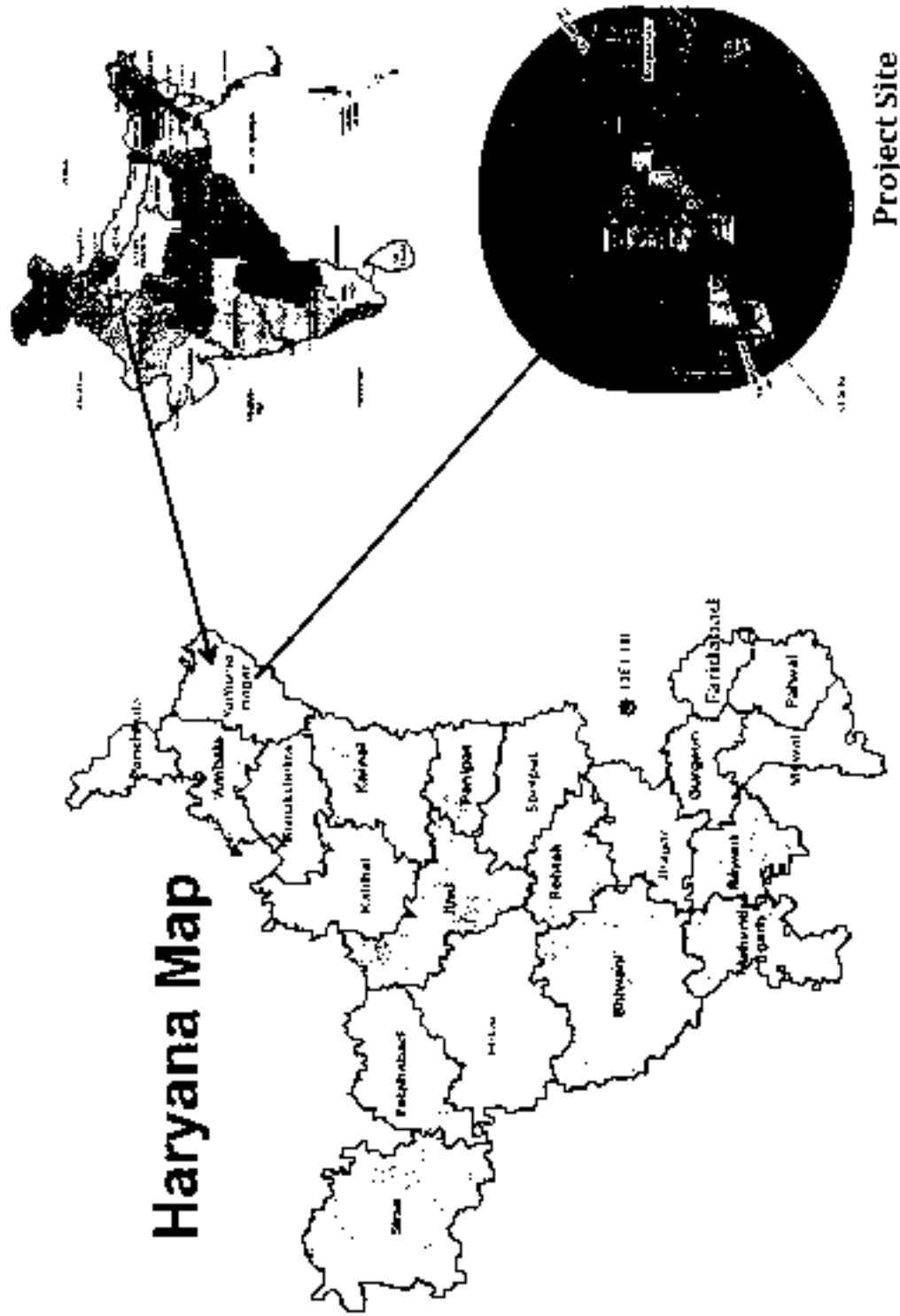


Figure 0-1: Location Map of the Project Site

<p>CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES.</p>	<p>DRAFT EIA REPORT</p>
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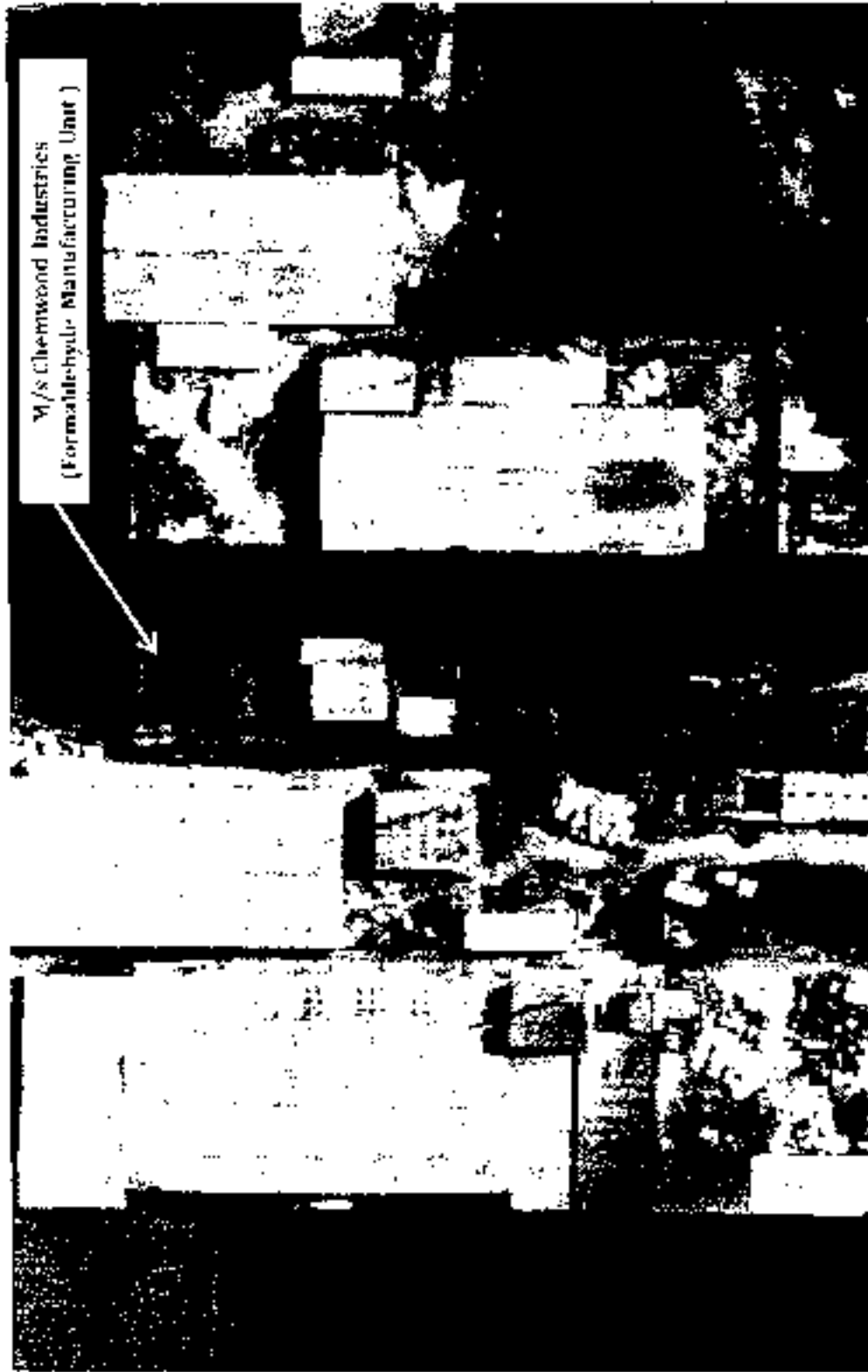


Figure: 0-2: Google Map of Project Area

Enclosure No. 2020 W 307, Form EIA, Rev-09
 Government of Haryana, Department of Environment, Govt. No. H-23, Sec-5, IIT, Mansarovar, Gurugram, Haryana-122051, Haryana (Mob. 998996573342)

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING
 PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD,
 TEHSIL JAGADHERI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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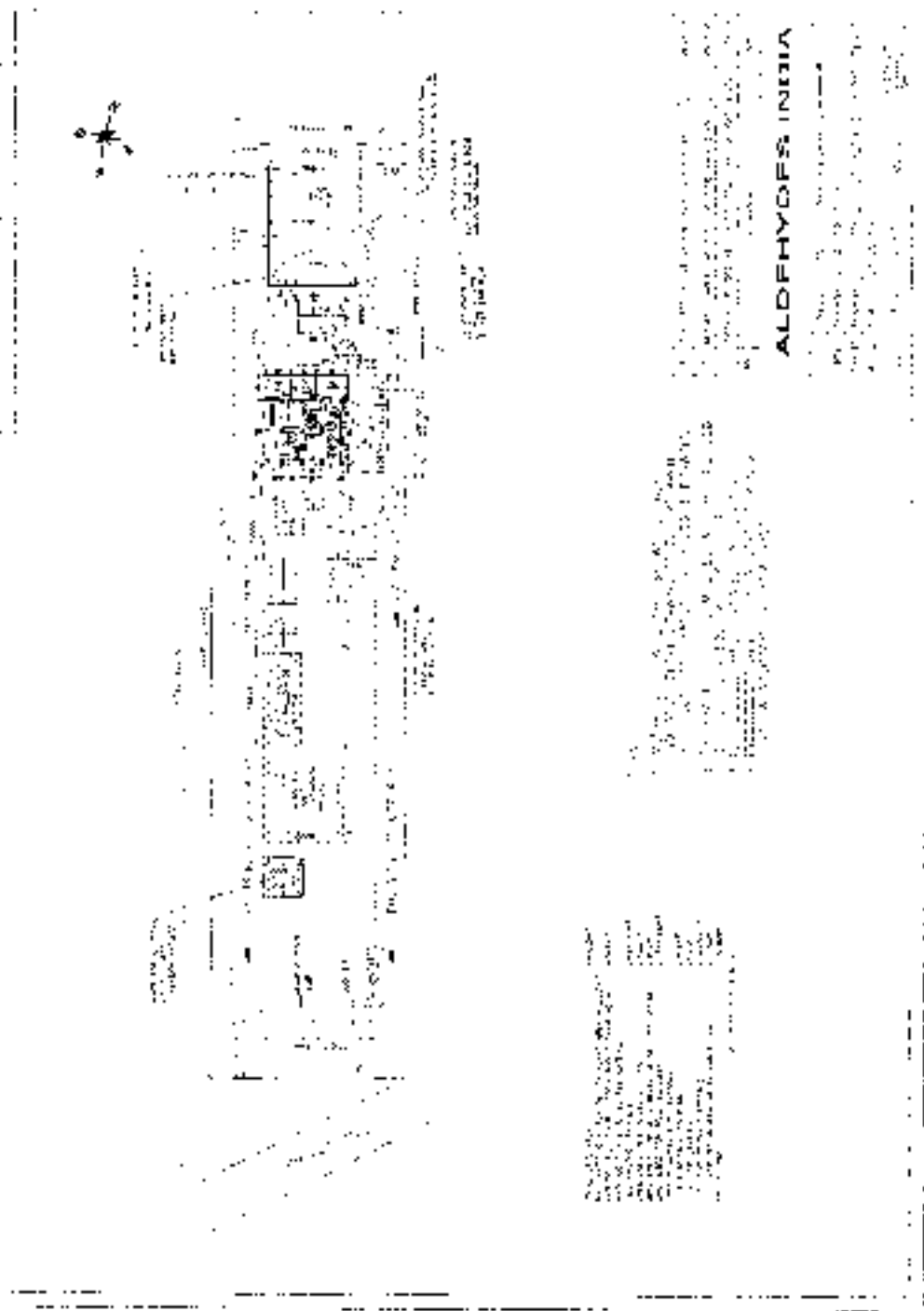


Figure: 0-3: Plant Layout

<p>CAPACITY EXPANSION IN FORMAL DEHYDRIDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES.</p>	<p>DRAFT EIA REPORT</p>
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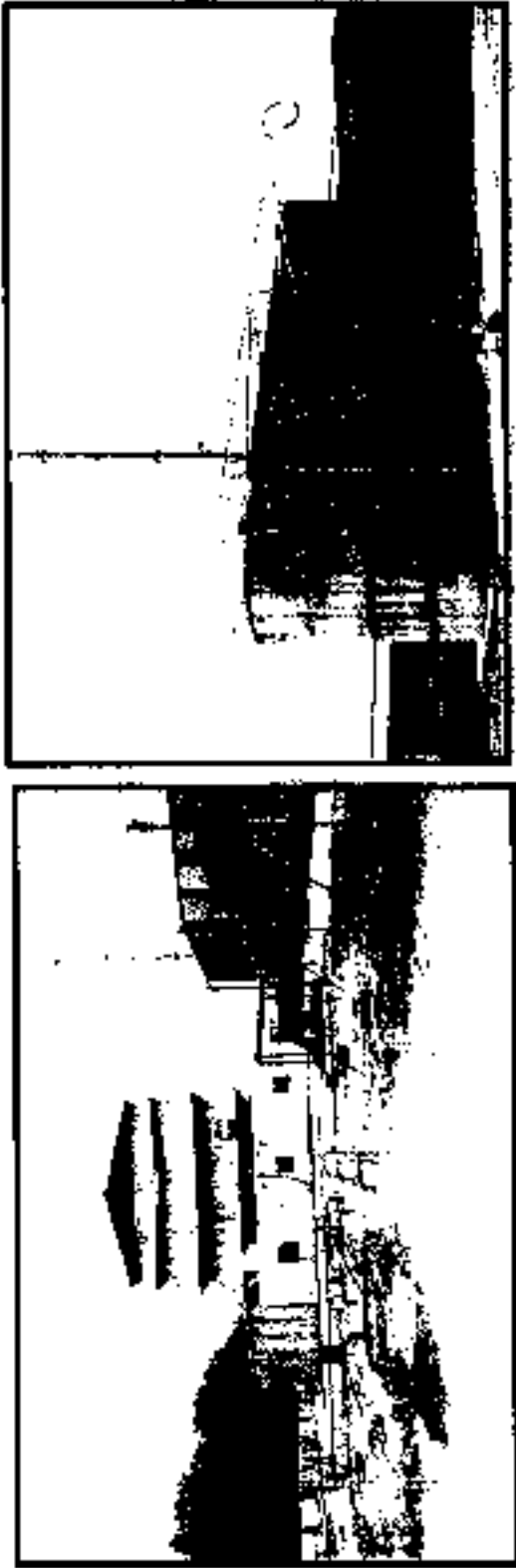


Figure: 0-4: Existing Plant Photographs

2.5 SIZE OR MAGNITUDE OF OPERATION

Product	Quantity (Existing)	Quantity (Proposed)	Quantity (Total)
Formaldehyde	100 TPD	100 TPA	200 TPD

2.6 REQUIREMENTS FOR THE PROJECT

2.6.1 Raw Material Requirement

Table 0-2 Raw Material Requirement

S.No.	Raw Materials	Quantity (Existing)	Quantity (Proposed)	Quantity (Total)	Supply Source	Storage Area
1	Methanol	91 TPD	50 TPD	130 TPD	Sourced from Kanola Pur, Gujarat	Warehouse

2.6.2 Technology and Process Description

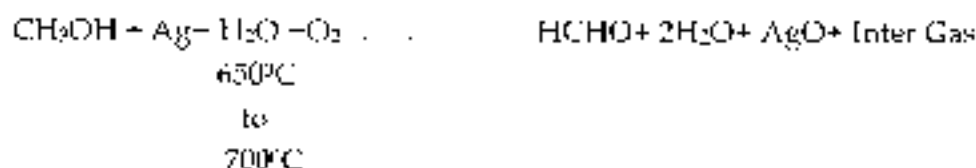
Description of Manufacturing Process:

Raw Material : Methanol (CH₃OH)
: Silver Granules (Catalyst)

Finished Product : Formaldehyde (HCHO)

Plant & Machinery (Main): Evaporator, Mixing Tank, Super Heater, Reactor, Condenser, Absorption column, heat exchanger, pumps, pipe line.

Methanol is converted into formaldehyde by oxidation process with Oxygen, silver & water at a temperature of 650°C to 700°C. It is an exothermic reaction.



Step I: Methanol is pumped from the underground storage tanks to a mixing tank where water is added to dilute the solution.

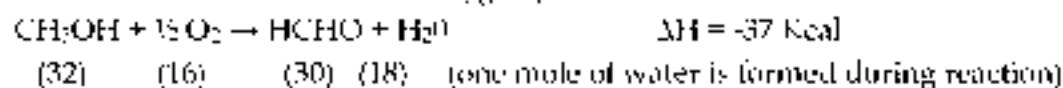
Step II: Dilute Methanol solution I is then taken into evaporator where it is evaporated to proper stage at 700°C. Air also passed through the blower and applied steam. The mixture of vapors (AIR + METHANOL + WATER) is passed to the reactor through silver bed where methanol is converted into formaldehyde gas at 670°C (approx.)

Step III: The temperature of formaldehyde gas is taken down upto 110°C through condensers and then passed to absorption column to absorb the gases in water. We circular the formaldehyde solution till desired quality of formaldehyde liquid is obtained, and then the product is transferred to the storage tank. And after testing the quality, we dispatch the goods. This is a continuous chemical process.

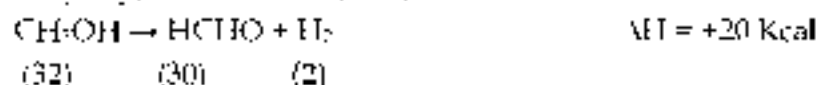
Normally, the ratio of methanol and formaldehyde is approx 1: 2, we get 2 kg of formaldehyde by 1 kg of methanol, if the quantity of raw material & product is OK. It depends on temperature, plant pressure and atmosphere climate also. On the demand of buyer, we produce the formaldehyde of different grade also, which is produced as per requirement of the party. The ratio of methanol and formaldehyde, sp. varies depends on the specification desired by the party.

Catalytic oxidation process is an optimized production method. Let us discuss about the technology in this process. It is a simple process as per the stoichiometric reaction steps along with material balance shown below.

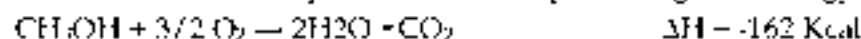
1. Oxidation of methanol with oxygen present in air



2. Pyrolysis endothermic reaction



3. Side reaction - complete combustion producing heat energy



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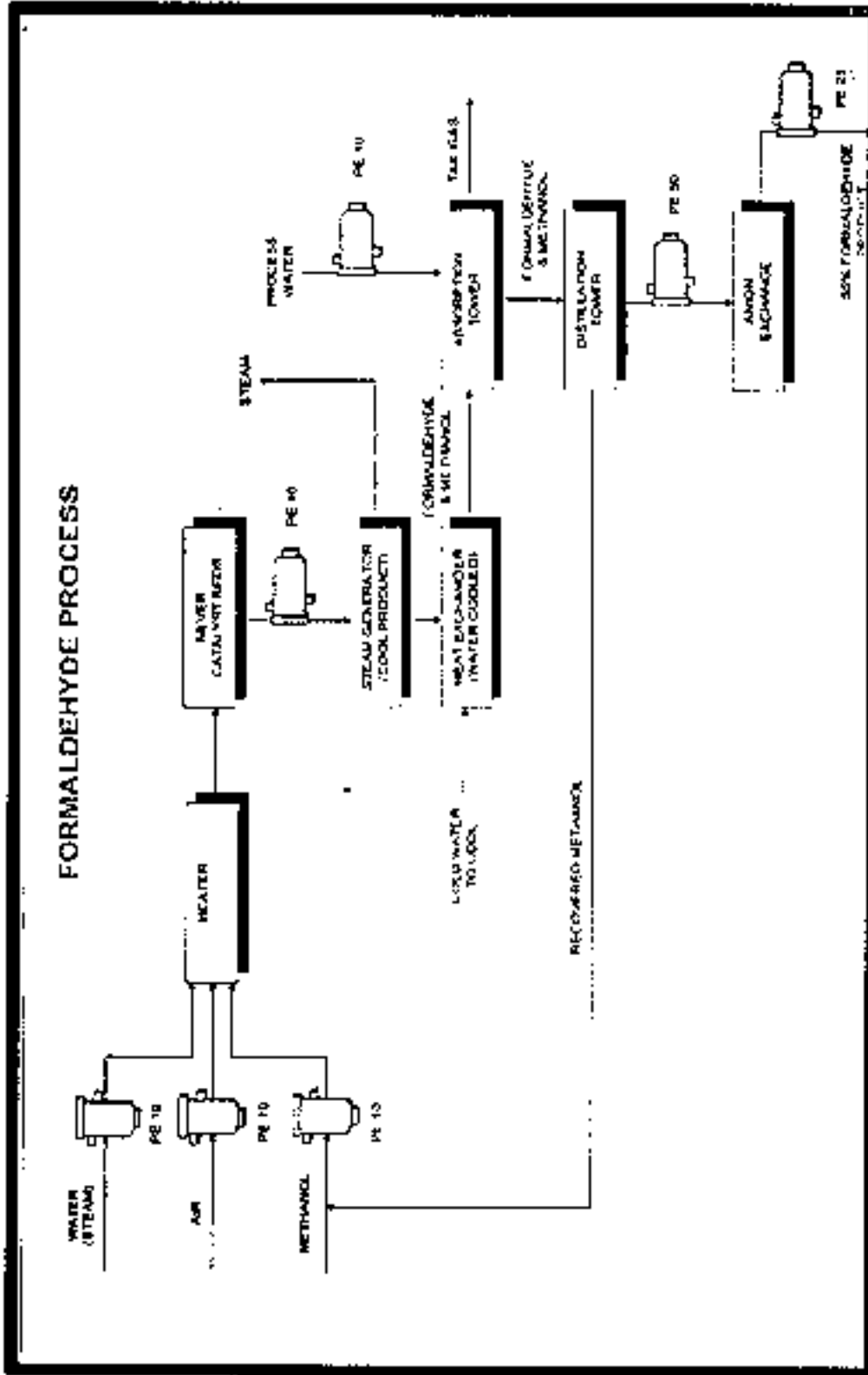


Figure 0-5: Process Flow Chart

2.6.3 Boiler & DG Set Details

1 D.G Set of capacity 325 KVA has been already installed and additional One DG Set of 560 KVA will be required for the expansion unit. 1 transformer of capacity 500 KW has been already installed. One Boiler of capacity 900 Kg/Hr is also provided in existing unit. Others details regarding this are mentioned in the table given below:

Table 0-3: Boiler Details

S. No.	Particular	Details
1.	Type of Fuel	HSD
2.	Capacity of Boiler	900 Kg/Hr

2.7 AVAILABILITY OF OTHER DETAILS AND THEIR SOURCE

2.7.1 Water Requirement

Total water requirement for Project after expansion will be 200 KLD which will be sourced from Ground Water. Application will be submitted to HWRA for permission for extraction of ground water.

2.7.2 Power Requirement

Maximum power requirement for the plant will be 500 W (Existing: 250 KW, Proposed: 250 KW). The power will be supplied by UHBVN. 1 D.G Set of capacity 325 KVA has been already installed and additional One DG Set of 560 KVA will be required for the expansion unit. 1 transformer of capacity 500 KW has been already installed. One Boiler of capacity 900 Kg/Hr is also provided in existing unit.

2.7.3 Manpower Requirement

Total manpower of existing unit is 10. Additionally 5 workers will be required for expansion unit. Additional manpower where taken from local area. Trailing will be provided to all the workers. Health checkup of all the workers will be ensured before and after appointment.

2.7.4 Land Requirement

Total land required for existing as well as expansion unit is 0.86 ha. No additional land will be required for the project. Permission has been granted for Change of Land Use (C.L.U) from Department of Town & Country Planning, Haryana vide Memo No. STP (P)/NOC-513/TE/2018/4621 dated 26.10.2018. Company has obtained diversion of 0.00944 ha of forest land for access to their factory from MoEF&CC vide F.No. 9-HRB032/2019-CHA dated 30.07.2019. This forest diversion is taken only to secure permission from concerned forest department for access from road to plant site. Plant area bifurcation is given below:

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Table 0-4 Land Breakup

S.No.	Details	Area (Sq. Mt.)	Area (Ha.)	Percentage
1	Main building area	1210.00	0.121	17.79
2	Road & pathway	2362.00	0.2362	34.74
3	Area for expansion	670.00	0.067	9.85
4	Green area	2558.00	0.2558	37.62
Total		6800.00	0.68	100

2.7.5 Project Cost

Total cost of existing unit is 4.86 Cr. Total cost of expansion unit is 2.14 Cr. Hence total cost of project after expansion will be 7.0 Cr. Following is cost bifurcation of the existing unit.

Table 0-5 Project Cost

S. No.	Description	Cost (Lakhs)
1	Land	40.01
2	Building and Construction	42.45
3	Machinery	403.53
		485.99 (~486 Lakhs)

2.8 SOLID WASTE GENERATION AND MANAGEMENT

Process Waste:

There is no solid waste generated from the existing process. Total 15 workers will be involved in the project. Considering 250 Gm/Person/ Day of waste; it is estimated that approximately 3.5 to 4.0 Kg/day of domestic solid waste will be generated. Dust bins has been provided for separated collection of Wet and dry waste. The same is being sent to authorize waste management agency in regular interval.

Aproximatly 2.0 KLD of water will be used in domestic purposed. 0.5 KLD will be used for plantation and 1.5 KLD will be used for domestic purpose. Considering 80% of total domestic use; 1.0 KLD of waste water will be generated. This is very less quantity and will be managed through septic tank followed by soak pit.

There is no effluent generation from the process. Total industrial water will be used back in the process till 100% consumption and evaporation loss.

Hazardous Waste:

All the hazardous substances in the proposed project will be sold to the Authorized Recyclers. Formaldehyde will be stored in containers in a cool, well-ventilated area. Container will be tightly closed and sealed. Waste oil, Waste grease, containers will be generated from the process. Waste oil and waste grease will be sent to authorize recyclers whereas containers will be sold to retail seller after proper disintention

and cleaning. No other hazardous waste will be generated from the process. Metallic & non metallic waste will be generated from the plant maintenance which will be sent for recycler after proper disinfection. Paper waste, card board etc will be sold to authorized vendor.

Air Emissions and Control:

All the exhaust gas emissions will be channelized all through the process and will be reused for various purposes like heating & remained chemical utilization. At the end, the remaining gas will be exhausted through a chimney. Emissions from production processes will contain exhaust gasses which shall contain only Nitrogen, Hydrogen, Carbon dioxide, Carbon Monoxide, VOC and traces of Formaldehyde and Methanol. Scrubber will be installed for scrubbing the residual Formaldehyde from the main product stream which also controls the odour problem.

To control the air emissions from D.G. Set, stack height of 6.0 m shall be provided above the roof level of D.G. Set. Boiler (900 kg/hr) shall be installed for heating load of the plant.

2.9 DESCRIPTION OF MITIGATION MEASURE INCORPORATED IN TO THE PROJECT TO MEET ENVIRONMENTAL STANDARD, ENVIRONMENTAL OPERATING CONDITIONS OR OTHER EIA REQUIREMENTS

Following mitigation measures has been adopted in existing unit and will be adopted after expansion by M/s. Chemwood Industries to minimize the impact of project on the surrounding environment.

S.No.	Particulars	Mitigation measures to be adopted
1	Air Environment	<ul style="list-style-type: none"> Scrubber will be installed for scrubbing the residual Formaldehyde from the main product stream which also controls the odour problem. Online Air monitoring system for stack emission (for Particulate Matter) will be installed and transmission of online data to HSPCB and CPCB will be done. Greenbelt development (37.62 %) of total area.
2	Water Environment	<ul style="list-style-type: none"> Domestic sewage to be collected in septic tank & used for gardening. There is no effluent generation from the process. Total plant will ensure ZLD. No effluent will be discharged outside the industries.
3	Solid/Hazardous Waste Environment	<ul style="list-style-type: none"> Used oil to be sold to registered recycler Spent catalyst to be sold to registered recycler. No other hazardous waste will be generated from the process. Domestic waste will be managed as per direction of

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S.No.	Particulars	Mitigation measures to be adopted
4	Noise Environment	<p>HSPCB.</p> <ul style="list-style-type: none"> The Noise free machines of latest technology will be installed. The green belt will help in reducing noise levels, generated as a result of attenuation of noise generated due to plant operations and transportation. PPEs would be used while running the equipments of the plant. DC sets will be provided with acoustic enclosures to control the noise level within the prescribed limit. A high standard of maintenance and proper lubricants will be practiced for plant machinery and equipments, which helps to avert potential noise problems. Material handling will be done in day time only. Night time transportation, material handling will be avoided.
5	Odour management	<ul style="list-style-type: none"> The remedial measures have been taken such as better house-keeping by regular steaming of all the equipments. Temperature kept under control during the process. The green belt will (plantation of dense trees across the boundary) will be proposed.

CHAPTER-III: DESCRIPTION OF ENVIRONMENT

3.1 INTRODUCTION

This chapter illustrates the description of the existing environmental status of the study area with reference to the prominent environmental attributes. The existing environmental setting is considered to establish the baseline conditions which are described with respect to physical environment, air environment, noise environment, traffic pattern and density, water environment, land environment, biological environment, socio economic environment. Baseline environmental status report contains the results of environmental monitoring carried out during the study period, March to May, 2020. The baseline environmental study reveals information on existing environmental scenario. To achieve these objectives, team of Vardan Envirolab monitored the environmental parameters as per the Guidelines for EIA issued by the Ministry of Environment & Forests, Govt. of India

- Delineation of study area
- Delineation of the environmental components and methodology
- Delineation of study period
- Delineation of the location of proposed project and description of its surroundings based on secondary data
- After delineation of the above for the present case the following studies were conducted
- Baseline data generation/establishment of baseline for different environmental components

3.2 STUDY AREA

The environmental impact due to the project is likely to affect the project site and its surroundings. Therefore, the study area for monitoring of environmental parameters covers 10 kms. The impact identification always commences with the collection of baseline data such as Ambient Air Quality, Micro-Meteorology, Ground and Surface Water Quality, Noise levels, Soil Quality, Land use pattern, Biological Environment and Socio-economic aspects in the 10 kms study area.

3.3 STUDY PERIOD

The baseline environmental data generation and other field studies for the preparation of Environment Impact Assessment was conducted during 1st March 2020 to 31st March 2020 (Pre-monsoon Season).

3.4 COMPONENTS & METHODOLOGY

The baseline data has been collected out during the March to May 20 by M/s. Vardan Envirolab, Gurgaon (NABL Accredited Lab, Certificate No. T-2629 MOEFCC NO. S.O. 1783 (E) (Certificate enclosed as Annexure 1)) in accordance with the Guidelines for EIA issued by the Ministry of Environment Forests and Climate Change, Govt. of India and CPCB.

The scoping and the extent of data generation were formulated based on interdisciplinary team discussions, and professional judgment. Primary data was

collected from the above mentioned monitoring stations. Various Government and other organizations were approached for getting information for the secondary data.

3.5 ESTABLISHMENT OF BASELINE FOR VALUED ENVIRONMENTAL COMPONENTS

3.5.1 Meteorological Data

The meteorological station was set-up at the project site and data were collected which are reproduced as under:

Wind

The critical weather elements that influence air pollution are wind speed, wind direction, temperature, which together determines atmosphere stability. Wind speed and direction data recorded during the study period is useful in identifying the influence of meteorology on the air quality of the area

Wind Rose

The meteorological data was collected at the site by installing an automatic weather station during pre-monsoon season. Wind Speed, Wind Direction, Temperature and Relative Humidity were recorded for the study period. Wind roses on sixteen sector basis (N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, and NNW) have been drawn for 24 hours. The data on wind patterns are pictorially represented by means of windrose diagrams for study period 1st March, 2020 to 31st May, 2020 as Figure 3.1. The meteorological data reflecting minimum, maximum temperature is 9.2°C to 42.9°C, relative humidity in 31% to 73%, rainfall in 8.4 mm to 24.2 mm, wind speed in 16.0 km/hr to 18.0 Km/hr was collected for the season, March to May, 2020.

Table 0-1: Onsite Meteorological Data of Yamunanagar District (Period: 1st March, 2020 to 31st May, 2020)

Month	Temperature		Relative Humidity (%)		Average wind speed (km/hr)	Rainfall(mm)
	Max °C	Min °C	Max	Min		
March 2020	37	9.2	73	51	16.0	17.8
April 2020	40.3	13.2	51	31	16.5	8.4
May 2020	42.9	18.4	52	32	18.0	24.2

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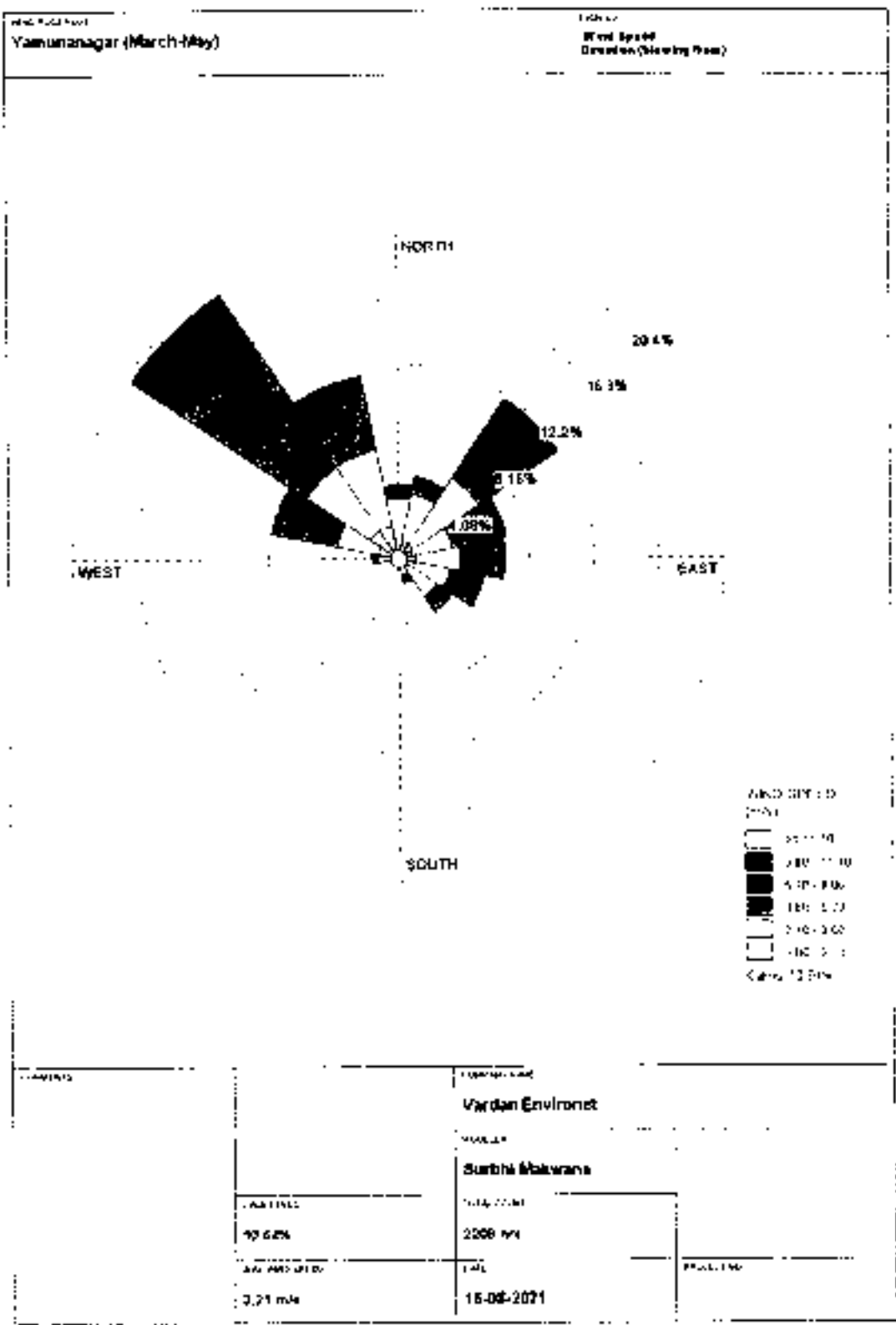


Figure 0-1: Wind Rose Diagram (Oct to Dec 2020)

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3.6 AIR QUALITY

3.6.1 Air Quality Monitoring

Baseline data for ambient air quality were collected at 8 locations within the study area during the period of 1st March, 2020 to 31st May, 2020. The sampling stations along with their distance and direction from the project site, ambient air quality monitoring stations, windrose diagram showing the direction of the blowing wind during the analysis period, are detailed in **Table 3.1** and **Figure 3.1**. Samples were collected continuously from all the stations for 24 hours. Ambient air quality analysis data for various parameters are given in **Table 3.4**.

The observations made during the study period are presented under the forthcoming sub-sections

3.6.2 Methodology Adopted for the Study

The baseline status of the ambient air has been established through a scientifically designed ambient air quality monitoring network.

Table 0-2: Procedures for Determining Various Air Quality Parameters

Parameters	Testing Procedure
PM10& PM2.5	Gravimetric Method by using Respirable Dust Sampler ^o (RDS) and Respirable fine Particulate Matter sampler
NO ₂	Absorption in diluted NaOH and then estimated calorimetrically with sulphaniamide and N (1-Nepthyle) Ethylene diamine Di-hydrochloride and Hydrogen Peroxide (IS: 5182 1975, Part-VI).
SO ₂	Absorption in Sodium Tetra Chloromercurate followed by Colorimetric estimation using P Rosaniline hydrochloride and Formaldehyde (IS: 5182 Part - II, 2001).
CO	Each constituent gas in a sample will absorb some infrared at a particular frequency. By shining an infra-red beam through a sample cell (containing CO), and measuring the amount of infra-red absorbed by the sample at the necessary wavelength, a NDIR detector is able to measure the volumetric concentration of CO in the sample.

8 Ambient Air Quality Monitoring Locations Maps are given below: -

Table 0-3: Ambient Air Quality Monitoring Locations

Stations	Name	Latitude	Longitude	Distance (km)	Direction
A1	Project Site	30°12'25.77" N	77°22'27.97" E	0.0	Core
A2	Bhagwanpur	30°12'22.05"N	77°22'43.72" E	4.5	E
A3	Dadupur Chawani	30°12'36.23"N	77°23'17.54" E	1.3	E
A4	Fatehgarh	30°10'42.15"N	77°23'5.95" E	3.3	SSB
A5	Khaori	30°11'3.69"N	77°24'6.59" E	3.61	SE
A6	Kharwan	30°12'6.98"N	77°21'44.34" E	1.24	WSW

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Stations	Name	Latitude	Longitude	Distance (km)	Direction
A7	Bhukhri	30°11'22.25"N	77°20'50.77"E	3.11	SW
A8	Balachaur	30°13'26.24"N	77°21'53.25"E	3.46	NW

Table 0-4: Ambient Air Quality Monitoring Results

Parameters	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	CO (µg/m ³)
AAQM Norms	100	60	80	80	2
Project Site (A1)					
Max	92.1	49.5	31.5	17.2	0.92
Min	71.2	36.8	21.4	10.2	0.71
Mean	81.65	43.15	26.45	13.7	0.81
98 Percentile	91.2	49.5	30.8	17	0.92
Bhagwanpur (A2)					
Max	90.4	54.2	32.1	18.9	0.94
Min	70.1	40.1	21.2	10.2	0.69
Mean	80.25	47.15	26.65	14.55	0.81
98 Percentile	89.39	53.72	31.67	18.18	0.91
Dadapur Chawani (A3)					
Max	81.3	52.5	25.5	16.8	0.86
Min	68.1	35.1	14.5	10.1	0.67
Mean	74.7	43.8	27	13.45	0.76
98 Percentile	81.11	51.49	25.70	16.18	0.84
Fatehgarh (A4)					
Max	84.2	51.4	26.6	15.3	0.89
Min	65.3	32.9	18.2	10.4	0.6
Mean	74.74	42.15	23.4	12.85	0.74
98 Percentile	82.70	49.05	27.55	15.05	0.87
Khadri (A5)					
Max	87.4	55.8	27.5	15.5	0.98
Min	68.5	32.5	19.6	10.5	0.57
Mean	76.95	44.15	23.55	13.0	0.77
98 Percentile	84.80	54.75	26.95	15.35	0.98
Kharwan (A6)					
Max	86.4	51.3	31.5	16.7	0.88
Min	68.5	41.3	20.3	9.1	0.66
Mean	77.5	46.3	26.05	12.9	0.77
98 Percentile	84.09	50.79	30.65	16.10	0.86

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Parameters	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO ($\mu\text{g}/\text{m}^3$)
Bhukhri (A7)					
Max	78.1	51.1	24.5	14.5	0.8
Min	60.1	35.5	16.2	9.7	0.62
Mean	69.1	43.3	20.15	12.1	0.71
98 Percentile	77.15	50.30	23.95	14.50	0.60
Balachaur (A8)					
Max	87.2	53.6	29.6	20.3	0.96
Min	68.2	37.5	18.3	20.5	0.7
Mean	77.7	45.55	23.95	14.9	0.83
98 Percentile	86.95	53.20	29.10	19.95	0.94

3.6.3 Observations

Ambient Air Quality Monitoring reveals that the minimum and maximum concentrations of PM_{10} for all the 8 Air Quality monitoring stations were found to be $60.1 \mu\text{g}/\text{m}^3$ and $92.1 \mu\text{g}/\text{m}^3$ respectively, while for $PM_{2.5}$ varies between $32.5 \mu\text{g}/\text{m}^3$ and $55.8 \mu\text{g}/\text{m}^3$. As far as the gaseous pollutants SO_2 , NO_2 , CO & VOC are concerned, the prescribed limits under NAAQ Standards for residential and rural areas has never surpassed at any station. The minimum and maximum concentrations of NO_x were found to be $16.2 \mu\text{g}/\text{m}^3$ and $32.1 \mu\text{g}/\text{m}^3$ respectively. The minimum and maximum concentrations of SO_2 were found to be $9.1 \mu\text{g}/\text{m}^3$ and $19.3 \mu\text{g}/\text{m}^3$ respectively. The minimum and maximum concentrations of CO were found to be $0.57 \text{mg}/\text{m}^3$ and $0.95 \text{mg}/\text{m}^3$ respectively. The prescribed limits of SO_2 and NO_2 is $80 \mu\text{g}/\text{m}^3$ and CO is $2 \text{mg}/\text{m}^3$ for residential and rural areas has never surpassed at any monitoring station. The standards of Ambient Air Quality in India are available online at http://epcb.nic.in/National_Ambient_Air_Quality_Standards.php

The Monitoring lab reports are attached as Annexure 7.

Ambient air quality at project site found higher as compared to other location. This is because of the transportation activities as well as the material handling and local transportation. AAQM monitoring was performed during Pre-monsoon season. The area is dominated with sandy soil which has higher dispersion during windy and dry days. This also contributed in the overall level of concentration. SO_2 & NO_x value are also found exceeding but few location which indicates the use of Diesel in the machineries, and burning of coal in the area. Generally these pollutants generated from domestic area and commercial area like market, main junction roads etc.

This project is for expansion of existing formaldehyde manufacturing unit. Process does not involve any kind of raw material which may produce dust during handling the same. No activities involved which produce dust from the manufacturing process. Dust may be generated during construction of expansion unit which need to be addressed and managed in proper way so as not to contribute in the overall AAQ concentration at the project site as well as nearby area.

3.7 NOISE ENVIRONMENT

Noise in general is sound, which is composed of many frequency components of various loudness distributed over the audible frequency range. The most common and universally accepted scale is the A weighted scale which is measured as dB (A). This is more suitable for audible range of 20 to 20,000. The environmental assessment of noise from the industrial activity, construction activity and vehicular traffic can be undertaken by taking into consideration various factors like potential damage to hearing, physiological responses, and annoyance and general community responses. The locations of noise monitoring are detailed in the Table 3.5 below:

3.7.1 Objective

The main objective of monitoring of ambient noise levels was to establish the baseline noise levels in different zones, i.e. Residential, Industrial, Commercial and Silence zones, in the surrounding areas and to assess the total noise level in the environment of the study area.

3.7.2 Methodology

Identification of Sampling Locations

A preliminary reconnaissance survey was undertaken to identify the major noise sources in the area. The sampling location in the area was identified considering location of industry, commercial shopping complex activities, and residential areas with various traffic activity and sensitive areas like hospital, court, temple and schools also near the railway track for railway noise. The noise monitoring was conducted at eight (8) locations for study area during the study period.

Table 0-5: Noise Level Sampling Stations

Stations	Name	Latitude	Longitude	Distance (km)	Direction
N1	Project Site	30°12'25.1" N	77°22'27.9" E	0.0	Core
N2	Bhagwanpur	30°12'22.05" N	77°22'43.72" E	0.3	E
N3	Dadepur Chawam	30°12'26.23" N	77°23'17.54" E	1.3	E
N4	Fatehgarh	30°10'42.45" N	77°23'5.95" E	3.3	SSE
N5	Khudri	30°11'3.69" N	77°24'6.59" E	3.61	SE
N6	Kharwan	30°12'6.98" N	77°21'44.14" E	1.24	WSW
N7	Bhukhri	30°11'22.25" N	77°20'50.77" E	3.11	SW
N8	Balochaur	30°13'26.24" N	77°21'35.25" E	2.46	NW

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Table 0-6: Noise Levels in Study Area

S. No.	Average Day Time Noise Level L_{eq}	Average Night Time Noise Level
	Db (A)	L_{eq} Db (A)
CPCB Norms	Day Time (6.00 a.m. to 10.00 p.m.)	Night Time (10:00 p.m. to 6.00 a.m.)
	Industrial area- 75 Residential area- 55	Industrial area- 70 Residential area- 45
N1	72.5	61.9
N2	50.2	41.6
N3	51.4	40.7
N4	72.6	42.4
N5	48.7	40.7
N6	49.9	39.7
N7	52.4	41.9
N8	51.9	42.2

3.7.3 Equivalent sound pressure level (L_{eq})

The sound from noise source often fluctuates widely during a given period of time. L_{eq} is the equivalent continuous sound level, which is equivalent to the same sound energy as the actual fluctuating sound measured in the same time period.

3.7.4 Instrument used for Monitoring

Noise levels were measured using an Integrating sound level meter. It had an indicating mode of L_p and L_{eq} . Keeping the mode in L_p for few minutes and setting the corresponding range and the weighting network in "A" weighting set the sound level meter was run for one hour time and L_{eq} was measured at all locations.

3.7.5 Observations

The values of noise observed in some of the rural areas are primarily owing to vehicular traffic and other anthropogenic activities. In rural areas wind blowing and chirping of birds would contribute to noise levels especially during the nights. Assessment of day time noise levels around the study area are ranging between 48.7 to 72.5 dB(A) during study period. Whereas the night equivalents were in the range of 39.7 to 61.9 dB (A). From the results it can be seen that the Day equivalents and the Night equivalents were within the Ambient Noise standards of residential areas standards. The noise level at project site found slightly increasing as compared with other location but found within the standard. This is because the ongoing activities, transportation etc. Material handling also involved in the overall noise level in the study area. All noise controlling measures are to be adopted at project site to maintain the noise level within the limit.

3.8 SOIL ENVIRONMENT

The major soil type of the district is sandy and silty Clay.

3.8.1 Soil Quality

The sampling locations have been finalized with the following objectives:

- To determine the base line characteristics.
- To determine the soil characteristics of proposed project site.
- To determine the impact of industrialization/ urbanization on soil characteristics.
- To determine the impacts on soils from agricultural productivity point of view.

3.8.2 Criteria Adopted for Selection of Sampling Locations

For studying the soil types and soil characteristics, 8 sampling locations were selected to assess the existing soil conditions representing various land use conditions and geological features.

3.8.3 Methodology and Sampling

The homogenized soil samples collected at different locations were packed in a polyethylene plastic bag and sealed. The sealed samples were sent to laboratory for analysis. The important physical, chemical parameter concentrations were determined from all samples.

3.8.4 Soil Sampling Locations

Details of the soil sampling locations are given in Table 3.7. And Soil Sampling Results are shown in Table 3.8 respectively.

Table 0-7: Soil Sample Monitoring Station

Stations	Name	Latitude	Longitude	Distance (km)	Direction
S1	Project Site	30°12'25.1" N	77°22'27.9" E	0.0	Core
S2	Bhagwanpur	30°12'26.09" N	77°22'47.92" E	0.3	E
S3	Dadupur Chawani	30°12'33.45" N	77°23'20.01" E	1.3	E
S4	Fatehgarh	0°10'43.45" N	77°22'58.82" E	3.3	SSW
S5	Khadri	30°10'59.39" N	77°23'56.08" E	3.61	SE
S6	Kharwan	30°11'50.73" N	77°21'35.03" E	1.24	WSW
S7	Bhukhri	30°11'25.98" N	77°20'58.42" E	3.11	SW
S8	Balachaur	30°13'29.65" N	77°21'29.54" E	2.46	NW

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHIRWOOD INDUSTRIES

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Table 0-8: Physico-Chemical Properties of Soil

S No	Parameter	Result (S1)	Result (S2)	Result (S3)	Result (S4)	Result (S5)	Result (S6)	Result (S7)	Result (S8)	
1.	pH(at 25 °C)	7.45	7.71	7.61	7.30	7.19	7.59	7.63	7.91	
2.	Conductivity (mS/cm)	0.291	0.275	0.279	0.242	0.311	0.295	0.268	0.307	
3.	Soil Texture (%)	Sand - 9 Silt - 26 Clay - 38 Yellowish Brown	Sand - 33 Silt - 27 Clay - 20 Yellowish Brown	Sand - 50 Silt - 9 Clay - 25 Yellowish Brown	Sand - 54 Silt - 29 Clay - 17 Yellowish Brown	Sand - 45 Silt - 40 Clay - 15 Yellowish Brown	Sand - 51 Silt - 26 Clay - 20 Yellowish Brown	Sand - 54 Silt - 26 Clay - 20 Yellowish Brown	Sand - 54 Silt - 26 Clay - 20 Yellowish Brown	Sand - 45 Silt - 46 Clay - 11 Yellowish Brown
4.	Color	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	
5.	Water holding capacity (%)	31.20	32.60	33.84	40.46	36.40	30.96	31.21	39.25	
6.	Bulk density (gm/cc)	1.44	1.57	1.51	1.42	1.44	1.46	1.48	1.44	
7.	Chloride as Cl (mg/100g)	49.20	53.61	46.52	49.61	48.52	48.36	46.21	48.11	
8.	Calcium as Ca (mg/100g)	43.71	41.65	52.15	46.65	56.41	40.12	40.52	45.12	
9.	Sodium as Na (mg/kg)	14.40	48.51	49.20	49.82	46.11	49.92	43.91	44.41	
10.	Potassium as K (kg/hec.)	48.66	112.00	126.20	129.00	142.00	125.00	132.00	149.21	
11.	Organic Matter (%)	0.34	0.30	0.41	0.53	0.46	0.49	0.43	0.51	
12.	Magnesium as Mg (mg/100g)	40.41	21.40	22.20	21.37	21.42	20.54	22.51	24.21	
13.	Available Nitrogen as N (kg/hec.)	183.40	219.31	225.00	220.55	254.00	218.04	212.00	215.00	
14.	Available Phosphorus (kg/hec)	16.54	17.57	19.25	18.21	20.11	18.54	18.17	20.30	
15.	Zinc as Zn (mg/kg)	1.51	2.6	4.61	6.15	9.85	7.61	7.84	11.20	

**CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING
PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD,
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S.No	Parameter	Result (S1)	Result (S2)	Result (S3)	Result (S4)	Result (S5)	Result (S6)	Result (S7)	Result (S8)
16.	Manganese (as Mn) (mg/kg)	3.41	5.51	3.02	4.0.	5.96	5.96	4.11	4.71
17.	Lead (as Pb) (mg/kg)	0.84	0.93	0.86	1.74	0.81	1.63	0.85	0.87
18.	Cadmium (as Cd) (mg/kg)	0.41	0.42	0.41	0.32	0.44	1.39	1.41	0.37
19.	Chromium (as Cr) (mg/kg)	0.27	0.29	0.36	0.22	1.26	0.26	0.24	0.18
20.	Copper (as Cu) (mg/kg)	1.10	3.12	2.96	2.14	3.19	2.87	2.34	3.42

3.8.5 Observations

The analysis results show that soil is slightly basic in nature as pH value ranges from 7.45 to 7.81 with organic matter (0.34%-0.51 %). The concentration of Nitrogen (183 Kg/ha. to 241 Kg/ha.) Phosphorus (15.16 Kg/ha. to 24.55 Kg/ha.) and Potassium (164 Kg/ha. to 242 Kg/ha.) has been found to be in good amount in the soil samples. The consumption of fertilizers is as important factor as their production. There should be appropriate balance in the consumption of different fertilizer nutrients.

During construction of expansion unit there may generation of solid and construction waste are to be managed scientifically. There should not be any disposal of hazardous waste out side the unit. As existing project already developed the area hence no major earth work will be required. No top soil will be removed which may cause loss of fertility.

3.9 WATER ENVIRONMENT

The impact has been assessed on randomly selected surface and ground water sources falling within the study area. In order to assess the existing water quality, the Ground water samples were collected from 8 different locations and Surface Water quality from 5 locations within the study area and analyzed it as per the procedure specified in standard methods for examination of water and wastewater published by American Public Health Association and Bureau of Indian Standards (APHA/BIS).

Monitored values have been used for describing the water environment and assessing the impacts on it. To assess the water quality impacts, water resources in the impact area have been grouped into 2 classes.

- Ground water resources in the deeper strata of the ground
- Surface water resources

The ground water samples were drawn from the hand pumps and open wells being used by the villagers for their domestic needs. Surface water sampling was carried out from Rivers present within 10 Km of the proposed project. The details of the Sampling locations for Ground Water (GW) and Surface Water (SW) are given in Fig 3.7.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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Table 0-9: Ground Water Sampling Location

Stations	Name	Latitude	Longitude	Distance (km)	Direction
GW1	Project Site	30°12'25.1" N	77°22'27.9" E	0.0	Core
GW2	Bhagwanpur	30°12'22.05" N	77°22'43.72" E	0.3	E
GW3	Dadupur Chawani	30°12'26.23" N	77°23'17.54" E	1.3	E
GW4	Fatehgarh	30°10'42.45" N	77°23'5.95" E	3.3	SSE
GW5	Khadr.	30°11'3.69" N	77°24'6.59" E	3.61	SE
GW6	Khazwan	30°12'6.98" N	77°21'44.34" E	1.24	WSW
GW7	Bhukhri	30°11'27.25" N	77°21'50.77" E	3.11	SW
GW8	Balachaur	30°13'26.74" N	77°21'35.29" E	2.46	NW

Table 0-10: Surface Water Sampling Location

Stations	Name	Latitude	Longitude	Distance (km)	Direction
SW1	Hydel canal near Dadupur (DS)	30°12'23.65" N	77°23'13.65" E	1.13	E
SW2	Hydel canal near Kishangarh (DS)	30°11'29.94" N	77°22'45.83" E	1.66	S
SW3	Somb nadi near Dadupur (DS)	30°12'24.63" N	77°23'47.64" E	2.1	E
SW4	Somb nadi near Kishangarh (DS)	30°11'28.54" N	77°23'20.23" E	2.32	SF
SW5	Somb nadi near Fatehgarh (DS)	30°10'39.89" N	77°23'16.15" E	3.37	SSE

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Table 0-11: Ground Water Analysis Result

S.No	Parameter	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8	Desirable Limit	Permissible Limit
1.	pH (at 25 °C)	7.46	7.57	7.74	7.22	7.69	7.55	7.82	7.85	6.5 to 8.5	No Restriction
2.	Colour (Ecm)	100	100	100	100	100	100	100	100	5	15
3.	Turbidity (NTU)	100	100	100	100	100	100	100	100	1	5
4.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃ (mg/l)	250	260	260	260	260	260	260	260	75	200
7.	Calcium as Ca (mg/l)	150	160	160	160	160	160	160	160	75	200
8.	Magnesium as Mg (mg/l)	100	100	100	100	100	100	100	100	30	100
9.	Chloride as Cl (mg/l)	225	225	225	225	225	225	225	225	250	1000
10.	Acyanide as CN (mg/l)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	No Restriction
11.	Magnesium as Mg (mg/l)	30	30	30	30	30	30	30	30	30	15
12.	Total Dissolved Solids (mg/l)	1000	1000	1000	1000	1000	1000	1000	1000	500	2000
13.	Sulphate as SO ₄ (mg/l)	40	40	40	40	40	40	40	40	200	400
14.	Fluoride as F (mg/l)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	1	1.5
15.	Nitrate as NO ₃ (mg/l)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	45	No Restriction
16.	Iron as Fe (mg/l)	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.3	No Restriction
17.	Aluminium as Al (mg/l)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.2
18.	Barium (mg/l)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.5	1
19.	Total Chromium as Cr (mg/l)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	No Restriction
20.	Conductivity (µS/cm)	1000	1000	1000	1000	1000	1000	1000	1000	500	2000

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Sl. No.	Parameter	Unit	Pre-construction	Construction	Operation	Post-closure	Standard	Remarks
21.	Phenolic Compounds (mg/l)		BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	Nil
22.	Mineral Oil (µg/l)		BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	No Resubstn
23.	Anionic Detergents as MBAS (mg/l)		BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	Nil
24.	Zinc as Zn (mg/l)		36 mg/l	348 mg/l	28 mg/l	112 mg/l	100 mg/l	Nil
25.	Copper as Cu (mg/l)		BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	Nil
26.	Manganese as Mn (mg/l)		BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	Nil
27.	Cadmium as Cd (µg/l)		BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	No Resubstn
28.	Lead as Pb (µg/l)		BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	No Resubstn
29.	Chromium as Cr (mg/l)		BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	BDL (mg/l)	Nil
30.	Arsenic as As (µg/l)		BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	Nil
31.	Mercury as Hg (µg/l)		BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	BDL (µg/l)	Nil
32.	Total Coliform (MPN/100ml)		BDL	BDL	BDL	BDL	BDL	Should not be detectable in any 100ml sample
33.	F. Coli (MPN/100ml)		Absent	Absent	Absent	Absent	Absent	Should not be detectable in any 100ml sample

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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Table No. 0-12 : Surface Water Analysis Result

S.No.	Parameter	SW1 (BHEL Pond)	SW2 (NRI Pond)	SW3 (BHEL Pond)	SW4 (BHEL Pond)	SW5 (BHEL Pond)
1	pH at 25°C	7.51	7.63	7.72	7.62	7.52
2	Colour (Hazen)	11.00	11.00	11.00	11.00	11.00
3	Turbidity (NTU)	21.50	26.00	4.40	26.00	52.00
4	Oxom	Aggravate	Aggravate	Aggravate	Aggravate	Aggravate
5	Total hardness as CaCO ₃ (mg/l)	55.21	28.27	23.10	28.00	2.100
6	Calcium as Ca (mg/l)	24.5	16.21	76.21	63.4	64.72
7	Magnesium as Mg (mg/l)	29.88	25.81	24.11	30.25	24.00
8	Chloride as Cl ⁻ (mg/l)	81.53	84.73	75.65	76.55	76.33
9	Residual Free Chlorine (mg/l)	0.00	0.00	0.00	0.00	0.00
10	Cyanide as CN ⁻ (mg/l)	0.00	0.00	0.00	0.00	0.00
11	Magnesium as Mg (mg/l)	11.51	17.23	5.62	24.45	23.22
12	Total Dissolved Solids (mg/l)	57.33	28.30	46.00	30.00	20.00
13	Total suspended Solids (mg/l)	15.10	15.33	12.00	13.00	12.00
14	Total Dissolved Solids (mg/l)	7.21	6.97	6.4	7.4	7.4
15	Sulphate as SO ₄ (mg/l)	40.5	81.53	46.81	40.5	38.9
16	Total Hardness (mg/l)	65	65	62	60	62
17	Hardness at 25°C	14.9	11.9	11.00	15.01	12.9
18	CO ₂ (mg/l)	32.00	6.00	12.00	43.00	41.21
19	Calcium Hardness (mg/l)	4.0	9.0	7.96	7.5	8.0
20	Magnesium Hardness (mg/l)	36.21	26.0	24.0	35.5	33.9
21	Sodium as Na (mg/l)	9.34	81.54	94.23	48.96	46.34
22	Iron as Fe (mg/l)	0.00	0.51	6.38	0.2	7.58
23	Lead as Pb (mg/l)	0.00	0.24	0.27	0.27	0.25
24	Aluminum as Al (mg/l)	0.45	0.41	0.42	0.43	0.43
25	Zinc as Zn (mg/l)	0.00	0.41	0.42	0.53	0.54
26	Cadmium as Cd (mg/l)	0.00	0.00	0.00	0.00	0.00
27	Mercury as Hg (mg/l)	0.00	0.00	0.00	0.00	0.00
28	Chromium as Cr (mg/l)	0.00	0.00	0.00	0.00	0.00

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S.No.	Parameter	SW1 RDLE (µg/L to 1 mg/L)	SW2 RDLE (µg/L to 1 mg/L)	SW3 RDLE (µg/L to 1 mg/L)	SW4 RDLE (µg/L to 1 mg/L)	SW5 RDLE (µg/L to 1 mg/L)
29.	Arsenic (As) (mg/L)	1.01	1.42	1.48	2.40	2.51
30.	Zinc as Zn (mg/L)	0.09	0.09	0.05	0.05	0.06
31.	Copper as Cu (mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)
32.	Manganese as Mn (mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)
33.	Lead as Pb (mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)	RDLE (µg/L to 1 mg/L)
34.	Total Cadmium (Cd) (mg/L)	480	500	1400	1400	500
35.	Fecal Coliform (MPS/100ml)	300	300	300	300	300

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3.9.1 Observations

Analysis results of ground water reveal the following:

- pH varies from to 7.56 to 7.88
- Total Hardness varies from 214 to 281.48 mg/l
- Fluoride varies from 0.48 to 0.74 mg/l
- Total Dissolved Solids varies from 314 to 368 mg/l
- E.coli is absent in all the location

Analysis results of surface water reveal the following:

- pH varies from to 7.51 to 7.72.
- Total Hardness varies from 221.0 to 315.21 mg/l
- Total COD varies from 32.0 to 43.45 mg/l
- Total BOD varies from 11.00 to 15.0 mg/l
- Total DO varies from 5.34 to 6.4
- Total Dissolved Solids varies from 460 to 571.0 mg/l

3.10 LAND USE/ LAND COVER OF STUDY AREA

The present land use pattern of the study area has been assessed based on NRSA Satellite (1:50,000) data and validated from field visit and data collection.

The land use analysis show that the area is of predominantly crop land, talow land, Open Scrub followed by Built-up, Waste land and water body respectively.

There will be no change in the land use categorization after laying of the proposed pipeline. Where, there will be change in land use pattern due to the excavating activities, the land use will be restored to near original conditions. Hence, the impact on land use is temporary.

In the study, both digital image processing and visual interpretation technique were used to generate output of Land use / land cover map of study area. The spatial distribution of various land use/ land cover is given in Figure. The data base on land use/ land cover belongs to project area is as follows. A standard False Colour Composite (FCC) image has also been generated on the same scale. The land use pattern of the study area is given in the table below:

Table 0-13: Land Use Pattern of the Study Area

Landuse Classification	Area in Hectare	Area in %
Waterbody	567	1.78
Sandy area	510	1.60
Industry	252	0.79
Forest	710	2.23

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Builtup	2838	8.91
Crop Land	12715	39.95
Fallow Land	4830	15.16
Open Scrub	6900	21.66
Waste Land	2519	7.92
Total	31850	100

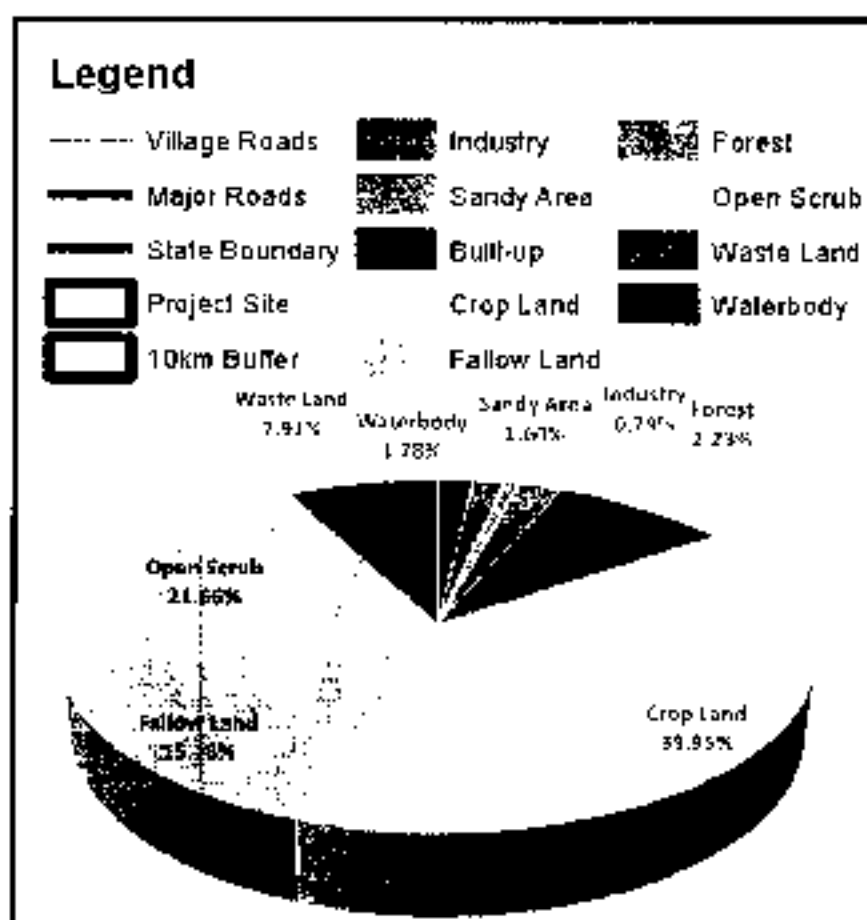


Figure 0-6: Pie Chart Representation for Land Use of the Study Area
The Land use map and other maps within the study area are as follows:

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KIHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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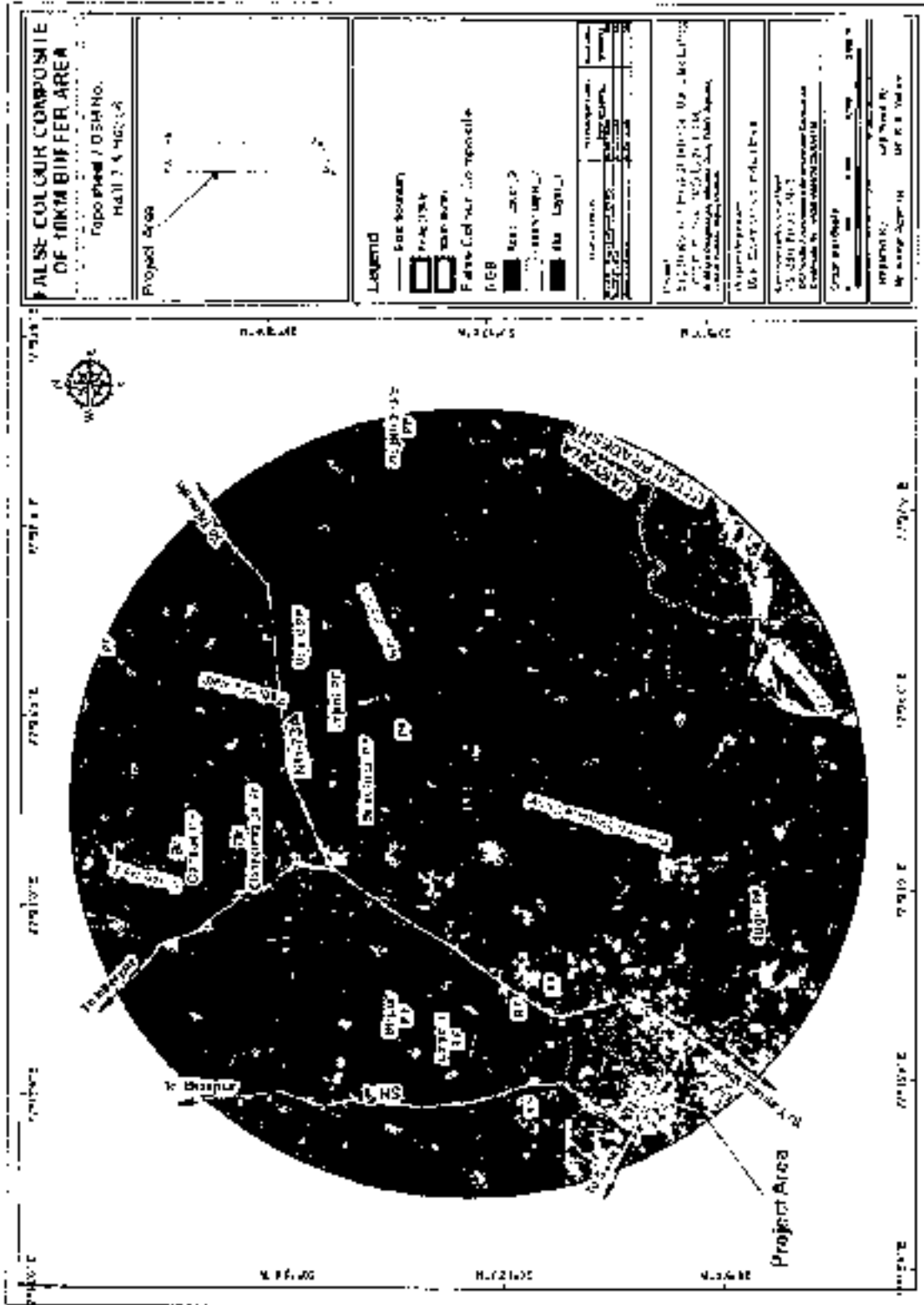


Figure 0-8: False Colour Composite Map of Study Area

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE HIRAGWANPUR, KIRARWAN ROAD, TEHSIL JAGAIDHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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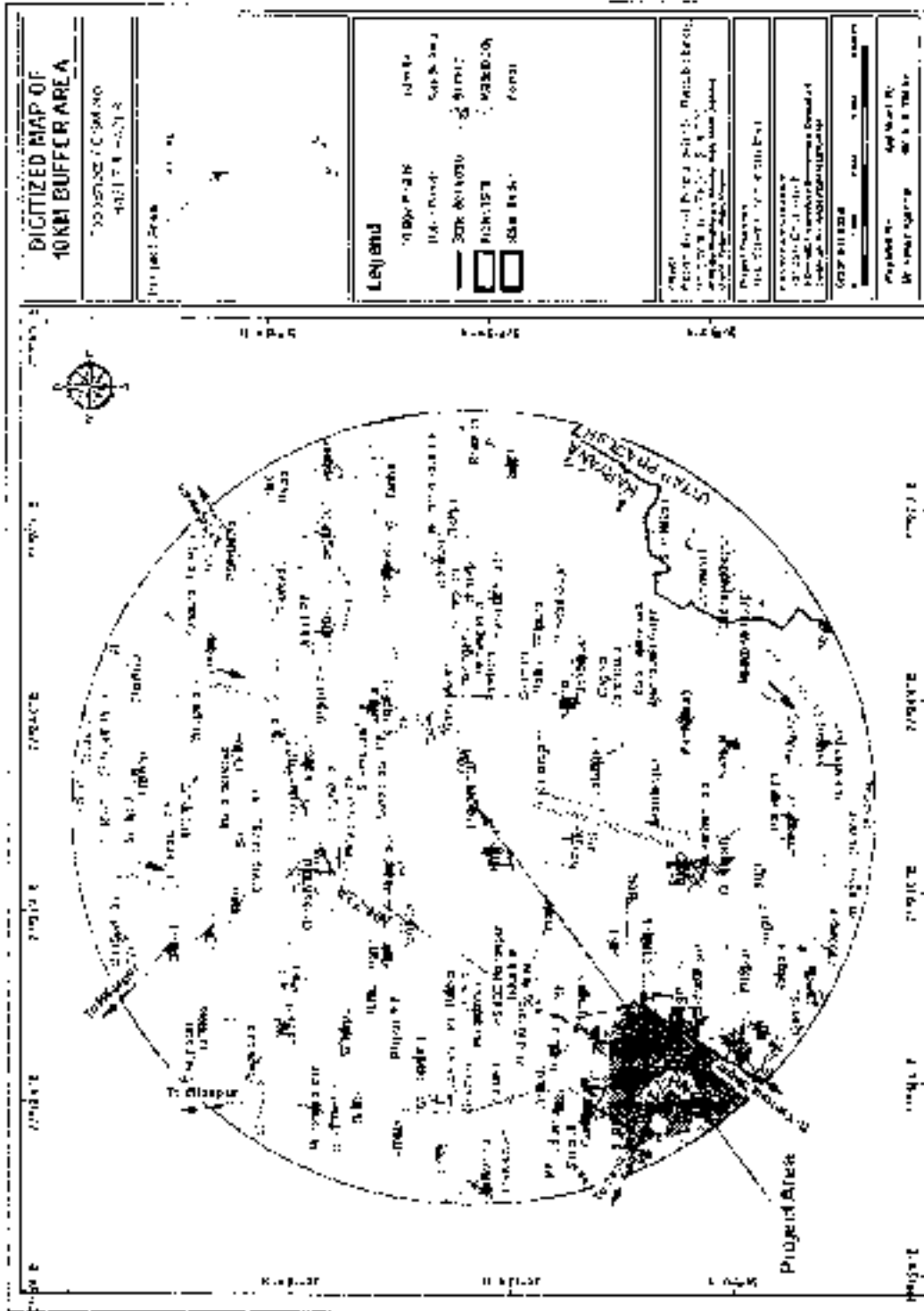


Figure 0-9: Digitize Map of Study Area

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 160 TPD TO 200 TPD AT VILLAGE BIJAGWANPUR, KIARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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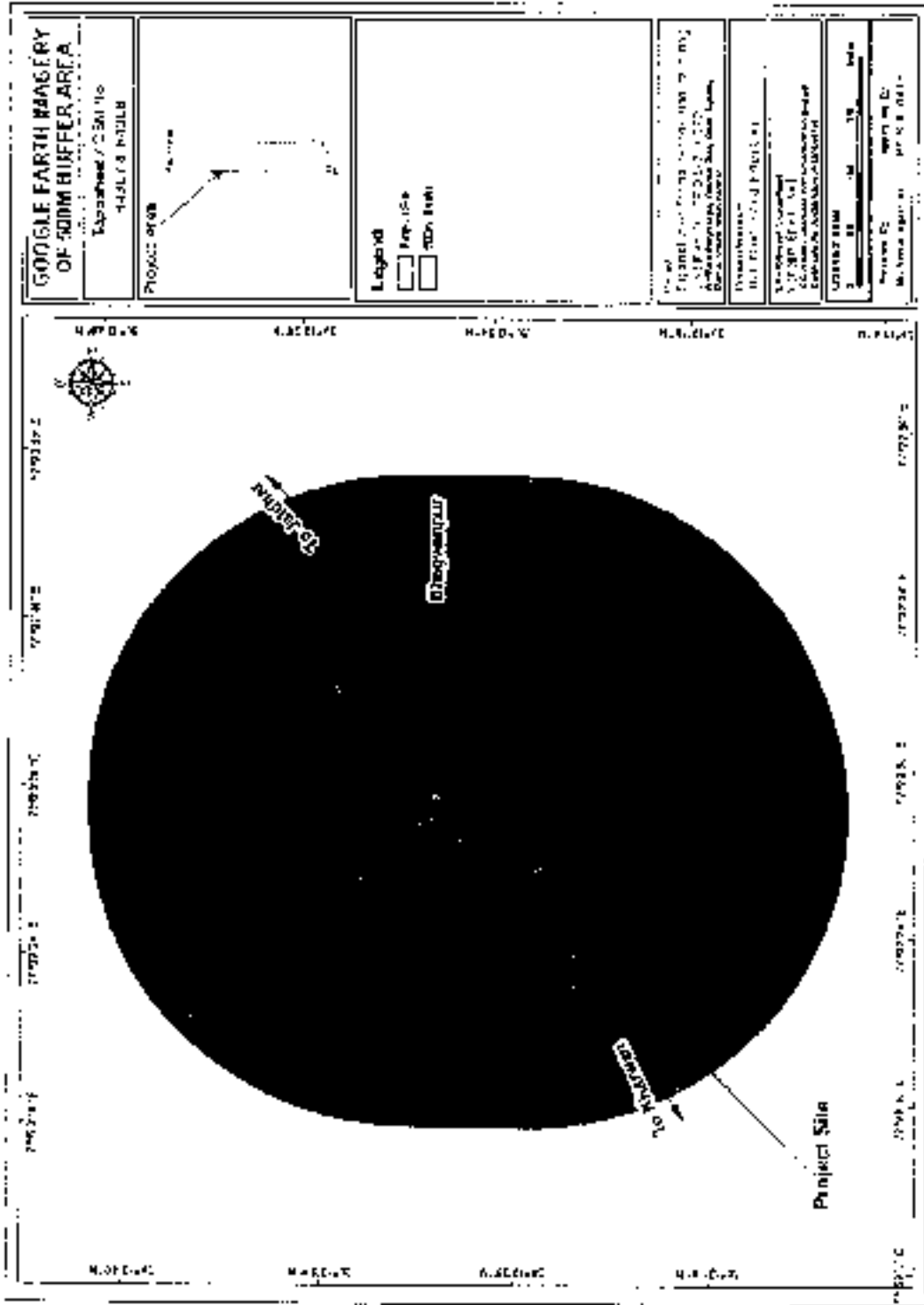


Figure 0-10: Google Earth Imagery of 500m Buffer Area

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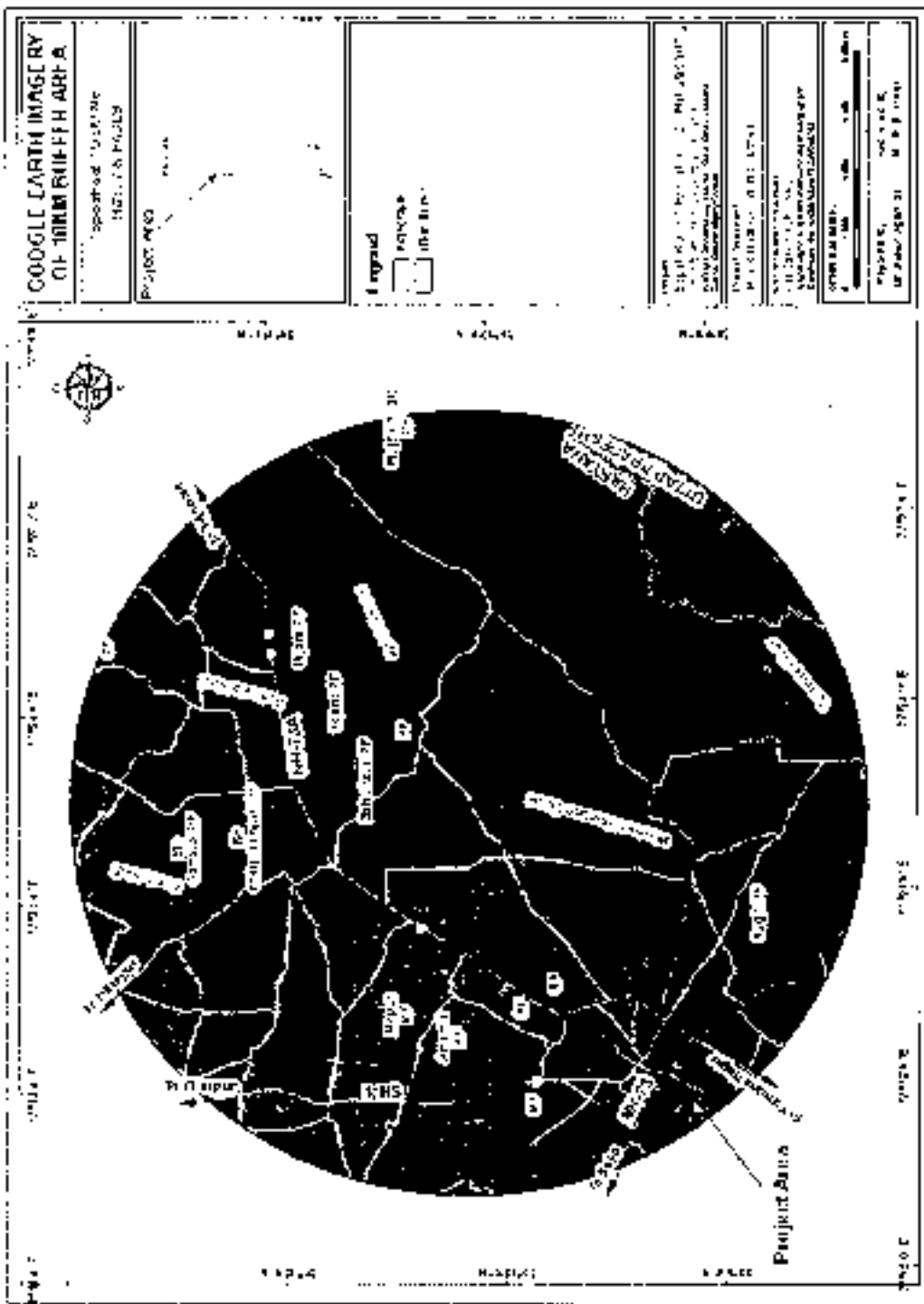


Figure 0-31: Google Earth Imagery of 10 Km study area

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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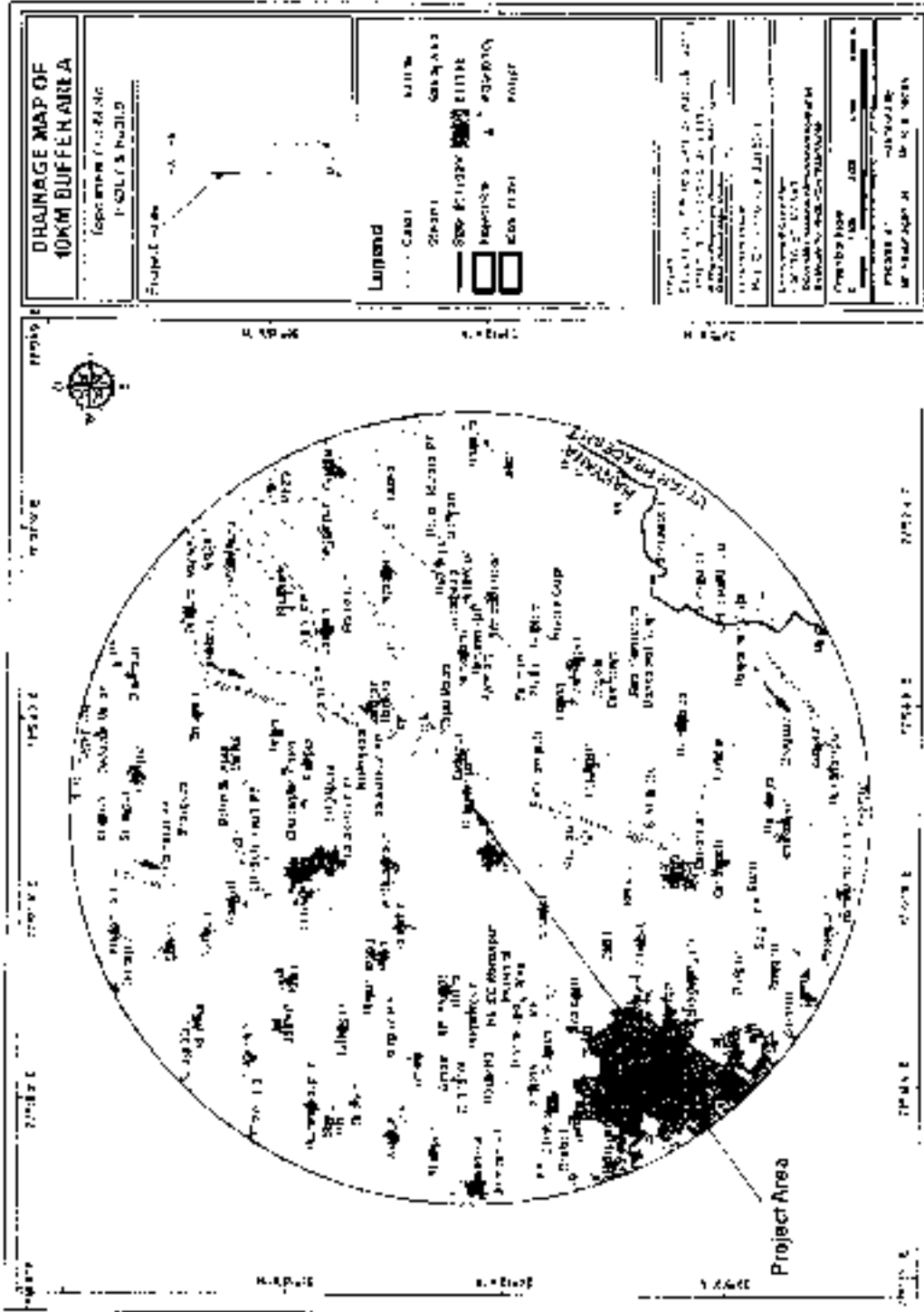


Figure 0-12: Drainage Map of Study Area

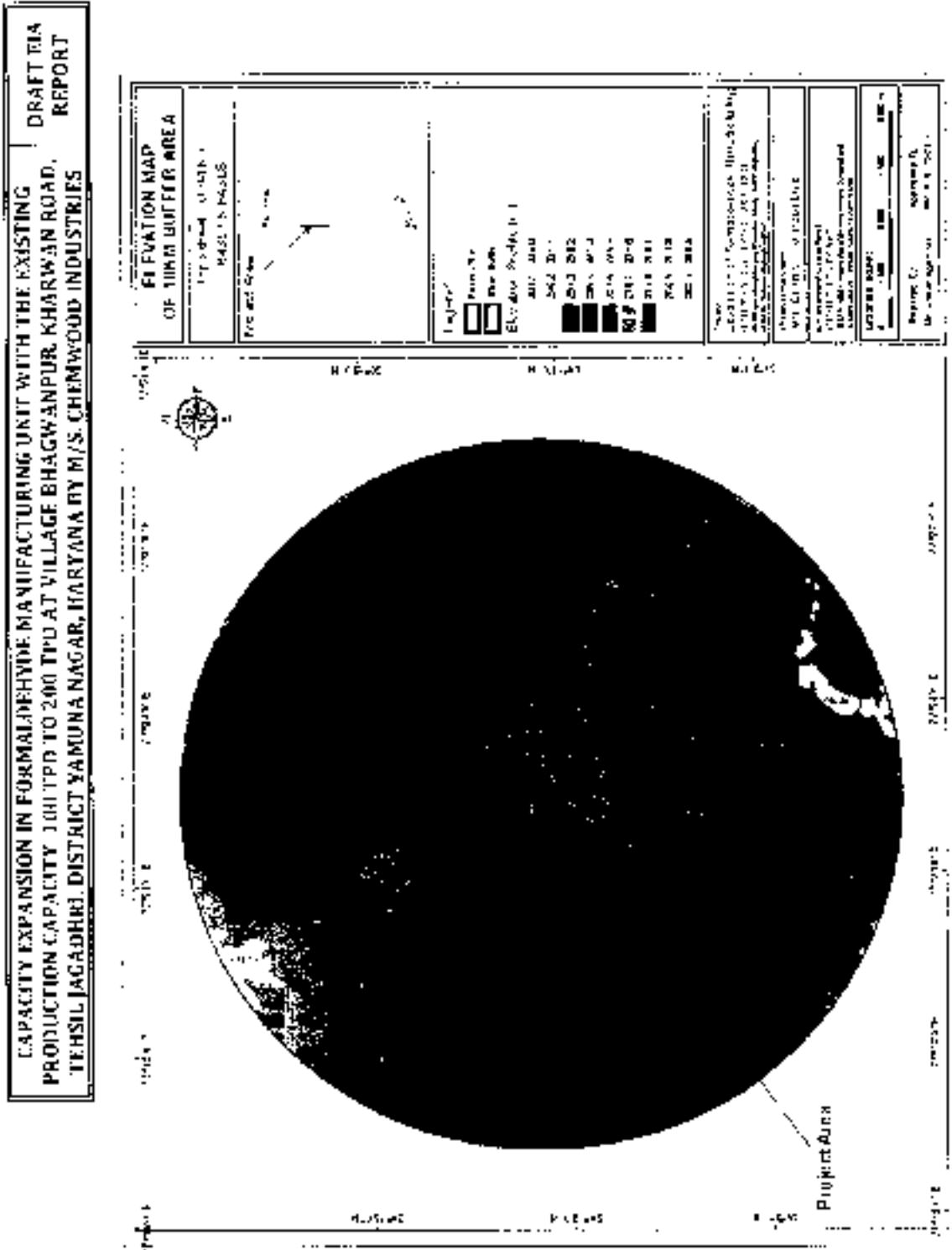


Figure 0-13: Elevation Profile Map of the Study Area

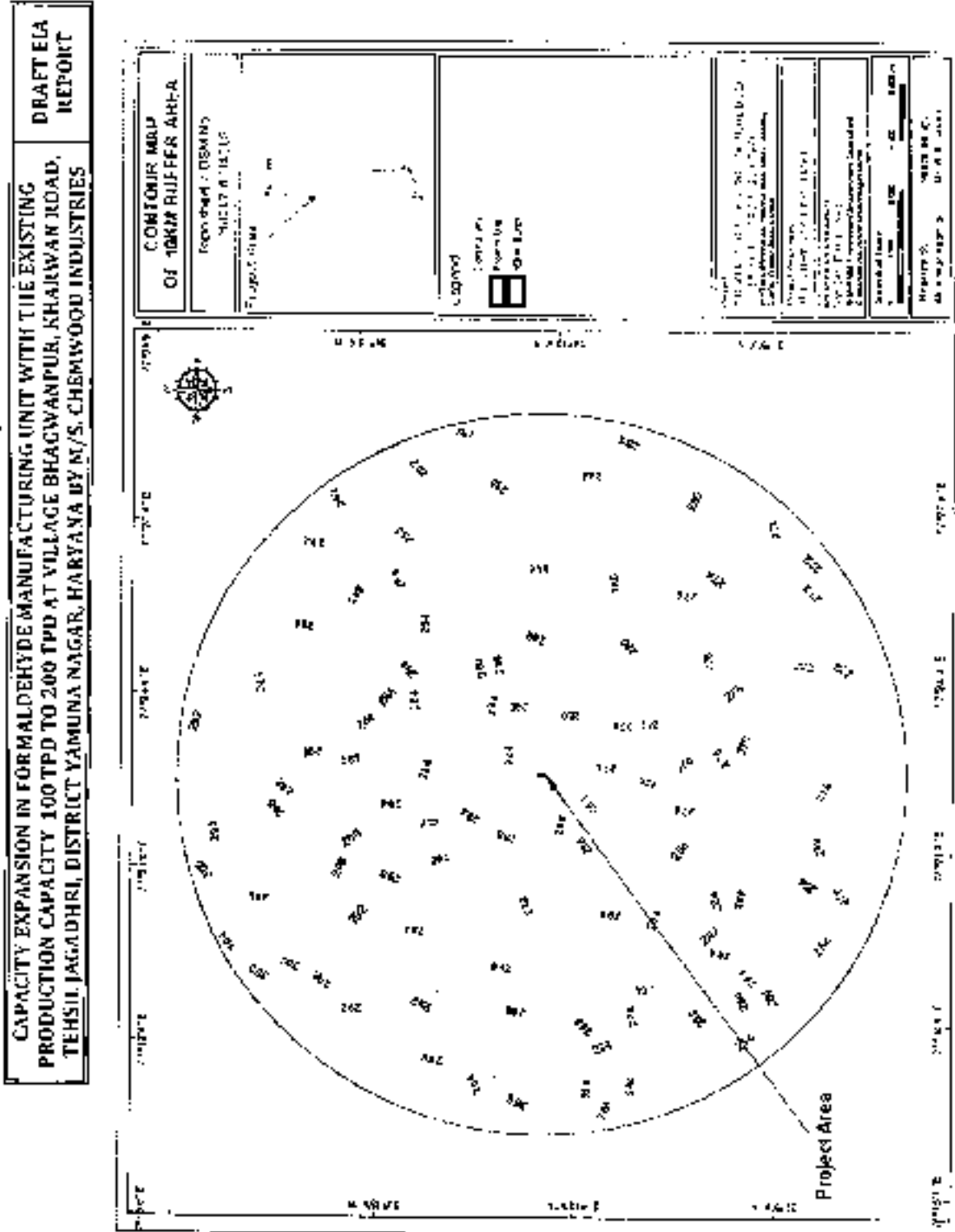


Figure 10-14: Contour Map of Study area

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3.11 HYDROGEOLOGY

M/s. Chemwood Industries has proposed expansion of existing formaldehyde manufacturing unit from 100 TPD to 200 TPD within the existing unit. The project site is located in Tehsil Jagadhri District Yamunanagar HR.

3.11.1 Climate and Rainfall:

The climate of Yamuna Nagar district can be classified as subtropical monsoon, mild & dry winter, hot summer and sub-humid which is mainly dry with hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. There are four seasons in a year. The hot weather season starts from mid March to last week of the June followed by the southwest monsoon which lasts up to September. The transition period from September to November forms the post monsoon season. The winter season starts late in November and remains up to first week of March.

The normal annual rainfall of the district is 1107 mm, which is unevenly distributed over the area in 43 days. The south west monsoon sets in from last week of June and withdraws in end of September, contributed about 61% of annual rainfall. July and August are the wettest months. Rest 19% rainfall is received during non-monsoon period in the wake of western disturbances and thunderstorms. Normal Annual Rainfall is 1107 mm where as normal monsoon rain fall is 898 mm. Mean maximum temperature is 48.8 °C. Mean minimum temperature is 8.8 °C.

3.11.2 Geomorphology, Soil and Topography

Yamuna Nagar district of Haryana located in north-eastern part of Haryana State and lies between 29° 55' 30" 31' north latitudes and 77° 00' 77° 35' east longitudes. Total geographical area of the district is 1756 sq.km and comprises 4% of total area of State.

The district is divided into four Physiographic units.

- Siwaliks
- Dissected Rolling Plains
- Interfluvial Plains
- Active And Recent Flood Plains
- Relict Plains

Siwaliks hills - Siwalik hill ranges occupy the northern fringe of Yamuna Nagar district and attain the height up to 950m AMSL. The hills are about 50km high with respect to the adjacent alluvial plains. These are characterized by the broad tableland topography that has been carved into quite sharp slopes by numerous ephemeral streams come down to the outer slopes of the Siwaliks and spread much of gravels boulders, pebbles in the beds of these streams.

Kandi Belt - A dissected rolling plain in the northern parts of district is a transitional tract between Siwaliks hills and alluvial plains. It is about 25 km wide and elevation varies between 250 and 375m AMSL.

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Interfluvial plains - This tract are part of higher ground between Ghaggar and Chautang and include high mounds and valleys. In general, the slope is from northeast to southwest.

Active and recent flood plains - This plain is narrow tract along river Yamuna in the district

Relict wedge plain - This is almost in alignment to the surface water divide between the westward flowing Ghaggar and eastward flowing Yamuna River

3.11.3 Soil Type

Eutrochrepts/ Udorthents - These are shallow and loamy sands to fine sandy loams, except in depressions, well-drained, non-saline, non-alkali, noncalcareous, mostly base saturated and are classified as loamy skeletal typic, lithic, eutrochrepts/ udorthents. These soils are found in the Siwalik range.

Udipsamments/ udorthents - These are loamy sand to sandy loam deep, excessively or well-drained, non-saline, non-alkali. These are placed under the associations of transitional tract between Siwalik hills and alluvial plains.

Psammaquents and Haplaquepts - These soils are found in Yamuna Plains

Haplaquept - These soils are non saline, alkalinity hazards are classified as typic ustochrepts but water logged soils with loam to clay loam texture showing the effect of glazing, are classified as acric/ typic Haplaquepts. Areas as acidic soil moisture, moisture have soils classified as camborthics and torripsamments.

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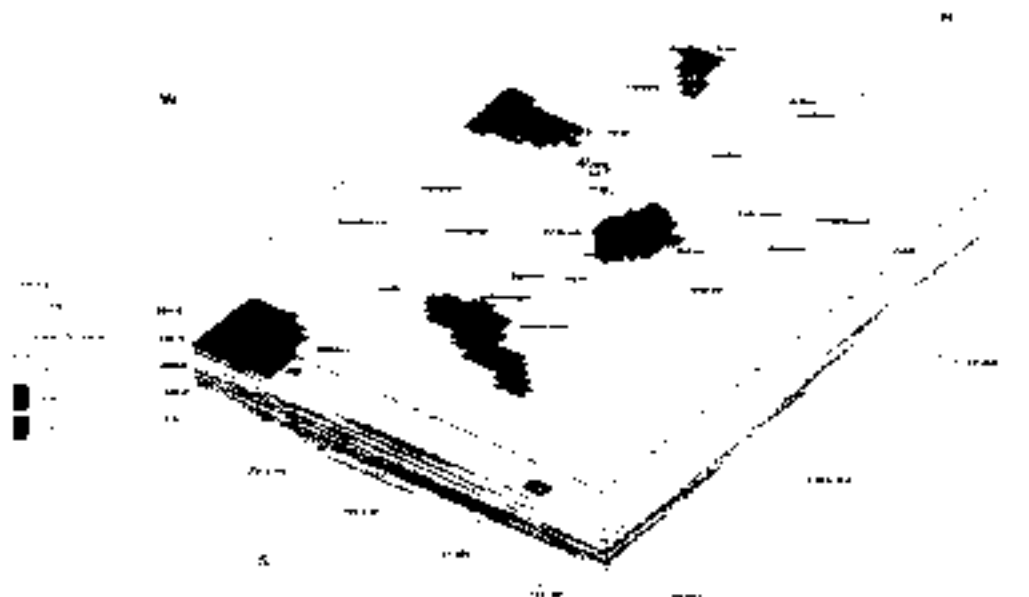


Figure 3.16: Lithological Model of Yamunanagar District

3.11.5 Seismicity of the area

Eastern parts of Haryana along with Delhi lie in the Gangetic Plain. It is a down warp of the Himalayan foreland, of variable depth, converted into flat plains by long-vigorous sedimentation. This is known as a geosynclines and the Gangetic Plain is the Indo-Gangetic Geosynclines. It has shown considerable amounts of flexure and dislocation at the northern end and is bound on the north by the Himalayan Frontal Thrust. The floor of the Gangetic trough (if seen without all the sediments) is not an even plain, instead shows corrugated inequalities and buried ridges (shelf faults). The region sits atop the Delhi-Haridwar ridge, which is a sub-surface ridge, trending NE-SW. There are numerous faults in this region, like the Moradabad, Panipat and Sohna faults. Delhi, Chandigarh and many parts of Haryana lie in Zone IV and thus they are extremely vulnerable to earthquakes. Most earthquakes in this region are shallow, though a few

earthquake of intermediate depth have been recorded in Haryana. The alluvial cover of the Indo-Gangetic plain makes even distant earthquake felt here quite strongly. This region often feels deep-seated earthquakes that are centered on the Pakistan-Afghanistan Border and in the Hindukush mountains in Afghanistan. However, it must be stated that proximity to faults does not necessarily translate into a higher hazard as compared to areas located further away, as damage from earthquakes depend on numerous factors such as subsurface geology and adherence to the building codes. As

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per seismic map of Haryana, Yamuna Nagar comes under the High damage risk zone - IV.

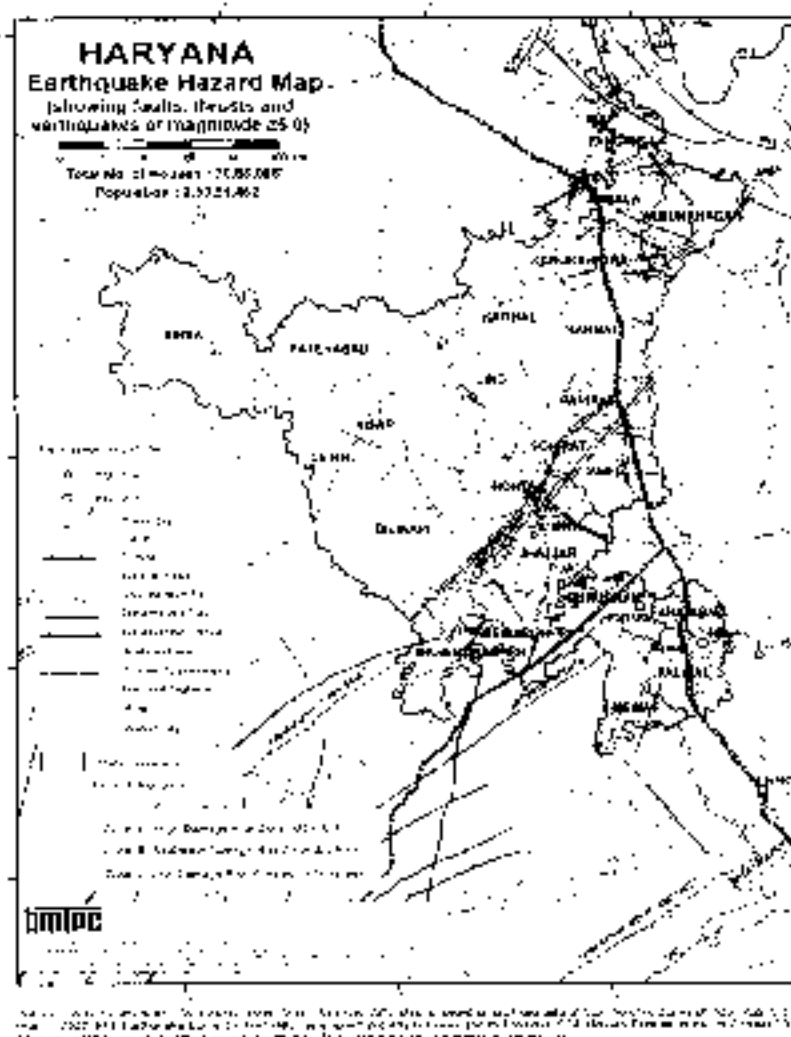


Figure 3.17: Seismic map of Haryana

3.11.6 Hydrogeology of the Area

As per CGWA the JAGADHRI block comes under the Non-Notified, Over-exploited zone

Drainage Study: The district is mainly drained by the rivers Yamuna, Markanda and its tributaries. Markanda is tributary of river Ghaggar and drains major part of the district. The high land between Markanda River and small rivulets of River Yamuna acts as basin boundary between west flowing rivers of Indus system and east flowing rivers of Ganga basin. River Yamuna drains eastern part of the district and acts as boundary between Haryana and Uttar Pradesh State.

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Based on the same criteria, to know the broad picture of the aquifer disposition, inter-relationship of granular zones, nature, geometry and extension of aquifers in the Yamunanagar district, the aquifer grouping has been done using the sub-surface lithology. The first aquifer is water table aquifer and extends all over the area. The aquifer is mainly composed of fine to coarse grained sand.

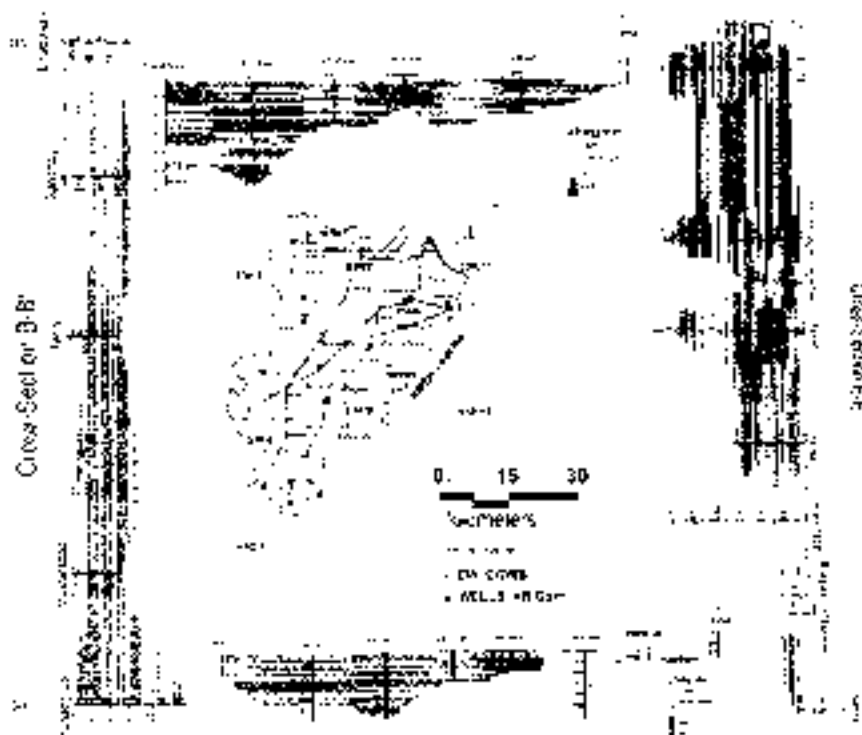


Fig. 3.19: Cross sections of Aquifer Map of Yamunanagar District

3.11.7 Groundwater Resources of the Area

The depth to water level during pre-monsoon period in the district ranges between 2.17m bgl at Choli and 16.02m bgl at Khizrabad. However, in major part of district water level ranges between 5.0m bgl and 10.0m bgl covering the Central and Northern portion of the district, while southern and North-eastern portion covering Radaur and Chacharauli blocks show water level more than 10 m ranging upto 16.02 m bgl. The Depth to water level during post-monsoon period in the district ranges between 2.04m bgl at Choli and 15.30m bgl at Dharaung. However, in major part of district water level ranges between 5.0m bgl and 15.0m bgl. The long term water level fluctuation shows a declining trend ranging from 0.17 m to 3.06 m. Maximum decline is shown in Rasulpur village of Sadhaura block. There is rise also seen in the Northern portion of the district ranging from 0.25 m to 4.94 m.

3.11.8 Groundwater Level Monitoring

Ground water level near the project location varies from 8.14 to 10.11 mbgl.

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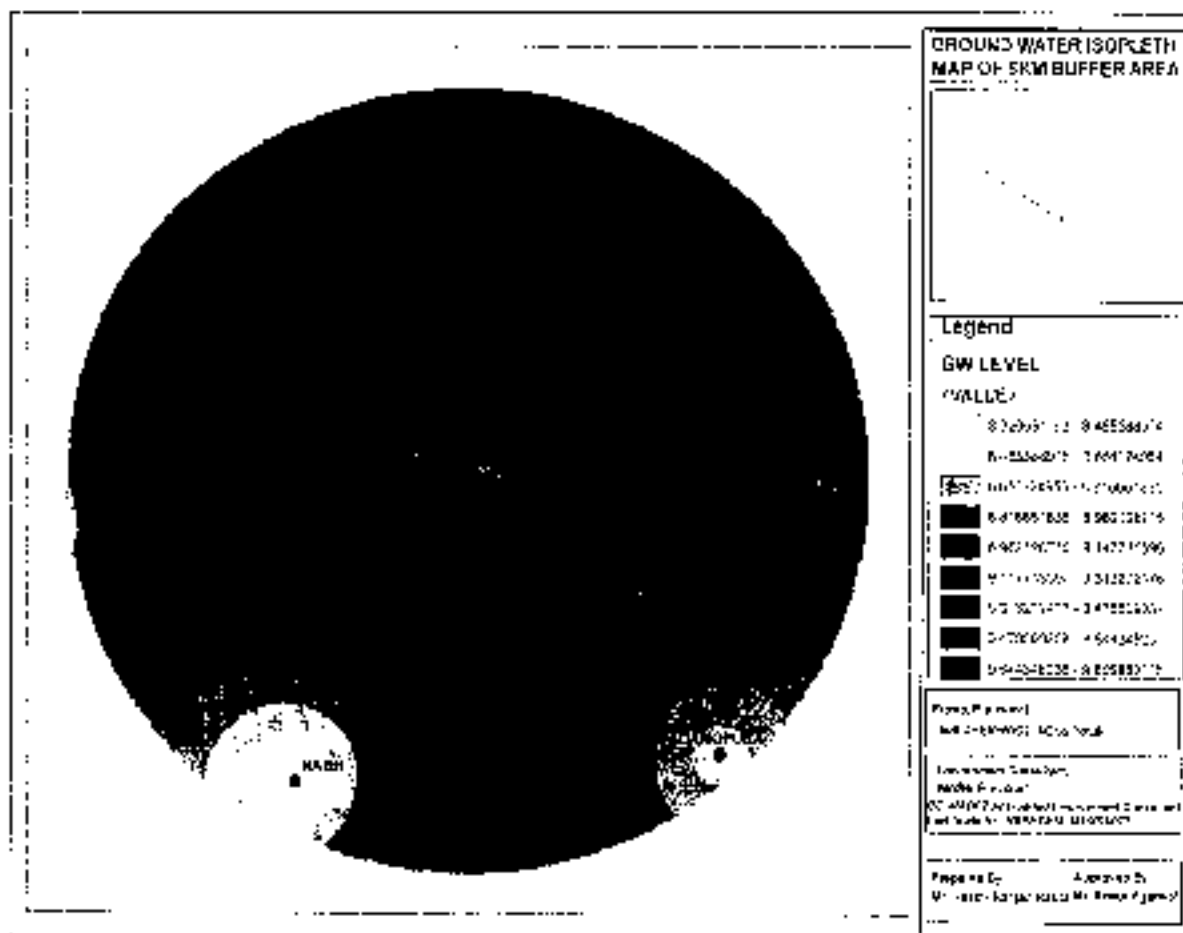


Fig. 3.20: Ground Water level of Study area

3.11.9 Flood History

Flood is a temporary inundation of large region due to increase in reservoir levels, or of rivers flooding their banks because of heavy rains, high winds, cyclones, storm surge along coast, tsunami, melting snow or dam bursts. In the sub-region of Haryana, the propensity of flooding is more as a hazard rather than a disaster. The areas under low-lying contour zone (heterogeneous topography) and along the river of Yamuna are subject to flood hazard. There are number of instances when several districts faced flood hazard primarily due to heavy rain in monsoon and discharge in Yamuna.

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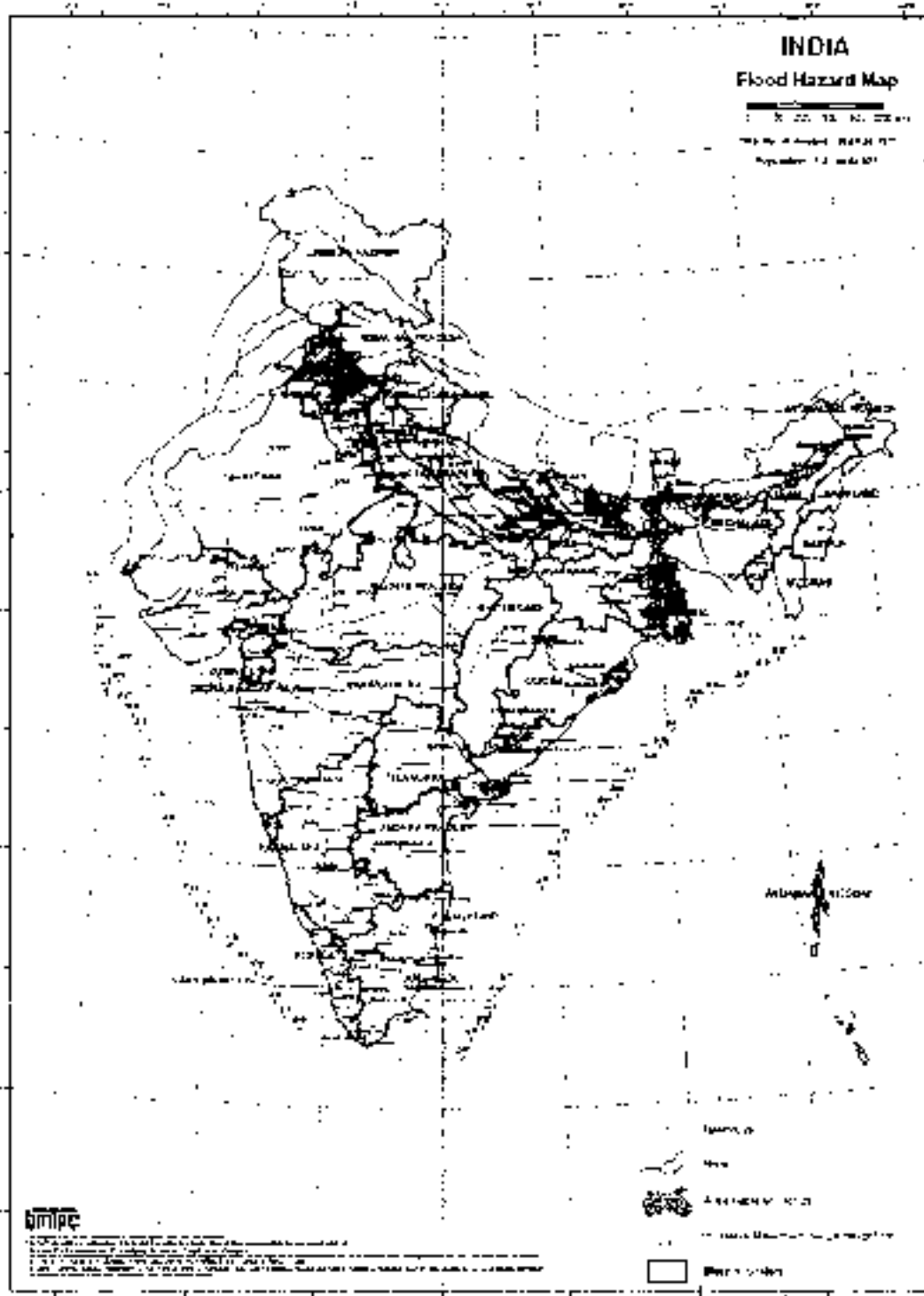


Figure 3.21: Flood Hazard Map of India

3.12 BIOLOGICAL ENVIRONMENT

Study of biological environment is one of the important aspects for the Environmental Impact Assessment, in view of the need for conservation of Environmental quality and biodiversity of particular geographical area. Ecological systems show complex interrelationship between biotic and Abiotic components including dependence, competition and mutualism. Biotic components comprises of plant and animal communities which interact not only within and between themselves but also with the Abiotic components viz. Physical and Chemical; components of the environment.

Generally, biological communities are the good indicators of climatic and edaphic factors. Studies on biological aspects of ecosystems are important in Environmental Impact Assessment for safety of natural flora and fauna. Information on the impact of environmental stress on the community structure serves as an inexpensive and efficient early warning system to check the damage to a particular ecosystem. The biological environment includes mainly terrestrial and aquatic ecosystems

The animal and plant communities exist in their natural habitats in well organized manner. Their natural settings can be disturbed by any externally induced anthropological activities or by naturally induced calamities or disaster. So, once this setting is disturbed, it becomes practically impossible or takes a longer time to come to its original state. Plants and animals are more susceptible to environmental stress. A change in the composition of biotic communities reflected by a change in the distribution pattern of natural species of flora and fauna existing in the ecosystem. The sensitivity of animal and plant species to the changes occurring in their existing ecosystem can therefore, be used for monitoring Environmental Impact Assessment studies of any project.

3.12.1 Objectives of Biological Study:

The main objectives of biological study were:

- To collect the baseline data for the study along with a description of the existing terrestrial, wetland and aquatic biodiversity.
- To assess the scheduled species in the proposed site (rare, endangered, critically endangered, endemic and vulnerable).
- To identify the locations and features of ecological significance.
- To identify the Impacts of proposed project before, after and during development phase.

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Table 0-14: Mode of data collection and parameters considered during the Survey

Sr. No.	Aspect	Mode of Data collection	Parameters monitored	Remarks
1.	Terrestrial Biodiversity	By field survey	Floral and Faunal diversity	For Floral Diversity: Random survey, sapling survey/forest inventory, walking transect, collection and identification with the help of relevant literature. For Faunal Diversity: direct and indirect sampling, walking transect, point sampling and nest sampling etc.
2.		From authentic sources like Forests department of Haryana and available published literatures from ZSI, ISI etc.	Floral and Faunal diversity and study of vegetation, forest type, importance etc.	Data collected from the working plan of the region, forest types from the authentic literature of Champion & Seth.
3.	Aquatic Biodiversity	By field survey	Floral and Faunal diversity	For Plankton Study- Lackey's drops method and light microscope For other aquatic- Random survey, opportunistic observations
4.		From authentic sources like Forests department of Haryana.	Floral and Faunal diversity and study of vegetation, forest type, importance etc.	Desktop literature review to indentify the representative spectrum of threatened species, population and ecological communities.

3.12.2 Terrestrial Flora and Fauna:

Biological communities are the indicator environmental condition and resource of its distribution and survival. Biotic component comprises of both plants (Flora) and animal (Fauna) communities, which interact not only within and between them but also with the Abiotic components, viz physical and chemical components of the environment.

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The changes in biotic community are studied in the pattern of distribution, abundance and diversity.

3.12.3 Terrestrial Flora:

Methodology

The present study on the floral assessment for the project activity is based on field survey of the area. By the following forest inventory methodology; the survey of biological parameters has been conducted within the core zone and buffer zone (10 km radial distance) from project site at Village: Bhagwanpur, Kharwan Road, Tehsil: Jagadhri, District: Yamuna Nagar, Haryana, in accordance with the guidelines issued by the Ministry of Environment, Forests and Climate Change, CPCB, and SPCB during the study period.

A preliminary survey of the study area has been performed to get a general picture of the landscapes in vegetation. Traverses have been taken within different zone of the study area to note major vegetation patterns and plant communities including their growth form and dominant species. A forest inventory is "an attempt to describe the quantity and quality of forest trees and many of the characteristics of the land area upon which the trees are grown." The objective this floral inventory of the study area, is to provide complete checklist of floristic structure within the core zone and buffer zone (10 km radial distance) from project site for formulating effective management and conservation measures.

Floristic Composition of Core/Buffer Zone:

The terrestrial flora of the study area i.e. core zone and buffer zone (10 km radial distance) from the project site could be categorized as agriculture vegetation, social forestry plantation, Agro-forestry plantation, greenbelts developed by existing industries and natural/forest vegetations.

Agricultural Crops:

Agriculture is the primary sector of Haryana State economy and majority of the population is directly or indirectly dependent on agriculture and its allied activities. The climatic conditions of a region affect the agricultural cropping pattern of different areas. Thus, it produces different crops. Amongst a host of climatic factors i.e. rainfall, temperature, humidity, wind velocity and duration of sunshine etc. affect the cropping pattern in a significant way. Annual rainfall and its distribution over the entire year and the regimes of diurnal and annual temperatures are by far, the prominent factors affecting agriculture and the life style of the people.

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Table 0-15: Cropping pattern of Study area, Yamuna Nagar

Crop Variety	Family	Botanical Name	Trade Name
Vegetable	Malvaceae	<i>Abelmoschus esculentus</i>	Bhindi
	Cucurbitaceae	<i>Cucurbita pepo</i>	Kaddu
	Cucurbitaceae	<i>Momordica charantia</i>	Karela
	Solanaceae	<i>Capsicum annuum</i>	Muchi
	Solanaceae	<i>Solanum melongena</i>	Brinjal
	Solanaceae	<i>Solanum tuberosum</i>	Potato
	Solanaceae	<i>Lycopersicon lycopersicum</i>	Tomato
Cereals	Poaceae	<i>Oryza sativa</i>	Rice
	Poaceae	<i>Triticum aestivum</i>	Wheat
	Poaceae	<i>Zea mays</i>	Maize
Fruits	Myrtaceae	<i>Psidium guajava</i>	Guava
	Musaceae	<i>Musa paradisiacal</i>	Banana
Spices	Caricaceae	<i>Carica papaya</i>	Papaya
	Anacardiaceae	<i>Mangifera indica</i>	Mango
	Amaryllidaceae	<i>Allium sativum</i>	garlic
	Zingiberaceae	<i>Zingiber officinale</i>	Adrak

Social/Agro-Forestry:

In India, natural forests are being conserved primarily for the environmental benefits. Serious efforts are also being done to plant large number of trees outside forest under social forestry programs to increase the tree cover and fulfill demand of various forest produce required by the people and forest based industries. Agricultural fields are one of the potential areas, where large scale planting of trees can be taken up along with the agricultural crops. Agro-forestry models adopted by the farmers in Haryana state are highly lucrative, therefore, attracting farmers in a big way.

Table 0-16: Agro Forestry Species of the Study Area (Buffer Zone)

Botanical Name	Trade Name	Family
<i>Delonix regia</i>	Gulmohar	Caesalpinaceae
<i>Phyllanthus emblica</i>	Awla	Euphorbiaceae
<i>Dalbergia sissoo</i>	Shisham	Fabaceae
<i>Azadirachta indica</i>	Neem	Meliaceae
<i>Mangifera indica</i>	Aam	Anacardiaceae
<i>Pongamia pinnata</i>	Karanja	Euphorbiaceae
<i>Musa paradisiacal</i>	Banana	Musaceae
<i>Ficus religiosa</i>	Papal	Moraceae

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Botanical Name	Trade Name	Family
<i>Moringa oleifera</i>	Munga	Moringaceae
<i>Eucalyptus camaldulensis</i>	Nilyiri	Myrtaceae
<i>Psidium guajava</i>	Guava	Myrtaceae
<i>Tectona grandis</i>	Sagwan	Verbenaceae
<i>Derrisulanius strictus</i>	Lathi bans	Poaceae
<i>Butea monosperma</i>	Kachnar	Fabaceae
<i>Cassia fistula</i>	Amaltas	Fabaceae
<i>Saraca asoca</i>	Asok	Fabaceae
<i>Populus deltoids</i>	Popular	Salicaceae

Grasslands:

No prominent grass land ecosystem has been found in core and buffer zone of the project. However the grass lands were mixed with natural vegetation in low lands and cultivable waste lands are now being utilized as grazing grounds to the livestock species: Goat, Cow, Ox and Buffalo. The grass species and sedges of core and buffer zone are listed below with the natural vegetation of buffer zone.

Endemic/Endangered Flora:

No endangered and endemic flora was recorded from core and buffer zone of the project area.

Location of National Park/Sanctuaries:

There is no Bio-sphere Reserve, National Parks, Wildlife Sanctuary, Tiger Reserve and Elephant Reserve within 10 km radius of the project site. Some protected area like protected forests and reserve forests are present within the 10 km radius study area from the formaldehyde manufacturing unit at village-Bhagwanpur, Kharwan Road, Tehsil-Jagadhri, District-Yamuna Nagar, Haryana.

Natural/Forest Vegetation:

Upper layer is stratified by dominant tree species: *Mangifera indica* (Mango); *Dalbergia sisso* (Shisham); *Azadirachta indica* (Neem); *Populus deltoides* (popular), *Bombax ceiba* (Seneh); *eucalyptus camaldulensis* (Eucalyptus); *ailanthus excelsa* (Arusa); *Ziziphus Mauritiana* (Jujube tree); and *Ficus religiosa* (Peepal). Some plantations of eucalyptus and populus are present at the bank of river Yamuna.

Lower strata of shrubs occupied at ground level: *Cassia alata* (Wild Senna); *Coccinia hirsuta* (Jamiti-ki-bel); *Tinospora cordifolia* (Gulancha), *Bartleria cristata* (Crested purple); *Vitex negundo* (Chastu tree); *Coccinia grandis* (Ivy gour); *Lantana camara* (Wild sage); *Rivinus communis* (Arandi); and *Hyptis suaveolens* (Wilayati tulasi).

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The herbaceous species: *Cynodon dactylon* (Dabhi); *Achyranthes aspera* (Chirchira); *Saccharum spontaneum* (Kansh); *Parthenium hysterophorus* (Congress weed); *Cassia tora* (Tarota); *Tridax procumbens* (Kamarmodi); *Panicum indicum* (Fox tail grass); *Croton bonplandianus* (Mirchini); and *Hemidesmus indicus* (Aonantmul) The status of natural/ forest flora of buffer zone is presented below.

Table 0-17: Checklist of Natural Vegetation (Buffer Zone)

Family Name	Botanical Name	Trade Name
I. UPPER LAYER-TREE FLORA		
Aceraceae	<i>Phoenix sylvestris</i>	Khajur
Anacardiaceae	<i>Mangifera indica</i>	Aam/Mango
Annonaceae	<i>Annona squamosa</i>	Sitafal
Caesalpiniaceae	<i>Bauhinia racemosa</i>	Apta
Caesalpiniaceae	<i>Bauhinia variegata</i>	Kachnar
Caesalpiniaceae	<i>Cassia fistula</i>	Amaltas
Combretaceae	<i>Anogeissus latifolia</i>	Dhaura
Combretaceae	<i>Terminalia arjuna</i>	Arjun
Combretaceae	<i>Terminalia tomentosa</i>	Asan
Simaroubaceae	<i>Ailanthus excelsa</i>	Adusa
Fabaceae	<i>Butea monosperma</i>	Palash
Fabaceae	<i>Dalbergia sissoo</i>	Shisham
Fabaceae	<i>Dalbergia paniculata</i>	Dhoban
Fabaceae	<i>Delonix regia</i>	Culmohar
Fabaceae	<i>Pongamia pinnata</i>	Karanj
Fabaceae	<i>Saraca asoca</i>	Ashok
Poaceae	<i>Dendrocalamus strictus</i>	Lathi Baans
Meliaceae	<i>Azadirachta indica</i>	Neem
Meliaceae	<i>Melia azadirachta</i>	Bakain
Mimosaceae	<i>Acacia auriculiformis</i>	Babul
Mimosaceae	<i>Acacia nilotica</i>	Desi Babul
Mimosaceae	<i>Albizia lebbek</i>	Siris
Mimosaceae	<i>Albizia procera</i>	Kala Siris
Moraceae	<i>Ficus benghalensis</i>	Bargad
Moraceae	<i>Ficus religiosa</i>	Papal
Moraceae	<i>Ficus racemosa</i>	Gular
Moraceae	<i>Morus alba</i>	Mulberry
Myrtaceae	<i>Argyrea maruies</i>	Bel
Myrtaceae	<i>Eucalyptus camaldulensis</i>	Safeda
Myrtaceae	<i>Syzygium cumini</i>	Jamun
Malvaceae	<i>Bombax ceiba</i>	Sernal
Salicaceae	<i>Populus deltoids</i>	Popular
II. LOWER LAYER-SHRUB & HERBS		

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Family Name	Botanical Name	Trade Name
Acanthaceae	<i>Adiantum vastica</i>	Bansa
Amaranthaceae	<i>Achyranthes aspera</i>	Chirehitta
Amaranthaceae	<i>Chenopodium album</i>	Bathuwa
Amaranthaceae	<i>Amaranthus spinosa</i>	Kate Chawli
Apocynaceae	<i>Valeris solanica</i>	Buddhi Bel
Apocynaceae	<i>Cassia occidentalis</i>	Karaunda
Apocynaceae	<i>Nerium indicum</i>	Kaner
Apocynaceae	<i>Cryptolepis buchanani</i>	Dudhi
Araceae	<i>Scindapsus officinalis</i>	Gajpiper
Asteraceae	<i>Parthenium hysterophorus</i>	Gajar Ghas
Asteraceae	<i>Tridax procumbens</i>	Kamarnudi
Asteraceae	<i>Xanthoxylum stumarium</i>	Chota Gokhru
Caesalpinaceae	<i>Cassia tora</i>	Parwar
Combretaceae	<i>Terminalia chebula</i>	Bahera
Convolvulaceae	<i>Evolvulus alsinoides</i>	--
Convolvulaceae	<i>Ipomoea carnea</i>	Besharam
Cyperaceae	<i>Eriophorum canosum</i>	Nakli Bhabbar
Cyperaceae	<i>Cyperus rotundus</i>	Nut grass
Euphorbiaceae	<i>Euphorbia hirta</i>	Dudhi
Fabaceae	<i>Tephrosia purpurea</i>	Nili
Lamiaceae	<i>Ocimum sanctum</i>	Tulsi
Leguminosae	<i>Bauhinia variegata</i>	Maljhan
Leguminosae	<i>Pueraria tuberosa</i>	Sural
Leguminosae	<i>Acacia pennata</i>	Agla
Malvaceae	<i>Sida acuta</i>	--
Myrtaceae	<i>Syzygium cumini</i>	Jamun
Nyctaginaceae	<i>Basella diffusa</i>	Punarnawa
Papaveraceae	<i>Argemone mexicana</i>	Satyanshu
Rubiaceae	<i>Dendrocalamus strictus</i>	Lathu Baans
Ranunculaceae	<i>Clematis gauriana</i>	Balkangri
Rhamnaceae	<i>Zizyphus nummularia</i>	Maltha
Rutaceae	<i>Mitragyna korrigui</i>	Gandhola
Sapindaceae	<i>Caesalpinia septaria</i>	Kainju Bel
Solanaceae	<i>Vitthania somnifera</i>	Asgardh
Solanaceae	<i>Solanum elaeagnifolium</i>	Aradu, Ban
Typhaceae	<i>Typha angustifolia</i>	Patera
Urticaceae	<i>Citrullus sativa</i>	Bhang
Verbenaceae	<i>Calotropis procera</i>	Aak
Verbenaceae	<i>Lantana camara</i>	Rainmurva

III. LOWER LAYER-GRASSES

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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Family Name	Botanical Name	Trade Name
Poaceae	<i>Apluda mutica</i>	Banjura grass
Poaceae	<i>Aristida hystrix</i>	
Poaceae	<i>Chloris barbata</i>	
Poaceae	<i>Cymbopogon martini</i>	Tikhadi
Poaceae	<i>Cynodon dactylon</i>	Doob
Poaceae	<i>Dactyloctenium aegyptium</i>	Crow foot grass
Poaceae	<i>Digitaria pruriens</i>	
Poaceae	<i>Eragrostis bifaria</i>	
Poaceae	<i>Eragrostis ciliaris</i>	
Poaceae	<i>Panicum triphorum</i>	
Poaceae	<i>Saccharum spontanium</i>	
Poaceae	<i>Apluda mutica</i>	Banjura grass

Wetlands are very useful to us. By producing resources, enabling recreational activities and controlling flood and pollution, they contribute to the national and local economies and environmental consequences. Wetlands provide important and incredible services to society, these services can neither be sold nor do they have the market value and tried to give wetlands an economic value.

Table 0-18: Wetland/Marshland Diversity of Study area

Family	Botanical Name	Local Name
Pteridaceae	<i>Adiantum capillus</i>	Maiden Hair Fern
Fabaceae	<i>Aeschynomene indica</i>	Phulan
Amaranthaceae	<i>Alternanthera philoxeroides</i>	Alligator Weed
Amaranthaceae	<i>Alternanthera sessilis</i>	Garundi
Myrsinaceae	<i>Anagallis arvensis</i>	Neel
Salviniaceae	<i>Azolla pinusta</i>	Mosquito Fern
Asteraceae	<i>Capsula oxifloris</i>	Maka
Ceratophyllaceae	<i>Ceratophyllum demersum</i>	Hornwort
Poaceae	<i>Chrysopogon zizanioides</i>	Vetiver
Poaceae	<i>Cenchrus ciliaris</i>	Adlay Millet
Araceae	<i>Colocasia esculenta</i>	Taro
Commelinaceae	<i>Commelina benghalensis</i>	Kana
Cyperaceae	<i>Cyperus alternifolius</i>	Umbrella Sedge

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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Family	Botanical Name	Local Name
Dryopteridaceae	<i>Dryopteris filix mas</i>	Fern
Dryopteridaceae	<i>Dryopteris sieboldii</i>	Fern
Poaceae	<i>Echinochloa colona</i>	Shama
Pontederiaceae	<i>Eichhornia crassipes</i>	Jal Kumbhi
Asteraceae	<i>Crangon maderaspatana</i>	Madras Carpet, Mustaru
Acanthaceae	<i>Hygrophila salicifolia</i>	---
Lemnaceae	<i>Lemna minor</i>	Duck Weed
Onagraceae	<i>Ludwigia adscendens</i>	Water Primrose
Marsileaceae	<i>Marsilea quadrifolia</i>	Four Leaf Clover
Sterculiaceae	<i>Melochia corchorifolia</i>	Bilpat
Nelumbonaceae	<i>Nelumbo nucifera</i>	Lotus, Kamal
Nymphaeaceae	<i>Nymphaea pubescens</i>	White Lotus
Oxalidaceae	<i>Oxalis corniculata</i>	Anrui
Urticaceae	<i>Pilea inaeophylla</i>	Gun Powder Plant
Polygonaceae	<i>Polygonum hydropiper</i>	Marsh Pepper Knot Weed
Portulacaceae	<i>Portulaca oleracea</i>	Little Hog-Weed
Potamogetonaceae	<i>Potamogeton natans</i>	Floating Pond Weed
Lythraceae	<i>Trapa natans</i>	Water Chest Nut
Ranunculaceae	<i>Ranunculus sceleratus</i>	Aglaon
Polygonaceae	<i>Rumex dentatus</i>	Ambavati
Typhaceae	<i>Typha angustata</i>	Patara
Hydrocharitaceae	<i>Vallisneria spiralis</i>	Lape Grass
Lentibulariaceae	<i>Utricularia gibba</i>	Floating Bladderwort
Plantaginaceae	<i>Veronica anagallis-aquatica</i>	Water Speedwell

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADURI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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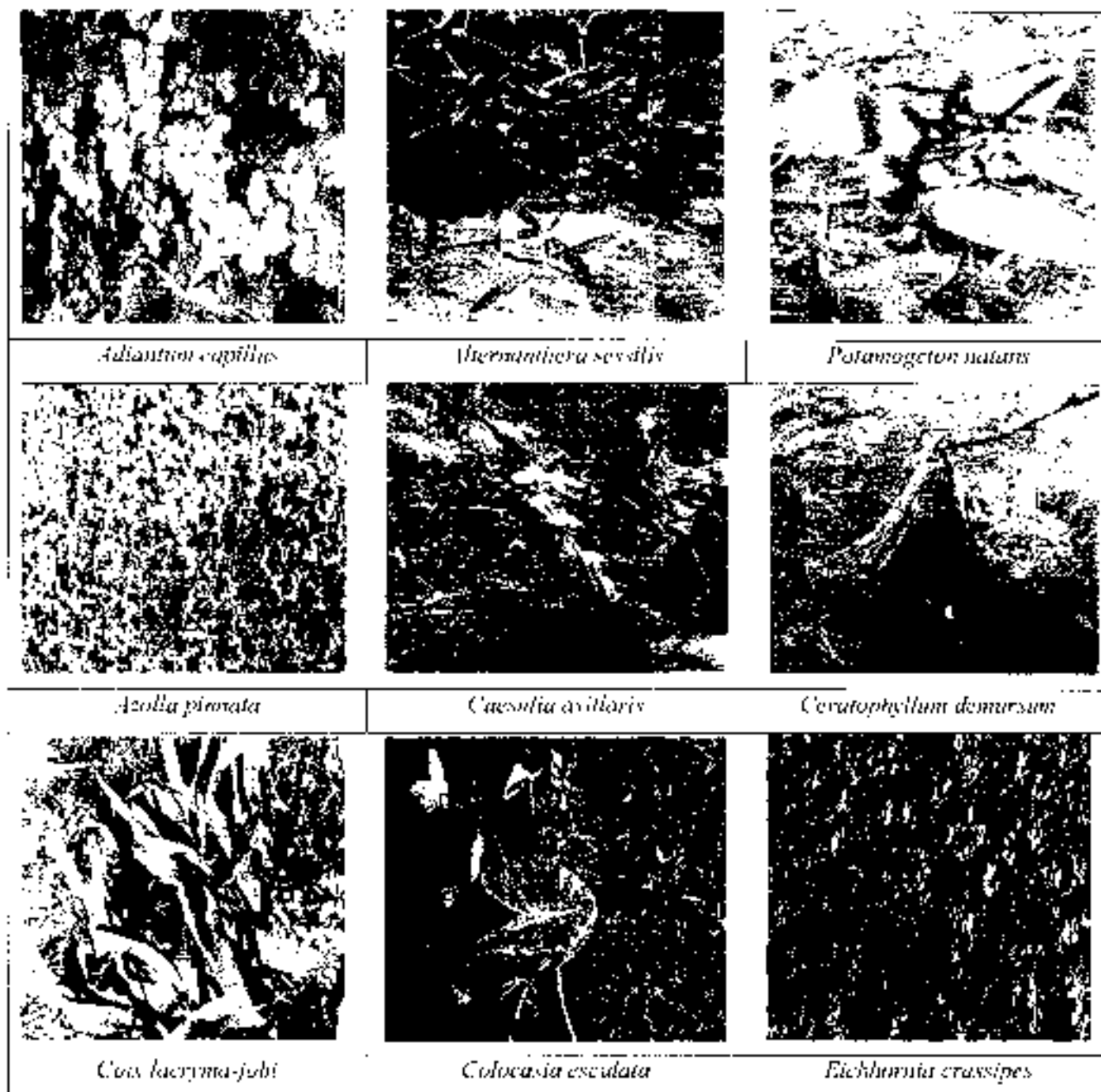


Figure 3.22: Floral Diversity of Wetland/Marshland of Study Area

3.12.14 Faunal Diversity:

To prepare a detailed report on the status of wildlife biodiversity within 10 km radial area from the proposed project to assess the impacts due to the project activity and evolve suitable mitigation measures to protect and conserve wildlife biodiversity following components were studied:

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- Wildlife Survey (Diversity)
- Habitat Study (Feeding, Breeding and Roosting areas)
- Distribution/Status of Birds
- Rare & Endangered species of Fauna
- Specific local characteristics of biodiversity in the study area

Methodology for Faunal Diversity:

A linear transect of 1.0 km each was chosen for sampling at each site. Each transect was trekked for 1.5 hr for the sampling of faunal diversity through following methods for different categories. For the sampling of butterflies, the standard 'Pollard Walk' method was employed and all the species recorded daily. Voucher specimens of the species that could not be identified in the field were collected using a butterfly net besides photographing them.

For bird's sampling, 'Point Sampling' along the fixed transect (Foot trails) was carried out. All the species of birds were observed through a binocular and identified with the help of field guide book and photographs.

For the sampling of mammals, direct count on open width (20m) transect was used. In addition, information on recent sightings/records of mammals by the villagers/locals was also collected. For carnivores, indirect sampling was carried out and the mammals were identified by foot marks, faeces and other marks/sign created by them. In case of reptiles mainly lizards were sampled by direct count on open width transects.

The study of fauna takes substantial amount of time to understand the specific faunal characteristic of area. The assessment of fauna has been done by extensive field survey of the area. During survey, the presence of wildlife was also inhabitants depending on animal sightings and the frequency of their visits in the project area which was later confirmed from forest department, Wildlife Department etc.

Table 0-19: Faunal Diversity from Study Area

S. No.	English Name	Scientific Name	Status/Schedule
Mammals			
1.	Jackal	<i>Canis aureus</i>	Schedule-II
2.	Indian Flare	<i>Lepus nigricollis</i>	Schedule-IV
3.	Little Indian field mouse	<i>Mus musculus</i>	Schedule-V
4.	Nalga	<i>Bosciapius tragocentrus</i>	Schedule-III
5.	Jungle Cat	<i>Felis tatus</i>	Schedule-II
6.	Monkey	<i>Macaca mulata</i>	Schedule II
7.	Black Rat	<i>Rattus rattus</i>	Schedule-V
8.	Bar	<i>Rousettus leschenaultii</i>	Schedule-V

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S. No.	English Name	Scientific Name	Status/Schedule
9.	Common Langur	<i>Simulapithecus entellus</i>	Schedule-II
10.	Common Mongoose	<i>Herpestes edwardsii</i>	Schedule-II
11.	Five Striped Palm Squirrel	<i>Faciobubalus javanicus</i>	Schedule-IV
12.	Hiare	<i>Lepus nigripes</i>	Schedule-IV
Amphibians			
1.	Indian pond frog	<i>Rana hexadactyla</i>	Schedule-IV
2.	Common Indian Toad	<i>Duttapertusus melanostictus</i>	Not Listed
3.	Indian Bull Frog	<i>Hornobatrachus sigginius</i>	Schedule-IV
4.	Indian Skipper Frog	<i>Engelhardia cynophlyctis</i>	Schedule-IV
5.	Marble Toad	<i>Rufic stombreyi</i>	Not Listed
Reptiles			
1.	House gecko	<i>Hemidactylus flaviventer</i>	Common
2.	Common garden lizard	<i>Colotes varzeahii</i>	Common
3.	Brahminy skink	<i>Mabuya orientalis</i>	Common
4.	Indian Cobra	<i>Naja naja</i>	Schedule-II
5.	Rat Snake	<i>Ptyas uncinata</i>	Schedule-IV
6.	Fawn Throated Lizard	<i>Sphenia pentadactyla</i>	Not Listed
Butterflies			
1.	White orange lip	<i>Pieris maronea</i>	Common
2.	Lime butterfly	<i>Papilio demoleus</i>	Common
3.	Common crow	<i>Euploce curvata</i>	Common
4.	Common map	<i>Cyrestis thyartus</i>	Common
5.	Common morion	<i>Papilio polydorus</i>	Common
6.	Common Grass Yellow	<i>Prepona heracle</i>	Fairly Common
7.	Striped Tiger	<i>Panorpa geminata</i>	Common
8.	Damrad Egg Fly	<i>Hypolimnastus biscriptus</i>	Common
9.	Common Bush Brown	<i>Melicope peramus</i>	Common
Aves			
1.	House Crow	<i>Corvus splendens</i>	Schedule-V
2.	Rock Pigeon	<i>Columba livia</i>	Common
3.	Grey francolin	<i>Francolinus pondicerianus</i>	Least Concern
4.	Jungle babbler	<i>Turdoides tristis</i>	Schedule-IV

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S. No.	English Name	Scientific Name	Status/Schedule
5	Common Myna	<i>Acridothera tristis</i>	Schedule-IV
6	Green bee-eater	<i>Motacilla orientalis</i>	Least Concern
7	Indian roller	<i>Coccyus leucorhinchos</i>	Schedule-IV
8	Black Drongo	<i>Dicrurus leucophaea</i>	Schedule-IV
9	Little cormorant	<i>Micranthus nigripes</i>	Schedule-IV
10	Common swift	<i>Hirundo rustica</i>	Schedule-IV
11	House swift	<i>Hirundo fulva</i>	Schedule-IV
12	Shikra	<i>Accipiter badius</i>	Schedule-IV
13	Cattle Egret	<i>Bubulcus ibis</i>	Schedule-IV
14	Little Egret	<i>Egretta garzetta</i>	Schedule-IV
15	Pond heron	<i>Ardeola grayii</i>	Schedule-IV
16	Red watted lapwing	<i>Vanellus indicus</i>	Schedule-IV
17	Black Ibis	<i>Pseudibis papillosa</i>	Schedule-IV
18	Ring dove	<i>Streptopelia decaocto</i>	Schedule-IV
19	Spotted Dove	<i>Streptopelia chinensis</i>	Schedule-IV
20	White Breasted Kingfisher	<i>Halcyon leucostriata</i>	Schedule-IV
21	Blue Choked Bee Eater	<i>Motacilla persicus</i>	Schedule-IV
22	Asian Koel	<i>Eudynamis scolopacea</i>	Schedule-IV
23	Drongo Cuckoo	<i>Sturnella lagurus</i>	Schedule-IV
24	Indian partridge	<i>Bucconia cristata</i>	Schedule-I
25	Red jungle Fowl	<i>Gallus gallus</i>	Schedule-IV
26	White breasted water her.	<i>Amurrcia phaeogaster</i>	Schedule-IV
27	Common Moorhen	<i>Gallinula chloropus</i>	Schedule-IV
28	Raven	<i>Corvus corax</i>	Schedule-IV
29	Tree Pie	<i>Dendrocygna nigripinnis</i>	Schedule-IV
30	Indian Robin	<i>Saxicolobus fulicata</i>	Schedule-IV
31	Pied Bush Chat	<i>Saxicola caprata</i>	Schedule-IV
32	Purple Sun Bird	<i>Nectarinia asiatica</i>	Schedule-IV
33	Small Sun Bird	<i>Nectarinia asiatica</i>	Schedule-IV
34	House Sparrow	<i>Passer domesticus</i>	Schedule-IV
35	Grey Tit	<i>Parus major</i>	Schedule-IV
45	Red Vented Bulb.	<i>Pycnonotus cafer</i>	Schedule-IV

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S. No.	English Name	Scientific Name	Status/Schedule
37.	Bank Myna	<i>Acridotheres tristis</i>	Schedule-IV
38.	Common Babbler	<i>Carduelis caninus</i>	Schedule-IV
39.	Tailor Bird	<i>Orthotomus satus</i>	Schedule-IV
40.	Rose Ringed Parakeet	<i>Psittacula krameri</i>	Schedule-IV
41.	Baya	<i>Pheas phillippinus</i>	Schedule-IV
42.	Owl	<i>Bubo bubo</i>	Schedule-IV
Pisces			
1.	Rohu	<i>Labeo rohita</i>	Least Concern
2.	Mahseer	<i>Toxotes jaculator</i>	Endangered
3.	Katla	<i>Catla catla</i>	Least Concern
4.	Calbasu	<i>Labeo calbasu</i>	Least Concern
5.	Cat fish	<i>Mystus catenatus</i>	Least Concern
6.	Mosquito fish	<i>Gambusia affinis</i>	Least Concern
7.	Black fish	<i>Borhis chililabris</i>	Least Concern
8.	Singi	<i>Channa listruchus</i>	Least Concern
9.	Bronze Feather Back	<i>Notemphus notopterus</i>	Least Concern
10.	Ganges River Gizzard Shad	<i>Coradisa orientalis</i>	Least Concern
11.	hilsa	<i>Tomalpa hilsa</i>	Not Listed
12.	Chelbaah	<i>Aspripoma morar</i>	Least Concern
13.	Barna Baril	<i>Berillia barna</i>	Least Concern
14.	Chagun	<i>Chagunius chagunus</i>	Least Concern
15.	Common Carp	<i>Cyprinus carpio</i>	Least Concern
16.	Rebo Carp	<i>Cirrhinus reba</i>	Least Concern
17.	Sind Dandi	<i>Danio deudae</i>	Least Concern
18.	Kharsa, Butter	<i>Labeo agra</i>	Least Concern
19.	Bata	<i>Labeo bata</i>	Least Concern
20.	Doga Bata	<i>Labeo dogu</i>	Least Concern
21.	Kali, Baalla	<i>Labeo dybowskii</i>	Least Concern
22.	Kuri, Khursa	<i>Labeo goniis</i>	Least Concern
23.	Swamp Barb	<i>Puntius dusi</i>	Least Concern
24.	Shive Barb	<i>Puntius sarda</i>	Least Concern
25.	Picto Barb	<i>Puntius ticto</i>	Least Concern

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S. No.	English Name	Scientific Name	Status/Schedule
26.	Wallago	<i>Wallago attu</i>	Near Threatened
27.	Elongated Grass Perchlet	<i>Ctenota nana</i>	Least Concern
28.	Great Snashead	<i>Ctenota muriei</i>	Least Concern

Endangered Species:

Pavo cristatus is listed in the Schedule I under Wildlife Protection Act, 1972 are found within the study area.

Aquatic Diversity:

Methodology for Aquatic Diversity:

The samples for qualitative and quantitative analysis of planktons were collected from the sub surface layer at knee depth. Water samples were filtered through plankton net of 20µ mesh size (APHA, 1971). The filtered samples were concentrated by using the centrifuge. By using Lackey's drops method and light microscope (Lackey, 1938), the qualitative analysis was carried out for phytoplankton and zooplankton (Table 8). The standard flora and other literature were followed for the qualitative evaluation of Plankton.

Table 0-20: List of Phytoplankton & Zooplanktons from Study Area

PHYTOPLANKTON	ZOOPLANKTONS
CHLOROPHYCEAE	PROTOZOA
<i>Ankistrodesmus falcatus</i>	<i>Paramecium caudatum</i>
<i>Chlorella vulgaris</i>	<i>Vorticella campanula</i>
<i>Chlorococum infusionum</i>	CLADOCERA
<i>Chlorella fragilis</i>	<i>Alona rectangularis</i>
<i>Cosmarium tenue</i>	<i>Bosmina longirostris</i>
<i>Closterium</i> Sp.	<i>Daphnia carinata</i>
<i>Hydrodictyon reticulatum</i>	COPEPODA
<i>Pediastrum simplex</i>	<i>Cyclops bicuspidatus</i>
<i>Ulothrix</i>	<i>Macrocylops albidus</i>
<i>Spirogyra condensate</i>	ROTIFERA
EUGLENOPHYCEAE	<i>Asplanchna intermedia</i>
<i>Euglena acris</i>	<i>Brachionus falcatus</i>
<i>Phacus caudatus</i>	<i>Filinia longiseta</i>
BACILLARIOPHYCEAE	<i>Keratella tropica</i>
<i>Cyclotella meneghiniana</i>	<i>Phlodium citrine</i>
<i>Synedra ulna</i>	<i>Polyarthra</i> Sp.

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PHYTOPLANKTON	ZOOPLANKTONS
CYANOPHYCEAE	MACROBENTHOS - MOLLUSCA
<i>Anabaena fertilissima</i>	<i>Pila</i>
<i>Nostoc</i> Sp	<i>Bellamya</i> Sp.
<i>Coccolithovira clornna</i>	<i>Cyprinus</i>
<i>Phormidium calcicola</i>	

3.13 SOCIO-ECONOMIC ENVIRONMENT

Any developmental activity exerts a direct impact on the socio-economic environment of the region. Usually, the beneficial impacts such as better job opportunities, improved education, communication, energy, housing, health, transportation facilities etc. outweighs the adverse impacts, if any.

M/s Chemwood Industries is a Partnership firm started with the objective to get involved in the business of manufacturing & trading in organic chemicals viz. Formaldehyde. M/s. Chemwood Industries has existing unit for Manufacturing of Formaldehyde with the Production capacity of 100 MT per day at Village-Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamuna Nagar, Haryana. Now PP has proposed to expand the capacity of project from 100 TPD to 200 TPD within the plant premises. No additional land will be required.

The study of socio-economic component of environment is incorporating various facets, viz. demographic structure, availability of basic amenities such as housing, education, health and medical services, occupation, water supply, sanitation, communication and power supply, prevailing diseases in the region as well as features such as places of tourist attraction and monuments of archaeological importance. The study of these parameters helps in identifying predicting and evaluating the likely impacts due to project activity in the surrounding region. Baseline data such as demographic pattern, occupational status, educational, health and other amenities as existing in the study area have been studied.

3.13.1 Baseline Status

The latest available data has been compiled to generate the existing socio-economic scenario of the study area. Information on socio-economic profile was collected from the Primary Census Abstract CD 2011 including the population details of the region.

The Socio-Economic Status of the study areas is mentioned below and the villages surveyed are enlisted in table below:

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Table 4-21: List of the Villages for Field Survey

S.No.	Villages
1	Bhagwanpur
2	Kharwan
3	Bala Chaur
4	Naugawan Jagir
5	Damanpur Bara
6	Panjetra
7	Harewa
8	Chhachhrauli
9	Jagadhri

3.13.2 Village

The basic unit for rural areas is the revenue village which has definite surveyed boundaries. The revenue village may comprise of one or more hamlets but the entire village is treated as one unit for presentation of data.

3.13.3 Study Area

The study area was defined as an area within 10 km radius around the proposed project site. Total 94 villages and urban area is Chhachhrauli town coming within the 10 km radius of the study area. The villages are from Chhachhrauli, Jagadhri and Bilaspur Tehsil of Yamunanagar District of Haryana state and Saharanpur Tehsil of Saharanpur district of Uttar Pradesh State.

Chhachhrauli is a Census Town city in district of Yamunanagar, Haryana. The Chhachhrauli Census Town has population of 10,533 of which 5,529 are males while 5,004 are females as per report released by Census India 2011.

Population of Children with age of 0-6 is 1111 which is 10.55 % of total population of Chhachhrauli (CT). In Chhachhrauli Census Town, Female Sex Ratio is of 905 against state average of 879. Moreover Child Sex Ratio in Chhachhrauli is around 812 compared to Haryana state average of 874. Literacy rate of Chhachhrauli city is 81.79 % higher than state average of 75.55 %. In Chhachhrauli, Male literacy is around 89.20 % while female literacy rate is 79.98 %. Chhachhrauli Census Town has total administration over 2,129 houses to which it supplies basic amenities like water and sewerage.

3.13.4 Demographic Structure

Demographic structure of the study area was estimated for the selected parameters as households, population, sex ratio, scheduled caste, scheduled tribes, literacy from primary census abstract, CD 2011 of Haryana and Uttar Pradesh State. The summarized demographic structure of the study area with rural and urban area is presented in Table 2.22.

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Table 0-152: Summarized Demographic Structure of the Study Area

Sr.No.	Parameter	Study Area
		RURAL
16.	No. of Villages	95
17.	Household	28492
18.	Household Ratio	4.6
19.	Total Population	132212
20.	Male Population %	71937(53.63)
21.	Female Population %	61047(46.32)
22.	Population (0-6 Years)%	16530(12.50)
23.	Sex Ratio	869
24.	Child Sex Ratio	836
25.	Scheduled Caste %	42570(32.19)
26.	Scheduled Tribes %	Nil
27.	Literates %	87029(65.82)
28.	Main Workers %	13697(26.99)
29.	Marginal Workers %	10143(7.67)
30.	Non-Workers %	90553(68.7)

Source: PCA Census 2011, Haryana & Uttar Pradesh State.

Table 0-163: Demographic Structure of the Study Area (Rural)

Sr.No.	Villages	Households	Total Population	Population (0-6 Years)	Scheduled Caste	Literates
Haryana State						
Yamunanagar District						
Chhachrauli Tehsil						
1.	Manakpur (361)	239	1400	160	381	690
2.	Bhukhari (388)	270	1386	153	232	924
3.	Kharwan (311)	1667	8745	944	3237	6118
4.	Bala Chaur (312)	603	3082	357	1771	2140
5.	Bhagwanpur (313)	70	395	40	35	261
6.	Dadupur Chhawri (116)	206	1033	92	128	755
7.	Fatehgah (117)	464	2347	259	935	1671
8.	Shahzadpur (119)	119	597	69	517	413
9.	Kanala (101)	268	1402	190	694	904
10.	Darampur Dara (102)	81	473	51	62	294
11.	Mohar Maya (105)	218	1753	198	339	1185
12.	Mir Mayampur (100)	11	6	0	0	0
13.	Darampur Chhota (99)	108	572	75	219	356
14.	Jairampur Khalsa (98)	283	1533	226	120	908
15.	Kanawala (71)	54	239	30	80	166
16.	Bhilpura (76)	163	1221	168	338	703
17.	Bichpuri (77)	77	431	61	0	271
18.	Nalhanpur (91)	181	970	113	307	596
19.	Hal-Dar Maru (88)	101	590	53	0	376
20.	Lahoriwala (87)	62	365	38	30	225

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Sr.No.	Villages	Households	Total Population	Population (0-6 Years)	Scheduled Caste	Literates
21.	Hasarpur (90)	77	360	50	316	210
22.	Khadri (97)	725	4051	487	1367	2627
23.	Rampur Khadar (94)	226	1255	176	301	829
24.	Nandgarh (87)	151	834	131	320	328
25.	Ismailpur (96)	317	1740	232	830	1106
26.	Harewa (93)	107	570	83	106	350
27.	Singh Pura (205)	116	686	91	14	258
28.	Jaidhar (82)	538	3013	441	555	1803
29.	B'hal Kheri (85)	92	468	63	249	291
30.	Jaidhari (81)	316	1849	235	406	1231
31.	Manjharwala (79)	100	572	92	270	359
32.	Deodhar (72)	573	3215	445	705	2053
33.	Bugampur (80)	406	2198	296	83	1306
34.	Bailpara (200)	213	1198	177	93	728
35.	Shahjahanpur (201)	71	459	61	82	299
36.	Yakulpur (197)	258	1347	231	185	947
37.	Sherpur (206)	183	993	118	505	703
38.	Harauli (194)	306	1693	223	424	1113
39.	Balanli (208)	349	1791	225	1125	1186
40.	Taranwala (209)	162	854	100	413	623
41.	Rajpur (196)	58	369	47	2	246
42.	Damoh (195)	201	1040	124	373	652
43.	Tugalpur (192)	202	1130	133	362	729
44.	Ledi (227)	326	1797	227	747	1247
45.	Dadupur Jattan (222)	167	928	107	369	630
46.	Leda Khadar (190)	254	1369	190	342	891
47.	Dasaura (198)	359	2126	299	361	1196
48.	Pipli Magra (199)	271	2243	257	250	1436
49.	Ganauli (309)	476	2413	340	1208	1573
50.	Ganaula (308)	171	950	111	438	586
51.	Mand Kheri (319)	461	2410	255	1092	1654
52.	Panjeton (315)	366	1963	256	637	1329
53.	Chaneta (316)	15	77	13	0	41
54.	Mukaribpura (317)	221	1164	153	626	762
55.	Munda Khera (318)	248	1299	157	315	800
56.	Mirpur (320)	83	477	24	0	68
57.	Leda Khas (310)	198	914	104	378	620
58.	Jathari (307)	273	1516	158	369	1072
59.	Chaowala (328)	102	545	61	103	379
60.	Taranwala (327)	105	533	68	161	383
61.	Urjani (203)	86	500	83	49	320
62.	Ashabpura (212)	40	243	25	105	154
63.	Kaunpuri (210)	51	283	42	283	164
64.	Chuharpur Khurd (207)	109	525	66	388	334
65.	Bisatpur Wala (216)	291	1465	144	561	963
66.	Uhhol (215)	366	1996	197	706	1427
67.	Chhachhrauli (CT)	2129	10893	1111	2270	7589

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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Sr.No.	Villages	Households	Total Population	Population (0-6 Years)	Scheduled Caste	Literates
Total		18234	97935	12026	30980	65601
Jagadhri Tehsil						
68.	Bhatana (405)	306	1603	179	621	1169
69.	Bhinwar Heri (381)	19	124	15	19	79
70.	Haluwala (384)	230	1184	140	101	837
71.	Jaraula (405)	373	1918	268	1272	1333
72.	Jalupura (402)	262	1358	181	621	904
73.	Chanoli (399)	323	1827	251	409	1129
74.	Fotehpur (125)	291	1530	148	613	1182
75.	Sugh (395)	288	1530	222	526	918
76.	Amadalpur (395)	562	2975	446	800	1631
77.	Mukarimpur (119)	203	1164	201	0	578
78.	Jairatpur Jagr (112)	1	8	1	0	4
79.	Mali Majra (140)	108	602	55	710	444
80.	Rhogpur (111)	237	1232	168	397	794
81.	Niyalgarh (394)	604	3057	437	1586	1690
82.	Suria Jagir (392)	53	319	11	5	136
83.	Nabh (389)	130	706	55	188	438
84.	Nangawan Barkar (108)	16	92	13	0	40
85.	Nangawan Jagir (390)	63	377	36	0	284
86.	S. Bipar (118)	435	2410	424	170	1031
Total		4506	24204	3243	8451	14679
Bilaspur Tehsil						
87.	Mahmudpur (425)	161	427	102	471	555
88.	Bherthal (325)	128	683	70	100	522
89.	Ranikheri (329)	265	1121	178	770	952
90.	Pruwala (301)	235	1209	124	295	843
91.	Chagnouli (304)	255	1418	153	547	1049
92.	Pheruwala (305)	236	1115	160	626	678
93.	Sankhera (306)	203	1123	112	78	788
Total		1483	7799	909	2917	5387
Saharanpur District						
94.	Sandhe Bass	2126	1123	178	190	643
95.	Gajajadipur	2143	1151	174	37	79
Total		4269	2274	352	227	1362
Grand Total		28492	132212	16530	12570	37029
Haryana State						
Yamunanagar District						
Chharhazari Tehsil						
1.	Manakpur (355)	299	1400	160	367	890
2.	Shukri (388)	250	1286	153	232	924
3.	Kharwan (314)	1667	8345	944	3237	6018
4.	Sala Chau (312)	603	3082	357	1774	2140
5.	Bhagwanpur (313)	70	395	40	35	261
6.	Madpur Chhawri (106)	206	1003	92	428	755
7.	Fatehgarh (107)	464	2347	259	933	1671
8.	Shahzadpur (109)	119	597	69	517	413

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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Sr.No.	Villages	Households	Total Population	Population (0-6 Years)	Scheduled Caste	Literates
9	Kanalsi (104)	268	1402	190	691	904
10	Dammampur Bata (107)	87	478	50	62	291
11	Mzhar Majra (105)	318	1753	198	309	1185
12	Mir Moveinpur (100)	0	0	0	0	0
13	Dammampur Chhota (99)	108	572	75	229	356
14	Jairampur Khalsa (98)	285	1533	226	429	948
15	Kaniwala (74)	54	290	30	80	186
16	Bhilpura (76)	163	1224	168	308	708
17	Bichpan (77)	77	430	61	0	271
18	Nathanpur (91)	181	970	113	301	596
19	Hal-Dar: Mara (86)	101	590	98	0	376
20	Lahoriwala (89)	62	365	38	49	245
21	Hasanpur (90)	77	390	50	246	232
22	Shadr (97)	725	4051	487	1367	2627
23	Rampur Khadar (94)	226	1255	176	301	829
24	Nandgarh (87)	154	634	131	320	528
25	Ismailpur (80)	327	1740	232	890	1108
26	Farewa (83)	107	570	83	106	390
27	Singh Pura (205)	116	686	91	14	368
28	Jadhari (82)	538	3013	441	595	1803
29	Bhul Khori (85)	92	468	63	249	291
30	Jadhari (87)	376	1849	235	406	1231
31	Marbharwala (78)	100	572	92	270	359
32	Asshar (72)	573	3215	449	705	2653
33	Begampur (80)	408	2198	296	88	1306
34	Bhilpura (203)	213	1198	177	98	778
35	Shahjahanpur (201)	71	459	61	82	299
36	Yakubpur (197)	258	1547	231	183	947
37	Sherpur (206)	183	983	118	506	703
38	Jaraul (194)	306	1693	223	424	1118
39	Balnali (208)	349	1781	225	1125	1186
40	Tarunwala (207)	182	854	100	413	623
41	Rampur (196)	58	369	47	7	246
42	Damoh (195)	201	1040	124	373	657
43	Jugalpur (192)	202	1130	133	362	729
44	Ledi (221)	326	1797	227	747	1247
45	Dadupur Jattan (222)	157	928	107	369	630
46	Ledi Khadar (190)	234	1269	190	342	894
47	Dasaura (198)	359	2126	290	361	1196
48	Pipli Majra (199)	271	2243	257	750	1436
49	Ganauli (309)	476	2443	340	1206	1573
50	Ganauli (308)	171	950	114	438	386
51	Mund Khori (310)	451	2410	255	1092	1654
52	Panjelon (315)	366	1963	256	697	1329
53	Charota (316)	15	77	15	6	41
54	Mukanilpura (317)	221	1164	153	626	762
55	Murda Khara (318)	248	1299	157	415	860

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL, JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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Sr.No.	Villages	Households	Total Population	Population (0-6 Years)	Scheduled Caste	Literates
56.	Mirpur (320)	30	177	24	0	68
57.	Leda Khas (310)	188	914	104	378	620
58.	Jather (307)	270	1516	158	360	1072
59.	Chauwala (328)	102	545	61	103	379
60.	Taranwala (327)	100	500	68	167	383
61.	Ujani (204)	86	500	80	49	320
62.	Ashabpura (212)	40	243	29	105	154
63.	Champuri (210)	51	283	42	283	161
64.	Chaharpur Khurd (207)	109	525	66	488	334
65.	Bisaton Wala (216)	291	1485	144	581	983
66.	Chholi (215)	396	1936	197	706	1127
67.	Chanchhrauli (215)	2129	10035	1111	2270	7989
Total		18234	97935	12026	30990	65601
Jagadhri Tehsil:						
68.	Bhataali (405)	306	1600	179	624	1166
69.	Jhinwar Heri (381)	19	124	15	19	79
70.	Halowala (384)	230	1184	146	1011	837
71.	Jaranda (403)	373	1918	208	1272	1333
72.	Tekhpura (402)	262	1558	181	621	904
73.	Chaneti (300)	325	1827	251	409	1139
74.	Fotehpur (123)	281	1380	148	613	1182
75.	Bugh (396)	288	1530	222	526	918
76.	Acradalpur (336)	562	2975	416	806	1687
77.	Mukarimpur (119)	203	1164	201	0	578
78.	Jainpur Jagi (112)	1	8	1	0	4
79.	Mali Majra (110)	108	602	50	210	444
80.	Blagpur (111)	250	1252	168	391	794
81.	Dyalgarh (395)	604	3051	437	1580	1692
82.	Bana Jagi (292)	63	319	34	5	146
83.	Nabh (389)	130	706	84	188	428
84.	Naugawan Sa-ka-r (108)	16	92	15	0	40
85.	Naugawan Jagi (290)	63	371	36	0	284
86.	Bibipur (118)	435	2410	424	170	1037
Total		4506	24204	3243	8451	14679
Bilaspur Tehsil						
87.	Mahmudpur (325)	161	827	102	471	565
88.	Bherthal (326)	128	683	70	100	522
89.	Ramkheri (325)	265	1424	178	770	952
90.	Piruwala (301)	235	1209	134	295	849
91.	Chagnauli (304)	255	1418	153	347	1049
92.	Pheruwala (305)	236	1115	160	656	678
93.	Sankhera (306)	203	1123	112	78	798
Total		1483	7799	909	2917	5387
Saharanpur District						
94.	Sandhe Bass	2126	1125	178	91	613
95.	Gaya Jampur	2143	1151	174	32	719
Total		4269	2276	352	222	1362

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES						DRAFT EIA REPORT
Sr.No.	Villages	Households	Total Population	Population (0-6 Years)	Scheduled Caste	Literates
	Grand Total	28492	132212	16530	42571	87029

3.13.5 Demographic Profile of the Study Area (Rural Area)

Household and Population

Total number of household in the study area of rural region is about 28492 with total population in rural area is about 132212 with male population is 70937(53.65%) and female population is 61647(46.62%).

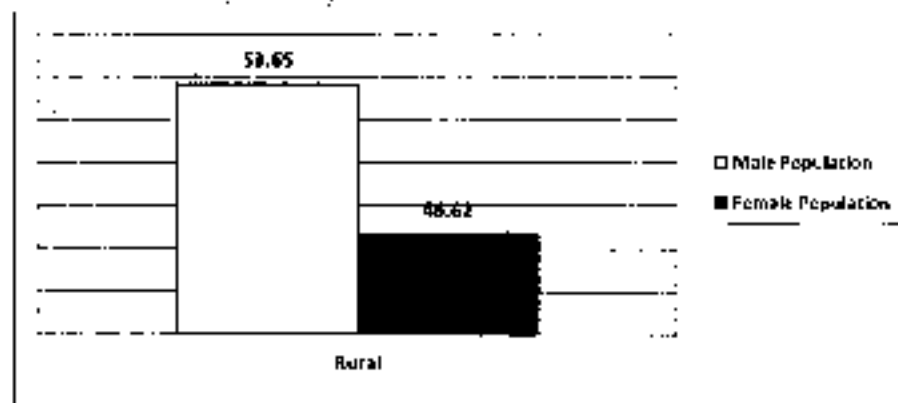


Figure 0-23: Bar diagram representing the distribution of population in the study area
Household Ratio and Population Density - The average family size i.e. person per family in rural area is 4.6. It can be concluded from the data obtained that the rural area is populated.

Population Age-Group (0-6yrs) - Out of the total population, the population of children within the age of 0-6 age-group in rural area is 16530(12.50%).

Sex Ratio & Child Sex Ratio - Sex ratio (No. of females per 1000 males) is 869 in rural area which indicates that females are less in number than their male counterpart in rural area area while the Child Sex ratio is 836 in rural area i.e. no. of female child per 1000 male child. It can be concluded from the data that female child is higher in rural area than the urban area. The graphical presentation of the distribution of population is given in fig below

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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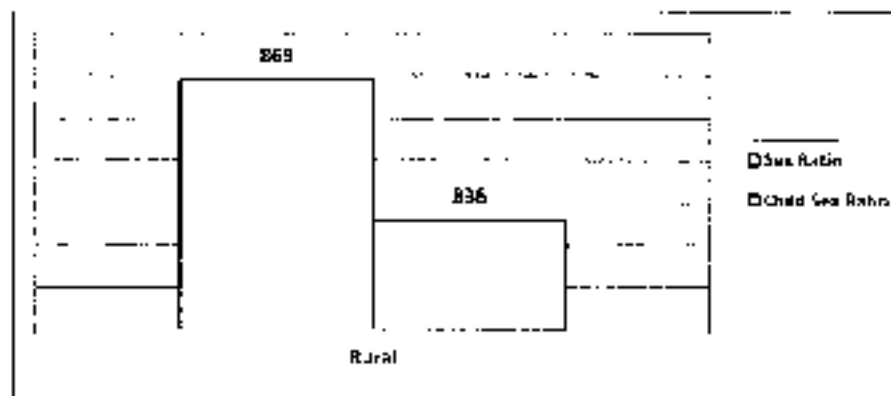


Figure 0-24: Bar Diagram Representing the Ratio of Population in the Study Area

Scheduled Caste Population in the Study Area

Out of the total population the Scheduled caste population in rural area is 42570 (32.19%)

Literacy Rate in the Study Area

Out of the total population 87029 i.e. 65.82% literates are from rural area with male literates (57.69%) and female literates (44.08%) in the study area. The literacy level of the region is also quite good while male populations are more literates as compared to the female population. The graphical presentation of the distribution of population is given in below figure.

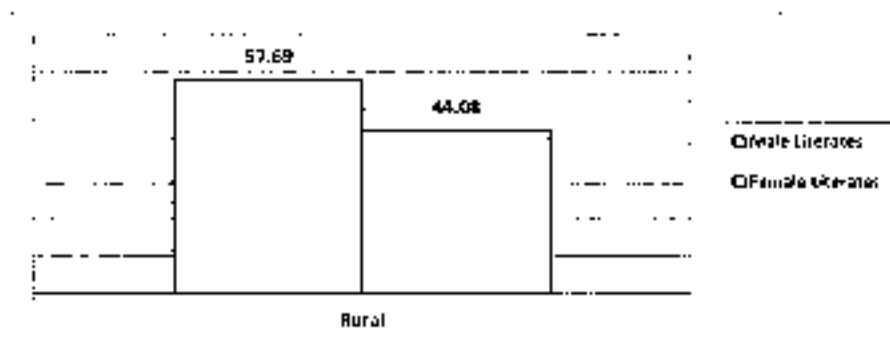


Figure 0-45: Representing the literacy rate in the study area

Occupational Pattern/ Economic Resource Base

'Work' has been defined as participation in any economically productive activity. Such participation may be physical or mental. Persons on leave and under training are also treated as workers. However, rent receivers and pensioners are not treated as workers.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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Total Workers

Occupational pattern of any region mainly depends upon its economically active group i.e. the working populations involved in different economically productive activities. The total workers further categorized as main worker, marginal and the non-working population.

A. Main Workers

Main workers are those who have worked for a major part of the year (i.e. at least six months or 183 days). Main activity of a person who was engaged in more than one activity was reckoned in terms of time disposition. 35697 (26.99%) of rural area from the total population comes under the main workers category from the villages coming in the project site. Main workers are further classified into 4 categories viz., cultivators, agricultural laborers and household workers and other main workers.

Cultivators

Maximum population in the study area is engaged as Cultivators i.e. depended on agriculture. The cultivator population within the rural area is 9310 (26.08%). It can be concluded from the data the populations in the villages are mainly engaged in agriculture activity.

Agricultural Laborers

Persons working on land owned by others for wages or share in the yield have been treated as agricultural laborers. Out of the total main worker category in the study area, agricultural laborers population in rural area is about 9095 (25.47%).

Laborers in Household Industry

The laborers engaged in household activity are quite low in all the study area. Among the total main workers very few population are engaged in household activity i.e. 7.67% in rural area.

Other Workers

All main workers i.e. those who have been engaged in some economic activity during the last one year and who are neither cultivators nor agricultural laborers or household industry workers are classified as other main workers. The type of workers that come under this category includes factory workers, plantation workers, those in trade, commerce, business, transport, construction, political or social works, all government servants, municipal employees, teachers, priests, entertainers, artists etc. Maximum population in the study area of rural area i.e. 16643 (46.62%) is engaged in other activity.

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It can be concluded that maximum population from the villages are engaged in other activities which means either in service, labourer or business activity.

Category of Main Workers in Rural Area of the Study Area

B. Marginal Workers

Marginal workers are those who have worked any time in the year for less than six months or 183 days but have not worked for a major part of the year. The population of marginal workers within the rural area comprises of only about 5.37 % of the total population.

C. Non-Workers

Non-Workers are those who have not worked any time at all in the year. Non-workers constitute householders, students, dependents, retired persons etc. The economy of the study area is primarily based on agriculture. The agriculture sector has thus absorbed a major portion of the working force. It is being observed that the 68.71% population are unemployed in villages.

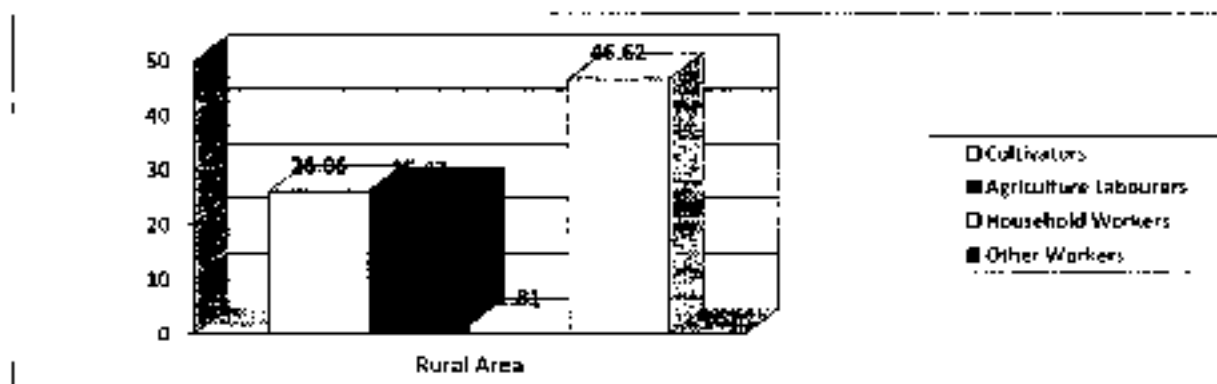
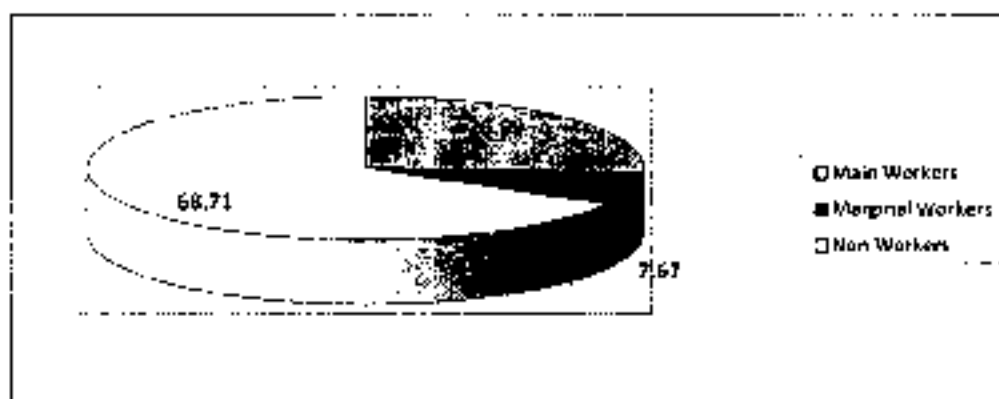


Figure 0-56: Occupational Structure in the Rural Area

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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Table 0-24: Occupational Structure of the Study Area (Rural)

Sr.No.	Villages	Total Main Workers	Main Workers			Other Workers	Marginal Workers	Non-Workers
			Cultivators	Agricultural Labourers	Household Labourers			
Haryana State								
Yamunanagar District								
Chhachhrauli Tehsil								
1	Manakpur (380)	657	40	5	6	606	38	68
2	Bhukhri (385)	386	129	29	11	217	59	81
3	Kharwan (511)	2439	314	666	46	1423	113	176
4	Rala Chaur (312)	252	122	125	16	276	329	219
5	Bhagwanpur (311)	167	51	21	2	53	0	28
6	Dadupur Chhawan (106)	259	72	45	17	125	19	72
7	Fatehgarh (107)	453	203	11	16	223	550	144
8	Shahzadpur (109)	246	49	44	1	152	25	29
9	Karals (101)	412	100	164	2	140	65	92
10	Damanpur Kasa (101)	102	31	36	1	21	22	31
11	Melan Majra (105)	336	284	119	2	131	35	118
12	Mr. Kalsopur (100)	0	0	0	0	0	0	0
13	Damanpur Chhota (99)	66	56	1	1	6	109	39
14	Jarampur Khalsa (98)	408	152	101	20	161	32	109
15	Kanawala (71)	92	60	27	1	9	0	20
16	Bhulpura (76)	256	87	138	1	10	108	80
17	Ichhpuri (7)	63	44	6	5	8	26	29
18	Nafarpur (91)	173	59	54	1	59	107	69
19	Hal-fer Majra (96)	165	63	7	4	91	15	41
20	Labotiwala (89)	108	62	28	2	16	3	25
21	Hasepur (90)	67	9	34	2	7	47	24
22	Khadr (92)	1169	294	563	25	285	19	280
23	Rampur Khadar (94)	294	111	147	5	31	26	93
24	Kanulgarh (87)	235	40	129	2	8	18	58
25	Isaulpur (86)	177	127	136	0	62	140	122
26	Harwa (63)	103	20	12	4	61	62	30
27	Singh Pura (203)	229	32	110	0	28	2	46
28	Jaidhar (82)	723	130	299	10	164	122	216
29	Bhul Khon (83)	142	43	71	1	27	1	32
30	Jaidhar (81)	567	274	197	2	96	3	127
31	Man. Kanawala (79)	180	43	91	0	24	1	41
32	Dandhar (72)	714	323	196	10	201	131	230
33	Begampur (90)	582	187	291	1	100	66	130
34	Bhulpura (260)	334	106	117	28	63	28	84
35	Shahjahanpur (201)	139	52	29	2	6	1	32
36	Yakubpur (192)	402	45	182	1	179	47	109
37	Shepur (206)	283	63	41	9	150	28	68
38	Haraul (194)	267	84	55	1	127	233	119
39	Balsuh (205)	431	51	23	18	339	63	128
40	Tarunwala (209)	197	32	39	0	121	109	54
41	Raipur (196)	112	74	5	0	33	6	25
42	Damali (197)	229	37	48	2	142	121	69
43	Fugalpur (192)	291	96	95	7	93	24	78
44	Led. (221)	433	149	164	6	194	120	122
45	Dadupur Jolan (222)	229	78	39	1	61	36	61
46	Leda Khadar (198)	212	51	21	1	137	151	98
47	Dasara (198)	354	181	209	2	139	14	155

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Sr. No.	Villages	Total Main Workers	Main Workers			Marginal Workers	Non-Workers	
			Cultivators	Agricultural Laborers	Household Laborers			Other Workers
48	Pipli Mata (199)	388	38	213	7	130	16	189
49	Gansoli (309)	714	97	192	14	401	11	173
50	Gansoli (308)	273	69	85	1	118	66	61
51	Maud Khari (319)	675	76	184	5	350	34	170
52	Paapson (315)	552	214	158	2	178	138	127
53	Chaneta (216)	30	8	0	0	32	0	3
54	Mukandpur (312)	323	47	14	3	259	12	82
55	Munda Khari (318)	386	128	20	0	218	25	94
56	Mirpur (320)	8	3	1	0	1	50	11
57	Leda Sotas (310)	351	96	30	1	224	47	91
58	Jathari (307)	456	138	95	3	222	48	101
59	Chauwala (328)	160	52	13	2	93	6	37
60	Tarawala (327)	129	47	4	4	84	2	39
61	Urjani (203)	110	56	18	3	35	31	37
62	Ashabpura (212)	168	25	12	0	31	2	17
63	Khanpur (219)	83	21	34	0	28	46	25
64	Chuharpur Khari (207)	151	21	89	0	37	0	57
65	Husaini Wala (216)	479	189	101	1	285	22	96
66	Chiboli (215)	604	242	80	15	317	51	129
67	Chha Phrauli (CT)	2860	149	223	123	2363	210	746
Total		2943	6022	6752	486	12083	4206	6779
Jagadhri Tehsil								
1	Bharaula (405)	511	161	13	50	257	180	105
2	Bhanwar Jori (381)	33	22	1	0	10	14	5
3	Hahucala (384)	338	26	13	2	297	64	84
4	Jaraula (406)	69	85	17	1	266	41	139
5	Telipura (402)	462	99	11	1	350	48	105
6	Chaneta (399)	584	165	133	16	264	12	119
7	Beshpur (421)	419	268	152	9	90	56	104
8	Soyi (396)	402	110	106	11	175	30	107
9	Amalpur (395)	852	88	204	3	457	9	209
10	Mukandpur (419)	297	89	125	0	82	0	85
11	Jarampur Jagi (412)	1	0	1	0	0	45	
12	Mali Mata (410)	170	54	15	1	100	26	38
13	Bhagpur (411)	389	115	97	4	134	349	83
14	Dyalgarh (394)	623	12	306	9	495	101	207
15	Buria Jagi (392)	73	11	0	1	58	6	14
16	Nalhi (389)	220	57	61	8	94	2	47
17	Naugawan Sankar (408)	27	0	1	0	26	0	6
18	Naugawan Jagar (390)	115	1	91	8	15	15	25
19	Bulipur (418)	586	136	131	10	309	436	180
Total		6450	1502	1311	134	3503	5231	1661
Bilaspur Tehsil								
1	Mahrasipur (325)	213	72	31	2	140	15	37
2	Bherhal (326)	189	83	23	3	80	217	47
3	Ranikhet (329)	246	99	47	2	98	26	96
4	Dauwala (301)	366	156	33	3	171	12	81
5	Chagnaul (303)	127	112	10	1	304	28	97
6	Pherwala (305)	300	37	206	3	52	4	78
7	Sankhera (307)	390	198	116	6	70	313	27
Total		2163	760	466	22	915	615	532

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Sr.No.	Villages	Total Main Workers	Cultivators	Main Workers			Marginal Workers	Non-Workers
				Agricultural Labourers	Household Labourers	Other Workers		
Saharanpur District								
	Sonthe Khas	539	183	267	4	86	11	51
	Gyanandpur	413	247	301	3	56	80	53
Total		1141	426	566	7	142	91	105
	Grand Total	35697	9370	4095	649	16643	7043	4068

Source: PC & Census 2011, Haryana & Uttar Pradesh State

3.13.6 Infrastructure Resource Base

The details of infrastructure resources base of the study area with reference to education, medical facility, water supply, post and telegraph, transportation, communication facility, power supply, existence of nearest town etc. are presented below. The significant features of these important parameters for each study area are discussed as below:

Educational Facility

The numbers of educational institution in the study area are 87 government primary schools, 64 middle schools and 14 Secondary schools and 4 Private secondary school, 4 senior secondary schools in rural area of the study area. Private engineering college is in Urjali Village of the study area avail the higher education facility and College from the nearest town that is Chhachhrauli town, Jagadhri town.

Drinking Water Facility

The numbers of major sources of drinking water in the study area is through Hand Pump facility in 87 villages and Tube well in 61 villages, treated Tap water in 95 villages, untreated tap water in 32 villages and uncovered well in 17 villages. Most of the villages do not have treated tap water facility and the quality of water is very poor in the study area.

Medical Facility

Medical institutions in rural parts of the region are inadequate. Villagers of the study area generally go to Chhachhrauli and Jagadhri town to avail medical facility. Primary Health centre is only in 1 village i.e. Kharwan village of Chhachhrauli district, Primary health sub-centre (PHS) in 17 villages with 17 medical staff, Maternal Child Welfare Centre in 2 villages, Dispensary in 2 villages.

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Sanitation & Drainage Facility

Sanitation facility is poor in the villages of the study area. Most of the villages only have the open drainage system in 92 villages while the closed drainage system is available only in 11 villages.

Communication Facility

Communication facility is available in the form of Post office is available in 9 villages (Thara, Bharsana and Raliawas) and telephone connections are available in 95 villages. At the present time most of the villagers have mobile phones for communication.

Economic Resource Base

Due to the abundant presence of water, fertile soil, and warm climate, farming is an important part of Yamuna Nagar. Some of the more commonly grown crops are sugarcane, rice, wheat, and garlic. In addition to conventional farming, many farmers of Yamuna Nagar also participate in agroforestry; poplar or eucalyptus trees are often included in these projects.

Health Status

Health of the people is not only a desirable goal, but it is also an essential investment in human resources. As per the National Health Policy (1983), Primary Health Care has been accepted as main instrument for achieving this goal of development and strengthening rural health infrastructure through a three-tier system, viz., Primary Health Center (PHCs), Primary Health Subcentres (PHS) and Community Health Centers have been established to provide health care facility not only to the resident population of the concerned villages but also to the neighboring villages.

Primary Health Centers - PHC is the first contact point between village community and the Medical Officer. The PHCs were envisaged to provide an integrated curative and preventive health care to the rural population with emphasis on preventive and promotive aspects of health care.

Primary Health Sub-Centers - Sub-Centers are assigned tasks relating to interpersonal communication in order to bring about behavioral change and provide services in relation to maternal and child health, family welfare, nutrition, immunization, diarrhea control and control of communicable diseases programmes.

Community Health Centre - Community Health Centre (CHCs) are being established and maintained by the State Government under MNP/BMS programme. As per minimum norms, a CHC is required to be manned by four medical specialists i.e.

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Surgeon, Physician, Gynecologist and Pediatrician supported by 21 paramedical and other staff.

Lack of building, shortage of manpower and inadequate provision of drug supplies are hampering the operation of these units. The standards to be met according to National Rural Health Care System are given below:

Population	Medical Facility & Infrastructure	Personnel
3000-5000	1 Sub centre (Contact Unit of PHC and Community)	1 Health Worker (Female)/ Auxiliary Nurse Midwives & 1 Health Worker (Male)
20,000-30,000	1 PHC (Unit of 6 Sub-Centers)- 6 beds	Medical officers & 14 Paramedical Staff
80,000-1,20,000	Community Health Centre (Referral Unit-4 PHCs)- 30 Bedded Hospital	Medical superintendent

Source: National Rural Health Care System - India (2005-12)

Health Facilities with the study area given below:

Medical Facility	Villages/City
Government Hospital	Yamuna Nagar, Haryana
Chhabra Hospital	Buna-Kharwan Rd Kharwan
PRIMARY HEALTH CENTRE Hospital	Harnauli-Paunti Rd Harnauli

It can be inferred from the data collected that the villagers generally prefer to go to Kharwan, Chhachhrauli town to avail the government medical facility. It is attributed from the data that different health problems are reported which could be attributed to improper sanitation, lack of health awareness among the people and lack of health related infrastructure facilities.

Cultural and Aesthetic Attributes

As such no culturally and aesthetically important places are located within the 10 kms radius of the study area.

3.13.7 Socio-economic Survey

In order to assess and evaluate likely impacts arising out of any development projects on socio economic environment, it is necessary to gauge the apprehensions of the people in the study areas.

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Methodology applied for selection of sample & data collection

The methodology which is applied for primary source of data collection i.e. gathering data through field survey for socio-economic environment is depicted below:

Sampling Method

A judgmental and purposive sampling method was used for choosing respondents of various sections of the society i.e. Sarpanch, adult males and females, teachers, medical practitioners, businessmen, agriculture laborers, unemployed group etc. Judgmental and purposive sampling method includes the right cases from the total population that helps to fulfill the purpose of research needs.

Sample Size

The sample size of roughly 10-20 percent of the total Study area is selected that may include all strata of the study area (including women and other vulnerable groups).

Data Collection Method

For the process of data collection through primary source certain methods are used among that are:

Field Survey and Observations

Field survey and observations is made at each sampling village and the socioeconomic status of that region is studied. Visits are made at hospitals, primary health centers and sub-centers to know the health status of the region. Various governmental organizations such as statistical department, department of census operations are visited to collect the population details of that region.

Interview Method

Structured interview method is used to collect data regarding the awareness and opinion from the samples selected of the various socio-economic sections of the community. Structured interviews involve the use of a set of predetermined project questions that includes fixed and alternative questions. The questionnaire mainly highlights the parameters such as income, employment and working conditions, housing, food, water supply, sanitation, health, energy, transportation and communication, education, environment and pollution to assess the standard of living of that particular region and general awareness, opinion and expectation of the respondents about the proposed project. Interview method helps to collect more correct and accurate information as the interviewer is present during the field survey.

Socio-economic survey was conducted in the villages within the study areas located in all directions with reference to the study area. 9 villages were surveyed from study area.

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The respondents were asked for their awareness / opinion about the existing plant and also of their opinion about the impacts of the project which are an important aspect of socio-economic environment, viz. job opportunities, education, health care, housing, transportation facility and economic status.

- About 51% of the main workforce is engaged in agriculture and its agriculture Labourers in rural area of the study area.
- Majority of workers are practicing farming activities without any irrigation source, it means that area under irrigation is very low and maximum area is covered by unirrigated land.
- Most of the villages have Primary School (PS) while in some villages it is extended up to Middle School (MS). While for further education villagers go to the town places that are to Chhachhrauli town
- No vocational training centre is available in the villages to provide skill development techniques to the unemployed youth.
- The main source of drinking water supply is through hand pump and tube well while few villages have untreated tap water facility. But majority of respondents expressed unsatisfactory opinion regarding the availability of drinking water facility as the villages mainly have open wells which are not portable for drinking.
- Government medical facilities in the form of community health centre and primary health centre is available in Kharwan village and in private hospital in Chhachhrauli town. Villagers expressed unsatisfactory opinion regarding the facilities available at the centre.
- Two wheelers, auto rickshaws & bus facility are the main mode of transportation used by natives in the study area.
- Power supply is available in mostly all the sampling villages. Street lights are also available in all villages but frequent power cut/ load shedding problem is experienced by the people in the area
- Wood, kerosene and LPG gas is a major fuel used for cooking purpose.
- No Post office is available in the survey villages few have sub post offices and banking facilities is available within the villages.

Majority of surveyed population are aware about the project but are not aware about the expansion of the project. Respondents' opted positive response regarding the project

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activities as most of the local population will be given preference in employment and the activity will help in development of auxiliary as well as ancillary jobs in the region.

Key Findings of the Consultation

The key findings of the consultation on various issues such as, general perception, expectation, from the project and suggestions to mitigate any damage are given below:

Points Discussed in consultation	Opinion and Expectations
<p>Issues Discussed:</p> <ul style="list-style-type: none"> The Project Background, Environmental, Social issue and benefit from the project were explained to the Stakeholders. The Main issue of villagers during public consultation was discussed. Perceptions of the villagers were discussed Expectations of the respondent from the project proponent were discussed to know their priority needs and requirements 	<ul style="list-style-type: none"> Most of the respondents are aware about the project Most of the respondents expected job opportunities may be increase due to project work mainly during construction work. As the main problem faced by most of the villagers is scarcity of water, lack of drainage system. They are expecting that water facility should be provided to them, also proponent must help in repairing and maintenance of hand pump Villagers of Bhagwanpur and Kharwan villages responded that the condition of the approach road to the village is very poor, so the proponent should construct village road adjacent to the plant, also the Health facility in the village should be developed by project authority and must assist for its maintenance Villagers opined that the proposed expansion project may increase the pollution level in the region so project proponent must adapt necessary measures to mitigate the environmental impacts

3.14 TRAFFIC STUDY

Traffic study measurements were performed at Project Connectivity road only and NH-73A which is at 3.2 Kms in NW direction from the project site, SH-1 at 7.5 Kms in West direction and NH-73 at 8.3 Kms in SE in direction from project site and does not has significant impact due to transportation activities generating from the project. Hence not included.

Table 0-25: Highway in the Study Area

Name of National/State Highway	Direction		Ratio in Percentage (%)
	Up	Down	
Project connectivity road	Tajewala	Yamunanagar	70
NH-73A	Tajewala	Yamunanagar	30
Total			100%

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Table 0-26: No. of Vehicles per Day

S.No.	Vehicles Distribution	Number of Vehicles Distribution/Day		Total Number of Vehicle in PCU		Total Number of Vehicle(PCU)/Hour	
		NH-73A	Project connectivity road	NH-73A	Project connectivity road	NH-73A	Project connectivity road
1	Cars	2531	330	1	2531	330	105.583
2	Buses	1740	132	3	5280	496	220
3	Trucks	2261	176	3	9792	528	22
4	Two wheelers	1765	451	0.5	882.5	228	36.7708
5	Three wheelers	1012	224	0.75	759	168	7
	Total	9911	991		19247.5	1650	801.979

Table 0-27: Existing Traffic Scenario and LOS

Road	V (Volume in PCU/hr)	C (Capacity in PCU/hr)	Existing V/C Ratio	LOS
NH-73A	821.98	3000	0.27	B
Project connectivity road	68.75	910	0.08	A

Note: The existing level may be "Very Good" for all the Highways near Project Site.

V/C	LOS	Performance
0.0-0.2	A	Excellent
0.2-0.4	B	Very Good
0.4-0.6	C	Good/ Average/ Fair
0.6-0.8	D	Poor
0.8-1.0	E	Very Poor

Note: Capacity as per IRC: 61-1990

Table 0-28: Additional Traffic during Plant Operation

S. No.	Type of Vehicle	Additional Vehicle Per day	PCU	Total Number of Vehicle in PCU/day	PCU/Hr
1	Truck	20	3	60	2.50
2	2 Wheeler	15	0.5	75	0.31

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?	Car	10		10	3.12
Total				77.5	3.23

Basis No. of vehicle x 2 (Up and Down)

Table 0-29: Modified Traffic Scenarios and LOS

Road	Increased PCU's- State/National Highway	V	C	Modified V/C Ratio	LOS
NH-73A	$3.23 \times 70\% = 2.26$	$1.29 + 801.97 - 803.26$	3000	0.27	B
Project connectivity road	$3.23 \times 30\% = 0.97$	$0.97 + 68.75 - 69.72$	900	0.08	A

3.14.1 Conclusion

The LOS value from the proposed project may be same as earlier value "Very Good" for all the highways. So the additional load on the carrying capacity of the concern roads is not likely to have any significant adverse effect. The transportation map is given as below figure.

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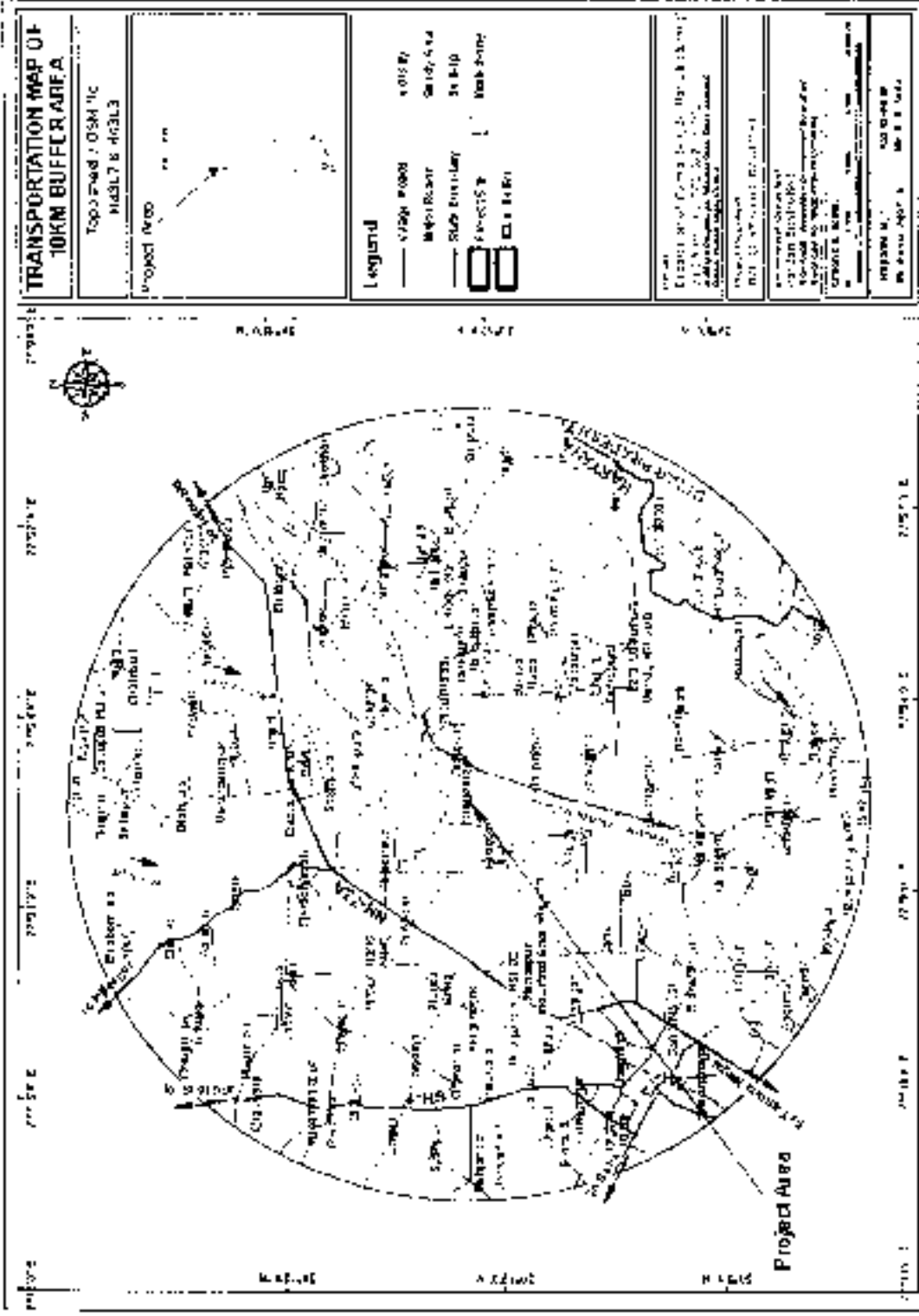


Figure 0-67: Transportation Map

CHAPTER-IV: ANTICIPATED ENVIRONMENT IMPACT AND MITIGATION MEASURES

4.1 INTRODUCTION

This chapter presents identification and appraisal of various impacts from after expansion of the plant in the study area. Generally, the environmental impacts can be categorized as either primary or secondary. Primary impacts are those which are attributed directly to the project and secondary impacts are those which are indirectly induced and typically include the associated investment and changed patterns of social and economic activities by the proposed action.

Quantification of assessments in terms of measurable units would be the ideal method for impact assessment. Mathematical models are the best tools to quantitatively describe cause-effect relationships between sources of pollution and different components of environment. However, due to lack of information/data, uncertainties involved and complex interrelationships between various sectors of environment; it is not always possible or at least not easily achievable. In such cases, only qualitative predictions have been made based on experience and judgments.

The Environment Management Plan (EMP) is required to ensure sustainable development in the study area (10 km) of the proposed expansion plant site, hence it needs to be an all-encompassive plan for which the proposed expansion industry, regulating agencies like pollution control board working in the region and more importantly the affected population of the study area need to extend their co-operation and contribution.

The affected environmental attributes in the region are air quality, water quality, soil, land use, ecology and public health. The management action plan aims at controlling pollution at the source level to the extent possible with the available and affordable technology followed by treatment measures before they are discharged. The proposed expansion project would create impact on the environment in two distinct phases.

- i. During the construction phase which may be regarded as temporary or short term; and
- ii. During the operation phase which would have long term effects.

Various impacts during the operation phase and construction phase on the environmental parameters have been studied and mitigation measures for the same are discussed briefly below and elaborated in the subsequent sections.

4.2 Impact Identification

Considering that identification of significant environmental impact is essential in the preparation of EIA report, an attempt has been made here through the use of 'Activity Effect' matrix.

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Table No 0-1: Impact Identification Matrix during Construction Phase

Activities	Environmental Attributes										
	Air	Water	Soil	Noise	LULC	Hydrology	Geology	SHW	Risk Hazardous	Ecology and Biodiversity	Socio Economic
Material Supply (Transportation)	✓	-	-	✓	-	-	-	-	✓	-	✓
Storage	✓	-	-	-	-	-	-	✓	✓	-	✓
Movement of Machinery	✓	-	-	✓	-	-	-	✓	✓	-	✓
Land Development/ Green belt	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓
Development Construction of Building	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓
Garbage Disposal	✓	-	✓	-	-	✓	-	✓	✓	✓	✓
Operation of DG set	✓	-	-	✓	-	-	-	✓	✓	✓	✓
Painting and Finishing	-	-	-	✓	-	-	-	✓	✓	✓	✓

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Table No 0-2: Impact Identification Matrix during Operation Phase

Component	Parameter Factor	Raw materials					Flue Gas Emission	Process Emission	Water Consumption (Source: its treatment Bore and disposal well)	Storage of toxic and flammable chemicals Solid & Hazardous	Solid & Hazardous waste Management
		handling and storage, access, parking, and loading/ Unloading	Chemical reactions of unit processes and unit operations	Chemical reactions of unit processes and unit operations	Flue Gas Emission	Process Emission					
Soil	Contamination	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Soil quality	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Resources	Reduction of farmland productivity	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Fuels/ Electricity	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Water	Alteration of Hydraulic	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Water Quality	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Air	Air Quality	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Noise	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Noise	Environment	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Effect on trees & shrubs	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Biological	Disturbance of habitats by Noise and vibration	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Generation of temporary and permanent jobs	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Social	Income for the state and private sector	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	

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Component	Parameter Factor	Raw materials handling and storage, access, parking, and loading/unloading	Chemical reactions of unit processes and unit operations	Process Emission	Flue Gas Emission (Source: bore and disposal well)	Water Consumption	Wastewater Generation, its treatment and disposal	Storage of toxic and flammable chemicals	Solid & Hazardous waste Management
Training in new technology and new skill to worker.	Health	✓	✓	✓	✓	-	✓	✓	

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4.3 Assessment of Significance of Impacts (Criteria for Determining Significance, Assigning Significance) & Mitigation Measures

This section is devoted to the assessment of impacts due to the proposed expansion of industrial unit, which are the most important components of EIA. Assessment involves determination of nature and extent of impacts due to the industrial activities or the actions involved. Here it is determined whether the environmental impacts will be:

1. Direct or Indirect
2. Impact of low, medium, or high significance

Based on Environmental Impact Analysis, the Environmental Impacts under this step are quantitatively and qualitatively assessed.

Quantitative assessment with the help of a mathematical model has been done wherever possible. In other cases, the impact assessment has been qualitative which is based on available scientific knowledge and judgement. The mathematical model used for assessment in the present study includes "AERMOD" Dispersion Model for air quality. For other cases i.e. Water, Noise, Land/Soil, Ecology, Socio-economic etc., the available scientific knowledge and judgements have been used.

N (D): Negative Direct
 N (ID): Negative Indirect
 P (D): Positive Direct
 P (ID): Positive Indirect
 LS: Low Significance
 MS: Medium Significance
 HS: High Significance
 ST: Short Term
 LT: Long Term

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Table 0-3: Impact Assessment Matrix during Construction Phase

Activities	Environmental Attributes										
	Air	Water	Soil	Noise	IU/LC	Hydro geology	Geology	SHW	Risk Hazarous	Ecology and Biodiversity	Socio Economic
Material Supply (Transportation)	N(D)	-	-	N(D)	-	-	-	-	N(D)	-	N(D)
	HS	-	-	HS	-	-	-	-	HS	-	HS
	ST	-	-	ST	-	-	-	-	ST	-	ST
Storage	N(D)	-	-	N(D)	-	-	-	N(D)	N(D)	-	N(D)
	HS	-	-	HS	-	-	-	HS	HS	-	HS
	ST	-	-	ST	-	-	-	ST	ST	-	ST
Movement of Machinery	N(D)	-	-	N(D)	-	-	-	N(D)	N(D)	-	N(D)
	HS	-	-	HS	-	-	-	HS	HS	-	HS
	ST	-	-	ST	-	-	-	ST	ST	-	ST
Land Development/ Green belt Development	N(D)	N(D)	N(D)	N(D)	N(D)	N(D)	N(D)	-	N(D)	N(D)	N(D)
	HS	HS	HS	HS	HS	HS	HS	-	HS	HS	HS
	ST	ST	ST	ST	ST	ST	ST	-	ST	ST	ST
Construction of Building	N(D)	N(D)	N(D)	N(D)	N(D)	-	N(D)	N(D)	N(D)	-	N(D)
	HS	HS	HS	HS	HS	-	HS	HS	HS	-	HS
	ST	ST	ST	ST	ST	-	ST	ST	ST	-	ST
Operation of set	N(D)	N(D)	-	N(D)	N(D)	-	N(D)	N(D)	N(D)	N(D)	N(D)
	HS	HS	-	HS	HS	-	HS	HS	HS	HS	HS
	ST	ST	-	ST	ST	-	ST	ST	ST	ST	ST
Painting and Finishing	N(D)	-	-	N(D)	-	-	-	N(D)	N(D)	N(D)	N(D)
	HS	-	-	HS	-	-	-	HS	HS	HS	HS
	ST	-	-	ST	-	-	-	ST	ST	ST	ST

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Table No 0-4: Impact Assessment Matrix during Operation Phase

Component	Parameter Factor	Raw materials handling and storage, access, parking, and loading/unloading							Chemical reactions of unit processes and unit operations	Process Emission	Flue Gas Emission	Water Consumption (Source: Borewell and disposal)	Wastewater Generation, its treatment and disposal	Storage of toxic and flammable chemicals Solid & Hazardous	Solid & Hazardous waste Management
		Raw materials handling and storage, access, parking, and loading/unloading	Raw materials handling and storage, access, parking, and loading/unloading	Raw materials handling and storage, access, parking, and loading/unloading	Raw materials handling and storage, access, parking, and loading/unloading	Raw materials handling and storage, access, parking, and loading/unloading	Raw materials handling and storage, access, parking, and loading/unloading	Raw materials handling and storage, access, parking, and loading/unloading							
Soil	Contamination	N(D) IS LT													
	Soil quality	N(D) HS LT													
	Reduction of farmland productivity														
Resources	Fuels/Fuellicity	N(D) HS LT													
	Alteration of Hydraulic														
Water	Water Quality														
	Air Quality														
Noise Environment	Noise Environment	N(D) IS LT													

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Component/Parameter Factor	Raw materials handling and storage, access, parking, and loading/unloading	Chemical reactions of unit processes and unit operations	Process Emission	Floor Gas Emission	Water Consumption (Source: Borewell and disposal)	Wastewater Generation, its treatment and disposal	Storage of toxic and flammable chemicals Solid & Hazardous	Solid & Hazardous waste Management
Biological	Effect on trees & shrubs	N(D) HS LT	N(D) HS LT	N(D) HS LT	-	-	N(D) HS LT	N(D) HS LT
	Disturbance of habitats by Noise and vibration	N(D) HS LT	-	-	N(D) HS LT	N(D) HS LT	-	N(D) HS LT
	Generation of temporary and permanent jobs	P(D) HS LT	-	-	-	P(D) HS LT	-	P(D) HS LT
	Income for the state and private sector	P(D) HS LT	-	-	-	P(D) HS LT	-	P(D) HS LT
Social	Training in new technology and new skill to worker	P(D) HS LT	P(D) HS LT	P(D) HS LT	-	P(D) HS LT	-	P(D) HS LT
	Health	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT

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4.4 IMPACTS AND ITS MITIGATION MEASURES

4.4.1 Air Environment

The impact has been predicted separately for operation phase of the project. During operation phase, air emissions both gaseous and fugitive will be on account of process emissions from stacks, transportation of men and material.

Air Quality Modeling

The Gaussian Dispersion Modeling (GDM) is used for prediction of dispersion of air emission and the computation of Ground Level Concentration (GLC) up to a specified distance from source. The fundamental model is given below:

$$c(x,y,z) = \frac{Q}{2\pi\sigma_y\sigma_z u} \exp\left(-\frac{y^2}{2\sigma_y^2}\right) \left(\exp\left(-\frac{(z-h)^2}{2\sigma_z^2}\right) + \exp\left(-\frac{(z+h)^2}{2\sigma_z^2}\right) \right)$$

Where c is a concentration at a given position, Q is the source term, x is the downwind, y is the crosswind and z is the vertical direction and u is the wind speed at the h height of the release. The σ_y , σ_z deviations describe the crosswind and vertical mixing of the pollutant. The above equation describes a mixing process that results in a Gaussian concentration distribution both in crosswind and in vertical direction, centered at the line downwind from the source. Gravitational settling and chemical or radioactive decays are neglected.

Stack details

Impacts on ambient air during operation phase would be due to emissions from flue gas stacks (2 D.G Sets: One 325 KVA Existing and One 650 KVA Proposed as backup, One HSD based boiler of 900 Kg/hr). No additional boiler will be installed for expansion unit.

Emissions were analyzed for their impacts on the GLC for various distances using the dispersion modeling guidelines given by the Central Pollution Control Board, New Delhi and the dispersion modeling software AERMOD of the United States Environment Protection Agency (USEPA).

Table 0-5: DG Set & Boiler Details

S. No.	Stack Attached to	Capacity	Stack Ht., m	Stack Dia., m	Fuel Used
1	1 D.G Set	325 KVA	6	0.2	HSD
2	1 D.G Set	650 KVA	6	0.2	HSD
3	Boiler	900 Kg/Hr	30	0.3	HSD

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Meteorological Data

The meteorology of the project area plays very important role in dispersion of pollutants and buildup of pollution within the atmosphere. In the present study, one season (March 2020 – May 2020) meteorological data has been taken to find the dispersion of pollutant concentration. The mixing height for study period, which is an important parameter to express the dispersive potential of atmosphere, has been taken from the atlas of hourly mixing height and assimilative capacity of atmosphere in India (S.D. Attri et al., 2008).

Results

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Table 0-6: Predicted GLC at Ambient Air Quality Monitoring Stations

Location	Village	Mass Baseline Concentrations				Predicted GLC - AERMOD				Cumulative GLC			
		PM10 (µg/m ³)	PM2.5 (µg/m ³)	NO2 (µg/m ³)	SO2 (µg/m ³)	PM10 (µg/m ³)	PM2.5 (µg/m ³)	NO2 (µg/m ³)	SO2 (µg/m ³)	PM10 (µg/m ³)	PM2.5 (µg/m ³)	NO2 (µg/m ³)	SO2 (µg/m ³)
S1	Chandpur	92.1	49.5	31.5	17.2	0.13864	0.05648	0.4368	0.43729	0.23864	31.668	17.3068	
S2	Bhagwanpur	90.4	51.2	32.1	18.9	0.04703	0.01928	0.05613	0.05613	90.44205	31.15613	18.95613	
S3	Dadpur, Chawab	81.5	52.5	25.5	16.8	0.09027	0.00381	0.037051	0.037051	81.30027	25.514071	16.813071	
S4	Chandpur	84.2	51.4	29.5	15.3	0.0062	0.00249	0.0082	0.0082	84.3362	29.5082	15.3082	
S5	Khairi	85.3	55.8	27.5	15.5	0.01005	0.00409	0.01288	0.01288	87.34005	27.51288	15.51288	
S6	Khairwan	86.4	51.3	31.8	16.7	0.02119	0.00491	0.00210	0.00210	86.40219	31.80219	16.70219	
S7	Block 1	78.1	51.1	24.5	14.5	0.00691	0.00355	0.00589	0.00589	78.19921	24.50589	14.50589	
S8	Holchar	87.2	53.8	29.5	19.3	0.0067	0.00228	0.00609	0.00609	87.3067	29.5067	19.3067	

The contour maps showing the predicted concentration levels of PM10, PM2.5, NO2, SO2 of Study area are presented as below figures:

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES **DRAFT EIA REPORT**

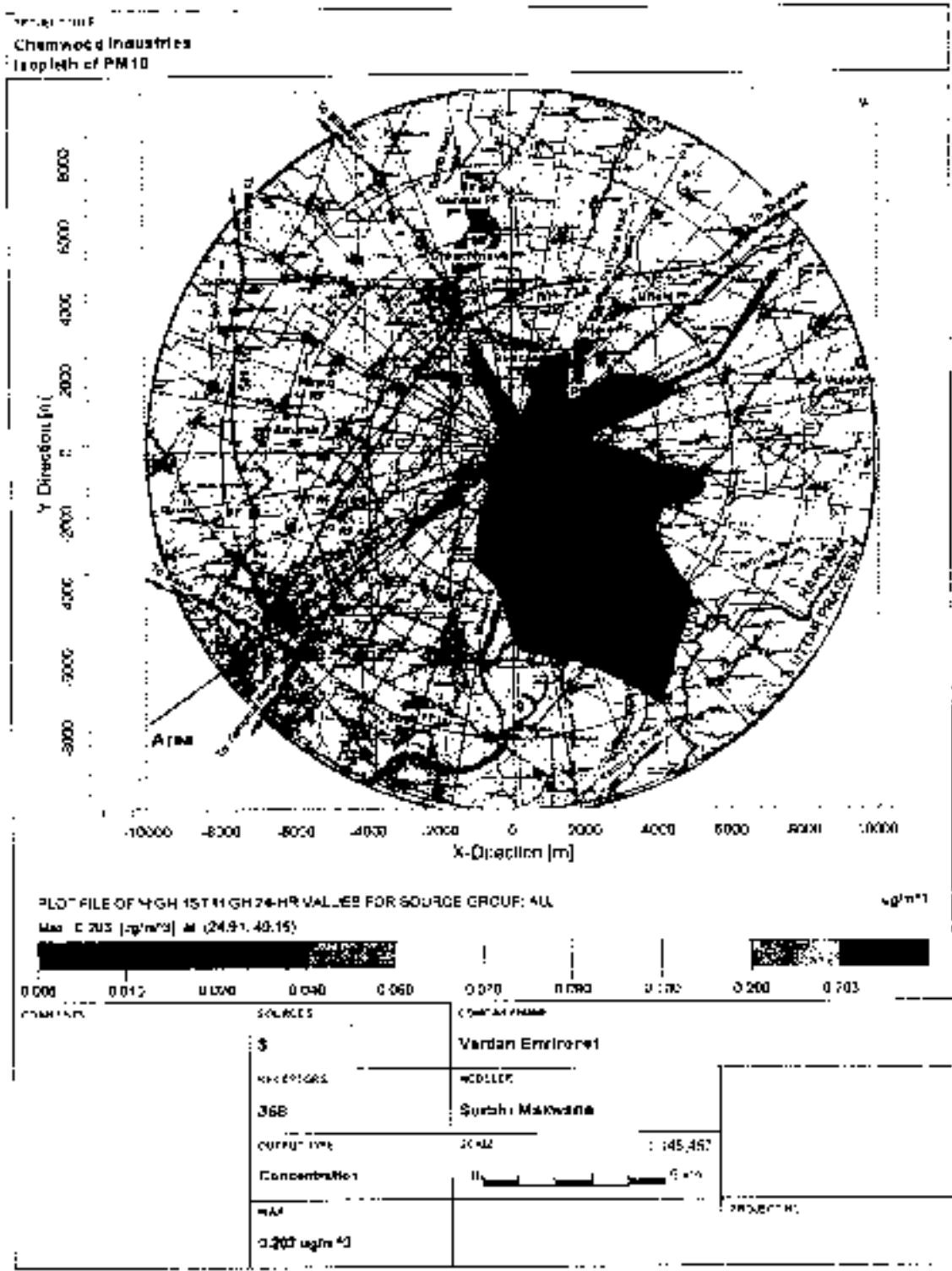


Figure 0-1: Spatial distribution of predicted GLCs of PM10

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES **DRAFT EIA REPORT**

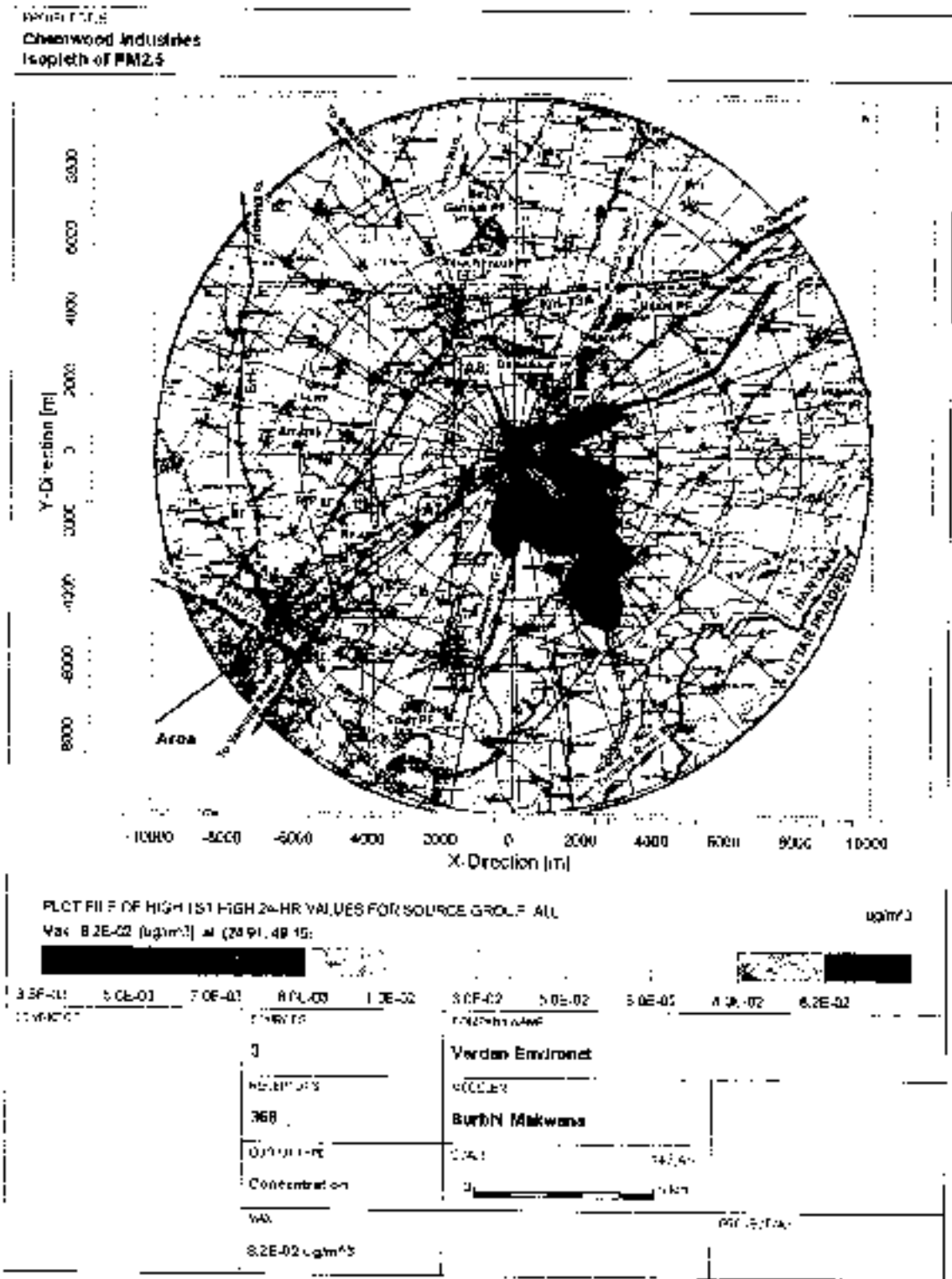


Figure 0-2: Spatial distribution of predicted GLCs of PM2.5

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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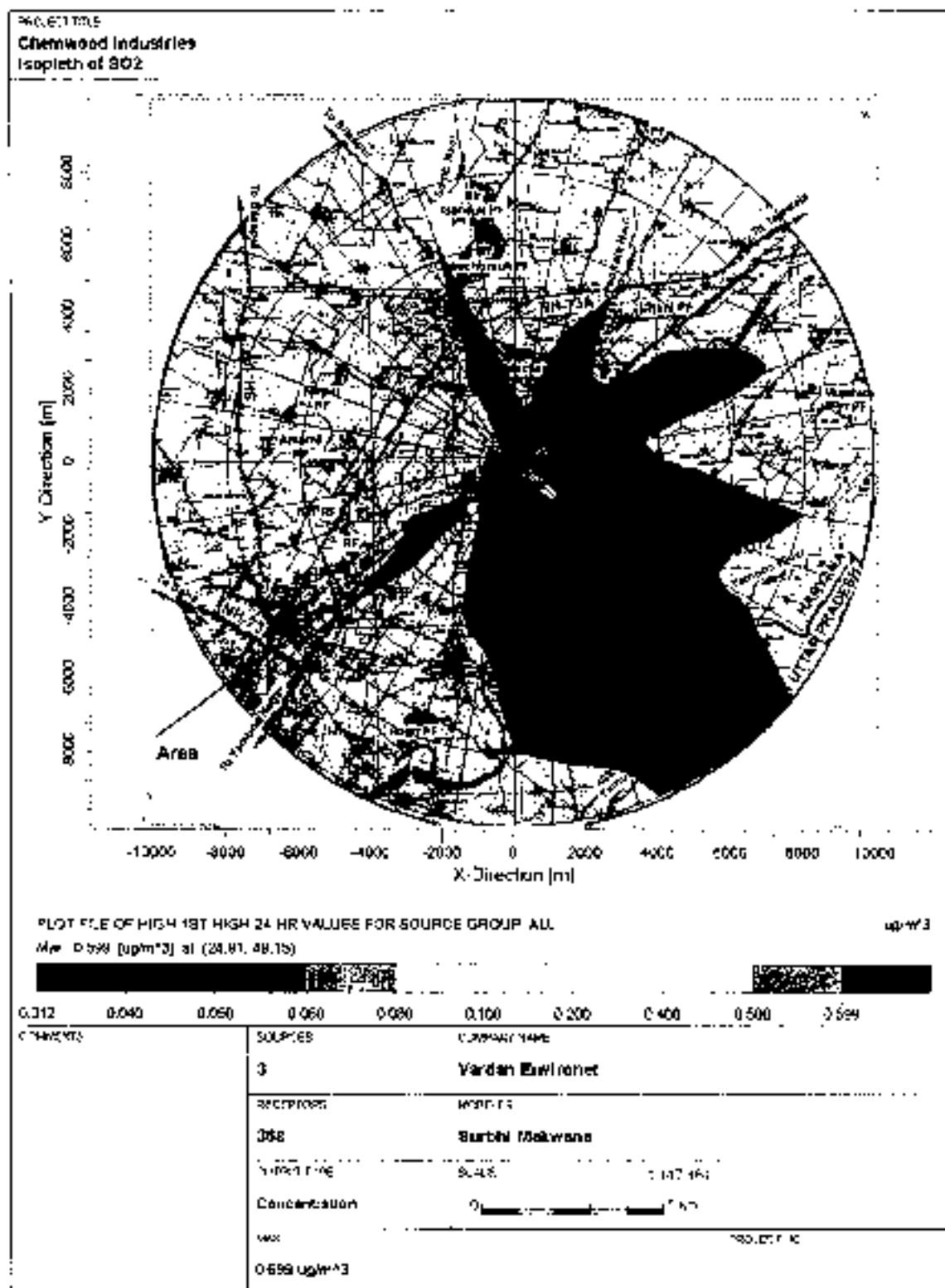
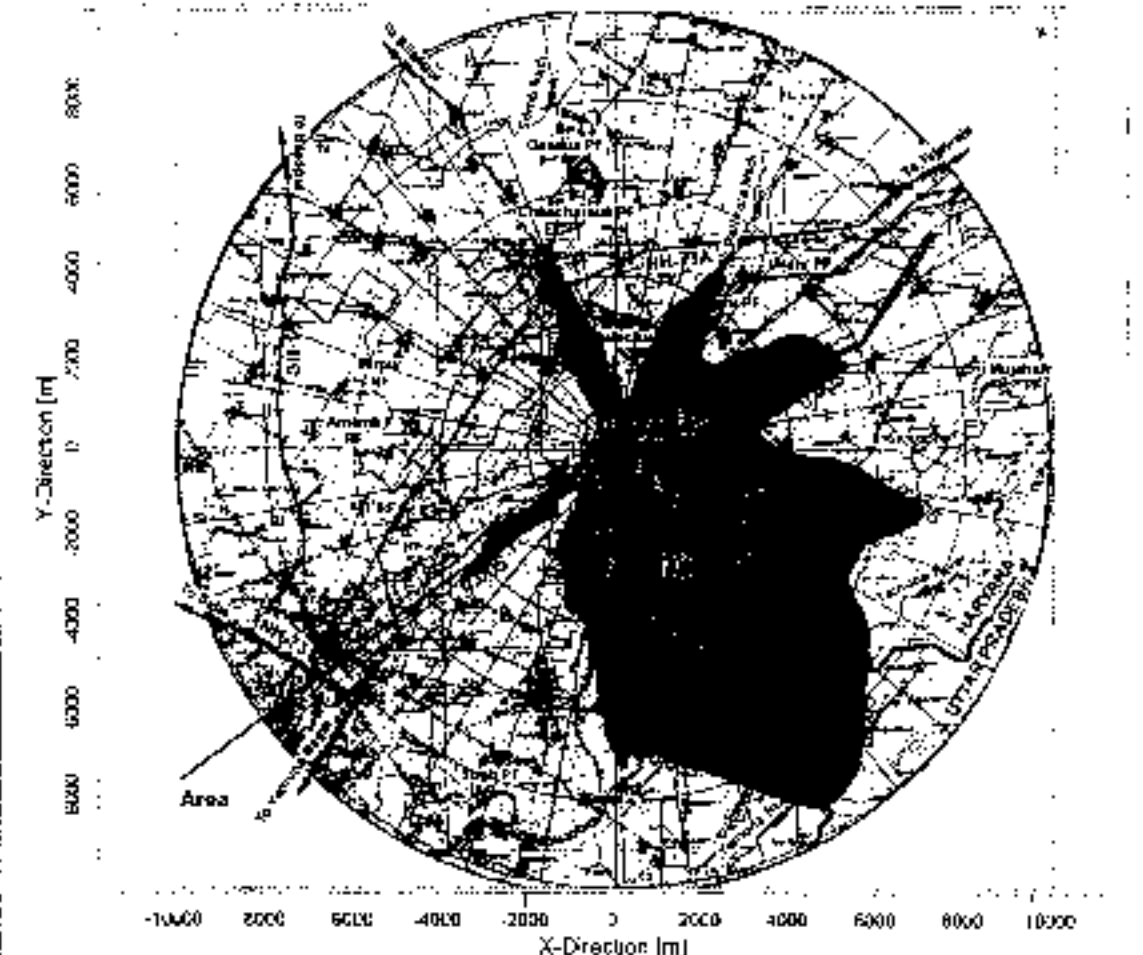


Figure 0-3: Spatial distribution of predicted GLCs of SO2

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

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FILE TITLE
Chemwood Industries
Isopleth of NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ugm³

Max: 0.235 [ugm³] at (2491, 4215)

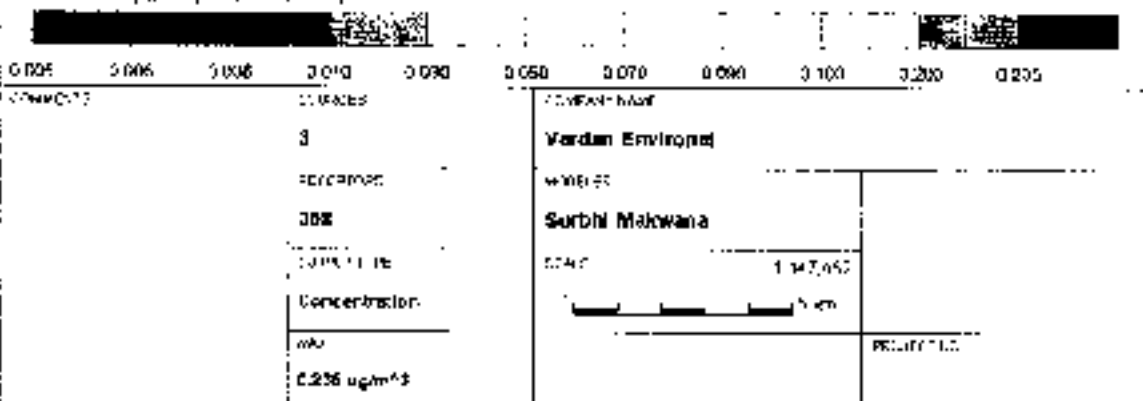


Figure 0-4: Spatial distribution of predicted GLCs of NO2

4.4.2 Output of the Air Modelling

- The maximum cumulative GLC concentration of PM_{2.5} viz. 55.80 ug/m³ was predicted inside the study area.
- The maximum cumulative GLC concentration of SO₂ viz. 19.30 ug/m³ was predicted inside the study area.
- The maximum cumulative GLC concentration of NO_x viz. 32.15 ug/m³ was predicted inside the study area.
- The maximum cumulative GLC concentration of PM₁₀ viz. 92.23 ug/m³ was predicted inside the study area.

4.4.3 Impacts on Air Environment (Construction Phase)

This project involved construction of expansion unit for production capacity expansion of Existing formaldehyde manufacturing unit from 100 TPD to 200 TPD. As major civil, land preparation work already done in existing unit so no major construction will be required except erection of production column and other supporting instrumentation.

During construction phase, suspended particulate matter will be generated in very less amount, which may be generated due to vehicular movement, because of vehicular traffic there may be a marginal increase in the concentrations of NO_x and SO₂. Fumes and gases near the work area due to welding & cutting activities. Dust emission due to removal of scrap materials, remaining and waste construction materials, construction machinery, dismantling and removal of temporary structures, site cleaning and disposal of these materials. No top soil will be removed from the project area.

4.4.4 Mitigation Measures

- The impact of such activities would be temporary and restricted to the construction phase only and will be confined within the project premises.
- Proper upkeep and maintenance of vehicles, sprinkling of water on roads at construction site, providing sufficient vegetation etc. are some of the proposed measures that would greatly reduce the impact on the air quality during the construction phase of the project.
- The vehicular impacts on the environment will be minimized by proper maintenance and limitation on speed.

4.4.5 Impacts on Air Environment (Operation Phase)

- Main sources of air emission will be from the Existing DG, Existing Boiler Stack and proposed DG sets. Increase in transportation will also increase the level of concentration of Air pollutant.

4.4.6 Mitigation Measures

- Existing has been provided with Scrubber scrubbing the residual Formaldehyde from the main product stream which also controls the odour problem. The same will be installed for expansion unit also.
- Online Air monitoring system for stack emission (for Particulate Matter) will be installed & transmission of online data to Haryana State Pollution Control Board and CPCB will be done
- Water sprinkling is being ensured during unloading/loading of trucks to control fugitive emissions in the existing unit. These practices will be continuing even after expansion.
- Required covered storage facility already provided which is capable for expansion unit also.
- PUC will be ensured to all the vehicles involvend in facility.
- Pucca roads within the premises, water sprinkling in dusty areas and greenbelt/green cover in 37.62 % of total area to arrest the fugitive dust emission.

4.5 Water Environment

4.5.1 Impacts on Water Environment (Construction Phase)

As the existing unit has already developed the entire plot area hence no major construction work will be involved which may produce the waste water during construction phase. The existing unit has already developed sanitation facility. The workers involved in the construction of expansion unit will use same sanitation facility hence no waste water will be discharged from the project area. Plant area already developed the drainage system which helps to channelize the waste water and storm water properly.

4.5.2 Mitigation Measures

All identified impacts during construction phase will be negligible, temporary and restricted to the plant boundary. Proper and effective mitigation measures will be implemented to minimize the impact and ensure minimum effect on water resources. Proposed mitigation measures to avoid/ minimized predicted impacts are mentioned below:

- Construction activities will be limited within project boundary. It will be ensured that construction equipment are washed properly only at designated washing places to avoid any unnecessary runoff at project site.
- Sewage will be discharged in a Septic Tank.
- Drinking water and sanitation facilities will be provided to avoid unwanted impacts on health and ground water during construction

4.5.3 Impacts on Water Environment (Operation Phase)

- Ground water and soil pollution may occur if waste is directly disposed on the land.
- Disposal of untreated wastewater may causes health problems in the community. change in physical and chemical properties of soil and water which ultimately affects organisms present.

Mitigation Measures

- This is a zero liquid discharge plant.
- Treated water from effluent is being reused in process and utilities.
- Treated water from septic tank will be used for gardening and the same will meet the quality required by local body regulations
- Ground water will be extracted with permission of HWRA. Application for the same will be submitted

4.6 Land Environment

4.6.1 Impacts on Land Environment (Construction Phase)

- Contamination of land due to spill of construction material may impact the land to some extent.
- There will be generation of garbage and sewage by the worker and other staff involved during construction phase. Untreated sewage and garbage disposal on land might pollute the land which may change physical and chemical properties of soil. Change in soil properties ultimately affects the living organisms present in the soil. Open dumping or improper disposal of sewage and garbage provides breeding ground for pathogenic bacteria and other creatures which may spread diseases like Diarrhea, Infections with intestinal helminthes (worms), Malaria, Typhoid and other infectious diseases.

4.6.2 Mitigation Measures

- The construction activities like excavation for foundation, site preparation and vehicular movements will definitely bring the changes in the landscape. However, these changes shall be of short duration with no much impact. Excavated soil will be stored properly to avoid the spread of wind-blown dust and shall be reused for backfilling and landscape development
- Spillage & leakage of fuel will be prevented by providing well lined/ paved area for the works having potential of leakage/ spillage of fuel or material. Hence contamination of land due to spillage/ leakage of fuel or construction material with soil would not arise.
- The sewage will be treated properly and garbage, if any, shall be disposed at a safe location to avoid the impact of these pollutants on the land

4.6.3 Impacts on Land Environment (Operation Phase)

- There is no hazardous waste will be generated from the process. Waste oil will be only generated from the DG set. This may cause impact on the soil if disposed openly. The unit does not involve any kind of Effluent generation and disposal on open land. All the waste water will be recirculated till 100% consumption.
- Domestic solid waste if disposed openly can cause the land pollution.

4.6.4 Mitigation Measures

- The plant will implement zero level discharge concepts. Therefore, there will not be any negative impact on soil.
- There is no ash generated from the boiler. This is HSD based boiler which does not generate solid particle in form of Ash.
- Waste oil generated from DG set is being sent to authorized recycler or vendor.
- It is envisaged that there will not be any major impacts on land environment during the operation phase as most of the effluent generated shall be reused in the process.

4.7 Noise Environment

4.7.1 Impacts on Noise Environment (Construction Phase)

Predicted noise pollution sources and its impacts during the construction phase:

- Operation of construction machineries, equipment and associated mechanical works will generate the noise which may cause loss of concentration
- Noise from Vehicular movement
- Noise pollution during construction phase is temporary and restricted to project boundary only.

4.7.2 Mitigation Measures

- Noise from Vehicular movement will be within the limit by implementing the policy of maintenance of Vehicles and PUC.
- Transportation of construction machinery or raw material shall be allowed only during daytime to reduce the impacts of increased noise.
- The construction equipment / machineries shall be turned off when not in use.
- Loud horn of vehicles will not be allowed at project area. Regular maintenance & lubrication of construction equipment & machineries will be undertaken to reduce the noise generation
- Adequate Personal Protective Equipment (PPEs) like ear muff, ear plug, hand gloves, gum boots etc. will be provided to worker which helps to prevent occupation health problems.

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4.7.3 Impacts on Noise Environment (Operation Phase)

Ambient noise levels will be increased during operation phase due to machineries and other industrial activities. However, the impacts of noise during this phase will be confined within plant boundary or within the source of generation. Existing unit has developed green belt. Additional green belt will be developed within the unit to cover minimum 33% of total project area which will help to reduce the noise level in the project area.

4.7.4 Mitigation Measures

- Vibrating pads & acoustic enclosure will be provided to noise generating equipment to control noise level within norms.
- Noise level can be reduced by stopping leakages from various steam lines, compressed air lines and other high-pressure equipment. The noise produced in valves and piping associated with equipment handling compressible and incompressible fluids shall be attenuated to 85 dB(A) at a distance of 1.0 m from the source by the use of low noise trims, acoustic lagging (insulation), thick-walled pipe work as and where necessary to comply with CPCB noise standards for industrial zones.
- It can be reduced by providing padding at various locations to avoid rattling due to vibration
- Latest technology and utmost care will be taken at the time of equipment / machinery installation.
- Lubrication of moving/ rotating part or component of machineries will be done on regular basis.
- The insulation provided for prevention of loss of heat and personnel safety gears will also act as noise reducers.
- Design and layout of building to minimize transmission of noise, segregation of particular items of plant.
- The operator's cabins (control rooms) will be properly (acoustically) insulated with special doors with observation windows.
- The operators working in the high-noise areas will be provided with ear-muffs or plugs.
- Acoustic enclosures and silencers will be provided to the Equipment wherever necessary
- Proper green belt will be developed to reduce the noise level

- Thus, it is envisaged that there will not be any adverse impacts of noise. The greenbelt developed within the premises will have significant beneficial impacts on reduction of noise within the periphery and outside the boundary.

4.8 Occupational Health & Safety

Impacts during the construction phase

Accident may occur due to operation of equipment, vehicular movement, construction activities, material handling etc.

4.8.1 Mitigation Measures

- PPE like helmets, goggles, safety mask, ear plugs, safety shoes, etc. will be provided to workers.
- Training to worker will help to minimize the probability of accident to large extent. Workers will get training considering their health aspects and hence the occupational health and safety impacts can be controlled.
- Effective implementation of the mitigation measures, proper care and training for the safety aspects will be followed which will controls occupational health or contagious diseases.

4.8.2 Impacts during Operation Phase

- It is envisaged that occupational health hazards shall be associated with operational activities such as spillage and exposure to the chemical, mechanical hazards like cuts and hits and electrical shocks.
- Accident due to fall from height, burn injury and trap in the machine or motors.

4.8.3 Mitigation Measures

- All safety signs have been placed at proper location.
- First aid kits have been made available at every department.
- Pre-employment Medical check-up and periodical medical check-up are being undertaken to know the occupational health hazards at the early stage.
- Work permit system will be introduced to avoid the entry or un-authorized working to avoid the incidences which can lead to the accident if proper care is not taken.
- All arrangement required for Fire hydrant system shall made at every vulnerable location to have the firefighting facility.
- Apart from above, all required Fire Extinguishers shall be provided at appropriate locations.
- All staff and workers will be trained in firefighting operations and emergency preparedness plan or to tackle the accident.
- PPEs will be provided as per requirement

- Good housekeeping also plays important role in avoiding the undesirable incidences / accidents, hence good housekeeping practices will be employed throughout the Factory premises

4.9 Socio Economic Environment

4.9.1 Impacts

Critically analyzing the existing environmental status of the socio-economic profile and visualizing the scenario with the project, the impacts of the project would be varied and may generate both positive and negative impacts of the proposed expansion project in the region that are stated below:

Positive Impacts:

- As per the survey it has been observed that the non worker population is very high in the area. So the project in general will help to provide direct and indirect job opportunities for auxiliary and ancillary works etc. Project has already appointed local workers in the existing unit.
- The manpower requirement during operation phase will be sourced from local area based on their education and skills. Some temporary man power will be hired from local areas during construction phase.
- Local work force will be given first preference in the activity due to which influx of the outsiders is not envisaged or it will be very minimal. If sufficient number of local workers will not be available, then workers from outside will be engaged. For the outside workers if any, housing arrangement and the facilities will be provided at the project site.
- Social and local area development plan proposed in CFR activities will also help to improve the social status of the area.

4.10 Impacts on Human Health

As such there is no direct impact is associated from the project activities until it come to direct contact of hazardous activities. The unit has been provided with Scrubber to control process emission from the project. No waste water will be discharge outside the factory which may pollute the water bodies commonly used by local public. No hazardous waste will be generating from the process. All the water generated from the project will be managed as per direction of HSPCB.

4.10.1 Mitigation Measures

- Adequate measures have been envisaged in the project design to control air & noise pollution. Proposed adequate & effective control measures will be provided which include dust suppression.
- Awareness programs shall be arranged on health, hygiene and sanitation

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- Periodic health checkup camps, distribution of medical aid and medicines shall be organized by project authority for villagers, contract laborers, employees and their family.
- Apart from the normal health check up, emphasis shall also be given to prevent specific diseases originating due to emission of different pollutants such as respiratory ailments, skin problems, water borne diseases, hearing abilities etc.
- Job oriented training courses must be organized through industrial / technical training institutions for educated youth like electrical, tailoring, plumbing, type writing, shorthand and machine repairing, welding fabrication, and other skill developing trades
- Whenever necessary, collaboration between project authority and local bodies will be done on regular basis with an objective to build and maintain a good relationship which is necessary for smooth functioning of the project as well as progress and welfare of the people in the study area
- Awareness programs will be taken to make people aware about the environmental protection, need of water conservation etc.
- At the work place, first aid facilities shall be maintained at a readily accessible place with
- Necessary appliances including sterilized cotton wool etc. Ambulance facility shall also be provided during emergency
- Sufficient supply of water fit for drinking shall be provided at suitable places.
- Sanitary facilities shall be provided at accessible place within the work zone and kept in a good condition

4.11 WASTE WATER MANAGEMENT

There will be no solid waste generated in the process, any kitchen solid waste can be binned and disposed. With regards to treatment technology, since the quantity is so small that a Septic tank shall be sufficient and the waste water generated will be used for the Greenbelt Purpose.

There will be no waste water generated through the process. It is a Zero Liquid Discharge Plant. All the waste water generated from the process will be reused till 100% consumption.

4.12 PROPOSED RAIN WATER HARVESTING

Rainwater harvesting is the accumulation and deposition of rainwater for reuse on-site, rather than allowing it to runoff. Rainwater can be collected from surface runoffs or roofs, and in many places the water collected is redirected to a deep pit (well).

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shaft, or borehole), a reservoir with percolation, or collected from dew or fog with nets or other tools. As this is expansion unit, rain water harvesting system is already provided in existing unit. The plant is has been provided with drainage system for waste water and storm water for separate collection of the same and to avoid the mixing of the same.

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CHAPTER-V: ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

5.1 PREAMBLE

M/s. Chemwood Industries is partnership firm started with the objective to get involved in the manufacturing of Formaldehyde.

The existing and proposed project is located at Village Bhagwanpur, Kharwan road, Tehsil Jagadhri, District Yamunanagar, Haryana. Total project area is 0.68 Hectares which is owned by Chemwood Industries.

5.2 SELECTION OF LOCATION

The land is already under the possession of project proponent and as the project is small scale, there hasn't been any alternative site considered for the project. Existing project was developed after securing CTE from HSPCB.

5.3 ANALYSIS OF ALTERNATIVES RELATED TO TECHNOLOGY

M/s Chemwood Industries has existing unit as well as proposed organic chemicals manufacturing unit to produce Formaldehyde. The technology for the manufacturing of formaldehyde is procured from India, domestically under the make-in-India concept to promote Swadeshi movement, was launched by the Government of India on 25th September, 2014 to encourage employment & growth in Indian economy and the details regarding manufacture process is given in Chapter 2 of this EIA report.

5.4 SITE SELECTION CRITERIA

Site selection was guided by many factors like infrastructure in the area, availability of land, water sources, fuel transportation, power availability etc. Existing site was developed considering will road, rail connectivity, source availability etc. As the site is already developed hence alternative site selection was not recommended in acopiing of the project (LoR Approval) hence not performed.

CHAPTER-VI: ENVIRONMENTAL MONITORING PROGRAMME

6.1 INTRODUCTION

Environmental Monitoring is an essential tool for sustainable development and ensuring effective most implementation and monitoring of Environmental management plan and mitigation measures. It is also very essential to keep updating the environmental management system for effective conservation of environment along with ongoing project activities/operation. The environment monitoring plan enables environmental management system with early sign of need for additional action and modification of ongoing actions for environment management, improvement and conservation. It provides exact idea for mitigation measures to be implemented as it is linked with actual distraction of environmental quality due to the project activities. Hence, monitoring of critical parameters of environmental quality is very essential in the routine activity schedule of project operation. An Environmental Monitoring Program shall be scheduled for the following major objectives:

- Assessment of the changes in environmental conditions, if any, during the project operation/activities.
- Monitoring and tracking the effectiveness of Environment Management Plan and implementation of mitigation measures planned.
- Identification of any significant adverse transformation in environmental condition to Plan additional mitigation measures.

6.2 ENVIRONMENT MANAGEMENT CELL

- Apart from having an EMP, it is also necessary to have a permanent organizational set up charged with the task of proposed expansion plant will create a department consisting of officers from various disciplines to co-ordinate the activities concerned with the management and implementation of the environmental control measures.
- Basically this department will undertake to monitor the environmental pollution levels by measuring stack emissions, ambient air quality, water and effluent quality, noise level etc. either departmentally or by appointing external agencies wherever necessary. Noise level etc. either departmentally or by appointing external agencies wherever necessary.
- In case the monitored results of environmental pollution are found exceeding the allowable values, the environmental management cell will suggest remedial action and get these suggestions implemented through the concerned plant authorities. The actual operation and maintenance of pollution control equipment of each unit will be under the respective plant managers.

- The Environmental Management Cell (EMC) will handle of all the related activities such as collection of statistics of health of workers and population of the region, afforestation and green belt development

6.3 METEOROLOGY

An continuous recording meteorological station would be procured and installed within the plant premises for a proper measurement and record of meteorological parameters. Continuous thermo hydrograph will be used for maintaining the record of ambient temperature and humidity. In addition, minimum and maximum temperatures, atmospheric pressure and rainfall will also be measured daily.

Ambient Air Quality

Monitoring of ambient air quality at inside and outside the Plant should be carried out on a regular basis to ascertain the levels of harmful pollutants in the atmosphere. Ambient Air quality shall be monitored on quarterly basis for PM10, SO₂ and NO_x. 24 hourly samples of ambient air quality at three locations outside and inside the plant, at least one in dominant wind direction, one in upwind direction shall be taken for PM10, SO₂ and NO_x quarterly basis at uniform interval at each location. Existing unit also performing same monitoring, as per direction given in CTE/CIO.

Surface Water Quality

Water quality constitutes another important area in post study monitoring programme. There are some major streams or perennial sources of surface water in the study area. Contamination of surface water during operation of Plant is possible. Surface water should be generally sampled once in six months and analyzed for physical, chemical and bacteriological parameters, including heavy metals and trace elements throughout the year.

Ground Water Quality

Ground water quality is also required to be checked periodically to detect any contamination arising out of operation of plant. Ground water at the bore well should be generally sampled in six months and analyzed for physical, chemical and bacteriological parameters, including heavy metals and trace elements. Wells could be selected for ground water quality sampling.

Noise Level

Ambient noise should be monitored at the inside and outside of Plant covering industrial, commercial residential and sensitive areas seasons for day time and night time L_{eq} .

6.4 MONITORING POINTS/ LOCATIONS AND COMPONENTS

The environmental monitoring points shall be decided considering the environmental impacts likely to occur due to the operation of proposed expansion project as the main

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scope of monitoring program is to track, timely and regularly, the change in environmental conditions and to take timely action for protection of environment. The monitoring points/location and components of significance shall be as per Table 6.1

Table 0-1: Pre Project Environmental Monitoring Locations

S.No.	Environmental Components	Monitoring Points/ Location
1.	Ambient Air	Ambient air quality at minimum 3 locations (Main gate, process area, DG set and Boiler area)
2.	Water Ground Water	Ground water monitoring will be done minimum at 3 locations (Project area, Near to project area at down stream location and one is from upstream location)
	Surface water	Surface water sampling shall be conducted near by water bodies (minimum two locations)
3.	Emission	At Source of emission (Stacks) from Sampling Port/ D.C. Sets.
		Process (Fugitive) emission in workplace area/ plants (for each area/ plant minimum 2 locations and 1 location outside plant area near vent).
4.	Noise	At all source and outside the Plant area. 3 points (near gate, process area, Near DG set)
5.	Greenbelt/Vegetation Cover	Regular observation.
7.	Soil	At least 3 locations from Greenbelt and area where manure of biological waste is applied

6.5 MONITORING PARAMETERS AND FREQUENCY

Table 0-2: Post Project Environmental Monitoring parameters and frequency of monitoring

S.No	Item	Parameters	Frequency
1	Ambient Air quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , CO, VOC etc.	As per HSPCB direction
2	Stationary Emission from Stack	PM, SO ₂ , NO _x	As per HSPCB direction
3	Process emission	Fugitive (PM) and gaseous pollutant expected	As per HSPCB direction
4	Water and Wastewater	pH, Temperature, EC, Turbidity, Total Dissolved Solids, Calcium, magnesium, Total hardness, Total Alkalinity, Chlorides, Sulphates, Nitrates, DO, COD, BOD, oil and Grease, Metals expected in effluent.	As per HSPCB direction
5	Treated Sewage Effluent	pH, BOD, COD, TSS, TDS, oil and Grease, Metals expected in effluent	As per HSPCB direction
6	Noise	Equivalent noise level- dB (A)	As per HSPCB direction
7.	Soil and Solid wastes	pH, Humidity, Texture, Organic matter, N, P, K, Sulphate, Calcium	As per HSPCB direction

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S.No	Item	Parameters	Frequency
		Magnesium, C:N ratio	
5.	Greenbelt	Number of plantation (Units), Number of Survived plants/ trees, Number of poor plants/ Trees	Ongoing round the year
6.	Environmental Audit	As per Direction of ISO 14001	Once in a Year

6.6 MONITORING METHODOLOGY

Monitoring of environmental samples will be done as per the guidelines provided by MoEF&CC/ CPCB. The method followed will be recommended / standard method approved / recommended by MoEF&CC /CPCB/SPCB.

6.7 REPORTING AND DOCUMENTATION

The records of the monitoring program will be kept on regular basis for all aspects of the monitoring. Separate records for water, wastewater, solid wastes, air emission, soil and manure/compost will be prepared and preserved regularly. Immediately upon the completion of monitoring as per the planned schedule, report will be prepared and necessary documents will be forwarded to the concerned authorities. Methodology of monitoring (sampling and analysis) will be prepared as separate documents as SOP (Standard Operating Procedure) wherever required. The records showing results/ outcome of the monitoring programs will be prepared as per the requirement of the schedule mentioned above. Regularly, these documents and records will be reviewed for necessary improvement of the monitoring plan/ mitigation measures/ environmental technologies as well as for necessary actions of environmental management cell.

6.8 BUDGET AND PROCUREMENT SCHEDULE

On regular basis Environment Management Cell will inspect the necessity and availability of the materials, technologies, services and maintenance works. The cell will make appropriate budget for the purpose. Regular record review for any change in financial requirement of environment management will be done and appropriate budget provisions will be made. Along with other budgets, budget for environmental management will be prepared and revised regularly as per requirement. The budget will include provisions for:

- Environmental Monitoring Program
- Operation and Maintenance of Equipments
- Emergency Purchase of necessary material, equipments, tools, services
- Greenbelt development
- Social and Environmental Welfare and Awareness programs / training (CSR)
- Annual Environmental Audit.

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6.9 BUDGET FOR ENVIRONMENTAL MONITORING PLAN

The detail of EMP (Environment Monitoring Plan) is given in Chapter 10 of this EIA report.

6.10 BUDGET OCCUPATIONAL HEALTH AND SAFETY WORK

About Rs. 0.10 Crore will be allocated for Occupational Health and Safety related expenses.

CHAPTER-7: ADDITIONAL STUDIES

7.1 PREAMBLE

In this chapter following issues are described and have been carried out.

- Public consultation/ Public Hearing
- Risk Assessment

7.2 PUBLIC HEARING / CONSULTATION

Public hearing for the project is applicable as per ToR Letter issued by the FAC-III, MoEFCC as per procedure given in EIA Notification 2006.

7.3 INTRODUCTION TO RISK ASSESSMENT

Chemical industry is associated with potential hazards that effect to the employee and environment. In the event of failure (Leak or Catastrophic rupture) will require the assistance of emergency services to handle it effectively. The operation shall be taken out under the well management and control by the qualified safety manager.

Disaster management plan shall be formulated with an aim of taking precautionary steps to avert disasters and also to take such action after the disaster which limits the damage to the minimum.

7.3.1 Objectives of Risk Assessment

Industrial accident results in great personal & financial loss. Managing these accidental risks in today's environment is the concern of every industry including chemical, because either real or perceived incidents can quickly jeopardize the financial viability of a business. Many facilities involve various manufacturing processes that have the potential for accidents which may be catastrophic to the plant, work force, and environment or public.

The main objective of the risk assessment study is to propose a comprehensive but simple approach to carry out risk analysis and conducting feasibility studies for industries and planning & management of industrial prototype hazard analysis in Indian context.

7.3.2 Hazard Identification & Risk Assessment (HIRA)

Hazard analysis involves the identification and quantification of the various hazards (unsafe condition) that exist in the plant. On the other hand, risk analysis deals with the identification and quantification of the risk, the plant equipment and Personnel are exposed to due to accidents resulting from the hazards present in the plant.

Risk analysis involves the identification and assessment of risks to the population is exposed to as a result of hazards present. This requires an assessment of failure

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probability credible accident scenario, vulnerability of population etc. Much of this information is difficult to get or generate consequently, the risk analysis in present case is confined to maximum credible accident studies and safety and risk aspect related to proposed expansion of production of Formaldehyde plant.

Activities requiring assessment of risk due to occurrence of most probable instances of hazard and accident are both onsite and off-site.

On-site

- Exposure to fugitive dust, noise, and other emissions
- Housekeeping practices requiring contact with solid and liquid wastes
- Emission/spillage etc. from storage and handling

Off-site

- Exposure to pollutants released from offsite/ storage/related activities
- Contamination due to accidental releases or normal release in combination with natural hazard
- Deposition of toxic pollutants in vegetation / other sinks and possible sudden releases due to accidental occurrences.

7.3.3 Raw Material Requirement (for production of Formaldehyde):

Raw material required for the manufacturing of Formaldehyde (i.e. Methanol) directly purchased from original importers at Kandla port, Gujarat along with the possibility from other network in Delhi and nearby states.

Table 0.1: Raw Material Requirement

Raw Material	Existing	Proposed	Total
Methanol	50 TPD	50 TPD	100 TPD

7.3.4 Details of finished products:

Table 0.2 Details of Finished Products

Finish Product	Existing	Proposed	Total	Storage
Formaldehyde	100 TPD	100 TPD	200 TPD	Storage in MS tanks as per MSDS

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7.3.5 List of Hazardous Chemicals alongwith their Toxicity Level as per MSJHC Rules

Table 0.3: List of hazardous chemicals along with their toxicity levels as per MSJHC rules

S.No.	Chemicals	TLV	Toxicity level		Flammable limit				Chemicals Class		
			LD50 Oral mg/kg	LD50 Dermal mg/kg	LD50 LC50	LEL	UEL	FP°C		BP°C	
1	Formaldehyde CAS No - 50-00-0	0.1 ppm	100	270	203	n	36.5	50°C	96°C	B	Flammable, toxic, hazardous.
2	Methanol CAS No 67-56-1	200 ppm	5026	15800	6-1000 ppm/4hr	6	36.5	12°C	64.5°C	A	Highly flammable
3	Silver Catalyst CAS No. 7440-22-1	0.1 mg/m ³	N.A	N.A	N.A	N.A	N.A	-38°C	2210°C	-	Acute Toxic

The Toxicity level of hazardous chemicals as per Manufacture, storage and import of Hazardous Chemical (Amendment) Rules, 2000 (MSJHC) is shown as below:

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Table 0.4: Toxicity index as per MISHC rules 2000

S.No	Toxicity	Oral Toxicity LD 50(mg/kg)	Dermal Toxicity LD50 (mg/kg)	Inhalation Toxicity LD 50(mg/kg)
1.	Extremely	<5	<40	<0.5
2.	Highly	>5-50	>40-200	>0.5-2.0
3.	Toxic	>50-200	>200-1000	>2.0-10

7.4 HAZARD IDENTIFICATION AND PREVENTIVE MEASURES

Man made disaster at Formaldehyde plant may occur due to following hazards:

- Fire in Electric Panels & fuel storage area
- Fire in Methanol and Formaldehyde storage area
- Run away reaction
- Explosion in Boiler house
- Cleaning of barrels, which have held chemical substances
- Fall of material

The potential hazardous areas and the likely accidents with the concerned area have been enlisted below Table No 7.5.

Table 0.5: Possible Hazardous Locations Onsite

S. No.	Hazardous Area	Likely Accident
1.	Boiler Area	Explosion
2.	Methanol and Formaldehyde storage area	Fire & toxic exposure
3.	Electrical rooms	Fire and electrocution
4.	Cable tunnel	Fire and electrocution
5.	Fuel storage area (FSD)	Fire hazard
6.	Chimney	Air pollution

A) Fire

Fire can be observed in the boiler area, storage yard, Fuel spillage, Electrical rooms etc. due to accidental failure scenario.

B) Boiler Explosion/Explosion due to chemicals

Explosion may lead to release of heat energy & Pressure waves. Following shows tentative list of Damages envisaged due to different heat loads.

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Table 0.6 : List of Damages Envisaged at Various Heat Loads

S.No.	Heat loads (kW/m ²)	Likely Accident	
		Damage to Equipment	Damage to People
1.	37.5	Damage to process equipment	100% lethality in 1 min 1% lethality in 10 sec
2.	25.0	Minimum energy required to ignite wood	50% lethality in 1 min. Significant injury in 10 sec
3.	19.0	Maximum thermal radiation intensity allowed on thermally unprotected equipment	--
4.	12.5	Minimum energy required to melt plastic tubing	1% lethality in 1 min
5.	4.0	--	First degree burns, causes pain for exposure longer than 10 sec
6.	1.6	--	Causes no discomfort on long exposures

Source: World Bank (1986), Technical Report No. 55: Techniques for Assessing Industrial Hazards, Washington, D.C.: The World Bank.

Table 0.7: List of Damages Envisaged at Various Overpressure Level

Overpressure (bar)	Damage
0.001	Annoying noise (137 dB if of low frequency 10-15 Hz)
0.002	Loud noise (143 dB, sonic boom glass failure)
0.003	Occasional breaking of large glass windows already under strain
0.007	Breakage of small windows under strain
0.010	Typical pressure for glass breakage
0.020	Projectile limit: some damage to house ceilings; 10% window glass broken
0.027	Limited minor structural damage
0.034	Large and small windows usually shattered; occasional damage to window frames
0.034 to 0.068	
0.048	Minor damage to house structures
0.068	Partial demolition of houses, made uninhabitable
0.068 to 0.136	Corrugated asbestos shattered; corrugated steel or aluminum panels, fastenings fail, followed by buckling, wood panels (standard housing) fastenings fail, panels blown in

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Overpressure (bar)	Damage
0.088	Steel frame of clad building slightly distorted
0.136	Partial collapse of walls and roofs of houses
0.136 to 0.201	Concrete of cinder brick walls, not reinforced, shattered
0.157	Lower limit of serious structural damage
0.170	50% destruction of brickwork of houses
0.204	Heavy machines (3,000 lb) in industrial building suffered little damage; steel frame building distorted and pulled away from foundations.
0.204 to 0.272	Frameless, self-framing steel panel building demolished; rupture of oil storage tanks
0.272	Cladding of light industrial buildings ruptured
0.310	Wooden utility poles snapped; tall hydraulic press (40,000 lb) in building slightly damaged
0.340 to 0.476	Nearly complete destruction of houses
0.476	Loaded train wagons overturned
0.476 to 0.544	Brick panels, 8-12 inches thick, not reinforced; heavy machine tools (7,000 lb) moved and badly damaged; Loaded trains boxcars completely demolished
0.612	Probable total destruction of buildings; heavy machine tools (7,000 lb) moved and badly damaged, very heavy machine tools (12,000 lb) survived.

(CCPS guidelines)

Electrocution

Fatal Accident due to carelessness in handling electrical appliances may lead to electrocution.

Consequences of Toxic Release

The effect of exposure to toxic substance depends upon the duration of exposure and the concentration of the toxic substance.

Short-term exposures to high concentration give Acute Effects while long term exposures to low concentrations result in Chronic Effects.

Only acute effects are considered under hazard analysis since they are likely credible scenarios. These effects are:

- ♦ Irritation (respiratory system skin, eyes)

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- Narcosis (nervous system)
- Asphyxiation (oxygen deficiency)
- System damage (blood organs)

Following are some of the common terms used to express toxicity of materials.

- **Threshold Limit Value (TLV):** it is the permitted level of exposure for a given period on a weighted average basis (usually 8 h for 5 days in a week)
- **Short Time Exposure Limit (STEL):** It is the permitted short term exposure limit usually for a 15 minutes exposure.
- **Immediately Dangerous to life and health (IDLH):** It represents the maximum concentration of a chemical from which, in the event of respiratory failure, one could escape within 30 minutes without a respirator and without experiencing any escape/impairing (eg. Severe irritation) or irreversible health effects.
- **Lethal Concentration Low (LCLo):** It is the lowest concentration of a material in air, other than LC50, which has been reported to cause a death in human or animals.
- **Toxic Concentration Low (TCLo):** It is the lowest concentration of a material in air, to which humans or animals have been exposed for any given period of time that has produced a toxic effects in humans or produced carcinogenic, neoplastigenic or teratogenic effect in humans or animals.
- **Emergency Response Planning Guidelines 1 (ERPG1):** The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour (without a respirator) without experiencing other than mild transient adverse health effects or without perceiving a clearly defined objectionable odor.
- **Emergency Response Planning Guidelines 2 (ERPG2):** The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action.
- **Emergency Response Planning Guidelines 3 (ERPG3):** The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects.

Meteorology/Stability Class

Atmospheric stability plays an important role in the dispersion of the chemicals. "Stability means, its ability to suppress existing turbulence or to resist vertical motion".

Atmospheric stability plays an important role in the dispersion of chemicals. "Stability means, its ability to suppress existing turbulence or to resist vertical motion".

Dispersion of vapors largely depends upon the Stability Class. Various stability classes that are defined as Pasquill classes are:

- A Very Unstable
- B Unstable
- C Slightly Unstable
- D Neutral
- E Stable
- F Very Stable

The stability class for a particular location is generally dependent upon:

- Time of the Day (Day or Night)
- Cloud Cover
- Season
- Wind Speed

Six stability classes from A to F are defined while wind speed can take any one of numerous values. It may thus appear that a large number of outcome cases can be formulated by considering each one of very many resulting stability class-wind speed combinations. However in fact the number of stability class - wind speed combinations that needs to be considered for formulating outcome cases in any analysis is very limited. This is because, in nature, only certain combinations of stability class and wind speed occur. Thus, for instance combinations such as A-3 m/s or B-5 m/s or F-4 m/s do not occur in nature. As a result only one or two stability class - wind speed combinations need to be considered to ensure reasonable completeness of Quantitative Risk Analysis study. Furthermore, though wind speeds less than 1 m/s may occur in practice, none of the available dispersion models, including state-of-art ones, can handle wind speeds below 1 m/s. Fortunately, wind speed does not influence consequences as much as stability class and for a given stability class, the influence of wind speed is relatively less. On the other hand, consequences vary considerably with stability class for the same speed.

Except during the monsoon months little or no cloud cover along with the prevailing low wind velocities results in unstable conditions during the day (C or D) and highly stable conditions (E or F) at night. During the three months of monsoons, the wind

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velocities are generally higher and cloud cover generally present. This results in stability class of D during the day and E or F during the night. The stability class distribution over the year roughly works out as below:

A - B - C	17%
D	50%
E or F	33%

The following wind velocity/ stability class combinations & frequencies are used for Quantified Risk Analysis.

D - 5 m/s
D - 3 m/s
F - 2 m/s

Hazard Identification is a critical step in Risk Analysis. Many aids are available, including experience, engineering codes, checklists, detailed process knowledge, equipment failure experience, hazard index techniques, What-if Analysis, Hazard and Operability (HAZOP) Studies, Failure Mode and Effects Analysis (FMEA), and Preliminary Hazard Analysis (PHA). In this phase all potential incidents are identified and tabulated. Site visit and study of operations and documents like drawings, process write-up etc. are used for hazard identification. In the present case, the release of hazardous chemicals (as per MSIHC rules) like formaldehyde and methanol can lead to undesirable consequences like toxic exposure/fire/explosion

7.5 PROPOSED MITIGATION MEASURES

(A) Preventive Measures for Electricity Hazard

- All electrical equipment's is to be provided with proper earthing. Earthed electrode are periodically tested and maintained
- Emergency lighting is to be available at all critical locations including the operator's room to carry out safe shut down of the plant
- Easy accessibility of fire fighting facilities such as fire water pumps and fire alarm stations is considered
- All electrical equipment's are to be free from carbon dust, oil deposits, and grease
- Use of approved insulated tools, rubber mats, shockproof gloves and boots, tester, fuse tongs, discharge rod, safety belt, hand lamp, wooden or insulated ladder and not wearing metal ring and chain.
- Flame and shock detectors and central fire announcement system for fire safety are to be provided
- Temperature sensitive alarm and protective relays to make alert and disconnect equipment before overheating is to be considered

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- Danger from excess current due to overload or short circuit is to be prevented by providing fuses, circuit breakers, thermal protection

(B) Precautionary Measures for Falling material

- Safety helmets to be used to protect workers below against falling Material
- Barriers like a toe boards or mesh guards is to be provided to prevent items from slipping or being knocked off the edge of a structure
- An exclusion zone is to be created beneath areas where work is taking place.
- Danger areas are to be clearly marked with suitable safety signs indicating that access is restricted to essential personnel wearing hard hats while the work is in progress.

Material Handling Hazards and Controls:

S.No.	Name of material stored	Quantity (max.)	Operating press/temp	Hazard rating systems	Type of hazard or risks involved	Persons affected
1	Formaldehyde	200 TPD	NTP	TLV-0.3 Ppm (1ppm) NFPA ratings. Health-3 Flammability -2 Reactivity-0 Flash point-50°C	-Flammable -Very toxic by inhalation -Very toxic in contact with skin -Very toxic if swallowed -Causes burns -Limited evidence of carcinogenic effect -Risk of serious damage to eyes -May cause sensitization by skin	-Operators -Maintenance Technicians
Control measures: - Dyke provision to storage tank. - Safety board's displayed in the tank area. - Good ventilation must be provided. - Use of proper PPEs (like SCBA), full body protection suite						

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S.No.	Name of material stored	Quantity (max.)	Operating press/temp	Hazard rating systems	Type of hazard or risks involved	Persons affected
2	Methanol	100 TPD	NTP	TLV-200 PPM(8 hr TWA) STEL-250 PPM NFPA Ratings: Health-1 Flammability -3	-Highly flammable -Toxic by inhalation -Toxic when contact with skin -Toxic if swallowed -Danger of very serious irreversible effects	-Operators -Maintenance -Technicians
<p>Control measures:</p> <ul style="list-style-type: none"> -Keep away from sources of ignition -Safety board's displayed in the tank area. -Effective ventilation must be provided. -For accidental contact if you feel unwell, seek medical advice immediately -Handling of methanol with safety gloves and protective clothing. -Use of proper PPEs (like SCBA), full body protection suite 						

7.6 PROCESS HAZARDS AND CONTROLS

Table 0.8: Process Hazards and Controls

Name of hazardous process and operation	Material in process /operation	Type of hazard possible toxic gas release/ fire / explosion / run away reaction/ rupture, etc.	Control measures provided
Reactor Vessel	Formaldehyde	-Exothermic run away reaction -Release of heat and flammable gases -Fire, toxic gas release and explosion	-Raw materials quantity must be controlled either volumetrically or gravimetrically -Process control devices must be installed includes the use of sensors, alarms, trips and

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other control systems that either take automatic action or allow for manual intervention to prevent the conditions for uncontrolled reaction, occurring.

-High temperature indicator valve and alarm system must be provided

-Auto cutoff system must be provided after reaching of predetermined maximum safe temperature.

-Pressure gauge must be provided

-Safety control valve must be provided. The vessel emergency relief vent should be discharged to suitably designed catch pot or should be so positioned that people working in the area and members of the public will not be in danger if the contents of the vessel are discharged.

-Use skilled worker

-Proper selection of MOC

-Mechanical seal in all pumps and reactors

7.7 Safe Practice for Handling, Storage, Transportation and Unloading of Hazardous Chemicals:

For Storage/Handling:

- Separate from strong oxidant & keep it in well ventilated room.
- Dyke wall shall be provided to all above ground storage tank.
- Fire hydrant system shall be installed.
- Safety shower and eye washer shall be installed near storage area.
- Flame proof light fitting shall be provided at flammable storage area.
- Sprinkler system shall be installed at flammable material storage area
- Earthing/bonding shall be provided for static charges.
- Level gauge and level measurement instrument shall be provided on material storage tank.
- Hazardous material should be stored separately at the plant and safe distance shall be maintained.
- Safety permit system shall be followed for loading, unloading of hazardous chemical.
- Fencing, caution note, hazardous identification board should be provided.
- Only authorized person shall be permitted in storage tank area and register will be maintained.

For Transportation & Unloading:

- Raw material shall be received by road tanker and stored in under ground storage tank in separated bulk storage area
- Loading and unloading procedure shall be prepared for material received through road tanker.
- Earthing/bonding shall be provided for static charges.
- Flexible steel hose shall be used for unloading from the road tanker.
- Flame proof electric motor shall be used during loading/unloading.
- Fixed pipeline with pumps shall be provided for transfer to vessel.
- TERM CARD will be provided to all transporters and shall be trained for transportation of hazardous chemicals.
- Personal Protective Equipment (safety goggles, hand gloves, apron, masks, gum boots etc.) shall be provided

7.8 OCCUPATIONAL HEALTH SURVEILLANCE PROGRAMME

Health surveillance is the monitoring of a person's health to identify changes in health status due to occupational exposure to a hazardous substance. It includes biological

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monitoring. Ideally, the avoidance of work-related diseases should be achieved by the prevention or controlling exposures to hazardous substances in the workplace. Where a process cannot be designed or maintained to eliminate the risk of exposure, it may be necessary for workers to undergo health surveillance

Aims of health surveillance:

i) Identify those at increased risk

Health surveillance is used to identify workers who have an increased risk of developing an occupational disease. For example, people who have existing skin problems, kidney, liver and eye disorders, heart problem; additionally smokers and pregnant women are at increased risk of being severely affected if exposed to Methanol/Formaldehyde.

ii) Early detection

The major purpose of health surveillance is to detect adverse health effects at an early stage so that the worker may be protected from further injury, either by control of the process or by removal from exposure.

iii) Evaluating effectiveness of control measures

Health surveillance is not a control measure in itself and should not be the sole means of determining whether control measures are effective. However, it can provide useful information on the effectiveness of safe working practices.

iv) Epidemiology and disease

Health surveillance can be used to evaluate the health experiences of groups of workers exposed to specific hazardous agents or working within a particular industry

Workers should be made aware that health surveillance is sometimes necessary to ensure their ongoing health. Health surveillance is often used in addition to workplace monitoring. Workplace monitoring will only indicate the potential for exposure of workers to a hazardous substance. It can never be an indication of the actual amount of substance absorbed or the effect on the body of absorbing the hazardous substance.

When a toxic substance (such as an industrial chemical) is present in the environment, it contaminates air, water, food, or surfaces in contact with the skin. environmental monitoring evaluates the amount of toxic agent in these media

As a result of absorption, distribution, metabolism, and excretion, a certain internal dose of the toxic agent (the net amount of a pollutant absorbed in or passed through the organism over a specific time interval) is effectively delivered to the body and becomes detectable in body fluids.

Subsequent interaction with a receptor in the critical organ (the organ which, under specific conditions of exposure, exhibits the first or the most important adverse effect)

leads to biochemical and cellular events. Both the internal dose and the elicited biochemical and cellular effects may be measured through biological monitoring.

7.8.1 Occupational Health Programme

- The health & physical hazards caused due to toxic, irritant, corrosive, flammable materials. All chemicals should be within Threshold Limit Value as per ACGIH.
- Monitoring of occupational hazards like noise, ventilation, chemical exposure etc. will be carried out regularly and its record will be maintained.
- Good housekeeping, use of PPE, Engineering controls, Enclosure processes, scrubber system, display of safety boards, SOP of loading / unloading, local exhaust ventilation, safety shower etc. are important safety measures have taken to keep these chemicals within TLV.
- Appropriate personal protective equipment will be provided & ensure the usage of them.
- Workers will be trained on safe material handling of hazardous chemicals.
- Prepare & display the safe operating procedure for hazardous chemicals storage, handling & transporting or using.
- Periodical medical examination of the workers & Liver Function Testes will be done.
- Employee training and education will be carried out.
- Control the noise at source by substitution, isolation, segregation, barriers etc.
- Local Exhaust ventilation and scrubber should be installed where it is required to reduce fumes, vapors, temperature and heat stress.
- Insulate all hot equipment to reduce air temperature.
- Reduce the level of physical activity by sharing workload with other or by using mechanical mean.

7.8.2 Minimization of the Manual Handling of Hazardous Substance

- Whether moving materials manually or mechanically, your employees should know and understand the potential hazards associated with the task at hand and how to control. Their workplaces to minimize the danger.
- Employers and employees should examine their workplaces to detect any unsafe or unhealthful conditions, practices, or equipment and take corrective action.
- Provide flameproof electrical motor & transfer chemicals through the pipelines.
- Use specially designed pallets to hold, move raw materials, finished products through work areas.
- Minimize lifting of raw materials, heavy loads by using appropriate platforms, trolleys etc
- Avoid the moving, manual handling of hazardous material.

7.9 DO'S AND DON'TS'

7.9.1 Handling of Chemicals

Do's	Don'ts
<ul style="list-style-type: none"> • Know the hazards of the chemical before handling. • Know the antidotes for chemical, which is to be handled. • Do keep material safety data sheet in locations where chemicals are being handled and study it. • Use appropriate personal protective equipment like gloves, aprons, and respirator, face shield etc. depending upon nature of the work. • Label every chemical that you use and tightly close the container. • Use eye wash fountain / safety shower in case of splash of chemicals in the eye or body for at least 15 minutes • Segregate toxic, flammable chemicals and keep them under control • In addition to draining and closing valves, lines should be blanked before taking up maintenance work. • Provide proper ventilation at the chemical handling area to limit their concentration within prescribed level. 	<ul style="list-style-type: none"> • Do not store the chemicals that are incompatible with other chemicals. • Do not spill the chemicals. • Do not dispose chemical without neutralizing. • Do not keep large inventory of chemicals. • Do not allow empty containers of hazardous chemicals to be used by others. • Do not use compressed air for transferring chemicals. • Do not stand near chemical transfer pump while it is in operation with temporary hose connection. • Pouring of chemicals by hand or doing siphoning by mouth should never be adopted. • Chemicals drums should never be moved without protection. • Do not attempt to neutralize the acid /alkali on the skin. Use water only. • Do not use solvent for cleaning hands.

7.9.2 Material Handling

Do's	Don'ts
<ul style="list-style-type: none"> • Use proper lifting tool and tackle having adequate capacity. • Only authorized persons should operate material handling equipment's. • Each tool, tackle or equipment should have number and safe working load (SWL) marked on it. 	<ul style="list-style-type: none"> • Do not use the equipment for the purpose other than its design intention. • Do not allow personnel to move underneath lifted load. • Do not load the equipment above its safe working load. • Does not use make shift arrangements

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- Assess weight of the material, distance to be carried and hazards etc. before lifting the load.
- Inspect and test all the lifting tools and tackles regularly as per Factory Rules.
- Wear Personal Protective Equipments while handling of material.
- for lifting equipment without inspection and test.
- Do not use effective tool and tackles.
- Keep the tools & tackles free from adverse effect of atmosphere by applying suitable protective coating.

7.9.3 House Keeping

- | Do's | Don'ts |
|--|--|
| <ul style="list-style-type: none"> • Assign places for everything and maintain things at assigned places. • Clean the area after completion of work. • Use aisle space free for personnel and material movement. • Ensure adequate illumination and ventilation for the job. | <ul style="list-style-type: none"> • Do not leave combustible materials in the work area • Do not smoke in the area of work. • Do not allow dust bin to overflow. • Do not generate extra waste. • Do not disturb the safety equipment from assigned location. • Do not block emergency switches and on/off. |

7.9.4 Fire Prevention

- | Do's | Don'ts |
|--|--|
| <ul style="list-style-type: none"> • Follow 'NO SMOKING' sign. • Deposit oily rags and waste combustible material in the identified containers and dispose them suitably. • Fire Hose used for any other purpose should be permanently marked and taken out of fire hydrant system. • Keep minimum inventory of flammable and combustible substances. • Take permission before breaking or removal of fire barrier and ensure subsequent relocation of fire barrier. • Check periodically the operability of fixed fire fighting system. | <ul style="list-style-type: none"> • Do not leave flammable material like acetone, kerosene etc. used as cleaning agent at the work area. • Do not over tighten fire hydrant valves with H-lever. • Do not allow wild grass growth around storage of the gas cylinders and switchyard. • Do not obstruct accessibility to the fire related equipment. • Do not destroy the inspection tag provided with the fire equipment. • Do not misuse fire-fighting equipment other than intended purpose. • Do not store the flammable material in |

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|--|--|
| <ul style="list-style-type: none"> ◆ Attend any abnormality/deficiency with fire protection system promptly. ◆ Provide earthing or bonding to prevent accumulation of static charges to tanks where flammable chemicals are stored / handled. ◆ Use instruments that are intrinsically safe in <u>explosive</u> atmosphere. | <ul style="list-style-type: none"> ◆ the open container. ◆ Do not use instruments that are not intrinsically safe in the explosive atmosphere. |
|--|--|

7.10 RISK REDUCTION MEASUREMENT & RECOMMENDATION IN VIEW OF SAFETY CONSIDERATION

- ◆ In order to ensure the safety of the installation, the facility should be constructed as per relevant codes and standards.
- ◆ As per consequence analysis, the damage distance may go outside the plant boundary as it involves the involvement as hazardous chemical like formaldehyde. So care to be taken to prevent the leakage of such chemical by proper designing, preventing corrosion, proper periodic inspection and maintenance of all instruments/ equipments.
- ◆ Storage tank of Formaldehyde and Methanol should be installed separately at the plant area.
- ◆ Wind indicator should be provided at the highest level of the plant to know the wind direction.
- ◆ Automatic sprinkler system for the flammable material tanks (over ground tanks only) may be provided as knock on effect in case of fire is possible.
- ◆ Containment dyes with proper sloping and collection sumps should be provided so that any spillages in the bulk storage and other handling areas shall not stagnate and shall be quickly lead away to a safe distance from the source of leakage. This reduces the risk of any major fire on the bulk storages and the risk to the environment shall be minimized/ eliminated.
- ◆ Inspection of the storage tanks as per prefixed inspection schedule for thickness measurement, joint and weld efficiency etc.
- ◆ Provision of flameproof electrical fittings / equipment's.
- ◆ Proper maintenance of earth pits.
- ◆ Strict compliance of security procedures like issue of identity badges for outsiders, gate passes system for vehicles, checking of spark arrestors fitted to the tank lorries etc.
- ◆ Strict enforcement of no smoking.

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- Periodic training and refresher courses to train the staff in safety fire fighting,
- Employee training and education will be carried out.
- Structural fireproofing in the process area could be considered as a safety measure in the light of probable spill and fires in the area.
- Emergency drills should be carried out periodically to ensure preparedness must continue.
- Many operations involve use of highly toxic/ flammable materials and these needs to be documented as SOPs. These must be made and kept updated on priority.
- Extensive training on use of Self Contained Breathing apparatus (SCBAs) must be ensured for emergency control.
- Loose drums of waste materials must be removed from the working areas and close watch kept.
- Proper Earthing system needs to be provided at appropriate locations for example while loading/unloading of methanol from Tanker.
- All electrical equipment needs to place as per HAC.
- Ventilation should be provided for any enclosed are where hydrocarbon or toxic vapors may accumulate. Several such areas were noticed- these may be surveyed and tackled accordingly.
- All personnel should be trained in handling emergency situations and should be apprised of their role in handling emergency situation and to ensure adequacy of the emergency procedures simulated exercise should be carried out
- Flame arrestor should be provided.
- Adequate number of caution boards highlighting the hazards of chemicals should be provided at critical locations.
- The health & physical hazards caused due to toxic, irritant, corrosive, flammable materials. All chemicals are within Threshold Limit Value as per ACGIH.
- Monitoring of occupational hazards like noise, ventilation, chemical exposure etc. will be carried out regularly and its record will be maintained.
- Good housekeeping, use of PPE, Engineering controls, Enclosure processes, scrubber system, display of safety boards, SOP of loading / unloading, local exhaust ventilation, safety shower etc are important safety measures have taken to keep these chemicals within TLV.
- Appropriate personal protective equipment will be provided & ensure the usage of them.
- Workers will be trained on safe material handling of hazardous chemicals.
- Prepare & display the safe operating procedure for hazardous chemicals storage, handling & transporting or using.

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- Local Exhaust ventilation and scrubber should be installed where it is required to reduce fumes, vapors, temperature and heat stress.
- Reduce the level of physical activity by sharing workload with other or by using mechanical means.
- Pre-employment medical checkup and periodically medical examination will be done.
- Proper inspection and maintenance of all instruments like PSVs, temperature indicator etc to avoid boiler explosion
- Use alcohol foam, water spray or fog in case of large fire.
- Use dry chemical powder for small fire.

Following Fire Safety Devices/ Provision will be provided to protect from any incidents:

- Water storage of adequate capacity to meet the requirements of water for firefighting purposes.
- Fire hydrants and automatic sprinkler system, Diesel driven pumps and headers to supply water to fire hydrant network.
- Adequate Portable fire extinguishers, sand bucket, wheeled fire & safety equipment should be provided at the required places.
- Equipment required for personal safety like blankets, gloves, apron, gum boots, face mask helmets, safety belts, first aid boxes etc. are provided. Proximity suits and self-contained breathing apparatus to be provided.
- Designated fire fighting team should be present to handle the emergency.

7.11 DISASTER MANAGEMENT PLAN

Definition

A major emergency in an activity/ project is one which has the potential to cause serious injury or loss of life. It may cause extensive damage to property and serious disruption both inside and outside the activity/ project. It would normally require the assistance of emergency services to handle it effectively.

Scope

An important element of mitigation is emergency planning, i.e. identifying accident possibility, assessing the consequences of such accidents and deciding on the emergency procedures, both on site and off site that would need to be implemented in the event of an emergency.

Objective

The overall objectives of the emergency plan will be:

- **To localize the emergency and, eliminate it;** and
To minimize the effects of the accident on people and property.

Elimination will require prompt action by operations and works emergency staff using, for example, fire-fighting equipment, water sprays etc.

Minimizing the effects may include rescue, first aid, evacuation, rehabilitation and giving information promptly to people living nearby.

Phases of Disaster

There are various phases of Disaster including pre and post Management of Hazardous Event that may or has occurred.

Warning Phase

Emergencies /disasters are generally preceded by warnings during which preventive measures may be initiated. For example uncontrollable build-up of pressure in process equipment, weather forecast give warning about formation of vapor cloud, equipment failure etc.

Period of Impact Phase

This is the phase when emergency /disaster actually strike and preventive measures may hardly be taken. However, control measures to minimize the effects may be taken through a well-planned and ready-to-act disaster management plan already prepared by organization. The duration may be from seconds to days.

Rescue Phase

This is the phase when impact is almost over and efforts are concentrated on rescue and relief measures.

Relief Phase

In this phase, apart from organization and relief measures internally, depending on severity of the disaster, external help are also to be summoned to provide relief measures (like evacuations to a safe place and providing medical help, food clothing etc.). This phase will continue till normalcy is restored

Rehabilitation Phase

This is the final and longest phase. During which measures required to put the situation back to normal as far as possible are taken. Checking the systems, estimating the damages, repair of equipment and putting them again into service are taken up. Help from revenue/ insurance authorities need to be obtained to assess the damage, quantum of compensation to be paid etc.

7.12 ONSITE EMERGENCY PLAN

The onsite emergency is an unpleasant situation that causes extensive damage to plant personnel and surrounding area and its environment due to in operation, maintenance, design and human error. Onsite plan will be applied in case of proposed expansion project. Following points are to be taken into consideration:

- To identify, assess, foresee and work out various kinds of possible hazards, their places, potential and damaging capacity and area in case of above happenings.
- Review, revise, redesign, replace or reconstruct the process, plant, vessels and control measures if so assessed.
- Measures to protect persons and property of processing equipments in case of all kinds of accidents, emergencies and disasters.
- To inform people and surroundings about emergency if it is likely to adversely affect them.

7.12.1 Disaster control Management system

Disaster Management group plays an important role in combating emergency in a systematic manner. Schematic representation Emergency Control Management system for M/s Chemwood Industries is shown in Figure 7.1.

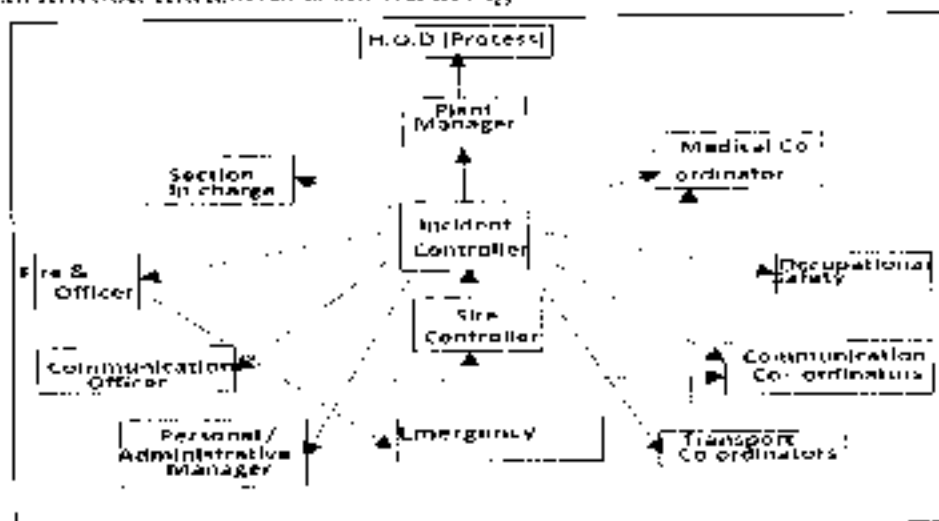


Figure 0.1: Onsite DMP - Disaster Control/ Management System
Control Room Facility

Following are the facilities to be provided at the control room of M/s. Chemwood Industries to tackle the emergency failure scenarios:

- Fire Detection System is to be installed in the control room
- VHF base station with a range of 25 km and VHF handsets of range 5 km is to be installed for ready communication in emergency

- Public address system (PAS) is to be installed to ease the communication to various corners of the site
- The duties and responsibilities of different Co-ordinators of Onsite Disaster Management Plan are to be displayed in the Control Room

Alarm System

A siren shall be provided under the control of Security office in the plant premises to give warning. In case of emergencies this will be used on the instructions to shift in charge that is positioned round the clock. The warning signal for emergency shall be as follows:

- Emergency Siren: Waxing and waning sound for 3 minutes.
- All clear signal: Continuous siren for one minute.

Communication

Walkies & Talkies shall be located at strategic locations; internal telephone system EPBX with external P&T telephones would be provided.

Fire Fighting System

The fire protection system for the unit is to provide for early detection, alarm, containment and suppression of fires. The fire detection and protection system has been planned to meet the above objective an all-statutory and insurance requirement of Tariff Advisory Committee (TAC) of India. The complete fire protection system will comprise of the following

A designated fire fighting team would be available in the facility to handle the fire emergency.

System Description of Fire Fighting System

The entire fire safety installation shall be compliant with the most stringent codes / standard for the entire complex to ensure the highest safety standard and uniformity of system. Further, before property is operational, the fire protection shall be fully operated and tested under simulated conditions to demonstrate compliance with the most stringent standards, codes and guidelines.

A) Fire pumping system

The fire pumping system shall comprise of independent electrical pumps for hydrant and sprinkler system, diesel engine driven pump & jockey pump for hydrant & sprinkler system.

Electrical pump shall provide adequate flow for catering requirement of hydrant system. Diesel engine driven fire pumps shall be provided for ensuring operation & performance of the system in case of total electrical power failure. Jockey pumps shall compensate for pressure drop and line leakage in the hydrant and sprinkler installation.

Provision of PRS/ orifice plate shall be made in sprinkler riser to restrict pressure on sprinkler system.

Individual suction lines shall be drawn from the fire reserve tanks at the basement level and connected to independent fire suction header. The electric fire pumps, diesel engine driven fire pumps and the jockey pumps shall all draw from this suction header.

Delivery lines from various pumps shall also be connected to a common header in order to ensure that maximum standby capacity is available. The sprinkler pump shall be isolated from the main discharge header by a non return valve so that the hydrant pump can also act as standby for the sprinkler system. The ring main shall remain pressurized at all times and Jockey pumps shall make up minor line losses. Automation required to make the system fully functional shall be provided.

B) Fire hydrant system

Internal and external standpipe fire hydrant system shall be provided with landing valve, hose reel, first aid hose reels, complete with instantaneous pattern short gunmetal pipe in the Complex.

The internal diameter of inlet connection shall be at least 80 mm. The outlet shall be of instant spring lock type gunmetal ferrule coupling of 63 mm dia. for connecting to hose pipe. Provision of flow switch on riser shall be made for effective zone monitoring. The flow switch shall be wired to FAP and shall indicate water flow on hydrant of the identified zone.

Recessed cupboard/ fire hydrant cabinet shall be strategically located for firefighting requirement. Location of cabinets shall be accessed as per compartmentation plan in consultation with the Architect. Provision of fire man's axe shall be made for internal hydrant.

External hydrant shall be located within 2 m to 15 m from the building to be protected such that they are accessible and may not be damaged by vehicle movement. A spacing of about 45-50 m between hydrants for the building shall be adopted. Details of fire hydrant system are as follows:

Piping: Mild Steel pipes (heavy class) as per IS: 1239 shall be provided throughout the complex. Pipes buried below ground shall be suitably lagged with 2 layers of 400 micron polyethylene sheet over 2 coats of bitumen.

External Hydrants: External hydrants shall be provided all around the Complex. The hydrants shall be controlled by a cast iron sluice valve or butterfly valve. Hydrants shall have instantaneous type 63mm dia outlets.

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For each external fire hydrant two numbers of 63mm dia 15 m long controlled percolation hose pipe with gunmetal male and female instantaneous type couplings machine wound with GI wire, gunmetal branch pipe with nozzle shall be provided.

- Each external hydrant hose cabinet shall be provided with a drain in the bottom plate.
- Each hose cabinet shall be conspicuously painted with the letters "FIRE HOSE".

Hose Reel: Hose reel shall be heavy duty, 20 mm dia, length shall be 36.5 metre long fitted with gun metal chromium plated nozzle, mild steel pressed reel drum which can swing upto 170 degree with wall brackets of cast iron finished with red and black enamel complete.

C) Sprinkler system

Elaborate automatic sprinkler system shall be provided. The system shall be suitably zoned for its optimum functional performance.

The sprinkler system shall be provided with control valves, flow and tamper switches at suitable location and shall be connected to control module of the fire alarm system for its monitoring and annunciation in case of activation.

Sprinkler type along with its Quartzite bulbs rating shall be selected based on the requirement of the space and shall be specified accordingly. Inspector's test valve assembly with sight glass shall be provided at remote end with discharge piped to drain outlet / pipe.

D) Fire Extinguishers

Portable fire extinguishers of water (gas pressure), Carbon-di-oxide, foam type, Dry Chemical Powder and FM-200 or Clean agent type shall be provided as first aid fire extinguishing appliances. These extinguishers shall be suitably installed in the entire areas as per IS: 2190

The appliances shall be so installed over the entire sections, that a person is not required to travel more than 15 m to reach the nearest extinguisher. These shall be placed or hanged on wall in a group on several suitable places.

E) Fire Pump

The fire pump shall be horizontally mounted, variable speed type. It shall have a capacity to deliver and developing adequate head so as to ensure a minimum pressure at the highest and the farthest outlet. The pump shall be capable of giving a discharge of not less than 150 per cent of the rated discharge, at a head of not less than 65 per cent of the rated head. The shut off head shall be within 120 per cent of the rated head.

The pump casing shall be of cast iron and parts like impeller, shaft sleeve, wearing ring etc shall be of non-corrosive metal like bronze/brass/gun metal. The shaft shall be of stainless steel. Provision of mechanical seal shall also be made

Bearings of the pump shall be effectively sealed to prevent loss of lubricant or entry of dust or water. The pump shall be provided with a plate indicating the suction lift, delivery head, discharge, speed and number of stages. The pump casing shall be designed to withstand 1.5 times the working pressure.

F) Foam System for Fire Fighting

Aqueous Film-Forming Foams (AFFF) based on combinations of fluoro-chemical surfactants, hydrocarbon surfactants, and solvents will be used as foam agent. These agents require a very low energy input to produce high quality fire-fighting foam.

Foam concentrate will be stored in a bladder tank system. In AFFF systems a bladder tank containing a nylon reinforced elastomeric bladder is used to store the foam concentrate. System water pressure is used to squeeze the bladder providing fire-fighting foam concentrate, at the same pressure, to the proportional.

An aqueous film will be formed on the surface of the alcohol by the foam solution as it drains from the foam blanket.

This film is very fluid and floats on the surface of most alcohol. This gives the AFFF unequalled speed in fire control and control the spill fire.

First Aid

A first aid centre with adequate facilities shall be provided. It shall be maintained round the clock by a compounder cum dresser and a doctor. An Ambulance shall also be provided at site to carry affected people to hospital.

Security

The security requirements of the company premises shall be taken care of by CSO assisted by a Fire In charge. The team, apart from the normal security functions will manage the role required during a disaster management operation as a part of the crisis control team.

Safety

The safety wing led by a Safety Head will meet the requirement of emergencies round the clock. The required safety appliances shall be distributed at different locations of the plant to meet any eventualities. Poster/placards reflecting safety awareness will be placed at different locations in the plant area.

Evacuation Procedure

As the major hazard is only due to fire, which has more or less localized impact no mass evacuation, procedures are required. Evacuation would involve only the people working very close to the fire area.

Personal Protective Equipment's (PPE)

This equipment is used mainly for three reasons; to protect personnel from a hazard while performing rescue/accident control operations, to do maintenance and repair

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work under hazardous conditions, and for escape purposes. The list of Personal Protective Equipment provided at the facility and their locations shall be available in ECC.

Effective command and control accomplish these functions necessitates personal trained in this On-site Disaster Management Plan with adequate facilities and equipments and equipment to carry out their duties and functions. These organizations and the facilities required to support their response are summarized in the following subsections.

Personal protective equipment's play a vital role in overcoming major disastrous situation saving life during onsite emergency. List of recommended Personal Protective equipment (PPE) is given below in Table 7.9.

Table 0.9: Summary of Recommended Personal Protective Equipment According to hazard onsite

Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, liquid chemicals, gases or vapors, light radiation	Safety glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords	Plastic helmets with top and side impact protection
Hearing protection	Noise of machineries	Hearing protectors (ear plugs or ear muffs)
Foot protection	Falling or rolling objects, points objects, Corrosive or hot liquids	Safety shoes and boots for protection against moving and falling objects, liquids and chemicals
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures	Gloves made of rubber or synthetic material (Neoprene), leather, steel, insulation materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors	Facemasks with appropriate filters for dust removal and air purification (chemical, mists, vapors and gases). Single or multi-gas personal monitors, if available
Body / leg protection	Oxygen deficiency Extreme temperatures, hazardous materials, biological	Portable or supplied air (fixed lines). Onsite rescue equipment Insulating clothing, body suits, aprons etc. of appropriate materials

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Objective	Workplace Hazards	Suggested PPE
	agents, cutting and laceration	
Mock Drill		
As per the Industrial Major Accident Hazard Rules,		
<ul style="list-style-type: none"> • Mock drills of the on-site emergency plan will be conducted every six months. • A detail report of the mock drill conducted is to be made immediately available to all the concerned authority • Also, Major Fire and Minor Fire mock drills are conducted once in six months 		
Training		
On job training to the engineers on various stages of risk analysis and preparedness during emergency to reflect in the operation of terminal, especially from the safety stand point. The fire team belonging to the firefighting department is to be intensively trained for the use of all equipment and in various fire fighting methods for handling different types of fires.		
Details of Training facilities for		
<ul style="list-style-type: none"> • Safety • Fire Fighting • Occupational Health & safety 	<ul style="list-style-type: none"> Monthly Monthly Monthly 	

Procedure for Testing & Updating the Plan

Simulated emergency preparedness exercises and mock fire fighting exercises including mutual aid scheme resources and in conservation with district emergency authority to be carried out time to time. Designated assembly point to be present in the facility.

Disclosure of Information to Worker & Public Awareness System in Existence & Anticipated

- Safety awareness among workers by conserving various training programs and Seminars, competition, slogans etc.
- Practical exercise.
- Distribution and practices of safety Instructions.
- Safety Quiz contests.
- Display of Safety Posters & Safety Slogans.
- Developing Safety Instructions for every Job and ensuring these instructions/booklets or manuals by the workers.

7.13 OFF-SITE EMERGENCY PLANNING

The off-site emergency plan is an integral part of any hazard control system. It is based on those accidents identified by the works management, which could affect people and

the environment outside the works. Thus, the off-site plan follows logically from the analysis that took place to provide the basis for the on-site plan and the two plans therefore complement each other. The roles of the various parties that may be involved in the implementation of an off-site plan are described below. The responsibility for the off-site plan will be likely to rest either with the works management or with the local authority. Schematic representation of various organizations involved during emergency is shown below in Figure 7.2.

Either way, the plan must identify an emergency coordinating officer who would take overall command of the off-site activities. Consideration of evacuation may include the following factors:

- In the case of a major fire but without explosion risk (e.g. an oil storage tank), only houses close to the fire are likely to need evacuation.
- If fire is escalating very fast it is necessary to evacuate people nearby as soon as possible.
- In acute emergency people are advised to stay indoors and shield themselves from the fire.

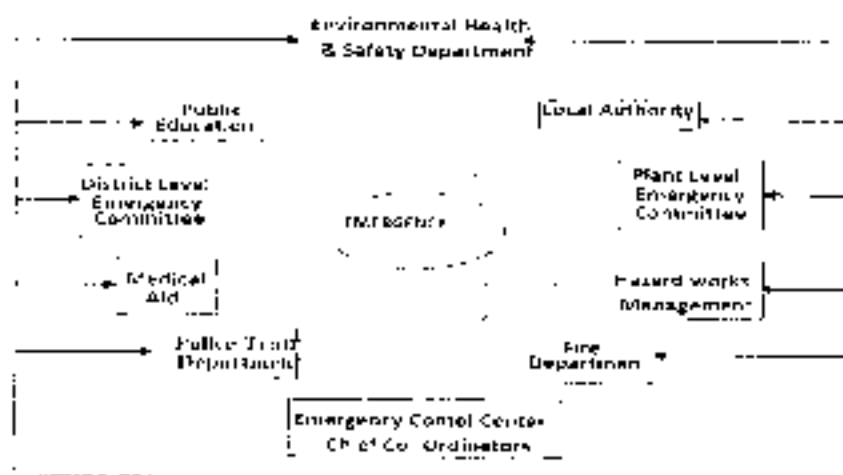


Figure 0.1: Various Organizations Involved During Emergency

Organization

Organizational details of command structure, warning systems, implementation procedures, emergency control centres include name and appointments of incident controller, site main controller, their deputies and other key personnel involved during emergency.

Communications

Identification of personnel involved, communication centre, call signs, network, list of telephone numbers.

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Special Emergency Equipment

Details of availability and location of heavy lifting gear, specified fire-fighting equipment, fireboats etc.

Voluntary Organizations

Details of Voluntary organizations, telephone numbers nearby of hospitals, Emergency helpline, resources etc are to be available with chief authorities.

Non-governmental Organizations (NGO)

NGO's could provide a valuable source of expertise and information to support emergency response efforts. Members of NGOs could assist response personnel by performing specified tasks, as planned during the emergency planning process.

- Evacuation of personnel from the affected area
- Arrangements at parking yards
- Rehabilitation of evacuated persons

Chemical information

Details of the hazardous substances (MSDS information) and a summary of the risks associated with them are to be made available at respective site.

Meteorological information

There is to be arrangements for obtaining details of weather conditions prevailing at or before the time of accident and weather forecasts updates.

Humanitarian Arrangements

Transport, evacuation centers, emergency feeding, treatment of injured, first aid, ambulances, temporary mortuaries.

Public Information

- Dealing with the media-press office
- Informing relatives, etc.

Assessment

- Collecting information on the causes of the emergency
- Reviewing the efficiency and effectiveness of all aspects of the emergency plan.

Role of local authority

Local Authorities like Panchayat, Sabha, Samity, municipalities, Industrial area authority can help in combating emergency situation after assessing the impact scenario in rescue phase.

Role of police

The police is to assist in controlling of the accident site, organizing evacuation and removing of any seriously injured people to hospitals.

- Co-ordination with the transport authorities, civil defense and home guards.
- Arrange for post mortem of dead bodies

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- Establish communication center with easy contact with ECC.

Role of Fire Brigade

The fire brigade is to be organized to put out fires and provide assistance as required during emergency.

Media

The media is to have ready and continuous access to designated officials with relevant information, as well as to other sources in order to provide essential and accurate information to public throughout the emergency and to avoid commotion and confusion.

- Efforts are made to check the clarity and reliability of information as it becomes available, and before it is communicated to public
- Public health authorities are consulted when issuing statements to the media concerning health aspects of chemical accidents
- Members of the media are to facilitate response efforts by providing means for informing the public with credible information about accidents involving hazardous substances

Role of health care authorities

Hospitals and doctors must be ready to treat all type of injuries to casualties during emergency.

- Co-ordinate the activities of Primary Health Centers and Municipal Dispensaries to ensure required quantities of drugs and equipment.
- Securing assistance of medical and paramedical personnel from nearby hospitals/institutions.
- Temporary mortuary and identification of dead bodies.

7.13 CONCLUSION

As discussed in above sections, adequate risk Control measures for process needs to be considered for the new proposed Project Activity is not likely to cause major significant risk to onsite, offsite & environment. Suitable Mitigation Measures will be taken by M/s Chemwood Industries to ensure complete workplace safety. In the event of disaster onsite, offsite and all the emergency planning procedures will be followed so as to minimize the impact on working personnel, plant surrounding and environment.



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CHAPTER-VIII: PROJECT BENEFITS

8.1 INTRODUCTION

The growth of the industry significantly contributes to economic growth as it generates employment both directly and indirectly also due to development of downstream industries. Peripheral development takes place and due to more influx of money through the area, overall importance of the area increases and overall the infrastructure improves.

The following benefits are expected due to the implementation of the said project:

- 1) The easy availability of infrastructure, man power, raw materials will reduce the production cost as well as demand supply gap. The same will bring revenue to the state exchequer by way of Duties and Taxes.
- 2) The development of green belt in and around the plant premises will improve on the aesthetics of the area. Moreover, it will help in reducing the noise levels within the plant boundary.
- 3) The setting up of the proposed expansion plant will help in providing employment to local people.
- 4) There will be an increase in indirect employment & earnings of the small time shop owners like tea vendors, transporters, etc.
- 5) Local area development and social development program will be conducted.

8.2 EMPLOYMENT POTENTIAL

Total 15 workers will be involved after expansion of the unit. Presently 10 workers are appointed. Additionally 5 workers will be appointed in the expansion unit. Indirect source of involve will also increase.

8.3 CORPORATE ENVIRONMENTAL RESPONSIBILITY

Any developmental activity exerts a direct impact on the socio-economic environment of the region. Usually, the beneficial impacts such as better job opportunities, improved education, communication, energy, housing, health, transportation facilities etc. outweighs the adverse impacts, if any.

MoEFCC has been granted ToR which include ToR Point related with Corporate Environmental Responsibility stating that "Adequate fund as per the Ministry's OM/Guideline, shall be earmarked towards the Corporate Environmental Responsibility based on the Public hearing issues/social-economic item-wise details along with time bound action plan shall be included (CER activities shall be related to Environment). For the project where public hearing is not conducted, CER plan shall be provided based on socio-economic study of the area." Considering the ToR

Points a sum of Rupees 7.00 Lakhs (1% of total project cost for brownfield project) has been proposed for social and environmental developmental activities. Details of activities will be defined based on the issues and requirement raised from local public during public hearing. Activity wise action plan will be included in the Final EIA Report.

8.4 OTHER TANGIBLE BENEFITS

For several decades, formaldehyde has been used consistently in a wide range of products, ranging from personal hygiene, to medicine, to building products and much more. Many different resins are created from formaldehyde, which are in turn used to create other materials having different properties. Formaldehyde derivatives are used as preservatives in personal hygiene products because they kill bacteria or they are used to make other products more effective in terms of foaming action such as soaps and detergents. Its versatile chemistry and unique properties have created applications for use of formaldehyde in all kinds of every day products such as plastics, carpentry, clothing, resins, glues, medicines, vaccines and the film used in x-rays.

- Formaldehyde destroys bacteria, fungi, molds, yeast & other type of germs. So it can be used as a sterilant/disinfectant.
- Industrial adhesive use formaldehyde as a bonding agent, such as in pressed wood, plywood, fiber boards, etc.
- Formaline (mixture of water & formaldehyde) is used as a preservation of food, antiseptics, medical labs, funeral homes & cosmetic (shampoo, deodorant, toothpaste, lipsticks, soaps, lotions etc).
- It can also help stabilizing fabrics, reducing wrinkles and shrinkages.
- It is also found in cigarette smoke, kerosene space heaters & fuel burning appliances.

One of the first benefits that can be derived from formaldehyde industry is as a child, when you received your vaccinations for childhood diseases. These include diphtheria, polio and influenza, to name a few. Since it also acts as a preservative, formaldehyde plays a critical role in our medical schools, preserving cadavers used in teaching human anatomy. It has been used for tissue and organ preservation for more than a century and has greatly assisted the advance of biological science.

8.5 CONCLUSION

The management will recruit the semi-skilled, unskilled workers from the local areas. The project activity and the management will definitely support the local Govt. bodies and provide other form of assistance for the development of public amenities in this region. The company is committed towards the environment & will use the technology to minimize the impact from the proposed expansion project & by handling/disposing

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the waste properly as per the CPCB/SPCB requirement. Thus considering the overall benefits from the proposed it is likely to generate the positive impact in the region.



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CHAPTER-IX: ENVIRONMENTAL COST BENEFIT ANALYSIS

9.1 ENVIRONMENTAL COST BENEFIT ANALYSIS

As per EIA Notification dated 14th September, 2006 as amended from time to time; the chapter on "Environmental Cost Benefit Analysis" is applicable only, if the same is recommended at the Scoping stage. This is recommended during ToR presentation. We are in process of the same and will be submitted in Final EIA/EMP Report.



CHAPTER-X: ENVIRONMENT MANAGEMENT PLAN

10.1 INTRODUCTION

The Environmental Management Plan (EMP) is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner. It is required to understand the potential environment risks arising from the proposed expansion project and to ensure that appropriate actions are taken to properly manage the risks. Hence it needs to be an overall encompass plan for which the developers, Government, regulating agencies like Pollution Control Board in the region and more importantly the population of the area need to extend their cooperation and contribution.

The EMP is generally:

- Prepared in accordance with rules and requirements of the MoEF&CC and the State Pollution Control Board.
- To ensure that the component of facility are operated in accordance with the design.
- A process that confirms proper operation through supervision and monitoring.
- A system that addresses public complaints during construction and operation of the facility.
- A plan that ensures remedial measures is implemented immediately.

Any industrial development is associated with certain positive impacts as well as some negative impacts on the environment. However, the negative or adverse impacts cannot possibly rule out scientific development. At the same time adverse impacts cannot be neglected. An Environmental Management Plan will be formulated for mitigation of the adverse impacts and is based on the present environmental conditions and the environmental impact appraisal. This plan helps in formulation, implementation and monitoring of the environmental parameters during and after commissioning of the project. The Environmental Management Plan describes in brief, the management's plan for proper and adequate implementation of treatment and control system for air and liquid pollutants and for maintaining the environment. It also includes the development of green belts in and around the plant, proper safety of the workers, noise control, fire protection systems and measures.

The emphasis on the EMP development is on the following:

- Mitigation measures for each of the activities causing the environmental impact.
- Monitoring plans for checking activities and environmental parameters and monitoring responsibilities.
- Role responsibilities and resource allocation for monitoring.

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EMP includes four major elements:

- Commitment and Policy
- Planning
- Implementation
- Measurement and Evaluation

10.2 ENVIRONMENTAL MANAGEMENT CELL

- Apart from having an EMP, it is also necessary to have a permanent organizational set up charged with the task of proposed plant will create a department consisting of officers from various disciplines to co-ordinate the activities concerned with the management and implementation of the environmental control measures. Environment Management cell is defined in the Fig 10.1.
- Basically this department will undertake to monitor the environmental pollution levels by measuring stack emissions, ambient air quality, water and effluent quality, noise level etc. either departmentally or by appointing external agencies wherever necessary.
- In case the monitored results of environmental pollution are found exceeding the allowable values, the environmental management cell will suggest remedial action and get these suggestions implemented through the concerned plant authorities. The actual operation and maintenance of pollution control equipment of each unit will be under the respective plant managers.
- The Environmental Management Cell (EMC) will handle of all the related activities such as collection of statistics of health of workers and population of the region, afforestation and green belt development.

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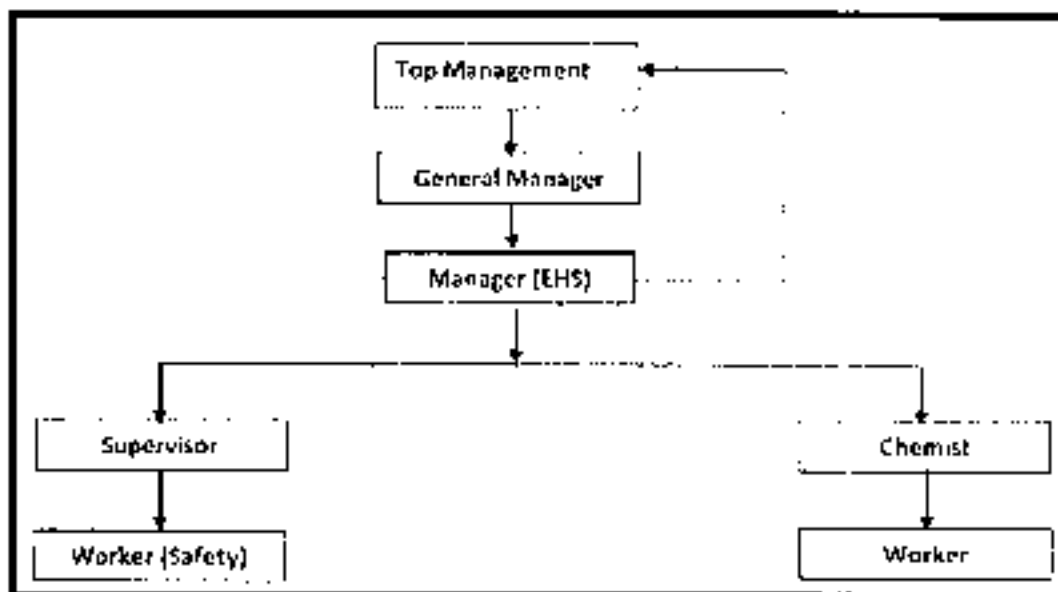


Figure 0-1: Organization Chart of Environmental Monitoring Cell

10.3 ENVIRONMENT MANAGEMENT POLICY

The Environment cell follows the well-defined Environment policy which is defined below:

- Effectively manage, monitor, improve and communicate the environmental performance.
- Take all reasonable steps to prevent environmental pollution.
- Set realistic anti measurable objectives and targets for continual improvement of the Environmental performance.
- Ensure that all employees and contractors are trained to understand their environmental responsibilities and create an environment that adheres to the company's Policies, Procedures and Application Regulations.
- Hold leadership accountable for good environment performance of our operations and projects, inherent in that accountability will be the commitment of senior management to provide resources and successfully create an appropriate environment.
- Comply fully with all relevant legal requirements, codes of practice and regulations.
- Reduce, recycle and reuse natural resources.
- Minimize waste and increase recycling within the frame work of waste management procedures, identify and manage environmental risks anti hazards.

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- The project proponent shall review this policy over a definite period of time and ensure that corrective and preventive actions are taken in order to ensure continual improvement.
- To treat all the pollutants viz liquid and gaseous, which contribute to the degradation of the environment, with appropriate technologies
- To comply with all regulations stipulated by the Central/ State Pollution Control Boards related to air emission and liquid effluent discharge as per air and water pollution control laws.
- To handle hazardous wastes as per the Hazardous Waste (Management and Handling Rules), 2009 of the Environment (Protection) Act, 1986.
- To encourage support and conduct development work for the purpose of achieving environmental standards and to improve the methods of environmental management
- To create good working conditions (avoid of all order and noise pollution) for employees.
- To minimize fire and accident hazards.
- Perspective budgeting and allocation of funds for environment management expenditure.
- Preventive maintenance and regular checking of machineries and equipments.
- To make continuous efforts in waste minimization.
- For the equipments and pipe lines, leakage detection and repair shall be scheduled to minimize fugitive emissions.
- Continuous efforts with energy audit for the reduction of fuel and energy consumption.
- The system of reporting of non-conformance/ violation of any Environmental Law/ Policy will be as per quality management system. The internal audit will be conducted on periodic basis and any non-conformance violation to Environmental Law/ Policy will be closed and discussed during Management Review Meetings of Board of Directors/ Partners.
- Environmental Management Cell will be responsible to implement the Environmental Policy.

10.4 MONITORING AND RESPONSIBILITIES:

For Water Environment

- The General Manager will keep in touch with the Environmental Consultant and seek their guidance for corrective action as and when required.

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- The Committee shall meet once every month to ensure implementation of the programme.
- The General Manager will bring to the notice of the Managing Director for any further action to be taken to ensure environmental requirements. The Managing Director will report to the Board of Directors, the action taken to set right deficiency, if any.

For Air Environment

- The supervisor will ensure that the APCD provided are functional at all times. Air emissions from the stack will be got checked by him once a month from a Laboratory to see that the limits of the various parameters are not exceeded. In case of any deviation noticed, he will inform the General Manager to take corrective action.
- The supervisor will ensure that the water is sprinkled on roads whenever transportation of material is to be done to and from the factory premises in trucks.
- The General Manager will ensure that all the vehicles coming to the premises have PUC Certificates and they do not blow horn unnecessarily within the premises
- The Manager Operations will ensure that the transportation of raw materials and finished goods is done in trucks covered with Tarpaulins.
- The Board of Directors will discuss at frequent intervals & see that the environmental policy laid-down by them, is followed meticulously by all persons in the Unit and the Environment is within the prescribed limits.

The cell will also be responsible for monitoring of the plant safety and safety related systems which include:

- Checking of safety related operating conditions.
- Visual inspection of safety equipments.
- Preparation of a maintenance plan and documentation of maintenance work specifying different maintenance intervals and the type of work to be performed

Other responsibilities of the cell will include:

- Conduct and submit annual Environmental Audit. A registered agency will be retained to generate the data in respect of air, water, noise, soil and meteorological data and prepare the Environmental Audit report. Timely renewal of Consolidated Consents & Authorization (CC&A) will also be taken care of.
- Submitting environmental monitoring report to statutory body. Data monitored by the cell will be submitted to the Board regularly. The cell will also take mitigative or corrective measures as required or suggested by the Board.

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- Keeping the management updated on regular basis about the conclusions/ results of monitoring activities and proposes measures to improve environment preservation and protection.
- Conducting regular safety drills and training programs to educate employees on safety practices. A qualified and experienced safety officer will be responsible for the identification of the hazardous conditions and unsafe acts of workers and advise on corrective actions, organize training programs and provide professional expert advice on various issues related to occupational safety and health.
- Conducting safety and health audits to ensure that recommended safety and health measures are followed.

Table No.0-1. Responsibility of Environment Management Cell

S.No.	Designation	Responsibility
1	Top Management	<p>Communicate company strategy to board of directors.</p> <p>Attend board meetings.</p> <p>Work with audit committee to prepare budgets.</p> <p>Analyze financial reports for environmental protection measures.</p> <p>Report and share information with the board to ensure they are kept fully informed on the condition of the organization and important factors influencing it.</p> <p>Participate in and nurture broad networks of alliances with others to exchanges knowledge and information about learning and change in support of change initiatives.</p>
2	General Manager	<p>Sets goal, monitor work, and evaluate results to ensure that departmental and organizational objectives and operating requirements are met and are in line with the needs and mission of the organization.</p> <p>Supervision, public relations, marketing, profitability and sales, service, reporting, capital requirements, and other duties as assigned by the board of directors.</p> <p>Managing all the Environmental issue.</p> <p>Ensure appropriate EHS supervision of Employee.</p> <p>Checking of non compliance/ violations of environmental norms.</p>
3	Manager (EHS)	<p>Develop performance standards.</p> <p>Handle claims and complaints promptly.</p>

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - S, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	VEL/AA/CNT/02	Report No.:	VEL/AA-027-083
Name & Address of the Project:	M/S Chemwood Industries, Village Bhagwanpur, Kharwan Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Reporting Date:	16/06/2020
		Ref. No.:	NIL
		Monitoring Period:	March 2020 to May 2020
Sample Collected By:	Vardan EnviroLab Representative	Equipment Used:	RDS & FPS with all accessories
Sample Description:	Ambient Air Quality Monitoring	Protocol Used:	IS-5182
Location:	Bhagwanpur (A2)	Parameter Required:	As per TOR Letter

RESULT

Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (ppm)	VOC ($\mu\text{g}/\text{m}^3$)	HC (ppm)
02.03.2020	70.1	44.2	21.2	11.2	1.80	ND	ND
03.03.2020	75.2	46.3	22.3	12.5	0.78	ND	ND
08.03.2020	78.7	40.2	23.8	14.1	0.79	ND	ND
09.03.2020	81.2	41.2	19.1	13.9	1.82	ND	ND
16.03.2020	75.4	49.8	26.3	12.1	0.75	ND	ND
17.03.2020	87.2	51.3	31.2	13.3	0.84	ND	ND
23.03.2020	93.5	54.2	32.1	12.3	0.94	ND	ND
24.03.2020	88.1	53.2	27.9	14.9	0.87	ND	ND
30.03.2020	75.2	46.5	23.6	13.3	0.74	ND	ND
31.03.2020	81.4	43.2	24.2	14.5	0.82	ND	ND
06.04.2020	77.3	45.4	16.0	13.8	0.76	ND	ND
07.04.2020	73.5	41.8	22.1	12.3	0.72	ND	ND
13.04.2020	84.3	45.9	25.1	12.5	0.86	ND	ND
14.04.2020	71.6	43.3	26.3	12.0	0.74	ND	ND
20.04.2020	74.5	40.1	25.6	16.2	0.71	ND	ND
21.04.2020	75.7	42.7	23.6	16.3	0.76	ND	ND
27.04.2020	79.3	46.9	24.3	13.3	0.79	ND	ND
28.04.2020	78.5	47.2	27.8	12.3	0.80	ND	ND
04.05.2020	71.2	45.3	22.6	11.9	0.69	ND	ND
05.05.2020	74.9	49.8	26.3	16.3	0.73	ND	ND
11.05.2020	79.1	43.6	16.7	12.2	0.71	ND	ND

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www.vardan.co.in

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No:

VRL/AA&H01-026

Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	VOC ($\mu\text{g}/\text{m}^3$)	HC (ppm)
18.05.2020	82.3	46.5	31.5	15.1	0.91	ND	ND
19.05.2020	83.4	47.6	28.4	15.8	0.86	ND	ND
25.05.2020	82.1	42.4	26.9	17.2	0.78	ND	ND
26.05.2020	85.9	41.5	23.5	16.7	0.80	ND	ND

Note: ND-Not Detected

Limit as per NAAQS	Parameter	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)
--	--	100	60	80	80	4

*National Ambient Air Quality Standards

KOMAL SINGH
(Analyst)
18/05/20

AKSHAY KUMAR
(Check Analyst)
18/05/20

(Signature)
18/05/20



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Vardan EnviroLab

Laboratory: Plot No. S7A, Sector - 5, IMI Manesar, Gurgaon - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	VLL/AA/CVI-01	Report No.:	VLL/AA/001/026
Name & Address of the Project:	M/s Chemwood Industries, Village-Bhogwampur, Kharwan Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Reporting Date:	06/06/2020
		Ref. No.:	Nil.
		Monitoring Period:	March 2020 to May 2020
		Equipment Used:	RDS & FPS with all accessories
		Protocol Used:	IS-5183
Sample Collected by:	Vardan EnviroLab Representative	Parameter Required:	As per TOC Letter
Sample Description:	Ambient Air Quality Monitoring		
Location:	Project Site (A1)		

RESULTS

Date	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO _x (µg/m ³)	SO ₂ (µg/m ³)	CO (µg/m ³)	VOC (µg/m ³)	HC (ppm)
02.03.2020	81.5	43.2	27.2	10.2	0.84	ND	ND
03.03.2020	85.0	44.9	29.3	11.4	0.79	ND	ND
08.03.2020	80.9	40.2	28.2	13.5	0.76	ND	ND
09.03.2020	81.5	47.2	28.7	10.4	0.91	ND	ND
16.03.2020	79.2	45.5	27.9	11.7	0.92	ND	ND
17.03.2020	83.4	46.5	24.3	13.4	0.85	ND	ND
23.03.2020	80.2	48.1	29.7	15.7	0.79	ND	ND
31.03.2020	59.2	37.9	28.1	14.7	0.71	ND	ND
30.03.2020	78.7	41.2	24.6	12.6	0.72	ND	ND
31.03.2020	56.3	36.8	25.7	14.2	0.81	ND	ND
06.04.2020	91.2	50.4	27.8	11.4	0.77	ND	ND
07.04.2020	63.5	31.5	29.2	12.9	0.80	ND	ND
13.04.2020	87.5	49.2	28.9	11.1	0.92	ND	ND
14.04.2020	91.2	46.9	27.6	10.8	0.94	ND	ND
20.04.2020	81.1	43.5	24.5	11.6	0.71	ND	ND
21.04.2020	34.6	17.5	23.2	14.2	0.80	ND	ND
27.04.2020	80.2	49.1	27.4	12.7	0.76	ND	ND
28.04.2020	86.3	43.3	21.4	14.8	0.83	ND	ND
04.05.2020	71.2	45.5	27.5	17.7	0.77	ND	ND
05.05.2020	83.4	47.5	20.5	16.2	0.76	ND	ND
11.05.2020	89.3	40.8	27.6	14.5	0.82	ND	ND
12.05.2020	87.0	39.5	30.1	16.2	0.81	ND	ND

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Ms. Aishwarya Bhati, ASG
Ms. Archana Pathak Dave, Adv.
Mr. Subhranshu, Adv.
Ms. Priyanka Das, Adv.
Mr. Gurmeet Singh Makker, AOR

Mr. Tahir Ashraf Siddiqui, AOR

Mr. Dhruv Mehta, Adv.
Mr. Rajesh Kumar Gautam, AOR
Mr. Kartik Jindal, Adv.
Mr. Anant Gautam, Adv.
Mr. Nipun Sharma, Adv.
Mr. Madhur Tewatia, Adv.
Mr. Ravi Solanki, Adv.

UPON hearing the counsel the Court made the following
O R D E R

Applications for deleting the proforma respondents are allowed. The names of the proforma respondent be deleted from the array of parties at the risk of the petitioners.

It is made clear that the interim orders passed by this Court will not stand in the way of requisite permits and clearances being processed and issued.

List the Civil Appeals along with Civil Appeal No. 4795 of 2021 and other connected matters.

(MANISH ISSRANI)
COURT MASTER(SH)

(MATHEW ABRAHAM)
COURT MASTER(NSH)

ITEM NO.3 Court 8 (Video Conferencing) SECTION XVII

S U P R E M E C O U R T O F I N D I A
R E C O R D O F P R O C E E D I N G S

Civil Appeal No(s). 2881/2021

NEETU SOLVENTS Appellant(s)

VERSUS

VINEET NAGAR & ORS. Respondent(s)

{IA No. 91538/2021 - ADDITION / DELETION / MODIFICATION PARTIES}

WITH

C.A. No. 4432/2021 (XVII)

{IA FOR ADDITION/DELETION/MODIFICATION PARTIES ON IA 91622/2021}

C.A. No. 4431/2021 (XVII)

{IA FOR ADDITION/DELETION/MODIFICATION PARTIES ON IA 91547/2021}

C.A. No. 4654/2021 (XVII)

{FOR ADMISSION and I.R. and IA No.95483/2021-EXEMPTION FROM FILING C/C OF THE IMPUGNED JUDGMENT and IA No.95481/2021-EX-PARTE STAY and IA No.95485/2021-PERMISSION TO FILE ADDITIONAL DOCUMENTS/FACTS/ANNEXURES}

C.A. No. 4748/2021 (XVII)

{IA No.97344/2021-EXEMPTION FROM FILING C/C OF THE IMPUGNED JUDGMENT and IA No.97343/2021-EX-PARTE STAY and IA No.97346/2021-PERMISSION TO FILE ADDITIONAL DOCUMENTS/FACTS/ANNEXURES}

Date : 25-08-2021 These matters were called on for hearing today.

CORAM : HON'BLE MS. JUSTICE INDIRA BANERJEE
HON'BLE MR. JUSTICE V. RAMASUBRAMANIAN

For Appellant(s) Mr. Nidhesh Gupta, Sr. Adv.
Mr. Tarun Gupta, AOR

For Respondent(s) Mr. Maninder Singh, Sr. Adv.
Mr. Vineet Nagar, Adv.
Ms. Ambika Kajal, Adv.
Mr. Pawan Kumar Sharma, Adv.
Mr. Rameshwar Prasad Goyal, AOR

Mr. Pradeep Misra, AOR.
Mr. Daleep Dhyani, Adv.
Mr. Suraj Singh, Adv.
Mr. Manoj Kumar Sharma, Adv.
Mr. Bhuvan Chandra, Adv.

M. Sathyanarayanan, JM

Brjesh Sethi, JM

Dr. Nagin Nanda, EM

June 03, 2021
Original Application No. 287/2020
A

which implies that the State could exempt EIA requirement, neither any such delegation is shown nor the State claims to have such power or to have exercised such power. A statement has been made on behalf of the private respondents as well as State that the units now stand closed. Learned Counsel for the private respondents also submitted that their units have been functioning in a bonafide manner without causing pollution. Though they did not have EC only for want of knowledge of such requirement, they had requisite consents to establish and operate which have been renewed from time to time. They wish to comply with law and have also applied for EC.

9. We are of the view that since prior EC is statutory mandate, the same must be complied. We have no doubt that the stand of the private respondents will be duly considered by the concerned regulatory authorities, including the MoEF&CC on merits and in accordance with law but till compliance of statutory mandate, the units cannot be allowed to function. For past violations, the concerned authorities are free to take appropriate action in accordance with polluter pays principle, following due process.

The application is disposed of.

In view of order in the main matter, I.A. No. [0/2021] also stands disposed of.

Adarsh Kumar Goel, JP

Sudhar Agarwal, JM

taken, Principle of Proportionalities applies as held in *Alembic Chemicals v Rohit Prajapati*.

5. We have heard learned counsel for the parties and with their assistance perused the records.

6. While the period of operation of the impugned order is over, we have gone into the matter on merits in view of contest by the private respondents.

7. It is clear from the stand of the State itself that prior EC is required under EIA Notification dated 14.09.2006 (Entry 5(f) of the Schedule. Once it is so there is no justification to permit function of such units in violation of mandate of law. In *Alembic Chemicals v Rohit Prajapati & Ors*, 2020 SCC Online 347, the Hon'ble Supreme Court has made it clear that prior EC requirement cannot be dispensed with. While it is true that having regard to the fact situation therein particularly grant of EC later, the units were not closed and instead were required to pay compensation for the period the units functioned without prior EC, it does not mean that in absence of prior EC the units can be allowed to function by paying compensation. We thus hold that without prior EC the units cannot be allowed to operate. The State has no power to exempt the requirement of prior EC or to allow the units to function without EC or payment of compensation. Same view has been taken in *O.A. No 840/2019, Ayush Gang v. DOI & Ors* which has been dealt with by a separate order today.

8. As regards the stand of the private respondents that the State has delegated power under section 3(3) of the Environment (Protection) Act.

¹2020 SCC Online SC 347

these units for obtaining environmental clearance from the appropriate authority.

2. The units were granted interim relief on basis of the fact the notification dated 14.09.2006 is being re-drafted by MoEF & CC and the zero draft has been circulated to all the States and other Stake holders for comments. The finalization and publication of revised notification is likely to take some time and that window for accepting application seeking environmental clearance is not kept open at present by the MoEF & CC.

Further, it is to mention here specifically that from the facts and circumstances of the given case, it can easily be inferred that the industries were operating in good faith with valid CTE/CTOs granted by Haryana State Pollution Control Board. Alongside it was admitted by Haryana State Pollution Control Board that the units in question were posing any pollution hazards and that only procedural laps was the deficiency against these units.

3. That keeping in view all the aforementioned facts, Government of Haryana vide order No. 16/14/2020-3Eas dated 11.11.2020 (Annexure-R/3) decided to allow these units to continue their operation for a period of 6 months without incurring any legal action against the procedural laps occurred, with the condition that these units will apply for environmental clearance within a period of 60 days from the date of issuance of this communication."

4. Reply has also been filed on behalf of the contesting Respondents Nos. 3, 5 and 7 which is in identical terms. It is stated that the contesting respondents have now sought EC in violation category. It is also stated that Central Government has delegated powers to the Haryana Government vide Notification dated 10.02.1989 which enables the State to exempt units from seeking EC and thus order dated 10.11.2020 of the State of Haryana is valid. The point of requirement of EIA was never raised for about 9 years during which the private respondents have functioned which shows that the Authorities themselves were not aware about this requirement. The private respondents were merely given breaching time to comply with the law. The said units are not causing any pollution and even if prior EC is not

where a unit is set up. There is no merit in the submission as there is nothing to show that such prior EC has been obtained by the industrial area in question.

3. Accordingly, let the contesting respondents show cause why the impugned order be not quashed by their response by email before the next date. The applicant may provide a set of papers and a copy of this order to all the contesting respondents and file an affidavit of service within one week.”

3. Accordingly, the State of Haryana has filed an action taken report dated 03.03.2021 through the Secretary, Environment *inter-alia* stating as follows:-

“3. That for the purpose of environmental protection certain restriction and prohibition on new projects and activities, or on the expansion or modernization of the existing project or activities based on their potential environmental impact were imposed vide S.O. 1533 dated 14.09.2006 by MoEF, GOI. under schedule to the aforementioned notification, the process of manufacturing of Formaldehyde is covered under provision 5(f) which requires prior Environmental Clearance (EC) from the competent authorities State Environment Impact Assessment Authority(SEIAA)/ MoEF & CC, GOI, before establishment and operation of such units, besides other mandatory clearances as applicable.

4. That 15 formaldehyde units (list attached at Annexure — R/ 1) were issued consent to establish and consent to operate by Haryana State Pollution Control Board at different times which were later revoked by the HSPCB for violating provision 5(f) of schedule to EIA Notification 2006 on the ground that no prior environmental clearance was obtained before establishment and operation of these units.

5. That a representation was received from all Haryana formaldehyde manufacturing association, Yamunanagar dated 23.10.2020 addressed to Additional Chief Secretary to Govt. of Haryana department of Environment and Climate Change, Chandigarh requesting to allow such formaldehyde units to operate and give sufficient time reasonable to obtain the Environmental Clearance from MoEF & CC and SEIAA on the basis of parity that same decision was taken by State of Rajasthan in similar case (Annexure —R/2). The copy of order of Rajasthan State Pollution Control Board was annexed with aforementioned representation.

6. That keeping in view the fact that units were established with the requisite consent from Haryana State Pollution Control Board and were operating with the necessary pollution control measures, as prescribed by Board, along with the investment in plant and machinery incurred by the individual units in establishing their plants, possible stock of raw material used for production, the case was referred to Government of Haryana by Haryana State Pollution Control Board for granting interim relief to

Item No. 07

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 287/2020
(I.A. No. 10/2021)

(With report dated 03.03.2021)

Dastak N.G.O.

Applicant

Versus

Synchem Organics Pvt. Ltd. & Ors.

Respondent(s)

Date of hearing: 03.06.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant: Dr. S.S. Hooda, Advocate

Respondent: Mr. Anil Goyal, Senior AAG with Mr. Rajat Khurana, Advocate
for State of Haryana and HSPCB
Ms. Sanita Bhardwaj, Advocate for MEF&CC
Mr. A.K. Prasad, Advocate for CWA
Mr. Sant Chaudha, Senior Advocate with Mr. Aashay Chaudha,
Advocate for R-6
Mr. Pardeep Gupta, Advocate for R-1
Mr. Shiv Mangal Sharma and Ms. Saurabh Rajpai, Advocate for R-3, R-7
Mr. Ashu Jain, Advocate

ORDER

1. This application seeks quashing of the order of State of Haryana dated 10.11.2020 allowing manufacturers of formaldehyde, requiring prior Environmental Clearance (EC), to operate for six months without EC, subject to making application for EC within 60 days. The applicant submits that requirement of prior EC is mandatory. There is no jurisdiction with the State to exempt the same. Reference has been made to an order of this Tribunal dated 28.11.2019 in O.A. No. 849/2019, *Apush Garg v Union of India & Ors.* to the effect that consent to establish

M. Sathyanarayanan, JM

Brijesh Sethi, JM

Dr. Nagin Nanda, EM

June 03, 2021
Original Application No: 840/2019
A

4. In view of the above, we direct the District Magistrate, Yamunanagar and the State PCB to ensure that unless a valid Environmental Clearance (EC) and other statutory clearances are available, the unit may not be allowed to function. The State PCB will be nodal agency for compliance. State PCB may also assess and recover compensation for illegal operation of the unit on 'Polluter Pays' principle, following due process of law. Compliance report be filed before the next date by e-mail or judicial ng@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF."

5. Accordingly, the State PCB has filed its report on 18.12.2020 as follows:-

"That the Unit M/s Om Chem Village Kuruli, Tehsil Lillaspur, Yamuna Nagar has been closed by the Board vide order dated 07.08.2020 and same was complied on dated 08.08.2020. The Environmental compensation of Rs 49,40,000/ (Forty Nine Lakh forty thousand, only) has been imposed on the unit vide order dated 24.11.2020 "

6. In view of above, no further direction appears to be necessary except that the State PCB may ensure that the unit does not re-start functioning without requisite statutory clearance. We have also noted the stand of the private respondents in connected matter being OA 287/2020 that their activities are bonafide and except for technical violation which they are remedying by seeking EC, they have consent from State PCB and are compliant with environment norms. The authorities may verify and act as per law. The MoEF&CC may also consider the matter accordingly.

The application is disposed of.

In view of order in the main matter, S.A. No. 52/2021 also stands disposed of.

Adarsh Kumar Goyal, CP

Sudhir Agarwal, JM

2. The matter was considered on 28.11.2019 in light of the report filed by the State Environment Impact Assessment Authority (SEIAA), Haryana on 15.10.2019. It was observed:

"2. Accordingly, a report has been filed by SEIAA, Haryana on 15.10.2019 to the effect that there is no Environmental Clearance and thus operation of the unit is illegal. Notice for revocation of 'Consent to Establish' was issued by the SPCB but the same was stayed on 13.09.2019 by the Appellate Authority.

3. Without commenting upon the issue of proceedings before the Appellate Authority on the subject of 'Consent to Establish', the action could certainly be taken for absence of EC by SEIAA under the Environment (Protection) Act 1986. Regional Officer of MoEF&CC at Chandigarh or SEIAA or CPCB can certainly exercise jurisdiction under Section 5 of the Environment (Protection) Act, 1986 for **stopping illegal operation of manufacturing activities in violation of requirement of EC forthwith**. Let such action be taken in accordance with law. Let SEIAA, Haryana furnish an action taken report in the matter within one month after coordinating with concerned authorities by e-mail at judicial-ny@nic.in."

3. The matter was thereafter considered on 10.08.2020 in the light of report of the SEIAA, Haryana dated 27.12.2019 that the activities of the unit have been directed to be stopped.

4. Accordingly, the Tribunal directed unless valid Environmental Clearance (EC) and other statutory clearances taken, the Unit may not be allowed to function. It was also directed that State PCB may assess and recover compensation for illegal operation of the units on 'Polluter Pays' principle. Operative part of the order is quoted below:-

"152...XX..... XXX..... XXXX

3. In view of the above, the SEIAA filed its report dated 27.12.2019 to the effect that a decision was taken to stop the activities of the unit. However, there was nothing to show that actual stopping of such activities was effective. The applicant has filed an application on 03.08.2020 to the effect that unit was still functioning. During the hearing, learned Counsel for the State Pollution Control Board states that on 07.08.2020 the functioning of the unit has been stopped.

Item No. 06

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 340/2019
(I.A. No. 52/2021)

(With report dated 18.12.2020)

Ayush Garg

Applicant

Versus

Union of India & Ors.

Respondent(s)

Date of hearing: 03.06.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant: Mr. Rahul Choudhury, Advocate

Respondent: Mr. Anil Grewal, Senior AAG with Mr. Rahul Khurana,
Advocate for State of Haryana and ESCPB
Mr. Sandeep Mangal Sharma and Mr. Suresh Rajpal, Advocates for R-3

ORDER

1. A factual and action taken report was sought from a Joint Committee of Haryana State Pollution Control Board (State PCB) and the State Environment Impact Assessment Authority (SEIAA), Haryana with reference to the allegation of illegal operation of manufacturing unit by M/s Om Chem at Village Kurali, Sabapur Road, Tehsil Bilaspur, District Yamunanagar, Haryana. According to the Applicant, formaldehyde is a hazardous chemical which was being used releasing Volatile Organic Compounds (VOCs) in violation of Hazardous Waste (Management and Transboundary Movement) Rules, 2016.



... copy of the order be sent to the Member, C.P.U. having
State Public Service Employees' Association, Lucknow by post

... to the member concerned. (Sd/-)

Shri. Kumar, I.T.

S.K. Singh, Jt.

Shri. Singh, I.T.

Secretary, C.P.U.
State Public Service Employees' Association
Lucknow



Annexure - A. U.

File No. 08

Case No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

Case No. 257/2019

Applicant Name:

Address:

Telephone No.:

Respondent Name:

Address:

Telephone No.:

**CORAM: HON'BLE MR JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR JUSTICE SHED KUMAR SINGH, JUDICIAL MEMBER
HON'BLE DR NALIN NANDA, EXPERT MEMBER**

Case No. 257/2019
File No. 08/2021

ORDER

This application seeks quashing of the order of the respondent dated 01.01.2021 in connection with the fundamental right of the applicant to work in a hazardous environment. The respondent is directed to take appropriate steps within 10 days. The applicant claims that the respondent has failed to provide any information regarding the State's compliance with the provisions of the Environment Protection Act, 1986. The respondent is directed to file a compliance report within 10 days. The respondent is directed to take appropriate steps to ensure the safety and health of the workers employed in the hazardous environment. The respondent is directed to provide a copy of the compliance report to the applicant. The respondent is directed to provide a copy of the compliance report to the National Green Tribunal. The respondent is directed to provide a copy of the compliance report to the Ministry of Environment, Forest and Climate Change, Government of India. The respondent is directed to provide a copy of the compliance report to the State Government. The respondent is directed to provide a copy of the compliance report to the District Collector, District of [Name of District]. The respondent is directed to provide a copy of the compliance report to the District Magistrate, District of [Name of District]. The respondent is directed to provide a copy of the compliance report to the District Engineer, District of [Name of District]. The respondent is directed to provide a copy of the compliance report to the District Forest Officer, District of [Name of District]. The respondent is directed to provide a copy of the compliance report to the District Health Officer, District of [Name of District]. The respondent is directed to provide a copy of the compliance report to the District Social Welfare Officer, District of [Name of District]. The respondent is directed to provide a copy of the compliance report to the District Labour Officer, District of [Name of District]. The respondent is directed to provide a copy of the compliance report to the District Milk Producers' Cooperative Societies Union, District of [Name of District].

Handwritten: PMS-54194, Dt: 11/11/2020

Haryana Government
Environment and Climate Change Department
ORDER

Whereas the process of manufacturing of Formaldehyde is covered under the provisions of S (1) of Schedule of Environment Impact Assessment Notification (EIA) 2006 of Government of India, and requires the prior Environmental Clearance (EC) from the competent authority State Environment Impact Assessment Authority (SEIAA) / Ministry of Environment, Forest and Climate Change, Government of India, before establishment and operation of such units, besides other mandatory clearances, as applicable.

Whereas, it has come to the notice of Government that around 15 such units have been permitted to establish / operate in the State of Haryana, without obtaining the necessary Prior Environmental Clearances, but with the Consent of the Haryana State Pollution Control Board (HSPCB), which misinterpreted the category of such units and on realizing the requirement of EC in these cases, has revoked its consents issued earlier to these units recently.

Whereas, some of these units approached the Government explaining their hardship due to such sudden revocation of their consents and have sought time for obtaining the necessary EC from the competent authority, as the process is likely to take a minimum of 6 months to one year period, and to allow them to operate with all pollution control measures, following the pollution control norms applicable, and,

Whereas, the Government has carefully considered their request and the competent authority has decided that these units shall be allowed to continue their operations for a period of six months, without prejudice to any legal action taken against the violations committed by them, by the competent authorities with the conditions that they will immediately apply for Environmental Clearance from the competent authority and provide the proof of such application within 60 days from the issuance of this communication to Environment and Climate Change Department and to Haryana State Pollution Control Board.

Therefore, it is ordered accordingly

Dated: 10.11.2020
Charidgarh:

Dheera Khoselwal
Additional Chief Secretary to Government of Haryana
Environment and Climate Change Department

Dated: 11.11.2020

Encls No. 16/14/2020-31env.

A copy is forwarded to the following for information and necessary action.

- 1 Chief Secretary, Government of Haryana
- 2 Principal Secretary, Industries and Commerce Department, Government of Haryana
- 3 Director General, Environment and Climate Change Department, Government of Haryana
- 4 All Deputy Commissioners of State of Haryana

— Sd —
Superintendent Environment,
for Additional Chief Secretary to Govt. Haryana,
Environment and Climate Change Department.

Dated: 11.11.2020

Chairman (BMS)
11/11/2020

Encls No. 16/14/2020-31env.

Handwritten: PMS, Sr. Sec. (E)

Handwritten: Putting on file, Clerk

Handwritten: Kamal Jew
Superintendent Environment,
for Additional Chief Secretary to Govt. Haryana,
Environment and Climate Change Department.

Handwritten: PMS, 11.11.2020



Annexure 2

Regional Office, Yamuna Nagar Region
Haryana State Pollution Control Board
 S.C.O. No- 131, Sector - 17, HUDA, Jagadhari, Yamuna Nagar
 Website - www.hspcb.gov.in E-Mail - hspcbroyr@gmail.com
 Contact No. 01732-268137, 237840

No. HSPCB/YR/2020/ 528 0

Dated 13/05/2020

To

M/s Chemwood Industries,
 Village Bhagwanpur, Khanwan Road,
 Tehsil Jagadhri, Yamuna Nagar.

Subject :- Show Cause Notice for closure under section 33 - A of the Water (Prevention and control of Pollution) Act, 1974 and 31 - A of the Air (Prevention and control of Pollution) Act, 1981 and Prosecution under Section 43 of Water Act, 1974 & 37 of the Air Act, 1981.

Whereas your unit was visited by this office on dated 12.05.2020.

Whereas your unit is involved in the manufacturing of Formaldehyde using methanal as raw material.

Whereas your unit is covered under Orange Category of Consent Management of Board as per policy order no. 517-546 dated 26.02.2016

Whereas the unit is found partially operating (DG Set, Motor, Electric Panel were operational) without obtaining Consent to operate from the Board. Thus, it is non-complying the provisions of Section 25 of Water (Prevention & Control of Pollution) Act, 1974 and 21 of the Air (Prevention & Control of Pollution) Act, 1981 and punishable under section 43 & 33 - A of Water Act, 1974 and 37 & 31 - A of Air Act, 1981.

In view of the above, you are hereby show caused for 15 days as to why your unit may not be closed and disconnect electric connection including other captive power under section 33 - A of Water Act, 1974 & 31- A of the Air Act, 1981 for non compliance of the provision of the said Acts and imposing Environmental Compensation as per policy of the Board vide no. HSPCB/PLG/2019/6050-73 dated 29.04.2019.

In case you fail to comply with the deficiencies mentioned above within stipulated period it will be presumed that you have nothing to say in this regard and accept the status as mentioned above, which will warrant your unit under section 33 - A of Water Act and 31 - A of Air Act reproduced as under, without giving any further notice

Regional officer
 Yamuna Nagar



Haryana State Pollution Control Board
SCO-131 Sector-17, HUDA Jagadhari Ph.01732-200137



No. OI9YAMCTO/A/WSCN6681779

DT 29/06/2019

To

M/s CHEMWOOD INDUSTRIES
Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamuna Nagar
Jagadhri
YAMUNANAGAR

Sub: **Show cause notice for refusal of consent to operate under Section 25/26 of Water Act, 1974, Section 21/22 of Air Act, 1981.**

Please refer to your application dated 2019-06-26 received in the Board for consent to operate under Air (Prevention & Control of Pollution) Act, 1981 and Water Act, 1974.

Your application has been examined by the Board and it has been observed that the application submitted by you is incomplete and not conforming to the requirement of the provisions of the Air (Prevention & Control of Pollution) Act, 1981 and Water (Prevention & Control of Pollution) Act, 1974 as per policy of the Board.

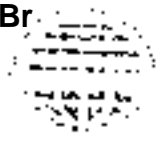
Accordingly, Show Cause Notice for refusal of consent under above said Acts is issued to reply or take corrective measures for the deficiencies and incompleteness in your application as per details given below:-

1. 1 not submitted the copy of EIA 2 compliance of CTE , 3 NOT submitted the detail of APCD , 4 not submitted the documents as per check list.

General Deficiencies :

In case, you fail to submit reply or submit compliance of the deficiencies within 07 days, the consent to operate under Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 shall be refused due to the above deficiencies/ incompleteness in your application.

Regional Officer, Yamuna Nagar
For Haryana State Pollution Control Board



Regional Office, Yamuna Nagar Region
Haryana State Pollution Control Board

Annexure 2

S.C.O. No. 131, Sector-17, HUDA, Gurgaon, Yamuna Nagar
Haryana-131001

No. HSPCB/YR/2019/1745

Dt. / 06 / 2019

To
M/s. Chem-Led Industries
Village Bhagwanpur, Kharwar Block, Meerut
Yamuna Nagar

Show Cause Notice for Prosecution under section 15 of Environment Protection Act, 1986.

Whereas you have established a unit for manufacturing of Formaldehyde and this product requires prior Environmental Clearance as per project activity mentioned in Sr. No. 519 of Schedule of Environment Impact Assessment Notification 2019.

Whereas, as per inspection of your unit on dt. 03/04/2019 by concerned field officer of this office, your unit for manufacturing of Formaldehyde has been established without obtaining prior Environmental Clearance as per Environment Impact Assessment Notification 2019.

In view of the above, you are hereby show caused for 07 days as to why Prosecution action not be initiated against your unit as per provisions of section 15 of Environment Protection Act, 1986.

In case you fail to comply with the deficiencies mentioned above within stipulated period, it will be presumed that you have nothing to say in this regard and accept the status as mentioned above, which will warrant Prosecution action against your unit and its owners/Proprietor/Partners/Directors/Staff Members under section 15 of Environment Protection Act, 1986.

Regional Officer
Yamuna Nagar

Dt. / 06 / 2019

Regional Officer
Yamuna Nagar

Encl. No. HSPCB / YMN / 2019 /

A copy of the above is forwarded to The Chairman, HSPCB, C-11, Sector-17, Gurgaon for information, please.

1/49/2021/Estt.Br

Annexure 2

Regional Office, Yamuna Nagar Region
Haryana State Pollution Control Board

S.C.O. No- 131, Sector -17, HUDA, Jagadhri, Yamuna Nagar

Website: www.hspcb.org | Mail: hspcb@hspcb.org | Phone: 01762-221111

No. HSPCB/YR/2019/1042.

Dt. 16 / 06 / 2019

To

M/s Chemwood Industries,
Village Bhagwanpur, Kharwan Road, Jagadhri,
Yamuna Nagar


Sub - Show Cause Notice for Closure under section 05 of Environment Protection Act, 1986.

Whereas you have established a unit for manufacturing of Formaldehyde and this product requires prior Environmental Clearance as per project activity mentioned at Sr. No. 5 (f) of Schedule of Environment Impact Assessment Notification 2006

Whereas, as per inspection of your unit on dt 03.05.2019 by concerned field officer of this office, your unit for manufacturing of formaldehyde has been established without obtaining prior Environmental Clearance as per Environment Impact Assessment Notification 2006.

In view of the above, you are hereby show caused for 07 days as to why closure action not be initiated against your unit as per provisions of section 5 of Environment Protection Act, 1986.

In case you fail to comply with the deficiencies mentioned above within stipulated period, it will be presumed that you have nothing to say in this regard and accept the status as mentioned above, which will warrant closure action against your unit under section 05 of Environment Protection Act, 1986.


Regional Officer
Yamuna Nagar

Dt. / 06 / 2019

Indst. No. HSPCB / YMN / 2019/

A copy of the above is forwarded to The Chairman, HSPCB, C-11, Sector 6, Anchkula for information, please.

Regional Officer
Yamuna Nagar

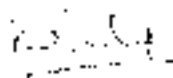
9. All the partners or any partner on behalf of the firm may borrow money from any bank or financial institution for the business of the firm in firm's name, firm's credit or against firm's moveable or immovable property

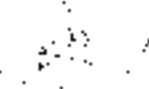
10. The duration of the firm shall be at WYI.

IN WITNESS WHEREOF the parties have put their respective hands the day and year first hereinabove written

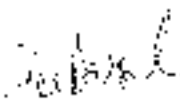
Signed and delivered by the

For and on behalf of M/s Chemwoodindustries


(Raghav Garg)


(Vame Garg)


(Archil Garg)


(Neeraj Bansal)

Witness 1

a) Name:

Address:

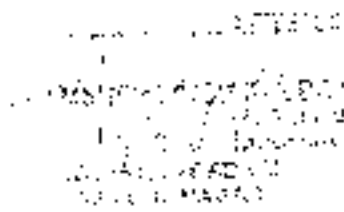
Signature:

Witness 2

b) Name:

Address:

Signature:



- ii) Be authorized by the firm to open current account, deposit account, loan account in the name of firm for the smooth running of business as and when required.

11. **Extent of Liability of Partnership**

Partnership is not bound by anything done by a partner in dealing with a person if—

- i) The partner in fact has no authority to act for the Partnership in doing a particular act, and
- ii) The person knows that he has no authority or does not know or believe him to be a partner of the Partnership

12. **Miscellaneous Provisions**

1. The partnership can be wound up with the consent of all the partners.
2. The Partnership shall indemnify each partner in respect of payments made and personal liabilities incurred by him—
 - i) in the ordinary and proper conduct of the business of the Partnership; or
 - ii) in or about anything necessarily done for the preservation of the business or property of the Partnership;
3. The books of Accounts of the firm shall be kept at the registered office of the Partnership for the reference of all the partners
4. The accounting year of the Partnership shall be from 1st April of the year to 31st March of subsequent year. The first accounting year shall be from the date of commencement of this Partnership till 31st March of that year
5. It is expressly agreed that the bank account of the partnership shall be operated by the any of the partners as mentioned above
6. That upon the dissolution of the Partnership in any event not hereinafter provided for the said business the assets, goods and liabilities thereof should absolutely vest amongst all the partners or as may be mutually decided by the parties to the partnership
7. That the partners shall be entitled to modify the above terms relating to remuneration, interest, etc. payable to partners by executing a supplementary deed and such deed when executed shall have effect unless otherwise provided from the first day of accounting period in which such supplementary deed is executed and the same shall form part of this deed of Partnership.
8. All disputes between the partners or between the Partner and the partnership arising out of the Partnership deed which cannot be resolved in terms of this deed shall be referred for arbitration as per the provisions of the Arbitration and Conciliation Act, 1996 (26 of 1996);

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The remuneration payable to the said working partners shall be computed in the manner laid down or deduction under section 40(b)(v), read with Explanation 3 of the income-tax Act, 1961 or any other applicable provision as may be in force in the income-tax assessment of the partners' firm for the relevant accounting year.

- (b) Every partner shall account to the Partnership for any benefit derived by him without the consent of the Partnership from any transaction concerning the Partnership, or from any use by him of the property, name or any business connection of the Partnership.
- (c) Every partner shall indemnify the Partnership and the other existing partner for any loss caused to it by his fraud in the conduct of the business of the Partnership.
- (d) Each partner shall render true accounts and full information of all things affecting the Partnership to any partner or his legal representatives.
- (e) In case any of the Partner of the Partnership desires to transfer or assign his interest or shares in the Partnership he has to offer the same to the remaining partners by giving 15 days notice. In the absence of any communication by the remaining partners, the concerned partner can transfer or assign his share in the market.
- (f) No partner shall without the written consent of the other Partners :-
- i. Employ any money, goods or effects of the Partnership or pledge the credit thereof except in the ordinary course of business and upon the account or for the benefit of the Partnership.
 - ii. Lend money or give credit on behalf of the Partnership or to have any dealings with any persons, company or firm whom the other partner previously in writing have forbidden it to trust or deal with. Any loss incurred through any breach of provisions shall be made good with the Partnership by the partner incurring the same.
 - iii. Assign, mortgage or charge his or her share in the Partnership or any asset or property thereof or make any other person a partner therein.
 - iv. Compromise or compound or (except upon payment in full) release or discharge any debt due to the Partnership except upon the written consent given by the other partner.
- g. Each partner shall :-
- i. Individually pay and discharge the separate debts and engagement and indemnify the other partners and the Partnership assets against the same and all proceedings, costs, claims and demands in respect thereof.
 - ii. Each of the partners shall give time and attention as may be required for the fulfillment of the objectives of the Partnership business and they all shall be the working partners.

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- 7 That the partners will be paid a Salary for the services rendered to the firm or as mutually agreed between the partners and provisions of applicable acts
- 8 That it is clarified that the remuneration and interest shall be credited to the accounts of partners only on close of the year

9 Rights of Partner

- (a) All the partners hereto shall have the rights, title and interest in all the assets and properties in the said Partnership in the proportion of their capital
- (b) Every partner has a right to have access to and to inspect and copy any books of the Partnership
- (c) Each of the parties hereto shall be entitled to carry on their own, separate and independent business as hitherto they might be doing or they may hereafter do as they deem fit and proper and other partners and the Partnership shall have no objection thereto provided that the said partner has intimated the said fact to the Partnership before the start of the independent business and moreover he shall not use the name of the Partnership to carry on the said business
- (d) That notwithstanding anything contained in the Indian Partnership Act it is hereby mutually agreed to by and between the parties that in case of death of any one or more partners the firm shall not be dissolved but shall continue to be carried on by and between the surviving partners and legal heirs and/or representatives of the deceased partner as a continuing concern, on the same terms and conditions as incorporated in this Deed or on such terms and conditions as may be agreed to by and between them from time to time. It is hereby further clarified that it shall be deemed as change in constitution and not succession
- (e) All bonds, bills, notes, bills of exchange, hundies or promissory notes or other securities given on behalf of the partnership (except cheques) shall be signed, endorsed, accepted or executed jointly by all the Partners and any bond, bill, note, bill of exchange etc. to which any partner may be a party contrary to this provision shall be deemed to have been on the personal account of such partner and he shall pay and discharge the same out of his own moneys and indemnify other partners and the firm against payment thereof and against all actions, proceedings, costs, charges, expenses, claims and demands in respect thereof

10. Duties of Partners

- a) All the partners shall actively engage in conducting the affairs of the business of the partnership firm. The said partners shall be working partners. It is hereby agreed to that in consideration of the said duties keeping themselves actively engaged in the business of the partnership firm and working as working partners, shall be entitled to remuneration

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NOW THIS DEED WITNESSETH AS UNDER:-

1. The Partnership shall come into effect from 01.05.2018 and shall be for an indefinite period unless it is determined.
2. That the name and style of the Partnership firm hereby formed shall be under the same names and style or with branch or branches at such place/s as the parties may mutually decide.
3. That the business of the Partnership firm hereby formed shall be that of manufacturing of Formaldehyde and other allied products. The parties may, however, with their mutual consent embark upon a new line or lines of business and may open branch or branches or new factory.
4. The fixed capital of the partnership shall be contributed by the partners in proportion of their profit loss sharing ratio. Any further finance required by the partnership shall be arranged and contributed by the partners from time to time by mutual consent.
5. The partners hereto shall contribute the required capital and share the profit & loss of the said business as follows:-

S. No.	Name of Partner	Share in Profit/loss (%)
1.	Raghav Garg	33.33
2.	Vaani Garg	16.67
3.	Ankur Garg	16.67
4.	Neeraj Bansal	33.33

The fixed capital requirement will be provided by the partners and the partners are entitled to charge interest on their capital account as well as fixed capital account at 12% per annum as per their choice or the rate of interest may be varied in accordance with the provisions of section 40(b) of the Income Tax Act 1961 or any other provisions applicable as may be in force in Income Tax Assessment of the firm for relevant accounting year.

(Handwritten signatures and names of partners)

Registration, Govt

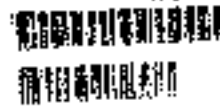


Indian-Non Judicial Stamp
Haryana Government



Date: 10/07/2018

Contract No: 10120/2018
CRN No: 05206426



Stamp Duty Paid: ₹ 100/-
Penalty: ₹ 0/-

Seller / First Party Detail

Name: Rakesh gang, Son of Ashok gang
H No./Floor: 1st
City/Village: Jagadhri
Phone: 9906688700
Sector/Ward: 0
District: Yamuna Nagar
Others: Main road side of banjay gang resident of Savera ka Jagadhri road Jagadhri Distt Yamuna Nagar
LandMark: Pura vihar jagadhri
State: Haryana



Buyer / Second Party Detail

Name: Anshu gang, Son of Sanjay gang
H No./Floor: 605
City/Village: Dehradun
Phone: 9900000000
Sector/Ward: 0
District: Dehradun
Others: Near to Laxmi sm of power house resident of sector seven/teen huda jagadhri Distt Yamuna Nagar
LandMark: Savera ka Jagadhri near dehradun
State: UK

Purpose: PARTNERSHIP DEED FOR VESSORS CHEMWOOD INDUSTRIES 1ST FLOOR PURAN VIHAR JAGADHRI TEHSIL JAGADHRI DIST: YAMUNA NAGAR

This document is a legal document and can be verified by scanning the QR Code through smart phone or the website www.haryana.gov.in

PARTNERSHIP DEED

This document of partnership made on May 5, 2018 at Jagadhri amongst the following partners:

1. Mr. Rajlax Gang s/o Sh. Ashok Gang R/o 1st, Pura Vihar, Jagadhri-Haryana
2. Mr. Varun Gang s/o Sh. Sanjay Gang R/o 605, Savera Ka Jagadhri Road, Dehradun-Uttarakhand
3. Mr. Anshu Gang s/o Sh. Sanjay Gang R/o 605, Savera Ka Jagadhri Road, Dehradun-Uttarakhand
4. Mr. Neeraj Bansal s/o Sh. Pawan Bansal R/o 1944 Sector 17, Huda, Jagadhri-Haryana

WHEREAS the Parties of First, Second Part, Third part & Fourth Part by virtue of this partnership deed have decided to carry on the business of manufacturing and storing of poly dehydrated; the name and style of M/s Chemwood Industries with its registered office at 1st Floor, Pura Vihar, Jagadhri-135001

AND WHEREAS it is deemed necessary and desirable that a regular Deed of Partnership be reduced in writing and executed on the terms and conditions mentioned hereunder.

[Signature]

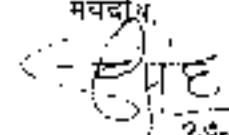
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[Signature]

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- xx. यदि आवश्यकता पड़े तो पर्याय सहाय्य पर्यावरण (सुरक्षा) अधिनियम 1986, के अनुसार पर्यावरण अनुपति प्राप्त करवा।
- xxi. कृषि क्षेत्र नियंत्रण तथा संरक्षण के अनुसार किया जायेगा।
- xxii. अन्य नदरों की शर्तें इस प्रांतिय कार्यालय द्वारा कल तथा अन्य संबंधित या संरक्षण, सुरक्षा तथा विकास के लिए समग्र - समय पर बनाई जा सकेंगी हैं।
- xxiii. यदि कोई अन्य संबंधित अधिनियम/अनुच्छेद/विधिमन्त्रालय अधिकाधिकारी द्वारा इस प्रस्ताव पर लागू होता है तो उसे भी ध्यान में लेना अनुमति लेना प्रस्ताव प्रयोग के लिए सरकार की जिम्मेवारी होगी।

3. मंचालय इस एनोन्समेंट में स्थिति/स्थल का सत्यापन कर सकता है यदि उपरोक्त शर्तों में से किसी भी शर्त को पर्याप्त रूप से मान्यता नहीं है। राज्य सरकार उन विभाग के माध्यम से इन शर्तों का पालन सुनिश्चित करेगी।

मंचालय,

 (सी० डी० सिंह) 23/07/2021
 अपर महानिदेशक (केन्द्रीय)

सहाय्यि-
 1. अपर धन महानिदेशक (अन), तवावर एन एवं गजपतपुर डिभिजन, पन्ना, इन्द्रा पर्यटन सभत, सी० डी०, अलीगढ़, उत्तर प्रदेश।

2. प्रधान मंत्री वन संरक्षण, हंरियाणा सरकार, C 18, वन भवन रोड 6, चिन्तकपुर हंरियाणा।
3. Nodal Officer-cum-ADCCF (PCI), Government of Haryana, Forest Department, Sector-6, Van Bazar, Panchikula, Haryana 134009.
4. Divisional Forest Officer, Forest Division & District Yamunanagar, Haryana.
5. M/s Chemwood Industries, Khawam road, Village Bhagwanpur, Jagadhari, District Yamunanagar.



भारत सरकार
GOVERNMENT OF INDIA

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय

MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
उत्तर क्षेत्रीय कार्यालय, चंडीगढ़ / Northern Regional Office, Chandigarh



दिनांक: 26 जनवरी 2019

F.No. - 9-HR/032/2019-CHA

सेवा में,

अतिरिक्त मुख्य अधिकारी (वन)
हरियाणा सरकार,
हरियाणा विनियोग अधिकारण,
चण्डीगढ़ - 160001

विषय- Diversion of 0.00944 ha of forest land for access to M/s Chenwood Industries along
Kharwan-Dudupur road, (Side of village Bhagwanpur, under Forest Division and District
Yamunanagar, Haryana (Online proposal no. FPHR/Approach/37770/2018) regarding

संदर्भ- प्रधान मुख्य वन संरक्षण के वन कमांक प्रशा डी टीन 87-89/4570 दिनांक 25.03.2019

महोदय,

कृपया उपर्युक्त विषय से संबंधित प्रस्ताव का अद्यतन करके इसमें वन (संरक्षण) अधिनियम, 1980 की धारा- 2 के अर्थात् केन्द्रीय सरकार की अनुमति मांगी गई है। इस प्रस्ताव में एम. चण्डीगढ़ के सभ संख्या का संख्या दिनांक 04.04.2019 द्वारा सैधात्मिक स्वीकृति प्रदान की गई थी, जिसे की अनुपालन मुख्य वन संरक्षण के प्रस्ताव प्रशा-डी-टीन-87-89/1309 दिनांक 08.07.2019 द्वारा प्राप्त होने के उपरान्त प्रस्ताव प्रस्तुत विषय हेतु 0.00944 हेक्टेयर का भूमि के उपयोग के लिए स्वीकृति निम्नलिखित शर्तों की पूर्ति करने पर प्रदान करती है।

- i. वन भूमि की विशिष्ट परिस्थिति बदली नहीं जाएगी।
- ii. प्रस्ताव के अनुसार वन में वन वृक्ष कटे जायेंगे और कटे जाने वाले वृक्षों की संख्या 01 से अधिक नहीं होगी।
- iii. प्रतिपूर्ति पौधारोपण प्रस्ताव के अनुसार Kalanour RF District Yamunanagar, में प्रयोक्ता एजेंसी से प्राप्त 51,272/- रुपये (Rupees Fifty one thousand two hundred & seventy two Only) की राशि से 50 प्रतिशत लगभग किया जायेगा।
- iv. फैनल प्रतिपूर्ति पौधारोपण प्रस्ताव के अनुसार Kalanour RF District Yamunanagar, में प्रयोक्ता एजेंसी से प्राप्त 87,630/- रुपये (Rupees Eighty seven thousand six hundred & thirty Only) की राशि से 94 प्रतिशत लगभग किया जायेगा।
- v. प्रतिपूर्ति और फैनल प्रतिपूर्ति पौधारोपण एक पत्र के जारी होने की तिथि से एक वर्ष के अन्दर हो जाना चाहिए।
- vi. Environment clearance may be taken, if required.
- vii. वन भूमि का प्रयोग प्रस्ताव में दर्शाये गये उद्देश्य के अलावा किसी अन्य उद्देश्य के लिये नहीं किया जायेगा।
- viii. जब कभी भी NPV की राशि बढ़ाई जायेगी तो उस बढ़ी हुई NPV की राशि को जमा करने के लिए प्रयोक्ता एजेंसी बाध्य होगी।
- ix. साथ लागते वन और वन भूमि की किसी तरह का कोई नुकसान नहीं पहुंचाया जायेगा और साथ लागते हुए वन और वन भूमि की रक्षाने के लिये सभी प्रयत्न किये जायेंगे,
- x. रक्षाना-सुरक्षण के लिए प्रस्तावित वन भूमि को केंद्रीय सरकार की पूर्ण अनुमति के अन्तर्गत किसी भी परिस्थिति में किसी अन्य एजेंसी, विभाग या व्यक्ति निदेशक का प्रस्तावित नहीं किया जायेगा।
- xi. केन्द्रीय सरकार की अनुमति के बिना प्रस्ताव की ले आउट प्लान को बदला नहीं जायेगा।

12. That there is no discharge directly or indirectly from the unit or the process into any interstate river or Yamuna River or River Ghaggar.
13. That the industry or the unit concerned is not sited within any prohibited distances according to the Environmental Laws and Rules, Notification, Orders and Policies of Central Pollution Control Board and Haryana State Pollution Control Board.
14. That if the unit is discharging its sewage or trade effluent into the public sewer meant to receive trade effluent from industries etc. then the permission of the Competent Authority owning and operating such public sewer giving permission letter to this unit shall be submitted at time of consent to operate.
15. That if at any time, there is adverse report from any adjoining neighbor or any other aggrieved party or Municipal Committee or Zila Parishad or any other public body against the unit's pollution, the Consent to Establish so granted shall be revoked.
16. That all the financial dues required under the rules and policies of the Board have been deposited in full by the unit for this Consent to Establish.
17. In case of change of name from previous Consent to Establish granted, fresh Consent to Establish fee shall be levied.
18. Industry should adopt water conservation measures to ensure minimum consumption of water in their Process. Ground water based proposals of new industries should get clearance from Central Ground Water Authority for scientific development of previous resource.
19. That the unit will take all other clearances from concerned agencies, wherever required.
20. That the unit will not change its process without the prior permission of the Board.
21. That the Consent to Establish so granted will be invalid, if the unit falls in Aesthetic Area or non-conforming Area.
22. That the unit will comply with the Hazardous Waste Management Rules and will also make the non-leachate pit for storage of Hazardous waste and will undertake not to dispose off the same except for pit in their own premises or with the authorized disposal authority.
23. That the unit will submit an undertaking that it will comply with all the specific and general conditions as imposed in the above Consent to Establish within 30 days failing which Consent to Establish will be revoked.
24. That unit will obtain EIA from MoEF, if required at any stage.
25. In case of unit does not comply with the above conditions within the stipulated period, Consent to Establish will be revoked.
26. That unit will obtain consent to operate from the board before the start of product activity.

Specific Conditions

Other Conditions :

1. Unit will follow the rules and regulations of board.
2. Unit will apply for c/o after establishing.
3. Unit will not change the process without obtaining prior permission of board.
4. Unit will comply the rules and regulations /directions/ guidelines of board reg norms/parameters.
5. The unit will be established on the land for which town & country planning / Municipal Corporation has granted permission.

Balraj Singh
Digitally signed by
Balraj Singh
Date: 2019.12.25
18:04:54 +05'30'

Regional Officer, Yamuna Nagar

1. NA	
Capacity of boiler	
1. NA	
Type of Furnace	
1. NA	
Type of Fuel	
1. NA	

Digitally signed by
Balraj Singh
 DN: cn=Balraj Singh,
 o=Haryana State Pollution Control Board,
 email=balraj@hspcb.org

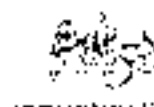
Regional Officer, Yamuna Nagar
Haryana State Pollution Control Board

Terms and conditions

1. The industry has declared that the quantity of effluent shall be 0.5 KL/Day i.e. (0 KL/Day for Trade Effluent, 0 KL/Day for Cooling, 0.5 KL/Day for Domestic and the same should not exceed.
2. The above 'Consent to Establish' is valid for 60 months from the date of its issue to be extended for another one year at the discretion of the Board or till the time the unit starts its real production whichever is earlier. The unit will have to set up the plant and obtain consent during this period.
3. The officer/official of the Board shall have the right to access and inspection of the industry in connection with the various processes and the treatment facilities being provided simultaneously with the construction of building/machinery. The effluent should conform the effluent standards as applicable.
4. The necessary arrangement shall be made by the industry for the control of Air Pollution before commissioning the plant. The emitted pollutants will meet the emission and other standards and will be prescribed by the Board from time to time.
5. The applicant will obtain consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 31/22 of the Air (Prevention & Control of Pollution) Act, 1981 as amended to-date even before starting trial production.
6. The above 'Consent to Establish' is further subject to the conditions that the unit comply with all the laws/rules/decisions and competent directions of the Board/Government and its functionaries in all respects before commissioning of the operation and during its actual working strictly.
7. No in-process or post-process objectionable emission or the effluent will be allowed, if the scheme furnished by the unit turns out to be defective in any actual experience.
8. The Electricity Department will give only temporary connection and permanent connection to the unit will be given after verifying the consent granted by the Board, both under Water Act and Air Act.
9. Unit will raise the stack height of DG Set/Boiler as per Board's norms.
10. Unit will maintain proper logbook of Water meter/sub meter before/after commissioning.
11. That in the case of an industry or any other process the activity is located in an area approved and that in case the activity is sited in an residential or institutional or commercial or agricultural area, the necessary permission for siting such industry and process in an residential or institutional or commercial or agricultural area or controlled area under Town and Country Planning laws CLU or Municipal laws has to be obtained from the competent Authority in law permitting this deviation and be submitted in original with the request for consent to operate.



HARYANA STATE POLLUTION CONTROL BOARD
 SCO-131 Sector-17, HUDA Jagadhari Ph.01732-200137



Website: www.hspcb.gov.in E-Mail - hspcb.pki@haryana.gov.in
 Telephone No.: 0172-2577810-73

No. HSPCB/Consent/ : 31325241SYAMCTES78449

Dated: 20/11/2018

To,

M/s : CHEMWOOD INDUSTRIES
 Village Bhagwanpur, Kharwan Road, Tehsil Jagadhari, District Yamuna Nagar
 YAMUNANAGAR
 135001

Sub : Grant of consent to Establish to M/s CHEMWOOD INDUSTRIES

Please refer to your application no. 3784449 received on dated 2018-11-12 in regional office Yamuna Nagar.

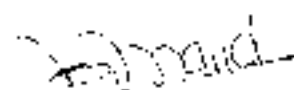
With reference to your above application for consent to establish M/s CHEMWOOD INDUSTRIES is here by granted consent as per following specification/terms and conditions.

Consent Under	AIR/WATER
Period of consent	2019/2018 - 19/12/2023
Industry Type	Small Scale Industry
Category	GRANITE
Investment (in Lakh)	295.01000
Total Land Area (Sq. meter)	6828.0
Total Built-up Area (Sq. meter)	3400.0
Quantity of effluent	
1. Trade	0.0 KL/Day
2. Domestic	0.5 KL/Day
Number of outlets	1.0
Mode of discharge	
1. Domestic	Septic tank
2. Trade	
Permissible Domestic Effluent Parameters	
1. BOD	30 mg/l
Permissible Trade Effluent Parameters	
1. NA	
Number of stacks	1
Height of stack	
1. NA	
Permissible Emission parameters	

ANNEXURE-II

1963 and the site in question thereafter will be regulated through the Act ibid and Rules framed there under.

4. The NOC shall also be considered to be null & void if at any point of time the provisions of sections 7 of the Haryana Development & Regulation of Urban Areas act, 1975 are violated by you.
5. That you will obtain necessary permission from any other Department required for the said project under any other Act and this certificate does not provide any immunity against any Act, Rules and Regulations of any other Department applicable on the land in question, nor grant any sanction/approval of construction raised/ to be raised by the landowner in any manner.
6. That you shall not object to the acquisition of land as undertaken vide your affidavit dated 11.09.2018 required for widening of roads/rasta in future which is passing along the land for which NOC has been granted.
7. Any breach of above said conditions will tantamount to automatic cancellation of this NOC.



Senior Town Planner,
Panchkula Circle,
Panchkula

Endst. no.: STP (P)/NOC-513/JE/2018/

Dated:

A copy of the above is forwarded to the following for information please: -

1. The Director, Town & Country Planning, Haryana, Chandigarh.
2. District Town Planner, Yamuna Nagar w.r.t letter no. E-1669 dated 16.10.2018.
3. Regional Officer, Haryana State Pollution Control Board, Yamuna Nagar.
4. Chief Inspector of Factories, 30 Bays Building, Sector-17, Chandigarh with the request to ensure compliance of provisions of Factories Act, 1948 and Punjab Factories Rules, 1952 as applicable in the State of Haryana to govern the building activities in the premises.
5. District Forest Officer, Yamuna Nagar.


Senior Town Planner,
Panchkula Circle,
Panchkula

ANNEXURE-11

OFFICE OF THE SENIOR TOWN PLANNER, PANCHKULA
 DEPARTMENT OF TOWN AND COUNTRY PLANNING, HARYANA, CHANDIGARH
 C-3, HSVP COMPLEX, THIRD FLOOR, SECTOR-6, PANCHKULA
 Email- stp1.pkt.tcp@gmail.com ☎ 0172-2560217 (0)

To

M/s Chemwood Industries,
 Through Partner Sh. Raghav Garg,
 Village Bhagwanpur, Tehsil - Jagadhari,
 District - Yamuna Nagar.

Memo No.: STP(P)/NOC-513/JE/2018/11631 Dated: 26.10.18

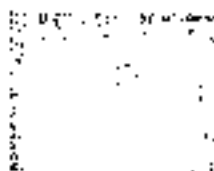
Subject: - Request for grant of No Objection Certificate for setting up of manufacturing unit of chemicals (Formaldehyde) & storage of petroleum Class-A chemical (Methanol) in underground tanks in the revenue estate of village Bhagwanpur, Tehsil Jagadhari Distt. Yamuna Nagar.

Ref: - Your request dated 05.10.2018.

On the above cited subject, your application for grant of No Objection Certificate for setting up of manufacturing unit of chemicals (Formaldehyde) & storage of petroleum Class-A chemical (Methanol) in underground tanks comprising in khasra nos. 7/12/2, 19, 22, 13/12 over an area measuring 13 Kanal 10 Marla in the revenue state of village Bhagwanpur, Tehsil - Jagadhari & District Yamuna Nagar has been examined in this office in the light of report sent by District Town Planner, Yamuna Nagar vide his memo no. E-1669 dated 16.10.2018, wherein he has reported that the site falls within Urban Area, Yamuna Nagar - Jagadhari but does not falls in any Controlled Area declared by this Department or within the limit of Municipal Corporation, Yamuna Nagar - Jagadhari. District Town Planner further affirmed that the site is not involved in any violation of Section 7(i), (ii) & 7(iii) of Haryana Development and Regulation of Urban Area Act, 1975. Hence, it has been decided to grant you NOC over the area mentioned above subject to the following conditions: -

1. That you shall adopt the planning and design norms as per NBC for raising construction of the building at site & you and supervising Architect/Engineer shall be solely responsible for structural safety as well as fire safety in the said building. Further, you shall obtain structural stability certificate from competent authority.
2. That you shall construct the building after leaving 6.00 meters set back from the boundary wall on all sides.
3. This NOC shall be considered null and void as soon as the controlled area is declared under the provisions of the Punjab Scheduled Roads and Controlled Areas Restriction of Unregulated Development Act,

Sl. No. Date of Birth Remarks



[Faded text, likely a list of names and details, mostly illegible due to low contrast.]

प्रमाण पत्र

[Faded text block, likely a certificate or official statement.]

[Faded text at the bottom of the page, possibly a signature or date.]



Indian-Non Judicial Stamp
Haryana Government



Date: 20/08/2018

Appendix I

सं. 1128649/2021/Estt.Br
20/08/2018

33/5
33/5

Stamp Duty Paid
₹ 200000

Seller / First Party Detail

Name	Shri. Anand	Address	Plot No. 100, Sector 10, Gurgaon, Haryana
Age	45	State	Haryana
Marital Status	Married		
Signature			



Buyer / Second Party Detail

Name	Shri. Anand	Age	45
Address	Plot No. 100, Sector 10, Gurgaon, Haryana	State	Haryana
Signature			

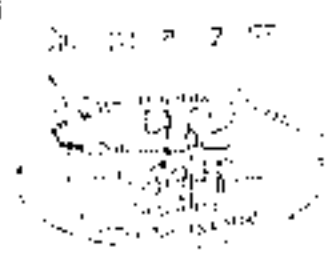
Stamp Duty Paid ₹ 200000

हस्ताक्षरित एवं मुद्रित प्रमाणित किया जाता है कि उपरोक्त विवरण सत्य है और इस पर कोई भी आपत्ति नहीं है।

- 1- अक्षरों में
- 2- अक्षरों का अर्थ
- 3- अक्षरों का अर्थ
- 4- अक्षरों के अर्थ
- 5- अक्षरों का अर्थ
- 6- अक्षरों का अर्थ
- 7- अक्षरों का अर्थ
- 8- अक्षरों का अर्थ

1. अक्षरों में विवरण सत्य है। 2. अक्षरों का अर्थ सत्य है। 3. अक्षरों का अर्थ सत्य है। 4. अक्षरों का अर्थ सत्य है। 5. अक्षरों का अर्थ सत्य है। 6. अक्षरों का अर्थ सत्य है। 7. अक्षरों का अर्थ सत्य है। 8. अक्षरों का अर्थ सत्य है।

अक्षरों के अर्थ सत्य हैं।





**National Accreditation Board for
Testing and Calibration Laboratories**

(A Constituent Board of Quality Council of India)

NABL



CERTIFICATE OF ACCREDITATION

VARDAN ENVIRO LAB

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

**"General Requirements for the Competence of Testing &
Calibration Laboratories"**

for its facilities at

PGO/NO. 82A, SECTOR 5, HISIDC, IMT MANESAR, GURGAON, HARYANA, INDIA

in the field of

TESTING

Certificate Number: IC-6299

Issue Date: 28/08/2019

Valid Until:

27/08/2021

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Signed for and on behalf of NABL



N. Venkateswaran
Chief Executive Officer



Quality Council of India
National Accreditation Board for
Education & Training



CERTIFICATE OF ACCREDITATION

Vardan Environet, Gurugram

Plot No. 82-A, Sector 5, IMT Manesar, Gurugram, Haryana

Accredited as Category - A organization under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations, Version 3 for preparing EIA-EMP reports in the following Sectors:

Sl. No.	Sector Description	Sector (as per)		Cat.
		NABET	MOEFCC	
1	Mining of minerals including open cast/ underground mining	1	1 (a), (i)	A
2	Offshore & Onshore Oil and gas exploration, development & production	2	1 (b)	A
3	River Valley projects	3	1 (c)	A
4	Mineral beneficiation	7	2 (b)	A
5	Metallurgical industries (ferrous & nonferrous)- both primary & secondary	8	3 (a)	A
6	Coke oven plants	11	4 (b)	A
7	Petrochemical based processing	20	5 (e)	B
8	Synthetic organic chemicals industry (dyes & dye intermediates, bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	21	5 (f)	A
9	Distilleries	22	5 (g)	A
10	Sugar Industry	23	5 (j)	B
11	Oil & gas transportation pipeline (crude and refinery/ petrochemical products), passing through national parks/ sanctuaries/coral reefs /ecologically sensitive Areas including LNG Terminal	27	6 (a)	A
12	Highways	34	7 (f)	A
13	Building and construction projects	38	8 (a)	B
14	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Feb 28, 2020 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions as per the Scheme. The accreditation needs to be renewed before the expiry date by Vardan Environet, Gurugram following due process of assessment.

Sd/-

Sr. Director, NABET
 Dated: June 17, 2020

Certificate No.
 NABET/EIA/1922/RA 0166

Valid till
 Nov 06, 2022

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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13.7 NATURAL & COMMUNITY RESOURCES AUGMENTATION PLAN (NCRAP)

Introduction

A need assessment survey was carried out for the purpose to formulate the Natural and community resources augmentation plan. The need assessment survey covered the 10 Km radius study area of plant site. The augmentation plan will be multi fold in nature and will be in conjunction with the damage assessment as stated earlier.

Activities for the augmentation plan can be classified in major categories as under:

- A. Natural Resource Augmentation Plan
- B. Community Augmentation Plan

Activities proposed for Natural Resource Augmentation Plan

- Creation of drainage & Repair of culverts and embankments in villages
- Road repair & maintenance
- Creation of Cow shed in villages
- Plantation in common areas of nearby villages
- Additional awareness programs on Environmental protection

Activities proposed for Community Augmentation Plan

- Infrastructure development for training of youth
- Entrepreneurial development program aiming make in India
- Provision of solar panel lighting in common areas of villages
- Supply of Agriculture water pump sets for locals

13.8 CONCLUSION

M/s Chemwood Industries aims to compensate for whatever minimal damages identified due to the plant's construction and operation of the plant, by way of a dedicated Natural & Community resource augmentation plan with an earmarked budget and defined timeframe for implementation of the same.

Through the summary of budgetary allocation with respect to violation activity and remediation measures suggested/recommended, natural and community resource augmentation plan, the impact on the environment and its relative damages are very low. As far as the impacts due to the future operation of the plant are concerned, the cumulative impact of implementation of the latest State-of-the-art technologies in the plant will bring an overall improvement in the environmental quality of the area.

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

DRAFT EIA REPORT

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
Loss of livelihood	Loss of livelihood	Existing Medical Establishment in the area are adequate			
Biological Environment Habitat Fragmentation and other ecological attributes	Key species likely to be disturbed Loss of herbs and shrubs	NI	Habitat disturbance Health problems to cattle	Landscape plan to improve vegetation cover in the area	Tree plantation

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT VAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

DRAFT EIA REPORT

Activity/ Causes of	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
pollution of operation of construction equipment and construction activity	vibration Generation and increase in background ambient Noise levels	workers working at site were provided with PPEs like ear plugs and ear muffs Construction of boundary wall has been made >3m to reduce the level of noise outside the campus PPE were provided to the worker during operation phase	to construction activities. Increase in ambient noise levels causing discomfort to nearby locals and fauna.	assistance to nearby villages.	workers and nearby villagers. Distribution of Hearing Aids hearing impaired Sr. Citizens of nearby villages.
Transportation of construction materials in Trucks and Dumpers					
Operation of Unit					
Socio- Economic Environment					
Occupational Health and Amenities	Health of the construction and operational workers Facilities related to hygiene and sanitation	PPEs were provided to all the construction and operational workers Periodical health examination of workers was done	Injuries to labours while working at site Health issues of construction and operational workers Health issues of cattle	Organizing health camps for construction and operational labours Provision of medical camp for local domestic animals	Organizing health camps for labours Provision of a medical camp for local domestic animals of nearby villages.
Other social attributes	Pressure on the existing infrastructure				

CAPACITY EXPANSION IN FORMAL DEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA IV M/S. CHEMWOOD INDUSTRIES

DRAFT EJA REPORT

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
to domestic use Generated during construction activity Waste water generated during operation of unit	breeding Soil Contamination Odour issues Ground water contamination	labours on the site with soak pit Waste water was treated in neutralization pit during operation of unit Training of staff & labours on the site for proper usage of water through signage	Runoff during rains will lead to increase in pollutants in surface drains	vicinity of site	under Swachh Bharat Mission. After construction the same shall be handed over to Municipal Corporation as Sulabh Shouchalya and will be operated on pay and use model.
Storm Water	Increase in Sediment load Contamination of Soil due to runoff from construction site.	Separate storm water drain to avoid mixing of plant effluent with storm water	Water logging in area leading to breeding of mosquito Deterioration of the water channel / drain and impact on aquatic life. Reduction in ground water recharge	Increasing the ground water recharge in the area	Rain Water Harvesting Ponds etc proposed for harvesting the rain water in government schools and panchayat building of nearby villages.
Noise Environment	Movement and Noise and	Construction	Increase in noise levels due	Providing medical	Audiometry test for

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES
DRAFT EIA REPORT

Activity/ Causes of pollution unit	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
Water Environment					
Fresh water requirement	Approximately 105,300 KL water (0.5 KL per sqm.) has been used in various construction activity like dust suppression, RMC Production, Cement Blocks/ Brick Preparation, Plastering etc. Approx. 500 KL of water has been used for domestic consumption (26 KL water consumption for 90 days of construction)	Curing compounds have been used to reduce the usage of water during construction purpose.	The rain water during construction/Operation phase was neither used for storage/ recharge and wasted completely. Tanker water was used during construction and Operation phases	Potable drinking water to be provided to nearby villages. Rain water harvesting ponds to be installed in near village	Providing and maintaining water in treatment plant in nearby area.
Waste Water Generated due	Water logging & Mosquito operation of Unit	Mobile toilets provided for	Percolation of waste water in the soil	Preventing open defecation in the	Toilet construction

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KIARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

DRAFT EIA
REPORT

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
Air Environment					
Site Clearance (removal of shrubs)	Dust emission during site cleaning	Water sprinkling on haul road.			Suppression of dust by sprinkling of water by water tankers on 'kaccha' road of the nearby villages
Soil Excavation	Dust and gaseous emission from transportation	Only PCC certified vehicles were allowed to enter the site.			Plantation and maintenance of trees along the approach road of plant in collaboration with NHAI / Forest Deptt. Regularly checking of Ambient Air Quality (3 stations) at nearby villages
Loading and Unloading of material	Dust and gaseous emission from vehicle during construction	Material were transported with covered trucks	Air Pollution at nearby areas.	To reduce Air Pollution in nearby	
Operation of DG Sets	Dust and gaseous emission from transportation	Wheel Wash arrangement was provided.	Increase in air pollution due to installation of formaldehyde plant	Pollution in nearby area.	
Transportation of construction materials through Vehicles	Emissions from Boiler operations, DG sets and transportation	'Pacca road' inside plant			
Operation of machineries like Mixer and others		Water sprinkling on 'kaccha road'			
Operation of formaldehyde		Bag filter system was provided to			

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

DRAFT EIA REPORT

Table 0.1: Damage Assessment and Remediation Plan

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
Land Environment					
Excavation	Change in Land use/ Land cover of site	Sprinkling of water to reduce fugitive dust emission.	Removal of top soil	To maintain quality of soil in vicinity of site	Assistance to gram panchayat regarding usage of Organic Fertilizer that shall be provided to the farmers to increase the productivity and to increase fertility of soil
Generation of Hazardous waste like empty cans of paints, fuel/oil	Change in topography and drainage pattern	Material storage under sheds.	Dust pollution in dry season	Reducing point of contact of hazardous waste if any.	Concrete flooring for storage of raw materials, waste materials and products
Land contamination due to spill of oil, paint, varnishes etc., during construction phase	Fugitive dust emission due to blowing of wind	Separate bins for onsite collection and segregation of domestic waste.	Contamination of soil/water.	Using designated / earmarked areas for refuelling and washing of machinery or storing empty cans of paints, varnishes etc.	Concrete flooring for storage of raw materials, waste materials and products
Generation of construction solid wastes	Unmanaged dumping	Filling of low lying area with construction wastes	Effects on Flora/ Fauna	Concrete flooring of storage area to prevent leaching.	Domestic waste collection and disposal system shall be created.
Solid waste from process.	Soil erosion	Construction of storm water drain to divert storm water from flowing over the construction areas	Health effects on workers handling chemical/ oil/ fuel/ paints etc.	Solid waste generated was given to Municipal Corporation for proper disposal.	
	Impact on productivity and fertility of the soil	Installation of oil and grease traps in construction workshop.	Health effects on workers near solid waste collection area		
	Contamination of surface water bodies due to runoff from construction site during rain	Construction of oil and grease traps in construction workshop.			
	Contamination of Soil. Leaching may affect Ground water quality.	Solid waste was disposed as per Municipal rules.			
	Unmanaged disposal of solid				

damage is assessed based on negative changes brought onto the various environmental aspects due to the project activity.

However, any industrial activity does pose threat on environment, which can either be avoided or minimized in terms of size, scope and duration. It is based on the fact that minimizing the environmental impact of an activity primarily entails managing the environmental consequence(s).

To ameliorate the adverse impacts on the environment due to the construction of the new units as well as its operation, a remediation plan is necessary. Also, a Natural & Community resource augmentation plan (NCRAP) is required to pay for the ecological damage as well as economic benefits derived at the cost of the environment and the local community. Both of these, with respect to violation units, have been elaborated in the subsequent sections.

As per the ToR, the following studies were carried out with respect to the violation activities carried out within the premises of M/s Chemwood Industries.

- Ecological/ environmental damage assessment
- Remediation plan
- The natural and community resource augmentation plan

13.5 ECOLOGICAL DAMAGE ASSESSMENT AND REMEDIATION PLAN

The assessment of environmental damage caused due to an industrial activity under violation of a regulatory framework needs to be measured across different aspects viz. biotic environment; abiotic environment and social environment. The environmental damage & assessment has been studied in comparison to the earlier environmental status before the start of the construction considering following parameters.

- **Air Environment**
- **Water Environment**
- **Noise Environment**
- **Land Environment**
- **Ecological Environment**
- **Socio-economic Environment**

A regional background to the baseline data is presented in **Chapter-3**, which will help in better appreciation of field data, generated on several environmental and ecological attributes of the study area.

13.6 DAMAGE ASSESSMENT AND ITS REMEDIATION PLAN

The project proponent has installed and operated formaldehyde unit without getting environmental clearance under EIA notification 2006. Damage assessment and Remediation Plan along with Cost of remediation measures for Water, Noise, Air, Social and Ecological environment is given in **Table 13.1**.

CHAPTER: DAMAGE ASSESMENT, REMEDIATION PLAN AND NATURAL & COMMUNITY RESOURCE AUGMENTATION PLAN (NCRAP)

13.1 INTRODUCTION

The project was issued ToR by MoEFCC vide F.No. J-11011/108/2021-IA.II(I) dated 20th July 2021 for preparing the Environmental Impact Assessment Report and Environmental Management Plan (Including Assessment of ecological damage and the remediation plan and the natural and community resource augmentation plan as an independent chapter in the EIA).

The primary concern of remediation plan is to evaluate the extent to environmental damage done due to construction and operation of SAF in absence or inadequacy of environmental protection measures. The traditional knowledge of the project is being utilized to derive the extent of damage and plan remediation with time bound action plan and budgetary provision.

13.2 PROJECT DEVELOPMENT

As elaborated in the previous chapters, Chemwood Industries has installed Formaldehyde unit during the year 2018 in order to meet the market demand. This unit was installed in order to fulfill the market demands for economic benefits without obtaining prior Environmental Clearance.

13.3 NEED OF THE STUDY

The specific Terms of Reference granted to the project, under the provisions of MoEFCC's notification vide S.O. 804 (E) dated 14.03.2017 regarding conducting EIA Study for obtaining Environment Clearance to the projects, considering violation of EIA Notification, 2006 and its subsequent amendments and recommended the following:

- Assessment of damage to be carried out with respect to air, water, land, ecology and other environmental attributes.
- A remediation plan and natural and community resource augmentation plan to be prepared corresponding to the ecological damage assessed and economic benefits derived due to violation.

13.4 OBJECTIVE OF THE STUDY

The objective of Damage Assessment Report (DAR) and Natural & Community Resource Augmentation Plan (NCRAP) includes the study of affects which are caused by change in the environment due to the project activity and to identify the corrective measures to compensate or replace those resources such as "Land, Biota, Air, Water and others in order to mitigate the adverse effects on such resources". The

Indian Oil, HPCL, NTPC, NIIPC, DMRC, GAIL, SAIL, NHAI, APCPL, RITL, MPPGCL, Indian Railways, JK Lakshmi Cement Ltd., L&T, Tata, Adani, Hero, Honda, HCL, Panasonic, Jaypee group, DLF, Godrej, Haldiram's, Unitech, JBM, Trident hotels, Lanco, Mangalam cement, JW Marriot, Fros group and many others.

12.6 TEAM MEMBER INVOLVED IN EIA STUDIES AND REPORT PREPARATION

S.No.	Functional Areas	Name of the EC/FAE
1	EIA Coordinator	Dr. Ashok Kumar Rathoure (EC)
2	AP	Mr. K.M. Khare (FAE)
3	WP	Dr. Ashok Kumar Rathoure (FAE)
4	SHW	Mr. S. K Shanna (FAE)
5	SE	Ms. Shilpa Mishra (FAE)
6	EB	Dr. Niteesh Kumar (FAE)
7	HC	Mr. R. S Yadav (FAE)
8	Gen	Mr. R. S Yadav (FAE)
9	AQ	Mrs. Surbhi Makhwana (FAE)
10	NV	Mr. K M. Khare (FAE)
11	IU	Mr. Ankur Agrawal (FAE)
12	RH	Mrs. Ashwini Ganvir (FAE)
13	SC	Dr. Sameer Deshpande
Other Team involved		
1	-	Mr. Pawan Kumar Verma
2	-	Mrs. Shweta Ghildiyal



CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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- EHS, Energy and water Audit, risk/hazard studies and disaster management plan (both onsite and off-site).

12.3 RECOGNITIONS

- Approved by NABET in 17 sectors for preparation of EIA/ EMP reports
- Vardan EnviroNet is recognized by Ministry of Environment, Forest & Climate Change, Govt. of India under Environmental Protection Act 1986
- Vardan EnviroLab is accredited by NABL in the field of Testing
- Vardan EnviroLab is certified by OHSAS 18001:2007
- Vardan EnviroLab is certified by ISO 14001:2015
- Vardan EnviroLab is certified by ISO 9001:2015
- Vardan EnviroLab is approved by HSPCB & KSPCB

12.4 KEY MANAGEMENT PERSONNEL OF VARDAN

- Multisource Dispersion Model based on Gaussian Model (ISCST3, AERMOD).
- Noise Propagation Model (Dhawani Pro).
- Risk and Hazard studies through PHAST model
- GIS mapping through Arc GIS, watershed & area drainage mapping, cadastral mapping, DGPS survey, 3D modelling, Urban/Rural area planning & management and Digital Elevation Model.
- Transect and line intercepts for Ecology and Biodiversity studies.
- Extrapolative method & Intuitive technique (Delphi technique) in socio-economic assessment.

Sl.No.	Name	Designation	Experience (years)
1	R.S. Yadav	Managing Partner	36
2	Aman Sharma	Vice President	15
3	Roupika Sharma	CTO	10
4	Anshul Yadav	General Manager	8
5	K.M. Khare	EIA Coordinator	43
6	Dr. Ashok Rathoure	EIA Coordinator & FAE	14
7	Nemi Chand Choudhary	General Manager-Jaipur	12

12.5 EMINENT CLIENTELE OF VARDAN

Vardan has executed around 1000 projects across all over India in a short span of time covering both public and private sectors. Following are some of our reputed clients.

CHAPTER 12: DISCLOSURE OF CONSULTANTS

12.1 INTRODUCTION

Vardan Environet is a pioneer consulting organisation of India specializing in Environmental Protection, Industrial Pollution Control, Environmental & Mechanical testing and engineering field. Vardan assists clients in comprehensive environmental and engineering services ranging from conceptual planning and preliminary investigation to detailed engineering designs.

Vardan has successfully completed a wide range of multi-disciplinary assignments/reports. The company's project formulation requires preliminary and detailed project investigation. The objective of the investigation is to assess the technical viability and cost effectiveness of the proposals vis-à-vis the objective and benefit. Vardan was founded in 2012 and brought together a number of consultancy services with a track record of performance in the environmental Science and Engineering field.

Headquartered in Gurugram, Vardan has prominent presence in Delhi-NCR, Rajasthan, Maharashtra, Madhya Pradesh, West Bengal and Jharkhand. With a manpower of over 125 professionals, the organization comprises of senior retired government officers from various departments like Pollution Control Board, Mines & Geology, Civil Services, SAIL, GAIL, NEERI who have decades of experience in the field of environmental management. The team also comprises of young, dynamic and progress driven Environment, Civil, Mechanical & Chemical engineers, Geologists, GIS experts, Ecologists and Auditors.

Vardan EnviroLab, a sister concern provides reliable and precise testing services for a wide range of Environmental, Chemical, Food testing, Microbiology and Building Materials with in-house Equipment/Instruments of advance technology along with experienced technical staff.

12.2 SERVICES OF VARDAN ENVIRONET

- Environmental Impact Assessment (EIA), Environmental Management Plan (EMP), Environmental Compliance, Mining Plan, Social Impact Assessment.
- Testing of water, Waste water, Ambient & work zone air, stack emissions, noise, soil, limestone, dolomite, iron ore, coal, cement, bricks, concrete, blocks, steel bars & wires, Indoor Air Quality monitoring, Sludge.
- Hydrological surveys for ground water clearance.
- Approvals/NOC/Clearances from various Government Authorities.
- Detailed Project report/Feasibility report/Plans/Designs.
- Environmental Quality Monitoring and analysis.
- Geotechnical investigations, Topographical Survey, Planning and Designs.

All the Solid & hazardous waste generated, are being collected, stored separately and disposed off as per the guidelines issued by CPCB & Haryana State Pollution Control Board and the condition given in the CTO letter.

11.5 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The total capital investment on environmental control measures is envisaged to be about Rs 42.90 Lakhs out of a total project cost of Rs. 7.0 Crore. Details are given in Table-10.2. Cost towards social development work is 7.0 Lakhs

11.6 POST PROJECT ENVIRONMENTAL MONITORING PARAMETER AND FREQUENCY

Environmental Monitoring Plan has been prepared and being implemented in the unit which includes Air Quality Monitoring, Stack Emission monitoring, Noise Level Monitoring, Water and Waste water analysis etc. Their report of the same is being submitted to the HSPCB on regular basis.

11.7 CONCLUSION

M/s Chemwood Industries has committed to implement all the pollution control measures to protect the surrounding environment. The project can definitely improve the regional, state and national economy. Industrial growth is an indication of socio economic development. The project has been developed complying with the condition of CTE and being operated as per CTO conditions given by HSPCB.



- Scrubber has been installed for scrubbing the residual Formaldehyde from the main product stream which also controls the odour problem.
- To control the air emissions from D.C. Set, stack height of 6.0 m (AGL) shall be provided.
- Green belt will be developed on 37.62 % area of the total project area which will help in attenuating the pollutants emitted by the plant.
- Adequate measures for control of fugitive dust emissions will be taken.

Waste Water Treatment

- There is no waste water discharge from the plant. Zero discharge effluent concept adopted in unit
- Fresh water requirement of the project is meeting through ground water through tubewell. Application for the same will be submitted to the concerned authority.
- Domestic wastewater is treated in Septic tank followed by soak pits.
- Rain water harvesting arrangement has been already developed.

Noise Pollution Control

- Green belt development (plantation of dense trees across the boundary) will help in reducing noise levels in the plant as a result of attenuation of noise generated due to plant operations, and transportation.
- Personal protective equipments like ear plugs and ear muffs will be provided to employees working in the noise prone areas.
- Time to time oiling and servicing and O and M of machineries will be done.
- Acoustic enclosure for heavy machines/equipment/D.C. already provided.

Land Pollution Control

- The plant implemented zero level discharge concepts. The treated water recycled in the process. Hence no effluent generation.
- No toxic /waste water will be disposed directly on land.
- Vegetation will be done on uncovered soil.

Odour Management

- Scrubber has been installed for scrubbing the residual Formaldehyde from the main product stream.
- Temperature will be kept under control during operation phase.
- Greenbelt will be developed.
- Good housekeeping is being maintained.

Solid & Hazardous Waste Generation and Disposal

- No Haz. Waste generation from the process.
- Used Oil is being sold to authorised recycler.
- Domestic solid waste is stored in separated collection bins provided in the unit. The same is sent to waste management agency in regular interval.

S. No.	Particulars	Details
		Fuel: HSD from local Vendor
10.	Working Days	Approximately 300 days

11.3 ENVIRONMENTAL BASELINE STUDY

Baseline study has been conducted from 1st March to 31st May 2020 covering a non-monsoon season (Pre-Monsoon). Following observations have been made after study:-

Table No. 0.2: Summary of Baseline Studies

Parameters	Baseline Status	Standard
Ambient Air Quality		
PM ₁₀	60.1 µg/m ³ and 92.1 µg/m ³	100 µg/m ³
PM _{2.5}	32.5 µg/m ³ and 55.8 µg/m ³	60 µg/m ³
SO ₂	9.1 µg/m ³ and 19.3 µg/m ³	80 µg/m ³
NO _x	16.2 µg/m ³ and 32.1 µg/m ³	80 µg/m ³
CO	0.57 mg/m ³ and 0.98 mg/m ³	2 mg/m ³
Noise Level Monitoring		
Day Time (6:00 a.m. to 10:00 p.m.)	45.7 to 72.5 dB(A)	75 (Ind.) 55 (Res.)
Night Time (10:00 p.m. to 6:00 a.m.)	39.7 to 61.9 dB (A)	70 (Ind.) 45 (Res.)
Soil Quality and Characteristics		
pH	7.45 to 7.81	-
Organic Matter	0.94%-0.51%	-
Nitrogen	183 Kg/ha. to 241 Kg/ha	-
Phosphorus	15.56 Kg/ha. to 24.55 Kg/ha	-
Potassium	161 Kg/ha. to 242 Kg/ha.)	-
Ground Water		
pH	7.56 to 7.88	6.5-8.5
Total Hardness	214 to 281.48 mg/l	≤200 mg/l.
Total Dissolved Solids	314 to 368 mg/l	<500 mg/l.
Fluoride	0.48 to 0.71 mg/l	< 1.0 mg/l.
Surface Water		
pH	7.51 to 7.72	6.5-8.5
Total Hardness	221.0 to 315.21 mg/l	≤200 mg/l.
Total Dissolved Solids	460 to 571.0 mg/l	≤500 mg/l.

The concentrations were found to be within permissible limits (Compared with IS 10500:2012)

11.4 MITIGATION MEASURES FOR CONTROL OF POLLUTION

Air Pollution Control

- All the exhaust gas emissions are channelized all through the process and reused for various purposes like heating & remained chemical utilization.
- Remaining gas will be exhausted through a chimney.
- Online Stack Monitoring System as an air pollution control measures to control the emission of particulate matter the flue gas emission will remain well within gaseous emission norms prescribed by the CPCB

CHAPTER 11: SUMMARY & COCLUSION

11.1 STRUCTURE OF EIA REPORT

The EIA report has been prepared as per TOR (Terms of Reference) grant in addition to "Generic Structure of EIA Report" required by the Ministry of Environment & Forest, Government of India as per the general condition stipulated in the EIA notification dated 14.9.2006.

11.2 INTRODUCTION

M/s Chemwood Industries has established a Formaldehyde manufacturing unit at village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Yamunanagar, Haryana in 2019 after getting CTE vide application no. HSPCB/Consent/: 313282118YAMCTE5784449 dated 20.12.2018 from Haryana State Pollution Control Board. The unit had started the production of 100 TPD formaldehyde in 2019. Now the company is proposing capacity expansion of Formaldehyde manufacturing from 100 TPD to 200 TPD.

Table No. 0.1: Project details

S. No.	Particulars	Details
1	Project	Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD
	Project Proponent	M/s. Chemwood Industries
	Location details	
2	Village / Town / Plot No.	Bhagwanpur, Kharwan Road
	Tehsil	Jagadhri
	District	Yamuna Nagar
	State	Haryana
3	Latitude and Longitude	Latitude- 30° 12' 25.1" N & Longitude- 77° 22' 27.9" E
4	Toposheet No.	H43L7 & H43L8
5	Total Project Area	0.68 ha
6	Project Cost	Existing: 486 Lakhs Proposed: 214 Lakhs Total: 700 Lakhs
7	Water requirement	200 KLD Source: Ground Water Permission Status: Application will be submitted to HWRA.
8	Manpower	Existing: 10 Proposed: 5 Total: 15 Source: Preference will be given to local public
9	Power requirement & Supply / Source	Existing: 250 KW Proposed: 250 KW Total: 500 KW Source: UHBVN (Uttar Haryana Bijli Vitran Nigam) DG Sets. Existing: 325 KVA Proposed: 650 KVA Total: 975 KVA

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWA ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES					DRAFT EIA REPORT
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Sr. No.	Environmental Components	Activities under Capital cost	Capital Cost in Lakhs	Activities under recurring cost	Recurring Cost in Lakhs
7	Occupational Health and Safety	drainage for Waste water and storm water, procurement, Inplant arrangement of safety of workers, safety gadgets, health checkup, medical assistance if any.	5.0	cleaning, cleaning at storage tanks etc Maintenance of safety equipments, replacement of Personal protective equipments with new one, training etc.	05
8	Community development under CER activities	Providing health infrastructure, education, sanitation facilities along with avenue plantation.	7.0	Regular maintenance, regular medical assistance through medical camps etc Regular maintenance of plantation	10
Total			42.90		5.5 Lakhs/yr

10.7 POST PROJECT ENVIRONMENTAL MONITORING PROTOCOL

This is being a Category "A" Project, after grant of environmental clearance by the Expert Appraisal Committee (Industry-III), MoEFCC, New Delhi; the copy of the clearance will be made available to the public along with its conditions so that people are aware of the obligation of project proponent. This shall also be given in the local newspaper for the knowledge of public and stakeholders. The environmental clearance granted will also be placed in official website of the state government in concerned department. Copies of the environmental clearance will also be submitted to municipal bodies and other relevant department.

The half yearly compliance reports shall be submitted in hard and soft copies to the concerned State level departments on 1st June and 1st December of each calendar year with respect to EC conditions. All such compliance reports submitted will be the public documents. Copies of the same shall be made available to any person on request. The HSPCB may incorporate Environmental clearance conditions into consent and make sure that it is being followed and implemented by the project proponent to fulfill the statutory obligation and EC condition. In case, there is any deviation, it shall be brought to the notice.



CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES

DRAFT EIA REPORT

financial requirement of environmental management shall be done and appropriate budgetary provisions shall be made. Along with other budgets, Budget for environmental management shall be prepared and revised regularly as per requirement. The budget shall include provisions for:

- Air Pollution Control
- Water & Waste water management
- Green Belt Development
- Rain Water harvesting
- Environmental Monitoring
- Occupational Health & Safety

The total capital investment on environmental control measures is envisaged to be about Rs 42.90 Lakhs out of a total project cost of Rs. 7.0 Crore. Details are given in Table-10.2. Cost towards social development work is 7.0 Lakhs. The implementation can be by inhouse and outsourcing as per requirement.

Table 10.3: EMP Cost Details

Sl. No.	Environmental Components	Activities under Capital cost	Capital Cost in Lakhs	Activities under recurring cost	Recurring Cost in Lakhs
1	Air Pollution Management	Wet scrubber, Acoustic enclosures with Boiler and DC sets	10.0	Maintenance of Scrubber, Stack, Regular water sprinkling etc	1.0
2	Water and Waste Water Management	Septic tank followed by Soak pits for domestic waste water <i>(Block. No. 1) not generated from the process</i>	2.5	Maintenance of Septic Tanks, Providing drinking water facility etc.	3.75
3	Fire Safety	Fire fighting equipments, Personal protective equipments	10.0	Maintenance of fire fighting equipments, replacement of Personal protective equipments with new ones, training etc	0.5
4	Greenbelt Development	Procurement of sapling providing Metal Guard, Manure, digging and plantation cost etc.	1.40	Maintenance of greenbelt, manpower, chemical expenditure	0.5
5	Environmental Monitoring	Environmental monitoring activities (Inhouse & Outsource)	4.0	Environmental audits, compliance audits, statutory compliances, third party monitoring expenses- calibration and maintenance of online systems	0.75
6	Rain water Harvesting	Providing Storm water collection system, providing separate	3.0	Maintenance of Storm water collection system, Drainage line	0.5

CAPACITY EXPANSION IN FORMALDEHYDE MANUFACTURING UNIT WITH THE EXISTING PRODUCTION CAPACITY 100 TPD TO 200 TPD AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI, DISTRICT YAMUNA NAGAR, HARYANA BY M/S. CHEMWOOD INDUSTRIES	DRAFT EIA REPORT
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S.No.	Designation	Responsibility
		Developing and promoting a vision of EHS. Conduct and submit annual Environmental Audit. Submitting environmental monitoring report to RSPCB. Reporting of non compliance /violations of environmental norms to the Board of Directors of the company.
4	Supervisor	Report to Manager EHS. Provide information, training and supervision. Assist in preparation of risk assessments. Reporting to EHS hazardous and incidents
5	Chemist	Report to Manager EHS. Taking responsibilities of all environmental issue as assigned by Manager EHS.
6	Worker (Safety)	Report to Supervisor for safety issues. Conducting regular safety drills and training programs. Conducting safety and health audits.
7	Worker (Environment)	Report to Supervisor for environmental issues. Conducting Environment audits.

10.5 GREENBELT DEVELOPMENT

Green belt will be developed over 37.62 % area of the total plant area out of the 0.68 ha of the plant area i.e., 0.2558 Ha of the total land. This greenbelt will serve as a buffer between the peripheries and the industry, there by controlling the air emissions and noise levels. PP has already done some plantation work which will be continue to cover 37.62 % of area.

A budget of approx. Rs. 1.40 Lakh has been kept for Green belt development.

Table 0.2: Calculation of Cost for Green Belt Development

S. No.	Components	Budget (in Rs)
1.	Total no. of plants i.e., 400*100	40,000
2.	Maintenance of Green Belt (Tree guards, Watering, manure etc.)	1,00,000
Total		140000.00

10.6 BUDGETS FOR ENVIRONMENTAL MANAGEMENT PLAN

On regular basis, Environment Management Cell shall inspect the necessity and availability of the materials, technologies, services and maintenance works. The Cell shall make appropriate budget for the purpose. Regular record review for any change in



Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.	VRT/AA/027-055						
Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	VOC ($\mu\text{g}/\text{m}^3$)	HC (ppm)
18.05.2020	76.3	41.2	25.4	12.6	0.81	ND	ND
19.05.2020	80.1	47.6	28.9	17.4	0.73	ND	ND
25.05.2020	77.9	44.2	26.3	18.9	0.80	ND	ND
26.05.2020	78.1	46.3	21.5	13.5	0.79	ND	ND

Note - HC-Hydrocarbon, ND-Not Detected

Limit as per NAAQS	Parameter	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)
		100	60	80	80	4

KO. S. L. SINGH
ANAND
16/5/20

Authorised Sign
16/5/20

Approved
16/5/20



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Laboratory: Plot No. 87A, Sector - 5, IMT Manesar, Gurgaon - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.	VEL/AA/CW103	Report No.:	VEL/AA/054-080
Name & Address of the Project.	M/s Clearwood Industries, Village Bha 2, Supta, Khawani Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana	Reporting Date:	06/06/2020
		Ref. No:	NH.
		Monitoring Period:	March 2020 to May 2020
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan EnviroLab Representative	Protocol Used:	IS-5182
Sample Description: Location:	Ambient Air Quality Monitoring Dahapur, Clearwood (A.)	Parameter Required:	As per FoR Letter

RESULT

Date	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	CO (mg/m ³)	VOC (µg/m ³)	EH (ppm)
02.03.2020	75.1	58.2	22.5	15.9	0.79	ND	ND
03.03.2020	77.9	50.7	21.7	14.2	0.86	ND	ND
08.03.2020	75.7	58.5	22.4	10.1	0.76	ND	ND
09.03.2020	69.8	50.9	24.8	13.4	0.73	ND	ND
16.03.2020	74.4	42.6	25.5	15.5	0.70	ND	ND
17.03.2020	70.6	45.5	23.1	14.3	0.59	ND	ND
23.03.2020	68.1	41.6	20.8	12.1	0.60	ND	ND
24.03.2020	77.7	44.7	24.4	13.0	0.81	ND	ND
31.03.2020	80.0	46.6	23.9	13.2	0.86	ND	ND
31.03.2020	75.3	48.1	20.6	11.5	0.71	ND	ND
06.04.2020	71.4	41.4	19.7	10.1	0.72	ND	ND
07.04.2020	75.7	44.7	21.2	12.7	0.70	ND	ND
13.04.2020	69.1	35.4	19.6	10.6	0.74	ND	ND
14.04.2020	75.2	41.1	23.8	14.2	0.79	ND	ND
26.04.2020	59.0	50.1	25.5	5.5	0.80	ND	ND
21.04.2020	81.3	52.2	24.7	16.3	0.81	ND	ND
27.04.2020	75.8	46.7	23.8	12.6	0.76	ND	ND
28.04.2020	72.1	42.7	20.1	11.2	0.75	ND	ND
04.05.2020	68.5	36.9	18.9	11.0	0.69	ND	ND
05.05.2020	70.3	41	24.4	13.5	0.74	ND	ND
14.05.2020	68.8	41.6	22.1	14.3	0.67	ND	ND

Signature of Analyst

Signature of Project Officer
(to be filled by)

Signature of Manager



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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
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Test Report

Report No.:

VEL/AA/054-080

Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	VOC ($\mu\text{g}/\text{m}^3$)	HC (ppm)
18.05.2020	73.6	38.5	21.3	14.2	0.75	ND	ND
19.05.2020	65.5	35.1	18.5	15.1	0.71	ND	ND
25.05.2020	74.7	41.9	23.8	14.2	0.8	ND	ND
26.05.2020	72.8	42.3	21.1	11.6	0.78	ND	ND

Note: HC-Hydrocarbon, ND-Not Detected

Limit as per NAAQS	Parameter	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)
--	--	100	60	80	80	4

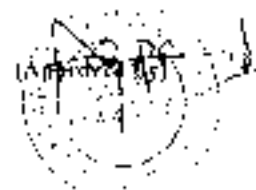
*National Ambient Air Quality Standards

KOMAL SINGH

ANALYST

18

Signature of Analyst



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Vardan EnviroLab

Laboratory Plot No. B2A, Sector - 5, IMT Manesar, Gurgaon - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	VEL/AA/2021/04	Report No.:	VEL/AA/081-107
Name & Address of the Project:	M's Chemwood Industries, Village Bhagwanpur, Khazwan Ruat, Tehsil Jagadhri, District Yamuna Nagar, Haryana	Reporting Date:	06/06/2020
		Ref. No.:	NIL
		Monitoring Period:	March 2020 to May 2020
		Equipment Used:	QDS & FPS with all accessories
		Protocol Used:	IS-5182
Sample Collected By:	Vardan EnviroLab Representative	Parameter Required:	As per TOR Letter
Sample Description:	Ambient Air Quality Monitoring		
Location:	Panchgati (A4)		

RESULT

Date	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	CO (mg/m ³)	VOC (µg/m ³)	HC (µg/m ³)
04.03.2020	78.5	41.1	30.1	14.7	0.71	ND	ND
05.03.2020	76.7	40.8	31.2	13.8	0.70	ND	ND
11.03.2020	71.1	36.7	25.5	10.4	0.75	ND	ND
12.03.2020	81.2	48.2	35.2	16.1	0.78	ND	ND
18.03.2020	84.7	51.8	26.3	15.3	0.81	ND	ND
19.03.2020	76.5	41.5	28.6	13.1	0.98	ND	ND
25.03.2020	78.3	42.0	26.5	15.8	0.84	ND	ND
26.03.2020	74.3	41.5	21.2	13.3	0.81	ND	ND
01.04.2020	76.4	40.7	25.7	14.8	0.84	ND	ND
02.04.2020	75.1	37.9	25.4	13.5	0.89	ND	ND
08.04.2020	70.9	33.0	22.5	14.1	0.85	ND	ND
09.04.2020	75.3	36.5	22.3	12.5	0.71	ND	ND
15.04.2020	77.9	41.1	21.4	13.4	0.74	ND	ND
16.04.2020	74.3	34.9	21.6	14.1	0.71	ND	ND
22.04.2020	70.7	35.2	23.1	7.3	0.60	ND	ND
23.04.2020	77.1	35.3	24.3	13.5	0.68	ND	ND
29.04.2020	73.6	41.3	22.5	12.4	0.61	ND	ND
30.04.2020	71.9	40.7	20.3	11.1	0.55	ND	ND
06.05.2020	68.1	37.7	19.7	13.2	0.66	ND	ND
07.05.2020	72.1	32.9	23.2	14.1	0.69	ND	ND

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Vardan EnviroLab

Laboratory: Plot No.. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:

VIL/NAQS-07

Date	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	CO (mg/m ³)	VOC (µg/m ³)	HC (ppm)
13.05.2020	73.4	37.5	22.3	13.8	0.71	ND	ND
14.05.2020	65.3	34.6	18.6	12.7	0.63	ND	ND
20.05.2020	74.9	41.5	19.5	14.5	0.61	ND	ND
21.05.2020	72.6	44.8	18.2	11.4	0.73	ND	ND
27.05.2020	75.3	48.3	19.4	17.8	0.82	ND	ND
29.05.2020	73.4	39.5	22.3	13.8	0.81	ND	ND

Note: HC-Hydrocarbons, ND-Not Detected

Limit as per NAQS	Parameter	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	CO (mg/m ³)
		100	60	80	80	4

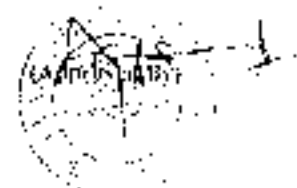
*National Ambient Air Quality Standards

KUNAL SINGH

ANALYST

ARJUN RANJAN

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Laboratory Plot No. 37A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.	VEJ/AA/CW/115	Report No.:	VEJ/AA/108-134
Name & Address of the Project:	M/s Chemswat Industries, Village Bhagwanpur, Kharwan Road, Tehsil-Jagohri, District - Yamana Nagar, Haryana.	Reporting Date:	06/06/2021
		Ref. No.:	NIL
		Monitoring Period:	March 2020 to May 2020
		Equipment Used:	RDS & PPS with all accessories
Sample Collected By:	Vardan EnviroLab Representative	Protocol Used:	IS-5182
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per ToR Letter
Location:	Khadra (AS)		

RESULT

Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	VOC ($\mu\text{g}/\text{m}^3$)	HC (ppm)
04.03.2020	78.7	55.8	21.7	13.5	0.84	ND	ND
05.03.2020	79.1	51.4	23.4	11.7	0.86	ND	ND
11.03.2020	75.6	52.0	24.1	10.5	0.83	ND	ND
12.03.2020	75.5	51.6	23.5	12.3	0.84	ND	ND
18.03.2020	76.5	53.5	25.2	12.2	0.77	ND	ND
19.03.2020	81.3	48.2	25.6	11.1	0.74	ND	ND
25.03.2020	78.4	46.7	27.5	12.8	0.98	ND	ND
26.03.2020	79.1	43.5	25.2	14.1	0.91	ND	ND
01.04.2020	77.5	47.5	24.6	13.7	0.93	ND	ND
02.04.2020	76.5	38.8	26.0	13.3	0.97	ND	ND
08.04.2020	70.7	41.2	23.3	14.7	0.95	ND	ND
09.04.2020	67.4	39.3	24.7	12.2	0.94	ND	ND
15.04.2020	80.5	37.4	22.4	14.4	0.89	ND	ND
16.04.2020	75.6	46.1	24.6	13.6	0.92	ND	ND
22.04.2020	82.2	44.8	26.2	15.2	0.67	ND	ND
23.04.2020	80.7	46.3	25.4	13.7	0.77	ND	ND
29.04.2020	76.5	32.5	21.0	10.6	0.73	ND	ND
30.04.2020	75.6	42.7	20.7	11.4	0.70	ND	ND
06.05.2020	78.1	37.4	19.6	13.9	0.74	ND	ND
07.05.2020	81.2	53.7	24.2	14.4	0.85	ND	ND

ANALYST: _____

Signature

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Mauesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.	VEL/AA/108-134						
Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	VOC ($\mu\text{g}/\text{m}^3$)	HC (ppm)
13.05.2020	74.6	38.5	23.2	14.5	0.87	ND	ND
14.05.2020	66.5	35.0	19.6	11.3	0.62	ND	ND
20.05.2020	75.3	42.6	22.2	14.4	0.57	ND	ND
21.05.2020	73.6	45.9	19.6	12.6	0.90	ND	ND
27.05.2020	80.5	52.5	20.4	13.2	0.78	ND	ND
28.05.2020	76.4	42.5	21.2	15.5	0.87	ND	ND

Note :- HC-Hydrocarbon, ND-Not Detected

Limit as per NAAQS	Parameter	PM ₁₀ ($\mu\text{g}/\text{m}^3$) 120	PM _{2.5} ($\mu\text{g}/\text{m}^3$) 60	NO ₂ ($\mu\text{g}/\text{m}^3$) 80	SO ₂ ($\mu\text{g}/\text{m}^3$) 80	CO ($\mu\text{g}/\text{m}^3$) 4

*National Ambient Air Quality Standards

ROHIT SINGH
Checked By

ARJUN KUMAR
Checked By

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Test Report

Sample No.	VEL/AAQ/W1/06	Report No.:	VEL/AAQ/CS-161
Name & Address of the Project:	M/s Chemwood Industries, Village Bhagwanpur, Kharwan Road, Tehsil-Jugadhri, District Yamuna Nagar, Haryana.	Reporting Date:	06-06-2020
		Ref. No.:	NH.
		Monitoring Period:	March 2020 to May 2020
Sample Collected By:	Vardan EnviroLab Representative	Equipment Used:	RDS & TPS with all accessories
Sample Description:	Ambient Air Quality Monitoring	Protocol Used:	IS-5182
Location:	Kharwan(Aff)	Parameter Required	As per TOR Letter

RESULT

Date	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	CO (mg/m ³)	VOC (µg/m ³)	HC (ppm)
04.03.2020	75.2	73.1	23.3	24.1	0.76	ND	ND
05.03.2020	71.3	12.9	23.9	13.4	0.75	ND	ND
11.03.2020	78.7	49.7	29.6	10.2	0.74	ND	ND
12.03.2020	80.0	50.1	24.2	11.0	0.80	ND	ND
15.03.2020	74.2	49.8	27.2	12.2	0.75	ND	ND
19.03.2020	72.7	47.2	20.1	17.5	0.71	ND	ND
25.03.2020	75.5	46.7	22.7	12.3	0.80	ND	ND
26.03.2020	78.9	42.4	21.0	12.2	0.77	ND	ND
01.04.2020	81.5	46.6	23.2	12.4	0.88	ND	ND
02.04.2020	86.4	51.3	21.5	24.2	0.71	ND	ND
08.04.2020	76.5	46.6	22.9	11.3	0.74	ND	ND
09.04.2020	78.8	47.2	23.1	12.9	0.76	ND	ND
15.04.2020	77.2	46.1	22.5	14.4	0.73	ND	ND
16.04.2020	71.3	45.2	25.2	13.2	0.71	ND	ND
22.04.2020	70.7	42.0	25.7	12.2	0.66	ND	ND
23.04.2020	66.0	47.7	21.9	12.4	0.75	ND	ND
29.04.2020	58.3	32.9	24.1	12.4	0.68	ND	ND
30.04.2020	76.2	43.4	20.2	17.4	0.73	ND	ND
06.05.2020	80.5	17.1	25.2	13.5	0.81	ND	ND
07.05.2020	82.0	48.7	26.6	16.2	0.82	ND	ND

Tested by

J.C. Bhatnagar

J.C. Bhatnagar

Approved by

J.C. Bhatnagar

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:		VEL/AA/125-161					
Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	VOC ($\mu\text{g}/\text{m}^3$)	HC (ppm)
13.05.2020	73.6	48.2	28.7	9.1	0.70	ND	ND
14.05.2020	77.1	41.6	25.6	10.3	0.73	ND	ND
20.05.2020	79.9	43.8	26.2	12.1	0.76	ND	ND
21.05.2020	80.7	45.4	29.5	15.0	0.83	ND	ND
27.05.2020	78.1	42.9	27.3	13.4	0.78	ND	ND
28.05.2020	76.0	41.0	27.1	14.7	0.72	ND	ND

Note: - HC-Hydrocarbons, ND Not Detected

Limit as per NAAQS	Parameter	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)
-	-	100	60	80	80	4

*National Ambient Air Quality Standards

ROHIT SINGH

Analyst

Checked by

Signature

Signature



Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	VEL/AA/162/07	Report No.:	VEL/AA/162-188
Name & Address of the Project:	M/S Chemwood Industries, Village Bangwanan, Kharnan Road, Vehal-Bagdore, District Yamuna Nagar, Haryana.	Reporting Date:	06/06/2020
		Ref. No.:	N/A
Sample Collected By:	Vardan EnviroLab Representative	Monitoring Period:	March 2020 to May 2020
Sample Description:	Ambient Air Quality Monitoring	Equipment Used:	RHS & FPS with all accessories
Location:	Bhukhari (A7)	Protocol Used:	IS-5182
		Parameter Required:	As per TOR Letter

RESULTS

Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO ($\mu\text{g}/\text{m}^3$)	VOC ($\mu\text{g}/\text{m}^3$)	HC (ppm)
06.03.2020	62.1	42.6	38.2	11.5	0.72	ND	ND
07.03.2020	61.0	45.5	39.4	12.1	0.74	ND	ND
13.03.2020	60.4	41.2	37.5	10.2	0.66	ND	ND
14.03.2020	70.2	43.1	38.2	12.5	0.67	ND	ND
20.03.2020	71.5	48.3	29.7	13.1	0.77	ND	ND
21.03.2020	76.2	49.5	24.5	14.5	0.71	ND	ND
27.03.2020	78.1	51.1	22.1	13.9	0.80	ND	ND
28.03.2020	73.5	48.2	21.6	12.8	0.70	ND	ND
03.04.2020	65.8	41.2	18.9	10.7	0.62	ND	ND
04.04.2020	71.2	45.1	21.5	12.1	0.67	ND	ND
10.04.2020	68.8	39.8	17.3	11.9	0.71	ND	ND
11.04.2020	73.4	40.6	22.3	15.4	0.72	ND	ND
17.04.2020	69.6	39.1	20.4	14.5	0.67	ND	ND
18.04.2020	70.2	42.1	25.4	13.2	0.59	ND	ND
24.04.2020	60.1	38.5	21.1	13.1	0.70	ND	ND
25.04.2020	62.2	36.6	20.6	12.5	0.67	ND	ND
01.05.2020	61.6	35.5	16.2	9.7	0.66	ND	ND
02.05.2020	67.4	37.2	17.2	12.2	0.62	ND	ND
08.05.2020	73.2	44.3	18.3	11.9	0.72	ND	ND
09.05.2020	69.5	41.2	17.5	11.4	0.71	ND	ND
18.05.2020	67.1	37.4	17.3	14.5	0.78	ND	ND
16.05.2020	63.2	40.7	18.6	12.1	0.76	ND	ND

COMPLIANT

Signature
Date

ANIL KAVAT
... (Signature)
Date

(Signature)
Date

Vardan EnviroLab

Laboratory: Plot No. B2A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.: VEI/AA/162-198

Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	VOC ($\mu\text{g}/\text{m}^3$)	HC (ppm)
22.05.2020	69.5	41.9	19.2	11.9	0.79	ND	ND
23.05.2020	71.2	42.1	20.7	12.1	0.78	ND	ND
29.05.2020	68.9	38.7	21.2	11.8	0.71	ND	ND
30.05.2020	67.5	37.5	17.6	13.5	0.80	ND	ND

Note: ND - Not Detected.

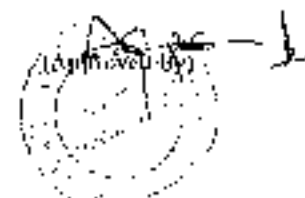
Limits as per NAAQS	Parameter	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)
		100	60	80	80	4

*National Ambient Air Quality Standard

KUNAL SINGH

ANALYST

ASHWIN KUMAR
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P.S.M.



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Test Report

Sample No.	VEL/AA/CW108	Report No.:	VEL/AA/189-215
Name & Address of the Project:	M/s. Chemwood Industries, Village Bhagwanpur, Kharewan Road, Tehsil Jagadhri, District Yamana Nagar, Haryana.	Reporting Date:	06/06/2020
		Ref. No.:	NIL
Sample Collected By:	Vardan EnviroLab Representative	Monitoring Period:	March 2020 to May 2020
Sample Description:	Ambient Air Quality Monitoring	Equipment Used:	RDS & FPS with all accessories
Location:	Baluchera (AB)	Protocol Used:	IS-5182
		Parameter Required:	As per TnR Letter

RESULT

Date	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	CO (µg/m ³)	VOC (µg/m ³)	TIC (ppm)
06.03.2020	75.2	41.6	25.5	16.8	1.72	ND	ND
07.03.2020	74.1	40.7	27.1	12.7	1.76	ND	ND
13.03.2020	82.1	46.1	26.3	11.9	0.84	ND	ND
14.03.2020	85.6	43.3	27.8	13.6	0.75	ND	ND
20.03.2020	75.6	40.2	25.1	16.2	0.79	ND	ND
21.03.2020	80.3	45.2	29.6	12.0	0.84	ND	ND
27.03.2020	87.7	57.5	28.6	15.1	0.90	ND	ND
28.03.2020	78.2	45.5	23.6	13.3	0.81	ND	ND
05.04.2020	75.6	40.7	21.6	11.2	0.86	ND	ND
04.04.2020	80.9	47.5	26.5	10.5	0.85	ND	ND
10.04.2020	84.2	48.5	28.2	12.1	0.81	ND	ND
11.04.2020	81.2	47.8	26.7	13.6	0.96	ND	ND
17.04.2020	75.8	46.0	20.5	11.2	0.74	ND	ND
18.04.2020	79.5	47.5	27.2	16.5	0.71	ND	ND
24.04.2020	80.3	47.8	22.9	11.6	0.84	ND	ND
25.04.2020	79.1	42.5	24.8	16.5	0.70	ND	ND
01.05.2020	85.1	51.0	26.1	18.2	0.84	ND	ND
02.05.2020	79.5	51.2	23.2	16.6	0.80	ND	ND
05.05.2020	80.5	50.8	24.5	17.4	0.81	ND	ND
09.05.2020	86.5	56.4	25.2	19.3	0.60	ND	ND
15.05.2020	75.2	41.6	24.6	18.4	0.91	ND	ND
16.05.2020	78.5	42.6	25.3	15.1	0.87	ND	ND

ANALYST: *[Signature]*

[Signature]

TEST REPORT
Checked By: *[Signature]*

[Signature]

APPROVED BY: *[Signature]*

[Signature]



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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.:	VPT/AA/184-215						
Date	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	VOC (ng/m^3)	TIC (ppm)
22.05.2020	71.5	44.2	21.6	13.5	0.73	ND	ND
23.05.2020	74.2	45.1	26.3	14.8	0.84	ND	ND
29.05.2020	68.2	42.5	18.3	13.4	0.78	ND	ND
30.05.2020	75.5	47.9	19.5	15.6	0.76	ND	ND

Note: 184-Hydrocarbon, N2-hal, Arsenic

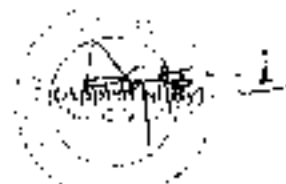
Limit as per NAAQS	Parameter	PM ₁₀ ($\mu\text{g}/\text{m}^3$) 100	PM _{2.5} ($\mu\text{g}/\text{m}^3$) 60	NO ₂ ($\mu\text{g}/\text{m}^3$) 80	SO ₂ ($\mu\text{g}/\text{m}^3$) 80	CO (mg/m^3) 4
	--					

*National Ambient Air Quality Standard

KOMAL SINGH

ANALYST

ANJALI KUMAR
Checked By



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Vardan EnviroLab

Laboratory: Plot No. B2A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VELAN/CWB01	Report No.:	VELAN/2020/01/001
Name & Address of the Project:	M/s Chemwood Industries, Village-Bhagwanpur, Kharwan Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Formal No.:	T.R.F/11
		Party Reference No.:	NIL
		Reporting Date:	06/06/2020
		Receipt Date:	01/06/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by:	: Vardan EnviroLab Representative
Sampling Location:	: Project Site (N1)
Instrument Used:	: Sound Level Meter-05
Instrument Calibration Status:	: Calibrated
Meteorological conditions during monitoring:	: Clear Sky
Date of Monitoring:	: 28/05/2020-29/05/2020
Time of Monitoring:	: 06:00 AM to 06:00 AM
Surrounding Activity:	: Human & Vehicular Activities
Scope of Monitoring:	: Regularity Requirement
Sampling & Analysis Protocol:	: IS-9889
Sampling Duration:	: 24 Hours
Standards Required:	: As per TOR Letter

S. No.	Parameters	Protocol	Test Result dB(A)		Unit
			Day Time	Night Time	
			(6:00 am to 10:00 pm)	(10:00 pm to 6:00 am)	
1	L_{max}	IS 9889	81.5	69.4	dB(A)
2	L_{min}	IS 9889	54.1	41.2	dB(A)
3	L_{eq}	IS 9889	72.3	61.9	dB(A)
4	CPQL Limits in dB(A) Leq (Industrial Area)	-	75.0	70.0	dB(A)

Signature of Client

Date

Signature of Analyst

Date

Signature of BSL

Date





Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VELAN/CW102	Report No.:	VELAN/2006/01/002
Client Name & Address of the Project:	M/s Chemwood Industries, Village-Bhagwanpur, Kharwan Road, Teasri-Jagadhri, District Yamuna Nagar, Haryana.	Form No.:	7.6 F.01
		Party Reference No.:	Nil.
		Reporting Date:	06/06/2020
		Receipt Date:	03/06/2020
Sample Description:	AMBIENT NOISE LEVEL MONITORING		

General Information:-

Sample collected by	Vardan EnviroLab Representative
Sampling Location	Bhagwanpur (N2)
Instrument Used	Sound Level Meter - 09
Instrument Calibration Status	Calibrated
Atmospherical condition during monitoring	Clear Sky
Date of Monitoring	28/05/2020-29/05/2020
Time of Monitoring	09:00 AM to 06:00 PM
Surrounding Activity	Human & Vehicle Activities
Scope of Monitoring	Regulatory Requirement
Sampling & Analysis Protocol	IS-5519
Sampling Duration	24 Hours
Parameter Required	As per TOR Letter

S. No.	Parameters	Standard	Test Result (dB(A))		Unit
			Day Time (06:00 am to 06:00 pm)	Night Time (06:00 pm to 06:00 am)	
1.	L_{eq}	IS 5519	55.9	50.5	dB(A)
2.	L_{min}	IS 5519	42.4	35.8	dB(A)
3.	L_{max}	IS 5519	50.3	41.0	dB(A)
4.	CPCB Limits (in dB(A)) Leq (Residential Area)		55.0	45.0	dB(A)

KOMAL SINGH

ANALYST
[Signature]

ARJUN KUMAR

Checked By
[Signature]

Approved By
[Signature]



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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VELAN/CWD03	Report No.	VELAN/2006/01/002
Name & Address of the Project:	M/s Chemwood Industries, Village-Bhagwanpur, Kharwin Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Formal No.	7.8 F-01
		Party Reference No.	NIL
		Reporting Date	06/06/2020
		Receipt Date	01/06/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:	
Sample Collected by:	Vardan EnviroLab Representative
Sampling Location:	Dadapur Chowani (N3)
Instrument Used:	Sound Level Meter- 67
Instrument Calibration Status:	Calibrated
Meteorological condition during monitoring:	Clear Sky
Date of Monitoring:	28/05/2020-29/05/2020
Time of Monitoring:	09:00 AM to 06:00 AM
Surrounding Activity:	Home & Vehicle Activities
Scope of Monitoring:	Regulatory Requirement
Sampling & Analysis Protocol:	IS-9989
Sampling Duration:	24 Hours
Parameter Required:	As per TOR Letter

S. No.	Parameters	Protocol	Test Result dB(A)		Unit
			Day Time	Night Time	
			10:00 am to 10:00 pm	11:00 pm to 06:00 am	
1	L_{max}	IS 9989	61.4	51.2	dB(A)
2	L_{eq}	IS 9989	44.5	35.1	dB(A)
3	L_{min}	IS 9989	51.4	40.7	dB(A)
4	CPCB Limits in dB(A) Leq (Residential Area)		55.0	45.0	dB(A)

Signature
Date: 06/06/2020

Signature
Date: 06/06/2020

Signature
Date: 06/06/2020



Vardan EnviroLab

Laboratory: Plot No. B2A, Sector - 5, IIT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/AN/CW004	Report No.:	VEL/AN/2020/01/004
Name & Address of the Project:	M/s Lhemwood Industries, Village-Bhujwangan, Kharwin Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana,	Formal No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	06/06/2020
		Receipt Date:	01/06/2020
Sample Description:	AMBIENT NOISE LEVEL MONITORING		

General Information:-

Sample collected by	Vardan EnviroLab Representative
Sampling Location	Fatehgarh (N4)
Instrument Used	Sound Level Meter- 03
Instrument Calibration Status	Calibrated
Metereological condition during monitoring	Clear Sky
Date of Monitoring	29-05/2020, 30-05/2020
Time of Monitoring	05:00 AM to 06:30AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: IS-9549
Sampling Duration	: 24 Hours
Procedure Required	: As per TOR Letter

S. No.	Parameters	Protocol	Test Result (dB(A))		Limit
			Day Time	Night Time	
			(06:00 hrs to 10:30 pm)	(10:30 pm to 06:00 am)	
1.	L_{eq}	IS 9959	64.1	45.6	dB(A)
2.	L_{min}	IS 9959	46.2	37.4	dB(A)
3.	L_{90}	IS 9959	52.6	42.4	dB(A)
4.	CPCB Limits (in dB(A)) Leq (Residential Area)		55.0	45.0	dB(A)

KOHLI SINGH

ANALYST
K.S.

Checked by
P.C.

LABORATORY
VARDAN ENVIROLAB



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Laboratory: Plot No. 87A, Sector - 5, IMI Manesar, Gurugram - 127051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/AN/CWL05	Report No.:	VEL/AN/2006/01/005
Name & Address of the Project:	M's Chemwood Industries, Village-Bhagwanpur, Kharwan Road, Tehsil-Jagadhra, District Yamuna Nagar, Haryana.	Form No.:	7.8 JG-01
		Party Reference No.:	ND.
		Reporting Date:	06/06/2020
		Recd. Date:	06/06/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by
Sampling Location
Instrument Used
Instrument Calibration
Meteorological condition during monitoring
Date of Monitoring
Time of Monitoring
Surrounding Activity
Scope of Monitoring
Sampling & Analysis Protocol
Sampling Duration
Parameters Required

Vardan EnviroLab Representative
: Khushi (NS)
Sound Level Meter-05
Calibrated
Clear Sky
29/05/2020-30/05/2020
06:00 AM to 06:00 AM
Traffic & Vehicular Activities
Regulatory Requirement
IS-5969
24 Hours
As per TOR Letter

S. No.	Parameters	Priority	Test Result dB(A)		Unit
			Day Time	Night Time	
			(06:00 am to 10:00 pm)	(10:00 pm to 06:00 am)	
1.	L_{max}	IS 9989	56.3	50.1	dB(A)
2.	L_{min}	IS 9989	42.4	34.2	dB(A)
3.	L_{eq}	IS 9989	48.7	40.7	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)		55.0	45.0	dB(A)

TESTED BY:
(Signature)
DATE:

TESTED BY:
(Signature)
DATE:

TESTED BY:
(Signature)
DATE:



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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
 ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/AN/CNV106	Report No.:	VEL/AN/2006-01/006
Name & Address of the Project:	M/s Chestwood Industries, Village-Bhagwanpur, Kharwan Road, Tebsil-Jagadhari, District Yamuna Nagar, Haryana.	Form No.:	7.8.1-01
		Party Reference No.:	NIL
		Reporting Date:	06.06.2020
		Receipt Date:	01.06.2020

Sample Description: **AMBIENT NOISE LEVEL MONITORING**

General Information:-

Sample collected by
 Sampling Location
 Instrument Used
 Instrument Calibration Status
 Meteorological condition during monitoring
 Date of Monitoring
 Time of Monitoring
 Surrounding Activity
 Scope of Monitoring
 Sampling & Analysis Protocol
 Sampling Duration
 Parameter Required

Vardan EnviroLab Representative
 Kharwan (N6)
 Sound Level Meter- 66
 Calibrated
 Clear Sky
 29.05/2020-10:05-2020
 15:00 AM to 06:00 AM
 Home & Vehicle Activities
 Regulatory Requirement
 IS-9899
 24 Hours
 As per TOR Letter

S. No.	Parameters	Protocol	Test Result dB(A)		Unit
			Day Time	Night Time	
			(06:00 am to 10:00 pm)	(10:00 pm to 06:00 am)	
1.	L_{max}	IS 9969	59.2	59.1	dB(A)
2.	L_{10}	IS 9969	49.2	35.4	dB(A)
3.	L_{50}	IS 9969	49.9	39.7	dB(A)
4.	CPCB Limits in dB(A) Day (Residential Area)		55.0	45.0	dB(A)

NOI/M/SM/SH

ANALYSIS

(06/06/20)

(01)

ANIL K. RAYAS

(Checked by)

(06/06/20)

(01)

Approved By

(06/06/20)

(01)



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Vardan EnviroLab

Laboratory: Plot No. B2A, Sector - 5, IIT Mandi, Gurugram - 122051 (Haryana)
 ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number	VELAN CWI-07	Report No.	VEL/AN/2006/2020/07
Client Name	M/S Cheatewood Industries,	Form No.	T.S.F.01
State & Address of Client	Village-Bhagwanpur,Chamara Road, Fehal-Jagadhri, District Yamunanagar, Haryana.	Case Reference No.	NIL
		Reporting Date	06/06/2020
		Receipt Date	01/06/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample received by
 Sampling Location
 Instrument Used
 Instrument Calibration Status
 Methodology Used (If any change in country)
 Date of Monitoring
 Time of Monitoring
 Surrounding Activities
 Scope of Monitoring
 Sampling & Analysis Interval
 Sampling Duration
 Parameter Requested

Methodology & Equipment:-

Method (IN)
 Sound Level Meter - C7
 Calibration
 Clear Sky
 29/05/2020-30/05/2020
 06:00 AM to 09:00 AM
 Haryana & West Bengal Act vides
 Regulatory Requirement
 25/2009
 24 Hours
 As per I-06/1/06

S.No.	Parameters	Protocol	Test Result (dB(A))		Unit
			Day Time (07:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
			1	L_{eq}	
2	L_{max}	15/98%	45.2	37.5	dB(A)
3	L_{min}	15/98%	52.1	41.5	dB(A)
4	CPCB Limits in dB(A) Leq (Residential Area)		55.0	45.0	dB(A)

Signature
 Date

Signature
 Checked By
 Date

Signature
 Date

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Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/AN/CW/08	Report No.:	VEL/AN/2006/01-005
Name & Address of the Project	M/s Chemwood Industries,	Format No.:	TS-F-01
	Village-Bhagwanpur, Khurwan Road,	Party Reference No.:	NIL
	Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Reporting Date:	06/06/2020
		Receipt Date:	01/06/2020

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by
Sampling Location
Instrument Used
Instrument Calibration Status
Meteorological condition during monitoring
Date of Monitoring
Time of Monitoring
Surrounding Activity
Scope of Monitoring
Sampling & Analysis Protocol
Sampling Duration
Parameter Required

Vardan EnviroLab Representative

Balraj Kumar (NRI)
Sound Level Meter- 08
Cal brace
Clear Sky
: 29/05/2020, 30/05/2020
: 06:00 AM to 10:00 AM
: Human & Vehicular Activities
: Regulatory Requirement
: IS 5989
: 24 Hours
As per TOR Letter

S. No.	Parameters	Standard	Test Result (dB (A))		Unit
			Day Time	Night Time	
			10:00 am to 10:00 pm	10:00 pm to 06:00 am	
1.	L_{eq}	15 9989	64.2	56.7	dB(A)
2.	L_{max}	5 9989	45.2	38.6	dB(A)
3.	L_{eq}	15 9989	51.9	42.2	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)		55.0	45.0	dB(A)

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Laboratory Plot No. 57A, Sector - 5, IIT Mandi, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	YELAV/CL/001	Report No.:	VEL/2021/01/001
Name & Address of the Project:	M/s Chemwood Industries, Village-Bhagwanpur, Kharansa Road, Fehal-Jagadhri, District Yamuna Nagar, Haryana.	Form No.:	7.01-01
		Party Reference No.:	NIL
		Reporting Date:	06/06/2020
		Period of Analysis:	01/06/2020 - 06/06/2020
Sample Description:	Ground Water Sample	Receipt Date:	01/06/2020
Sample Location:	Project site	Sampling Date:	18/05/2020
Sample Collected by:	Yashraj Khandelwal Representative	Sampling Quantity:	5.0 Ltr + 250ml
Sampling and Analysis Protocol:	IS 3025 & APHA, 23rd Edition 2017	Sampling Type:	Grab
		Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:11850 - 2012	
					Requirements (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
1	pH at 20°C	APHA 4500-OR H Titrimetric Method	7.56	-	6.5 to 8.5	No Restriction
2	Total Solids	APHA 2540 B, Visual Comparison Method	*BOD (**DL) 1.0 Hazen	mg/L	5	10
3	Total Solids	APHA 2540 B, Nephelometric Method	*BOD (**DL) 1.0 NTU	NTU	1	5
4	Oil and Grease	APHA 2150 B, Spectrophotometric Method	Agreeable	-	Agreeable	Agreeable
5	Oil and Grease	APHA 2160 B, Gravimetric Method	Agreeable	-	Agreeable	Agreeable
6	Calcium Chloride (CaCl ₂)	APHA 1840 C, EDTA Titrimetric Method	754.0	mg/l	200	500
7	Chloride (Cl ⁻)	APHA 1840 C, EDTA Titrimetric Method	90.89	mg/l	25	200
8	Mercury (Total Hg)	APHA 1631 B, Oxidation Method	215.50	µg/l	100	100
9	Fluoride (F ⁻)	APHA 4500-F B, Spectrometric Method	10.05	mg/l	10	10.00
10	Cyanide (CN ⁻)	APHA 4500-CN D	*BOD (**DL) 0.02 mg/l	mg/l	0.05	No Restriction
11	Magnesium (Mg)	APHA 3100 B, Calorimetric Method	23.9	mg/l	30	30
12	Total Dissolved Solids	APHA 2540 C, Gravimetric Method	412.00	mg/l	500	2000
13	Sulphate (SO ₄ ²⁻)	APHA 4500-S, Turbidity Method	43.65	mg/l	50	250
14	Zinc (Zn ²⁺)	APHA 4500-Z D, SPADNS Method	0.43	mg/l	1.0	1.0
15	Nitrate (NO ₃ ⁻)	4500-NO ₃ -A, Cadmium (Cd) Method	0.96	mg/l	45	No Restriction
16	Nitrite (NO ₂ ⁻)	APHA 4500-NO ₂ -A, Diazotization Method	0.52	mg/l	1.00	No Restriction
17	Ammonium (NH ₄ ⁺)	APHA 4500-NH ₄ -A, Nesslerization Method	*BOD (**DL) 0.02 mg/l	mg/l	0.05	0.5
18	Ammonia	APHA 4500-NH ₄ -C, Cadmium Method	*BOD (**DL) 0.01 mg/l	mg/l	0.5	2.00
19	Chlorophyll a (C _{oc2})	APHA 8171 B, Direct Assayless Fluorometric Method	*BOD (**DL) 0.007 mg/l	mg/l	0.05	No Restriction

ANVITA NAYAK
SR. ANALYST

YASHRAJ Khandelwal
Representative

Signature
Date: 06/06/2020

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No. VLL/WC/WP/2021		Report No. VLL/WC/21/001/2021				
S.No.	Parameter	Test Method	Result	Unit	Limit of IS:10500-2012 Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
20.	Cumecity as % of TSS ₁₀	APHA, 2510 B, Gravimetric Method	534	g/kg	-	-
21.	Fluoride (Free) (mg/l)	APHA, 3520 C Calcium Fluoride Method	0.01 (MDL 0.02 mg/l)	mg/l	0.50	0.50
22.	Mercuric Ion	APHA, 3111 B (ASAP) Method	0.00 (MDL 0.05 mg/l)	mg/l	0.1	No Relaxation
23.	Ammonia Nitrogen as N	APHA, 3500 C Nessler Method	0.00 (MDL 0.05 mg/l)	mg/l	0.5	0.5
24.	Zinc as Zn	APHA, 3111 B Direct Air, Acetylene Flame Method	0.0	mg/l	3	15
25.	Cadmium as Cd	APHA, 3111 B, Direct Air, Acetylene Flame Method	0.00	mg/l	0.05	1.5
26.	Manganese as Mn	APHA, 3111 B, Direct Air, Acetylene Flame Method	0.00 (MDL 0.01 mg/l)	mg/l	0.1	0.5
27.	Chromium as Cr	APHA, 3111 B Direct Air, Acetylene Flame Method	0.00 (MDL 0.002 mg/l)	mg/l	0.05	No Relaxation
28.	Lead as Pb	APHA, 3111 B, Direct Air, Acetylene Flame Method	0.00 (MDL 0.002 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA, 3111 B, Manual Hydride Generation	0.00 (MDL 0.001 mg/l)	mg/l	0.0	No Relaxation
30.	Arsenic as As	APHA, 3111 B, Hydride Generation	0.00 (MDL 0.002 mg/l)	mg/l	0.01	0.05
31.	Mercury as Hg	APHA, 3111 B, Cold Vapor ASAS Method	0.00 (MDL 0.0005 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS:1622 (S&T) (3-2015)	02	MPS/100ml	Not to be detected in 100 ml of sample	Not to be detected in 100 ml of sample
33.	Total Solids	IS:1622 (Part 3) (2015)	About	g/l (N/100ml)	Not to exceed 500 mg/l in 100 ml of sample	Not to exceed 500 mg/l in 100 ml of sample

Note - This report is valid only for the purpose mentioned above.

*MS - Method Detection Limit, ** MDL - Method Detection Limit

*Amendments to IS:1622 (Parts 1, 2, 3) (Amendment 1) & Amendment 2 to IS:1622 (Part 3) (Amendment 2) (2015) issued by Bureau of Indian Standards (BIS) are incorporated.

MAMTA NAYAK
Sr. Analyst

ARUN KANWAR

Checked by: [Signature]

[Signature]

Vardan EnviroLab

Laboratory Plot No. 82A, Sector - 5, IMT Manesar, Gurgaon - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

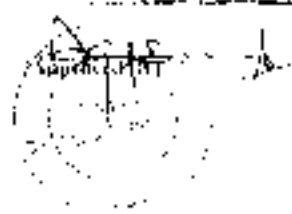
Test Report

Sample Number:	VHL/WRW/1307	Report No.:	VHL/WR/2026-01307
Name & Address of the Project:	M/s Unimewood Industries, Village-Bhagwanpur, Kharwan Road, Tehsil-Jagadhri, District Yamouna Nagar, Haryana.	Form No.:	VR-01
Sample Description:	Ground Water Sample	Entry Reference No.:	NIL
Sample Location:	Bhagwanpur	Reporting Date:	05/06/2024
Sample Collected by:	Vinodkumar Singh Representative	Period of Analysis:	05/06/2024-06/06/2024
Sampling and Analysis Protocol:	IS 3025 & APHA, 23rd Edition 2017	Receipt Date:	05/06/2024
		Sampling Date:	28/05/2024
		Sampling Quantity:	5.0 Litre - 25lit.
		Sampling Type:	Grab
		Preservation:	Refrigerator

S. No	Parameter	Test Method	Result	Unit	Limits of IS:11500-2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1	pH at 25°C	APHA 2450 B Titrimetric Method	7.8	--	6.5 to 8.5	Not Specified
2	Total Hardness	APHA 2120 B Visual Comparison Method	NRDL (1000 mg/l as CaCO ₃)	mg/l	5	15
3	Calcium Hardness	APHA 2120 B, EDT Titrimetric Method	NRDL (1000 mg/l as CaCO ₃)	mg/l	5	15
4	Magnesium Hardness	APHA 2120 B, EDT Titrimetric Method	Agreeable	--	Agreeable	Agreeable
5	Total Dissolved Solids	APHA 2540 B, Gravimetric Method	Agreeable	--	Agreeable	Agreeable
6	Total Suspended Solids	APHA 2540 B, Gravimetric Method	218.0	mg/l	20	60
7	Chloride as Cl ⁻	APHA 2500 B, Mercurimetric Method	91.48	mg/l	25	250
8	Sulfate as SO ₄ ²⁻	APHA 2500 C, Turbidity Method	214.85	mg/l	250	500
9	Chloride as Cl ⁻	APHA 4500-Cl ₂ Argentometric Method	67.96	mg/l	250	1000
10	Free Ammonia Nitrogen	APHA 4500-NH ₃	<EDL (0.02 mg/l)	mg/l	0.05	Not Specified
11	Nitrate as Nitrate Nitrogen	APHA 4500-NO ₃ -N Cadmium Method	21.95	mg/l	10	100
12	Iron Dissolved as Fe ²⁺	APHA 4500-Fe ²⁺ Inductance Method	102.00	mg/l	5.0	2000
13	Nitrite as Nitrite Nitrogen	APHA 4500-NO ₂ -N SPADNS Method	0.59	mg/l	1.0	5
14	Nitrate as Nitrate Nitrogen	USEPA 4500-NO ₃ -N Cadmium Method	2.02	mg/l	45	Not Specified
15	Iron Total	APHA 4500-Fe ²⁺ Inductance Method	0.58	mg/l	1.0	Not Specified
16	Aluminum as Al	APHA 4500-Al Inductance Method	<EDL (0.05 mg/l)	mg/l	0.05	0.2
17	Copper	APHA 4500-C _u Cathodic Method	<EDL (0.01 mg/l)	mg/l	1.5	2.0
18	Chromium as Cr ⁶⁺	APHA 4500-Cr ₆₊ Diphenylpicrylhydrazyl Method	<EDL (0.02 mg/l)	mg/l	0.05	Not Specified

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.: VEL/W/1/W1002		Report No.: VEL/W/2006-01-002				
S. No.	Parameter	Test-Method	Result	Unit	Limit of ISO 10500-2012 Residential (Acceptable) Limit	Excess with limit in the Absence of Adequate Source
01	Conductivity (25°C)	APHA 2510H, Conductivity Meter Method	618	µS/cm
02	Formaldehyde (ppm)	APHA 8000-C Chloroacetaldehyde Method (1000 µg/L = 0.10 ppm)	*NDL**DL 0.0004 mg/L	mg/l	0.01	0.005
03	Ammonia (mg/l)	APHA 4500-NH ₄ MNH ₂ Method	*NDL**DL 0.05 mg/L	mg/l	1.0	No Relaxation
04	Ammonia Nitrogen (MEQ/L)	APHA 4500-NH ₄ MNH ₂ Method	*NDL**DL 0.05 mg/L	mg/l	0.2	1.0
05	Zinc (mg/L)	APHA 3111-B Direct Air, Acetylene Flame Method	1.96	mg/l	2	2
06	Copper (mg/L)	APHA 3111-B Direct Air, Acetylene Flame Method	0.56	mg/l	0.25	0.5
07	Manganese (mg/L)	APHA 3111-B Direct Air, Acetylene Flame Method	*NDL**DL 0.05 mg/L	mg/l	0.1	0.5
08	Calcium (mg/L)	APHA 3121-B Direct Air, Acetylene Flame Method	*NDL**DL 0.02 mg/L	mg/l	0.001	No Relaxation
09	Lead (mg/L)	APHA 3111-B Direct Air, Acetylene Flame Method	*NDL**DL 0.02 mg/L	mg/l	0.01	No Relaxation
10	Selenium (mg/L)	APHA 3114-B Method (Hydrogen Peroxide)	*NDL**DL 0.001 mg/L	mg/l	0.01	No Relaxation
11	Arsenic (mg/L)	APHA 3113-B Micro Hydrographic	*NDL**DL 0.02 mg/L	mg/l	0.01	No Relaxation
12	Mercury (mg/L)	APHA 3122-B Cold Vapor AAS Method	*NDL**DL 0.005 mg/L	mg/l	0.01	No Relaxation
13	Total Chloride	IS 1637 (1981), Part-2, 15	02	MEQ/100ml	Should be determined only if it is not done	
14	Total Hardness	IS 1027 (1981), Part-2, 15	Absent	MEQ/100ml	Should be determined only if it is not done	

Note: This report complies with IS 15554 & IS 15555:2018

*NDL, Below Detection Limit; **DL, Detection Limit

Announcement No. 1 dated 20/04/2016 (1) : A. Approved and Authorized No. 7 dated 20/04/2016 (1) of Haryana Government (Environmental Protection, Govt. of Haryana)

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MANAGER

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Vardan EnviroLab

Laboratory Plot No. 87A, Sector - 5, IMT Manesar Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VLL-W-CW102	Report No.:	VLL-W-200601-003
Name & Address of the Project:	M/s Cloverwood Industries, Village-Bhagwangan, Kharwa Road, Tehsil-Jugadhri, District-Yamuna Nagar, Haryana.	Contract No.:	781001
		Party Reference No.:	NIL
		Reporting Date:	06/08/2020
		Period of Analysis:	01/06/2020 - 06/06/2020
		Receipt Date:	01/06/2020
Sample Description:	Ground Water Sample	Sampling Date:	28/05/2020
Sample Location:	Dadapur Charani	Sampling Quantity:	5.0 Ltr + 250ml
Sample Collected by:	Vardan EnviroLab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS 3025 & APHA, 21st Edition 2007	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012	
					Requirement (Case of only Limit)	Permissible Limit in the Absence of Alternate Sample
1	pH (25°C)	APHA 4500-01 pH Titrimetric Method	7.74	-	6.5 to 8.5	No Requirement
2	Cobalt	APHA 2120-B, Visual Comparison Method	*NDL (**DL: 10 Hazard)	Filter	5	15
3	Turbidity	APHA 2130-B, Nephelometric Method	*NDL (**DL: 10 NTU)	N/A	1	5
4	Odour	APHA 2150-B, Characteristic Odour Method	Agreeable	-	Agreeable	Agreeable
5	Taste	APHA 2160-B, Descriptive Test Method	Agreeable	-	Agreeable	Agreeable
6	Total Hardness as CaCO ₃	APHA 2150-C, EDTA Titrimetric Method	162.00	mg/l	300	600
7	Calcium Ca	APHA 2150-C, EDTA Titrimetric Method	55.74	mg/l	75	225
8	Magnesium Mg	APHA 2150-B, Titrimetric Method	205.52	mg/l	200	600
9	Chloride Cl ⁻	APHA 4500-Cl ₂ Argentometric Method	65.30	mg/l	250	1000
10	Sulfate SO ₄ ²⁻	APHA 4500-SO ₄	*NDL (**DL: 0.02 mg/l)	mg/l	100	No Requirement
11	Manganese Mn	APHA 3100-Mn, Inductance Method	30.15	mg/l	10	100
12	Total Dissolved Solids	APHA 2540-C, Gravimetric Method	145.00	mg/l	500	2000
13	Sulphate SO ₄	APHA 4500-SO ₄ , Turbidimetric Method	51.72	mg/l	200	400
14	Chloride Cl ⁻	APHA 4500-Cl ₂ , Spectrophotometric Method	67.4	mg/l	10	10
15	Nitrate as NO ₃	IS 3025 (Part 1), Cadimetry Method	10.25	mg/l	15	No Requirement
16	Nitrite as NO ₂	APHA 4500-NO ₂ , Dinitrophenylamine Method	0.46	mg/l	100	No Requirement
17	Ammonia as N	APHA 4500-NH ₃ , Gas Diffusion-Nesslerization Method	*NDL (**DL: 0.02 mg/l)	mg/l	500	0.5
18	Iron	APHA 4500-Fe, Colorimetric Method	*NDL (**DL: 0.10 mg/l)	mg/l	0.5	0.30
19	Cadmium as Cd	APHA 3111-B, Electrodeless Cold Vaporization Atomic Fluorescence Method	*NDL (**DL: 0.002 mg/l)	mg/l	0.05	No Requirement

Total By:

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SR. ANALYST

Checked By:

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Approved By:

SR. ANALYST

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No: VUL-WR/2021/003			Report No: VUL/2021/003			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500-2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
26	Conductivity (µS/cm)	APHA 8430 OR Conductivity Meter Method	784	µS/cm		
27	Total Hardness	APHA 8430 OR Titrimetric Estimation Method	310 (**DL 600 mg/l)	mg/l	1000	500
28		Calcium (Ca)	Case Col IS:5021 Part - 9a	*BDL (**DL 0.05 mg/l)	mg/l	10
23	Residual Chlorine as HClO ₂	APHA 8460 or MBAS Method	*BDL (**DL 0.05 mg/l)	mg/l	0.5	1.0
24	Zinc (Zn)	APHA 3113 B, Direct Air Acetylene Flame Method	1.48	µg/l	5	15
25	Copper (Cu)	APHA 3111 A, Direct Air Acetylene Flame Method	0.97	µg/l	5.0	15
26	Manganese (Mn)	APHA 3111 C, Direct Air Acetylene Flame Method	*BDL (**DL 0.11 µg/l)	µg/l	0.1	0.5
27	Cadmium (Cd)	APHA 3111 B, Direct Air Acetylene Flame Method	*BDL (**DL 0.02 µg/l)	µg/l	0.015	Not Relocated
28	Lead (Pb)	APHA 3111 B, Direct Air Acetylene Flame Method	*BDL (**DL 0.02 µg/l)	µg/l	0.01	Not Relocated
29	Selenium (Se)	APHA 3114 A, Manual Hydride Generation	*BDL (**DL 0.01 µg/l)	µg/l	0.01	Not Relocated
30	Arsenic (As)	APHA 3114 B, Manual Hydride Generation	*BDL (**DL 0.002 µg/l)	µg/l	0.01	Not Relocated
31	Mercury (Hg)	APHA 3120 Cold Vaporization Method	*BDL (**DL 0.005 µg/l)	µg/l	0.01	Not Relocated
32	Total Chlorine	IS:1622, 081, RA-210	ND	MG/LITRE	Not Relocated due to very low concentration	
33	Chloride	IS:1622, 081, RA-210	ND	MG/LITRE	Not Relocated due to very low concentration	

Note: This report is valid as per IS:14001, RA-210.

*BDL: Below Detection Limit (DL) (µg/l)

1. Analytical method used for the test is as per IS:14001, RA-210, Part 2010 and IS:1622, 081, RA-210, Part 2010.

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IIT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VFL/WRM/0001	Report No.:	VFL/WR/200659/001
Name & Address of the Project:	M/s Chemsworld Industries, Village-Bhogwanpur, Khirwan Road, Tehsil-Jagadhri, District Yamunanagar, Haryana.	Sample No.:	78 P-01
		Party Reference No.:	N/A
		Reporting Date:	06/06/2020
		Period of Analysis:	01/06/2020 - 06/06/2020
Sample Description:	Ground Water - Sample	Receipt Date:	06/06/2020
Sample Location:	Location:	Sampling Date:	28/05/2020
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Quantity:	5.0 Litr - 250ml.
Sampling and Analysis Protocol:	IS 3025 & APHA, 15th Edition 2017	Sampling Type:	Grab
		Preservation:	Refrigerator

S.No.	Parameter	Test Method	Result	Unit	Limits of IS, HSEB - 2012	
					Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
1	pH (at 25°C)	APHA 2190-11 Titrimetric Method	7.42	-	6.5 to 8.5	6.5 to 8.5
2	Colour	APHA 2120-B Visual Comparison Method	*BDL (**DL 1.0 Pt-Co)	Hexa.	5	15
3	Turbidity	APHA 2130-B Nephelometric Method	*BDL (**DL 1.0 NTU)	NTU	5	5
4	Fluoride	APHA 2150-E Electrode Method	Agreeable	-	Agreeable	Agreeable
5	Lead	APHA 2160-B Titrimetric Test Method	Agreeable	-	Agreeable	Agreeable
6	Total Hardness (CaCO ₃)	APHA 2190-C Titrimetric Method	231.98	mg/l	200	500
7	Chloride (Cl ⁻)	APHA 2500-5.1 Titrimetric Method	35.95	mg/l	25	250
8	Ammonia Nitrogen (NH ₄ ⁺)	APHA 2520-B Colorimetric Method	20.00	mg/l	2.0	2.0
9	Chloride (Cl ⁻)	APHA 2500-5.1 Argentometric Method	66.02	mg/l	250	1000
10	Cyanide as CN ⁻	APHA 3500-5.10	ND (**DL 0.01 mg/l)	mg/l	0.05	No Reliance
11	Magnesium as Mg	APHA 3500-5.10 Colorimetric Method	0.47	mg/l	30	100
12	Calcium as Ca	APHA 3500-5.10 Colorimetric Method	158.70	mg/l	500	1000
13	Sulfate as SO ₄	APHA 3500-5.10 Barium Sulfate Method	55.08	mg/l	250	500
14	Total Hardness	APHA 2190-C Titrimetric Method	0.58	mg/l	1.0	1.5
15	Nitrate as NO ₃	IS 3025 (2017) Chromatic Method	2.63	mg/l	45	No Reliance
16	Nitrite as NO ₂	APHA 3500-0.6.1.1 Diazotization Method	0.50	mg/l	1.00	No Reliance
17	Ammonium as NH ₄ ⁺	APHA 2520-B Inductively Coupled Plasma Atomic Fluorescence Method	*BDL (**DL 0.02 mg/l)	mg/l	0.05	0.1
18	Boric Acid	APHA 3500-5.10 Gravimetric Method	*BDL (**DL 0.01 mg/l)	mg/l	0.5	1.0
19	Fluoride as F ⁻	APHA 2150-E Electrode Method	*BDL (**DL 0.002 mg/l)	mg/l	0.05	No Reliance

Tested By:

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SR. ANALYST

Checked By:

Dr. Anil Kumar
Sr. Analyst

Checked By:

Dr. Anil Kumar
Sr. Analyst

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No. VELDWCW1004		Report No. VELDWCW-2022-01004				
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500-2012	
					Requirement (Acceptable) Limit	Permissible Limit in the Absence of Alternate Source
20.	Temperature at 25°C	APHA, 2510 C Conductivity Meter Method	735	µS/cm	-	-
21.	Free Chlorine Residual	APHA, 4500 Cl ₂ Free Chlorine Residual Method	*BDL (**DL) 0.000 mg/l	mg/l	0.50	0.50
22.	Microbial Coli	Clause 5.1.1.3 IS: 3025 Part 1 (2015)	*BDL (**DL) 0.00 CFU/100 ml	mg/l	1.0	5.0
23.	Waterborne Coliforms as MPN	APHA, 5540 C MBAS Method	*BDL (**DL) 0.05 mg/l	mg/l	0.1	1.0
24.	Zinc as Zn	APHA, 3111 D Direct Am. Acetylate Flame Method	1.74	mg/l	5	15
25.	Copper as Cu	APHA, 3111 B Direct Am. Acetylate Flame Method	0.08	mg/l	0.05	0.1
26.	Manganese as Mn	APHA, 3111 B Direct Am. Acetylate Flame Method	*BDL (**DL) 0.01 mg/l	mg/l	0.1	0.5
27.	Cadmium as Cd	APHA, 3111 D Direct Am. Acetylate Flame Method	*BDL (**DL) 0.002 mg/l	mg/l	0.005	No Restriction
28.	Lead as Pb	APHA, 3111 D Direct Am. Acetylate Flame Method	*BDL (**DL) 0.002 mg/l	mg/l	0.05	No Restriction
29.	Selenium as Se	APHA, 3111 H Vanad. Hydride Generation	*BDL (**DL) 0.001 mg/l	mg/l	0.01	No Restriction
30.	Arsenic as As	APHA, 3111 D Methyl Hydride Generation	*BDL (**DL) 0.002 mg/l	mg/l	0.01	No Restriction
31.	Mercury as Hg	APHA, 8120 B Cold Vapor AAS Method	*BDL (**DL) 0.0006 mg/l	mg/l	0.01	No Restriction
32.	Total Chlorine	IS: 1487 (2015) IS: 3025	<2	mg/l	5.0	5.0
33.	Total Chlor	IS: 1487 (2015) IS: 3025	Absent	mg/l	5.0	5.0

Note: 1. Analysis performed per IS: 3025 (2015) IS: 3025

*BDL Below Detection Limit, **DL - Detection Limit

2. As per IS: 3025 (2015) IS: 3025, the maximum permissible limit for Chlorine is 5.0 mg/l in drinking water. The method of Total Chlorine is as per IS: 1487 (2015) IS: 3025.

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IIT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VIJWA/2005	Report No.:	VIJWA/2021/001-005
Name & Address of the Project:	M/S Chetwood Industries, Village-Bhagwanpur, Kharwan Road, Fateh-Jagadhri, District - Yamuna Nagar, Haryana.	Formal No.:	7d11-01
		Party Reference No.:	NIL
		Reporting Date:	05-06-2020
		Period of Analysis:	01-06-2020-06-06-2020
Sample Description:	Ground Water - Sample	Receipt Date:	01-06-2020
Sample Location:	Khadri	Sampling Date:	28/05/2020
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Quantity:	5.0 Ltr - 250ml.
Sampling and Analysis Protocol:	IS 3025 & APHA, 23rd Edition, 2017	Sampling Type:	Grab
		Preservation:	Refrigerator

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500-2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	APHA, 2500-C, Titrimetric Method	7.05	--	6.5 to 8.5	No Regulation
2.	Colour	APHA, 2100-B, Visual Comparison Method	*BOD (20°C) 1.0 Hazrat	Hazrat	5	15
3.	Turbidity	APHA, 2130-B, Nephelometric Method	*BOD (20°C) 1.0 Hazrat	NTU	5	5
4.	Alkalinity	APHA, 2130-B, Titrimetric Method	Acceptable	--	Acceptable	Acceptable
5.	Total Hardness	APHA, 2100-B, Titrimetric Method	Acceptable	--	Acceptable	Acceptable
6.	Total Dissolved Solids (TDS)	APHA, 2540-C, Gravimetric Method	294.26	mg/l	500	500
7.	Calcium (Ca)	APHA, 3100-C, EDTA Titrimetric Method	58.96	mg/l	75	200
8.	Magnesium (Mg)	APHA, 3100-B, Titrimetric Method	220.81	mg/l	100	100
9.	Chloride (Cl)	APHA, 4500-Cl ⁻ , Mercuric Nitrate Method	64.87	mg/l	250	1000
10.	Cyanide (CN)	APHA, 4500-CN, B	*BOD (20°C) 1.0 Hazrat	mg/l	0.05	No Regulation
11.	Free Residual Chlorine	APHA, 4500-Cl ⁻ , Dichloro-Dimethyl Methane Method	35.76	mg/l	50	100
12.	Total Dissolved Solids (TDS)	APHA, 2540-C, Gravimetric Method	298.00	mg/l	500	500
13.	Sulphate (SO ₄)	APHA, 4500-SO ₄ ²⁻ , Turbidity Method	22.23	mg/l	200	400
14.	Fluoride (F)	APHA, 3500-F, D-SPADNS Method	0.51	mg/l	1.0	1.5
15.	Nitrate (NO ₃)	IS 3025 (Part-41) Colorimetric Method	15.27	mg/l	45	No Regulation
16.	Nitrite (NO ₂)	APHA, 4500-NO ₂ ⁻ , D-APD Spectrophotometric Method	0.29	mg/l	1.00	No Regulation
17.	Ammonia Nitrogen (NH ₄ -N)	APHA, 4500-NH ₄ ⁺ , Nesslerization Method	*BOD (20°C) 1.0 Hazrat	mg/l	1.00	5.0
18.	Iron	APHA, 4500-Fe ³⁺ , Thiocyanate Method	*BOD (20°C) 1.0 Hazrat	mg/l	0.3	1.00
19.	Chloride (Cl)	APHA, 4500-Cl ⁻ , Mercuric Nitrate Method	*BOD (20°C) 1.0 Hazrat	mg/l	250	No Regulation

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Vardan EnviroLab

Laboratory Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.: VFL/WC/WL-025		Report No.: VFL/WC/WL-025				
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
21	Total Solidity (at 27°C)	APHA 2510 B, Conductivity Meter Method	750	µS/cm		
21	Phenolic Compounds	APHA 5530-C Fluorimetric Analysis Method	0.117111 0.003 mg/l	mg/l	0.01	0.02
22	Mineral Oil	Clause 6 of IS 1525 (Part 3)	0.010111 0.001 mg/l	mg/l	0.5	No Relaxation
23	Surface Detergents (SMBAS)	APHA 5546-C MBAS Method	0.010111 0.001 mg/l	mg/l	0.2	0.5
24	Zinc (as Zn)	APHA 3111 B, Direct Air, Ascorbic Acid Method	1.12	mg/l	5	
25	Copper (as Cu)	APHA 3111 B, Direct Air, Ascorbic Acid Method	0.17	mg/l	0.05	0.5
26	Manganese (as Mn)	APHA 3111 B, Direct Air, Ascorbic Acid Method	0.020111 0.001 mg/l	mg/l	0.1	0.1
27	Chromium (as Cr)	APHA 3111 B, Direct Air, Ascorbic Acid Method	0.020111 0.002 mg/l	mg/l	0.05	No Relaxation
28	Lead (as Pb)	APHA 3111 B, Direct Air, Ascorbic Acid Method	0.020111 0.002 mg/l	mg/l	0.01	No Relaxation
29	Nickel (as Ni)	APHA 3111 B, Direct Air, Ascorbic Acid Method	0.020111 0.001 mg/l	mg/l	0.01	No Relaxation
30	Arsenic (as As)	APHA 3111 B, Direct Air, Ascorbic Acid Method	0.020111 0.002 mg/l	mg/l	0.01	No Relaxation
31	Mercury (as Hg)	APHA 3112 B, Cold Vapor, AAS Method	0.010111 0.005 mg/l	mg/l	0.007	No Relaxation
32	Total Coliform	IS 1622:1981, IS-2019	02	MPN/100ml	Should be less than or equal to 100	
33	E. Coli	IS 1622:1981, IS-2019	Absent	MPN/100ml	Should be less than or equal to 0	

Note: For Borewell, maximum permissible limit is 1000 µS/cm.

ISDI Borewell limit is 0.05 mg/l for phenolic compounds.

As per Environment Protection Act, 1986 and Environment Protection Rules, 1986, Section 24-B, out of them & for coliform, Total Coliform should be less than or equal to 1000/100ml.

MANITA NAYAK
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Sr. Analyst

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Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/W/21/06	Report No.:	VEL/W/21/06/01/06
Name & Address of the Client:	M/S Chemwood Industries, Village-Bhangwanpur, Khirwan Road, Tejpal-Jugadhri, District Yamuna Nagar, Haryana.	Form No.:	7.81-01
Sample Description:	Ground Water Sample	Party Reference No.:	NIL
Sample Location:	Kharwan	Reporting Date:	06/02/2020
Sample Characteristics:	Vardan Enviro Lab Representative	Period of Analysis:	01/02/2020 - 05/06/2020
Sampling and Analysis Protocol:	IS 3025 & APHA, 1995 Edition 2017	Receipt Date:	01/02/2020
		Sampling Date:	28/05/2020
		Sampling Quantity:	5.0 Lit + 250ml
		Sampling Type:	Grab
		Preservation:	Refrigerator

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10592-2017	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1	pH (25°C)	APHA 2454-17 Potentiometric Method	7.7	--	6.5 to 8.5	No Relaxation
2	Color	APHA 2100-B Visual Comparison Method	<0.1 PCU (10 Hazen)	pcu	5	15
3	Turbidity	APHA 2130-B Spectrophotometric Method	<0.1 NTU (10 NCU)	NTU	1	5
4	Total Hardness (CaCO ₃)	APHA 2120-B Titrimetric Method	Agreeable	--	Agreeable	Agreeable
5	Total Dissolved Solids	APHA 2540-B Gravimetric Method	Agreeable	--	Agreeable	Agreeable
6	Total Hardness (CaCO ₃)	APHA 2120-B Titrimetric Method	21.00	mg/l	200	500
7	Calcium (Ca ²⁺)	APHA 2200-B EDTA Titrimetric Method	47.30	mg/l	75	200
8	Magnesium (Mg ²⁺)	APHA 2210-B EDTA Titrimetric Method	16.50	mg/l	300	500
9	Total Solids (TSS)	APHA 2540-B Gravimetric Method	Nil	mg/l	150	100
10	Chloride (Cl ⁻)	APHA 4500-Cl ₂ D	<0.1 mg/l	mg/l	250	No Relaxation
11	Manganese (Mn)	APHA 3100-B Colorimetric Method	2.00	mg/l	50	50
12	Total Dissolved Solids	APHA 2540-B Gravimetric Method	<0.1	mg/l	500	1000
13	Fluoride (F ⁻)	APHA 4500-F ₂ Colorimetric Method	0.15	mg/l	200	1.0
14	Hardness (d)	APHA 2120-B Titrimetric Method	0.65	mg/l	10	15
15	Sulfate (SO ₄ ²⁻)	IS 3025 (F 341) Turbidity Method	1.82	mg/l	5	No Relaxation
16	Total Hardness	APHA 2120-B Titrimetric Method	0.35	mg/l	100	No Relaxation
17	Aluminum (Al ³⁺)	APHA 3110-B Spectrophotometric Method	<0.01 mg/l	mg/l	0.5	1.0
18	Iron	APHA 4500-Fe Colorimetric Method	<0.1 mg/l	mg/l	0.3	0.3
19	Total Hardness	APHA 2120-B Titrimetric Method	<0.1 mg/l	mg/l	100	No Relaxation

Checked By:

MAMTA NAYAK
SR. ANALYST

Checked By:

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IGI Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No: VET/WW/WT/006

Report No.: VTL/06/2023/01/016

S. No.	Parameter	Test Method	Result	Unit	Limits of IS-10500:2012	
					Requirement (Acceptable) Limit	Permissible Limit in the Absence of Alternate Source
20.	Conductivity (at 25°C)	APHA, 2510, B, Conductivity - Direct Method	631	µS/cm	500	500
21.	Dissolved Oxygen (DO)	APHA, 2540, C, Hacheco - Electrode Method	7.00 mg/l	mg/l	5.0	5.0
22.		Change of DO (COD)	APHA, 2540, C, Hacheco - Electrode Method	1.00 mg/l	mg/l	1.0
23.	Dissolved Oxygen (DO) as MBAS	APHA, 5540 C, MBAS Method	1.00 mg/l	mg/l	0.2	0.2
24.	Ammonia (NH ₄ -N)	APHA, 4500, B, Direct Ammonia - Nesslerization Method	1.10	mg/l	5	5
25.	Supernatant	APHA, 2111, B, Direct Ammonia - Nesslerization Method	0.10	mg/l	0.5	0.5
26.	Manganese as Mn	APHA, 2111, B, Direct Ammonia - Nesslerization Method	0.01 mg/l	mg/l	0.1	0.1
27.	Chloride as Cl	APHA, 2111, B, Direct Ammonia - Nesslerization Method	100 mg/l	mg/l	100	No Relaxation
28.	Total Phosphate	APHA, 2111, B, Direct Ammonia - Nesslerization Method	0.05 mg/l	mg/l	0.1	No Relaxation
29.	Sulfate as SO ₄	APHA, 3110, B, Barium Chloride Gravimetric Method	100 mg/l	mg/l	100	No Relaxation
30.	Ammonia as N	APHA, 4500, B, Direct Ammonia - Nesslerization Method	0.10 mg/l	mg/l	0.1	No Relaxation
31.	Total Hardness	APHA, 2112, B, Colorimetric Method	100 mg/l	mg/l	100	No Relaxation
32.	Total Solids	IS 1624:1981, 3A-2019	2	mg/l	Shall be as directed by the client	Shall be as directed by the client
33.	Total Solids	IS 1624:1981, 3A-2019	Absent	mg/l	Shall be as directed by the client	Shall be as directed by the client

Notes: The above report is valid only for the purpose mentioned.

For more information, please contact us at 0122-2611111.

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MANITA NAYAK
SR. ANALYST

Manita Nayak
SR. ANALYST

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SR. ANALYST



Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - S, IIT Marhasa, Gurugram - 122951 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/WRW/0007	Report No.:	VEL/WR/2006/11977
Name & Address of the Project:	M/S Chemwood Industries, Village-Hogwanpur, Kharwan Road, Tehsil-Jagadhri, Distric- Yamuna Nagar, Haryana.	Format No.:	7.5.1-01
Sample Description:	Ground Water Sample	Purity Reference No.:	NIL
Sample Location:	Bhukla	Reporting Date:	06/06/2020
Sample Collected by:	Vardan Enviro Lab Representative	Period of Analysis:	01/06/2020 - 06/06/2020
Sampling and Analysis Protocol:	IS 3025 & APHA, 21st Edition 2017	Receipt Date:	01/06/2020
		Sampling Date:	28/05/2020
		Sampling Quantity:	5.0 Lit + 250ml.
		Sampling Type:	Grab
		Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012	
					Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternative Source
1	pH at 25°C	APHA 8590C Titrimetric Method	7.85	-	6.5 to 8.5	No Relaxation
2	Color	APHA 2120B Visual Comparison Method	100 (PCU/100ml)	Hzon	5	15
3	Turbidity	APHA 2130H Nephelometric Method	100 (NTU)	NTU	-	5
4	Total Hardness	APHA 2100 Total Hardness Method	150 mg/l	mg/l	Agreeable	Agreeable
5	Calcium	APHA 2100 Titrimetric Method	Agreeable	-	Agreeable	Agreeable
6	Total Dissolved Solids	APHA 2540C Gravimetric Method	290.0	mg/l	500	500
7	Total Solids	APHA 2540C Gravimetric Method	58.0	mg/l	75	200
8	Alkalinity as CaCO ₃	APHA 2320 D Titrimetric Method	275.00	mg/l	200	500
9	Total Chloride	APHA 2500 C Titrimetric Method	61.24	mg/l	250	1000
10	Cyanide as CN	APHA 1500 CND	110 (ppb) (0.02 mg/l)	mg/l	0.05	No Relaxation
11	Magnesium as Mg	APHA 2500 B Gravimetric Method	23.77	mg/l	0	100
12	Total Dissolved Solids	APHA 2540 C Gravimetric Method	902.00	mg/l	500	500
13	Sulfate as SO ₄	APHA 4500 F Gravimetric Method	32.12	mg/l	200	400
14	Total Hardness	APHA 2100 Titrimetric Method	1.35	mg/l	10	15
15	Chloride as Cl ⁻	APHA 4500 F Gravimetric Method	12.07	mg/l	25	No Relaxation
16	Iron as Fe	APHA 1500 B Colorimetric Method	0.58	mg/l	0.3	No Relaxation
17	Arsenic as As	APHA 3110 D Stannous Oxide Arsenite-Flame Method	1200 (ppb) (0.02 mg/l)	mg/l	0.05	0.2
18	Barium	APHA 2500 B Gravimetric Method	100 (ppb) (0.01 mg/l)	mg/l	0.5	2.0
19	Strontium as Sr	APHA 3110 B Diphenylpicrylhydrazyl-Flame Method	100 (ppb) (0.02 mg/l)	mg/l	0.05	No Relaxation

ANITA NAYAK
SR. ANALYST

Dr. Anil Kumar
Sr. Analyst

Dr. Anil Kumar
Sr. Analyst

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No: VEL/WCW/017		Report No: VELAY 2016/11/017				
S. No.	Parameter	Test Method	Result	Unit	Limits of IS:15910-2013	
					Requirement (As per file)	Permissible limit in the absence of other source
21	Temperature (25°C)	APHA 2510 A, Conductivity Meter Method	21.8	µS/cm	-	-
21	Fluoride Compound	APHA 8000, CF-chloride Extraction Method	0.02 (**DL) 0.00 mg/l	mg/l	0.01	0.1
22	Mutual CF	Clause 6 of IS:15910-2013	2.02 (**DL) 0.05 mg/l	mg/l	1.0	50 No Relaxation
23	Ammonia Nitrogen as NH ₃	APHA 5540 CADAP Method	0.01 (**DL) 0.05 mg/l	mg/l	0.2	1.0
24	Chloride	APHA 3112 B, Direct Azide/mercuric Chloride Method	0.97	mg/l	5	5
25	Copper as Cu	APHA 3112 B, Direct Azide/mercuric Chloride Method	0.38	mg/l	0.5	1.5
26	Manganese as Mn	APHA 3112 B, Direct Azide/mercuric Chloride Method	0.01 (**DL) 0.05 mg/l	mg/l	0.1	0.5
27	Cadmium as Cd	APHA 3112 B, Direct Azide/mercuric Chloride Method	0.01 (**DL) 0.05 mg/l	mg/l	0.01	0.1 No Relaxation
28	Lead as Pb	APHA 3112 B, Direct Azide/mercuric Chloride Method	0.01 (**DL) 0.05 mg/l	mg/l	0.01	No Relaxation
29	Zinc as Zn	APHA 3112 B, Manual Hydrolyde Generation	0.01 (**DL) 0.05 mg/l	mg/l	0.01	No Relaxation
30	Arsenic as As	APHA 3112 B, Manual Hydrolyde Generation	0.01 (**DL) 0.05 mg/l	mg/l	0.01	No Relaxation
31	Mercury as Hg	APHA 3112 B, Cold Vaporization Method	0.01 (**DL) 0.05 mg/l	mg/l	0.01	No Relaxation
32	Total Coliform	IS:15910-2013, IS-15910	0	MPN/100ml	Should not be detectable in any 100 ml sample	
33	Fecal Coli	IS:15910-2013, IS-15910	Absent	MPN/100ml	Should not be detectable in any 100 ml sample	

Note: - (**DL) part of the test result is from NABL sample
(**DL) Above detection limit (**DL) - Detection limit

MAMTA NAYAK
SR. ANALYST

Signature of Sr. Analyst

Signature of Sr. Analyst

Vardan EnviroLab

Laboratory Plot No. 82A, Sector - 5, IMT Manesar, Surugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VLE/W/2020/08	Report No.:	VLE-W/2020/01008
Name & Address of the Project:	M/s Chemwood Industries, Village-Bhugwanpur, Kharwan Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Format No.:	7.53-01
		Party Reference No.:	N/A
		Reporting Date:	06/06/2020
		Period of Analysis:	01/06/2020 - 06/06/2020
		Receipt Date:	01/06/2020
Sample Description:	Ground Water Sample	Sampling Date:	29/05/2020
Sample Location:	Baluchaur	Sampling Quantity:	5.0 Ltr + 250ml.
Sample Collected by:	Vardan Enviro-Lab Representative	Sampling Type:	Grab
Sampling and Analysis Protocol:	IS 5025 & APHA, 2nd Edition 2017	Preservation:	Refrigerator

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1	pH (25°C)	APHA (800-H) Potentiometric Method	7.85	--	6.5 to 8.5	No Relaxation
2	Colour	APHA 2120 - Visual Comparison method	<BOLD><DL 10 Hazen	Hazen	5	15
3	Turbidity	APHA 2130 - Turbiditymeter Method	<BOLD><DL 12 NTU	NTU	1	5
4	Odour	APHA 2150 L, Throatle Odour Method	Appropriate	--	Appropriate	Appropriate
5	Taste	APHA 2150 B, Tined GOTTes Method	Appropriate	--	Appropriate	Appropriate
6	Total Dissolved Solids (TDS)	APHA 2540 C, EDTA Titrimetric Method	224.00	mg/l	250	500
7	Total Hardness (CaCO ₃)	APHA 2540 C, EDTA Titrimetric Method	56.78	mg/l	75	200
8	Alkalinity as CaCO ₃	APHA 2320 B, Titrimetric Method	195.00	mg/l	200	600
9	Chloride as Cl ⁻	APHA 4500-Cl B, Mercurimetric Method	51.24	mg/l	250	1000
10	Cyanide as CN ⁻	APHA 4540 CN D	<BOLD><DL 0.02 mg/l	mg/l	0.05	No Relaxation
11	Magnesium as Mg	APHA 3120 Mg A, Calculated Method	20.0	mg/l	75	150
12	Total Dissolved Solids (TDS)	APHA 2540 C, Gravimetric Method	411.00	mg/l	500	2000
13	Sulphate as SO ₄	APHA 4500 L, Turbidimetric Method	25.68	mg/l	200	500
14	Fluoride as F ⁻	APHA 4500-F 3, SPADNS Method	0.57	mg/l	1.5	1.5
15	Silicate as SiO ₂	PH 8020 H 20, Colorimetric Method	9.91	mg/l	45	No Relaxation
16	Iron as Fe	APHA 4500-Fe B, Orthoantrotronic Method	0.29	mg/l	0.3	No Relaxation
17	Acetaminophen	APHA 4510 D Nitro Oxidation Acetylene Flame Method	<BOLD><DL 0.02 mg/l	mg/l	0.02	0.2
18	Lead	APHA 4500-Pb A, AAS Method	<BOLD><DL 0.01 mg/l	mg/l	0.05	0.10
19	Fluoride as F ⁻	APHA 4500-F 3, SPADNS Method	<BOLD><DL 0.02 mg/l	mg/l	1.5	No Relaxation

MANITA NAYAK
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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IIT Mahesh, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VE/2021/001	Report No.:	VEL/VR/200650-001
Name of the Project:	M/s Chemwood Industries, Village-Bhagwanpur, Kharwan Road, Tehsil-Jajalhra, District Yamuna Nagar, Haryana.	Estimate No.:	181-01
Sample Description:	Surface Water Sample	Party Reference No.:	NIL
Sampling Location:	Hydracanal near Daulapur (L&I)	Reporting Date:	06/06/2020
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01/06/2020 - 06/06/2020
Preservation:	Refrigerator	Receipt Date:	01/06/2020
Sampling and Analysis Protocol:	IS-3025 & APHA, 21 st Edition 2017	Sampling Date:	28/05/2020
		Sampling Quantity:	5.0 Ltr + 250ml
		Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1	pH (at 25°C)	APHA, 9150-H, B, Titration Colorimetric Method	7.51	--
2	Temperature	APHA, 2120-D, Visual Comparison Method	4.0	Electron
3	Turbidity	APHA, 2130-B, Nephelometric Method	21.00	NPTU
4	Odour	APHA, 2150-G, Threshold Test Method	Agreeable	--
5	Total Dissolved Solids (TDS)	APHA, 2160-C, EDTA Titrimetric Method	315.23	mg/l
6	Total Solids (TS)	APHA, 2540-C, Gravimetric Method	742.1	mg/l
7	Alkalinity as CaCO ₃	APHA, 2120-D, Titrimetric Method	281.85	mg/l
8	Chloride as Cl ⁻	APHA, 4590-F, D, Argentometric Method	81.54	mg/l
9	Zinc as Zn (ppm)	APHA, 1960-C, Spectrophotometric Method	*BODI**BODI 0.15 mg/l	mg/l
10	Cyanide as CN ⁻	APHA, 4500-CN-B	*BODI**BODI 0.02 mg/l	mg/l
11	Nitrate as NO ₃ ⁻	APHA, 3500-Ng D, Cadmium Method	31.54	mg/l
12	Total Dissolved Solids (TDS)	APHA, 2540-C, Gravimetric Method	628.07	mg/l
13	Total Suspended Solids (TSS)	APHA, 2540-D, Gravimetric Method	137.00	mg/l
14	Dissolved Oxygen	APHA, 4500-O, D, Iodometric Method	6.2	mg/l
15	Salinity as ppt	APHA, 4500-S, Turbidity Method	60.51	mg/l
16	Fluoride as F ⁻	APHA, 4500-F, D, SPADNS Method	0.53	mg/l
17	Hardness (as CaCO ₃)	APHA, 5200-H, 5.0025, P-44	14.00	mg/l
18	COD	APHA, 5210-B, Open Reflux Method	32.00	mg/l

NIAMITA NAYAK
SR. ANALYST

Dr. Anil Kumar
Sr. Analyst

Dr. Anil Kumar
Sr. Analyst

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, MF Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.: VEL/CA/19/011

Report No.: VEL/CA/26/01-051

S. No.	Parameter	Test-Method	Result	Unit
19	Chlorinity (at 25°C)	APHA, 2110 B, Conductivity Meter Method	966	mg/l
20	Nitrate as N	APHA, 4500 N-1, Cadmium Spectrophotometric Method	10.21	mg/l
21	Sulfide as S	APHA, 4500 S-1, Ethane Dithionite Method	96.54	mg/l
22	Cyanide as C	APHA, 4500 C-1, Ethane Dithionite Method	13.81	mg/l
23	Iron as Fe	APHA, 4500 Fe-1, Inductively Coupled Plasma Atomic Absorption Method	*BDL (**DL 0.01 mg/l)	mg/l
24	Ammonia as N	APHA, 4500 NH ₃ , Nesslerization Method	0.48	mg/l
25	Boride	APHA, 4500 B-1, Inductively Coupled Plasma Atomic Absorption Method	*BDL (**DL 0.01 mg/l)	mg/l
26	Chromium as Cr	APHA, 2111 B, Direct Air, Acetylene Flame Method	*BDL (**DL 0.001 mg/l)	mg/l
27	Phenolic Compounds	APHA, 5390 C, Chloroform Extraction Method	*BDL (**DL 0.004 mg/l)	mg/l
28	Vanadium	APHA, 4500 V-1, Inductively Coupled Plasma Atomic Absorption Method	*BDL (**DL 0.005 mg/l)	mg/l
29	Arbatic Detergent as MBAS	APHA, 5510 C, MBAS Method	*BDL (**DL 0.05 mg/l)	mg/l
30	Zinc as Zn	APHA, 3111 B, Direct Air, Acetylene Flame Method	1.04	mg/l
31	Copper as Cu	APHA, 3111 B, Direct Air, Acetylene Flame Method	0.09	mg/l
32	Manganese as Mn	APHA, 3111 B, Direct Air, Acetylene Flame Method	*BDL (**DL 0.01 mg/l)	mg/l
33	Calcium as Ca	APHA, 3111 B, Direct Air, Acetylene Flame Method	*BDL (**DL 0.002 mg/l)	mg/l
34	Total Cr (mm)	IS 1522	900	MPN/100ml
35	Total Coliform	IS 1522	500	MPN/100ml

Note: *BDL - Below Detection Limit, **DL - Detection Limit

MAMTA NAYAK
SR. ANALYST

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IM1 Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/WCW-02	Report No.:	VEL/W-2021/11310
Name of the Project:	M/S. Chemswood Industries, Village-Bhagwanpur, Kharwar Road, Tehsil Jagadhri., District Yamuna Nagar, Haryana.	Form No.:	Z&F-01
Sample Description:	Surface Water Sample	Party Reference No.:	NIL
Sampling Location:	Hydrant near Kishangarh (DS)	Reporting Date:	06/06/2020
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01-06/2020 - 06/06/2020
Preservation:	Refrigerator	Receipt Date:	01/06/2020
		Sampling Date:	29/05/2020
		Sampling Quantity:	5.0 Liter + 250ml
		Sampling Type:	Grab

Sampling and Analysis Protocol: IS-1025 & APHA

S. No.	Parameter	Test-Method	Result	Unit
1	pH @ 25°C	APHA, 4500-H, H-Electrode Method	7.61	-
2	Color	APHA, 2120-N, Visual Comparison Method	3.0	Pt-Co
3	Turbidity	APHA, 1100-B, Nephelometric Method	20.00	NTU
4	Total Solids	APHA, 2540-G, Gravimetric Method	Agreeable	-
5	Total Dissolved Solids	APHA, 2540-G, Gravimetric Method	294.00	mg/l
6	Calcium as Ca	APHA, 3100-Ca D, EDTA Titrimetric Method	76.21	mg/l
7	Magnesium as CaCO ₃	APHA, 3120-M, Titrimetric Method	275.24	mg/l
8	Chloride as Cl	APHA, 4500-Cl B, Argentometric Method	94.83	mg/l
9	Residual Free Chlorine	APHA, 4500-Cl B, Argentometric Method	*0.01, **0.1, 0.15mg/l	mg/l
10	Cyanide as CN	APHA, 4500-CN D	*0.01, **0.1, 0.02 mg/l	mg/l
11	Magnesium as Mg	APHA, 3100-Mg B, Titrimetric Method	25.23	mg/l
12	Total Dissolved Solids	APHA, 2540-G, Gravimetric Method	678.00	mg/l
13	Total Suspended Solids	APHA, 2540-D, Gravimetric Method	318.00	mg/l
14	Dissolved Oxygen	APHA, 4520-O, Iodometric Method	6.3	mg/l
15	Sulfate as SO ₄ ²⁻	APHA, 4500-SO ₄ , Turbimetric Method	61.52	mg/l
16	Fluoride as F	APHA, 4500-F D, SPADNS Method	0.54	mg/l
17	Hardness as CaCO ₃	APHA, 3100-H, AS 3125 P-11	14.0	mg/l
18	Hardness	APHA, 3120-H, Open Bottle Method	26.00	mg/l

MAYITA NAYAK
SR. ANALYST

ANIL K. SHARMA
Checked by

APRIL 15 2021

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMI Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No: VET/2021/002

Report No: VGL/W/2008/018002

S. No.	Parameter	Test-Method	Result	Unit
19.	Conductivity (at 25°C)	APHA, 25.0 B, Conductivity Meter Method	1043	µS/cm
20.	pH (at 25°C)	IS 3025 (Part-2) Colorimetric Method	28.0	mg/l
21.	Sulphate as S ₂	APHA, 5500 Sulf. Flame Photom. Method	61.54	mg/l
22.	Dissolved As ₂	APHA, 5570 K B. Flame Photometry Method	22.51	mg/l
23.	Total As ₂	APHA, 5570 K B. I.D. Parametric Method	0.24	mg/l
24.	Aluminium as Al	APHA, 31.11 B. Induct. Aat. Spect. Method	<MHL (**MHL: 0.002 mg/l)	mg/l
25.	Boron	APHA, 4500 B. Colorim. Method	0.41	mg/l
26.	Calcium as Ca	APHA, 31.11 B. Direct Air, Acetylene Flame Method	<MHL (**MHL: 0.002 mg/l)	mg/l
27.	Magnesium as Mg	APHA, 5530 C. Induct. Aat. Spect. Method	<MHL (**MHL: 0.004 mg/l)	mg/l
28.	Mineral Oil	Change of Refractive Index	<MHL (**MHL: 0.05 mg/l)	mg/l
29.	Aromatic Hydrocarbons (MIBAS)	APHA, 5540 C. MIBAS Method	<MHL (**MHL: 0.05 mg/l)	mg/l
30.	Zinc as Zn	APHA, 31.11 B. Direct Air, Acetylene Flame Method	1.42	mg/l
31.	Copper as Cu	APHA, 31.11 B. Direct Air, Acetylene Flame Method	0.09	mg/l
32.	Manganese as Mn	APHA, 31.11 B. Direct Air, Acetylene Flame Method	<MHL (**MHL: 0.01 mg/l)	mg/l
33.	Chromium as Cr	APHA, 31.11 B. Direct Air, Acetylene Flame Method	<MHL (**MHL: 0.002 mg/l)	mg/l
34.	Total Coliform	IS 1622	900	MPN/100ml
35.	Fecal Coliform	IS 1622	350	MPN/100ml

Note: *MHL -Below Detection Limit. **DL- Detect Limit.

MAMTA NAYAK
SR. ANALYST

LABORATORY MANAGER

QUALITY CONTROL

Vardan EnviroLab

Laboratory Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VI/06/W/911	Report No.:	VI/06/2006/04/004
Name of the Project:	M/s. Chemwood Industries, Village-Bhagwarpur, Kharwan Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Format No.:	7 x 1 - 01
Sample Description:	Surface water sample	Party Reference No.:	NIL
Sampling Location:	Sewb well near Dadapur ILS	Receiving Date:	26/05/2020
Sample Collected By:	Vardan Enviro Lab Representative	Period of Analysis:	01/06/2020-06/06/2020
Preservation:	Refrigeration	Receipt Date:	01/06/2020
Sampling and Analysis Protocol:	IS 3025 & APHA	Sampling Date:	29/05/2020
		Sampling Quantity:	5.0 Liter (250ml)
		Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH at 25°C	APHA 2500-H B (Electrode) Method	7.77	-
2.	Color	APHA 2120 B, Visual Comparison Method	4.0	Hazen
3.	Turbidity	APHA 2100 B, Nephelometric Method	46.00	NTU
4.	Odour	APHA 2150 B, Flasks Test Method	Agreeable	-
5.	Total Chlorides as Cl ⁻ (mg/L)	APHA 2140 C, T.D.T. Titrimetric Method	221.00	mg/L
6.	Calcium as Ca ⁺⁺ (mg/L)	APHA 3500-Ca (EDTA) Titrimetric Method	56.21	mg/L
7.	Alkalinity as CaCO ₃ (mg/L)	APHA 2220 B, Titrimetric Method	209.41	mg/L
8.	Chloride as Cl ⁻ (mg/L)	APHA 4500-Cl B, Argentometric Method	91.66	mg/L
9.	Residual Free Chlorine (mg/L)	APHA 4500-Cl B Indirect Method	*BDL, **DL 0.15 (mg/L)	mg/L
10.	Cyanide as CN ⁻ (mg/L)	APHA 4520 C.S.D	*BDL, **NDL 0.02 (mg/L)	mg/L
11.	Mercuric Ion (mg/L)	APHA 4500-Mg B, Labation Method	19.62	mg/L
12.	Total Dissolved Solids	APHA 2540 D, Gravimetric Method	500.00	mg/L
13.	Total Suspended Solids	APHA 2540 D, Gravimetric Method	121.00	mg/L
14.	Dissolved Oxygen	APHA 4500-DO B, Volumetric Method	6.4	mg/L
15.	Sulphate as SO ₄ ²⁻ (mg/L)	APHA 4500-S, Bariumometric Method	46.91	mg/L
16.	Fluoride as F ⁻ (mg/L)	APHA 4500-FD, SPADNS Method	0.24	mg/L
17.	BOD at 20°C (mg/L)	APHA 5210 C, 5 IS 3025, P-4	14.00	mg/L
18.	COD (mg/L)	APHA 5210 B, Open Kettle Method	42.00	mg/L

MAMTA NAYAK
SR. ANALYST

VI/06/W/911
Kharwan Road

VI/06/W/911
Kharwan Road



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Laboratory Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
 ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No: VED/CW/AY/03

Report No: VED/W/260001/073

S. No.	Parameter	Test-Method	Result	Unit
19	Temperature (at 25°C)	APHA, 25.0°C, Calibrated by Metro Method	26.1	°C
20	pH at 25°C	IS 1051, 0.1% Chromatopic Method	24.51	°C
21	Sulfates as S _o	APHA, 55.05 Na ₂ Chrom. Photometric Method	54.21	mg/l
22	Chlorides as Cl ⁻	APHA, 15.0% Z.D. Flame Photometric Method	6.38	mg/l
23	Total Ca	APHA, 1500-LE B, 1,10E Spectrophotometric Method	0.27	mg/l
24	Aluminium as Al	APHA, 7511 DR Spectrophotometric Analytical Plastic Method	NBHL (***DL) 0.002 mg/l	mg/l
25	Iron	APHA, 1500-C Colorim. Method	0.42	mg/l
26	Cyanide as CN ⁻	APHA, 31.1 B, Luce. Air Acetylen. Flame Method	*BOD (***DL) 0.002 mg/l	mg/l
27	Phenolic Compounds	APHA, 5550-C Chloroform extraction Method	*BOD (***DL) 0.000 mg/l	mg/l
28	Mercury as Hg	IS 1632 (IS 1015) by Cold	*MUL (***DL) 0.05 mg/l	mg/l
29	Arsonic Detergent as MBAS	APHA, 5540-K MBAS Method	*BOD (***DL) 0.05 mg/l	mg/l
30	Zinc as Zn	APHA, 5111-L, D. Red. An. Acetylen. Flame Method	1.46	mg/l
31	Copper as Cu	APHA, 5111-L, D. Red. An. Acetylen. Flame Method	0.25	mg/l
32	Manganese as Mn	APHA, 31.1 B, Luce. Air Acetylen. Flame Method	NBHL (***DL) 0.01 mg/l	mg/l
33	Chromium as Cr	APHA, 31.1 B, Luce. Air Acetylen. Flame Method	NBHL (***DL) 0.002 mg/l	mg/l
34	Total Coliform	IS 1632	1600	MPN/100ml
35	Fecal Coliform	IS 1632	500	MPN/100ml

Note: *M-D-B-H-S-D-Check Limit ***H - Exceeds Limit

Checked by
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 SR. ANALYST

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Laboratory: Plot No. B2A, Sector - 5, IMI Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/CW/2021/05	Report No.:	VEL/2021/05/0054
Name of the Project:	M/S Chemwood Industries, Village-Fogwamno, Kharwar Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Form No.:	7.8 E-01
Sample Description:	Surface Water Sample	Party Reference No.:	NIL
Sampling Location:	South end near Kishangarh IDS.	Reporting Date:	05/06/2021
Sample Collected by:	Vardan Enviro Lab Representative	Period of Analysis:	01/06/2021 - 04/06/2021
Preservation:	Refrigerator	Receipt Date:	01/06/2021
Sampling and Analysis Protocol:	IS-3025 & APHA	Sampling Date:	19/05/2021
		Sampling Quantity:	50 Ltr = 250ml.
		Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH at 25°C	APHA, 4500-H ⁺ B Electrode Method	7.54	-
2.	Colour	APHA, 2150 D. Visual Comparison Method	4.0	Hazen
3.	Turbidity	APHA, 2550 B. Nephelometric Method	52.0%	NTU
4.	Total Solids	APHA, 2540 C. Gravimetric Method	Agreeable	-
5.	Total Dissolved Solids	APHA, 2540 C. EDTA Titrimetric Method	260.00	mg/l
6.	Calcium Ca	APHA, 3500 Ca B. EDTA Titrimetric Method	63.54	mg/l
7.	Magnesium Mg	APHA, 3120 D. Titrimetric Method	238.00	mg/l
8.	Chloride Cl	APHA, 4500 Cl H. Argentometric Method	90.38	mg/l
9.	Total Dissolved Chloride	APHA, 4500 Cl H. Titrimetric Method	*BDL (< 0.15 mg/l)	mg/l
10.	Cyanide as CN	APHA, 4500 CN D	*BDL (< 0.100 mg/l)	mg/l
11.	Magnesium Mg	APHA, 3500 Ca B. Calculation Method	24.65	mg/l
12.	Total Dissolved Nitric	APHA, 2540 C. Gravimetric Method	590.00	mg/l
13.	Total Suspended Solids	APHA, 2540 C. Gravimetric Method	119.00	mg/l
14.	Dissolved Oxygen	APHA, 4500 O B. Titrimetric Method	5.6	mg/l
15.	Sulphate as SO ₄ ²⁻	APHA, 4500 S. Turbidimetric Method	40.8	mg/l
16.	Fluoride as F	APHA, 4500 F B. SPADNS Method	1.00	mg/l
17.	BOD at 20°C at 27°C	APHA, 5210 C - IS 3025 Part 1	15.00	mg/l
18.	TOD	APHA, 5210 B. Open Burette Method	43.45	mg/l

MAMTA NAYAK
SR. ANALYST

(Signature)

(Signature)

Vardan EnviroLab

Laboratory: Plot No. B7A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.: VEL/CW/FW/04

Report No.: VEL/W/2005/11/004

S. No.	Parameter	Test-Method	Result	Unit
19.	Cond. (at 25°C)	APHA, 25.0 B, Conductivity Meter Method	936	µS/cm
20.	Nitrate as NO ₃	IS:2025 (P-34) Chromatographic Method	14.25	mg/l
21.	Sodium as Na	APHA, 15.0 Na.D. Flame Photometry Method	48.36	mg/l
22.	Potassium as K	APHA, 15.0 K.D. Flame Photometry Method	6.5	mg/l
23.	Iron as Fe	APHA, 15.0 Fe.B.I.D. Flame Spectrometry Method	0.27	mg/l
24.	Ammonia as A	APHA, 3111 DN.2000 Oxide Acetylene Flame Method	*NDL (**DL: 0.002 mg/l)	mg/l
25.	Sulfur	APHA, 5500H.1. Gravimetric Method	N.S.	mg/l
26.	Chloride as Cl	APHA, 3111 B. Direct Air Acetylene Flame Method	*BDL (**DL: 0.002 mg/l)	mg/l
27.	Fluoride Compounds	APHA, 3500 C. Graphite Furnace Atomic Method	*BDL (**DL: 0.0004 mg/l)	mg/l
28.	Mercury	Class. as per IS:2025 (P-34)	*BDL (**DL: 0.05 mg/l)	mg/l
29.	Anionic Detergents as MPAS	APHA, 5520 G. MBAS Method	*BDL (**DL: 0.05 mg/l)	mg/l
30.	Zinc as Zn	APHA, 3111 B. Direct Air Acetylene Flame Method	2.40	mg/l
31.	Copper as Cu	APHA, 3111 B. Direct Air Acetylene Flame Method	0.05	mg/l
32.	Manganese as Mn	APHA, 3111 B. Direct Air Acetylene Flame Method	*NDL (**DL: 0.01 mg/l)	mg/l
33.	Cadmium as Cd	APHA, 3111 B. Direct Air Acetylene Flame Method	*NDL (**DL: 0.002 mg/l)	mg/l
34.	Total Coliform	IS 1522	1000	MPN/100ml
35.	Fecal Coliform	IS 1522	900	MPN/100ml

*NDL - Below Detection Limit, **DL - Detection Limit

Tested by
ANAMTA NAYAK
SR. ANALYST

ANAMTA NAYAK
Sr. Analyst
P.C.

ANAMTA NAYAK
Sr. Analyst


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Laboratory: Plot No. 82A, Sector - 5, IIT Manesar, Gurugram - 122051 (Haryana)
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Test Report

Sample Number:	VLEW/2021/05	Report No.:	VLEW/2021/05
Name of the Project:	M/s. Chemwood Industries, Village-Bhagwanpur, Kharswan Road, Tehsil-Bagadhari, District - Yamuna Nagar, Haryana.	Form No.:	TRF-01
Sample Description:	Surface Water Sample	Party Reference No.:	NIL
Sampling Location:	Sampled from Trench/pond (D/S)	Reporting Date:	06/06/2021
Sample Collected by:	Vardan Enviro Lab Representative	Period of Analysis:	01/06/2021 - 06/06/2021
Preservation:	Refrigerator	Receipt Date:	01/06/2021
Sampling and Analysis Protocol:	IS:3025 & APHA	Sampling Date:	29/05/2021
		Sampling Quantity:	5.0 Liter + 250ml
		Sampling Type:	Grab

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 °C)	APHA, 8000-C, Bismuthate Ion Method	7.61	--
2	Colour	APHA, 2120-B, Visual Comparison Method	3.0	PCU
3	Turbidity	APHA, 2130-A, Nephelometric Method	52.00	NTU
4	Odour	APHA, 2150-B, Threshold Test Method	Agreeable	--
5	Total Dissolved Solids (TDS)	APHA, 2540-C, TITA Filterable Method	285.0	mg/l
6	Total Solids (TS)	APHA, 2530-F, TITRA Filterable Method	61.71	mg/l
7	Total Suspended Solids (TSS)	APHA, 2540-C, Filterable Method	141.69	mg/l
8	Chloride as Cl	APHA, 4500-Cl B, Argentometric Method	36.01	mg/l
9	Biochemical Oxygen Demand (BOD ₅)	APHA, 4500-5B, 5-Dilution Method	*BOD ₅ < DL 0.15mg/l	mg/l
10	Chemical Oxygen Demand (COD)	APHA, 4700-COD	*BOD ₅ < DL 0.02 mg/l	mg/l
11	Magnesium as Mg	APHA, 3100-Mg H, Calorimetric Method	12.72	mg/l
12	Total Dissolved Solids	APHA, 2540-C, Gravimetric Method	602.00	mg/l
13	Total Suspended Solids	APHA, 2540-D, Gravimetric Method	123.00	mg/l
14	Dissolved Oxygen	APHA, 4500-OH, Hachendorf Method	5.34	mg/l
15	Sulphate as SO ₄	APHA, 4500-S, Turbidimetric Method	38.56	mg/l
16	Ammonia as N	APHA, 4500-NH ₃ , NADPH Method	0.22	mg/l
17	BOD (5 Days at 20 °C)	APHA, 5210-C, 5-Dilution Method	12.66	mg/l
18	COD	APHA, 5210-B, Open Reflux Method	11.23	mg/l

(Signature)
MAMTA NAYAK
SR. ANALYST

(Signature)
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Test Report

Sample No. YLL/AVL/2021/005			Report No. VIL/W/200601/005	
S. No.	Parameter	Test Method	Result	Unit
19	Conductivity @ 25°C	APHA 2510 B Direct Readout Method	998	µS/cm
20	Nitrate as NO ₃	IS 3101 (B-84) Chromatographic Method	18.94	mg/l
21	Sodium as Na	APHA 2500 B/D Flame Photometry Method	46.54	mg/l
22	Potassium as K	APHA 2500 B/D Flame Photometry Method	7.56	mg/l
23	Iron as Fe	APHA 2500 C B/D Phosphomolybdate Method	0.29	mg/l
24	Ammonia as N	APHA 2111 B Inducto-Block Analytical Method	*BDL (**DL: 0.012 mg/l)	mg/l
25	Copper	APHA 2500 C Graphite Furnace	0.24	mg/l
26	Chromium as Cr	APHA 2111 B Direct Air Acetylene Flame Method	*BDL (**DL: 0.014 mg/l)	mg/l
27	Chloride Compounds	APHA 2500 C Desferm Extraction Method	*BDL (**DL: 0.0004 mg/l)	mg/l
28	Mercury as Hg	Standard IS 3095 (2015)	*BDL (**DL: 0.05 mg/l)	mg/l
29	Arsenic as As	APHA 2500 C MARS Method	*BDL (**DL: 0.05 mg/l)	mg/l
30	Zinc as Zn	APHA 2111 B Direct Air Acetylene Flame Method	2.51	mg/l
31	Lead as Pb	APHA 2111 B Direct Air Acetylene Flame Method	0.46	mg/l
32	Manganese as Mn	APHA 2111 B Direct Air Acetylene Flame Method	*BDL (**DL: 0.01 mg/l)	mg/l
33	Cadmium as Cd	APHA 2111 B Direct Air Acetylene Flame Method	*BDL (**DL: 0.007 mg/l)	mg/l
34	Total Chloride	IS 3102	500	MPN/100 ml
35	Total Coliform	IS 3102	500	MPN/100 ml

Note: *BDL - Below Detection Limit, **DL - Detection Limit

MEENKA NAYAK
SR. ANALYST

ANIL KUMAR
Sr. Analyst

ANIL KUMAR

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMF Manesar, Gurugram - 122001 (Haryana)
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Test Report

Sample Number:	VEL-CWIS/01	Report No.:	VEL/S/2020/CL/001
Name & Address of the Party:	M/s Chemical Industries, Village-Bhagwanpur, Kharwan Road, Tehsil- Jugadhri, District Yamuna Nagar, Haryana.	Format No.:	7.8 F-01
Sample Description:	SOIL SAMPLE	Party Reference No.:	NIL
Sample Location:	Project Site	Reporting Date:	06/06/2020
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01/05/2020-06/06/2020
Sampling and Analysis Protocol:	IS 2720, USEPA 3050 & SOP	Receipt Date:	01/05/2020
		Sampling Date:	28/05/2020
		Sample Quantity:	2.0 Kg
		Sampling Type:	Composite
		Packaging Status:	Temp Sealed
		Parameter Required:	As Per Toll Letter

S. No.	Parameter	Test-Method	Result	Unit
1	pH @ 25 °C	IS 2720 (Part 2) by pH Meter	7.3*	-
2	Conductivity	IS 15717 by Conductivity meter	0.231	µS/cm
3	Soil Texture	IS 2720 (Part 2) by No. 1 & Issue Date: 14/02/2013	Sand - 56 Silt - 36 Clay - 18	%
4	Color	SOP SP-75 Issue No-01 & Issue Date-14/02/2013	Yellowish Brown	-
5	Water Holding Capacity	SOP SP-51 Issue No-01 & Issue Date-14/02/2013	29.20	%
6	Bulk density	SOP SP-50 Issue No-01 & Issue Date-14/02/2013	1.44	g/cc
7	Chloride as Cl	SOP SP-85 Issue No-01 & Issue Date-14/02/2013	4.20	mg/100g
8	Calcium as Ca	SOP SP-82 Issue No-01 & Issue Date-14/02/2013	43.71	mg/100g
9	Sodium as Na	SOP SP-84 Issue No-01 & Issue Date-14/02/2013	54.40	mg/kg
10	Potassium as K	SOP SP-80 Issue No-01 & Issue Date-14/02/2013	98.60	mg/kg
11	Organic Matter	IS 2720 (Part 2) Titrimetric Method	0.14	%
12	Magnesium as Mg	SOP SP-81 Issue No-01 & Issue Date-14/02/2013	20.41	mg/100g
13	Available Nitrogen as N	Distillation Diffusion Method	183.40	µg/kg
14	Available Phosphorus	SOP SP-26 Issue No-01 & Issue Date-14/02/2013	16.34	µg/kg
15	Zinc as Zn	USEPA 3050B	5.54	µg/kg
16	Manganese as Mn	USEPA 3050B	5.41	µg/kg
17	Lead as Pb	USEPA 3050B	0.64	µg/kg
18	Cadmium as Cd	USEPA 3050B	0.43	µg/kg
19	Chromium as Cr	USEPA 3050B	0.17	µg/kg
20	Copper as Cu	USEPA 3050B	1.10	µg/kg

MAMTA NAYAK
SR. ANALYST

Signature of Analyst

Signature of Analyst

VARDAN ENVIRONMENTAL LABORATORY

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
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Test Report

Sample Number:	VR19W375-02	Report No.:	VLE/2020/01/002
Name & Address of the Party:	M/s Chemwood Industries, Village-Bhagwanpur, Kharayn Road, Tehsil-Jagadhra, District-Yamuna Nagar, Haryana.	Format No.:	783-01
Sample Description:	SOIL SAMPLE	Party Reference No.:	NIL
Sample Location:	Bhagwanpur	Reporting Date:	05/06/2020
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01/06/2020 - 06/06/2020
Sampling and Analysis Protocol:	IS 2720, ISIRI 3050 & SOP	Receipt Date:	01/06/2020
		Sampling Date:	28/05/2020
		Sample Quantity:	2.0 kg
		Sampling Type:	Composite
		Packing Status:	Tight Sealed
		Parameter Required:	As Per L&R Letter

S. No.	Parameter	Test-Method	Result	Unit
1.	pH at 25 °C	IS - 2720 (P-26) for Soil Water	7.71	
2.	Conductivity	IS 14787 by Conductivity meter	9775	µS/cm
3.	Soil Texture	SOP, SP-87 Issue No-01 & Issue Date-14/02/2013	Sand - 53 Silt - 27 Clay - 20	
4.	Color	SOP, SP-74 Issue No-01 & Issue Date-14/02/2013	Yellowish Brown	
5.	Water Holding Capacity	SOP, SP-81 Issue No-01 & Issue Date-14/02/2013	12.00	%
6.	Bulk density	SOP, SP-86 Issue No-01 & Issue Date-14/02/2013	1.43	g/cc
7.	Chloride as Cl	SOP, SP-85 Issue No-01 & Issue Date-14/02/2013	52.61	mg/kg
8.	Calcium as Ca	SOP, SP-82 Issue No-01 & Issue Date-14/02/2013	41.03	mg/100g
9.	Sodium as Na	SOP, SP-84 Issue No-01 & Issue Date-14/02/2013	48.51	mg/kg
10.	Potassium as K	SOP, SP-80 Issue No-01 & Issue Date-14/02/2013	112.06	mg/kg
11.	Organic Matter	IS-2720 (P-22) Titrimetric Method	0.59	%
12.	Magnesium as Mg	SOP, SP-85 Issue No-01 & Issue Date-14/02/2013	21.40	mg/100g
13.	Available Nitrogen as N	IS-14684 Distillation Method	119.44	mg/kg
14.	Available Phosphorus	SOP, SP-85 Issue No-01 & Issue Date-14/02/2013	17.92	mg/kg
15.	Zinc (as Zn)	ISIRI 3050	7.61	mg/kg
16.	Manganese (as Mn)	ISIRI 3050	3.54	mg/kg
17.	Lead (as Pb)	ISIRI 3050	0.83	mg/kg
18.	Cadmium (as Cd)	ISIRI 3050	0.42	mg/kg
19.	Chromium (as Cr)	ISIRI 3050	0.29	mg/kg
20.	Copper (as Cu)	ISIRI 3050	0.12	mg/kg

Tested by
MANITA NAYAK
SR. ANALYST

Checked by
Dr. Pooja
SR. ANALYST

Lab. In-charge
Dr. Pooja
SR. ANALYST



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Test Report

Sample Number:	VLD/2021/808	Report No.:	VLD/2021/01003
Name & Address of the Party:	M/S C. Hemwood Industries, Village-Bhagwatpur, Kharwan Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Form No.:	TS-F-01
Sample Description:	SOIL SAMPLE	Party Reference No.:	NIL
Sample Location:	Dalapur Chawri	Reporting Date:	06/06/2021
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01/05/2021- 06/06/2021
Sampling and Analysis Protocol:	IS 1720, USEPA 3050 & SOP	Receipt Date:	01/05/2021
		Sampling Date:	19/05/2021
		Sample Quantity:	2.0 Kg
		Sampling Type:	Composite
		Packing Status:	Temp Sealed
		Parameter Required:	As Per TOR Letter

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 4721 (P-25) by pH meter	7.61	-
2.	Conductivity	IS 14707 by Conductivity meter	0.270	µS/cm
3.	Soil Texture	SOP, SP-87 Issue No-01 & Issue Date-14/02/2013	Sand - 50 Silt - 50 Clay - 20	-
4.	Color	SOP, SP-76 Issue No-01 & Issue Date-14/02/2013	Yellowish Brown	-
5.	Water holding capacity	SOP, SP-81 Issue No-01 & Issue Date-14/02/2013	33.84	%
6.	Bulk density	SOP, SP-80 Issue No-01 & Issue Date-14/02/2013	1.51	g/cc
7.	Chloride as Cl	SOP, SP-85 Issue No-01 & Issue Date-14/02/2013	36.52	meq/100g
8.	Calcium as Ca	SOP, SP-82 Issue No-01 & Issue Date-14/02/2013	41.42	mg/100g
9.	Sodium as Na	SOP, SP-84 Issue No-01 & Issue Date-14/02/2013	49.26	mg/kg
10.	Potassium as K	SOP, SP-84 Issue No-01 & Issue Date-14/02/2013	126.08	mg/kg
11.	Organic Matter	IS 7729 (P-22) Elmer's Method	6.41	%
12.	Magnesium as Mg	SOP, SP-89 Issue No-01 & Issue Date-14/02/2013	22.20	mg/100g
13.	Available Nitrogen as N	IS 14631 Distillation Method	274.00	mg/kg
14.	Available Phosphorus	SOP, SP-86 Issue No-01 & Issue Date-14/02/2013	19.20	mg/kg
15.	Zinc (as Zn)	USEPA 3050B	9.64	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	6.02	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.86	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	0.41	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	0.30	mg/kg
20.	Copper (as Cu)	USEPA 3050B	2.96	mg/kg

MAHITA NAYAK
SR. ANALYST

Signature of Analyst

Signature of Analyst



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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
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Test Report

Sample Number:	VEL/CW/ISOM	Report No.:	VEL/S-2006/01/0004
Name & Address of the Party:	M/s Chemwood Industries, Village-Bhagwanpur, Kharwan Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Format No.:	7.81-01
Sample Description:	SOIL SAMPLE	Party Reference No.:	NIL
Sample Location:	Fatehgarh	Reporting Date:	06/06/2020
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01/06/2020 - 06/06/2020
Sampling and Analysis Protocol:	IS 2720, USEPA 3050 & SOP	Receipt Date:	01/06/2020
		Sampling Date:	29.05.2020
		Sample Quantity:	2.0 Kg
		Sampling Type:	Composite
		Packing Status:	Temp Sealed
		Parameter Required:	As Per ToR Letter

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26) w/ pH Meter	7.60	
2.	Conductivity	IS 1167 by Conductivity meter	0.242	µS/cm
3.	Soil Texture	SOP - SP-87, Issue No-01 & Issue Date-14/02/2013	Sand - 54 Silt - 29 Clay - 17	
4.	Color	SOP - SP-76, Issue No-01 & Issue Date- 14/02/2013	Yellowish Brown	
5.	Water holding capacity	SOP - SP-81, Issue No-01 & Issue Date-06/02/2013	30.46	%
6.	Bulk density	SOP - SP-86, Issue No-01 & Issue Date-14/02/2013	1.42	g/cm ³
7.	Chloride as Cl	SOP - SP-85, Issue No-01 & Issue Date-14/02/2013	3.81	mg/kg
8.	Calcium as Ca	SOP - SP-82, Issue No-01 & Issue Date- 14/02/2013	46.05	mg/100g
9.	Sulfur as S	SOP - SP-84, Issue No-01 & Issue Date-14/02/2013	48.82	mg/kg
10.	Potassium as K	SOP - SP-83, Issue No-01 & Issue Date-14/02/2013	129.00	mg/kg
11.	Organic Matter	IS 2711 (P-27) Titrimetric Method	0.42	%
12.	Magnesium as Mg	SOP - SP-83, Issue No-01 & Issue Date-14/02/2013	21.17	mg/100g
13.	Available Nitrogen as N	IS 14854 Distillation Method	120.85	mg/kg
14.	Available Phosphorus	SOP - SP-86, Issue No-01 & Issue Date-14/02/2013	18.21	mg/kg
15.	Zinc (as Zn)	USEPA 3050B	0.24	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	4.01	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.54	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	0.01	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	0.22	mg/kg
20.	Copper (as Cu)	USEPA 3050B	2.14	mg/kg

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SR. ANALYST

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Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VLE/CWIS/05	Report No.:	VLE/2021/0017005
Name & Address of the Party:	M/s Chemwood Industries, Village Bhagwanpur, Khurwan Road, Tehtil-Jagadhri, District Yamuna Nagar, Haryana.	Format No.:	7.01-01
Sample Description	SOIL SAMPLE	Party Reference No.:	NIL
Sample Location:	Khudri	Reporting Date:	06/06/2020
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01/06/2020 - 06/06/2020
Sampling and Analysis Program:	IS 2721, USEPA 3050 & SOP	Receipt Date:	01/06/2020
		Sampling Date:	29/05/2020
		Sample Quantity:	2.0 Kg
		Sampling Type:	Composite
		Packing Status:	Temp Sealed
		Packette Required:	As Per Job Letter

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-20) by HI 9142	7.09	
2.	Conductivity	IS 14707 by Conductivity meter	0.311	mS/cm
3.	Soil Texture	SOP - SP-87 Issue No-016, Issue Date-14/02/2013	Sand - 45 Silt - 40 Clay - 15	
4.	Color	SOP - SP-78, Issue No-016, Issue Date-14/02/2013	Yellowish Brown	
5.	Water holding capacity	SOP - SP-81, Issue No-016, Issue Date-14/02/2013	26.40	%
6.	Bulk density	SOP - SP-83, Issue No-016, Issue Date-14/02/2013	1.44	g/cc
7.	Chloride as Cl	SOP - SP-85, Issue No-016, Issue Date-14/02/2013	48.32	mg/100g
8.	Calcium as Ca	SOP - SP-82, Issue No-016, Issue Date-14/02/2013	50.21	mg/100g
9.	Sodium as Na	SOP - SP-84, Issue No-016, Issue Date-14/02/2013	46.11	mg/kg
10.	Potassium as K	SOP - SP-84, Issue No-016, Issue Date-14/02/2013	132.00	mg/kg
11.	Organic Matter	IS 2720 (P-12) Titrimetric Method	0.46	%
12.	Magnesium as Mg	SOP - SP-83, Issue No-016, Issue Date-14/02/2013	21.42	mg/100g
13.	Available Nitrogen as N	IS 14581 (Distillation Method)	234.00	mg/kg
14.	Available Phosphorus	SOP - SP-86, Issue No-016, Issue Date-14/02/2013	20.21	mg/kg
15.	Zinc as Zn	USEPA 3050B	9.84	mg/kg
16.	Manganese as Mn	USEPA 3050B	5.06	mg/kg
17.	Lead as Pb	USEPA 3050B	0.01	mg/kg
18.	Cadmium as Cd	USEPA 3050B	0.44	mg/kg
19.	Chromium as Cr	USEPA 3050B	0.20	mg/kg
20.	Copper as Cu	USEPA 3050B	5.16	mg/kg

Checked by:

SR. ANALYST

Checked by:

Checked by:

PHONE: 0174-2343750/757/753 0010245550 0057147268 E-mail: lab@vardanenviro.com, hd@vardanenviro.com

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Vardan EnviroLab

Laboratory: Plot No. B2A, Sector - 5, IMT Manesar, Gurugram - 122052 (Haryana)
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/2021/506	Report No.:	VEL/S-2046/01/006
Name & Address of the Party:	M/S Chemwood Industries, Village Bhaagvanpur, Khurwan Road, Tehsil Jagadhri, District Yamuna Nagar, Haryana.	Sample No.:	7314-06
Sample Description:	SOIL SAMPLE	Party Reference No.:	ND
Sample Location:	Khurwan	Reporting Date:	06/06/2020
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01/06/2020 - 06/06/2020
Sampling and Analysis Protocol:	IS 2720, USEPA 3050 & 307	Receipt Date:	01/06/2020
		Sampling Date:	30.05/2020
		Sample Quantity:	2.0 Kg
		Sampling Type:	Composite
		Packing Status:	Temp Sealed
		Parameter Specified:	As Per Encl Letter

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-25) by pH Meter	7.59	-
2.	Conductivity	IS 1470 by Conductivity meter	0.295	µS/cm
3.	Soil Texture	SOP, SP-67, Issue No.-01 & Issue Date-14/02/2013	Sand - 54 Silt - 26 Clay - 20	-
4.	Color	SOP, SP-78, Issue No.-01 & Issue Date-14/02/2013	Yellowish Brown	-
5.	Water holding capacity	SOP, SP-81, Issue No.-01 & Issue Date-14/02/2013	30.9%	%
6.	Bulk Density	SOP, SP-83, Issue No.-01 & Issue Date-14/02/2013	1.48	g/cc
7.	Chloride as Cl	SOP, SP-85, Issue No.-01 & Issue Date-14/02/2013	46.56	mg/kg
8.	Calcium as Ca	SOP, SP-82, Issue No.-01 & Issue Date-14/02/2013	40.42	mg/kg
9.	Sodium as Na	SOP, SP-84, Issue No.-01 & Issue Date-14/02/2013	41.92	mg/kg
10.	Potassium as K	SOP, SP-84, Issue No.-01 & Issue Date-14/02/2013	127.00	mg/kg
11.	Organic Matter	IS 2720 (P-20) Turbidity Method	0.59	%
12.	Magnesium as Mg	SOP, SP-80, Issue No.-01 & Issue Date-14/02/2013	20.44	mg/kg
13.	Available Nitrogen as N	IS 11280 Distillation Method	218.35	kg/ha
14.	Available Phosphorus	SOP, SP-86, Issue No.-01 & Issue Date-14/02/2013	15.54	mg/kg
15.	Zinc (as Zn)	USEPA 3050F	5.64	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	3.96	mg/kg
17.	Lead (as Pb)	USEPA 3063	0.83	mg/kg
18.	Cadmium (as Cd)	USEPA 3063	0.49	mg/kg
19.	Chromium (as Cr)	USEPA 3063	0.26	mg/kg
20.	Copper (as Cu)	USEPA 3050F	2.87	mg/kg

(Tested By)
MANITA NAYAK
SR. ANALYST

(Reviewed By)
Rishabh

(Approved By)
Manoj



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Laboratory Plot No. 87A, Sector - 5, IMT Manesar, Gurugram - 122051 (Haryana)
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Test Report

Sample Number:	VELA/WLS-97	Report No.:	VEL/S/2006/01-097
Name & Address of the Party:	M/s Chemswad Industries, Village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamuna Nagar, Haryana.	Format No.:	2.0 F-01
Sample Description:	SOIL SAMPLE	Party Reference No.:	Nil
Sample Location:	Bhadri	Reporting Date:	06/06/2020
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01/06/2020-06/06/2020
Sampling and Analysis Protocol:	IS 2720, USEPA 3050 & SOP	Receipt Date:	01/06/2020
		Sampling Date:	06/05/2020
		Sample Quantity:	2.0 Kg
		Sampling Type:	Composite
		Packing Status:	Temp Sealed
		Parameter Required:	As Per ToR Letter

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25 °C)	IS 2720 (P-20) by pH Meter	7.63	
2	Conductivity	IS 4767 by Conductivity meter	10268	µS/cm
3	Soil Texture	SOP, SP-87, Issue No-016, Issue Date-14/05/2013	Sand - 54 Silt - 36 Clay - 20	
4	Color	SOP, SP-78, Issue No-016, Issue Date-14/05/2013	Yellowish Brown	
5	Water holding capacity	SOP, SP-81, Issue No-016, Issue Date-14/05/2013	51.21	%
6	Bulk density	SOP, SP-83, Issue No-016, Issue Date-14/05/2013	1.48	g/cc
7	Chloride as Cl	SOP, SP-85, Issue No-016, Issue Date-14/05/2013	36.21	mg/lit
8	Calcium as Ca	SOP, SP-82, Issue No-016, Issue Date-14/05/2013	40.42	mg/lit
9	Sulfur as S	SOP, SP-84, Issue No-016, Issue Date-14/05/2013	43.91	mg/lit
10	Phosphorus as P	SOP, SP-80, Issue No-016, Issue Date-14/05/2013	102.60	mg/lit
11	Organic Matter	IS 2720 (P-22) Titrimetric Method	0.43	%
12	Magnesium as Mg	SOP, SP-80, Issue No-016, Issue Date-14/05/2013	21.41	mg/lit
13	Available Nitrogen as N	IS 14854 Distillation Method	212.00	kg/ha
14	Available Phosphorus	SOP, SP-86, Issue No-016, Issue Date-14/05/2013	18.57	kg/ha
15	Zinc (as Zn)	USEPA 3050B	7.64	mg/kg
16	Manganese (as Mn)	USEPA 3050B	4.11	mg/kg
17	Lead (as Pb)	USEPA 3050B	0.85	mg/kg
18	Carbon (as C)	USEPA 3050B	0.41	%
19	Carbon (as C)	USEPA 3050B	0.24	%
20	Copper (as Cu)	USEPA 3050B	1.04	mg/kg

Checked by
MAMTA NAYAK
SR. ANALYST

Attested by
[Signature]

[Signature]

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Test Report

Sample Number:	VCI/CW/588	Report No.:	VEL/2021/01/008
Name & Address of the Party:	M/s. Chemwood Industries, Village- Bhagwanpur, Kharwan Road, Tehsil-Jagadhri, District Yamuna Nagar, Haryana.	Format No.:	V E Y-01
Sample Description:	SOIL SAMPLE	Party Reference No.:	NIL
Sample Location:	Bahachaur	Reporting Date:	16-06-2020
Sample Collected by:	Vardan EnviroLab Representative	Period of Analysis:	01-06-2020- 06/30/2020
Sampling and Analysis Protocol:	IS 2720, USEPA 1050 & SOP	Receipt Date:	01-06-2020
		Sampling Date:	30-05-2020
		Sample Quantity:	2.0 kg
		Sampling Type:	Composite
		Packing Status:	Tight Sealed
		Parameter Required:	As Per TOR Letter

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25°C)	IS 2720 (P-16) by pH Meter	7.81	
4	Conductivity	IS 1567 by Conductivity meter	0.307	mc/cm
4	Soil Texture	SOP - SP-87, Issue No-01 & Issue Date-14-02-2013	Sand - 43 Silt - 46 Clay - 11	
4	Color	SOP - SP-76, Issue No-01 & Issue Date-14-02-2013	Yellowish Brown	
4	Water holding capacity	SOP - SP-81, Issue No-01 & Issue Date-14-02-2013	38.24	%
6	Bulk Density	SOP - SP-80, Issue No-01 & Issue Date-14-02-2013	1.34	g/cm ³
7	Chloride as Cl	SOP - SP-85, Issue No-01 & Issue Date-14-02-2013	18.14	mg/100g
8	Calcium as Ca	SOP - SP-82, Issue No-01 & Issue Date-14-02-2013	45.10	mg/100g
9	Sodium as Na	SOP - SP-84, Issue No-01 & Issue Date-14-02-2013	55.44	mg/kg
11.	Potassium as K	SOP - SP-81, Issue No-01 & Issue Date-14-02-2013	149.21	mg/kg
11.	Organic Matter	IS 2721 (11-22) Titrimetric Method	0.51	%
12	Magnesium as Mg	SOP - SP-83, Issue No-01 & Issue Date-14-02-2013	24.20	mg/100g
14	Available Nitrogen as N	IS 1584 (1991) Titrimetric Method	241.00	kg/ha
14	Available Phosphorus	SOP - SP-86, Issue No-01 & Issue Date-14-02-2013	23.00	kg/ha
15	Zinc (as Zn)	USEPA 1050B	11.20	mg/kg
16	Manganese (as Mn)	USEPA 1050B	6.51	mg/kg
17.	Lead (as Pb)	USEPA 1050B	0.87	mg/kg
18.	Cadmium (as Cd)	USEPA 1050B	0.37	mg/kg
19	Chromium (as Cr)	USEPA 1050B	0.18	mg/kg
20	Copper (as Cu)	USEPA 1050B	3.42	mg/kg

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MAHITA NAYAK
SR. ANALYST

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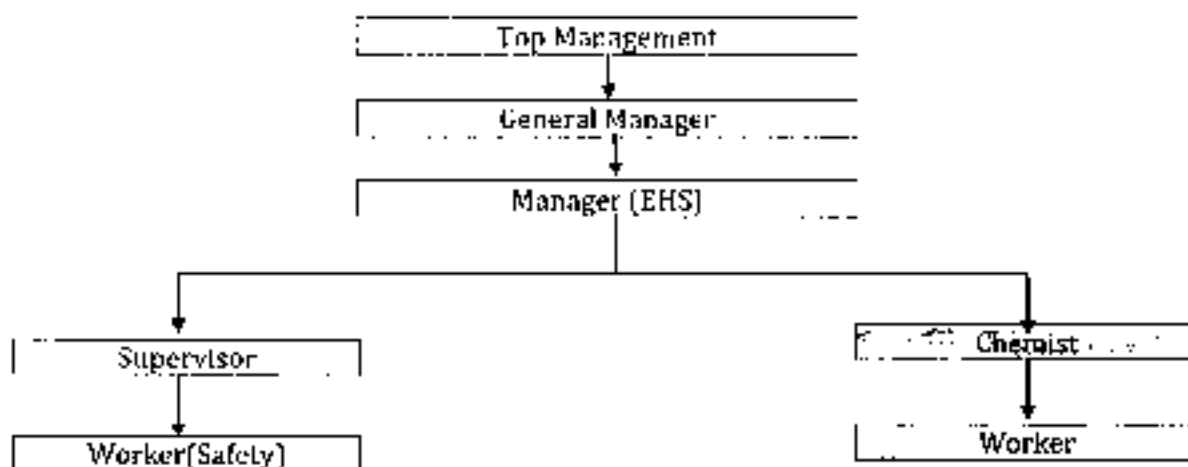
Chemwood Industries
 Kharwan road, Village Bhagwanpur, Jagadhri
 Dist. Yamunanagar, Haryana
 P-01 9953688768



ENVIRONMENT MANAGEMENT POLICY

Mr. Raghav Garg, Director of M/s **Chemwood Industries** having vast experience in Industrial Management, acknowledge its responsibility to manage the environment issues associated with Capacity Expansion for Formaldehyde Manufacturing Unit with the existing production capacity 100 TPD to 200 TPD at Village- Bhagwanpur, Kharwan Road, Tehsil Jagadhri, District Yamuna Nagar, Haryana.

The company is very much oblivious of its responsibility in protecting the Environment. Regular monitoring has thus, been provided. The Company has a well defined policy to keep the Environment Clean. The company has decided that all effective steps shall be taken to prevent deterioration of the existing environment. They have formed an Environment Committee committed for this cause. The committee will consist of following persons as given in,



Environment Management Cell

The main aims under the said policy are to:

- Effectively manage, monitor, improve and communicate the environmental performance.
- Take all reasonable steps to prevent pollution.



- Set realistic and measurable objectives and targets for continual improvement of the environmental performance.
- Comply fully with all relevant legal requirement, codes of practices and regulations
- Reduce, recycle and reuse natural resources.
- Identify and manage environmental risks and hazards.
- The project proponent shall regularly review the policy and ensure the corrective and preventative actions are taken in order to ensure continual improvement.
- To treat all the pollutants viz. liquid and gaseous, which contribute to the degradation of the environment with appropriate technologies.
- Hazardous and other wastes (Management and Transboundary Movement) Amendments Rules 2016.
- To encourage support and conduct developmental work for the purpose of achieving environmental standards and to improve the methods of environmental management.
- To create good working conditions (devoid of air and noise pollution) for employees.
- To minimize fire and accident hazards.
- Perspective budgeting and allocation of funds for environment management expenditure.
- Preventive maintenance and regular checking of machineries and equipments.
- To make continuous efforts in waste minimization.
- For the equipments and pipelines, leakage detection and repair shall be scheduled to minimize fugitive emissions.
- Continuous efforts with energy audits for the reduction of fuel and energy consumption.

Authorized Signatory

R. K. S.

M/s Chemwood Industries

Safety Data Sheet

according to 29CFR1910/1200 and GHS Rev. 3

Effective date: 01.08.2015

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Methanol, Lab Grade, 4L**SECTION 1 : Identification of the substance/mixture and of the supplier****Product name :** Methanol, Lab Grade, 4L**Manufacturer/Supplier Trade name****Manufacturer/Supplier Article number:** S25426A**Recommended uses of the product and uses restrictions on use:****Manufacturer Details:**AquaPhoenix Scientific
9 Barnhart Drive, Hannover, PA 17131**Supplier Details**Fisher Science Education
15 Jet View Drive, Rochester, NY 14624**Emergency telephone number:**

Fisher Science Education - Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification**Classification of the substance or mixture:****Flammable**

Flammable liquids, category 2

**Toxic**

Acute toxicity (oral, dermal, inhalation), category 3

**Health hazard**

Specific target organ toxicity following single exposure, category 1

AcTox Dermal: 3

Flammable liq.: 2

AcTox Oral: 3

AcTox Inhal.: 3

Stot SE: 1

Signal word: Danger**Hazard statements:**

Highly flammable liquid and vapour

Toxic if swallowed

Toxic in contact with skin

Toxic if inhaled

Causes damage to organs

Precautionary statements:

If medical advice is needed, have product container or label at hand

Keep out of reach of children

Read label before use

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Methanol, Lab Grade, 4L

Wear protective gloves/protective clothing/eye protection/face protection

Wash skin thoroughly after handling

Do not eat, drink or smoke when using this product

Avoid breathing dust/fume/gas/mist/vapours/spray

Keep away from heat/sparks/open flames/hot surfaces. No smoking

Do not breathe dust/fume/gas/mist/vapours/spray

Specific treatment (see supplemental first aid instructions on this label)

IF ON SKIN: Wash with soap and water

Call a POISON CENTER or doctor/physician if you feel unwell

Specific measures (see supplemental first aid instructions on this label)

Take off contaminated clothing and wash before reuse

Wash contaminated clothing before reuse

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

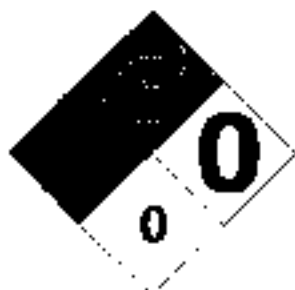
IF EXPOSED: Call a POISON CENTER or doctor/physician

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Store locked up

Store in a well ventilated place. Keep cool

Dispose of contents and container as instructed in Section 13

Other Non-GHS Classification.**WHMIS****NFPA/HMIS**

NFPA SCALE (0-4)

Health	2
Flammability	3
Reactivity	0
Personal Protection	X

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on Ingredients**Ingredients:**

CAS 67-56-1

Methanol

>90 %

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according to 29CFR1910/1200 and GHS Rev. 3

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Methanol, Lab Grade, 4L

Percentages are by weight

SECTION 4 : First aid measures**Description of first aid measures**

After inhalation: Move exposed individual to fresh air. Loosen clothing as necessary and position individual in a comfortable position. Get medical assistance. If breathing is difficult, give oxygen.

After skin contact: Wash affected area with soap and water. Rinse/flush exposed skin gently using water for 15-20 minutes. Seek medical attention if irritation persists or if concerned.

After eye contact: Protect the exposed eye. Rinse or flush eye gently with water for at least 15-20 minutes, lifting upper and lower lids. Seek medical attention if irritation persists or if concerned.

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Dilute mouth with water or milk after rinsing. Get medical assistance.

Most important symptoms and effects, both acute and delayed:

Poison. Toxic by ingestion, absorption through skin and inhalation, potentially causing irreversible effects. Irritating to eyes, skin, and respiratory tract. Irritation - all routes of exposure. Shortness of breath. Nausea. Headache. May be fatal or cause blindness if swallowed. Cannot be made non-poisonous. May cause gastrointestinal irritation, vomiting, and diarrhea. Central nervous system disorders. Skin disorders, preexisting eye disorders, gastrointestinal tract. Toxic - danger of very serious irreversible effects by inhalation, ingestion or absorption through skin. Experiments have shown reproductive toxicity effects on laboratory animals. May cause adverse kidney and liver effects.

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention, provide SDS document to physician. Physician should treat symptomatically.

SECTION 5 : Firefighting measures**Extinguishing media**

Suitable extinguishing agents: Dry chemical, foam, dry sand, or Carbon Dioxide. Water spray can keep containers cool.

For safety reasons unsuitable extinguishing agents: Water may be ineffective.

Special hazards arising from the substance or mixture:

Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated.

Advice for firefighters:

Protective equipment: Wear protective eyewear, gloves, and clothing. Refer to Section 8.

Additional information (precautions): Remove all sources of ignition. Avoid contact with skin, eyes, and clothing. Ensure adequate ventilation. Take precautions against static discharge.

SECTION 6 : Accidental release measures**Personal precautions, protective equipment and emergency procedures:**

Use spark-proof tools and explosion-proof equipment. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above. Ensure adequate ventilation.

Environmental precautions:

Prevent from reaching drains, sewer or waterway. Should not be released into environment.

Methods and material for containment and cleaning up:

If necessary use trained response staff or contractor. Remove all sources of ignition. Contain spillage and then

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Methanol, Lab Grade, 4L

collected. Do not flush to sewer. Absorb with a noncombustible absorbent material such as sand or earth and containerize for disposal. Ventilate area of leak or spill. Use spark-proof tools and explosion-proof equipment. Follow proper disposal methods. Refer to Section 13.

Reference to other sections:**SECTION 7 : Handling and storage****Precautions for safe handling:**

Use in a chemical fume hood. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes, and clothing. Take precautions against static discharge.

Conditions for safe storage, including any incompatibilities:

Store in a cool location. Provide ventilation for containers. Avoid storage near extreme heat, ignition sources or open flame. Keep container tightly sealed. Store with like hazards. Protect from freezing and physical damage.

SECTION 8 : Exposure controls/personal protection**Control Parameters:**

67-56-1, Methanol, ACGIH: 250 ppm STEL; 200 ppm TWA
 67-56-1, Methanol, NIOSH: 250 ppm STEL; 200 ppm TWA
 67-56-1, Methanol, NIOSH: 200 ppm TWA; 260 mg/m³ TWA

Appropriate Engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Ensure that dust-handling systems (exhaust ducts, dust collectors, vessels, and processing equipment) are designed to prevent the escape of dust into the work area.

Respiratory protection:

Use in a chemical fume hood. If exposure limit is exceeded, a full-face respirator with organic cartridge may be worn.

Protection of skin:

Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation.

Eye protection:

Safety glasses with side shields or goggles.

General hygienic measures:

Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Perform routine housekeeping.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Clear, colorless liquid	Explosion limit lower: Explosion limit upper:	6 21
Odor:	Alcohol	Vapor pressure:	128 hPa @ 20 °C
Odor threshold:	Not Available	Vapor density:	1.11
pH-value:	Not Available	Relative density:	0.79
Melting/Freezing point:	-98 °C	Solubilities:	Miscible at 20 °C

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Methanol, Lab Grade, 4L

Boiling point/Boiling range:	64.7°C @ 760mmHg	Partition coefficient (n-octanol/water):	Not Available
Flash point (closed cup):	12°C	Auto/Self-ignition temperature:	455°C
Evaporation rate:	5.2	Decomposition temperature:	Not Available
Flammability (solid,gaseous):	Flammable	Viscosity:	a. Kinematic: Not Available b. Dynamic: Not Available
Density: Not Available			

SECTION 10 : Stability and reactivity

Reactivity: Vapours may form explosive mixture with air.

Chemical stability: Stable under normal conditions.

Possible hazardous reactions: None under normal processing

Conditions to avoid: Excess heat, incompatible materials, flames, or sparks.

Incompatible materials: Oxidizing agents, reducing agents, alkali metals, acids, sodium, potassium, metals as powders, acid chlorides, acid anhydrides, powdered magnesium, and aluminum.

Hazardous decomposition products: Carbon monoxide, formaldehyde.

SECTION 11 : Toxicological information

Acute Toxicity:		
Dermal:	(rabbit)	LD-50 15600 mg/kg
Oral:	(rat)	LD-50 5628 mg/kg
Inhalation:	(rat)	LC-50 130,7 mg/l
Chronic Toxicity: No additional information.		
Corrosion/Irritation		
Ocular:		Irritating to eyes
Dermal:		Irritating to skin
Sensitization: No additional information.		
Single Target Organ (STOT)		Classified as causing damage to organs: Eyes, skin, optic nerve, gastrointestinal tract, central nervous system, respiratory system, liver, spleen, kidney, blood
Numerical Measures: No additional information.		
Carcinogenicity:		Teratogenicity: Has occurred in experimental animals.
Mutagenicity		Mutagenic effects have occurred in experimental animals.

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Methanol, Lab Grade, 4L**Reproductive Toxicity:**

Developmental Effects (Immediate/Delayed) have occurred in experimental animals

SECTION 12 : Ecological Information**Ecotoxicity****Freshwater Fish:** 96 Hr LC50 Pimephales promelas: 28700 mg/l**Freshwater Fish:** 96 Hr LC50 Oncorhynchus mykiss: 19500 - 20700 mg/L**Freshwater Fish:** 96 Hr LC50 Pimephales promelas: >100 mg/L**Freshwater Fish:** 96 Hr LC50 Oncorhynchus mykiss: 18 - 20 mL/L**Freshwater Fish:** 96 Hr LC50 Lepomis macrochirus: 13500 - 17600 mg/L**Persistence and degradability:** Not persistent.**Bioaccumulative potential:** Not Bioaccumulative.**Mobility in soil:** Aqueous solution has high mobility in soil.**Other adverse effects:****SECTION 13 : Disposal considerations****Waste disposal recommendations:**

Methanol RCRA waste code U154. Do not allow product to reach sewage system or open water. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Absorb with a non-combustible absorbent material such as sand or earth and containerize for disposal. Provide ventilation. Have fire extinguishing agent available in case of fire. Eliminate all sources of ignition. Use spark-proof tools and explosion-proof equipment. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information**UN-Number**

UN1230

UN proper shipping name

Methanol

Transport hazard classes)

Class:
3 Flammable liquids



Class:
6.1 Toxic substances

Packing group II**Environmental hazard:****Transport in bulk:****Special precautions for user****SECTION 15 : Regulatory information**

Safety Data Sheet

according to 29CFR1910/1200 and GHS Rev. 3

Effective date : 01.08.2015

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Methanol, Lab Grade, 4L**United States (USA)****SARA Section 311/312 (Specific toxic chemical listings):**

Acute, Chronic, Fire

SARA Section 313 (Specific toxic chemical listings):

67-56-1 Methanol

RCRA (hazardous waste code):

67-56-1 Methanol RCRA waste code J154

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

67-56-1 Methanol 5000 lbs

Proposition 65 (California):**Chemicals known to cause cancer:**

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

67-56-1 Methanol

Canada**Canadian Domestic Substances List (DSL):**

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

67-56-1 Methanol

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of The Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases**Abbreviations and acronyms:**

IMDG: International Maritime Code for Dangerous Goods

PNEC: Predicted No-Effect Concentration (REACH)

Safety Data Sheet

according to 29CFR1910/1201 and GHS Rev. 3

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Methanol, Lab Grade, 4L

CFR: Code of Federal Regulations (USA)

SARA: Superfund Amendments and Reauthorization Act (USA)

RCRA: Resource Conservation and Recovery Act (USA)

TSCA: Toxic Substances Control Act (USA)

NPRI: National Pollutant Release Inventory (Canada)

DOT: US Department of Transportation

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

DNEL: Derived No-Effect Level (REACH)

Effective date : 01.08.2015**Last updated** : 03.27.2015



SAFETY DATA SHEET

Creation Date: 08-Feb-2010

Revision Date: 25-Apr-2015

Revision Number: 5

1. Identification

Product Name	Formaldehyde solution 37%
Cat No. :	F75F-1GAL; F75P-1GAL; F75P-4; F75P-20
Synonyms	Formalin; Methanal; Methylene oxide; Oxymethane; Formic aldehyde; Methyl aldehyde
Recommended Use	Laboratory chemicals.
Uses advised against	Food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 766-7100

Emergency Telephone Number

CHEMTRECS, Inside the USA: 800-424-9300
CHEMTRECS, Outside the USA: 001 703 527-3387

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1205)

Flammable liquids	Category 3
Acute oral toxicity	Category 3
Acute Dermal Toxicity	Category 3
Acute Inhalation Toxicity - Vapors	Category 3
Skin Corrosion/Irritation	Category 1 B
Serious Eye Damage/Eye Irritant	Category 1
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1A
Specific target organ toxicity (single exposure)	Category 1
Target Organs - Respiratory system, Central nervous system (CNS), Optic nerve	
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Kidney, Liver, Heart, spleen, Blood	

Label Elements

Signal Word
Danger

Formaldehyde solution 37%

Revision Date 25-Apr-2019

Hazard Statements

Flammable liquid and vapor

Toxic if swallowed

Toxic in contact with skin

Causes severe skin burns and eye damage

May cause an allergic skin reaction

Toxic if inhaled

May cause respiratory irritation

May cause drowsiness or dizziness

Suspected of causing genetic defects

May cause cancer

Causes damage to organs

Causes damage to organs through prolonged or repeated exposure

**Precautionary Statements****Prevention**

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Use personal protective equipment as required

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Use only outdoors or in a well-ventilated area

Do not breathe dust/fume/gas/mist/vapors/spray

Contaminated work clothing should not be allowed out of the workplace

Wear protective gloves

Keep away from heat/sparks/open flames/hot surfaces - No smoking

Keep container tightly closed

Ground/bond container and race way equipment

Use explosion-proof electrical/ventilating/lighting/equipment

Use only non-sparking tools

Take precautionary measures against static discharge

Keep cap

Response

Immediately call a POISON CENTER or doctor/physician

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Skin

Wash contaminated clothing before reuse

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

If skin irritation or rash occurs: Get medical advice/attention

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Ingestion

Rinse mouth

Do NOT induce vomiting

Fire

In case of fire: Use CO2, dry chemical, or foam for extinction

Storage

Store locked up

Store in a well-ventilated place. Keep container tightly closed

Disposal

Dispose of contents/container in an approved waste disposal plant

Formaldehyde solution 37%

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Hazards not otherwise classified (HNOC)

None identified

Other hazards

Poison, may be fatal or cause blindness if swallowed. Vapor harmful. Cannot be made non-poisonous.

WARNING: Reproductive Harm - <https://www.p65warnings.ca.gov/>.**3. Composition/Information on Ingredients**

Component	CAS No	Weight %
Water	7732-18-5	40 - 48
Formaldehyde	50-00-0	37 - 40
Methyl alcohol	67-50-1	15

4. First-aid measures

General Advice	Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Inhalation	If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Move to fresh air. Immediate medical attention is required.
Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately.
Most important symptoms and effects	Breathing difficulties. Causes burns by all exposure routes. May cause allergic skin reaction. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Product is a caustic material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.
Notes to Physician	Treat symptomatically.

5. Fire-fighting measures

Suitable Extinguishing Media	Cool closed containers exposed to fire with water spray.
Unsuitable Extinguishing Media	No information available.
Flash Point	50 °C / 122 °F
Method -	No information available.
Autoignition Temperature	No information available.
Explosion Limits	
Upper	No data available.
Lower	No data available.
Sensitivity to Mechanical Impact	No information available.
Sensitivity to Static Discharge	No information available.

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are close to the workstation location. Use explosion-proof electrical/ventilating/lighting equipment. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Tightly fitting safety goggles. Face shield.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.154 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	pungent
Odor Threshold	No information available
pH	No information available
Melting Point/Range	0 °C / 32 °F
Boiling Point/Range	101 °C / 213.8 °F
Flash Point	56 °C / 132 °F
Evaporation Rate	No information available
Flammability (solid, gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	> 1.0
Specific Gravity	No information available
Solubility	Miscible
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available

10. Stability and reactivity

Reactive Hazard	None known, based on information available.
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products: Excess heat. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Strong oxidizing agents, Strong bases, nitriles, Acids, Isocyanates, Acid anhydrides, Metals, Acid chlorides.
Hazardous Decomposition Products	Hydrogen, Formaldehyde
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information**Acute Toxicity**

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Product Information

Oral LD50 Category 3, ATE = 50 - 300 mg/kg.
 Dermal LD50 Category 3, ATE = 200 - 1000 mg/kg
 Vapor LC50 Category 3, ATE = 2 - 10 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	Not listed	Not listed
Formaldehyde	500 mg/kg (Rat)	LD50 = 270 mg/kg (Rabbit)	0.578 mg/l (Rat) 4 h
Methyl alcohol	Calc. ATE 60 mg/kg LD50 = 1187 - 2769 mg/kg (Rat)	Calc. ATE 60 mg/kg LC50 = 1710X mg/kg (Rabbit)	Calc. ATE 0.6 mg/L (Vapours) or 0.3 mg/L (mists) LC50 = 129.2 mg/l (Rat) 4 h

Toxicologically Synergistic Products No information available

Products

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes burns by all exposure routes

Sensitization May cause sensitization by skin contact

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS.No	IARC	NTP	ACGIH	OSHA	Mexico
Water	7732-18-2	Not listed	Not listed	Not listed	Not listed	Not listed
Formaldehyde	50-00-0	Group 1	Known	A1	X	A2
Methyl alcohol	57-86-1	Not listed	Not listed	Not listed	Not listed	Not listed

IARC: (International Agency for Research on Cancer)

IARC: International Agency for Research on Cancer,

Group 1 - Carcinogenic to Humans

Group 2A - Probably Carcinogenic to Humans

Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

Known - Known Carcinogen

Reasonably Anticipated - Reasonably Anticipated to be a Human

Carcinogen

A1 - Known Human Carcinogen

A2 - Suspected Human Carcinogen

A3 - Animal Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

A1 - Confirmed Human Carcinogen

A2 - Suspected Human Carcinogen

A3 - Confirmed Animal Carcinogen

A4 - Not Classifiable as a Human Carcinogen

AR - Not Suspected as a Human Carcinogen

Mutagenic Effects Mutagenic effects have occurred in humans.

Reproductive Effects Experiments have shown reproductive toxicity effects on laboratory animals

Developmental Effects Developmental effects have occurred in experimental animals. Component substance is listed on California Proposition 65 as a developmental hazard.

Teratogenicity Teratogenic effects have occurred in experimental animals.

STOT - single exposure Respiratory system Central nervous system (CNS) Optic nerve

STOT - repeated exposure Kidney Liver Heart spleen Blood

Aspiration hazard No information available

Symptoms / effects, both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Product is a caustic material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should on investigation. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. Symptoms

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of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.

Endocrine Disruptor Information: No information available.

Other Adverse Effects: The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Formaldehyde	Not listed	Leuciscus dos EG50 = 15 mg/L 96h	Not listed	EC50 = 20 mg/L 96h EC50 = 2 mg/L 48h
Methyl alcohol	Not listed	Pimephales promelas: LC50 > 10000 mg/L 96h	EC50 = 35000 mg/L 20 min EC50 = 40000 mg/L 15 min EC50 = 43000 mg/L 5 min	EC50 > 10000 mg/L 24h

Persistence and Degradability: Miscible with water. Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation: No information available.

Mobility: Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Formaldehyde	-0.35
Methyl alcohol	-0.74

13. Disposal considerations

Waste Disposal Methods: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Formaldehyde - 50-0F-0	U122	-
Methyl alcohol - 67-56-1	U154	-

14. Transport information

DOT

UN-No: UN1190
 Proper Shipping Name: FORMALDEHYDE SOLUTIONS, FLAMMABLE
 Hazard Class: 3
 Subsidiary Hazard Class: 8
 Packing Group: III

TDG

UN-No: UN1196
 Proper Shipping Name: FORMALDEHYDE SOLUTION, FLAMMABLE
 Hazard Class: 3
 Subsidiary Hazard Class: 8
 Packing Group: III

IATA

UN-No: UN1196
 Proper Shipping Name: FORMALDEHYDE SOLUTION, FLAMMABLE
 Hazard Class: 3
 Subsidiary Hazard Class: 8
 Packing Group: III

IMDGMO

UN-No: UN1196
 Proper Shipping Name: FORMALDEHYDE SOLUTION, FLAMMABLE
 Hazard Class: 3

Formaldehyde solution 37%

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Subsidiary Hazard Class 8
Packing Group III**15. Regulatory information****United States of America Inventory**

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Water	7732-18-5	X	ACTIVE	-
Formaldehyde	50-00-0	X	ACTIVE	-
Methyl alcohol	67-56-1	X	ACTIVE	-

Legend:

TSCA - Toxic Substances Control Act (40 CFR Part 710)

X - Listed

- - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL, NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (JENCS), Australia (AICS), China (IECS), Korea (ECL)

Component	CAS-No	DSL	NDSL	EINECS	PICCS	JENCS	AICS	IECS	ECL
Water	7732-18-5	X	-	201-291-2	X	-	X	X	KE-0549
Formaldehyde	50-00-0	X	-	200-001-H	X	X	X	X	KE-1737
Methyl alcohol	67-56-1	X	-	200-656-6	X	X	X	X	KE-2319

U.S. Federal Regulations**SARA 313**

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Formaldehyde	50-00-0	37-41	0.1
Methyl alcohol	67-56-1	15	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Formaldehyde	X	100 lb	-	-

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Formaldehyde	X	-	-
Methyl alcohol	X	-	-

OSHA - Occupational Safety and Health Administration

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Formaldehyde	2 ppm STEL 0.5 ppm Action Level 0.75 ppm TWA	10 ⁻⁶ to 10 ⁻⁵

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs

Formaldehyde solution 37%

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Formaldehyde	100 lb	100 lb
Methyl alcohol	500 lb	

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Formaldehyde	50-00-0	Carc. (Gasous/Airy)	40 µg/day	Carcinogen
Methyl alcohol	67-36-0	Developmental		Developmental

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Water	-	-	X	-	-
Formaldehyde	X	X	X	X	X
Methyl alcohol	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ) Y
 DOT Marine Pollutant N
 DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product contains the following DHS chemicals:

Legend - STGs = Screening Threshold Quantities APA = A per allowed amount

Component	DHS Chemical Facility Anti-Terrorism Standard
Formaldehyde	Release STGs - 15000lb (suatun)

Other International Regulations

Mexico - Grade Moderate risk, Grade 2

16. Other information

Prepared By Regulatory Affairs
 ThermoFisher Scientific
 Email: EMSDS_RA@thermofisher.com

Creation Date 08-Feb-2010
 Revision Date 25-Apr-2019
 Print Date 25-Apr-2019
 Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of SDS

**कार्यकारी सारांश
मेसर्स केमवुड इंडस्ट्रीज**

द्वारा

**ग्राम भगवानपुर, खरवां रोड, तहसील जगाधरी,
यमुनानगर, हरियाणा में मौजूदा
फॉर्मलडीहाइड निर्माण उद्योग का 100 टीपीडी से
200 टीपीडी क्षमता विस्तार
की पर्यावरणीय प्रभाव आकलन रिपोर्ट का
कार्यकारी सारांश**

कार्यकारी सारांश

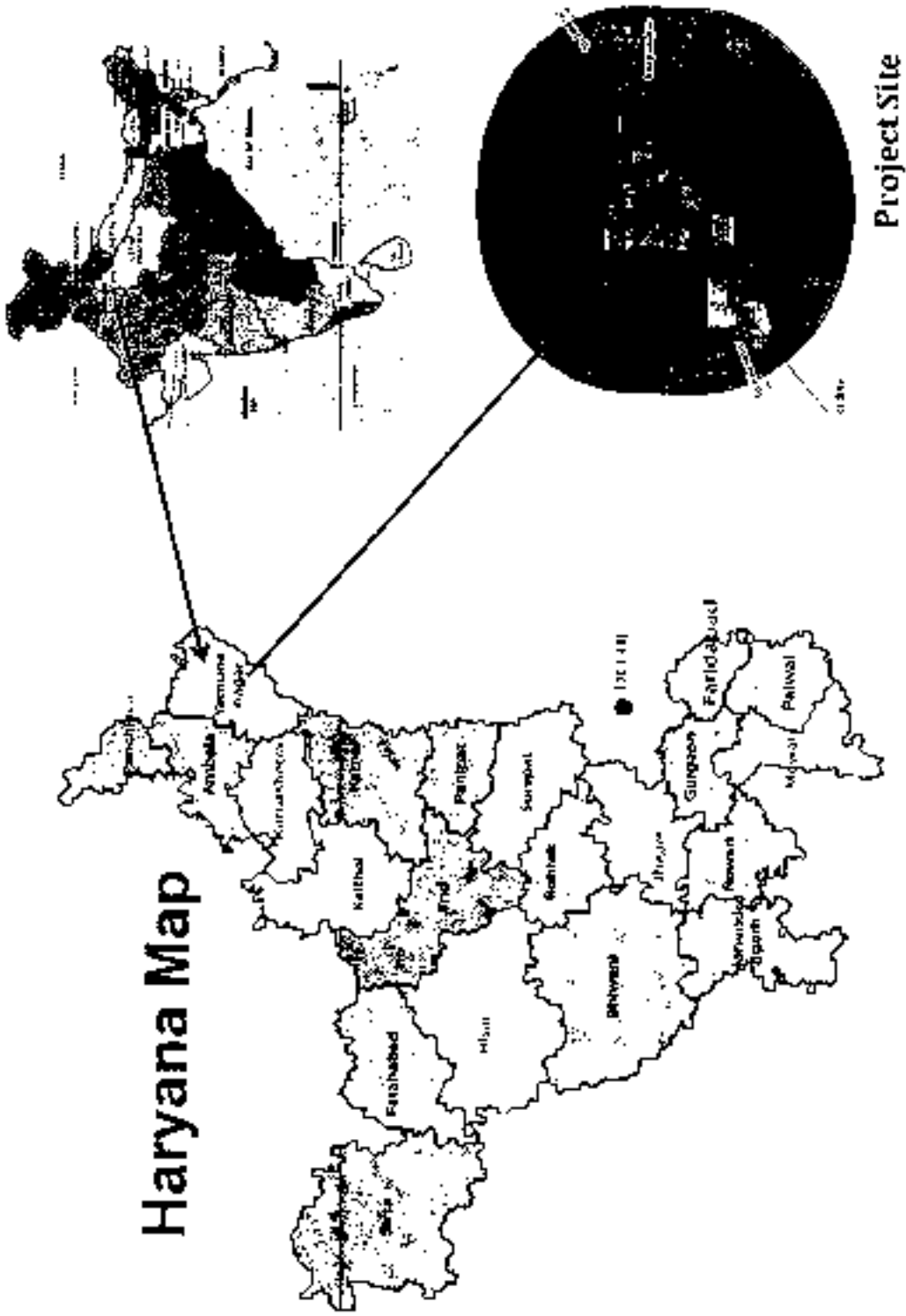
परिचय

मेसर्स केमवुड इंडस्ट्रीज द्वारा वर्ष 2019 में गांव भगतानपुर, खरवां रोड, तहसील जगाधरी, यमुनानगर, हरियाणा में फोर्मलडीहाइड निर्माण इकाई की स्थापना हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड से अनुमति आवेदन संख्या H5PCB/Consent/: 313282118YAMCTE5784449 दिनांक 20.12.2018 को प्राप्त करने के बाद की गई।

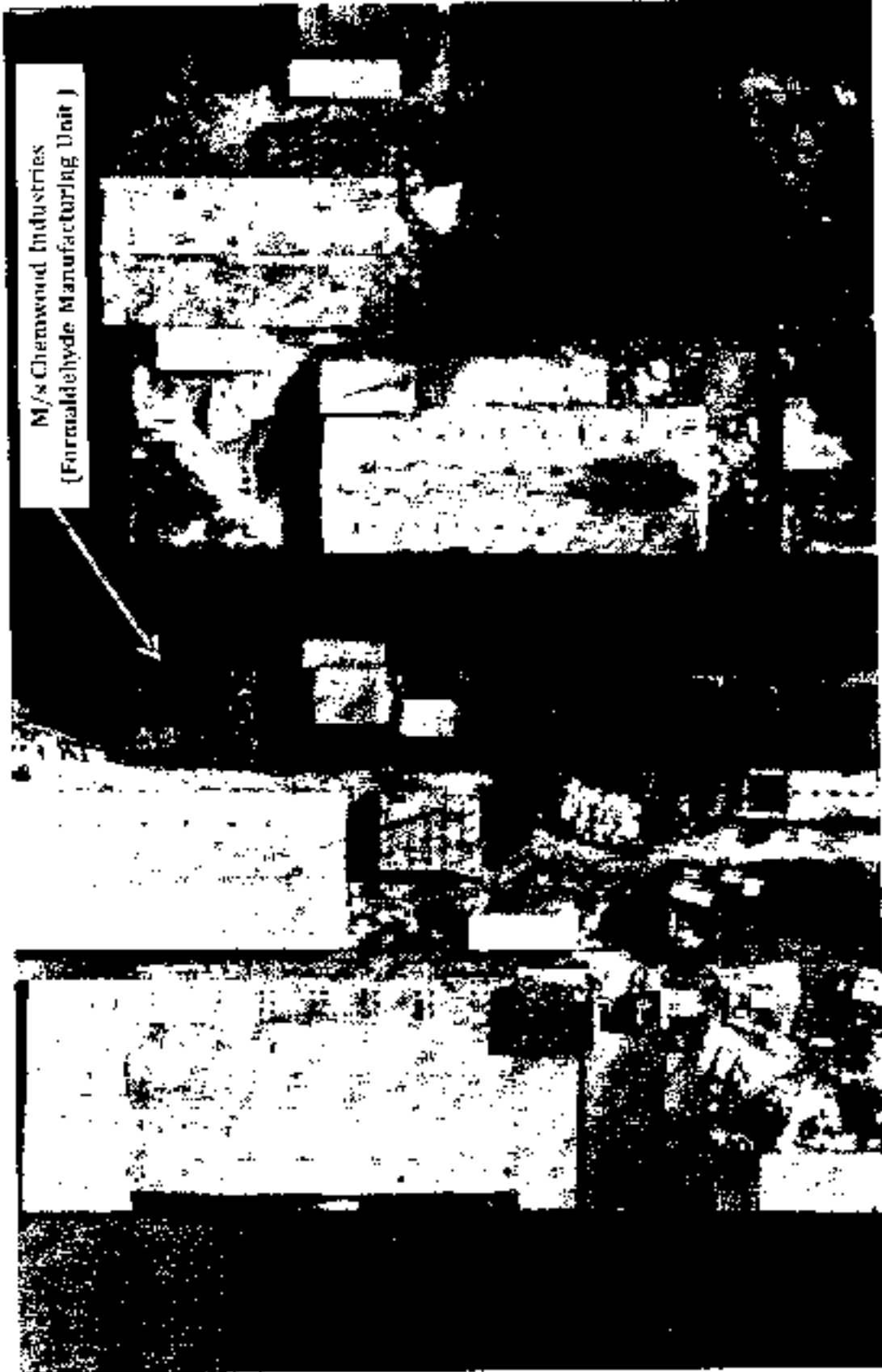
यूनिट ने 2019 में 100 टीपीडी फोर्मलडीहाइड का उत्पादन शुरू किया था। अब कंपनी फोर्मलडीहाइड निर्माण की क्षमता को 100 टीपीडी से 200 टीपीडी तक बढ़ाने का प्रस्ताव किया है।

तालिका संख्या 11.1: परियोजना विवरण

क्रमांक	घटक	विवरण
1.	परियोजना	मौजूदा सुविधा में फोर्मलडीहाइड निर्माण इकाई का विस्तार 100 टीपीडी से 200 टीपीडी तक
	परियोजना प्रस्तावक	मेसर्स केमवुड इंडस्ट्रीज
	स्थान विवरण	
2.	गांव/कस्बा/प्लॉट नं.	भगतानपुर, खरवां रोड
	तहसील	जगाधरी
	जिला	यमुना नगर
	राज्य	हरियाणा
3.	अक्षांश और देशांतर	अक्षांश- 30°12'25.1" उत्तर और देशांतर- 77°23'27.9" पूर्व
4.	टोपोग्राफी संख्या	M431.7 और M431.8
5.	कुल परियोजना क्षेत्र	0.68 हेक्टेयर
6.	परियोजना की लागत	मौजूदा- 456 लाख प्रस्तावित- 214 लाख कुल- 700 लाख
7.	पानी की आवश्यकता	200 केएलडी स्रोत: भूजल अनुमति की स्थिति- आवेदन एच.डब्ल्यू.आर.ए को जमा किया जाएगा। मौजूदा: 10 प्रस्तावित: 5
8.	श्रमशक्ति	कुल: 15 स्रोत: स्थानीय जनता को वरीयता दी जाएगी मौजूदा: 250 किलोवाट प्रस्तावित: 250 किलोवाट कुल: 500 किलोवाट
9.	पावर आवश्यकता: & आपूर्ति / स्रोत	स्रोत: यू.एच.बी.टी.एन (उत्तर हरियाणा बिजली वितरण निगम); ई.जी.सेट. मौजूदा: 325 केवीए प्रस्तावित: 650 केवीए कुल: 975 केवीए ईंधन- एवरसूडी (स्थानीय विक्रेता से)
10.	कार्य दिवस	लगभग 300 दिन



चित्र संख्या 1: परियोजना स्थल का स्थान मानचित्र



चित्र संख्या 2: परियोजना क्षेत्र का गूगल मानचित्र

पर्यावरण आधारभूत अध्ययन

पर्यावरण अध्ययन 1 मार्च 2020 से 31 दिसंबर, 2020 तक आयोजित किया गया था. विश्लेषण परिणामों का सारांश नीचे दिया गया है:

पैरामीटर	आधारभूत स्थिति (माइक्रोग्राम/मीटर क्यूब)	मानक माइक्रोग्राम/मीटर क्यूब
परिवेशी वायु गुणवत्ता		
पी. एम. १०	60.1 and 92.1 माइक्रोग्राम/मीटर क्यूब	100
पी. एम. १०	32.5 and 55.8 माइक्रोग्राम/मीटर क्यूब	60
सल्फर डाइऑक्साइड	9.1 and 19.3 माइक्रोग्राम/मीटर क्यूब	80
नाइट्रोजन के ऑक्साइड	16.2 and 32.1 माइक्रोग्राम/मीटर क्यूब	80
कार्बन मोनोऑक्साइड	0.57 and 0.98 माइक्रोग्राम/मीटर क्यूब	2 मिली ग्राम / मीटर क्यूब
शोर स्तर की निगरानी		
दिन का समय (सुबह 6:00 बजे से रात 10:00 बजे तक)	48.7 से 72.5 डीबी (ए)	75 (औद्योगिक) 55 (आवासीय)
रात का समय (शाम 10:00 बजे से सुबह 6:00 बजे तक)	39.7 से 61.9 डीबी (ए)	70 (औद्योगिक) 45 (आवासीय)
मिट्टी की गुणवत्ता		
पीएच	7.45 से 7.81	-
कार्बनिक पदार्थ	0.34% - 0.51%	-
नाइट्रोजन	183 किग्रा/हे. 241 किग्रा/हे.	-
फास्फोरस	15.16 किग्रा/हे. से 24.55 किग्रा/हेक्टेयर	-
पोटेशियम	164 किग्रा/हे. 242 किग्रा/हे.	-
भूजल		
पी.एच.	7.56 से 7.88	6.5-8.5
कठोरता	214 से 281.48 मिलीग्राम/ली	<200 मिलीग्राम/ली
पूर्णतः घुले हुए ठोस पदार्थ	314 से 368 मिलीग्राम/ली	<500 मिलीग्राम/ली
फ्लोराइड	0.48 से 0.74 मिलीग्राम/ली	<1.0 मिलीग्राम/ली
भू-पृष्ठ जल		
पी.एच.	7.51 से 7.72	6.5-8.5
कठोरता	222.6 से 354.22 मिलीग्राम/ली	<200 मिलीग्राम/ली
पूर्णतः घुले हुए ठोस पदार्थ	460 से 571.0 मिलीग्राम/ली	<500 मिलीग्राम/ली

प्रदूषण नियंत्रण के उपाय

3.1 वायु प्रदूषण नियंत्रण

- सभी निकास गैस उत्सर्जन को प्रक्रिया के माध्यम से चैनलाइज़ किया जाएगा और इसका उपयोग विभिन्न उद्देश्यों जैसे हीटिंग और अन्य उद्देश्यों के लिए किया जाएगा।
- बची हुई गैस चिमनी के जरिए खत्म हो जाएगी।
- गैसीय उत्सर्जन की निगरानी के लिए ऑनलाइन स्टेक मॉनिटरिंग सिस्टम उपलब्ध कराया जाएगा।
- प्रक्रिया से फॉर्मलडीहाइड के अवशेषों को साफ करने के लिए स्क़बर लगाया गया है जो गंध की समस्या को भी नियंत्रित करता है।

- डी.जी. सेट, से वायु उत्सर्जन को नियंत्रित करने के लिए स्टैक की ऊंचाई 6.0 मीटर (एजीएल) प्रदान की जाएगी।
- कुल परियोजना क्षेत्र के 37.62% क्षेत्र में हरित पट्टी विकसित की जाएगी जो संयंत्र द्वारा उत्सर्जित प्रदूषकों को कम करने में मदद करेगी।
- पर्याजिटिव उत्सर्जन को कम करने के लिए सभी प्रकार के उपाय सुनिश्चित किये जायेंगे।

3.2 अपशिष्ट जल प्रबंधन

- संयंत्र से कोई अपशिष्ट जल नहीं निकलता है। संयंत्र में जीरो डिस्चार्ज एप्टुएंट अवधारणा को अपनाया गया है।
- परियोजना की पानी की आवश्यकता को भूजल के माध्यम से ट्यूबवेल के माध्यम से पूरा किया जाता है। उसी के लिए आवेदन संबंधित प्राधिकारी को प्रस्तुत किया जाएगा।
- घरेलू अपशिष्ट जल को सेंट्रिक टैंक में उपचारित किया जाता है और उसके बाद सोक पिट में डाला जाता है।
- वर्षा जल संचयन की व्यवस्था पहले ही विकसित की जा चुकी है।

3.3 ध्वनि प्रदूषण नियंत्रण

- हरित पट्टी के विकास से संयंत्र में शोर के स्तर को कम करने में मदद मिलेगी।
- कर्मचारियों को आवश्यकता के अनुसार व्यक्तिगत सुरक्षा उपकरण जैसे इयरप्लग और ईयरमफ प्रदान किए जाएंगे।
- सभी संयंत्र घटकों और वाहनों का रखरखाव किया जाएगा।

भूमि प्रदूषण नियंत्रण

- संयंत्र ने शून्य तरल निर्वहन अवधारणाओं को लागू किया। इस प्रक्रिया में उपचारित पानी का पुनर्चक्रण किया जाता है। इसलिए संयंत्र के बाहर कोई अपशिष्ट नहीं छोड़ा जाता है।
- कोई भी जहरीला/अपशिष्ट जल सीधे जमीन पर नहीं डाला जाएगा।

1.1.1 खुली मिट्टी पर वनस्पति की जाएगी।

1.1.2 गंध प्रबंधन

- मुख्य उत्पाद धारा से अपशिष्ट फॉर्मलडिहाइड को साफ करने के लिए स्कबर स्थापित किया गया है।
- संचालन चरण के दौरान तापमान नियंत्रण में रखा जाएगा।
- हरित पट्टी विकसित की जाएगी।
- परियोजना में साफ सफाई का पूरा ध्यान रखा जाता है।

ठोस और खतरनाक अपशिष्ट उत्पादन और निपटान

- प्रक्रिया से कोई खतरनाक अपशिष्ट उत्पन्न नहीं होगा।
- प्रयुक्त तेल अधिकृत पुनर्चक्रणकर्ता को बेचा जा रहा है।
- घरेलू ठोस कचरे को यूनिट में उपलब्ध कराए गए अलग-अलग संग्रह डिब्बे में संग्रहित किया जाता है। इसे नियमित अंतराल में कचरा प्रबंधन एजेंसी को भेजा जाता है।
- उत्पन्न होने वाले सभी ठोस और खतरनाक कचरे को सीपीसीबी और हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड द्वारा जारी दिशा-निर्देशों और सीटीओ पत्र में दी गई शर्तों के अनुसार अलग-अलग एकर, संग्रहीत और निपटाया जा रहा है।

पर्यावरण प्रबंधन योजना (ईएमपी) लागत

परियोजना की कुल लागत 7.0 करोड़ है। पर्यावरण प्रबंधन योजना के लिए कुल 42.90 लाख रुपये का अनुमान है। सामाजिक विकास कार्य की लागत लगभग 7.0 लाख होगी।

पर्यावरण निगरानी योजना

पर्यावरण निगरानी योजना तैयार की गई है और इकाई में कार्यान्वित की जा रही है जिसमें वायु गुणवत्ता निगरानी, स्टैक उत्सर्जन निगरानी, शोर स्तर की निगरानी, जल और अपशिष्ट जल विश्लेषण इत्यादि शामिल हैं। इसकी रिपोर्ट नियमित आधार पर एचएसपीसीबी को प्रस्तुत की जा रही है।

निष्कर्ष

मैसर्स केम्बुड इंडस्ट्रीज आसपास के पर्यावरण की रक्षा के लिए सभी प्रदूषण नियंत्रण उपायों को लागू करने के लिए प्रतिबद्ध है। यह परियोजना निश्चित रूप से क्षेत्रीय, राज्य और राष्ट्रीय अर्थव्यवस्था को बेहतर बनाने में योगदान देगी। औद्योगिक विकास सामाजिक आर्थिक विकास का सूचक है। परियोजना को सीटीई की शर्तों का अनुपालन करते हुए विकसित किया गया है और एचएसपीसीबी द्वारा दी गई सीटीओ शर्तों के अनुसार संचालित किया जा रहा है।



EXECUTIVE SUMMARY**OF
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT****For
EXPANSION OF FORMALDEHYDE MANUFACTURING UNIT IN EXISTING
FACILITY FROM 100 TPD TO 200 TPD****AT VILLAGE BHAGWANPUR, KHARWAN ROAD, TEHSIL JAGADHRI,
YAMUNANAGAR, HARYANA****By****M/S CHEMWOOD INDUSTRIES**

EXECUTIVE SUMMARY

1. INTRODUCTION

M/s Chemwood Industries has established a Formaldehyde manufacturing unit at village Bhagwanpur, Kharwan Road, Tehsil Jagadhri, Yamunanagar, Haryana in 2019 after getting CTE vide application no. HSPCB/Consent/: 313282118YAMCTE5784419 dated 20.12.2018 from Haryana State Pollution Control Board. The unit had started the production of 100 TPD formaldehyde in 2019. Now the company is proposing capacity expansion of Formaldehyde manufacturing from 100 TPD to 200 TPD.

Table No. 0.1: Project details

S. No.	Particulars	Details
1	Project	Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD
	Project Proponent	M/s. Chemwood Industries
	Location details	
2	Village / Town / Plot No	Bhagwanpur, Kharwan Road
	Tehsil	Jagadhri
	District	Yamuna Nagar
	State	Haryana
3	Latitude and Longitude	Latitude- 30° 12' 25.1" N & Longitude- 77° 22' 27.9" E
4	Toposheet No.	H431.7 & H431.8
5	Total Project Area	0.08 ha
6	Project Cost	Existing: 486 Lakhs Proposed: 211 Lakhs Total 700 Lakhs
7	Water requirement	200 KLD Source: Ground Water Permission Status: Application will be submitted to HWRA
8	Manpower	Existing: 10 Proposed: 5 Total: 15 Source: Preference will be given to local public
9	Power requirement & Supply / Source	Existing: 250 KW Proposed: 250 KW Total: 500 KW Source: UIDVN (Uttar Haryana Bijli Vitran Nigam) DG Sets. Existing: 325 KVA Proposed: 650 KVA Total: 975 KVA Fuel: HSD from local Vendor
10	Working Days	Approximately 300 days

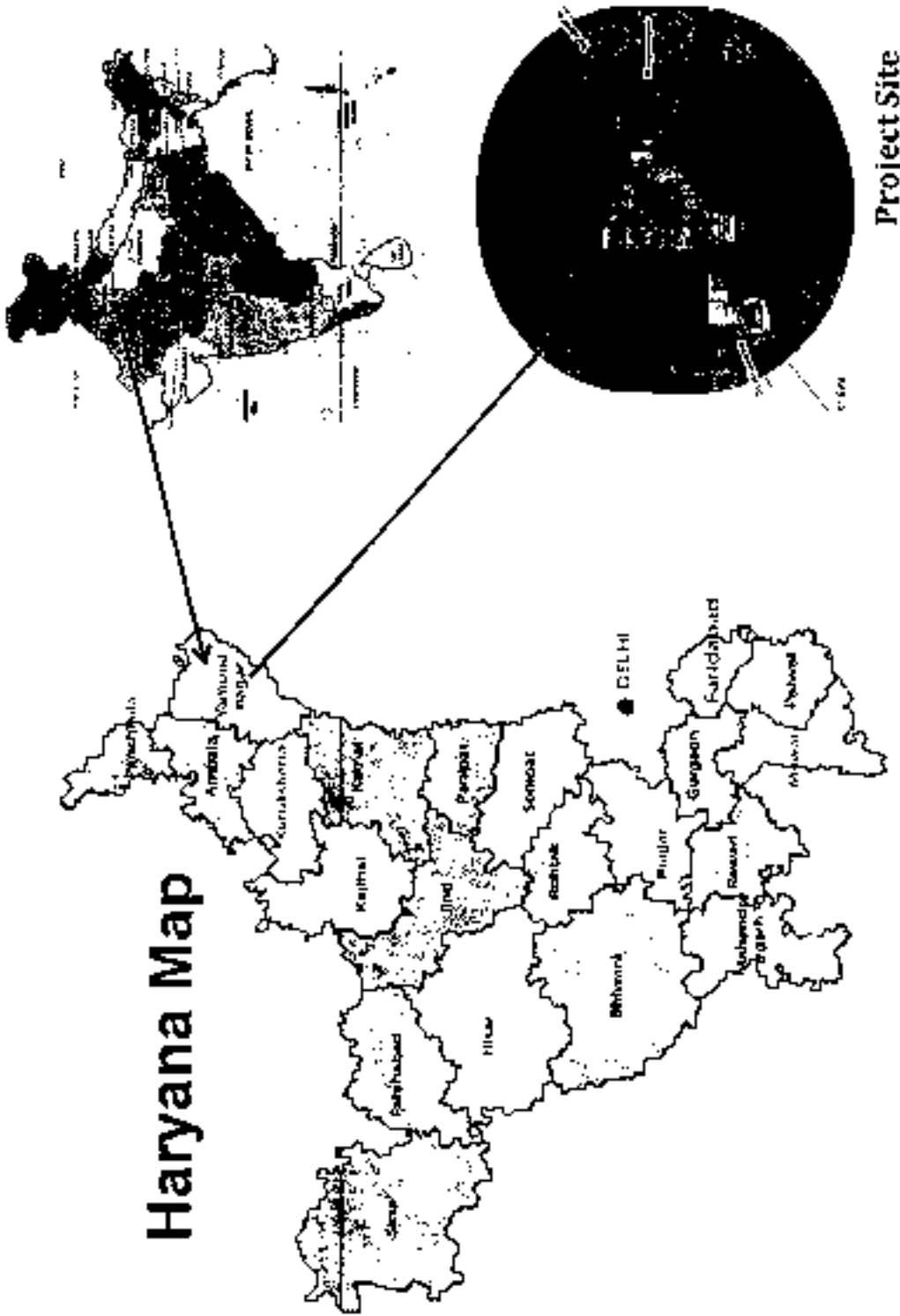


Figure No. 1: Location Map of the Project Site



Figure No. 2: Google Map of Project Area

2. ENVIRONMENTAL BASELINE STUDY

Baseline study has been conducted from 1st March to 31st May 2020 covering on non-monsoon season (Pre- Monsoon). Following observations has been made after study:-

Parameters	Baseline Status	Standard
Ambient Air Quality		
PM ₁₀	60.1 µg/m ³ and 92.1 µg/m ³	100 µg/m ³
PM _{2.5}	32.5 µg/m ³ and 55.8 µg/m ³	60 µg/m ³
SO ₂	9.1 µg/m ³ and 19.3 µg/m ³	80 µg/m ³
NO _x	16.2 µg/m ³ and 32.1 µg/m ³	80 µg/m ³
CO	0.57 mg/m ³ and 0.98 mg/m ³	2 mg/m ³
Noise Level Monitoring		
Day Time (6:00 a.m. to 10:00 p.m.)	48.7 to 72.5 dB(A)	75 (Ind.) 55 (Resi.)
Night Time (10:00 p.m. to 6:00 a.m.)	39.7 to 61.9 dB (A).	70 (Ind.) 45 (Resi.)
Soil Quality and Characteristics		
pH	7.45 to 7.81	-
Organic Matter	0.34%-0.51%	-
Nitrogen	183 Kg/ha. to 241 Kg/ha.	-
Phosphorus	15.16 Kg/ha. to 21.55 Kg/ha.	-
Potassium	164 Kg/ha. to 242 Kg/ha.)	-
Ground Water		
pH	7.56 to 7.88	6.5-8.5
Total Hardness	214 to 281.18 mg/l	≤200 mg/L
Total Dissolved Solids	314 to 368 mg/l	≤500 mg/l.
Fluoride	0.48 to 0.74 mg/l	≤ 1.0 mg/L
Surface Water		
pH	7.51 to 7.72	6.5-8.5
Total Hardness	221.0 to 315.21 mg/l	≤200 mg/L
Total Dissolved Solids	460 to 571.0 mg/l	≤500 mg/l.

The concentrations were found to be within permissible limits. (Compared with IS 10300:2012)

3. MITIGATION MEASURES FOR CONTROL OF POLLUTION

3.1.1 Air Pollution Control

- All the exhaust gas emissions are channelized all through the process and reused for various purposes like heating & remained chemical utilization.
- Remaining gas will be exhausted through a chimney.
- Online Stack Monitoring System as an air pollution control measures to control the emission of particulate matter the flue gas emission will remain well within gaseous emission norms prescribed by the CIRC.
- Scrubber has been installed for scrubbing the residual Formaldehyde from the main product stream which also controls the odour problem.

- To control the air emissions from D.G. Set, stack height of 6.0 m (AGL) shall be provided.
- Green belt will be developed on 37.62 % area of the total project area which will help in attenuating the pollutants emitted by the plant.
- Adequate measures for control of fugitive dust emissions will be taken

1.1.2 Waste Water Treatment

- There is no waste water discharge from the plant. Zero discharge effluent concept adopted in unit
- Fresh water requirement of the project is meeting through ground water through tubewell. Application for the same will be submitted to the concerned authority.
- Domestic wastewater is treated in Septic tank followed by soak pits.
- Rain water harvesting arrangement has been already developed.

1.1.3 Noise Pollution Control

- Green belt development (plantation of dense trees across the boundary) will help in reducing noise levels in the plant as a result of attenuation of noise generated due to plant operations, and transportation.
- Personal protective equipments like ear plugs and ear muffs will be provided to employees working in the noise prone areas.
- Time to time oiling and servicing and O and M of machineries will be done.
- Acoustic enclosure for heavy machines/equipment/D.G. already provided.

1.1.4 Land Pollution Control

- The plant implemented zero level discharge concepts. The treated water recycled in the process. Hence no effluent generation.
- No toxic /waste water will be disposed directly on land.
- Vegetation will be done on uncovered soil.

1.1.5 Odour Management

- Scrubber has been installed for scrubbing the residual Formaldehyde from the main product stream.
- Temperature will be kept under control during operation phase.
- Greenbelt will be developed.
- Good housekeeping is being maintained.

1.1.6 Solid & Hazardous Waste Generation and Disposal

- No Haz. Waste generation from the process.
- Used Oil is being sold to authorized recycler.
- Domestic solid waste is stored in separated collection bins provided in the unit. The same is sent to waste management agency in regular interval.

All the Solid & hazardous waste generated, are being collected, stored separately and disposed of as per the guidelines issued by CPCB & Haryana State Pollution Control Board and the condition given in the CTO letter.

4. ENVIRONMENTAL MANAGEMENT PLAN (EMP) COST

The total capital investment on environmental control measures is envisaged to be about Rs 42.90 Lakhs out of a total project cost of Rs. 7.0 Crure. Details are given in Table-10.2. Cost towards social development work is 7.0 Lakhs

5. POST PROJECT ENVIRONMENTAL MONITORING PARAMETER AND FREQUENCY

Environmental Monitoring Plan has been prepared and being implemented in the unit which includes Air Quality Monitoring, Stack Emission monitoring, Noise Level Monitoring, Water and Waste water analysis etc. The report of the same is being submitted to the HSPCB on regular basis.

6. CONCLUSION

M/s Chemwood Industries has committed to implement all the pollution control measures to protect the surrounding environment. The project can definitely improve the regional, state and national economy. Industrial growth is an indication of socio economic development. The project has been developed complying with the condition of CTE and being operated as per CIO conditions given by HSPCB.

