

Date: 22nd May 2023

To,

Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change,
Regional Office (WCZ), Ground Floor, East Wing,
New Secretariat Building Civil Lines,
Nagpur.

Subject: Submission of Six-monthly post EC compliance report (**Period: October 2022 to March 2023**) for **M/s. Aquapharm Chemicals Pvt. Ltd.** Plot No. K-3/1, K-3/2, K-3/3, MIDC Mahad, Taluka- Mahad, District -Raigad.

Reference: EC File No: SEAC-2013/CR-550/TC - 2 Dated October 8th, 2015.

Respected Sir/Madam

M/s. Aquapharm Chemicals Pvt. Ltd. is submitting herewith six-monthly compliance report in spirit of EC letter received from State Level Environment Impact Assessment Authority (SEIAA) Environment Department, Government of Maharashtra vide referenced EC letter for Proposed expansion of Speciality Chemicals Manufacturing unit at Plot No. K-3/1, K-3/2, K-3/3, MIDC Mahad, Taluka- Mahad, District -Raigad.

Report context following information

- I. Project Information sheet**
- II. Point-wise compliance status report of various stipulations as laid down by SEIAA in reference letter with supporting documents.**

Kindly acknowledge the report and record it.

Yours faithfully

For, M/s. Aquapharm Chemicals Pvt. Ltd.



Authorized Signatory

Copy to:

1. The Secretary, Department of Environment, Government of Maharashtra, Mantralya, Mumbai- 400 032.
2. The Member Secretary, Maharashtra Pollution Control Board, Kalpataru Points, 3rd & 4th floor, Opposite Cine Planet, Sion Circle, Sion (E), Mumbai- 400 022.
3. Regional Officer, Raigad Maharashtra Pollution Control Board, 6th Floor, Raigad Bhavan, Sector 11, CBD Belapur, Navi Mumbai, Maharashtra 400614.
4. Sub-Regional Officer, Maharashtra Pollution Control Board, Mahad, Samaik Suvidha Kendra Building, MIDC - Mahad, District Raigad - 402 309

CIN: U24231MH1974PTC017243

To,

The Secretary, Department of Environment,
Government of Maharashtra, Mantralya,
Mumbai- 400 032.

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9th & 10th Floor, Amar Synergy,
12B, Sadhu Vaswani Road,
Pune - 411001. India.

Tel. : +91 20 66090000
Fax : +91 20 26053396
Website: www.aquapharm-india.com

Aquapharm Chemicals Pvt. Limited

Date: 22nd May 2023

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List of EC Granted Proposals for uploading condition

ID	Proposal_no	Type Of Proposal	Type of Application	Project Details	Edit EC Condition	View EC Condition	Status
1	SEAC – 2013/CR-550/ TC-2 Dated 8th October, 2015	EC	Category B	File Name : SEAC – 2013/CR-550/ TC-2 Dated 8th October, 2015 Project Name : Synthetic Organic Chemicals Manufacturing Unit at Plot No. K-3/1, K-3/2, K-3/3, Mahad MIDC, Taluka- Mahad, District – Raigad, Maharashtra by M/s. Aquapharm Chemicals Pvt. Ltd. State Name : Maharashtra	(Condition_upload_form_detail.aspx? proposal_id=83537032 &proposal_no=SEAC –2013/CR-550/ TC-2 Dated 8th October, 2015) Edit Condition Uploaded (Condition_upload_form_detail.aspx? proposal_id=83537032 &proposal_no=SEAC –2013/CR-550/ TC-2 Dated 8th October, 2015)	(Condition_upload_form_detail_View.aspx? proposal_id=83537032 &proposal_no=SEAC –2013/CR-550/ TC-2 Dated 8th October, 2015) View Condition Uploaded Report (Condition_upload_form_detail_View.aspx? proposal_id=83537032 &proposal_no=SEAC –2013/CR-550/ TC-2 Dated 8th October, 2015)	Submitted

Add EC Granted Proposal which are not available in above table

+ Add



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 For any Technical support, Please Contact EFCCID, NIC, New Delhi, monitoring-fc(at)nic(dot)in



aquapharmk3 K-3 <aquapharmchemicalsk3@gmail.com>

Post EC Compliance/ Progress Report (Period: October 2022 to March 2023) - M/s. Aquapharm Chemicals Pvt. Ltd

aquapharmk3 K-3 <aquapharmchemicalsk3@gmail.com>
To: ecompliance-mh@gov.in

Tue, Jun 6, 2023 at 11:21 AM

Respected Sir,

References - SEAC - 2013/CR-550/TC-2 Dated 8th October, 2015

M/s. Aquapharm Chemicals Pvt. Ltd. is submitting a Six - Monthly Compliance Report for the period of October 2022 to March 2023, in accordance to EC letter received from the State Level Impact Assessment Authority (SEIAA) Environment Department, Government of Maharashtra for the Manufacturing of Speciality Chemicals of M/s. Aquapharm Chemicals Pvt. Ltd.

Compliance of EC conditions has been uploaded on Parivesh Portal dated 31/05/2023.

Please find the attachment enclosed.

1. Post EC Compliance Report.
2. Conditions uploaded on Parivesh Portal.

Thanks & Regards,
M/s. Aquapharm Chemicals Pvt. Ltd

2 attachments**Compliance of EC Conditions - Aquapharm (1).pdf**
292K**Nagpur- Post EC_Aquapharm K3.pdf**
8898K



aquapharmk3 K-3 <aquapharmchemicalsk3@gmail.com>

Post EC Compliance/ Progress Report (Period: October 2022 to March 2023) - M/s. Aquapharm Chemicals Pvt. Ltd

aquapharmk3 K-3 <aquapharmchemicalsk3@gmail.com>

Tue, Jun 6, 2023 at 11:25 AM

To: vijay.patil@nic.in

Respected Sir,

References - SEAC - 2013/CR-550/TC-2 Dated 8th October, 2015

M/s. Aquapharm Chemicals Pvt. Ltd. is submitting a Six - Monthly Compliance Report for the period of October 2022 to March 2023, in accordance to EC letter received from the State Level Impact Assessment Authority (SEIAA) Environment Department, Government of Maharashtra for the Manufacturing of Speciality Chemicals of M/s. Aquapharm Chemicals Pvt. Ltd.

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*Thanks & Regards,
Aquapharm Chemicals Pvt. Ltd*

2 attachments**Compliance of EC Conditions - Aquapharm (2).pdf**
292K**Mantralaya - Post EC_Aquapharm K3.pdf**
8670K

SIX MONTHLY POST EC COMPLIANCE REPORT

PERIOD: October 2022 to March 2023



EC File No: SEAC –2013/CR-550/ TC-2 Dated 8th October, 2015.

M/s. Aquapharm Chemicals Pvt. Ltd.

Plot No. K-3/1, K-3/2, K-3/3 at MIDC Mahad, Taluka. Mahad, District. Raigad, 402309

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Annexure 7	:	Onsite Emergency Preparedness & Response Plan
Annexure 8	:	Monitoring Reports (Ambient Air, Noise, Workzone Noise, Work zone air, Stack Monitoring, ETP Treated water, STP Treated Water)
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1. PROJECT BACKGROUND

M/s. Aquapharm Chemicals Private Limited located at plot no. K-3/1, K-3/2, K-3/3, Mahad MIDC, Taluka -Mahad, District - Raigad, 402302. Industry manufactures specialty chemicals including Phosphonates, Polymers, Oil field Chemicals, and Biodegradable chelating agents. Currently industry is manufacturing total 29 no's. of products over the plot area of 73547.00 sqm.

The Basic Organic Chemical Manufacturing Industry is an essential part of the broader chemical manufacturing industry. They support and provide many technological innovations. The Basic Organic chemicals industries play a vital role in providing chemicals and intermediates as inputs to other sectors, like paints, adhesives, dyestuffs, leather chemicals, pesticides, alcohol, or ethanol, turpentine (except mineral turpentine), and a number of organic dyes or pigments. Aquapharm chemicals is committed to making the industries of the world more efficient, productive and effective through their specialty chemicals that make their formulations world class. Over 40 years Aquapharm has served clients across the world through our additives like Phosphonates, Polymers, Questoll detergent additives and Biodegradable chelating agents.

M/s. Aquapharm Chemicals Private Limited is a private company incorporated on 2nd March 1974 having registered office at 9th & 10th Floor, Amar Synergy,12-B, Sadhu Vaswani Road, Pune, Maharashtra 411001. In accordance with EIA Notification 14th September 2006 and amendment thereof Aquapharm has obtained environmental clearance from State Environmental Impact Assessment Authority vide letter no. SEAC-2013/CR-550/TC-2 dated October 8th, 2015.

Industry has obtained Environmental Clearance for Plot Area 73,547.00 Sq.m. and existing BUA is 33,180.35 Sq.m.

2. INFORMATION SHEET

**Monitoring the Implementation of Environmental Safeguards
Ministry of Environment & Forest**

MONITORING REPORT

PART – I

DATA SHEET

Sl. No.	Particulars	Details																		
1.	Project type: River Valley / Mining / Industry / Thermal / Nuclear / Others (specify)	: Industry																		
2.	Name of the Project	: Synthetic Organic Chemicals Manufacturing Unit at Plot No. K-3/1, K-3/2, K-3/3, Mahad MIDC, Taluka- Mahad, District – Raigad, Maharashtra by M/s. Aquapharm Chemicals Pvt. Ltd.																		
3.	Clearance letter (s) / OM No. and date	: File No.: SEAC –2013/CR-550/ TC-2 Dated 8 th October, 2015. Annexure 1: Environmental Clearance Letter																		
4.	Location																			
	a) District (s)	: Raigad																		
	b) State (s)	: Maharashtra																		
	c) Location latitude / longitude	: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Point</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>18°6' 44.46"N</td> <td>73°30' 47.57"E</td> </tr> <tr> <td>B</td> <td>18°6'38.93"N</td> <td>73°30' 58.57"E</td> </tr> <tr> <td>C</td> <td>18°6'33.22"N</td> <td>73°30' 54.86"E</td> </tr> <tr> <td>D</td> <td>18°6 '39.00"N</td> <td>73°30'44.12"E</td> </tr> <tr> <td>E</td> <td>18°6'39.31"N,</td> <td>73°30'50.13"E</td> </tr> </tbody> </table>	Point	Latitude	Longitude	A	18°6' 44.46"N	73°30' 47.57"E	B	18°6'38.93"N	73°30' 58.57"E	C	18°6'33.22"N	73°30' 54.86"E	D	18°6 '39.00"N	73°30'44.12"E	E	18°6'39.31"N,	73°30'50.13"E
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5.	Address for Correspondence a) Address of the Concerned Project Chief Engineer (with Pin code & Telephone / Telex / Fax Numbers)	: Mr. Avinash Dattaram Khaire Aquapharm Chemicals Pvt Ltd. 9 th and 10 th Floor, " Amar Synergy", 12 B, Sadhu Vaswani Road, Pune- 411001																		

		Telephone - 020-26053396																																																	
	b) Address of the Concerned Project Engineer / Manager (with Pin code & Telephone / Telex / Fax Numbers)	Mr. Avinash Dattaram Khaire Aquapharm Chemicals Pvt Ltd. 9 th and 10 th Floor," Amar Synergy", 12 B, Sadhu Vaswani Road, Pune- 411001 Telephone - 020-26053396																																																	
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			MS Scrap (Metallic Scrap) – 100 kg/day	MS Scrap (Metallic Scrap) – 500 kg/day
			4.Canteen Waste – 20 kg/day	4.Canteen Waste – 10 kg/day
			5.Office Bottles & Plastic Bags – 25 kg/day	5.Office Bottles & Plastic Bags – 25 kg/day
			6.Waste Cotton – 5 kg/day	6.Waste Cotton – 10 kg/day
			7.Wooden Scrap – 10 kg/day	7.Wooden Scrap – 1500 kg/day
			8.Wet Waste – --	8.Wet Waste – 10 kg/day
			9.STP Sludge – --	9.STP Sludge – 3 kg/day
Industrial Hazardous Waste				
		Waste	As per EC	Present Scenario
		5.1 Used Spent Oil	3 MT/A	3 MT/A
		5.2 Waste Residue containing oil	--	1.5 MT/A
		34.3 ETP Sludge	160 kg/day	160 kg/day
		33.1 Discarded Containers	61,800 Nos/A	29450 Nos/A
		36.1 Sludge from MEE	72 MT /A	It is considered under Distillation Residue
		Lead Acid Batteries	50 Nos/A	50 Nos/A
		15.2 Discarded Asbestos	2 MT/A	2 MT/A
		35.2 Spent Catalyst	24.00 MT/A	--
		E- Waste	1 MT/A	1 MT/A
		35.3 Carbon / Charcoal	--	0.5 MT/M
		Silica & Resin	0.5 MT/A	--
		Distillation Residue	350 MT/A	350 MT/A
		Oil-soaked cotton waste / gaskets	1.0 MT/A	--

		3.3 Sludge and filters contaminated with oil	--	3.12 MT/M
		33.1 Empty barrels/containers/liners contaminated with hazardous chemicals/waste	--	01 MT/Day
		20.2 Spent Solvent	--	24 MT/A
		33.1 Empty barrels/containers/liners contaminated with hazardous chemicals/waste	--	06 MT/A
		23.1 Wastes or residues (not made with vegetable or animal materials)	--	0.5 MT/A
		37.2 Ash from incinerator and flue gas cleaning residue	--	02 MT/A
		37.3 Concentration or evaporation residues	--	72 MT/A
		28.4 Off specification products	--	12 MT/A
		Acetyl Chloride	--	31 MT/Day (It is by product)
		Methanol	--	05 MT/Day (It is by product)
		Sodium Chloride	--	08 MT/Day (It is by product)
		Sodium Sulphate	--	7.7 MT/Day (It is by product)
		Hydrochloric Acid 30-33%-100%	--	119 MT/Day (It is by product)
		Sodium Bromide	--	09 MT/Day (It is by product)
		Power requirement	2000 KVA	
		Cost of the Project	As per EC	Present Scenario
			35.82 Cr	232.13 Cr

b) of the Environmental Management Plans

Environmental and Social Monitoring –

Waste Water Treatment Plant

The total generation of sewage is 8 CMD from the project. The industry has STP of capacity 20 CMD to treat the generated sewage. The treated sewage of 8 CMD is partly recycle 4 CMD for gardening and partly 4 CMD discharge to CETP.

The total generation of trade effluent is 57 KLD which is treated in ETP of designed capacity of 57.00 CMD consisting of Primary (Collection tank, Neutralization tank, Equalization tank, Flash mixer, Primary Clarifier/Primary Settling Tank), Secondary (Activated sludge process), Tertiary (Pressure sand filter, Activated carbon filter, Reverse Osmosis & Multi Effect Evaporator), Sludge treatment (Sludge drying bed). Out of 57 KLD Treated water 31 KLD is sent to CETP for final disposal and remaining 26 KLD is recycled for CT make up and other auxiliary system.

Air Pollution

Air pollution in the form of fuel burning, process emission, fugitive emission.

Industry has installed 12 TPH coal fired boiler and Furnace Oil standby boiler. To control air pollution from coal fired boiler ESP has provided. Similarly for furnace oil fired boiler Fabric Bag Filter Cyclone has installed as air pollution control system.

Other process emission in the form of HCL & Methanol control through scrubber. After scrubbing of process emission, it is being disposed of as per consent guidelines. Other By product such as Acetyl Chloride, Sodium Chloride, Sodium Sulphate and Sodium Bromide recovered through production process and disposed off as per consent guidelines.

Waste Management (During Operational Phase)

Hazardous Waste Generation & Disposal

Sr. No.	Waste	Quantity	Disposal System
1	5.1 Used Spent Oil	3 MT/A	Sale to Authorized Party

2	5.2 Waste Residue containing oil	1.5 MT/A	Sale to Authorized Party / CHWTSDF
3	34.3 ETP Sludge	160 kg/day	CHWTSDF
4	33.1 Discarded Containers	29450 Nos/A	Sale to Authorized Party / CHWTSDF
5	Lead Acid Batteries	50 Nos/A	Sale to Authorized Party
6	15.2 Discarded Asbestos	2 MT/A	CHWTSDF
7	E- Waste Rules	1 MT/A	CHWTSDF
8	35.3 Carbon / Charcoal	0.5 MT/M	CHWTSDF
9	Distillation Residue	350 MT/A	CHWTSDF/Co-processor through Authorized Preprocessor
10	3.3 Sludge and filters contaminated with oil	3.12 MT/M	Sale to Authorized Party
11	33.1 Empty barrels/containers/liners contaminated with hazardous chemicals/waste	01 MT/Day	Sale to Authorized Party
12	20.2 Spent Solvent	24 MT/A	CHWTSDF
13	33.1 Empty barrels/containers/liners contaminated with hazardous chemicals/waste	06 MT/A	Sale to Authorized Party
14	23.1 Wastes or residues (not made with vegetable or animal materials)	0.5 MT/A	CHWTSDF
15	37.2 Ash from incinerator and flue gas cleaning residue	02 MT/A	CHWTSDF
16	37.3 Concentration or evaporation residues	72 MT/A	CHWTSDF
17	28.4 Off specification products	12 MT/A	CHWTSDF
18	Acetyl Chloride	31 MT/Day	Sale to Authorized Party
19	Methanol	05 MT/Day	Sale to Authorized Party
20	Sodium Chloride	08 MT/Day	Sale to Authorized Party
21	Sodium Sulphate	7.7 MT/Day	Sale to Authorized Party
22	Hydrochloric Acid 30-33%-100%	119 MT/Day	Sale to Authorized Party
23	Sodium Bromide	09 MT/Day	Sale to Authorized Party

Non-Hazardous Waste Generation & Disposal

Sr. No.	Particulars	Total	Disposal
1	Waste Cotton	10 kg/day	Sale to Authorized Party
2	Metallic Scrap	500 kg/day	Sale to Authorized Party
3	Wooden scrap	1500 kg/day	Sale to Authorized Party
4	Dry Waste	50 kg/day	Sale to Authorized Party
5	Insulation	5 kg/day	Sale to Authorized Party
6	Wet Waste	10 kg/day	Used as Manure
7	Canteen Waste	10 kg/day	Used as Manure
8	STP Sludge	03 MT/A	Used as Manure
9	Coal ash from boiler	10 MT/Day	Sale to Brick Manufacturer.

Corporate Social Responsibility –

7.	Breakup of the Project Area a) Submergence area: forest & non forest b) Others	:	NA There is no forest area involved Total Plot Area: 73547.00 Sq. Meter. Total BUA: 33,185.55 Sq.M.
8.	Breakup of the project affected population with the enumeration of those losing Houses / Dwelling units only, Agricultural Land & Landless Laborers / Artisans: a) SC, ST / Adivasi b) Others (please indicate whether these figures are based on any scientific and systematic survey carried out or only provisional figures, if a survey is carried out give details & year of survey)	:	Not applicable.
9 a)	Financial Details: Project cost as originally planned and subsequent revised estimates and the year of price reference	:	As per EC Originally Planned: Rs. 35.82 Cr
b)	Allocation made for environmental management plans with item wise and year wise breakup	:	Capital Investment – Rs. 216.5 Lakhs Recurring Cost – Rs. 54.8 Lakhs/ Years
c)	Benefit cost ratio/Internal rate of Return and the year of assessment	:	-

d)	Whether includes the cost of environmental management as shown in the above	:	Yes.
e)	Actual expenditure incurred on the project so far	:	Rs. 232.13 Cr
f)	Actual expenditure incurred on the environmental management plans so far	:	Rs. 216.5 Lakhs
10	Forest Land Requirement		No Forest land is involved in the project
a)	The status of approval for diversion of forest land for non-forestry use	:	NA
b)	The status of clearing felling	:	NA
c)	The status of compensatory afforestation, if any	:	NA
d)	Comments on the viability & sustainability of compensatory afforestation program in the light of actual field experience so far	:	NA
11	The status of clear felling in non-forest areas (such as submergence area or reservoir, approach roads.), if any with quantitative information required.	:	NA
12	Status of construction (Actual & /or planned)	:	Industry is under operation.
a)	Date of commencement (Actual & / or planned)	:	1/12/2015
b)	Date of completion (Actual &/or planned)	:	20/06/2016
13	Reasons for the delay if the project is yet to start.	:	NA
14	Dates of Site Visits		
a)	The dates on which the project was monitored by the Regional Office on previous occasions, if any	:	--
b)	Date of site visits for this monitoring report	:	18/01/2023

CONDITION -WISE COMPLIANCE REPORT OF ENVIRONMENT CLEARNACE

EC Order No.: F. No SEAC –2013/CR-550/ TC-2 Dated 8th October, 2015

Sr.No.	Conditions	Status of Compliance along with details
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General Conditions for Pre-Construction Phase.

i.	This environment clearance is issued subject to increase height of hazardous storage tank up to 1.2 feet.	Industry has obtained DISH plan approval & PESO Approval as per requirement.
ii.	Project Proponent shall be responsible for end disposal of hazardous waste to authorized dealer.	Hazardous waste is sent to CHWTSDF and it is sold to authorized dealer. Annexure 5 - Membership of MWML

	Waste	Quantity	Disposal
1	5.1 Used Spent Oil	3 MT/A	Sale to Authorized Party
2	5.2 Waste Residue containing oil	1.5 MT/A	Sale to Authorized Party / CHWTSDF
3	34.3 ETP Sludge	160 kg/day	CHWTSDF
4	33.1 Discarded Containers	29450 Nos/A	Sale to Authorized Party / CHWTSDF
5	Lead Acid Batteries	50 Nos/A	Sale to Authorized Party
6	15.2 Discarded Asbestos	2 MT/A	CHWTSDF
7	E- Waste Rules	1 MT/A	CHWTSDF
8	35.3 Carbon / Charcoal	0.5 MT/M	CHWTSDF
9	Distillation Residue	350 MT/A	CHWTSDF/Co-processor through Authorized Preprocessor
10	3.3 Sludge and filters contaminated with oil	3.12 MT/M	Sale to Authorized Party
11	33.1 Empty barrels/containers/liners contaminated with hazardous chemicals/waste	01 MT/Day	Sale to Authorized Party
12	20.2 Spent Solvent	24 MT/A	CHWTSDF
13	33.1 Empty barrels/containers/liners	06 MT/A	Sale to Authorized Party

	contaminated with hazardous chemicals/waste		
14	23.1 Wastes or residues (not made with vegetable or animal materials)	0.5 MT/A	CHWTSDF
15	37.2 Ash from incinerator and flue gas cleaning residue	02 MT/A	CHWTSDF
16	37.3 Concentration or evaporation residues	72 MT/A	CHWTSDF
17	28.4 Off specification products	12 MT/A	CHWTSDF
18	Acetyl Chloride	31 MT/Day	Sale to Authorized Party
19	Methanol	05 MT/Day	Sale to Authorized Party
20	Sodium Chloride	08 MT/Day	Sale to Authorized Party
21	Sodium Sulphate	7.7 MT/Day	Sale to Authorized Party
22	Hydrochloric Acid 30-33%-100%	119 MT/Day	Sale to Authorized Party
23	Sodium Bromide	09 MT/Day	Sale to Authorized Party

iii.	This environment clearance is issued subject to BOD Level to be improved and shall be maintained within the limits prescribed by LPRB / MPCB.	Industry has maintaining BOD <30 mg/lit as per Consent prescribed standards Annexure 8 – Monitoring Reports
iv.	MPCB shall conduct regulate/ surprise checks to ensure maintenance of emission standards as per laid down norms.	Noted. MPCB is doing regular site visit as per their scheduled.
v.	PP to install RO plant.	RO plant has installed after ETP.
vi.	No additional land shall be used /acquired for any activity of the project without obtaining proper permission.	Noted for compliance. Maharashtra Industrial Development Corporation (MIDC) has allotted 73547.00 Sq.M. of land for industrial activity and it is fully developed.
vii.	For controlling fugitive natural dust, regular sprinkling of water & wind shields at appropriate distances in vulnerable areas of the plant shall be ensured.	It is already been complied during construction as well as operation phase. Industry is having cement road within plant premises. Hence there is negligible chance of fugitive dust. Still at windy days or in summer season water sprinkling is being carried out within the plant area.
viii.	Regular monitoring of the air quality, including SPM & SO2 levels both in work zone and ambient air shall be carried out in and around the power plant and records shall be maintained. The location of monitoring stations and frequency of	Regular monitoring of air quality is being carried out in Ambient air & work zone area. Record is maintained by EHS team. The monitoring reports are attached as Annexure 8. Annexure 8 – Monitoring Reports

	monitoring shall be decided in consultation with Maharashtra Pollution Control Board (MPCB) & submit report accordingly to MPCB.	
ix.	Necessary arrangement shall be made to adequate safety and ventilation arrangement in furnace area.	Noted and compiled.
x.	Proper housekeeping programmers shall be implemented.	Proper housekeeping is being carried within the plant. In addition to that specific SOP's are establish for ground force working on shop floor accordingly solid waste & Hazardous waste get collected at designated place and disposed off through Authorized vendor/recycler.
xi.	In the event of the failure of any pollution control system adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieve.	Noted. Standing instruction given to the plant manager in case of failure of any pollution control systems production is stopped till the resume / maintenance of pollution control system. All pollution control systems are designed with back up. Considering back up load industry has installed DG sets of 2 Nos. x 1500 kVA.
xii.	A stack of adequate height based on DG set capacity shall be provided for control and dispersion of pollutant from DG set. (If applicable).	D.G Sets are of 2 Nos. having capacity of 1500 KVA with stack height of 30 meter above the roof as per CPCB guidelines. Annexure 8 – Monitoring Reports
xiii.	A detailed scheme for rainwater harvesting shall be prepared and implemented to recharge ground water.	Recharge pit is constructed within plant premises for Rainwater Harvesting. 6 No's. of RWH Pits are already provided.
xiv.	Arrangement shall be made that effluent and storm water does not get mixed.	Separate network is designed for effluent & storm water.
xv.	Periodic monitoring of ground water shall be undertaken and result analyzed to ascertain any change in the quality of water. Results shall be regularly submitted to the Maharashtra Pollution Control Board.	There is no abstraction or use of Ground Water. Treated effluent of 31 CMD is being sent to the Mahad CETP for final disposal.
xvi.	Noise level shall be maintained as per standards. For the people working in the high noise area, requisite personal protective equipment like earplugs etc. shall be provided.	As per EHS policy workers working in noise prone area equipped with PPE's such as ear muff and ear plug, etc.

		Major noise were observed at cooling tower due to pressure of water and reactor pressure release valve, etc. Annexure 8 - Monitoring Reports. (Noise)
xvii.	The overall noise levels in and around the plant are shall be kept well within the standards by providing the noise control measures including acoustic hoods, silencers, enclosures, etc. on all sources of noise generation. The ambient noise level shall confirm to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989.	The ambient noise level within plant premises and around the industry is found within the permissible limits. The Ambient Noise level – 70.8 dB (A) Annexure 8 - Monitoring Reports. (Noise)
xviii.	Green belt shall be developed & maintained around the plant periphery. Green Belt Development shall be carried out considering CPCB guidelines including selection of plant species and in consultation with the local DFO/Agriculture Department.	Industry has already developed 18700.30 Sq. M. of green belt area. Local plant species was selected for green belt development. Annexure 3 - List of Plant Species
xix.	Adequate safety measures shall be provided to limit the risk zone within the plant boundary, in case of an accident. Leak detection devices shall also be installed at strategic places for early detection and warning.	Assembly points are defined and marked within plant premises in case of accident. In addition to that alarm system and sensors are placed at working area to avoid catastrophic accident. Following listed alarm are installed within plant <ul style="list-style-type: none"> ➤ Smoke alarm. ➤ Smoke + heat alarm. ➤ Heat alarm. ➤ Beam type alarm.
xx.	Occupational health surveillance of the workers shall be done on a regular basis and record maintained as per Factories Act.	Health checkup for all worker is being carried out as per schedule of company's Health policy and in compliance with Factory Act.
xxi.	The company shall make arrangement for protection of possible fire hazards during manufacturing process in the material handling.	Industry has adopt atomization within plant area hence material handling is doing automatically. QRA of the plant has been done and all precautionary measures for fire hazards are taken. Industry has obtained fire NoC from Maharashtra Fire Department

xxii.

The project authorities must strictly comply with the rules and regulation with regard to handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management and Handling) Rules, 2003 (amended). Authorization from the MPCB shall be obtained for collection /treatment/storages/disposal of hazardous wastes.

Industry is complying Hazardous wastes (Management and Handling) Rules, 2016 and amendment thereof.

Generated Hazardous waste is disposed of through CHWTSDF / Authorized Vendor.

Waste	Quantity	Disposal
5.1 Used Spent Oil	3 MT/A	Sale to Authorized Party
5.2 Waste Residue containing oil	1.5 MT/A	Sale to Authorized Party / CHWTSDF
34.3 ETP Sludge	160 kg/day	CHWTSDF
33.1 Discarded Containers	29450 Nos/A	Sale to Authorized Party / CHWTSDF
Lead Acid Batteries	50 Nos/A	Sale to Authorized Party
15.2 Discarded Asbestos	2 MT/A	CHWTSDF
E- Waste Rules	1 MT/A	CHWTSDF
35.3 Carbon / Charcoal	0.5 MT/M	CHWTSDF
Distillation Residue	350 MT/A	CHWTSDF/Co-processor through Authorized Preprocessor
3.3 Sludge and filters contaminated with oil	3.12 MT/M	Sale to Authorized Party
33.1 Empty barrels/containers/liners contaminated with hazardous chemicals/waste	01 MT/Day	Sale to Authorized Party
20.2 Spent Solvent	24 MT/A	CHWTSDF
33.1 Empty barrels/containers/liners contaminated with hazardous chemicals/waste	06 MT/A	Sale to Authorized Party
23.1 Wastes or residues (not made with vegetable or animal materials)	0.5 MT/A	CHWTSDF
37.2 Ash from incinerator and flue gas cleaning residue	02 MT/A	CHWTSDF
37.3 Concentration or evaporation residues	72 MT/A	CHWTSDF
28.4 Off specification products	12 MT/A	CHWTSDF
Acetyl Chloride	31 MT/Day	Sale to Authorized Party

Methanol	05 MT/Day	Sale to Authorized Party
Sodium Chloride	08 MT/Day	Sale to Authorized Party
Sodium Sulphate	7.7 MT/Day	Sale to Authorized Party
Hydrochloric Acid 30-33%-100%	119 MT/Day	Sale to Authorized Party
Sodium Bromide	09 MT/Day	Sale to Authorized Party

xxiii.	The company shall undertake following Waste Minimization Measures: <ul style="list-style-type: none"> ➤ Meeting of the quantities of active ingredients to minimize the waste. ➤ Reuse of by-products from the process as raw materials or as raw material substitutes in the other process. ➤ Maximizing Recoveries. ➤ Use of automated material transfer system to minimize spillage. 	Industry has already done Atomization of the process. Existing by-product as per Rule 9 of Hazardous waste Management Rules 2016 is being disposed to authorized party only.
xxiv.	Regular mock drills for the on-site emergency management plan shall be carried out. Implementation of changes/improvements required. If any, in the on-site management plan shall be ensured.	Noted and complying. Regular mock drills for on-site emergency preparedness are being carried out. Annexure 7 - Onsite Emergency Preparedness & Response Plan.
xxv.	A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.	Aquapharm has its own environment management cell with qualified staff for implementation of the stipulated environmental safeguards statutory compliance. Annexure 11 - Environmental Management Cell
xxvi.	Transportation of ash will be through closed containers and all measures should be taken to prevent spilling of ash.	Noted. Annexure 14 – Photograph of Transportation of Ash through close container
xxvii.	Separate silos will be provided for collecting and storing bottom ash and fly ash.	Noted. Annexure 13 – Photograph of Storage & Collection of Bottom Ash & Fly Ash
xxviii.	Separate fund shall be allocated for implementation of environmental protection measures / EMP along with	Separate fund is allocated for implementation of environmental protection measures / EMP.

	<p>item-wise breaks-up. This cost shall be included as part of the project cost. The funds earmarked for the environment for the environment protection measures shall not be diverted for the other purposes and year wise expenditure should reported to the MPCB & this department.</p>	<p>Annexure 12- EMP Budget is attached for the reference.</p>
xxix.	<p>The project management shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the Marathi language of the local concerned within seven days of issue of this letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the Maharashtra Pollution Control Board and may also be seen at Website at http://ec.maharashtra.gov</p>	<p>Complied.</p>
xxx.	<p>Project management should submit half yearly compliance reports in respect of the stipulated prior environment clearance terms and condition in hard & soft copies to the MPCB & this department, on 1st June & 1st December of each calendar year.</p>	<p>Noted and complied.</p>
xxxi.	<p>A copy of the clearance letter shall be sent by proponent to the concerned Municipal Corporation and the local NGO, if any, from whom suggestion/representation, if any were received processing the proposal. The clearance letter shall be also be put on the website of the company by the proponent.</p>	<p>Noted and complied.</p>
xxxii.	<p>The proponent shall upload the status of compliance of the stipulated EC condition, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant level namely; SPM, RSPM, SO₂, NO_x (ambient level as well as stack</p>	<p>Noted and complied.</p> <p>Annexure 8 - Monitoring Reports</p>

	emission) or critical sector parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	
xxxiii.	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC condition including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB	Noted and complied.
xxxiv.	The environmental statement for each financial year ending 31 st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as Prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of the compliance of EC condition and shall also be sent to the respective Regional Offices of MoEF by e-mail.	Noted & agreed. Project Proponent submitting Environmental Statement on 31st March for each financial year. Annexure 10- Environmental Statement for the FY 2021-22
4.	The environmental clearance is being issued without prejudice to the action initiated under EP act or any court case pending in the court of law and it does not mean that project proponent has not violated any environmental laws in the past and whatever decision under EP act or of the Hon'ble court will be binding on the project proponent. Hence this clearance does not give immunity to the project proponent in the case filed against him, if any or action initiated under EP act.	Noted & agreed.
5.	The Environment department reserves the right to add any stringent condition or to revoke the clearance if conditions stipulated are not implemented to the satisfaction of the department or for that matter, for any other administrative reason.	Noted & agreed.

6.	Validity of Environmental Clearance: The environmental clearance accorded shall be valid for a period of 7 years as per MoEF&CC Notification dated 29 th April, 2015 to start of production operations.	Noted & agreed.
7.	In case of any deviation or alteration in the project proposed from those submitted to this department for clearance, a fresh reference should be made to the department to assess the adequacy of the condition(S) imposed and to incorporate additional environmental protection measures required, if any.	Noted & agreed.
8.	The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981. The Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management and Handling) Rules, 1986 and its amendments, the public liability insurance act, 1991 and its amendments.	Noted & agreed.
9.	Any appeal against this environmental clearance shall lie with the National Green Tribunal (Western Zone Bench, Pune), New Administrative Building, 1 st Floor, D- Wing, Opposite Council Hall, Pune, if preferred, within 30 days as prescribed under section 16 of the National Green Tribunal Act 2010.	Noted & agreed.

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY

SEAC- 2013/CR-550/TC-2
 Environment department
 Room No. 217, 2nd floor,
 Mantralaya Annex,
 Mumbai- 400 032.
 Dated: 8th October, 2015

To,
 M/s. Aquapharm Chemicals Pvt. Ltd,
 9th & 10th floors 'Amar Synergy',
 12B, Sadhu Vaswani Road, Pune- 411 001.

Subject: Environmental Clearance for proposed expansion "Manufacturing of Speciality Chemicals" on plot K-3/1, K-3/2, K-3/3 at Addl. MIDC Mahad Raigad by M/s. Aquapharm Chemicals Pvt. Ltd.

Sir,

This has reference to your communication on the above mentioned subject. The proposal was considered as per the EIA Notification, 2006, by the State Level Expert Appraisal Committee-I, Maharashtra in its 98th meeting and decided to recommend the project for prior environmental clearance to SEIAA. Information submitted by you has been considered by State Level Environment Impact Assessment Authority in its 87th meeting.

2. It is noted that the proposal is considered by SEAC-I under screening category 5(f) B1 as per EIA Notification 2006.

Brief Information of the project submitted by Project Proponent is as:

Name of Project	Environmental Clearance for the proposed Manufacturing of Speciality Chemicals
Project Proponent	Mr.R.R.Wadnerkar Designation: GM M/s Aquapharm Chemicals Pvt. Ltd.
Consultants	M/s. Green Circle Inc.
New Project / Expansion	Expansion Project
Activity schedule in th EIA Notification	5(F) Category B as per the provision of "EIA Notification No. S.O. 1533 (E)" dated 14.09.2006; amended on December 01, 2009.
Area Details	Total plot area (Sq. m.): 73547.0
Name of the Notified Industrial area / MIDC area	The proposed project is located at plot No. k-3/1,k-3/2, k-3/3 Additional Industrial area, Maharashtra Industrial Development Corporation (MIDC) Tal- Mahad, Dist- Raigad
TOR given by SEAC? (If yeas then specify the meeting)	83th meeting SEAC 18 th & 19 th July 2014

Estimated capital cost of the Project (including cost for land, building, plant and machinery separately)	Sr.no.	Description	Amount in Lacs			
	1	Land & Building	100			
	2	Building (Factory + Office + Warehouse)	400			
	3	Plant & Machinery	1900			
	4	Piping + Electrical + Instrumentations + Painting + Erection & Commissioning	1100			
		Total	3582.00			
Location details of the project :	<ul style="list-style-type: none"> ➤ Latitude: 18°06'650"N ➤ Longitude: 73°30'865"E ➤ Location: Additional Industrial area, MIDC, Mahad, Dist- Raigad ➤ Elevation above Mean Sea Level (metres): 35.05 					
Rain Water Harvesting (RWH)	<ul style="list-style-type: none"> ➤ Storm Water Management attached as Annexure IV ➤ Budgetary allocation (Capital cost and O&M cost): Capital Cost (Lacs): 3.0 Lacs Recurring Cost (Lacs): 0.5 Lacs 					
Total Water Requirement	Total water requirement:					
	• Fresh water (CMD): Existing- 488.0 + Propose- 735 & Source: MIDC Water Supply, Total: 1223					
	• Recycled water (CMD): 26.0					
	Use of the water:					
	• Process (CMD)	253.0				
	• Cooling water (CMD)	865.0				
	• DM Water (CMD)	6.0				
	• Dust Suppression (CMD)	-				
	• Drinking (CMD)	Included in domestic requirement				
	• Green belt (CMD)	40.0				
	• Fire service (CMD)	-				
• Domestic (CMD)	10.0					
• Boiler (CMD)	35.0					
• Others (CMD)	14.0					
	Total (CMD)	1223.0				
Storm water drainage	• Natural water drainage pattern		The industry is located in Mahad MIDC area where all the facilities are available by MIDC. The land is having gentle slope. Runoff from surrounding areas ultimately joins to Savitri river and Kal river through medium and small shallow streams.			
	<ul style="list-style-type: none"> • quantity of storm water: 65519.09 m³ (generated during monsoon) • Size of SWD: 2280 mm X 2530 mm X 1200 mm 					
Effluent generation and treatment	<ul style="list-style-type: none"> • Amount of sewage generation (CMD): 8 m³/day • Proposed treatment for the sewage: Soak pit and Septic tank followed by STP. 					
Effluent characteristic	Sr. No.	Parameters	Inlet effluent Characteristic	Outlet effluent Characte	CPCB Standard	

				ristic			
	1	pH	5.0	7.2	5.5-9		
	2	COD	1540	150	250		
	3	BOD	510	40	30		
	4	NH ₄ ⁺ - N	30	8	50		
	5	Oil & Grease	25	5	10		
	6	TDS	2560	1260	2100		
ETP details	<ul style="list-style-type: none"> • Amount of trade influent generation (CMD): 57 • Capacity of the ETP (CMD): 50 • Amount of treated effluent recycled (CMD): 26 • Amount of water send to the CETP (CMD): 31 • Membership of the CETP (If require): If yes then attach the letter submit the letter Attached as Annexure VII 						
Note on ETP technology to be used	The ETP is comprise of primary, secondary & tertiary treatment units viz. equalization tank, neutralization tank, aeration tank, primary & secondary clarifiers and final collection sump. A proposed tertiary treatment in RO and MEE would confirm the effluent characteristics to MPCB norms.						
Disposal of the ETP sludge (If applicable)	Forwarded to CHWTSDF						
Solid waste Management	Sr. No	Source	Existing Qty (Kg/Day)	Proposed Qty (Kg/Day)	Form(Sludge / Dry /Slurry etc.)	Composition	
	Non-Hazardous Waste						
	1	Utility					
		Boiler ash	0 MT/Day	10 MT/Day	Dry & Solid	Sale to brick manufacturer & land filling	
		Insulation	0	50	Dry & Solid	Sale to authorize party	
	2.	Process & Utility					
		MS Scrap (Metallic Scrap)	50	100	Dry & Solid	Sale to authorize party	
	3	Canteen Waste	0	20	Dry/Slurry & Solid	Sale to vermiculture	
	4	Office					
		Bottles & Plastic Bags	25.00	25.00	Dry & Solid	Sale to authorize party	
		Waste Cotton	5.00	5.00	Dry & Solid	Sale to authorize party	
		Wooden Scrap	10.00	10.00	Dry & Solid	Sale to authorize party	
	Hazardous Waste						
	S.no	Type & Category of hazardous waste				Quantity	
1	Cat.no.-34.3 Chemical Sludge from				160 Kg/day		

		ETP				
2		Cat.no.- 5.1 Spent oil /used oil		3 MT/A		
3	Cat.no.-33.3 Discarded Containers		Drums	61,800 Nos/A		
			IBCs			
			Carboys /Liners			
4		Cat.no.- 36.1 Sludge from MEE		72 MT/A		
5		Batteries rules,2002- Lead acid batteries		50 Nos/A		
6		Cat.no.-15.2 Discarded Asbestos		2 MT/A		
7		Cat.no.- 35.2 Spent Catalyst		24.00 MT/A		
8		Cat.no.- 5.2 Waste residue containing oil		---		
9		E-Waste rules, 2011- e-waste		1 MT/A		
10		Cat.no.- 35.3 Carbon/Charcoal		---		
11		Silica & Resin		0.5 MT/A		
12		Distillation Residue		350 MT/A		
13		Oil soaked cotton waste / gaskets		1.0 MT/A		
<ul style="list-style-type: none"> • If waste(s) contain any hazardous/toxic substance/radioactive materials or heavy metals then provide quantity, disposal data and proposed precautionary measures. Disposal Method: Sale to authorize party or forwarded to CHWTSDF, • Possible users of solid waste Boiler ash Sale to Brick Manufacture and canteen waste sale to Vermiculture • Method of disposal of solid waste Sale to authorize party 						
Atmospheric Emissions (Flue gas characteristics SPM, SO ₂ , NO _x , CO, etc.)	Sr. No	Pollutant	Source of Emission	Emission rate (Nm ³ /hr)	Concentration in flue gas (g/m ³)	
		SPM	Boiler 12 TPH	10761	92 mg/Nm ³	
		SO ₂			15. mg/Nm ³	
		NO _x			16 mg/Nm ³	
		CO			--	
		Others			--	
		SPM	Boiler 6 TPH (standby)	Negligible	Negligible	
		SO ₂			Negligible	
		NO _x			Negligible	
		CO			Negligible	
		Others			Negligible	
		Others				
		SPM	DG Set 380 KVA	1491	95 mg/Nm ³	
		SO ₂			12.8 mg/Nm ³	
		NO _x			25.2 mg/Nm ³	
		CO			--	
		Others			---	
		NO _x				
		CO				
		Others				
Stack emission	Plant	Stack	Height	Internal	Emission	Temp.

Details:	Section & units	No.	from ground level (m)	Diameter (Top)(m)	Rate	of Exhaust Gases
	Boiler 12 TPH	1	40.0	1.2	SPM: SO2: NOx: CO: Others 1491 m3/hr	125
	DG set 380 KVA	1	10.0	00.2	SPM: SO2: NOx: CO: Others 1491 m3/hr	185
Emission Standard	Pollutants		Emission Standard Limit (mg/Nm3)	Proposed Limit (mg/Nm3)	MPCB Consent (mg/Nm3)	
	SPM/TPM		-	Not to exceed	150.0	
	SO ₂ (from boiler)		-	Not to exceed	389 Kg/d	
	SO ₂ /NOx		-	Not to exceed	50 ppm	
	Acid mist		-	Not to exceed	35.0	
	HCL		-	Not to exceed	50.0	
Ambient Air Quality Data	Pollutant		Permissible Standard	Remarks		
	PM ₁₀		100 µg/m ³	Within Limit		
	PM _{2.5}		60 µg/m ³			
	SO ₂		80 µg/m ³			
	NOx		80 µg/m ³			
	CO		2 mg/m ³			
	Ammonia		400 µg/m ³			
	Ozone		100 µg/m ³			
	Lead		1.0 µg/m ³			
	Arsenic		6.0 ng/m ³			
	Nickel		20.0 ng/m ³			
	Benzopyrene		1.0 ng/m ³			

Details of Fuel to be used:	Source of fuel:Coal: Imported						
	Sr. No	Fuel	Daily Consumption (kg/D)		Calorific value (Kcals /kg)	% Ash	% Sulphur
			Existing	Proposed			
	1	Gas	-	-	-	-	-
	2	Naphtha	-	-	-	-	002D
	3	HSD	300 lit /d	300 lit /d	-	-	-
4	Fuel Oil	360	-	-	-	-	
	5	Coal	20MT/D	---	5700	-	-
Mode of transportation of fuel to site:By Road							
Energy	Power supply: • Existing power requirement: 1300 KVA • Proposed power requirement: 700 KVA DG set (for Backup) Quantity: 380 KVA (Existing) & 2 ×1250 KVA (Proposed) .						

Green Belt Development	• Green belt area (Sq. m.): 14238 • Number and species of trees to be planted: 500 nos.			
Details of Pollution Control Systems:	Sr. No.	Aspects	Existing pollution control system	Proposed to be installed
	1	Air	For Fugitive emissions: Venturi Scrubber & Packed bed Scrubber	Air Preheater, Cyclone, Bag filter & APH , Cooling
	2	Water	Effluent treatment Plant inline with Holding Tank.	RO and MEE -
	3	Noise	The Boiler and thermic fluid heater would be kept in an isolated area with proper acoustic treatment to have the ambient noise level as per CPCB standards. The workers would be provided with proper personal protective equipment (PPE) such as ear plugs,ear muffs etc. The DG sets would be enclosed in canopy as well as silencer.	-

	4	Solid Waste	The Solid waste generated would be disposed off by giving back to the suppliers/sale to scrap collectors.	-
Environmental Management plan Budgetary Allocation	<ul style="list-style-type: none"> • Capital cost (With break up): 216.5 Lakhs • O&M cost (With break up): 54.8 Lakhs 			
	Sr. No.	Pollution Control Measures	Recurring Cost Per Annum (Rs. Lakhs)	Capital Cost (Rs. Lakhs)
	Operation Phase			
	1	Storm water management (construction and operation)	0.5	3
	2	Pollution Control system	50	200
	3	Environment Monitoring (Monitoring charges for air, water, waste water, soil, DG stack, noise etc.)	2	---
	4	Solid Waste Management	1.5	1.5
	5	Occupational Health includes cost of medical checkup, PPE & first aid kit cost of PPE, first aid facility, safe drinking water plant & sanitation measures)	0.3	2
	6	Green Belt development (includes cost of labours, plantation management, landscaping)	0.5	1.0
	7	Others (CSR Activity)	----	9.0
	TOTAL		54.8	216.5

3. The proposal has been considered by SEIAA in its 87th meeting & decided to accord environmental clearance to the said project under the provisions of Environment Impact Assessment Notification, 2006 subject to implementation of the following terms and conditions :

General Conditions for Pre- construction phase:-

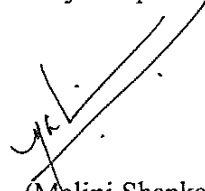
- (i) This environment clearance is issued subject to increase height of hazardous storage tank up to 1.2 feet.

- (ii) Project Proponent shall be responsible for end disposal of hazardous waste to authorized dealer.
- (iii) This environment clearance is issued subject to BOD Level to be improved and shall be maintained within the limits prescribed by LPRB / MPCB.
- (iv) MPCB shall conduct regular / surprise checks to ensure maintenance of emission standards as per laid down norms.
- (v) PP to install RO plant.
- (vi) No additional land shall be used /acquired for any activity of the project without obtaining proper permission.
- (vii) For controlling fugitive natural dust, regular sprinkling of water & wind shields at appropriate distances in vulnerable areas of the plant shall be ensured.
- (viii) Regular monitoring of the air quality, including SPM & SO2 levels both in work zone and ambient air shall be carried out in and around the power plant and records shall be maintained. The location of monitoring stations and frequency of monitoring shall be decided in consultation with Maharashtra Pollution Control Board (MPCB) & submit report accordingly to MPCB.
- (ix) Necessary arrangement shall be made to adequate safety and ventilation arrangement in furnace area.
- (x) Proper Housekeeping programmers shall be implemented.
- (xi) In the event of the failure of any pollution control system adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieve.
- (xii) A stack of adequate height based on DG set capacity shall be provided for control and dispersion of pollutant from DG set.(If applicable)
- (xiii) A detailed scheme for rainwater harvesting shall be prepared and implemented to recharge ground water.
- (xiv) Arrangement shall be made that effluent and storm water does not get mixed.
- (xv) Periodic monitoring of ground water shall be undertaken and results analyzed to ascertain any change in the quality of water. Results shall be regularly submitted to the Maharashtra Pollution Control Board.
- (xvi) Noise level shall be maintained as per standards. For people working in the high noise area, requisite personal protective equipment like earplugs etc. shall be provided.
- (xvii) The overall noise levels in and around the plant are shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures, etc. on all sources of noise generation. The ambient noise levels shall confirm to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989.
- (xviii) Green belt shall be developed & maintained around the plant periphery. Green Belt Development shall be carried out considering CPCB guidelines including selection of plant species and in consultation with the local DFO/ Agriculture Dept.
- (xix) Adequate safety measures shall be provided to limit the risk zone within the plant boundary, in case of an accident. Leak detection devices shall also be installed at strategic places for early detection and warning.
- (xx) Occupational health surveillance of the workers shall be done on a regular basis and record maintained as per Factories Act.
- (xxi) The company shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling.
- (xxii) The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous wastes in accordance with the Hazardous Waste (Management and Handling) Rules, 2003 (amended). Authorization from the MPCB shall be obtained for collections/treatment/storage/disposal of hazardous wastes.
- (xxiii) The company shall undertake following Waste Minimization Measures :

- Metering of quantities of active ingredients to minimize waste.
 - Reuse of by- products from the process as raw materials or as raw material substitutes in other process.
 - Maximizing Recoveries.
 - Use of automated material transfer system to minimize spillage.
- (xxiv) Regular mock drills for the on-site emergency management plan shall be carried out. Implementation of changes / improvements required, if any, in the on-site management plan shall be ensured.
- (xxv) A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.
- (xxvi) Transportation of ash will be through closed containers and all measures should be taken to prevent spilling of the ash.
- (xxvii) Separate silos will be provided for collecting and storing bottom ash and fly ash.
- (xxviii) Separate funds shall be allocated for implementation of environmental protection measures/EMP along with item-wise breaks-up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should reported to the MPCB & this department
- (xxix) The project management shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the marathi language of the local concerned within seven days of issue of this letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the Maharashtra Pollution Control Board and may also be seen at Website at <http://ec.maharashtra.gov.in>
- (xxx) Project management should submit half yearly compliance reports in respect of the stipulated prior environment clearance terms and conditions in hard & soft copies to the MPCB & this department, on 1st June & 1st December of each calendar year.
- (xxxi) A copy of the clearance letter shall be sent by proponent to the concerned Municipal Corporation and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.
- (xxxii) The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM, SO₂, NO_x (ambient levels as well as stack emissions) or critical sectorai parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.
- (xxxiii) The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.
- (xxxiv) The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.
4. The environmental clearance is being issued without prejudice to the action initiated under EP Act or any court case pending in the court of law and it does not mean that project proponent has not violated any environmental laws in the past and whatever

decision under EP Act or of the Hon'ble court will be binding on the project proponent. Hence this clearance does not give immunity to the project proponent in the case filed against him, if any or action initiated under EP Act.

5. The Environment department reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction of the department or for that matter, for any other administrative reason.
6. **Validity of Environment Clearance:** The environmental clearance accorded shall be valid for a period of 7 years as per MoEF&CC Notification dated 29th April, 2015 to start of production operations.
7. In case of any deviation or alteration in the project proposed from those submitted to this department for clearance, a fresh reference should be made to the department to assess the adequacy of the condition(s) imposed and to incorporate additional environmental protection measures required, if any.
8. The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management and Handling) Rules, 1989 and its amendments, the public Liability Insurance Act, 1991 and its amendments.
9. Any appeal against this environmental clearance shall lie with the National Green Tribunal (Western Zone Bench, Pune), New Administrative Building, 1st Floor, D- Wing, Opposite Council Hall, Pune, if preferred, within 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.


(Malini Shankar)
Member Secretary, SEIAA.

Copy to:

1. Shri. R. C. Joshi, IAS (Retd.), Chairman, SEIAA, Flat No. 26, Belvedere, Bhulabhai desai road, Breach candy, Mumbai- 400026.
2. Shri T. C. Benjamin, IAS (Retired), Chairman, SEAC-I, 602, PECAN, Marigold, Behind Gold Adlabs, Kalyani Nagar, Pune – 411014. .
3. Additional Secretary, MoEF & CC, Indira Paryavaran Bhavan, Jorbagh Road, Aliganj, New Delhi-110003.
4. Member Secretary, Maharashtra Pollution Control Board, with request to display a copy of the clearance.
5. The CCF, Regional Office, Ministry of Environment and Forest (Regional Office, Western Region, Kendriya Paryavaran Bhavan, Link Road No- 3, E-5, Ravi-Shankar Nagar, Bhopal- 462 016). (MP).
6. Regional Office, MPCB, Raigad.

7. Collector, Raigad
8. IA- Division, Monitoring Cell, MoEF & CC, Indira Paryavaran Bhavan, Jorbagh Road, Aliganj, New Delhi-110003.
9. Select file (TC-3)

(EC uploaded on 15/10/2015)

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MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010706/24010437
 Fax: 24023516
 Website: <http://mpcb.gov.in>
 Email: cac-cell@mpcb.gov.in



Kalpataru Point, 2nd and
 4th floor, Opp. Cine Planet
 Cinema, Near Sion Circle,
 Sion (E), Mumbai-400022

RED/L.S.I (R25)
No:- Format1.0/CAC/UAN
No.0000126518/CR/2204000671

Date: 12/04/2022

To,
M/s. Aquapharm Chemicals Pvt. Ltd
Plot No. K-3/1-2-3, Mahad MIDC
Mahad, Dist- Raigad



Your Service is Our Duty

Sub: Grant of Renewal of Consent to Operate under Red/LSI

Ref: 1. Consent to Operate granted vide No. Format 1.0/BO/CAC-Cell/UAN No. 0000069926/A/18th CAC-2001001967 dated 29/01/2020
 2. Minutes of Consent Appraisal Committee Meeting held on 09/3/2022

Your application No.MPCB-CONSENT-0000126518 Dated 30.11.2021

For: grant of Consent to Operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

- 1. The consent to renewal is granted for a period up to 31/01/2024**
- 2. The capital investment of the project is Rs.232.13 Crs. (As per C.A Certificate submitted by industry Existing CI is-Rs. 126.37 Crs + Increase in C.I. - Rs. 105.76 Crs)**
- 3. Consent is valid for the manufacture of:**

Sr No	Product	Maximum Quantity	UOM
Products			
Alkyl Phosphonates			
1	HEDP (100% Basis)	81	MT/Day
2	PBTC (100% Basis)	14	MT/Day
3	Polymaleic Phosphonic Acid (100% Basis)	0.15	MT/Day
4	Hydroxy Phosphonic Acetic Acid (100% Basis)	0.15	MT/Day
5	OR Alkyl Phosphonates derivatives and family (100% Basis)	95.3	MT/Day
Amine Phosphonates			
6	Diethylene Triamine Penta Methylene Phosphonic Acid -100%	8	MT/Day
7	Ethylene Diamine Tetramethylene Phosphonic Acid (100% Basis)	0.5	MT/Day
8	Amino Tetramethylene Phosphonic Acid (100% Basis)	10	MT/Day



Sr No	Product	Maximum Quantity	UOM
9	Bis Hexamethylen e Triamine Pentamethylen e Phosphonic Acid (100% Basis)	0.6	MT/Day
10	Amino Ethyl Ethanol Amine Trimethylene Phosphonate Acid (100% Basis)	2	MT/Day
11	Poly Amino PolyEther Polymethylene Phosphonic Acid (100% Basis)	1	MT/Day
12	Monoethanola m ino diphosphonic Acid (100% Basis)	1	MT/Day
13	Hexamethylene Diamino Phosphonic Acid(100% Basis)	8	MT/Day
14	OR Amine Phosphonates derivatives and family (100% Basis)	24.1	MT/Day
Salt of Alkyl Phosphonates			
15	HEDP salts Liquids (100% Basis)	17	MT/Day
16	HEDP Salts Powder (100% Basis)	29	MT/Day
17	Or Salts of Alkyl Phosphonates, derivatives and family (100% Basis)	46	MT/Day
Salts of Amine Phosphonates			
18	DETMP Salts (100% Basis)	30	MT/Day
19	ATMP Salts (100% Basis)	10	MT/Day
20	Or Salts of Amine Phosphonate, derivatives and family (100% Basis)	40	MT/Day
Polymers			
21	Poly Maleic (100% Basis)	14	MT/Day
22	Poly Acrylic (100% Basis)	14	MT/Day
Eco Friendly Products			
23	GLDA (100% Basis)	27	MT/Day
24	or Amino Acid Derivaties and Eco Friendly Product Family (100% Basis)	27	MT/Day
25	Methylene Bisthiocyanate	1.5	MT/Day
Halogen Derivaties			
26	Phosphrous Trichloride 100%	120	MT/Day
27	MDB (100% Basis)	3	MT/Day
28	OR Halogen Derivaties and family (100% Basis)	123	MT/Day
29	Di-Bromo Nitrilo Propion Amide	1	MT/Day

4. Conditions under Water (P&CP), 1974 Act for discharge of effluent:

Sr No	Description	Permitted (in CMD)	Standards to	Disposal Path
1.	Trade effluent	57	As per Schedule-I	Partly recycle 26 CMD & partly CETP 31 CMD

Sr No	Description	Permitted	Standards to	Disposal
2.	Domestic effluent	8	As per Schedule-I	Partly recycle 4 CMD & partly CETP 4 CMD

5. **Conditions under Air (P& CP) Act, 1981 for air emissions:**

Sr No.	Stack No.	Description of stack / source	Number of Stack	Standards to be achieved
1	S-1	Boiler (Coal Fired)	1	As per Schedule -II
2	S-2	Boiler (Furnace oil fired) & Boiler (Furnace oil fired)- Stand by	1	As per Schedule -II
3	S-3 & S-4	DG Set (2 X 1500KVA)	2	As per Schedule -II
4	S-5	Spray Dryer-1	1	As per Schedule -II
5	S-6	Spray Dryer-2	1	As per Schedule -II
6	S-7	Chlorine Scrubber	1	As per Schedule -II
7	S-8	Absorber & Scrubber for HEDP Plant	1	As per Schedule -II
8	S-9	Scrubber for PCL3-1 Plant	1	As per Schedule -II
9	S-10	Spray Dryer-3	1	As per Schedule -II
10	S-11	Process Stack Attached to SPD-1 Plant	1	As per Schedule -II
11	S-12	Process Stack Attached to SPD-2 Plant	1	As per Schedule -II
12	S-13	Scrubber for Amine Plant	1	As per Schedule -II
13	S-14	Scrubber for Liq. Ammonia Plant	1	As per Schedule -II
14	S-15	Process stack attached to SPD-3 Plant	1	As per Schedule -II
15	S-16	Scrubber for HCL Filling Plant	1	As per Schedule -II

6. **Non-Hazardous Wastes:**

Sr No	Type of Waste	Quantity	UoM	Treatment	Disposal
1	Wooden Scrap	1500	Kg/Day	Sale	Sale to authorized party
2	Metallic Scrap	500	Kg/Day	Sale	Sale to authorized party
3	Waste Cotton	10	Kg/Day	Sale	Sale to authorized party
4	Dry Waste	50	Kg/Day	Sale	Sale to authorized party
5	Insulation	5	Kg/Day	Sale	Sale to authorized party
6	Wet Waste	10	Kg/Day	Composting	Used as mannure
7	Canteen Waste	10	Kg/Day	Composting	Used as mannure
8	STP Sludge	03	MT/A	Composting	Used as mannure
9	Coal ash from boiler	10	MT/Day	Sale	Sale to Brick Manufacturer

7. **Conditions under Hazardous & Other Wastes (M & T M) Rules 2016 for treatment and disposal of hazardous waste:**

Sr No	Category No./ Type	Quantity	UoM	Treatment	Disposal
1	3.3 Sludge and filters contaminated with oil	3.12	MT/M	Incineration	CHWTSDF
2	33.1 Empty barrels /containers /liners contaminated with hazardous chemicals /wastes	29450	Nos./Y	Incineration/ Recycle*	Sale to authorised party / CHWTSDF
3	33.1 Empty barrels /containers /liners contaminated with hazardous chemicals /wastes	01	MT/Day	Recycle*	Sale to authorised party
4	35.3 Chemical sludge from waste water treatment	160	MT/A	Landfill	CHWTSDF
5	23.1 Wastes or residues (not made with vegetable or animal materials)	0.5	MT/A	Incineration/ Recycle*	Sale to authorised party / CHWTSDF
6	20.2 Spent solvents	24	MT/A	Recycle*	Sale to authorised party
7	20.3 Distillation residues	350	MT/A	Incineration	CHWTSDF/Co-processor through Authorized Preprocessor
8	33.1 Empty barrels /containers /liners contaminated with hazardous chemicals /wastes	06	MT/A	Recycle*	Sale to authorised party
9	5.1 Used or spent oil	3.0	MT/A	Recycle	Sale to authorised party
10	5.2 Wastes or residues containing oil	1.5	MT/A	Incineration	CHWTSDF
11	36.2 Spent carbon or filter medium	0.5	MT/A	Incineration	CHWTSDF
12	37.2 Ash from incinerator and flue gas cleaning residue	02	MT/A	Landfill	CHWTSDF
13	15.2 Discarded asbestos	02	MT/A	Landfill	CHWTSDF
14	37.3 Concentration or evaporation residues	72	MT/A	Landfill	CHWTSDF
15	28.4 Off specification products	12	MT/A	Incineration	CHWTSDF
16	Acetyl Chloride	31	MT/Day	Recycle*	Sale to authorised party
17	Methanol	05	MT/Day	Recycle*	Sale to authorised party
18	Sodium Chloride	08	MT/Day	Recycle*	Sale to authorised party

Sr No	Category No./ Type	Quantity	UoM	Treatment	Disposal
19	Sodium Sulphate	7.7	MT/Day	Recycle*	Sale to authorised party
20	Hydrochloric Acid 30-33% - 100%	119	MT/Day	Recycle*	Sale to authorised party
21	Sodium Bromide	09	MT/Day	Recycle*	Sale to authorised party

* Sale to Authorized Party having permission under Rule 9 of H&OW Rule

8. **Conditions under Batteries (Management & Handling) Rules, 2001:**

Sr No	Type of Waste	Quantity	UoM	Disposal Path
1	Lead Acid Batteries	50.00	Nos./Y	Sale to Authorized Party

Specific Conditions for used Batteries:

- The applicant shall ensure that used batteries are not disposed of in any manner other than by depositing with the authorized dealer/ manufacturer/ registered recycler/ importer/ re-conditioner or at the designated collection center.
- The applicant shall file half-yearly return in Form VIII to the M.P.C. Board.
- Bulk consumers to their user units may auction used batteries to registered recyclers only.

9. **Conditions under E-Waste Management:**

Sr No	Type of Waste	Quantity	UoM	Disposal Path
1	E-Waste	1.00	MT/A	Sale to Authorized Party

- The Board reserves the right to review, amend, suspend, revoke this consent and the same shall be binding on the industry.
- This consent should not be construed as exemption from obtaining necessary NOC/ permission from any other Government authorities.
- The applicant shall submit Board Resolution stating increased Capital Investment increased without permission of the Board & violated the provisions of Environmental Laws
- The applicant shall comply with the conditions of the Environmental Clearance granted vide letter No. SEAC-2013/CR-550/TC-2 dtd. 08/10/2015.
- The applicant shall make an application for renewal of consent 60 days prior to date of expiry of the consent.
- This consent is issued as per the minutes of Consent Appraisal Committee meeting held on 09/3/2022



Ashok Shingare

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1287076d
a723635f

Signed by: **Ashok Shingare**
Member Secretary
For and on behalf of,
Maharashtra Pollution Control Board
ms@mpcb.gov.in
2022-04-12 12:06:31 IST

Received Consent fee of -

Sr.No	Amount(Rs.)	Transaction/DR.No.	Date	Transaction Type
1	928520.00	TXN2112000377	03/12/2021	Online Payment
2	200000.00	TXN2112003465	29/12/2021	Online Payment
3	11540.00	TXN2112003422	29/12/2021	Online Payment

Copy to:

1. Regional Officer, MPCB, Raigad and Sub-Regional Officer, MPCB, Mahad
- They are directed to ensure the compliance of the consent conditions.
2. Chief Accounts Officer, MPCB, Sion, Mumbai



SCHEDULE-I

Terms & conditions for compliance of Water Pollution Control:

1. A] As per your application, you have provided Effluent Treatment Plant (ETP) of designed capacity of 57.00 CMD consisting of Primary (Collection tank, Neutralization tank, Equalization tank, Flash mixer, Primary Clarifier/Primary Settling Tank), Secondary (Activated sludge process), Tertiary (Pressure sand filter, Activated carbon filter, Reverse Osmosis & Multi Effect Evaporator), Sludge treatment (Sludge drying bed) for the treatment of 57 CMD of trade effluent.
- B] The Applicant shall operate the effluent treatment plant (ETP) to treat the trade effluent so as to achieve the following standards prescribed by the Board or under EP Act, 1986 and Rules made there under from time to time, whichever is stringent:

Sr.No	Parameters	Limiting concentration not to exceed in mg/l, except for pH
(1)	pH	6.0 -8.5
(2)	BOD (3 days 27°C)	30
(3)	COD	250
(4)	TSS	100
(5)	Oil & Grease	10
(6)	TDS	2100
(7)	Chloride	600
(8)	Sulphate	1000
(9)	Iron	3
(10)	Zinc	3

- C] The Industry shall ensure connectivity online monitoring system to the MPCB server including separate energy meter for pollution control system.
- D] The treated effluent shall be partly 31 CMD recycled for secondary purposes and remaining 26 CMD shall be discharged to CETP after confirming above standards. In no case, effluent shall find its way for outside factory premises.
2. A] As per your application, you have provided Sewage Treatment Plant of designed capacity 20 CMD for the treatment of 8 CMD of sewage.
- B] The Applicant shall operate the sewage treatment system to treat the sewage so as to achieve the following standards.

Sr.No	Parameters	Standards (mg/l)	
1	Suspended Solids	Not to exceed	50 mg/l
2	BOD 3 days 27°C	Not to exceed	30 mg/l
3	COD	Not to exceed	100 mg/l

- C] The treated sewage shall be partly 04 CMD recycled for secondary purposes and remaining 04 CMD shall be discharged to CETP after confirming above standards. In no case, sewage shall find its way outside factory premises.

3. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification there of & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto.
4. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.
5. The Applicant shall comply with the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and as amended, by installing water meters and other provisions as contained in the said act:

Sr. No.	Purpose for water consumed	Water consumption quantity (CMD)
1.	Industrial Cooling, spraying in mine pits or boiler feed	834.00
2.	Domestic purpose	10.00
3.	Processing whereby water gets polluted & pollutants are easily biodegradable	253.00
4.	Processing whereby water gets polluted & pollutants are not easily biodegradable and are toxic	0.00
5.	Gardening	40

6. The Applicant shall provide Specific Water Pollution control system as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance/ CREP guidelines.

SCHEDULE-II

Terms & conditions for compliance of Air Pollution Control:

1. As per your application, you have provided the Air pollution control (APC) system and erected following stack (s) to observe the following fuel pattern:

Stack No.	Source	APC System provided/proposed	Stack Height(in mtr)	Type of Fuel	Sulphur Content(in %)	Pollutant	Standard
S-1	Boiler	Fabric Bag Filter Cyclone APH	40.00	Coal 1500 Kg/Hr	0.5	TPM	150 Mg/Nm ³
						SO2	360 Kg/Day
S-2	Boiler	Air Pre Heater	40.00	Furnace Oil 370 Kg/Hr	4	TPM	150 Mg/Nm ³
						SO2	710.4 Kg/Day
	Boiler	Air Pre Heater	Furnace Oil 190 Kg/Hr	4	TPM	150 Mg/Nm ³	
					SO2	364.8 Kg/Day	
S-3 & S-4	DG Set (2 X 1500kVA)	Acoustic Enclosure	30.00	HSD 600 Kg/Hr	1	TPM	150 Mg/Nm ³
						SO2	312 Kg/Day
S-5	Spray Dryer-1	Stack	33.00	FO 50 Kg/Hr	4	TPM	150 Mg/Nm ³
						SO2	96 Kg/Day
S-6	Spray Dryer-2	Stack	33.00	FO 50 Kg/Hr	4	TPM	150 Mg/Nm ³
						SO2	96 Kg/Day
S-7	Chlorine Scrubber	Packed Bed Wet Scrubber	15.00	-	-	Chlorine	3 PPM
S-8	Absorber & Scrubber for HEDP Plant	Scrubber	10.00	-	-	Acid Mist	35 Mg/Nm ³
S-9	Scrubber for PCL3-1 Plant	Scrubber	15.00	-	-	Chlorine	3 PPM
S-10	Spray Dryer-3	Stack	33.00	FO 50 Kg/Hr	4	TPM	150 Mg/Nm ³
						SO2	96 Kg/Day
S-11	Process Stack Attached to SPD-1 Plant	Scrubber	33.00	-	-	Acid Mist	35 Mg/Nm ³
S-12	Process Stack Attached to SPD-2 Plant	Scrubber	33.00	-	-	Acid Mist	35 Mg/Nm ³
S-13	Scrubber for Amine Plant	Scrubber	10.00	-	-	Acid Mist	35 Mg/Nm ³
S-14	Scrubber for Liq. Ammonia Plant	Scrubber	10.00	-	-	-	50 Mg/Nm ³
S-15	Process stack attached to SPD-3 Plant	Scrubber	33.00	-	-	Acid Mist	35 Mg/Nm ³
S-16	Scrubber for HCL Filling Plant	Scrubber	10.00	-	-	HCL	35 Mg/Nm ³

2. The Applicant shall provide Specific Air Pollution control equipments as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance / CREP guidelines.

3. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.
4. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).

SCHEDULE-III

Details of Bank Guarantees:

Sr. No	Consent (C2E/C2O/C2R)	Amt of BG Imposed	Submission Period	Purpose of BG	Compliance Period	Validity Date
1	C to R	25 Lakh	15 Days	Towards O&M of Pollution Control System and Compliance of Consent Conditions	31/01/2024	31/7/2024

BG Forfeiture History

Srno.	Consent (C2E/C2O/C2R)	Amount of BG imposed	Submission Period	Purpose of BG	Amount of BG Forfeiture	Reason of BG Forfeiture
NA						

BG Return details

Srno.	Consent (C2E/C2O/C2R)	BG imposed	Purpose of BG	Amount of BG Returned
NA				

SCHEDULE-IV

General Conditions:

1. Consumers or bulk consumers of electrical and electronic equipment listed in Schedule I shall ensure that e-waste generated by them is channelised through collection centre or dealer of authorised producer or dismantler or recycler or through the designated take back service provider of the producer to authorised dismantler or recycler
2. Bulk consumers of electrical and electronic equipment listed in Schedule I shall maintain records of e-waste generated by them in Form-2 and make such records available for scrutiny by the concerned State Pollution Control Board
3. Consumers or bulk consumers of electrical and electronic equipment listed in Schedule I shall ensure that such end-of-life electrical and electronic equipment are not admixed with e-waste containing radioactive material as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and rules made there under;
4. Bulk consumers of electrical and electronic equipment listed in Schedule I shall file annual returns in Form-3, to the concerned State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates. In case of the bulk consumer with multiple offices in a State, one annual return combining information from all the offices shall be filed to the concerned State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates.

5. Specific Conditions for storage, Handling and Disposal of Waste from Electrical & Electronic equipment (WEEE):
1. **Collection of WEEE** - The applicant must provide appropriate and dedicated vehicles duly identified as per the norms for transportation of Hazardous Waste. The applicant shall obtain all the required permits for transportation of WEEE from competent authority. The applicant shall ensure the safe transport of the WEEE without any spillage during transportation.
Storage for disassembled parts: The applicant must provide appropriate storage for disassembled spare parts from WEEE. Some spare parts (e.g. motors and compressors) will contain oil and/or other fluids. Such part must be appropriately segregated and stored in containers that are secured such that oil and other fluids cannot escape from them. These containers must be stored on an area with an area with an impermeable surface and a sealed drainage system.
 2. **Storage for other components and residues:** Other components and residues arising from the treatment of WEEE will need to be contained following their removal for disposal or recovery. Where they contain hazardous substances they should be stored on impermeable surface and in appropriate containers or bays with weatherproof covering. Containers should be clearly labelled to identify their contents and must be secured so that liquids, including rain water cannot enter them. Components should be segregated having regard to their eventual destinations and the compatibility of the component types. All batteries should be handled and stored having regard to the potential fire risk associated with team.
 3. **Balances** : WEEE Guidelines also requires that sites for handling of WEEE have "balances to measure the weight of the segregated waste". The objective is to ensure that a record of weights can be maintained of WEEE entering a facility and components and materials leaving each site (together with their destinations). The nature of the weighing equipment should be appropriate for the type and quantity of WEEE being processed.
 4. Plastic, which cannot be recycled and is hazardous in nature, is recommended to be land filled in nearby CHWTSDf.
 5. Ferrous and nonferrous metal recycling facilities fall under the purview of existing environmental regulations for air, water, noise, land and soil pollution and generation of hazardous waste and the same should be followed.
 6. CFCS should be either reused or incinerated in common hazardous waste Incineration facilities at CHWTSDf.
 7. Waste Oil should be either reused or incinerated in common hazardous waste incineration facilities.
 8. PCB's containing capacitors shall be incinerated in common hazardous waste incineration facilities at CHWTSDf.
 9. Mercury recovery and lead recycling facilities from batteries fall under the Hazardous & Other Wastes (M & TM) Rules, 2016.
 10. Existing environmental regulations for air; water; noise, land and soil pollution and generation of hazardous waste and the same should be followed. In case Mercury or lead recovery is very low, they can be temporarily stored at e-waste recycling facility and later disposed in TSDF.
 11. The industry shall maintain records of the e-waste purchased, processed in Form-2 and shall file annual returns of its activities of previous year in Form-3 as per Rules 11(9) & 13(3)(vii) of the E-Waste(M) Rules, 2016; on or before 30th day of June of every year.
6. The Energy source for lighting purpose shall preferably be LED based

7. The PP shall harvest rainwater from roof tops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial applications within the plant
8. Conditions for D.G. Set
 - a) Noise from the D.G. Set should be controlled by providing an acoustic enclosure or by treating the room acoustically.
 - b) Industry should provide acoustic enclosure for control of noise. The acoustic enclosure/ acoustic treatment of the room should be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on higher side. A suitable exhaust muffler with insertion loss of 25 dB (A) shall also be provided. The measurement of insertion loss will be done at different points at 0.5 meters from acoustic enclosure/room and then average.
 - c) Industry should make efforts to bring down noise level due to DG set, outside industrial premises, within ambient noise requirements by proper siting and control measures.
 - d) Installation of DG Set must be strictly in compliance with recommendations of DG Set manufacturer.
 - e) A proper routine and preventive maintenance procedure for DG set should be set and followed in consultation with the DG manufacturer which would help to prevent noise levels of DG set from deteriorating with use.
 - f) D.G. Set shall be operated only in case of power failure.
 - g) The applicant should not cause any nuisance in the surrounding area due to operation of D.G. Set.
 - h) The applicant shall comply with the notification of MoEFCC, India on Environment (Protection) second Amendment Rules vide GSR 371(E) dated 17.05.2002 and its amendments regarding noise limit for generator sets run with diesel.
9. The applicant shall maintain good housekeeping.
10. The non-hazardous solid waste arising in the factory premises, sweepings, etc. be disposed of scientifically so as not to cause any nuisance / pollution. The applicant shall take necessary permissions from civic authorities for disposal of solid waste.
11. The applicant shall not change or alter the quantity, quality, the rate of discharge, temperature or the mode of the effluent/emissions or hazardous wastes or control equipments provided for without previous written permission of the Board. The industry will not carry out any activity, for which this consent has not been granted/without prior consent of the Board.
12. The industry shall ensure that fugitive emissions from the activity are controlled so as to maintain clean and safe environment in and around the factory premises.
13. The industry shall submit quarterly statement in respect of industries obligation towards consent and pollution control compliance's duly supported with documentary evidences (format can downloaded from MPCB official site).
14. The industry shall submit official e-mail address and any change will be duly informed to the MPCB.
15. The industry shall achieve the National Ambient Air Quality standards prescribed vide Government of India, Notification No. B-29016/20/90/PCI-L dated. 18.11.2009 as amended.
16. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions. The Applicant shall obtain prior consent of the Board to take steps to establish the unit or establish any treatment and disposal system or an extension or addition thereto.
17. The industry shall ensure replacement of pollution control system or its parts after expiry of its expected life as defined by manufacturer so as to ensure the compliance of standards and safety of the operation thereof.

18. The PP shall provide personal protection equipment as per norms of Factory Act
19. Industry should monitor effluent quality, stack emissions and ambient air quality monthly/quarterly.
20. Whenever due to any accident or other unforeseen act or even, such emissions occur or is apprehended to occur in excess of standards laid down, such information shall be forthwith Reported to Board, concerned Police Station, office of Directorate of Health Services, Department of Explosives, Inspectorate of Factories and Local Body. In case of failure of pollution control equipments, the production process connected to it shall be stopped.
21. The applicant shall provide an alternate electric power source sufficient to operate all pollution control facilities installed to maintain compliance with the terms and conditions of the consent. In the absence, the applicant shall stop, reduce or otherwise, control production to abide by terms and conditions of this consent.
22. The industry shall recycle/reprocess/reuse/recover Hazardous Waste as per the provision contain in the Hazardous and Other Wastes (M & TM) Rules 2016, which can be recycled /processed /reused /recovered and only waste which has to be incinerated shall go to incineration and waste which can be used for land filling and cannot be recycled/reprocessed etc. should go for that purpose, in order to reduce load on incineration and landfill site/environment.
23. An inspection book shall be opened and made available to the Board's officers during their visit to the applicant.
24. Industry shall strictly comply with the Water (P&CP) Act, 1974, Air (P&CP) Act, 1981 and Environmental Protection Act, 1986 and industry specific standard under EP Rules 1986 which are available on MPCB website (www.mpcb.gov.in).
25. Separate drainage system shall be provided for collection of trade and sewage effluents. Terminal manholes shall be provided at the end of the collection system with arrangement for measuring the flow. No effluent shall be admitted in the pipes/sewers downstream of the terminal manholes. No effluent shall find its way other than in designed and provided collection system.
26. Neither storm water nor discharge from other premises shall be allowed to mix with the effluents from the factory.
27. The industry should not cause any nuisance in surrounding area.
28. The industry shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standard in respect of noise to less than 75 dB (A) during day time and 70 dB (A) during night time. Day time is reckoned in between 6 a.m. and 10 p.m. and night time is reckoned between 10 p.m. and 6 a.m.
29. The industry shall create the Environmental Cell by appointing an Environmental Engineer, Chemist and Agriculture expert for looking after day to day activities related to Environment and irrigation field where treated effluent is used for irrigation.
30. The applicant shall provide ports in the chimney/(s) and facilities such as ladder, platform etc. for monitoring the air emissions and the same shall be open for inspection to/and for use of the Board's Staff. The chimney(s) vents attached to various sources of emission shall be designated by numbers such as S-1, S-2, etc. and these shall be painted/ displayed to facilitate identification.
31. The industry should comply with the Hazardous and Other Wastes (M & TM) Rules, 2016 and submit the Annual Returns as per Rule 6(5) & 20(2) of Hazardous and Other Wastes (M & TM) Rules, 2016 for the preceding year April to March in Form-IV by 30th June of every year.

32. The applicant shall install a separate meter showing the consumption of energy for operation of domestic and industrial effluent treatment plants and air pollution control system. A register showing consumption of chemicals used for treatment shall be maintained.
33. The applicant shall bring minimum 33% of the available open land under green coverage/ plantation. The applicant shall submit a yearly statement by 30th September every year on available open plot area, number of trees surviving as on 31st March of the year and number of trees planted by September end.
34. The Board reserves its rights to review plans, specifications or other data relating to plant setup for the treatment of waterworks for the purification thereof & the system for the disposal of sewage or trade effluent or in connection with the grant of any consent conditions.
35. The firm shall submit to this office, the 30th day of September every year, the Environment Statement Report for the financial year ending 31st March in the prescribed FORM-V as per the provisions of Rule 14 of the Environment (Protection) (second Amendment) Rules, 1992.
36. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.
37. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).
38. The applicant shall provide facility for collection of environmental samples and samples of trade and sewage effluents, air emissions and hazardous waste to the Board staff at the terminal or designated points and shall pay to the Board for the services rendered in this behalf.



This certificate is digitally & electronically signed.

List of Plant Species

Scientific name	Common name	Family
<i>Mangifera indica</i>	Amba	Anacardiaceae
<i>Annona squamosa</i> L.	Sitaphal	Annonaceae
<i>Polyalthia longifolia</i>	Ashok	Annonaceae
<i>Alstonia scholaris</i>	Saptaparni	Apocynaceae
<i>Nerium indicum</i>	Kaner	Apocynaceae
<i>Cocos nucifera</i>	Coconut	Arecaceae
<i>Tridax procumbens</i>	Dagadipala	Asteraceae
<i>Jacaranda mimosefolia</i>	Neel Gulmohor	Bignoniaceae
<i>Bombax ceiba</i>	Shalmali	Bombacaceae
<i>Cassia fistula</i>	Bahava	Caesalpiaceae
<i>Cassia javanica</i>	Cassia	Caesalpiaceae
<i>Cassia siamea</i>	Cassia	Caesalpiaceae
<i>Cassia tora</i>	Takla	Caesalpiaceae
<i>Delonix regia</i>	Gulmohar	Caesalpiaceae
<i>Tamarindus indica</i>	Chinch	Caesalpiaceae
<i>Casuarina equisetifolia</i>	Suru	Casuarinaceae
<i>Cyperus</i> spp.	Motha	Cyperaceae
<i>Dalbergia sisso</i>	Shisham	Fabaceae
<i>Pongamia pinnata</i>	Karanj	Fabaceae
<i>Lawsonia inermis</i>	Mehndi	Lythraceae
<i>Melia azedarach</i>	Bakan neem	Meliaceae
<i>Albizia lebbek</i>	Kala shirish	Mimosaceae
<i>Ficus glomerata</i>	Umbar	Moraceae
<i>Ficus religiosa</i>	Pimpal	Moraceae
<i>Ficus benghalensis</i>	Vad	Moraceae
<i>Eugenia jambolana</i>	Jambhul	Myrtaceae
<i>Bougainvillea spectabilis</i>	Boganvel	Nyctaginaceae
<i>Andropogon contortus</i>	Surwal	Poaceae
<i>Andropogon martinii</i>	Rohis	Poaceae
<i>Mimusops elengi</i>	Bakul	Sapotaceae
<i>Ailanthus excelsa</i>	Rukhdo	Simaroubaceae
<i>Typha angustata</i>	Pankanis	Typhaceae
<i>Emblica officinalis</i>	Amla	Euphorbiaceae
<i>Syzygium cumini</i>	Jamun	Myrtaceae



क्र. व. १२० अहमदनगर जिल्हाचे वद
 सर्व साधारण घुसक किंमत १००/-
 (१००/-) मर २१/६/०४ किपती का
 को. अशा मर के मीठकरी मर की.
 रा. मर २०८. ५६५
 तर्फे को. मर २०८. ५६५
 रा. मर २०८. ५६५
 राजा विका व. ५६५ १५६५०४
 > अशोक

(Signature)
 (समीर अ. संसारे)
 घुसक विकेला
 मराड - रायगड
 परवाना क्र. ४/९९/२०००

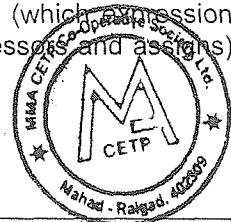
15 JUN 2004
 MMA CETP

THIS Agreement made and entered at this day of 2004 between the MMA (CETP) Cooperative Society Ltd. registered under the Maharashtra Co-operative Societies Act 1960 having its office at P-43, MIDC Mahad Dist: Raigad hereinafter referred to as the Party of the First Part (which expression shall unless it be repugnant to the context of meaning thereof deemed to mean and include its successors of assigns of the FIRST PART.

AND

The Maharashtra Industrial Development, a corporation constituted under the Maharashtra Industrial Development Act, 1961 (Maharashtra Industrial Development Corporation, III of 1962) and having its principal office at Orient House, Adi Murzban Path, Ballard Estate, Mumbai-400 038 (which expression shall, unless the context does not so admit, include its successors and assigns) of the SECOND PART.

Executive Engineer AND
 MIDC, Mahad Da. (C) Mahad
 Shri. VIMAL VISHNU MANGWANI



(Signature)
 Vimal Mangwani

company having being registered under partnership Act/A company within the meaning of the company Act/A Company within the meaning of the company Act 1956 having its registered office at **S-113/2, MIDC, BHOSARI, Pune 411026 India.** under the firm name and style of **M/s. Aquapharm Chemicals Pvt. Ltd.** as the party of Third Part (which expression shall included his heirs, executors, administrators and permitted assigns, their survivors or survivor and the heirs, executors, administrators and permitted assigns of such last survivor and its successor(s) in business and permitted assigns).

DEFINATIONS AND INTERPRETATIONS:

1. "TIME" shall be stated in 'Hours' and shall mean Indian Standard Time.
2. "DAY" means a period of Twenty – four (24) consecutive hours beginning and ending at 0700 hours.
3. "WEEK" means a period of seven (7) consecutive days beginning from day.
4. "MONTH" means a period beginning at 0700 hours on the First day of Calendar month & ending at 0700 hours first day of succeeding Calendar Month.
5. "YEAR" means a period of three hundred and sixty five (365) Consecutive days or three hundred and sixty six (366) Consecutive days when such period includes twenty ninth (29) day of February, beginning at 0700 hours from a day.
6. " FINANCIAL YEAR" means a period of three hundred and sixty five (365) Consecutive days or three hundred and sixty six (366) Consecutive days when such period includes a twenty nine (29) day of February, beginning at 0700 hours from a day.
7. The headings of or titles to the clauses in this AGREEMENT shall not deemed to be part thereof or be taken into Consideration in the interpretation or construction thereof or of the AGREEMENT
8. Words imparting the singular only also include the plural and, Vice versa, where the context so requires.

AND WHEREAS on the lead taken by State / Central Government MIDC/MPCB for setting up and operating of common Effluent Treatment Plant (hereafter referred to as 'CETP') the said MMA & MIDC and Paramount Ltd (hereafter referred to as PL) executed a MOU dated 19th Dec. 2000 for establishing a CETP and MMA for the said purpose registered the Co-operative Society herein with the members of MMA as its members.

AND WHEREAS it has been contemplated that all the industries units who intend to have benefit of the said CETP should enter into a Tripartite agreement along with parties of first & second parties.

AND WHEREAS party of third part is one of such unit intending to have benefit of the CETP.

NOW THEREFORE THIS AGREEMENT WITNESSES AS UNDER:

1. Parties agree that Memorandum of Understanding executed on 12.2000 between M/s Paramount Ltd, (a Company selected by Mahad Manufacturers Association) of one part; said Mahad Manufacturers Association (Chief Promoter of the party of the first part herein) of the Second Part and M.I.D.C. of the third part, is and shall be the basis and guidance factor for this agreement. The said



2. The party of the first part, Co-operative Society shall setup CETP at P-43, M.I.D.C. area Mahad, District Raigad, the plot is allotted by M.I.D.C. for the said purpose at the nominal rate of Rs. 1 per Sqm. The Co-operative Society shall use the same for setting up of CETP, with all the ancillaries and incidentals thereto.

3. The party of first part shall set up CETP, which will meet the specification presently laid down by Maharashtra Pollution Control Board. (MPCB)/ under the Environment(Protection). Currently the specifications applicable are reproduced in **Annexure-B** hereto.

4. It is agreed that all the industrial units intending to secure benefit of the CETP shall contribute to the capital cost of the CETP. The capital contribution is non refundable and is to be made according to the formula given in **Annexure C-1** hereunder, and contribution to the operating / running cost is to be made according to the formula given in **Annexure C-2**. Accordingly party of the third part agrees that these contributions shall be made over by the party of the third part to party of first part through the party of the second part along with payment of water bills.

5. All the parties agree that, Society party of the first part and the party of the third part shall arrive at the contribution figure as per the formula stated in point no 4.0 above and thereafter the Party of the first part shall intimate to M.I.D.C party of second part, the contribution to be made by the party of the third part. Party of the first part and party of the third part hereby authorize the party of the second part M.I.D.C to send demands of the contributions along with 2% service charges to the party of the third part and to recover the same from the party of the third part along with the water bills.

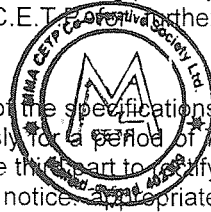
6. Towards final demand of contribution of **Rs.11,90,400/- (Rs. Eleven Lakhs Ninety Thousand Four Hundred only)** to the equity capital and in anticipation of the execution of this agreement, the party of the third part has paid through M.I.D.C party of second part an amount of **Rs.11,90,400/-** for Capital contributions. It will be accounted for and given credit for by the party of the first part to the party of the third part. Party of third part, will pay the balance amount, if any, on account of capital contribution, to the party of first part through party of second part before 30th November-2004.

7. Party of the first part shall operate the C.E.T.P to the norms laid down by M.P.C.B(Maharashtra pollution control board), from time to time, as also in conformity of and compliance with all other application rules and regulations under various enactments.

8. The party of second part agrees to demand and collect contributions from time to time from the industries, (party of third parties) by sending demands along with water bill. The M.I.D.C party of second part further agrees and undertakes to pay contributions so collected from the party of the third part to party of the first part, after deducting 2% service charges by 10th of the succeeding month.

9. It is also agreed that if the party of Third part is a SSI Unit, it will undertake the pre-treatment of their effluent comprising of neutral pH adjustment, detoxification, degreasing and settling and in case of its a Medium Scale/Large Scale unit, will in addition to Preliminary treatment, will undertake to operate the existing primary and secondary treatment facilities before sending it to C.E.T.P for further treatment.

In case, the party of the First part finds a variance over 10% of the specifications as per **Annexure 3** or as per consent conditions, continuously for a period of 7 days, party of the first part will issue a notice to the party of the third part to rectify the problem within 3 days of the date of the receipt of the notice. Appropriate action will be taken by executive body of party of first part.



Signature of Margua

Executive Engineer
MIDC, Mahad Dist. (C) Mahad

Signature

Signature
P. D. D.

10. Party of First part shall have rights to test & collect the samples at the boundary out let of the party of the third part or at MPCB sampling point and will test such effluent in C.E.T.P laboratory. Party of the third part shall ensure discharge of such treated effluent as per **Annexure C-3** or as per consent conditions, to the carry lines of M.I.D.C.

11. The party of the first part shall be at liberty to extend the payment of party of third part, hereunder, by maximum one month time on the condition that, the party of the third part shall pay interest @ 15% p.a. on delayed payments.

12. In case of default in payment and or non-compliance of adherence to the Specifications as agreed and annexed at **Annexure C- 3** or as per consent conditions, or as referred to under clause no 9 herein above, the party to issue warning notice to the party of the third part and to call upon the party of the third part to comply with the demands within the specified time, contained in the notice. First part shall have following powers:

a) To issue warning notice to the party of the third part and to call upon the party of the third part to comply with the demands within the specified time, contained in the notice.

b) If the party of the third part fails to comply with the demands in the warning notice, the party of the first part will charge penalty of 10% of the monthly bill amount in addition to the interest as aforesaid wherever applicable.

c) In the event of the party of the third part failing to comply with the demands, the party of the first part will serve on the party of the third part 10 days notice of termination of the agreement and if the party of the third part fails to comply with the demands in the notice of termination within stipulated period, notice of termination shall become final and the party of first part will request M.P.C.B to instruct the party of second part to disconnect the water supply of party of third part, and the party of the second part to disconnect effluent discharge line of the party of the third part is connected to M.I.D.C line and party of second part shall disconnect the lines accordingly, till the party of third part meets the standard .

The penal charges for the individual units shall be as under,

i) For pH violation (3.0 to 5.5) the penal charges shall be Rs 20/M3 X0.65Xper day charges water consumption, Till pH meets M.P.C.B norms.

ii) For pH violation (below3.0) the penal charges shall be Rs 30/M3X0.65x per day average water consumption, Till the pH meets the M.P.C.B norms.

iii) For COD violation penal charges will be Rs 12/KgX0.65Xper day average water consumption (COD observed-250)/1000,till the LSI/MSI units meet the M.P.C.B norms.

iv) For those units for whom COD limits have been relaxed, the penal charges shall be based on BOD limits and which is as follows:

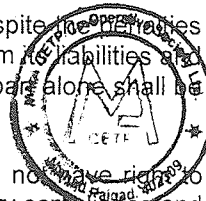
Rs30/Kg X0.65Xper average water consumption (BOD observed -100)/1000, till the unit meets the M.P.C.B norms.

d) Parties covenant with each other that, in case of default despite the opportunities aforesaid, the party of the third part shall not be absolved from its liabilities and obligations, under Pollution Control Act. The party of the third part alone shall be liable for criminal & civil liability, if any applicable.

e) The party of the third part shall not be entitled to and shall not have right to receive water from M.I.D.C until and unless he makes necessary compliance and

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MIDC, Mahad Dn. (C) Mahad



reimburses the damages to party of the first part and party of the first part instructs party of the second part to restore the water supply.

13) The party of the third part agrees that, it shall alone be responsible to pay disconnection and reconnection charges and any other charges to the party of the second part.

14) If any industry, which is not the member of C.E.T.P and intends to join the C.E.T.P, the following procedure is applicable: -

a) The particular industry will inform the party of first part about its intention to join and become the member of the society.

b) The party of first part will inform the new member about the membership fee and its share of the capital contribution to be paid in one lump sum.
New member will have to pay to party of first part the society membership fee
Formula for capital contribution for new members is as per the below formula:

$$\frac{A * 0.6}{7500 \text{ cu.m}} * \text{Total cost of the plant in Rs.}$$

Where as:

A = Water sanction as per MIDC in cu.m / day
0.6 = 60% of A
7500 cu.m = Hydraulic design of plant

c) The intending member will execute the tripartite agreement within one week from the date of payment of capital contribution.

d) After execution of the agreement, the member will be allowed to join the C.E.T.P

e) New member will pay the total contribution within one month from the date of signing of agreement

15. The party of the first part agrees and covenants as under:-

a) It shall maintain, operate and run the C.E.T.P for the benefit of the members i.e. the party of the third part.

b) It shall keep and maintain proper accounts and shall work out the treatment cost and contribution to be paid by party of the third part towards operating cost accordance with the formula annexed hereto as **Annexure C 2**. The operating expenditure of the C.E.T.P shall include installment for repayment of loans, interest thereon, recurring expenses, overheads, depreciation, idling cost, normal cost of administration, cost of input of chemicals, utilities, disposal cost of hazardous / solid waste, maintenance expenses and laboratory expenses, loan, insurance etc so as to ensure smooth working of C.E.T.P

c) It shall appoint consultants, advisors, contractors and staff for technical and administrative jobs.

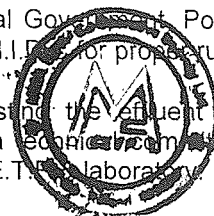
d) It shall act as liaison between the State and Central Government, Pollution Control Board (s), Financial and other Institutions and M.I.P for proper running of the plant.

e) To establish a laboratory for the purpose of testing the effluent being discharged by the users of the C.E.T.P and set up a technical committee to supervise, manage and control the operations of the C.E.T.P laboratory.

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Executive Engineer

MPC, Mahad District, Maharashtra



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f) In case of dispute over analysis of samples drawn of the party of the third part, the same sample will be sent to Government approved laboratory acceptable to parties of first and third parties. The results will be binding on both the parties. During this period, the charges of treatment will be as per analysis of party of first part and it will be adjusted, as per revised analysis. All expenses on account of external analysis will be borne by party of third part.

16. The party of the first part states and declares that its promoter M.M.A has signed the contract documents with Paramount Ltd of Vadodra. The same is taken on its record by the party of the first part with the consent of the said Paramount Ltd has taken over responsibility and obligation to ensure satisfactory implementation of the contract by and at the hands of the said Paramount Ltd as also liaison between the State and Central Government, MPCB, financial and other Institutions and MIDC for proper running of the plant.

17. Parties agree and declare that this agreement is being executed in terms of Clause 7 (a) of the MOU dt. 19.12.2000.

Annexure A above referred to - MOU dt. 19/12/2000

Annexure B above referred to - MPCB specifications

Annexure C-1 above referred to - Formula for capital contribution

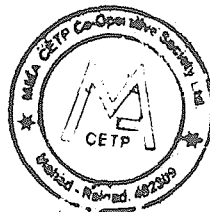
Annexure C-2 above referred to - Formula for share of operating/ running cost

Annexure C-3 above referred to - Specification of effluent to be discharged by party of the third part

Annexure C-4 above referred to - Establishment & operation of Laboratory

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MIDC, Mahad Da. (C) Mahad



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In witness whereof the party of party of first part has affixed its common seal hereto on its behalf, the party of second part / has set his/ her set his/ her hand/ have set their respective hand / have caused its common seal to be affixed, the party of third part have caused the MIDC to set his hand affix its common seal hereto the day and year first above written

The common seal of above named Party of First Part (A) , Common Effluent Treatment Plant _____

Pursuant to its Resolution of its Board of Directors passed in that behalf on the date affixed in the presence of

Who is token Of having affixed the Seal of Association have set their respective hand/ hereto in the presence of:

- (1)
(2)

Signed /sealed and delivered by the

Shri A.K. Kumawat

The Executive Engineer. for And on behalf of the party of the second part Maharashtra industrial development corporation In the presence of:

[Handwritten signature]



[Handwritten signature]

Executive Engineer MIDC, Mahad Dn. (C) Mahad

- (1) Shri Bartakke R.A.F. [Handwritten signature]
(2) Shri Oak H.P. [Handwritten signature]

The common seal of the above named party of Third part

Pursuant to a resolution of Board its Boards of directors, Passed on the Date 28-07-2004 Of affixed hereto in the presence of

Directors/Shri

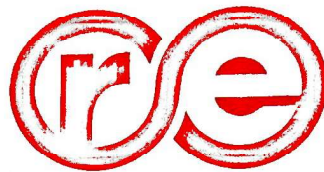
Secretary of the company, Who in token of having affixed the seal of the company Set his hand/have set their respective hands hereto in the presence of

- (1) Vimal Mangwa (Shri. Vimal Vishnu Mangwani)
(2) [Handwritten signature] (Shri. Dhamesh Vishnu Mangwani)

Vimal Mangwa

[Handwritten signature]

[Handwritten signature]



Sustainability

Mumbai Waste Management Limited
CERTIFICATE OF MEMBERSHIP

M/S. AQUAPHARM CHEMICALS PRIVATE LIMITED.

*is a registered member of
CHW-TSDF at MIDC - Taloja for
safe and secure disposal of
Hazardous waste.*

Membership No: MWML-HZW - MHD - 289

This Certificate is valid up to 31st MARCH 2025

Onkar Kulkarni
Manager - BMD

Somnath Malgar
Director

Waste Generation

Hazardous Waste -

Sr. No.	Cat.	Type of Solid Waste	Qty	UOM	Disposal
1	3.3	Sludge and filters contaminated with oil	3.12	MT/A	Sent to CHWTSDF
2	33.1	Empty barrels /containers /liners contaminated with hazardous chemicals/wastes	29450	Nos/Y	Sale to authorised party/CHWTSDF
3	33.1	Empty barrels /containers /liners contaminated with hazardous chemicals/wastes	1	MT/Y	Sale to authorised party
4	35.3	Chemical sludge from waste water treatment	160	MT/A	Sent to CHWTSDF
5	23.1	Wastes or residues (not made with vegetable or animal materials)	0.5	MT/A	Sale to authorised party/CHWTSDF
6	20.2	Spent solvents	24	MT/A	Sale to authorized party
7	20.3	Distillation residues	350	MT/A	Sale to authorised party/CHWTSDF
8	33.1	Empty barrels /containers /liners contaminated with hazardous chemicals /wastes	6	MT/A	Sale to authorised party
9	5.1	Used or spent oil	3.0	MT/A	Sale to authorized party
10	5.2	Wastes or residues containing oil	1.5	MT/A	Sent to CHWTSDF
11	36.2	Spent carbon or filter medium	0.5	MT/A	Sent to CHWTSDF
12	37.2	Ash from incinerator and	2	MT/A	Sent to CHWTSDF

		flue gas cleaning residue			
13	15.2	Discarded asbestos	2	MT/A	Sent to CHWTSDF
14	37.3	Concentration or evaporation residues/ Evaporation salts	72	MT/A	Sent to CHWTSDF
15	28.4	Off specification products	12	MT/A	Sent to CHWTSDF

Non - Hazardous Waste -

Sr. No.	Type of Solid Waste	Quantity (MT/A)	Disposal
1	Wooden Scrap	540	Send to scrap vendor.
2	Metallic Scrap	180	Sale to Authorized scrap vendor
3	Waste Cotton	3.6	Sent to CBWTDF
4	Dry waste	18	Send to Local MSW or Scrap Vendor
5	Wet Waste	3.1	OWC
6	Insulation	1.8	Send to authorized vendor
7	STP Sludge	3	Mixed in OWC and Use as manure for gardening purpose.
8	Coal ash from boiler	3600	Send to Brick Manufacturer.
9	Plastic scrap & other nonbiodegradable waste	1	Sale to Authorized recycler

QUANTITATIVE RISK ASSESSMENT

6.0 INTRODUCTION

QRA study for, M/s. Aquapharma Pvt. Ltd. has been carried out based on data provided by them. The study has been carried out in accordance with the International codes of practices using PHAST (Process Hazard Analysis Software Tool) – 6.53 software. The latest version of the renowned PHAST Risk software package of DNV is used for carrying out the risk analysis.

The full terms of potential hazardous scenarios and consequence events associated with the installation and operation was considered in the analysis. Based on the operations to be carried at the plant, the Risk Analysis, affected distances and the damage of property and population from the identified scenarios considering the Maximum Credible Loss Scenario (MCLS) & Worst case scenario. Maximum credible loss scenarios have been worked based on the inbuilt safety systems and protection measures to be provided for the operation of the facility & the Worst case scenario i.e. 100% catastrophic rupture have been worked out based on failure of the inbuilt safety system.

We have assumed Maximum credible loss scenario (MCLS) i.e. Nozzle failure and Worst case Scenario i.e. catastrophic rupture as per the guidelines suggested by DNV – UK. Similarly, maximum inventory at the time of failure is assumed.

6.1 OBJECTIVE OF THE STUDY

The main objective QRA (Quantitative Risk Analysis) is to determine the potential risks of major disasters having damage potential to life and property and provide a scientific basis for decision makers to be satisfied about the safety levels of the facilities to be set up. This is achieved by the following:

- Identification of hazards that could be realized from process plant.
- Identify the potential failure scenarios that could occur within the facility.
- To Asses, the potential risks associated with identified hazards to which the plant and its personal and community outside may be subjected. Consequences

analysis of various hazards is carried out to determine the vulnerable zones for each probable accident scenario.

- Evaluate the process hazards emanating from the identified potential accident scenarios.
- Analyze the damage effects to the surroundings due to such accidents.
- Conclusion and Recommendation to mitigate measures to reduce the hazard / risks.
- To provide guidelines for the preparation of On-site response plan.

6.2 SCOPE OF THE STUDY

Following flammable chemicals or solvents stored, used and handled in the premises.

S. No	Flammable solvents/Material	Hazards	Flash Point (°C)	Approx Quantity (KL)
1	Acetic Acid	Flammable (Pool fire, Jet fire, flash fire, Max Concentration)	39	38
2	Amines	Flammable (Pool fire, Jet fire, flash fire, Max Concentration)	- 6	100
3	Ammonia	Flammable (Pool fire, Jet fire, flash fire, overpressure)	--	15

6.3 USE OF QRA RESULTS

The techniques used for risk prediction within the QRA have inherent uncertainties associated with them due to the necessary simplifications required. In addition, QRA incorporates a certain amount of subjective engineering judgment and the results are subject to levels of uncertainty. For this reason, the results should not be used as the sole basis for decision making and should not drive deviations from sound engineering practice. The results should be used as a tool to aid engineering judgment and, if used in this way, can provide valuable information during the decision making process.

The QRA results are dependent on the assumptions made in the calculations, which are clearly documented throughout the following sections of this report. Conservative assumptions have been used, which helps to remove the requirement for detailed analysis of the uncertainty. The results show the significant contributions to the overall risk and indicate where worthwhile gains may be achieved if further enhancement of safety is deemed necessary.

6.4 SOFTWARE USED

PHAST 6.53 (latest version) has been used for consequence analysis include discharge and dispersion calculations.

6.5 METEOROLOGICAL CONDITIONS

The consequences of released toxic or flammable material are largely dependent on the prevailing weather conditions. For the assessment of major scenarios involving release of toxic or flammable materials, the most important meteorological parameters are those that affect the atmospheric dispersion of the escaping material. The crucial variables are wind direction, wind speed, atmospheric stability and temperature. Rainfall does not have any direct bearing on the results of the risk analysis; however, it can have beneficial effects by absorption / washout of released materials. Actual behavior of any release would largely depend on prevailing weather condition at the time of release. For the present study we use the metrological data of the Savli Village.

6.6 ATMOSPHERIC PARAMETERS

The Climatological data which have been used for the study is summarized below:

Table 6.1: Climatological data

S. No.	Parameter	Max	Min.	Annual Average
1.	Ambient Temperature (°C)	42	22	33
2.	Relative Humidity (%)	50	27	38.5

The average value of the atmospheric parameters is assumed for the study.

6.6.1 Wind Speed and Wind Direction

The wind speed and wind direction data which have been used for the study is summarized below:

Wind Speed : 1.5 m/s & 5 m/s
Atmospheric Stability : D and F
Wind Direction : _____

6.6.2 Weather Category

One of the most important characteristics of atmosphere is its stability. Stability of atmosphere is its tendency to resist vertical motion or to suppress existing turbulence. This tendency directly influences the ability of atmosphere to disperse pollutants emitted into it from the facilities. In most dispersion scenarios, the relevant atmospheric layer is that nearest to the ground, varying in thickness from a few meters to a few thousand meters. Turbulence induced by buoyancy forces in the atmosphere is closely related to the vertical temperature gradient.

Temperature normally decreases with increasing height in the atmosphere. The rate at which the temperature of air decreases with height is called Environmental Lapse Rate (ELR). It will vary from time to time and from place to place. The atmosphere is said to be stable, neutral or unstable according to ELR is less than, equal to or greater than Dry Adiabatic Lapse Rate (DALR), which is a constant value of 0.98°C/100 meters.

Pas-quill stability parameter, based on Pas-quill – Gifford categorization, is such a meteorological parameter, which describes the stability of atmosphere, i.e., the degree of convective turbulence. Pas-quill has defined six stability classes ranging from 'A' (extremely unstable) to 'F' (moderately stable). Wind speeds, intensity of solar radiation (daytime insolation) and nighttime sky cover have been identified as prime factors defining these stability categories.

When the atmosphere is unstable and wind speeds are moderate or high or gusty, rapid dispersion of pollutants will occur. Under these conditions, pollutant concentrations in air will be moderate or low and the material will be dispersed rapidly. When the atmosphere is stable and wind speed is low, dispersion of material will be limited and pollutant concentration in air will be high. In general, worst dispersion conditions (i.e. contributing to greater hazard distances) occur during low wind speed and very stable weather conditions.

6.7 METHODOLOGY ADOPTED FOR CONSEQUENCE ANALYSIS

Consequences of loss of containment can lead to hazardous situation in any industry handling potentially hazardous materials. Following factors govern the severity of consequence of the loss of containment.

- Intrinsic properties; flammability, instability and toxicity.
- Dispersive energy; pressure, temperature and state of matter.
- Quantity present
- Environmental factors; topography and weather.

Consequence analysis and calculations are effectively performed by computer software using models validated over a number of applications. Consequence modeling is carried out by PHAST (version 6.53) of DNV Software, UK.

PHAST uses the Unified Dispersion Model (UDM) capable of describing a wide range of types of accidental releases. The Model uses a particularly flexible form, allowing for sharp-edged profiles, which become more diffuse downwind.

PHAST contains data for a large number of chemicals and allows definition of mixtures of any of these chemicals in the required proportion. The calculations by PHAST involve following steps for each modeled failure case:

- Run discharge calculations based on physical conditions and leak size.
- Model first stage of release (for each weather category).
- Determine vapor release rate by flashing of liquid and pool evaporation rate.
- Dispersion modeling taking into account weather conditions.
- In case of flammable release, calculate size of effect zone for fire and explosion.
- The hazardous materials considered in this study are mostly flammable liquids. Flow chart for consequence analysis is shown in the form of event tree for release of flammable liquid.

6.8 HAZARDS OF MATERIALS

Definitions

The release of flammable gas or liquid can lead to different types of fire or explosion scenarios. These depend on the material released, mechanism of release, temperature and pressure of the material and the point of ignition. Types of flammable effects are as follows.

a. Pool fire

The released flammable material which is a liquid stored below its normal boiling point, will collect in a pool. The geometry of the pool will be dictated by the surroundings. If the liquid is stored under pressure above its normal boiling point, then a fraction of the liquid will flash into vapor and the remaining portion will form a pool in the vicinity of the release point. Once sustained combustion is achieved, liquid fires quickly reach steady state burning. The heat release rate is a function of the liquid surface area exposed to air. An unconfined spill will tend to have thin fuel depth (typically less than 5 mm) which will result in slower burning rates. A confined spill is limited by the boundaries (e.g. dyked area) and the depth of the resulting pool is greater than that for an unconfined spill.

b. Flash fire:

It occurs when a vapor cloud of flammable material burns. The cloud is typically ignited on the edge and burns towards the release point. The duration of flash fire is very short (seconds), but it may continue as jet fire if the release continues. The overpressures generated by the combustion are not considered significant in terms of damage potential to persons, equipment or structures. The major hazard from flash fire is direct flame impingement. Typically, the burn zone is defined as the area the vapor cloud covers out to half of the LFL. This definition provides a conservative estimate, allowing for fluctuations in modeling. Even where the concentration may be above the UFL, turbulent induced combustion mixes the material with air and results in flash fire.

c. Jet Fire:

Jet flames are characterized as high-pressure release of gas from limited openings (e.g. due to small leak in a vessel or broken drain valve). Boiling liquid expanding vapor explosion (BLEVE) or fireball: A fireball is an intense spherical fire resulting from a sudden release of pressurized liquid or gas that is immediately ignited. The best known cause of a fireball is a boiling liquid expanding vapor explosion (BLEVE). Fireball duration is typically 5 – 20 seconds.

d. Vapor cloud explosion

When a large quantity of flammable vapor or gas is released, mixes with air to produce sufficient mass in the flammable range and is ignited, the result is a vapor cloud explosion (VCE). Without sufficient air mixing, a diffusion-controlled fireball may result without significant overpressures developing. The speed of flame propagation must accelerate as the vapor cloud burns. Without this acceleration, only a flash fire will result.

6.8.1 HAZARDS ASSOCIATED WITH TOXIC MATERIALS

It is necessary to specify suitable concentration of the toxic substance under study to form the end-point for consequence calculations. The considerations for specifying the end-points for the hazardous material involved in the failure scenario are described in the following paragraphs. American Industrial Hygiene Association (AIHA) has issued Emergency Response Planning Guidelines (ERPG) for many chemicals.

- ERPG-1 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined, objectionable odour.
- ERPG-2 is 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, which could impair an individual's ability to take protective action.
- ERPG-3 is 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 life-threatening health effects.

Toxic limit values as Immediately Dangerous to Life or Health (IDLH) concentrations are issued by US National Institute for Occupational Safety and Health (NIOSH). An IDLH level represents the maximum airborne concentration of a substance to which a healthy male worker can be exposed as long as 30 minutes and still be able to escape without loss of life or irreversible organ system damage. IDLH values also take into consideration acute toxic reactions such as severe eye irritation, which could prevent escape. IDLH values are used in selection of breathing apparatus.

TLV: Threshold Limit Value – is the permitted level of exposure for a given period on a weighted average basis (usually 8 hrs for 5 days in a week).

STEL: A Short Term Exposure Limit (STEL) is defined by ACGIH as the concentration to which workers can be exposed continuously for a short period of time without suffering from:

- Irritation
- chronic or irreversible tissue damage
- Narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency.

It is permitted Short Time Exposure Limit usually for a 15-minute exposure.

IDLH: IDLH is an acronym for Immediately Dangerous to Life or Health. This refers to a concentration, formally specified by a regulatory value, and defined as the maximum exposure concentration of a given chemical in the workplace from which one could escape within 30 minutes without any escape-impairing symptoms or any irreversible health effects. This value is normally referred to in respirator selection.

LCLo: Lethal Concentration Low (LCLo) value is the lowest concentration of a material in air reported to have caused the death of animals or humans. The exposure may be acute or chronic. This is also called the lowest concentration causing death, lowest detected lethal concentration, and lethal concentration low.

LDLo: LDLo is closely related to the LC50 value which is the concentration which kills half of the test animals under controlled conditions. This value applies to vapors, dusts, mists and gases. Solids and liquids use the closely related LDLo value for routes other than inhalation

TCLo: Toxic Concentration Low quantity at which a water-soluble, liquid, or gaseous substance produces harmful effects in specified test specie over a certain exposure period.

6.8.2 Damage Criteria

Damage estimates due to thermal radiations and overpressure have been arrived at by taking in to consideration the published literature on the subject. The consequences can then be visualized by the superimposing the damage effects zones on the proposed plan site and identifying the elements within the project site as well as in the neighboring environment, which might be adversely affected, should one or more hazards materialize in real life.

6.8.3 Thermal Damage

The effect of thermal radiation on people is mainly a function of intensity of radiation and exposure time. The effect is expressed in terms of the probability of death and different degrees of burn. The following tables give the effect of various levels of heat flux.

6.8.3.1 Damage Due to Radiation Intensity

Table 6.2: Damage Due to Radiation Intensity

RADIATION KW/m²	DAMAGE TO EQUIPEMENT	DAMAGE TO PEOPLE
1.2		Solar heat at noon.
1.6	***	Minimum level of pain threshold.
2.0	PVC insulated cables damaged	Minimum level of pain threshold.
4.0	***	Causes pain if duration is longer than 20 sec. But blistering is unlikely.
6.4	***	Pain threshold reached after 8 sec. Second degree burns after 20 sec.
12.5	Minimum energy to ignite wood with a flame; Melts plastic tubing.	1% lethality in one minute. First degree burns in 10 sec.
16.0	***	Severe burns after 5 sec.
25.0	Minimum energy to ignite wood at identifying long exposure without a flame.	100% lethality in 1 minute. Significant injury in 10 sec.
37.5	Severe damage to plant	100% lethality in 1 minute. 50% lethality in 20 sec. 1% lethality in 10 sec.

6.8.3.2 Fatal radiation exposure levels

Table 6.3: Fetal radiation Exposure Level

RADIATION LEVEL kW/m ²	FATALITY		
	1%	50%	99%
	EXPOSURE IN SECONDS		
4.0	150	370	930
12.5	30	80	200
37.5	8	20	50

6.8.4 Overpressure Damage:

Table 6.4: Overpressure Damage Criteria

OVER PRESSURE (mbar)	MECHANICAL DAMAGE TO EQUIPMENTS	DAMAGE TO DAMAGE TO PEOPLE
300	Heavy damage to plant & structure	1% death from lung damage >50% eardrum damage >50% serious wounds from flying objects
100	Repairable damage	>1% eardrum damage >1% serious wounds from flying objects
30	Major glass damage	Slight injury from flying glass
10	10% glass damage	***

6.8.4.1 Over pressure damage: (In Details)

Table 6.5: Over pressure Damage

OVER PRESSURE		MECHANICAL DAMAGE TO EQUIPMENTS
Bar	KPa	
0.0014	0.14	Annoying noise (137 dB if of low frequency 10–15 Hz).
0.0021	0.21	Occasional breaking of large glass windows already under strain.
0.0028	0.28	Loud noise (143 dB), sonic boom, glass failure.
0.0069	0.69	Breakage of small windows under strain.
0.0103	1.03	Typical pressure for glass breakage.
0.0207	2.07	"Safe distance" (probability 0.95 of no serious damage below this value); projectile limit; some damage to house ceilings; 10% window glass broken.
0.0276	2.76	Limited minor structural damage.
0.03-0.069	3.4-6.9	Large and small windows usually shattered; occasional damage to window frames.
0.048	4.8	Minor damage to house structures.
0.069	6.9	Partial demolition of houses, made uninhabitable.
0.069-0.138	6.9-13.8	Corrugated asbestos shattered; corrugated steel or aluminum panels, fastenings fail, followed by buckling; wood panels (standard housing) fastenings fail, panels blown in.
0.09	9.0	Steel frame of clad building slightly distorted.
0.138	13.8	Partial collapse of walls and roofs of houses.
0.138-0.207	13.8-20.7	Concrete or cinder block walls, not reinforced, shattered.
0.158	15.8	Lower limit of serious structural damage.
0.172	17.2	50% destruction of brickwork of houses.
0.207	20.7	Heavy machines (3000 lb) in industrial building suffered little damage; steel frame building distorted and pulled away from foundations.
0.207-0.276	20.7-27.6	Frameless, self-framing steel panel building demolished; rupture of oil storage tanks.
0.276	27.6	Cladding of light industrial buildings ruptured.
0.345	34.5	Wooden utility poles snapped; tall hydraulic press (40,000 lb) in building slightly damaged.

0.345- 0.482	34.5- 48.2	Nearly complete destruction of houses.
0.482	48.2	Loaded, lighter weight (British) train wagons overturned.
0.482- 0.551	48.2- 55.1	Brick panels, 8–12 in. thick, not reinforced, fail by shearing or flexure.
0.62	62.0	Loaded train boxcars completely demolished.
0.689	68.9	Probable total destruction of buildings; heavy machine tools (7,000 lb) moved and badly damaged, very heavy machine tools (12,000 lb) survive.
0.689	68.9	Probable total destruction of buildings; heavy machine tools (7,000 lb) moved and badly damaged, very heavy machine tools (12,000 lb) survive.
20.68	2068	Limit of crater lip.

6.9 CONSEQUENCE ANALYSIS

6.9.1 Introduction

The consequence analysis is carried out to determine the extent of spread (dispersion) by accidental release which may lead to jet fire, pool fire, tank fire resulting into generating heat radiation, overpressures, explosions etc.

In order to form an opinion on potentially serious hazardous situations and their consequences, consequence analysis of potential failure scenarios is conducted. It is qualitative analysis of hazards due to various failure scenarios. In consequence analysis, each failure case is considered in isolation and damage effects predicted, without taking into the account of the secondary events or failures it may cause, leading to a major disastrous situation. The results of consequence analysis are useful in developing disaster management plan and in developing a sense of awareness among operating and maintenance personnel. It also gives the operating personnel and population living in its vicinity, an understanding of the hazard they are posed to.

6.9.2 Event Outcomes

Upon release of flammable / toxic gas & liquids, the hazards could lead to various events which are governed by the type of release, release phase, ignition etc. PHAST has an in-built event tree for determining the outcomes which are based on two types of releases namely continuous and instantaneous. Leaks are considered to be continuous releases whereas, ruptures are considered to be instantaneous releases. These types of releases are further classified into those which have a potential for rain-out and those which do not. Whether the release would leak to a rain-out or not depends upon droplet modeling which is the main cause of formation of pools. Fig 6.1, 6.2, 6.3 and 6.4 presents the event trees utilized by PHAST to generate the event outcomes.

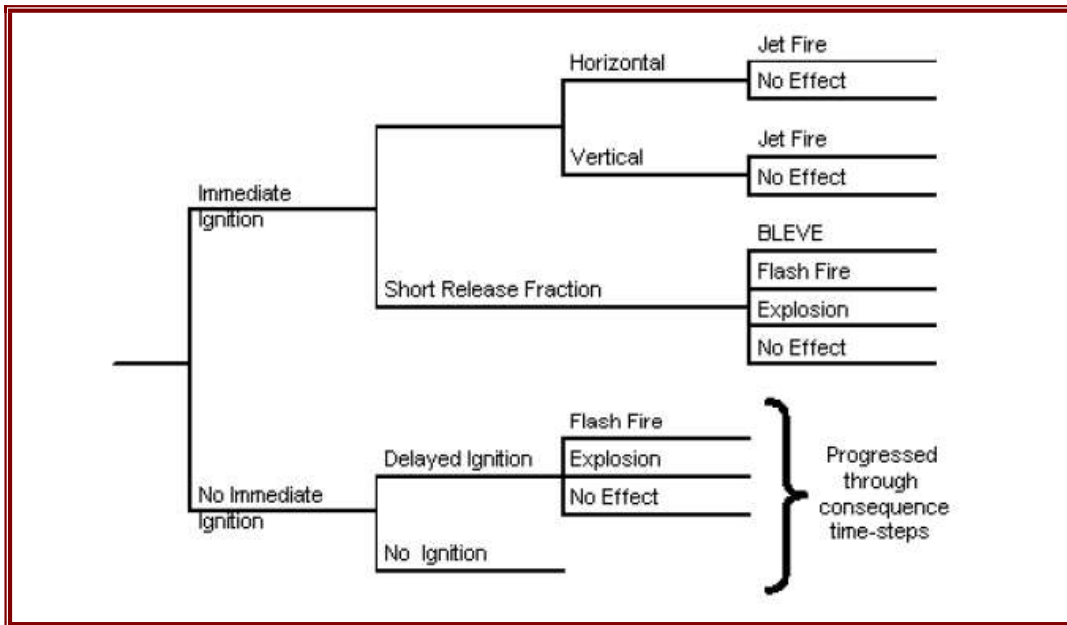


Figure 6.1: Event Tree for continuous release without rain-out (from PHAST)

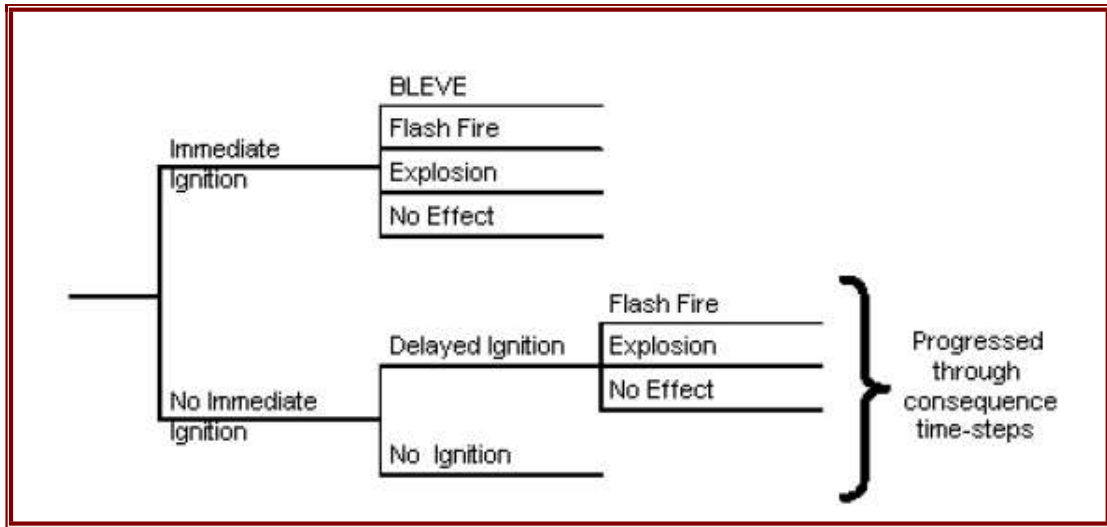


Figure 6.2: Event Tree for Instantaneous release without rain-out (from PHAST)

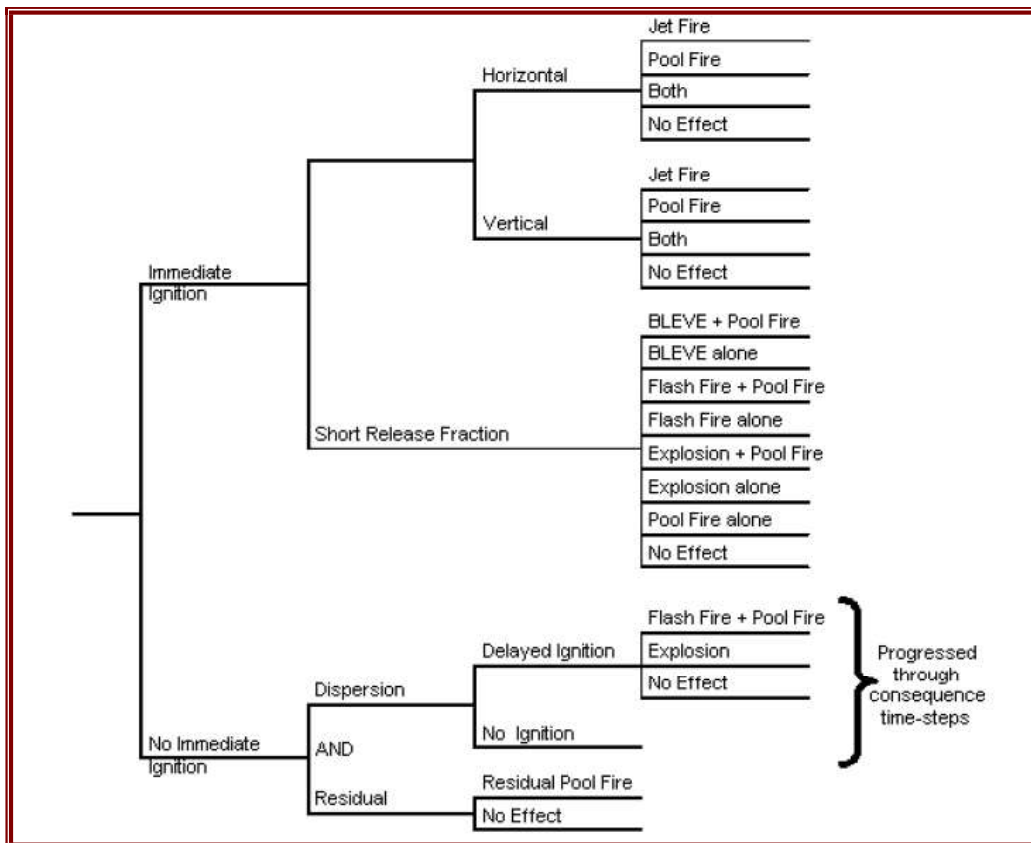


Figure 6.3: Event Tree for continuous release with rain-out (from PHAST)

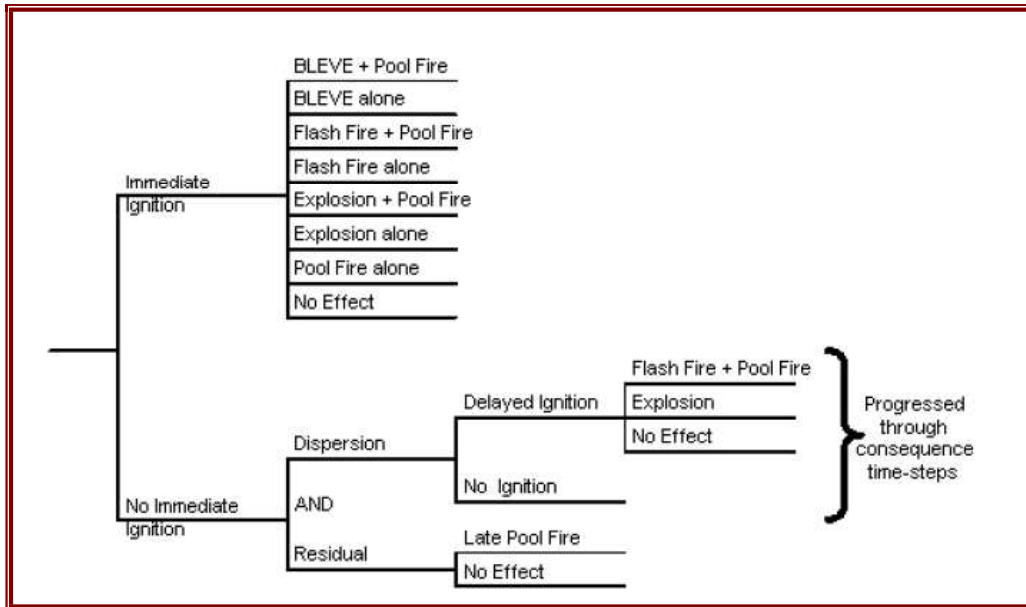


Figure 6.4: Event Tree for Instantaneous release with rain-out (from PHAST)

6.9.3 Modes of Failure

There are various potential causes and sources of leakage. This may be by way of failures of equipment or piping, due to pump seal failure, instrument tubing giving way, failure of the pipes, failure of process vessels etc. Following Table represents general mechanism for loss of containment for Piping and fitting, instruments, and human error.

(A). Piping and Fitting

Table 6.6: Piping and Fitting

Ref. No.	LOSS OF CONTAINMENT	EXAMPLES OF POSSIBLE BASIC CAUSE	REMARKS
A.1	Flange/Gasket Leaks	<ul style="list-style-type: none"> - Incorrect gasket installed, e.g. incorrect material, incorrect size (thickness and diameter). - Incorrect installation, e.g. flange faces not cleaned, flanged face damaged, incorrectly tightened bolts, incorrect bolts used. - Flange replacement without gasket. 	Possible flame impingement and localized heating of adjacent equipment.
A.2	Pipe Overstress Causing Fracture	<ul style="list-style-type: none"> - Inappropriate use of design codes. - Error in stress analysis calculations. - Lack of inspection during pipe erection, e.g. excessive cold pull. - Pipe testing incorrectly carried out. - Incorrect setting of spring hangers and pipe supports and sliding shoes not free to move. - Pipe not hydro tested because of bore size (or considered not critical) and no secondary test procedures carried out. - Omission to test because systems not clearly identified, or error in documentation. - Extreme temperature differential in pipe work not catered for in design, i.e. cold and hot streams 	Pipe stresses would most likely cause a flange leak, unless there existed a combination of errors, e.g. installation of rogue materials and unsuitable pipe support, or error in stress calculation plus failure to pressure test.

Ref. No.	LOSS OF CONTAINMENT	EXAMPLES OF POSSIBLE BASIC CAUSE	REMARKS
A.3	Over pressurization of Pipe work Causing Fracture	<p>a) <u>Inadequate Pressure Relief</u></p> <ul style="list-style-type: none"> - Relief valve 'simmering' and hydrating, icing. - Incorrect setting of RV pressure. - Incorrectly sized RV. - Wrongly installed RV, e.g. due to transferred tag No. : or installation of incorrect spring material. - Abuse of locking system and all RVs isolated from system - Excessive back pressure caused by blockage of relief sub-headers with sludge, ice/hydrate, etc. - High pressure breakthrough into low pressure systems, which have inadequate relief capacity. - Blockage of RVs with debris/fines, e.g. mol sieve dust, or breakage of screens/package/demister. <p>b) <u>Excessive Surge Pressure / Hammer</u></p> <ul style="list-style-type: none"> - Too rapid isolation or blockage of liquid full lines, i.e., operator closing isolation valve. - Rapid blockage of liquid lines, e.g. NRV failure. - Lines not or inadequately designed for two phase/slug flow. - Too rapid opening of valves and letdown of liquid under high 	<p>Careful attention required for handling hydrocarbons with "free" water.</p> <p>Rigorous adherence to procedures is essential.</p> <p>Relief capacity should always be adequate or high integrity trip system installed.</p> <p>Potential problem around mol sieve vessels, absorbers, columns and RVs.</p> <p>Consider needs to handle liquid slugs from feed line when pigging recommended.</p> <p>Particular care required at pig traps and at inlet PCVs/bypass.</p> <p>No remote</p>

Ref. No.	LOSS OF CONTAINMENT	EXAMPLES OF POSSIBLE BASIC CAUSE	REMARKS
		<p>differential pressure.</p> <ul style="list-style-type: none"> - Rapid vaporization of cold liquid in contact with hot fluid. (Rapid phase transition). <p>c) <u>Rupture Under Fire Conditions</u></p> <ul style="list-style-type: none"> - Direct fire impingement without any cooling (internal or external) or failure to effectively depressure equipment. 	<p>depressurizing system available; requires review.</p> <p>Potential for catastrophic rupture of equipment, fragmentation and fireball effects.</p>
A-4	Failure of piping due to fatigue or vibration.	<ul style="list-style-type: none"> - Failure due to acoustic fatigue arising from:- E.g. failure to recognize problem exists in particular areas, failure to take adequate precautions (selection of incorrect valve at design stage or during maintenance, inadequate line support). Improper testing/inspection when in service, failure to report abnormally high noise levels (during normal and upset conditions). - Failure due to mechanical vibration arising from: e.g. failure to recognize problem, inadequate support, failure to report and minor excessive vibrations (under all plant conditions), maintenance error, (failure to correctly align rotating equipment and test for vibration prior to reinstatement? 	<p>Vulnerable areas are piping downstream of PCVs and RVs operating at very high pressures. Particularly susceptible is small bore pipe work associated with pressure letdown and two phase flow systems and compressors/pumps.</p> <p>Regeneration gas pipe work and connections to mol sieve vessels merit particular attention.</p>

Ref. No.	LOSS OF CONTAINMENT	EXAMPLES OF POSSIBLE BASIC CAUSE	REMARKS
		<ul style="list-style-type: none"> - Failure due to pressure or thermal cycling. 	
A.5	Failure of Pipe due to Stress Corrosion of Embrittlement	<ul style="list-style-type: none"> - Hydrogen embrittlement/blistering. (Hydrogen induced cracking). 	Only stainless steel equipment.
A.8	Failure of piping Due to installation of Wrong Materials	<ul style="list-style-type: none"> - Incorrect materials selection, e.g. at design stage, from supplier or site stores. - Incorrect material installed, e.g. improper supervision and identification of materials after withdrawal from stores. 	Strict system for supervision, inspection and verification of materials required during all modifications.
A.9	Failure of Piping Due to low Temperature Brittle fracture	<ul style="list-style-type: none"> - Rogue material used in construction, wrong material specified, or uncertainties in material specification. - Error in calculating minimum lower design temperatures. - Systems not designed for low temperature, (e.g. on emergency depressuring) and immediate repressurising. 	A number of systems have been identified as being vulnerable, particularly where condensate at high pressure may be depressurized.
A.10	Failure of Piping (or nozzles) Due to External Forces or Impact.	<ul style="list-style-type: none"> - Impact from equipment being moved during maintenance. - Impact of heavy lifting gear, e.g. cranes. - Impact from site transport, e.g. construction traffic, fire tender. - Impact on reinforced nozzle causing fractures elsewhere, e.g. 	Historically, failure of HP process piping due to mechanical impact is confined mainly to small bore piping. Strict control over site construction will of course be necessary.

Ref. No.	LOSS OF CONTAINMENT	EXAMPLES OF POSSIBLE BASIC CAUSE	REMARKS
		valve, pump casing vessel.	Any incident of impact on pipe work during construction must be reported and damage investigated.

(B) Human Error**Table 6.7: Human Error**

Ref. No.	LOSS OF CONTAINMENT	EXAMPLES OF POSSIBLE BASIC CAUSE	REMARKS
Loss of containment through human error has been assumed implicitly in the storage area however examples or some typical operating and maintenance errors are included below:-			
B.1	Operational Error	<ul style="list-style-type: none"> - Failure or inability to close instrument or sample valves. - Failure or inability to close drain and vent valves. - Leaving safety trips/systems out of commission after testing or inspecting. - Intentionally defeating trip systems for reasons of production. 	
B.2	Error in De-commissioning	<ul style="list-style-type: none"> - Inadvertent or unauthorized opening of a pressurized system, e.g. filters, vessels. - Improper depressurizing and purging of a system prior to isolation or spading. - Failure to effectively isolate all process (and utility) and electrical connections. 	
B.3	Error in Maintenance	<ul style="list-style-type: none"> - Failure to maintain effective isolation. - Failure to report damage to equipment during repair or modification. - Maintenance activities extended to systems, which are `live`. - Improper supervision of contract maintenance staff, improper maintenance. 	
B.4	Error in Re-	<ul style="list-style-type: none"> - Failure to close vents/drains, 	

Ref. No.	LOSS OF CONTAINMENT	EXAMPLES OF POSSIBLE BASIC CAUSE	REMARKS
	commissioning	replace plugs. - Improper or lack of purging of equipment e.g. sphere receiver furnaces.	
B.5	Supervision Error	- Design error for modifications. - Lack of supervision and control e.g. Authorization of permits isolation. - Failure to regularly test/inspect e.g. trip/alarm system, safety equipment. Allure to regularly monitor e.g. noise vibration, corrosion, stream composition	

6.9.4 Selected Failure Cases

Earlier, it was the practice to select a particular item in a unit as failure scenario, e.g. rupture of reactor outlet pipe. Such selection is normally subjective on following parameters:

- Properties of material namely Toxic or Flammable.
- The likely severity of consequence in the event of accidental release based on inventory, operated pressure & operated temperature.
- The probability of failure of various equipments such as valves, flanges, pipe, pressure vessels etc. used in the plant.

Size of Release: For accidental releases identified for consequence analysis is 50mm leakage. The scenarios are considered to be confined to those equipment failures which involve the leakage of flammable or toxic products, of which the frequency of occurrence and the severity of the consequences have been taken into consideration and which may have a low probability of early detection.

Taking this factor into consideration, a list of selected failure cases was prepared based on process knowledge, inventory, engineering judgment, and experience, past incidents associated with such facilities and considering the general mechanisms for loss of containment. Cases have been identified for the consequence analysis.

Consequence analysis and calculations are effectively performed by computer software using models validated over a number of applications. Consequence modeling is carried out by PHAST (version 6.53) of DNV Software, UK.

PHAST uses the Unified Dispersion Model (UDM) capable of describing a wide range of types of accidental releases. The Model uses a particularly flexible form, allowing for sharp-edged profiles, which become more diffuse downwind.

PHAST contains data for a large number of chemicals and allows definition of mixtures of any of these chemicals in the required proportion. The calculations by PHAST involve following steps for each modeled failure case:

6.9.4.1 Effect of Release

When hazardous material is released to atmosphere due to any reason, a vapor cloud is formed. Direct cloud formation occurs when a gaseous or flashing liquid escapes to the atmosphere. Release of hydrocarbons and toxic compounds to atmosphere may usually lead to the following:

(a) Dispersion of hydrocarbon vapor with wind till it reaches its lower flammability limit (LFL) or finds a source of ignition before reaching LFL, which will result in a flash fire or explosion.

(b) Spillage of liquid hydrocarbons will result in a pool of liquid, which will evaporate taking heat from the surface, forming a flammable atmosphere above it. Ignition of this pool will result in pool fire causing thermal radiation hazards.

(c) Lighter hydrocarbon vapor (e.g. Natural Gas) or Hydrogen disperses rapidly in the downwind direction, being lighter than air. But comparatively heavier hydrocarbon vapor cloud like that of LPG, Propylene or Ammonia will travel downwind along the ground. If it encounters an ignition source before it is dispersed below the LFL, explosion of an unconfined vapor cloud will generate blast waves of different intensities.

(d) A fireball or BLEVE (Boiling Liquid expanding Vapor Explosion) occurs when a vessel containing a highly volatile liquid (e.g. LPG, Propylene etc) fails and the released large mass of vapor cloud gets ignited immediately. It has damage potential due to high intensity of radiation and generation of the overpressure waves, causing large-scale damage to nearby equipment and structures.

(e) Catastrophic failure of tanks/ pressurized vessels, rotary equipment and valves etc. can result in equipment fragments flying and hitting other equipment of the plant.

(f) Release of toxic compounds results in the toxic vapour cloud traveling over long distances, affecting a large area, before it gets sufficiently diluted to harmless concentration in the atmosphere.

(g) The material is in two phases inside the containment - liquid & vapor. Depending on the location of the leak liquid or vapor will be released from the containment. If vapor is released a vapor cloud will form by the mixing of the vapor and air. The size of the vapor cloud will depend on the rate of release, wind speed; wind direction & atmospheric stability will determine the dispersion and movement of the vapor cloud.

(h) If liquid is released there will be some flashing as the boiling point of liquid is below the ambient temperature. The vapor formed by immediate flashing will behave as vapors release. The liquid will fall on the ground forming a pool. There will be vaporization from the pool due to the heat gained from the atmosphere & ground. There will be dispersion and movement of vapor cloud formed by evaporation of liquid.

The behavior of material released by loss of containment depends on the following factors:

- (1)** Physical properties of the material.
- (2)** Conditions of material in containment (pressure and temperature).
- (3)** Phase of material released (liquid or gas).
- (4)** Inventory of material released.
- (5)** Weather parameters (temperature, humidity, wind speed, atmospheric stability).
- (6)** Material with boiling point below ambient condition.

Statistical reports of consequence analysis are summarized below in Table 7. Similarly pictorial presentations of consequence results are shown below the tabular report.

Table 6.8: Consequence results for Acetic Acid failure

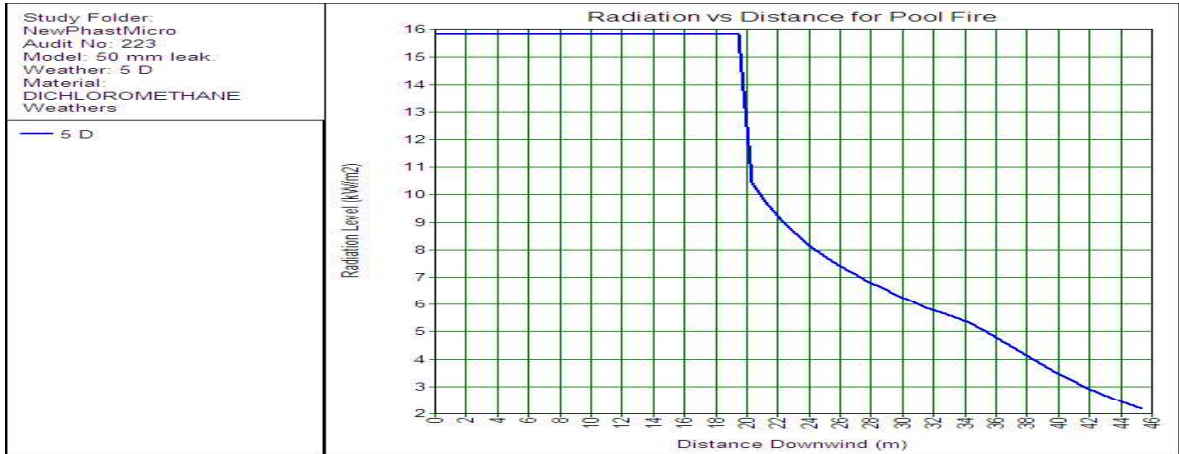
S. No	1		
Scenario description	Leakage of Acetic Acid.		
	Weather data	1.5 m/s F	5 m/s D
		Damage Distances (m)	
Flash Fire	UFL	1.672	0.734051
	LFL	1.95837	1.67103
	LFL Fraction	2.56393	2.51443
Jet Fire (kW/m ²)	4	29.9103	30.2126
	12.5	5.19589	5.27517
	37.5	Not Reached	Not Reached
Pool fire (kW/m ²)	4	87.0314	87.726
	12.5	55.7739	56.227
	37.5	39.4851	39.787

Table 6.9: Consequence results for Ammonia failure

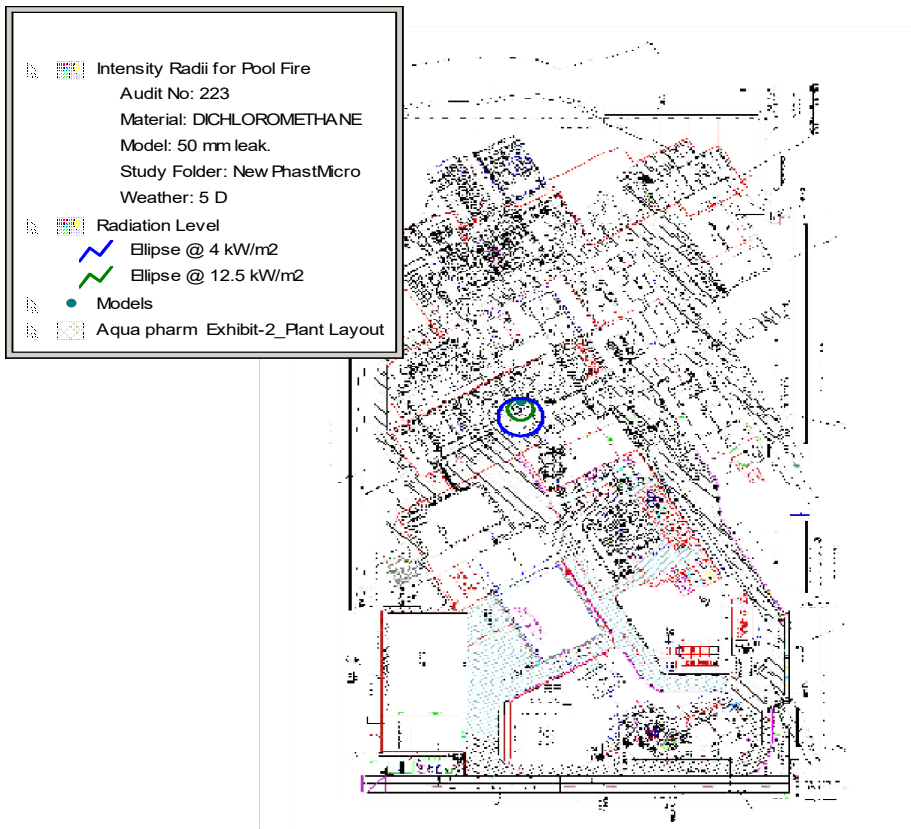
S. No	2		
Scenario description	Leakage of Ammonia		
	Weather data	1.5 m/s D	5 m/s F
		Damage Distances (m)	
Flash Fire	UFL	6.97011	7.20521
	LFL	17.2437	14.4003
	LFL Fraction	53.7567	33.6682
Jet Fire (kW/m ²)	4	54.4412	47.5428
	12.5	43.132	39.079
	37.5	Not Reached	Not Reached
Overpressure (bar)	0.02068	93.5569	49.6578
	0.1379	61.278	35.089
	0.2068	58.7256	33.9364
Pool fire (kW/m ²)	4	153.706	151.375
	12.5	102.95	108.109
	37.5	67.1992	65.0112

Intensity Radii for Pool Fire- Acetic Acid Leak

GRAPH

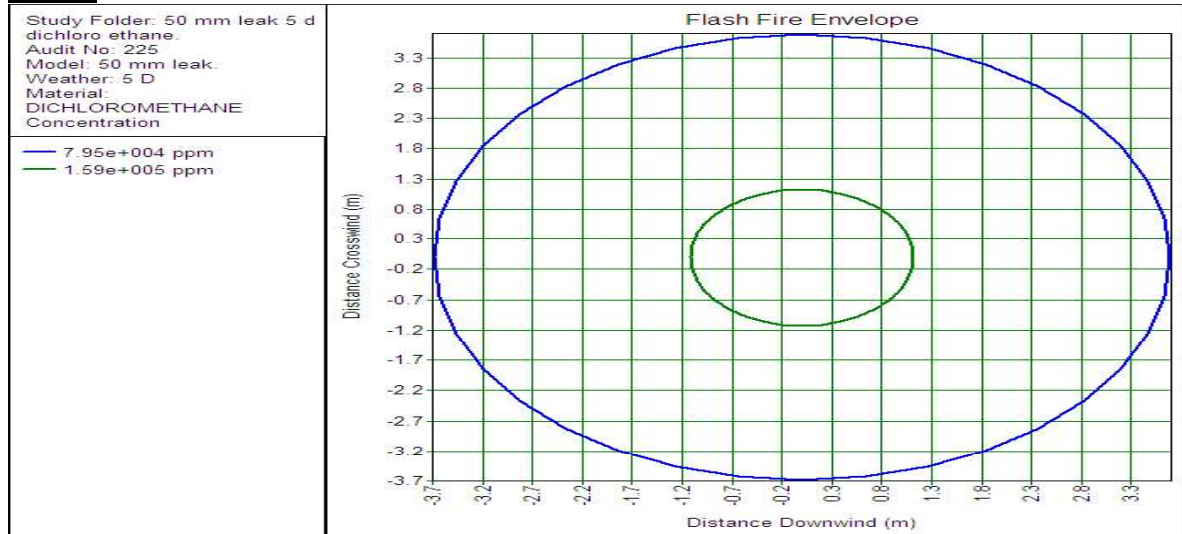


MAP

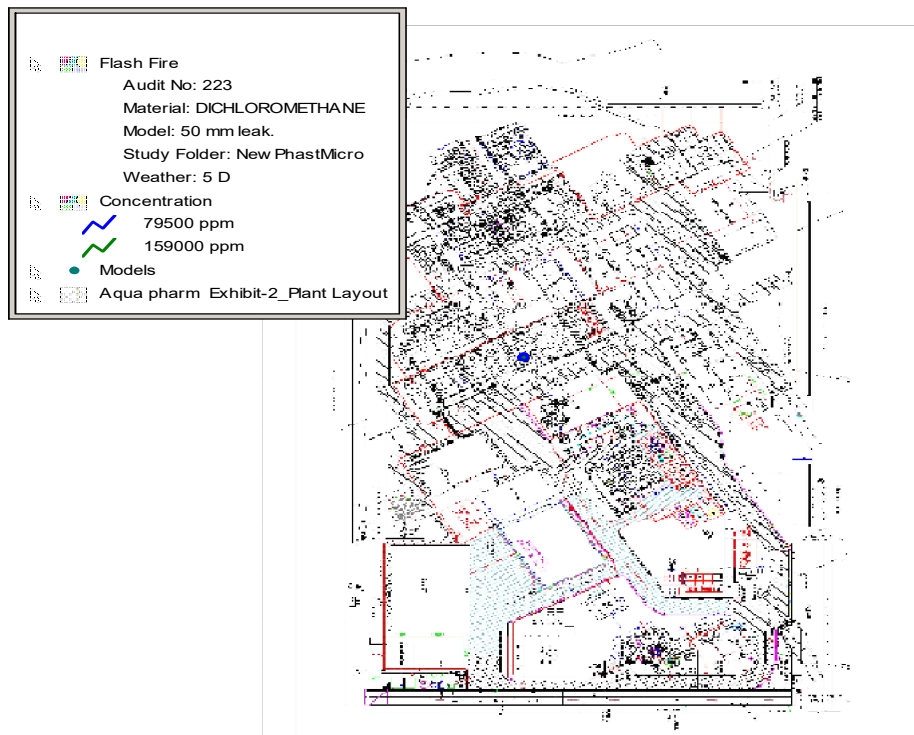


Flash Fire- Acetic Acid Leak

GRAPH

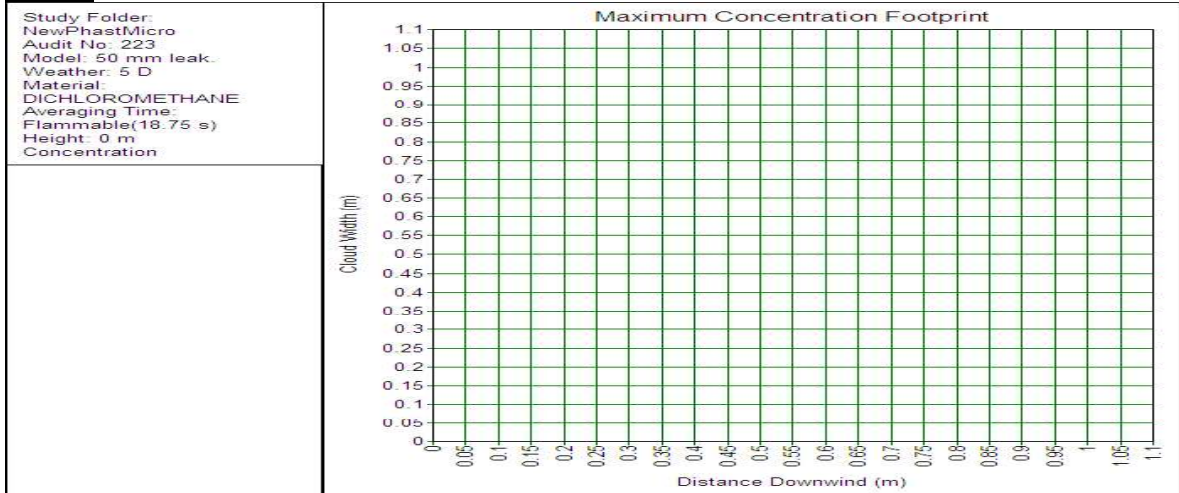


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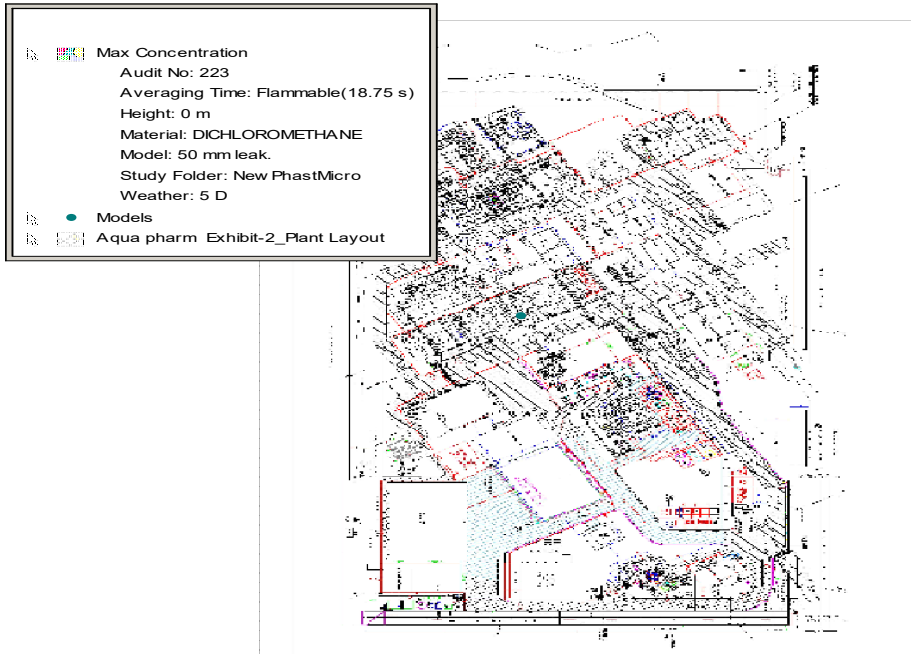


Maximum Concentration- Acetic Acid Rupture

GRAPH

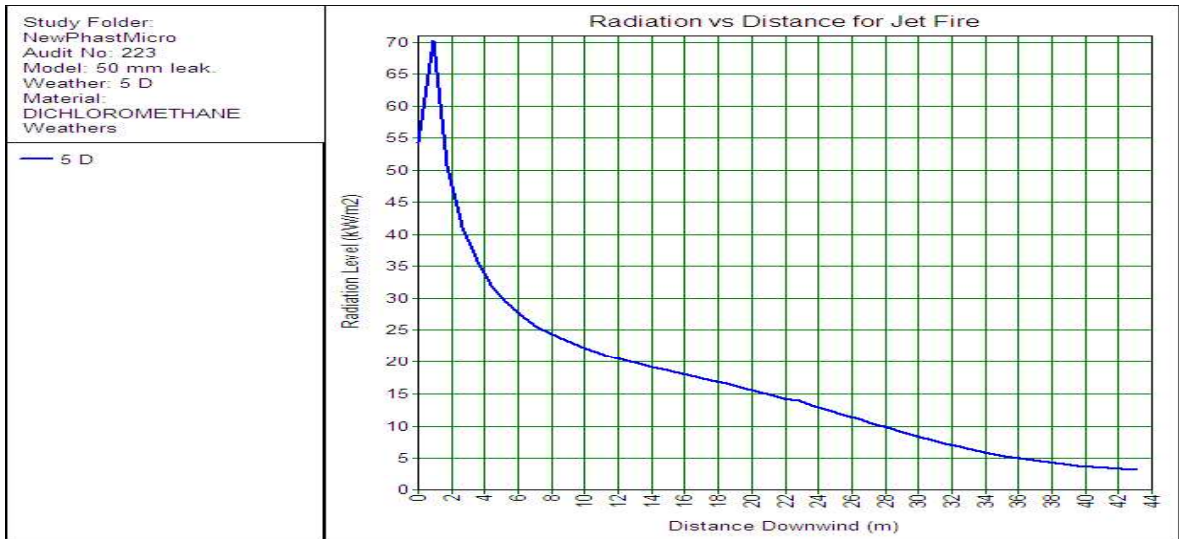


MAP

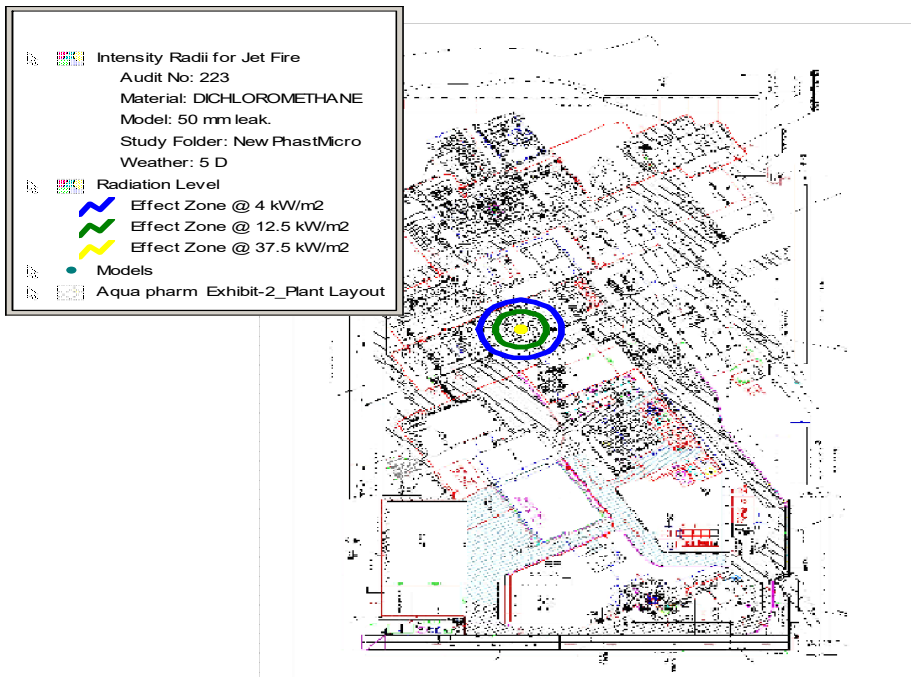


Jet Fire- Acetic Acid Rupture

GRAPH

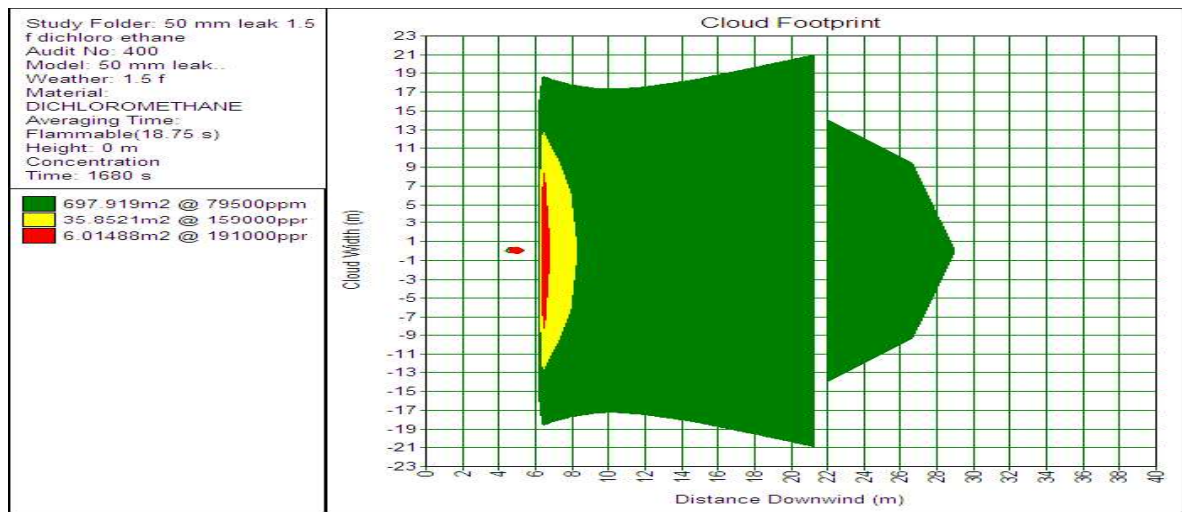


MAP

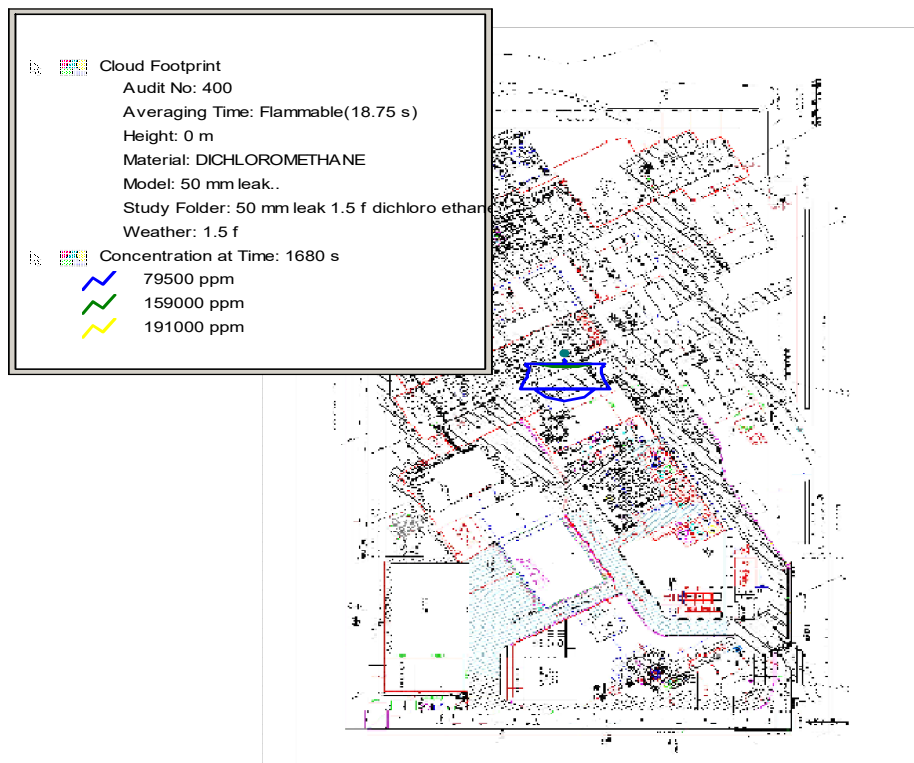


1.5 m/s D Pool Fire

GRAPH

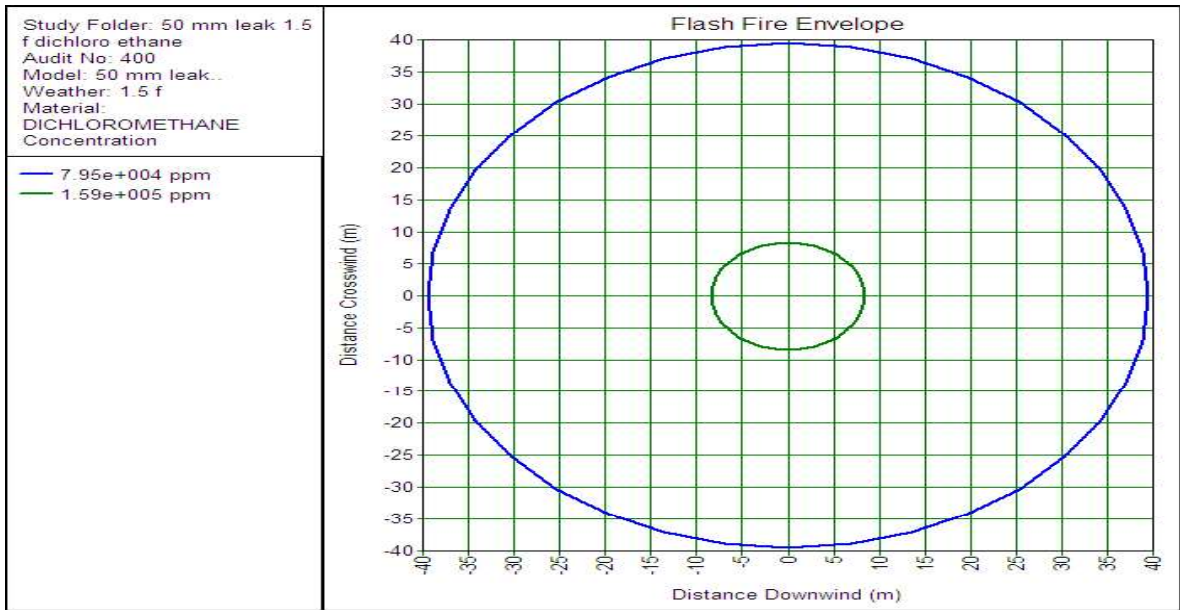


MAP

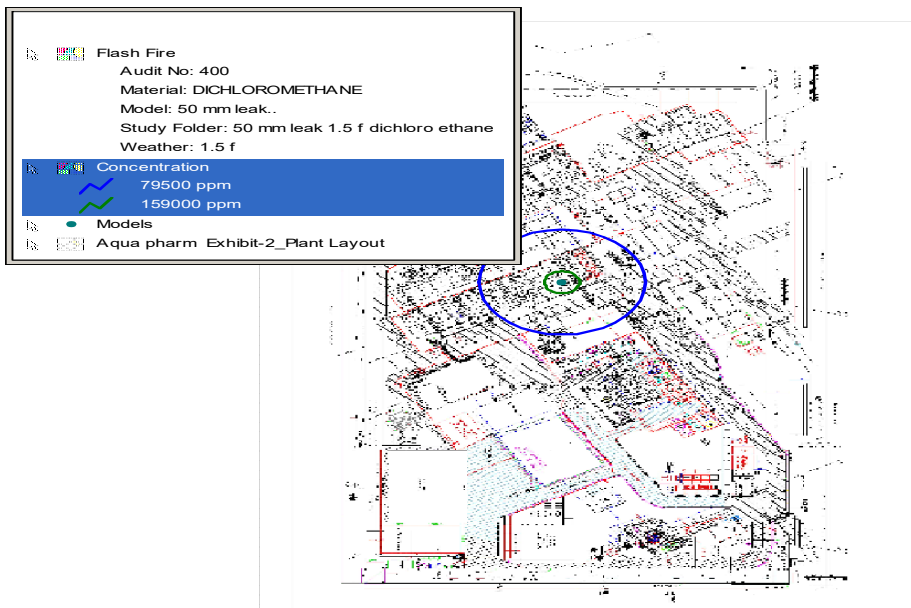


Flash Fire

GRAPH

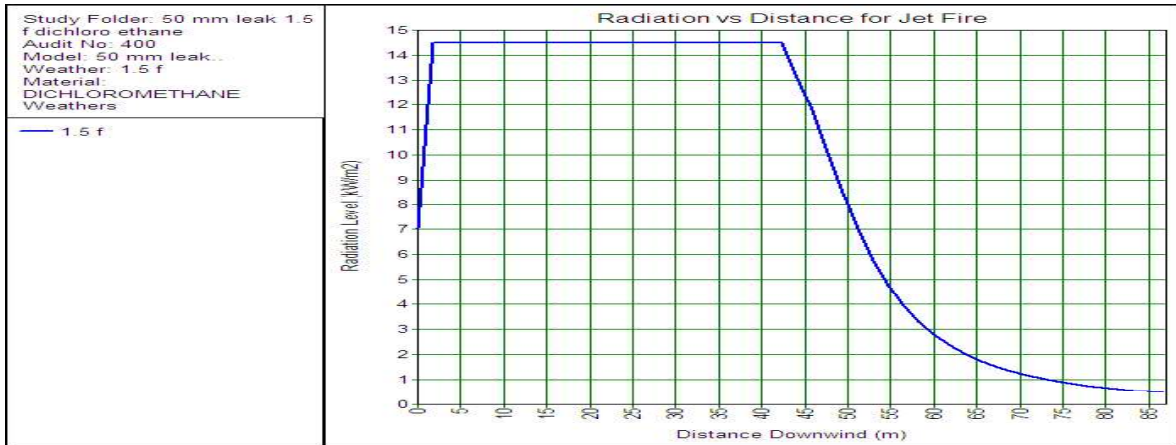


MAP

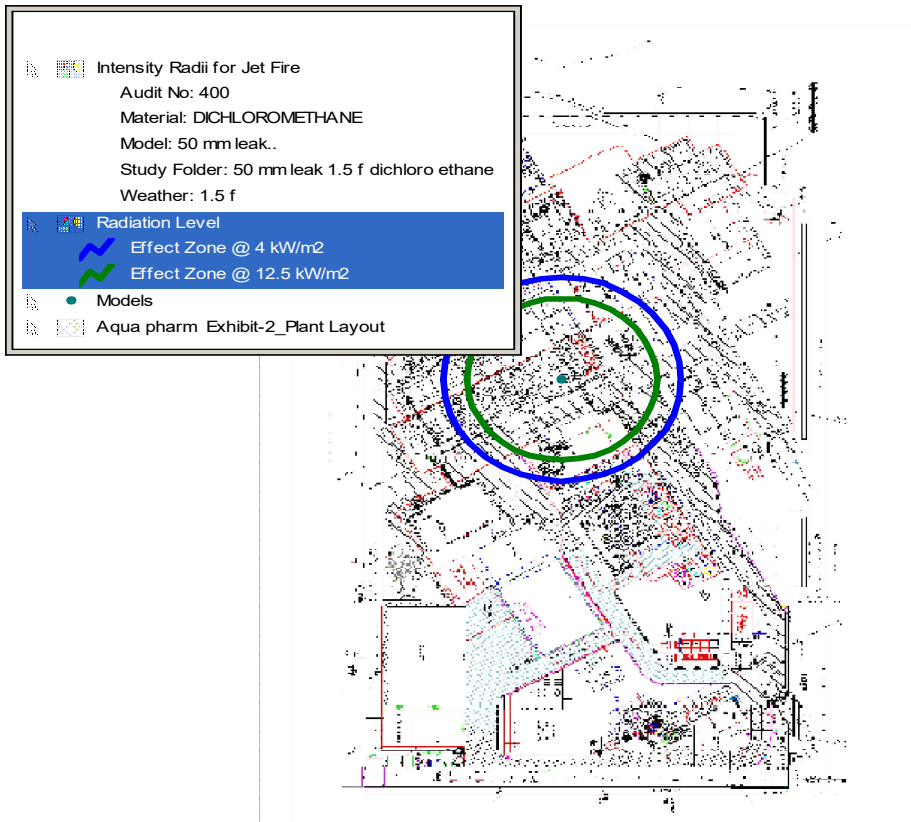


Jet Fire

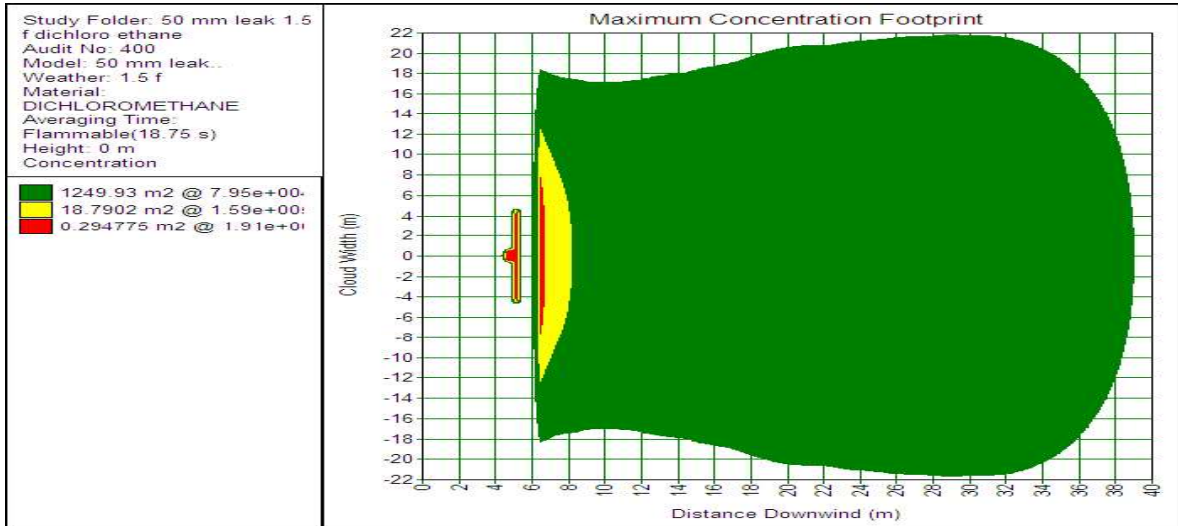
Graph



Map



Maximum Concentration Graph



Map

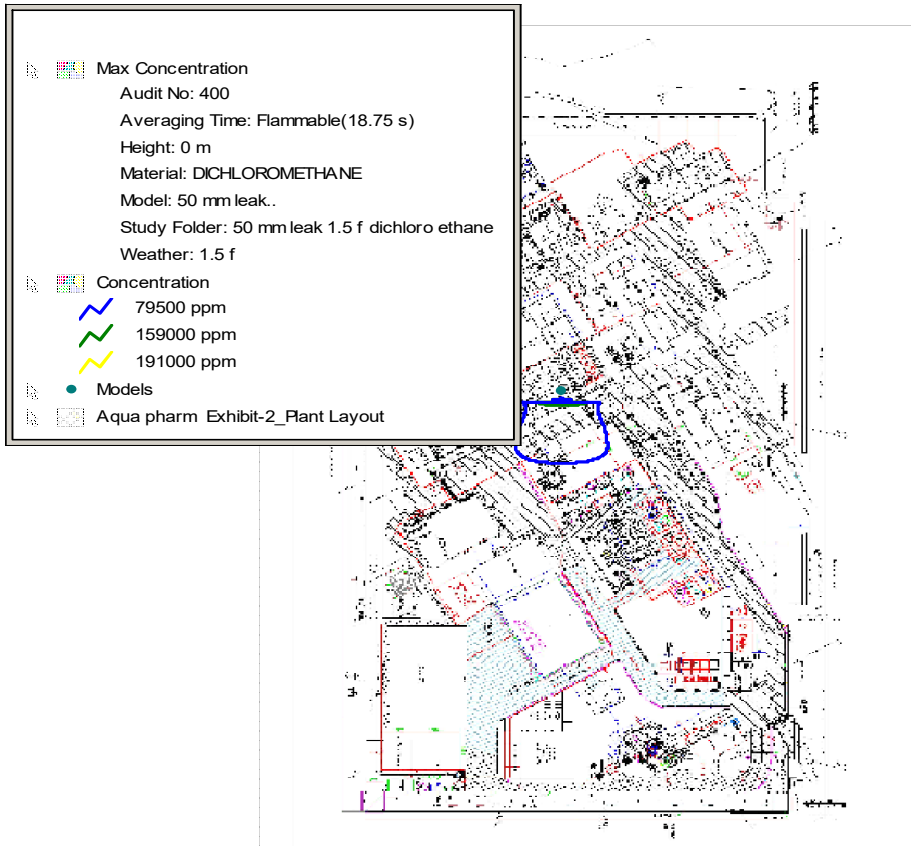
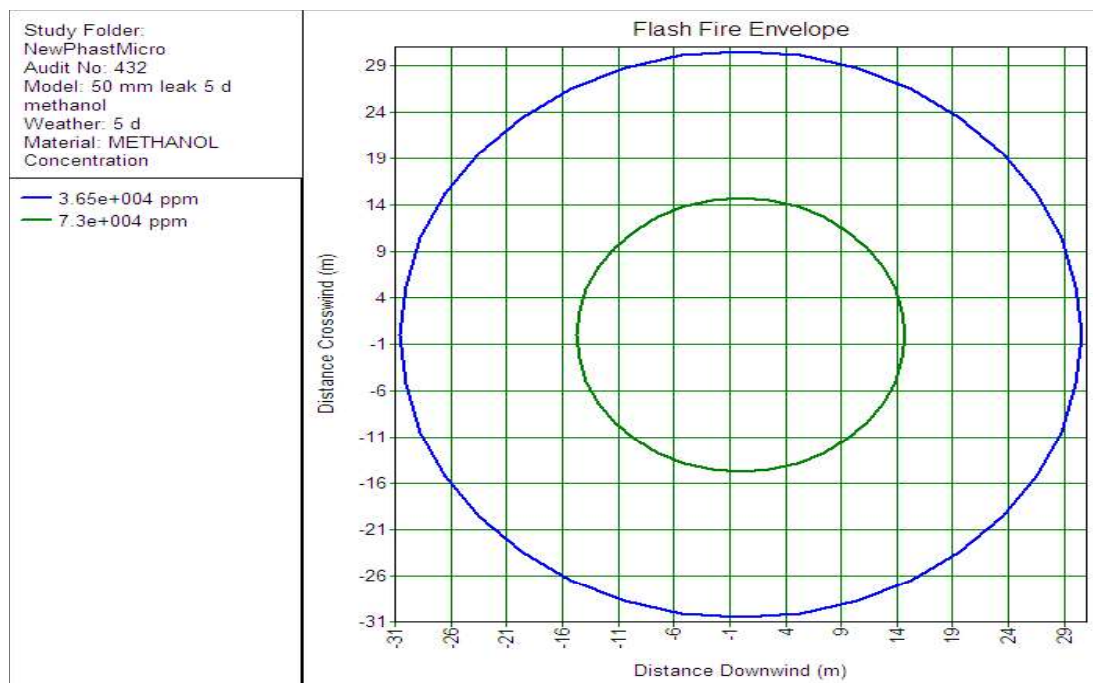


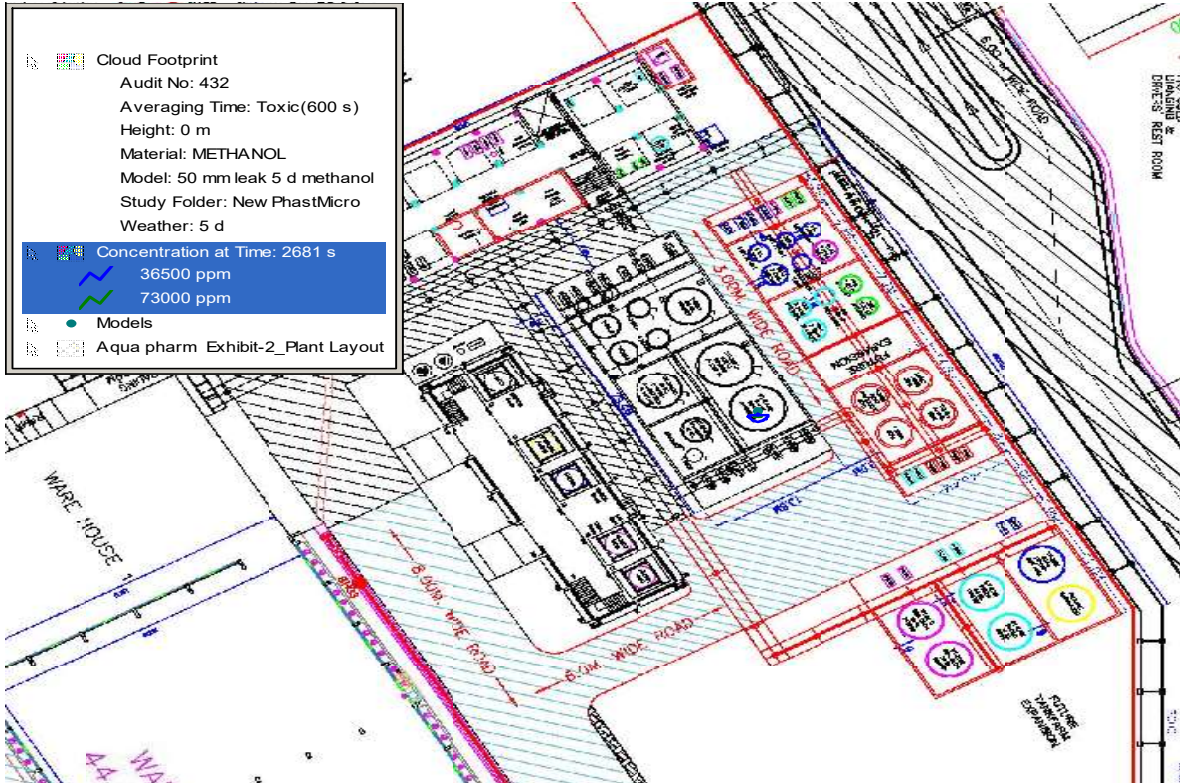
Table 6.10: Consequence Results for Amine 50 mm leak

S. No	2		
Scenario description	Leakage of Amine		
	Weather data	1.5 m/s D	5 m/s F
		Damage Distances (m)	
Flash Fire	UFL	6.97011	7.20521
	LFL	17.2437	14.4003
	LFL Fraction	53.7567	33.6682
Jet Fire (kW/m ²)	4	54.4412	47.5428
	12.5	43.132	39.079
	37.5	Not Reached	Not Reached
Overpressure (bar)	0.02068	93.5569	49.6578
	0.1379	61.278	35.089
	0.2068	58.7256	33.9364
Pool fire (kW/m ²)	4	153.706	151.375
	12.5	102.95	108.109
	37.5	67.1992	65.0112

FLASH FIRE



MAP

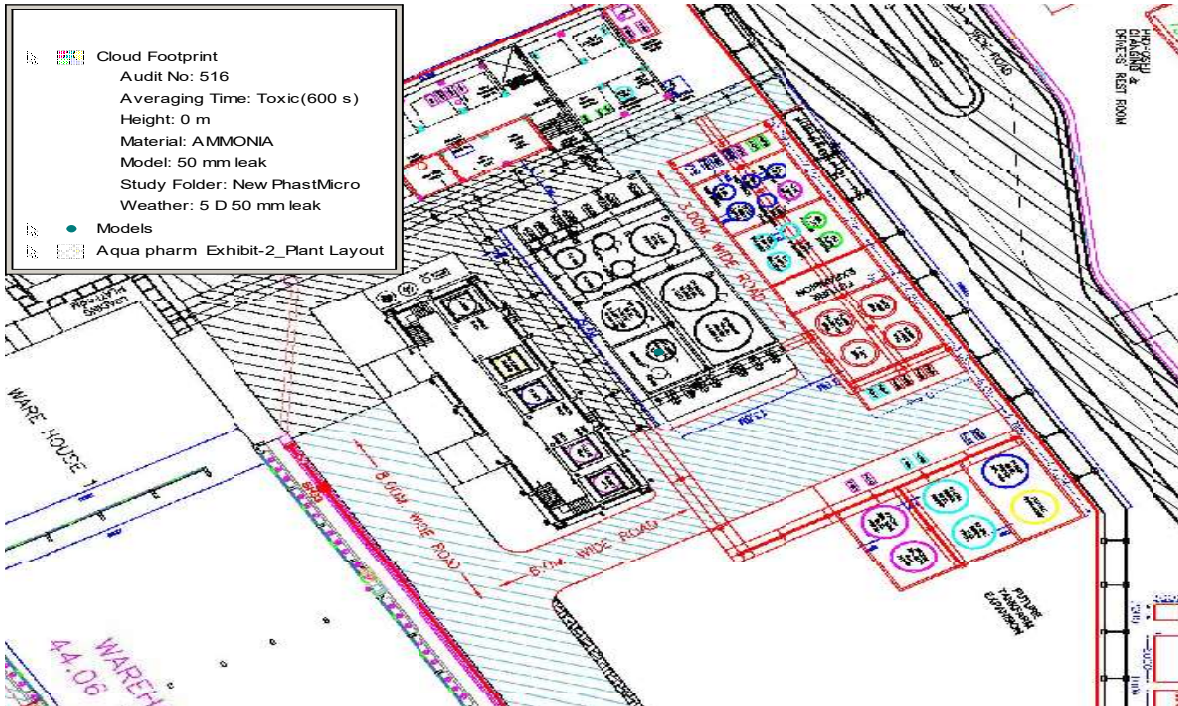


Jet Fire

Graph

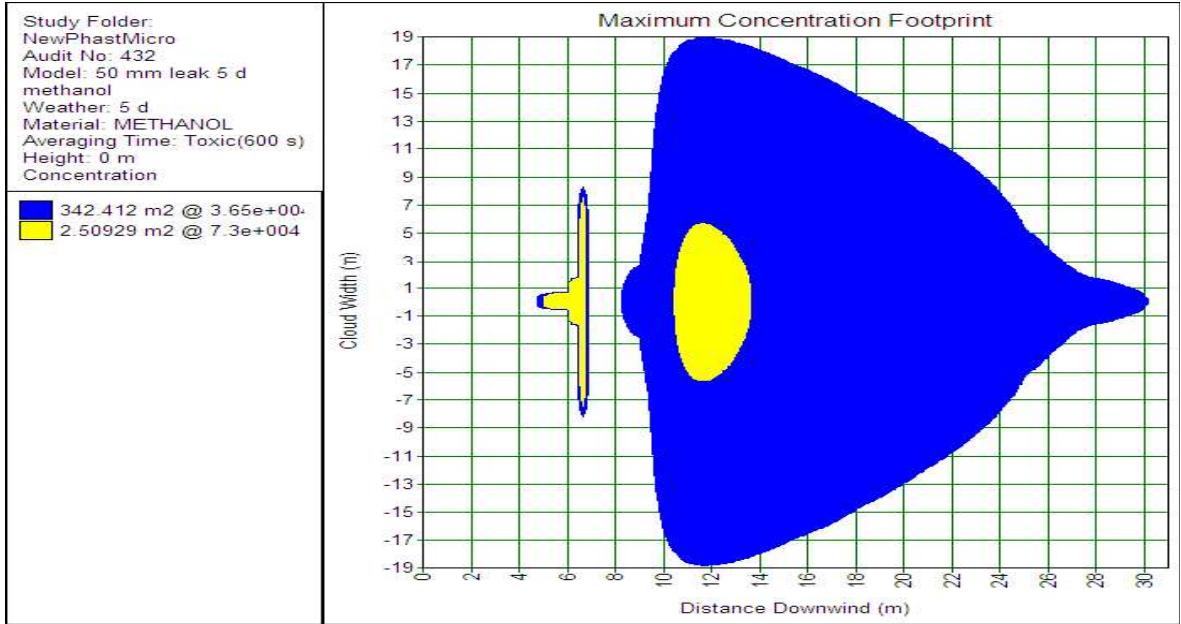


MAP

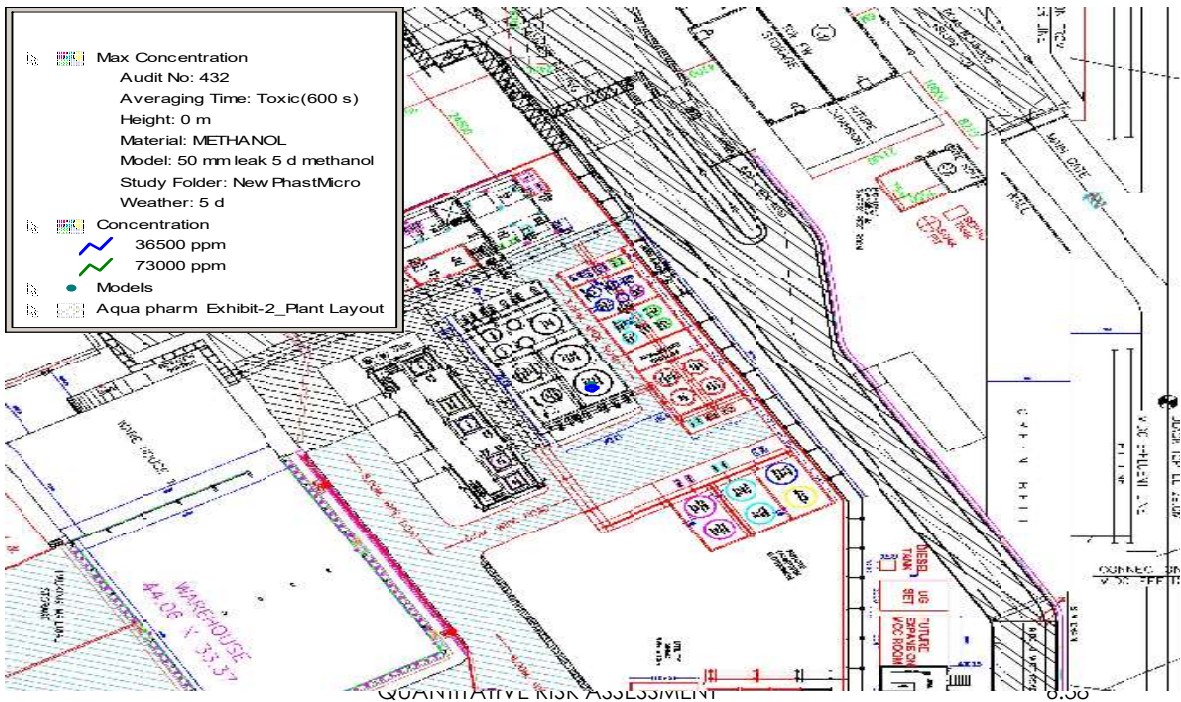


Maximum Concentration

GRAPH

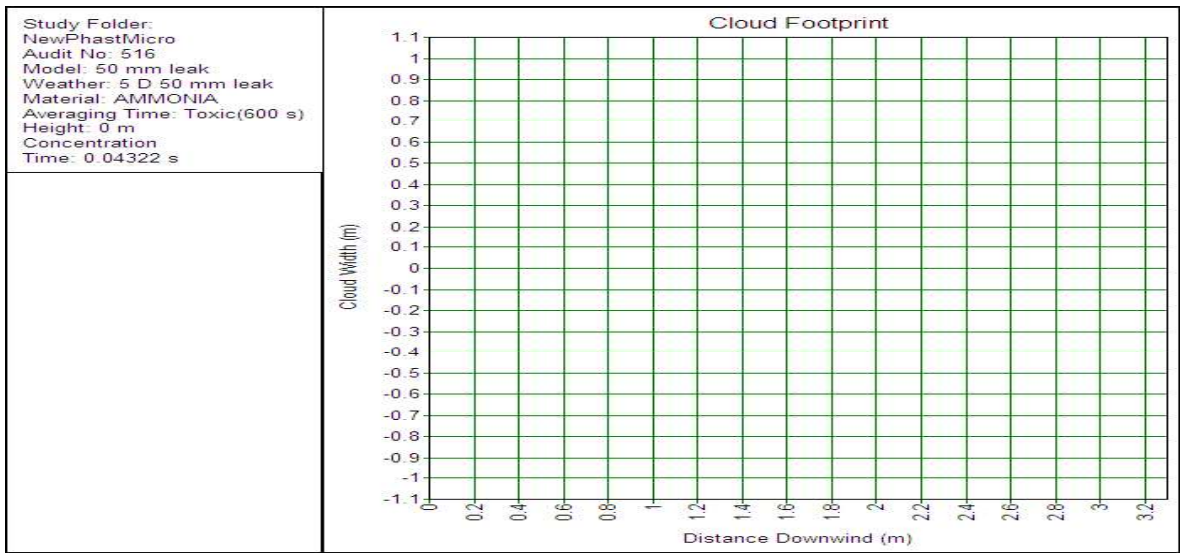


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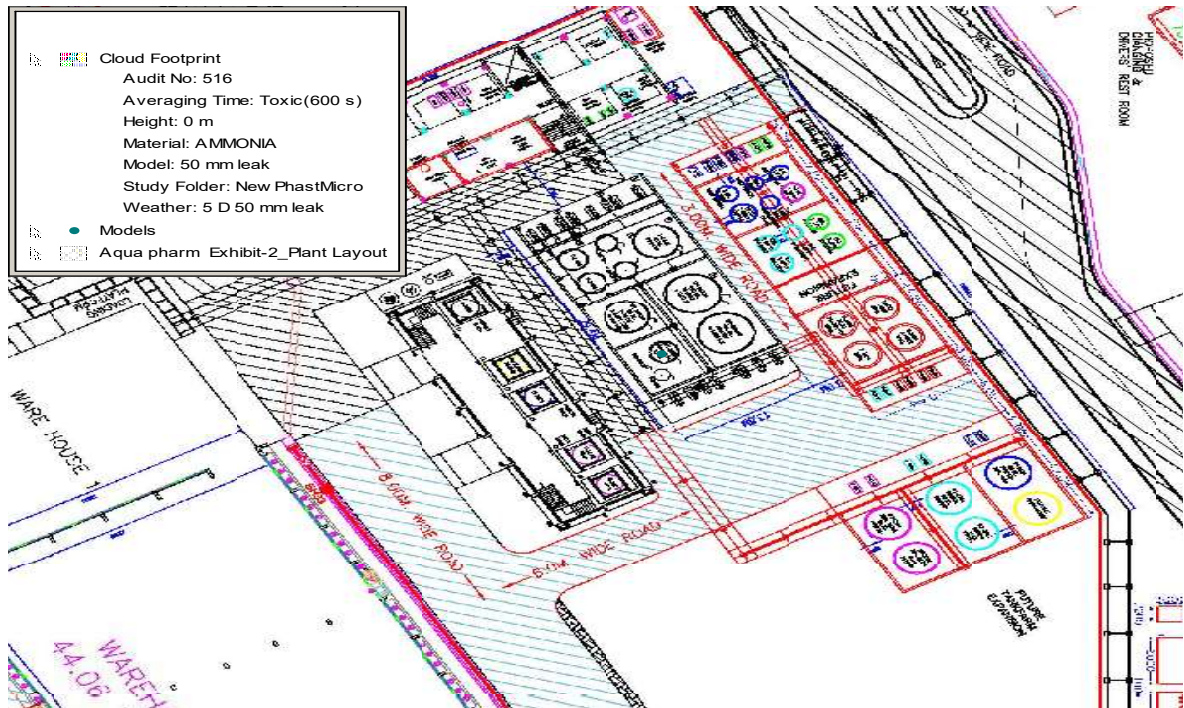


Ammonia leakage

GRAPH



MAP

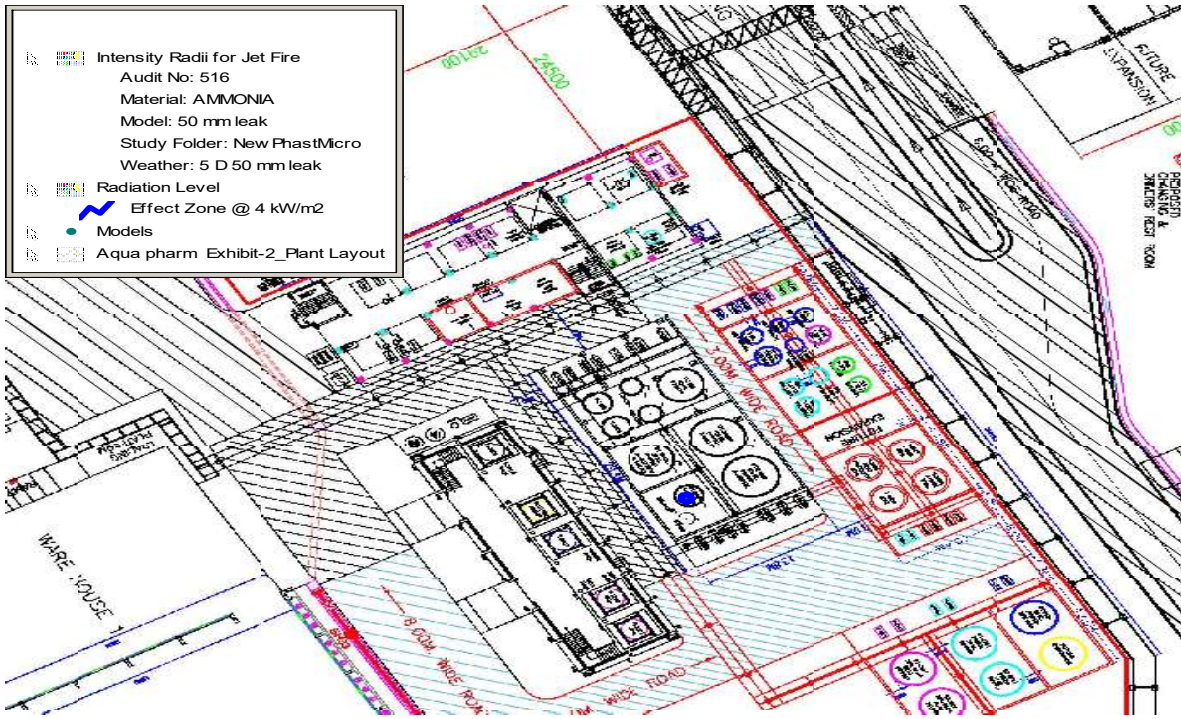


JET FIRE

GRAPH

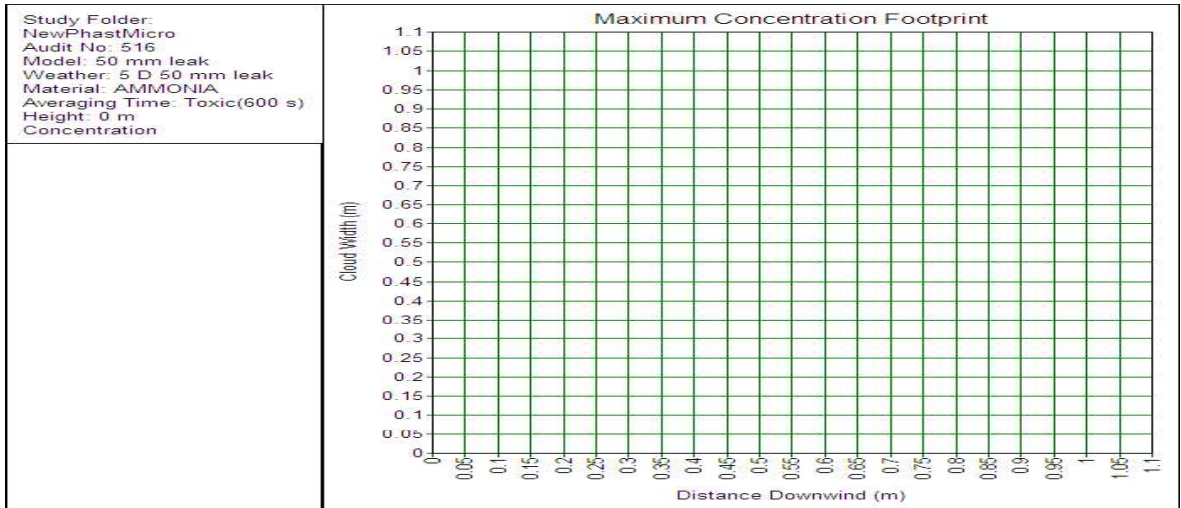


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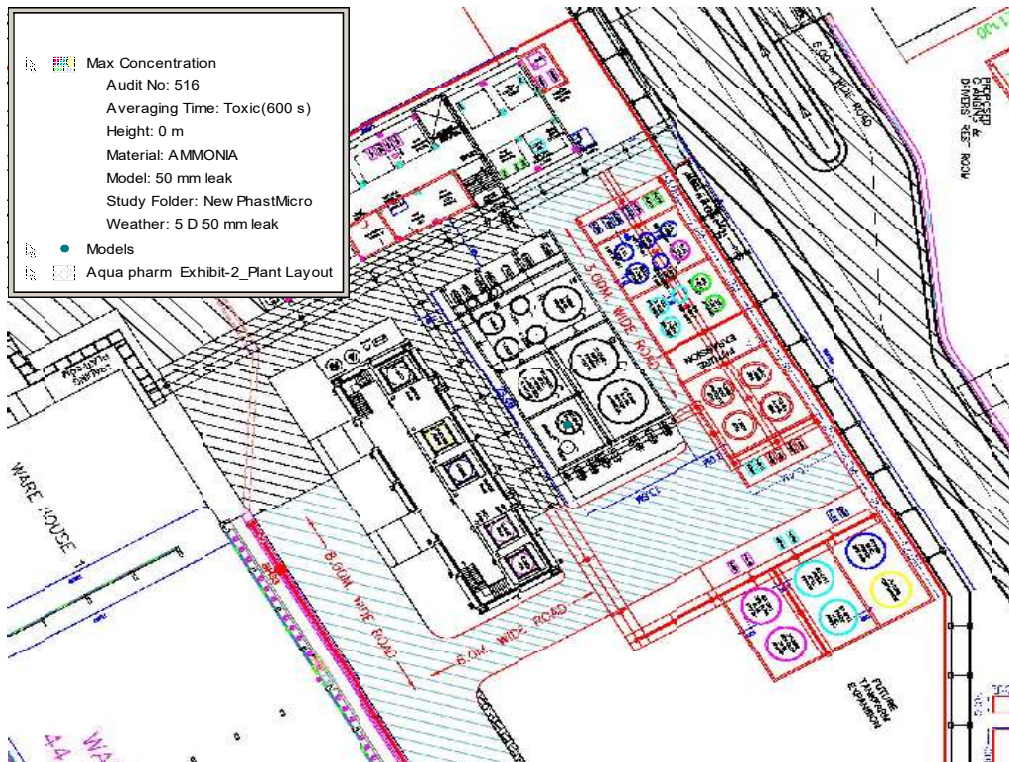


MAXIMUM CONCENTRATION

GRAPH

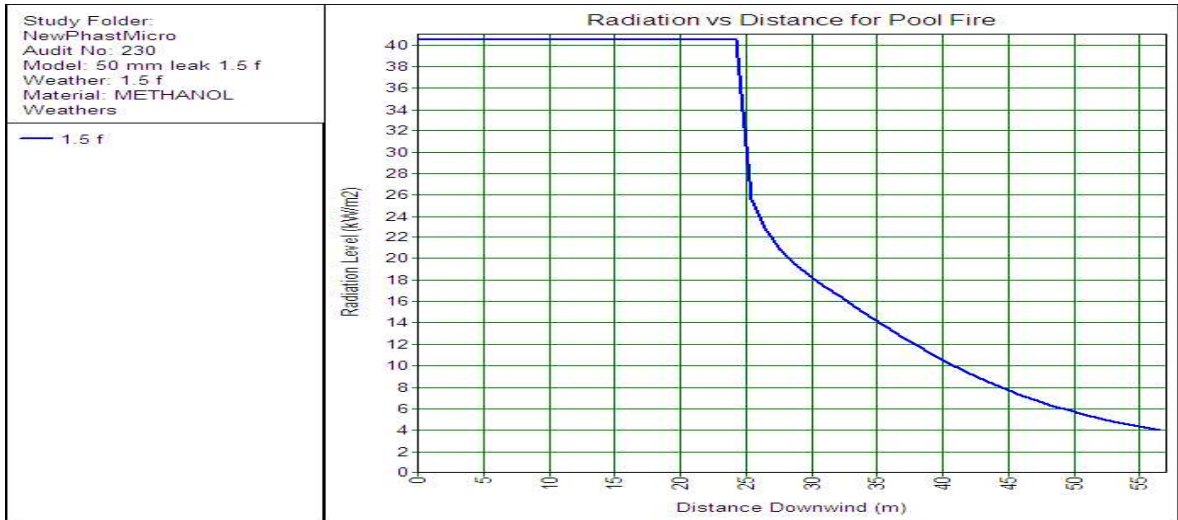


MAP



1.5 F m/s D

GRAPH



MAP

