FORM-I

for

PROPOSED BULK DRUGS & BULK DRUG INTERMEDIATES MANUFACTURING UNIT

of

M/s. LYCOS CHEMTECH

Plot No. 1032/3, GIDC, Panoli-394 116,

Taluka: Ankleshwar, Dist: Bharuch (Guj.)

Prepared By:

NABL Accredited Testing Laboratory
ISO 9001:2008 Certified Company

Aqua-Air Environmental Engineers P. Ltd.
403, Centre Point, Nr. Kadiwala School, Ring Road, Surat - 395002

APPENDIX I

FORM 1

(I) Basic Information

Sr. No.	Item	Details
1.	Name of the Project/s	**M/s. Lycos Chemtech**
2.	S. No. in the Schedule	5(f)
3.	Proposed capacity / area / length / tonnage to be handled/command area/lease area/number of wells to be drilled	• Proposed Capacity: 15.5 MT/Month (Please refer **Annexure-I**) • Plot Area: 1,040 m^2 • No bore well will be drilled within the premises.
4.	New/Expansion/Modernization	New
5.	Existing capacity/area etc.	--
6.	Category of project i.e. 'A' or 'B'	'A'
7.	Does it attract the general condition? If yes, please specify.	Yes. Located within 5 km of critically polluted area (Ankleshwar).
8.	Does it attract the specific condition? If yes, please specify.	No.
9.	Location	
	Plot/Survey/Khasra No.	Plot. No. 1032/3
	Village	GIDC, Panoli - 394 116
	Tehsil	Ankleshwar
	District	Bharuch
	State	Gujarat
10.	Nearest railway station/airport along with distance in kms.	Nearest Railway Station: Panoli = 2 km Nearest Airport: Surat = 60 km
11.	Nearest Town, city, District Headquarters along with distance in kms.	Nearest Town: Ankleshwar = 4 km Nearest District Head Quarter: Bharuch = 15 km
12.	Village Panchayats, ZillaParishad, Municipal corporation, Local body (Complete postal addresses with telephone nos. to be given)	Panoli, Taluka: Ankleshwar, Dist. Bharuch, Gujarat.
13.	Name of the applicant	M/s. Lycos Chemtech
14.	Registered address	Plot. No. 1032/3, GIDC, Panoli-394116, Tal: Ankleshwar, Dist. Bharuch, Gujarat.
15.	Address for correspondence:	
	Name	Mr. Bhavesh Ghadhiya
	Designation (Owner/Partner/CEO)	(Partner)
	Address	120 & 121, Omkar Raw House, Opp. Turning Point

		Complex, Utran, Surat-394105 (Guj.)
	Pin Code	394 105
	E-Mail	lycoschem@gmail.com
	Telephone No.	Mob.: +91 9825285981
	Fax No.	--
16.	Details of Alternative Sites examined, if any location of these sites should be shown on a topo sheet.	No
17.	Interlinked Projects	No
18.	Whether separate application of interlinked project has been submitted?	No interlinked project has been submitted.
19.	If Yes, date of submission	Not applicable
20.	If no., reason	Not applicable
21.	Whether the proposal involves approval/clearance under: If yes, details of the same and their status to be given. (a) The Forest (Conservation) Act, 1980? (b) The Wildlife (Protection) Act, 1972? (c) The C.R.Z Notification, 1991?	No
22.	Whether there is any Government order/policy relevant/relating to the site?	No
23.	Forest land involved (hectares)	No
24.	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders/directions of the Court, if any and its relevance with the proposed project.	No

(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

Sr. No.	Information/Checklist confirmation	Yes /No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	No	
1.2	Clearance of existing land, vegetation and buildings?	Yes	Proposed activities will be carried out in GIDC Industrial Estate.
1.3	Creation of new land uses?	No	Land is for industrial purpose. The proposed project site is located on level ground, which does not require any major land filling for area grading work.
1.4	Pre-construction investigations e.g. bore houses, soil testing?	No	Proposed activities will be carried out in GIDC Industrial Estate.
1.5	Construction works?	Yes	The construction work will include installation of process plants, utility blocks & other infrastructure. **Please refer Annexure – II.**
1.6	Demolition works?	No	
1.7	Temporary sites used for construction workers or housing of construction workers?	Yes	Some land portion on the site will be provided for temporary housing of construction workers during construction stage.
1.8	Above ground buildings, structures or Earthworks including linear structures, cut and fill or excavations	Yes	All process plants will have structures & will require excavation. Other buildings, godown, stores, etc. will also require some excavation work. **Please refer Annexure – II.**
1.9	Underground works including mining or tunneling?	No	
1.10	Reclamation works?	No	
1.11	Dredging?	No	
1.12	Offshore structures?	No	
1.13	Production and manufacturing	Yes	**Please refer Annexure –III.**
1.14	Facilities for storage of goods or materials? Infrastructure	Yes	Raw material storage area, Tank farm area & finished products area will be developed for proposed project.
1.15	Facilities for treatment or disposal of	Yes	• Effluent Treatment Plant will be installed

	solid waste or liquid effluents?		to treat the effluent so as to achieve the CETP inlet norms. • Domestic Waste water will be disposed by septic tank & soak pit. • Hazardous/Solid waste shall be disposed to TSDF Site. Details of water consumption & wastewater generation are attached as **Annexure IV.** Details of proposed Effluent Treatment Plant to be installed are attached as **Annexure V.** Details of Hazardous waste generation and disposal is attached as **Annexure VI.**
1.16	Facilities for long term housing of operational workers?	No	
1.17	New road, rail or sea traffic during construction or operation?	No	
1.18	New road, rail, air waterborne or other airports etc?	No	The unit is situated in a well developed Industrial Estate having all the infrastructure facilities. Existing transportation system is adequate.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	
1.20	New or diverted transmission lines or pipelines?	No	
1.21	Impoundment, damming, converting, realignment or other changes to the hydrology of watercourses or aquifers?	No	
1.22	Stream crossings?	No	
1.23	Abstraction or transfers or the water form ground or surface waters?	Yes	The raw water shall be supplied by GIDC authority.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	--
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Transportation of personnel or raw materials/materials will be primarily by road only.
1.26	Long-term dismantling	No	There is no dismantling of any sort. Not

	ordecommissioning or restoration works?		applicable.
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	Not applicable as no decommissioning is required.
1.28	Influx of people to an area in either temporarily or permanently?	No	Not applicable as this is a well developed Industrial Area and due to project, local people shall be employed.
1.29	Introduction of alien species?	No	
1.30	Loss of native species of genetic diversity?	No	
1.31	Any other actions?	No	

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

Sr. No	**Information/checklist confirmation**	**Yes/ No?**	**Details there of (with approximate quantities/rates, wherever possible) with source of information data**
2.1	Land especially undeveloped or agriculture land (ha)	No	
2.2	Water (expected source & competing users) unit: KLD	Yes	Water Source: GIDC Water Supply **Please refer Annexure – IV.**
2.3	Minerals (MT)	No	
2.4	Construction material -stone, aggregates, sand / soil (expected source MT)	Yes	Company shall use sand, stones, cement and structural steel for construction as and when required and procure from local market.
2.5	Forests and timber (source - MT)	No	
2.6	Energy including electricity and fuels source, competing users Unit: fuel (MT), energy (MW)	Yes	• **Power Requirement:** 250 KVA • **Sources:** - DGVCL - D.G. Set (Proposed): 125 KVA (to be used in emergency only) • **Fuel Requirement:** - Agro waste/Imported coal: 1,750 Kg/day - HSD: 25 Liter/day
2.7	Any other natural resources (use appropriates standard units)	No	

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

Sr. No.	Information / Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities / rates wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	Yes	**Please refer Annexure-VIII**
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	
3.3	Affect the welfare of people e.g. by changing living conditions?	No	
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	
3.5	Any other causes	No	

4. Production of solid wastes during construction or operation or decommissioning MT/month)

Sr. No.	Information/Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	No	
4.2	Municipal waste (domestic and or commercial wastes)	No	
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	**Please refer Annexure VI**
4.4	Other industrial process wastes	Yes	**Please refer Annexure VI**
4.5	Surplus product	No	
4.6	Sewage sludge or other sludge from effluent treatment	Yes	**Please refer Annexure VI**
4.7	Construction or demolition wastes	No	Construction wastes shall be utilized for leveling & land filling within premises.
4.8	Redundant machinery or equipment	No	
4.9	Contaminated soils or other materials	No	
4.10	Agricultural wastes	No	
4.11	Other solid wastes	No	

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

Sr. No.	Information/Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels From stationary or mobile sources	Yes	**Please refer Annexure – VII.**
5.2	Emissions from production processes	Yes	**Please refer Annexure – VII.**
5.3	Emissions from materials handling including storage or transport.	Yes	The construction materials such as stones, cements, bricks may pollute the air by dust particles. But it will be controlled by covering the trucks & trailers by clothes during transportation. Also all hazardous chemicals storage tanks will be provided with flame arrestors & breather valves for safety.
5.4	Emissions from construction activities including plant and equipment	Yes	During construction work, buildings will be covered by sheets or clothes to avoid dust contamination in air.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	No	
5.6	Emissions from incineration of waste	No	
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	
5.8	Emissions from any other sources	No	

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

Sr. No.	Information/Checklist confirmation	Yes/ No?	Details there of (with approximate Quantities /rates, wherever possible) With source of source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	At noisy areas adequate preventive & control measures shall be taken to control the noise level within prescribed limits. No significant noise, vibration or emission of light & heat from the unit.
6.2	From industrial or similar processes	Yes	-do-
6.3	From construction or demolition	No	
6.4	From blasting or piling	No	
6.5	From construction or operational traffic	No	
6.6	From lighting or cooling systems	No	
6.7	From any other sources	No	

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

Sr. No	Information/Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	Yes	Raw materials shall be stored separately in designated storage area and safely. Dyke walls shall be provided around raw materials storage tanks for containing any liquid spillage. Other materials shall be stored in bags / drums on pallets with concrete flooring and no spillage is likely to occur. Please refer **Annexure –VIII**.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	Sewage shall be disposed in septic tank & soak pit.
7.3	By deposition of pollutants emitted to air into the land or into water	No	
7.4	From any other sources	No	
7.5	Is there a risk of long term build up of pollution in the environment from these sources?	Yes	Environmental Management System (EMS) will be installed i.e. ETP, Air Pollution Control systems, Hazardous Waste Handling and Management as per Rules, etc. which will eliminates the possibility of building up of pollution.

8. Risks of accident during construction or operation of the Project, which could affect human health or the environment:

Sr. No	Information/Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc. from storage, handling, use or production of hazardous substances	Yes	Please refer **Annexure – VIII.**
8.2	From any other causes	No	
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

Sr. No.	Information/Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
9.1	Lead to development of supporting. laities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: * Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other	Yes	Please refer **Annexure – IX.**
9.2	Lead to after-use of the site, which could have an impact on the environment	No	
9.3	Set a precedent for later developments	No	
9.4	Have cumulative effects due to proximity to Other existing or planned projects with similar effects	No	

(III)Environmental Sensitivity

Sr. No	Information/Checklist confirmation	Name / Identity	Aerial distance (within 25 km). Proposed Project Location Boundary.
1	Areas protected under international conventions national or local legislation for their ecological, landscape, cultural or other related value	No	
2	Areas which are important or sensitive for Ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	No	

3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	
4	Inland, coastal, marine or underground waters	Yes	Amla Khadi: 5.5 Km(approx.)
5	State, National boundaries	No	
6	Routes or facilities used by the public for to recreation or other tourist, pilgrim areas.	No	
7	Defense installations	No	
8	Densely populated or built-up area	Yes	Ankleshwar city: 2 Lakh population (approx.)
9	Areas occupied by sensitive man-made land community facilities)	No	
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, tourism, minerals)	Yes	No ground water will be used.
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	No	
12	Are as susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence ,landslides, flooding erosion, or extreme or adverse climatic conditions)	No	

IV). Proposed Terms of Reference for EIA studies: Please refer **Annexure – X.**

I hereby given undertaking that, the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage the project will be rejected and clearance give, if any to the project will be revoked at our risk and cost.

Date: 25/04/2017
Place: Panoli

For **Lycos Chemtech**

Bhavesh Ghadhiya
(Partner)

For LYCOS CHEMTECH

Partner

NOTE:

1. The projects involving clearance under Coastal Regulation Zone Notification, 1991 shall submit with the application a C.R.Z. map duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z. (at the stage of TOR) and the recommendations of the State Coastal Zone Management Authority (at the stage of EC). Simultaneous action shall also be taken to obtain the requisite clearance under the provisions of the C.R.Z. Notification, 1991 for the activities to be located in the CRZ.

2. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon (at the stage of EC).

3. All correspondence with the Ministry of Environment & Forests including submission of application for TOR/Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC Meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for the specific project.

ANNEXURES

SR. NO.	NAME OF ANNEXURE
I	List of Products with their Production Capacity
II	Layout of Plant
III	Manufacturing Process Description
IV	Details of water consumption & waste water generation
V	Details of Effluent Treatment Plant
VI	Details of Hazardous Waste Generation and Disposal
VII	Details of Hazardous Chemicals Storage & Handling
VIII	Details of Source of Emissions
IX	Socio-economic Impacts
X	Proposed Terms of Reference
XI	Land Possession/Plot Allotment document
XII	CETP Membership Letter
XIII	Common TSDF & HWIF Membership Letter
XIV	Toposheet
XV	GIDC Letter for Water Supply

ANNEXURE-I

LIST OF PRODUCTS WITH THEIR PRODUCTION CAPACITY

Sr. No.	Name of Products	CAS No.	Proposed Capacity (MT/Month)
1	Diethylcarbamazine Citrate	1642-54-2	15.0
2	1-[2-(2-Hydroxyethyl)Ethoxy] Piperazine (99%)	13349-82-1	
3	1-(2, 3- Dichlorophenyl) PiperazineHCl	119532-26-2	
4	1-Benzylpiperazine (99%)	2759-28-6	
5	1-(2-Methoxyphenyl) PiperazineHCl (98%)	5464-78-8	
6	Piperazine Hexahydrate	142-63-2	
7	Piperazine Citrate	144-29-6	
8	Piperazine Adipate	142-88-1	
9	Piperazine Dihydrochloride	142-64-3	
10	Piperazine Phosphate	14538-56-8	
11	Povidone Iodine	25655-41-8	
12	N-Phenyl Piperazine (NPP)	92-54-6	
13	N-Methyl Piperazine	109-01-3	
14	1-Amino-4-Methyl Piperazine	6928-85-4	
15	1- BOCPiperazine	57260-71-6	
16	Sodium Barbital	144-02-5	
17	Methoxsalen	298-81-7	
18	5-Methyl Nicotinic Acid	3222-49-9	
19	Ciprofloxacin Lactate	97867-33-9	
20	Ciprofloxacin Base	86483-48-9	
21	Mecobalamin	13422-55-4	0.5
		Total	**15.5**
By-Product			
1	Manganese Dioxide	1313-13-9	0.92

RAW MATERIAL CONSUMPTION:

Sr. No.	Raw Material	Consumption Quantity (MT/MT)
1.	**Diethylcarbamazine Citrate**	
	N Methyl Piperazine	3.95
	NaOH	1.97
	Di ethyl carbamyl chloride	5.33
	Carbon	0.08
	Citric acid	7.58
	Toluene	9.28
	Acetone	17.76
2	**1-[2-(2-Hydroxyethyl)Ethoxy] Piperazine (99%)**	
	2-Chloroethoxyethanol	11.90
	Piperazine	24.75
	NaOH	3.85
	Methanol	35.75
3	**1-(2, 3- Dichlorophenyl) PiperazineHCl**	
	O-Xylene	30.00
	Bis. HCl	19.45
	2,3 Dichloro Aniline	15.00
	KI	2.50
	IPA HCl	13.05
	Methanol	2.50
	Acetone	5.00
4	**1-Benzylpiperazine (99%)**	
	Benzyl chloride	10.77
	Piperazine	7.33
	Toluene	15.00
	NaOH	3.40
5	**1-(2-Methoxyphenyl) PiperazineHCl (98%)**	
	O-Anisidine	9.53
	Bis(2-Chloroethyl)amine Hydrochloride	13.80
	NaOH	9.23
	Toluene	28.50
	IPA HCl	12.83
	IPA	28.50

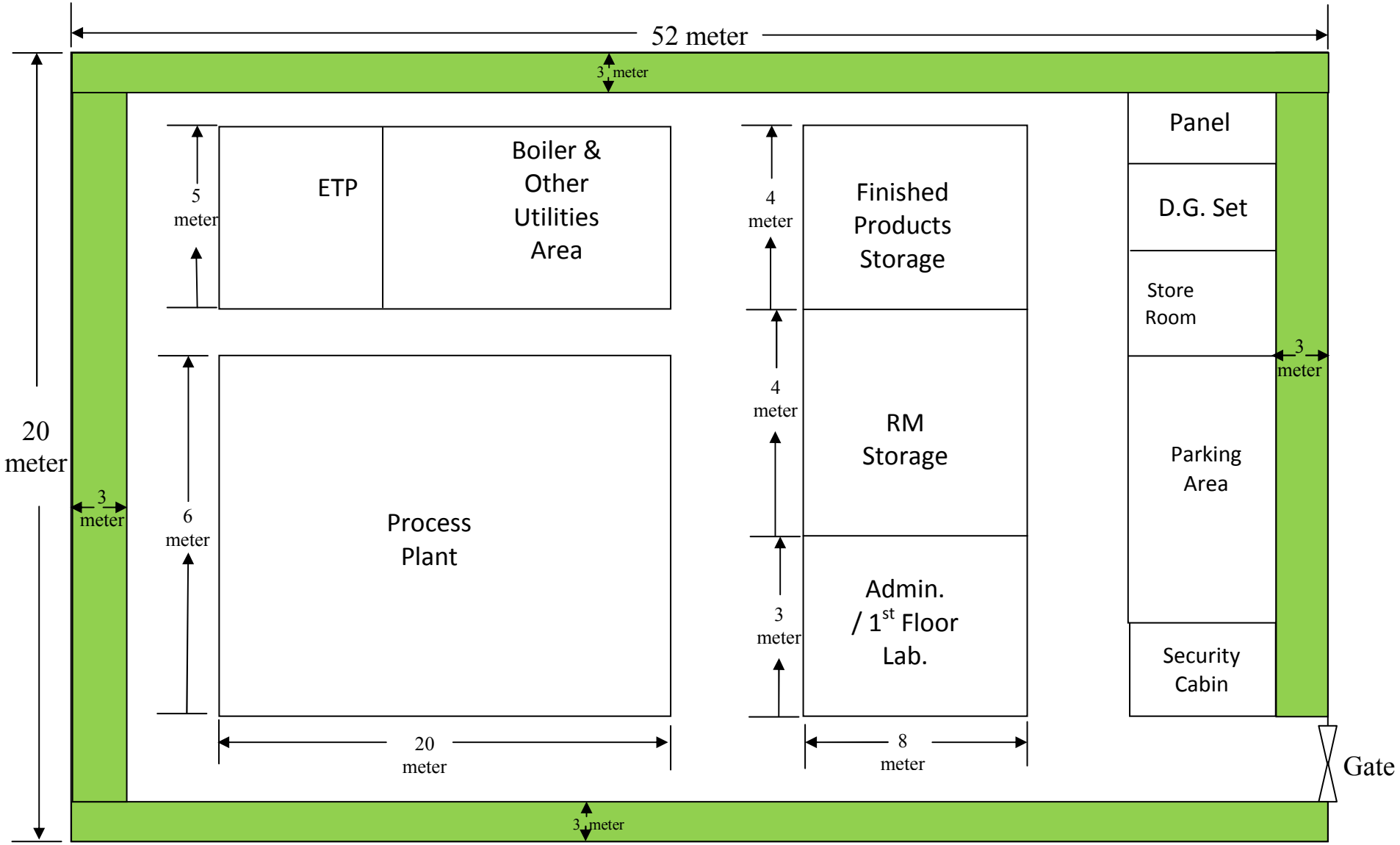
6	**PiperazineHexahydrate**	
	DiethyleneDiamine	9.75
	M.L.	3.00
7	**Piperazine Citrate**	
	DiethyleneDiamine 68%	7.80
	Citric Acid	8.55
	M. L.	3.00
8	**Piperazine Adipate**	
	M. L.	6.00
	DiethyleneDiamine 68%	8.10
	Adipic Acid	9.30
9	**Piperazine Dihydrochloride**	
	DiethyleneDiamine	11.10
	HCl	6.30
	M. L.	1.50
10	**Piperazine Phosphate**	
	M. L.	6.00
	DiethyleneDiamine 68%	9.30
	Phosphoric Acid	8.40
11	**Povidone Iodine**	
	Iodine	1.80
	Polyvinyl Pyrrolidone	13.20
12	**N-Phenyl Piperazine (NPP)**	
	BIS –Salt	24.00
	Aniline	12.00
	Toluene	36.00
	Caustic Soda Flakes	15.00
13	**N-Methyl Piperazine**	
	Piparazine	16.17
	Dipiparazineformile	14.25
	Formic acid	25.41
	Formaldehyde	15.40
	Octanol	38.50
	Costic flakes	8.39
14	**1-Amino-4-Methyl Piperazine**	
	N Methyl Piparazine	14.42
	HCl	28.85

	Sodium Nitrite	10.10
	Zinc Dust	20.19
	Caustic Flakes	17.31
15	**1- BOC Piperazine**	
	Piparazine 68%	57.00
	Methanol	450.00
	NaOH	34.50
	Di Boc Anhydrous	18.75
	Toluene	135.00
16	**Sodium Barbital**	
	Di ethyl melonate	21.43
	Na metal	7.07
	Alcohol	128.57
	Ethyl Chloride gas	21.43
	Toluene	42.86
	Methanol	160.71
	Urea	15.27
	Na Methoxide Powder	11.79
	HCl	42.86
	NaOH flakes	2.95
17	**Methoxsalen**	
	Heracleum Roots	375.00
	Toluene	360.00
	NaOH	6.00
	Dimethyl Sulphate	19.20
	Hexane	360.00
	Silica Gel	375.00
18	**5-Methyl Nicotinic Acid**	
	3,5-Dimethyl Pyridine	12.50
	Potassium Permanganate	25.00
	Methanol	43.75
19	**Ciprofloxacin Lactate**	
	Ciprofloxacin	6.43
	Lactic Acid	8.57
	Acetone	4.29
20	**Ciprofloxacin Base**	
	Ciprofloxacin HCl	17.05

	Ammonia Aqueous	1.57
21	**Mecobalamin**	
	Cyanocobalamin	0.01
	Sodium Borohydride	0.01
	Dimethyl Sulphate	0.01
	Methanol	0.09
	Chloroform	0.16
	Acetone	0.08

ANNEXURE-II

LAYOUT OF PLANT



ANNEXURE-III

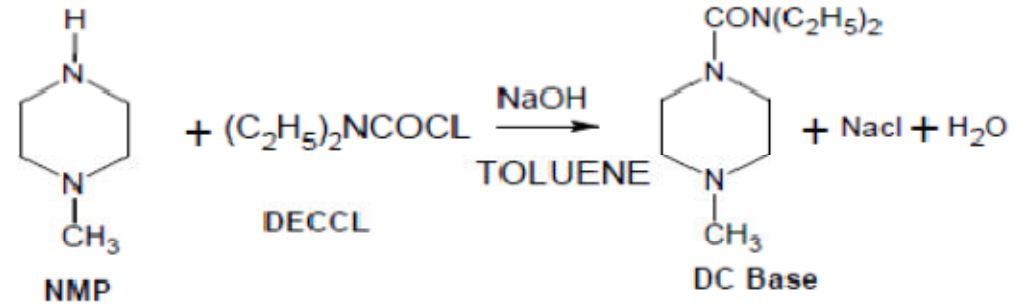
MANUFACTURING PROCESS DESCRIPTION

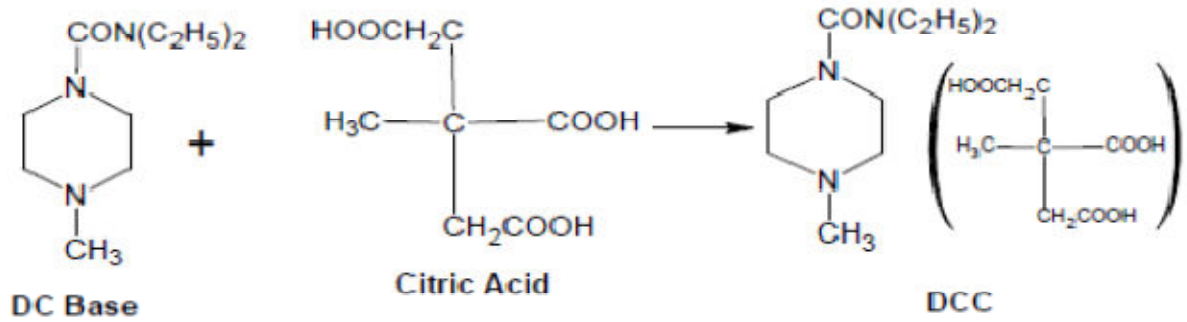
1. Diethylcarbamazine Citrate

Process Description:

- First charge Toluene, N-Methylpiperazine and Sodium Hydroxide in SS reactor.
- Start slowly addition Di-Ethyl Carbamyl Chloride under stirring below 20°C temperature.
- After addition is completed, start distillation for recovery of Toluene.
- At the end Di Ethyl Carbamazine base are received.
- Then start separation of Sodium Chloride & Water.
- Then dissolve Di Ethyl Carbamazine base in acetone and add carbon & filter the material.
- Then start addition of Citric Acid under stirring to get pure Diethyl Carbamazine Citrate.
- Then Di Ethyl carbamazine Citrate is centrifuged and dried.
- After drying for 4 to5 hrs material is taken for analyses and then packed.
- The mother liquor obtained is recycled in the next batch.
- The solvent is recovered by distillation is reused in next batch.

Chemical Reaction:





Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	N Methyl Piperazine	100	Sodium Chloried	58
2	NaOH	50	Water	28
3	Di ethyl carbamyl chloride	135	Toluene Loss	10
4	Carbon	2	Toluene Recovered	225
5	Citric acid	192	Carbon waste	2
6	Toluene Fresh	10	Acetone Fresh	20
7	Toluene Recovered	225	Acetone Recovered	430
8	Acetone Fresh	20	Material Loss	44
9	Acetone Recovered	430	Di Ethyl Carbamyzine Citrate	380
	Total	**1164**	**Total**	**1164**

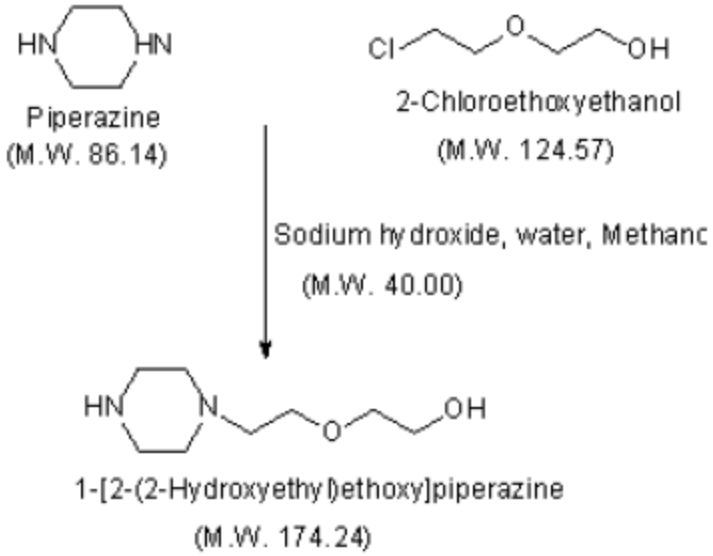
2. 1-[2-(2-Hydroxyethyl)Ethoxy] Piperazine (99%)

Process Description:

Into reactor, charge 818 Kg Water and 495 Kg piperazine at room temperature. Add 238 kg 2-Chloroethoxyethanol at 60 °C in 180 minutes. Stir for 12 hrs at 70 °C and monitor the reaction performanceby analytical method. After completion of reaction, add 77 kg sodium hydroxide and 715 lit methanol andstirr for 3 hours. Filter the inorganic solid. Distilled out methanol, water, excess piperazine and finally productunder high vaccum.

Expected weight is 300 Kg.

Chemical Reaction:



Mass Balance:

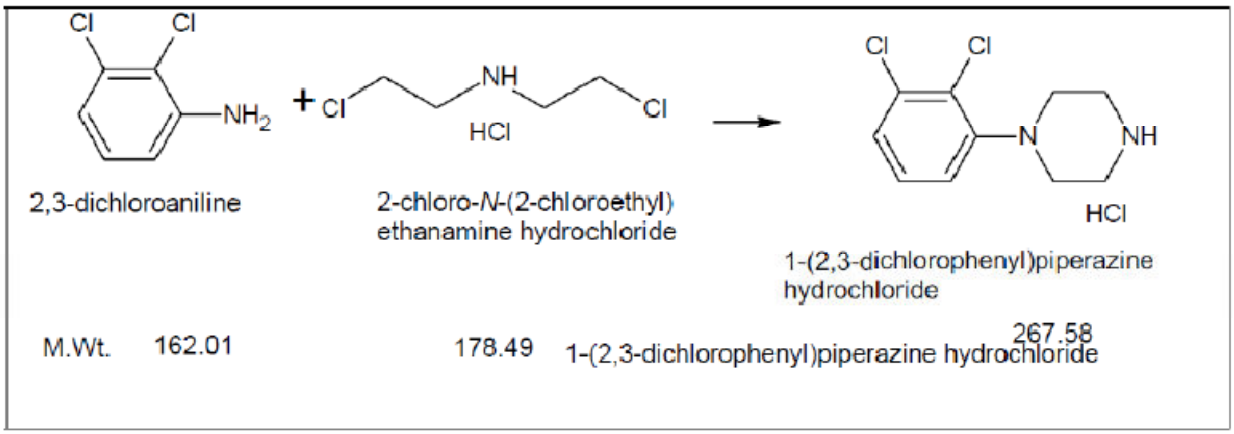
Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	2-Chloroethoxyethanol	238	1-[2-(2-Hydroxyethyl)Ethoxy] Piperazine	300
2	Piperazine	495	Recovered Piperazine	330
3	Water	818	Sodium Chloride	112
4	NaOH	77	Water	88
5	Methanol	715	Water Generated from reaction	35
6			Recovered Methanol	691
7			Methanol Loss	24
8			Distillation Residue	33
	Total	**2343**	**Total**	**2343**

3.1-(2, 3- Dichlorophenyl) PiperazineHCl

Process Description:

In reactor 2,3 DCA react with bis salts at present of KI& xylene and get 2,3 dichloro phenyl piparazine& 2,3 dichloro phenyl piparazine react with IPAHCL & make 2,3 DCPP HCl.

Chemical Reaction:



Mass Balance:

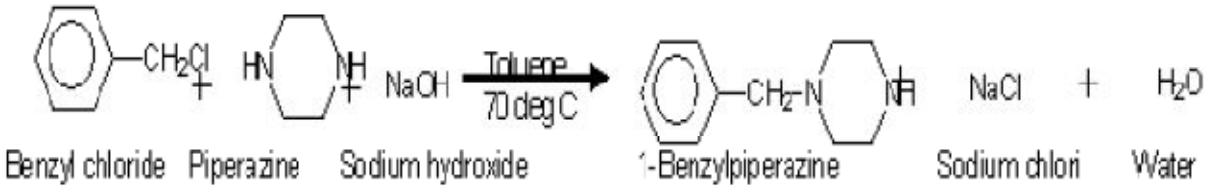
Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	O-Xylene for reaciton	600	Finish Product	300
2	Bis. HCl	389	O-Xylene Recovery	580
3	2,3 Dichloro Aniline	300	O-Xylene loss	20
4	KI	50	Methanol Recovered	230
5	IPA HCl	261	Acetone Recoverd	80
6	Methanol	50	Satl-water	600
7	Acetone	100	Acetone Loss	20
8	Water	95	Loss	70
	Total	**1800**	**Total**	**1800**

4.1-Benzylpiperazine (99%)

Process Description:

Benzylchloride is reacted with piperazine in the presence of an organic solvent such as toluene at 70 °C for 8 hours to give 1-Benzylpiperazine hydrochloride. Hydrochloride salt of the 1-Benzylpiperazine neutralise with sodium hydroxide to give 1-Benzylpiperazine, sodium chloride and water. The by product sodium chloride is filltered off in pure form (while water generated during neutralization will be retained by the wet cake of sodium chloride which will be lost during drying). After filtration organic layer taken for distillation to remove the solvent. The final product (1-Benzylpiperazine) is dried under vaccum to remove traces of moisture.

Chemical Reaction:



Mass Balance:

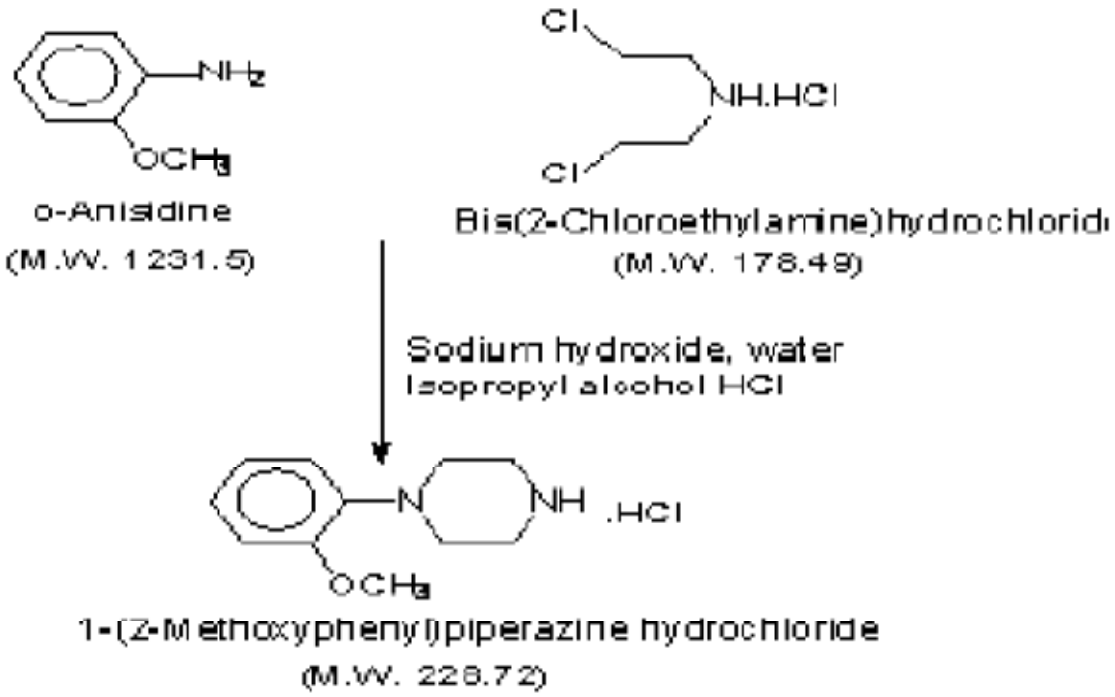
Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	Benzyl chloride	7.182	**1-Benzylpiperazine**	10
2	Piperazine	4.886	Sodium Chloride	3.314
3	Toluene	10	Water	1.022
4	NaOH	2.268	Toluene Recovered	10
	Total	**24.336**	**Total**	**24.336**

5.1-(2-Methoxyphenyl) PiperazineHCl (98%)

Process Description:

Into reactor, charge 313 Kg water, 127 Kg o-anisidine, 184 Kg Bis(2-Chloroethyl)amine hydrochloride and123 Kg sodium hydroxide at room temperature. Take temperature 90 °C within 15 hours. Monitor thereaction performance by analytical method. After completion of reaction cool to 35 °C and add 916 lit. Toluene at 35 °C in 2 hrs. Stirr for 1 hrs and filter the sodium chloride (inorganic salts) slurry and collect the filtrate separately. Separate organic layer and take for the solvent recovery. After solvent recovery add isopropyl alcohol 380 lit, and IPA.HCl 171 kg under cooling. Stirr for 3 hours. Centrifuge the product and dry the product under vacuum. Filtrate taken for the solvent recovery. Unload and dry the material at 45 to 50 °C in vacuum tray drier (VTD) till to reach the required LOD (Loss on Drying) of the product. Expected weight is 200 Kg.

Chemical Reaction:



Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	O-Anisidine	127	**1-(2-Methoxyphenyl) Piperazine HCl**	200
2	Bis(2-Chloroethyl)amine Hydrochloride	184	Sodium Chloride	180
3	Water	313	Water	314
4	NaOH	123	Water Generated from Reaction	56
5	Toluene	380	Recovered Toluene	367
6	IPA HCl	171	Toluene Loss	13
7	IPA	380	Recovered IPA	479
8			IPA Loss	34
9			Distillation Residue	35
	Total	**1678**	**Total**	**1678**

6.PiperazineHexahydrate

Process Description:

- The D.M.Water and Mother Liquor of previous lots is taken into S.S. evaporating pan.
- The DiethyleneDiamine (65% or 68%) is added with constant stirring.
- After thorough mixing, remaining quantity of D.M.Water is added and allowed to cool.
- The mixture is centrifuged, and the mother liquor is collected, which can be used for next batch.
- The Quality Control Test is carried out for the wet cake obtained from centrifuge.
- The wet cake is tray dried and Packed into bags/ drums.
- The mother liquor is used 20-25 times and then evaporated to dryness and mass will be sold as low grade product.

Chemical Reaction:

$C_4H_{10}N_2$	+	$6H_2O$	$C_4H_{10}N_2.6H_2O$
DiethyleneDiamine (DEDA)		Water	Piperazine Hexahydrate
86.14		108	194.14

Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	DiethyleneDiamine	0.65	PiperazineHexahydrate	1.0
2	DM water	0.35	ML	0.2
3	M.L. Recycled	0.2		
	Total	**1.2**	**Total**	**1.2**

7.PiperazineCitrate

Process Description:

- The D.M.Water and Mother Liquor of previous lots is taken into S.S. REACTOR. If Mother Liquor is to be taken, adjust the pH between 5.0 and 6.0 by Citric Acid monohydrate orDiethyleneDiamine (Piperazine 68 %), which ever required. Heat just up to vaporization.
- Add DiethyleneDiamine (Piperazine 68 %) and Citric Acid monohydrate simultaneously.
- After addition is completed and all the mass become even, cool the material to Crystallize.
- The mixture is centrifuged, and the mother liquor is collected, which can be used for next batch.
- The Quality Control Test is carried out for the wet cake obtained from centrifuge.
- The wet cake is tray dried and Packed into bags/ drums.
- The mother liquor is used 20-25 times and then evaporated to dryness and mass will be sold as low grade product.

Chemical Reaction:

$3\ C_4H_{10}N_2$	+	$2\ C_6H_8O_7$	$(C_4H_{10}N_2)_3.2C_6H_8O_7$
DiethyleneDiamine (Piperazine 68 %)		Citric acid monohydrate	Piperazine Citrate
258.42		384.28	642.7

Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	DiethyleneDiamine 68%	0.52	**Piperazine Citrate**	1.0
2	Citric Acid	0.57	ML	0.2
3	DM water	0.01	Water Vapour	0.1
4	M. L. recycled	0.2		
	Total	**1.3**	**Total**	**1.3**

8. PiperazineAdipate

Process Description:

- The D. M. Water and Mother Liquor are taken into S.S. REACTOR. If Mother Liquor is to be taken, adjust the pH between 5.0 and 6.5 by Adipic Acid or Piperazine, which ever required. Heat just up to vaporization.
- Add PiperazineHexahydrate or DiethyleneDiamine (which ever may be) and Adipic Acidsimultaneously.
- After addition is completed and all the mass become even, cool the material to Crystallize.
- The mixture is centrifuged and washed and the mother liquor is collected, which can be used fornext batch.
- The Quality Control Test is carried out for the wet cake obtained from centrifuge.
- The wet cake is tray dried and Packed into bags/ drums.
- The mother liquor is used 20-25 times and then evaporated to dryness and mass will be sold as low grade product.

Chemical Reaction:

$C_4H_{10}N_2$	+	$C_6H_{10}O_4$ →	$C_4H_{10}N_2.C_6H_{10}O_4$
DiethyleneDiamine		Adipic acid	PiperazineAdipate
86.14		146.14	232.28

Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	DM Water	10	Piperazine Adipate	500
2	M. L.	200	ML	200
3	Diethylene Diamine 68%	270	Water Vapour	90
4	Adipic Acid	310		
	Total	**790**	**Total**	**790**

9.Piperazine Dihydrochloride

Process Description:

- Take Hydrochloric Acid in PVC Drum with external cooling arrangement of water. Addpiperazinehexahydrate or diethylenediamine (which ever may be) with constant stirring and
  continuous cooling. Addition should be slow as the reaction is exothermic and fumes ofpieprazine will evolve. If required make the arrangement for closing the drum.
- After addition is completed take the solution in S.S. evaporating pan. Add mother liquor if any ofthe previous lot and adjust the pH in between 3.0 to 3.5 with hydrochloric acid or piperazine(which ever may be required).
- Cool the material to Crystallize.
- The mixture is centrifuged, washed with methanol to remove colour and the mother liquor iscollected, which can be used for next batch.
- The Quality Control Test is carried out for the wet cake obtained from centrifuge.
- The wet cake is tray dried and Packed into bags/ drums.
- The mother liquor is used 20-25 times and then evaporated to dryness and mass will be sold aslow grade product.

Chemical Reaction:

$C_4H_{10}N_2$	+	$2HCl$	+	H_2O	→	$C_4H_{10}N_2.2HCl.H_2O$
DiethyleneDiamine		Hydrochloric Acid		Water		PiperazineDihydrochloride
86.14		36.5		18		177.14

Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	DiethyleneDiamine	370	Piperazine Dihydrochloride	500
2	HCl	210	ML	50
3	M. L.	50	Water Vapour	80
	Total	**630**	**Total**	**630**

10.Piperazine Phosphate

Process Description:

- The D. M. Water and Mother Liquor are taken into S.S. evaporating pan. If Mother Liquor is to be taken, adjust the pH between 5.0 and 6.5 by Phosphoric Acid or Piperazine, which everrequired. Heat just up to vaporization.
- Add PiperazineHexahydrate or DiethyleneDiamine (which ever may be) and Phosphoric Acid simultaneously.
- After addition is completed and all the mass become even, cool the material to Crystallize.
- The mixture is centrifuged, washed with methanol to remove colour and the mother liquor is collected, which can be used for next batch.
- The Quality Control Test is carried out for the wet cake obtained from centrifuge.
- The wet cake is tray dried and Packed into bags/ drums.
- The mother liquor is used 20-25 times and then evaporated to dryness and mass will be sold as low grade product.

Chemical Reaction:

C4H10N2	+ H3PO4	+ H2O →	C4H10N2.H3PO4.H2O
DiethyleneDiamine	Phosphoric acid	Water	Piperazine Phosphate
86.14	98	18	202.14

Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	DM Water	10	Piperazine Phosphate	500
2	M. L.	200	ML	200
3	Diethylene Diamine 68%	310	Water Vapour	100
4	Phosphoric Acid	280		
	Total	**800**	**Total**	**800**

11.Povidone Iodine

Process Description:

- Weight accurately the required quantities of Polyvinyl-pyrrolidone. Now switch on the stirrer in which this material is to be mixed. Now add Polyvinyl-pyrrolidone slowly to the ribbon blander with taking care that the rotation of the stirrer should not stop.
- After the completion of addition of Polyvinyl-pyrrolidone, stir for 30 mins. To break any lumps formed during storage. Weight accurate quantities of iodine and make three parts.
- Now after 30 mins of stirring of Polyvinyl-pyrrolidone, add first part of iodine and closed the door air tight, after 20 mins add second portion of the iodine
- The third portion of remaining iodine should be added after 40 mins of last addition.
- Stir continuously for four hours.
- After stirring of the mixture, store in cool, dry and dark place for 12 hours and after keeping 12 hours again this mixture should be added to stirrer for two hours to saturation.
- Final material should passes through appropriate sieve made from polyethylene. Carry out the quality control test.
- Pack it and label it.

Chemical Reaction:

$(C_6H_9NO)n$	+	I_2	$(C_6H_9NO)n\ I$
Polyvinyl-pyrrolidone		Iodine	Povidone Iodine
(111)n		253.8	(111)n + 127

Mass Balance:

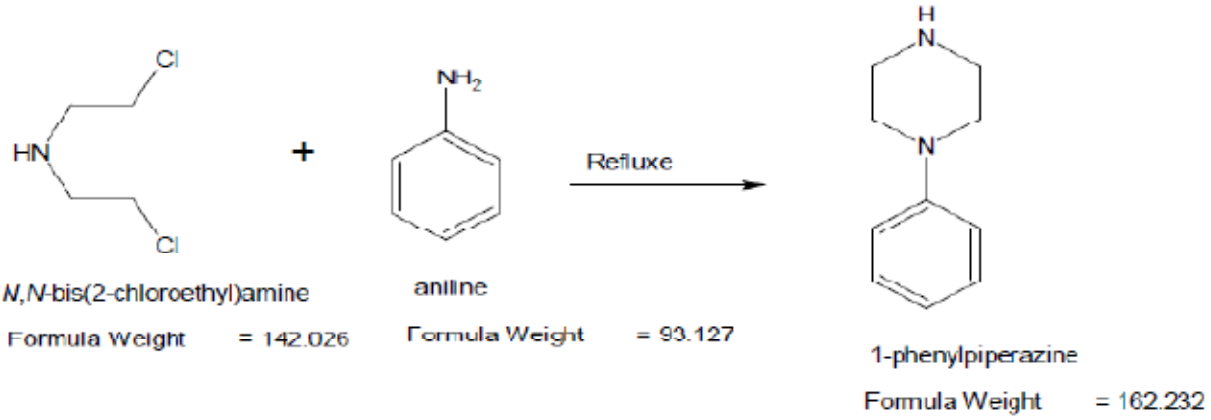
Sr. No.	Name of Raw Material	Quantity			Remarks
		Kg/Batch	Kg/Kg of Product	Mt/Month	
	Input				
1	Iodine	60	0.12	18	
2	Polyvinylpyrrolidone	440	0.88	132	
	Total	**500**	**1**	**150**	
	Output				
1	Povidone Iodine	500	1	150	Finished Product
	Total	**500**	**1**	**150**	

12.N-Phenyl Piperazine (NPP)

Process Description:

In reactor take water&bis salt then charge aniline and refluxed for required time. After the reactioncompleted caustic &toluene added. Then layer separated the aqueous layer was sent to ETP. Theorganic was layer was distilled off to recover toluene & NPP.

Chemical Reaction:



Mass Balance:

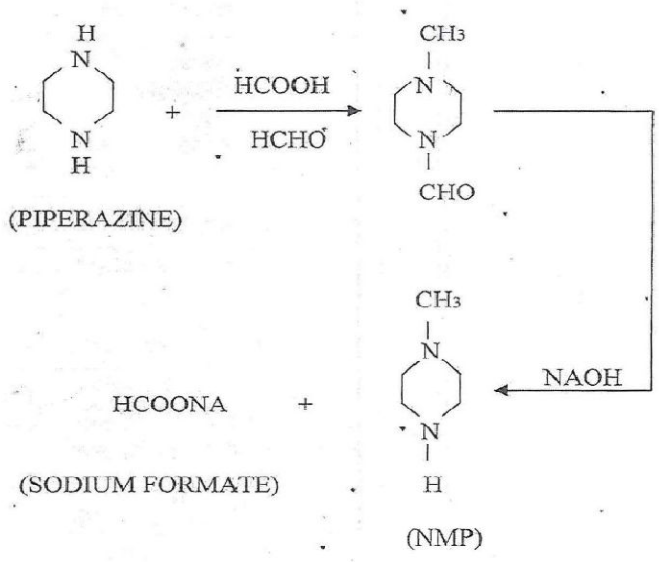
Sr. No.	RM Name	Quantity (Kg)	Output	Quantity (Kg)
1	Bis-salt	400	Product	250
2	Aniline	200	Toluene (Recovered)	550
3	Toluene	600	Toluene (Loss)	50
4	Water	400	Aqueous Effluent	1000
5	Caustic Soda Flakes	250		
	Total	1850	**Total**	1850

13.N-Methyl Piperazine

Process Description:

Piperazine is Methylated with Formic acid and formaldehyde & isolation with Caustic Soda Solution gives mass of N-Methyl Piperazine.

Chemical Reaction:



Mass Balance:

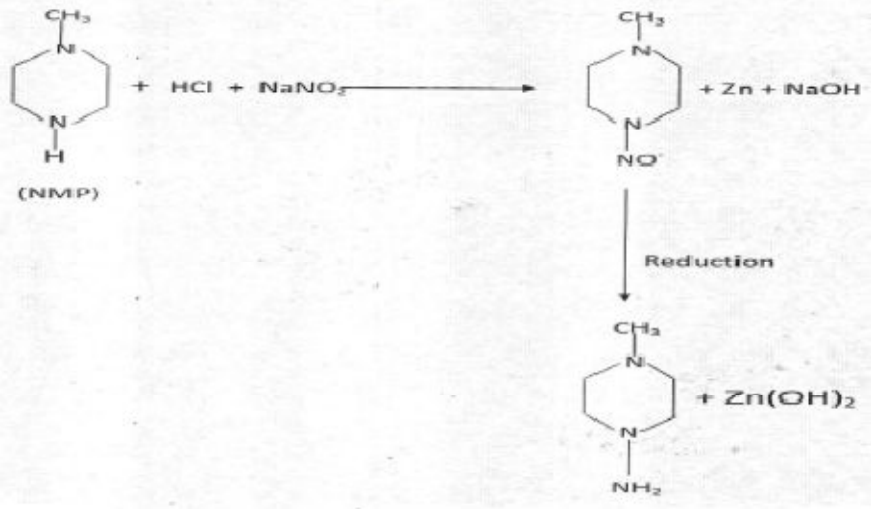
Input	**Qty (kg)**	Output	**Qty (kg)**
PIPARAZINE	210	N METHYL PIPARAZINE	195
DI PIPARAZINE FORMILE	185	DI PIPARAZINE FORMILE (Aqueous)	285
FORMIC ACID	330	SODIUM FORMATE	200
FORMALDEHYDE	200	RECOVER OCTANOL (Aqueous)	20
OCTANOL	5	EFFLUENT	439
COSTIC FLAKES	109		
DISTILLED WATER	100		
TOTAL	**1139**	**TOTAL**	**1139**

14.1-Amino-4-Methyl Piperazine

Process Description:

Piperazine is Methelated with Formic acid & Formaldehyde & isolated with NaOFI and prepairedNitroso methyl with HCL & NaN02 and finally reduced with Zn dust and NH4CI.Ai\/IP isolated with caustic & distilled fractionally to get pure AMP which is packed.

Chemical Reaction:



Mass Balance:

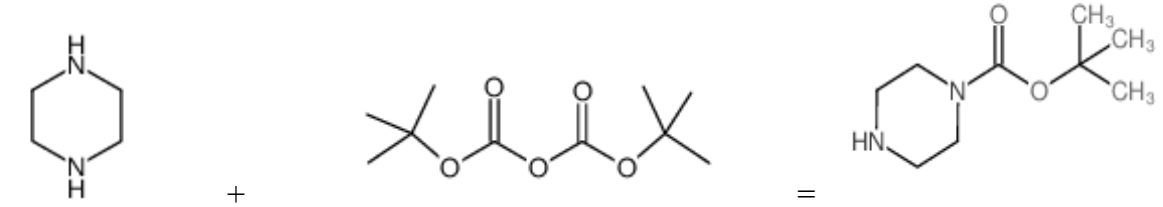
Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	N Methyl Piparazine	250	**1-Amino-4-Methyl Piperazine**	260
2	HCl	500	N-Methyl Piperazine	40
3	Sodium Nitrite	175	Zinc Hydroxide	800
4	Zinc Dust	350	Effluent	475
5	Caustic Flakes	300		
	Total	**1139**	**Total**	**1139**

15.1- BOC Piperazine

Process Description:

In reactor charge Methanol and piperazine 68% at room temperature than charge caustic lye at roomtemperature. Than apply cooling to bring the temperature 10 ^{0}C. Start the addition of DI-BOC . Afteraddition complete start recovery of methanol. After methanol recovery add toluene and stiring for halfhour allow settling for half hour for organic layer separation of toluene. Recover the BOCpiperazine cakeunder vacuumed filtration. Check the purity of BOCpiperazine and if the purity is 98% than pack in HDPEdrums.

Chemical Reaction:



Piperazine + Di Bocanhudrous = Bocpiperazine

Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	Piparazine 68%	38	Methanol Recovered	250
2	Methanol	300	Methanol Loss	50
3	NaOH	23	Toluene Recovered	70
4	Di Boc Anhydrous	12.5	Toluene Loss	20
5	Toluene	90	BOC Piperazine	10
6			Effluent	6305
	Total	463.5	**Total**	**463.5**

16. Sodium Barbital

Process Description:

Stage-I

Charge Alcohol, Sodium metal and Di ethyl Malonate (DEM), after sterring start the purging of ethylchlorigegas.for preparation of Diethyl DiethylMalonate (DEDEM). Distill the alcohol and add water andtoluene. After half hour stop sterring for layer separation of toluene and separate out the DEDEM forstage II.

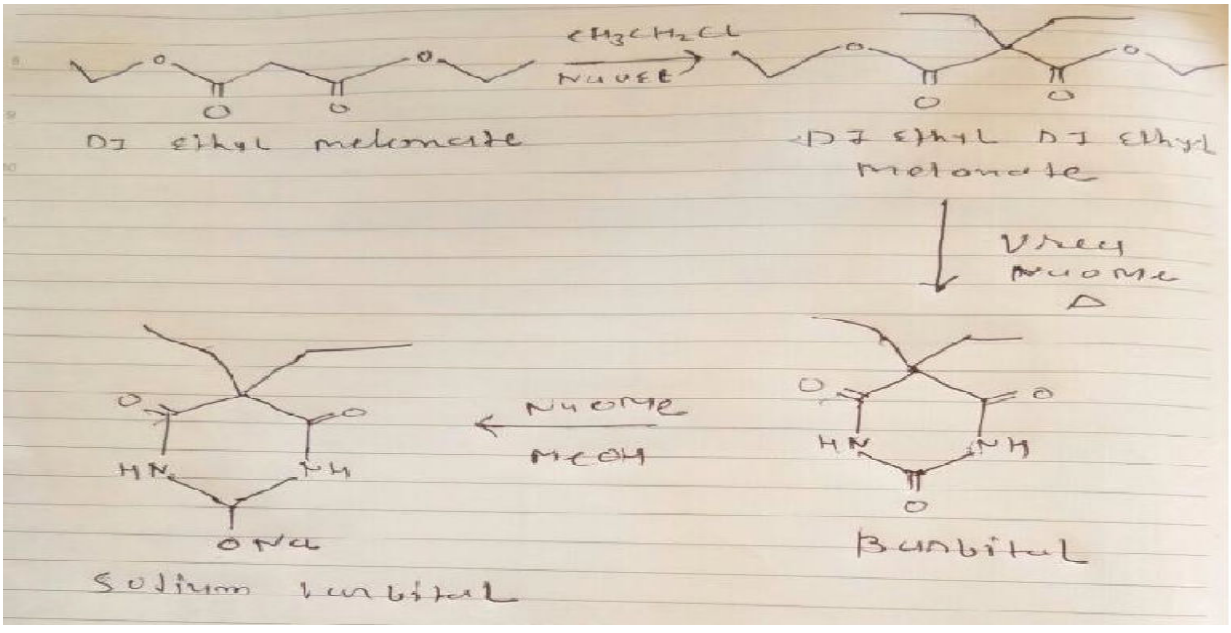
Stage-II

Take stage-I peoduct in reactor than charge Methanol, Urea and Sodium methoxide powder and stir forone hour. Recover the methanol by distillation and add HCL in it. Filter and saperate the cake which is barbital and ML is dilute HCl.

Stage-III

Take second stage Barbital cake in the reactor and add methanol and charge the caustic flakes to bringpH 10. Apply cooling and separate the Sodium barbital cake by filtration. And dry it in drier.

Chemical Reaction:



Mass Balance:

Stage-1

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	Di ethyl melonate	400	Diethyl Melonate	400
2	Na metal	132	Alcohol Recovered	2450
3	Alcohol	2400	Toluene Recovered	750
4	Ethyl Chloride gas	400	Toluene Loss	50
5	Water	800	Effluent	1200
6	Toluene	800	Loss	82
	Total	**4932**	**Total**	**4932**

Stage-2

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1		400	Barbital	260
2	Methanol	1300	Methanol Recovered	1250
3	Urea	285	Methanol Loss	50
4	Water	800	Effluent	2245
5	Na Methoxide Powder	220		
6	HCl	800		
	Total	**3805**	**Total**	**3805**

Stage-3

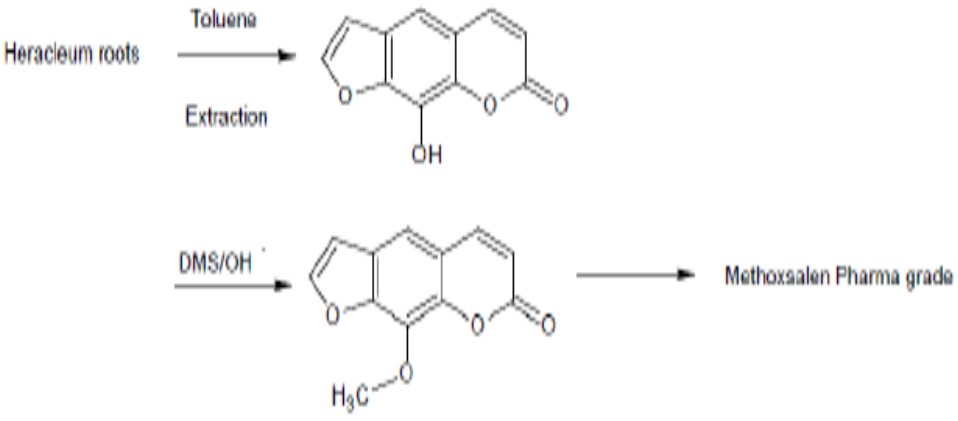
Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	Barbital	260	Sodium Barbital	280
2	Methanol	1700	Methanol	1650
3	NaOH flakes	55	Methanol Loss	50
			Resiude	35
	Total	**2015**	**Total**	**2015**

17. Methoxsalen

Process Description:

Heracleum roots are mixed with Toluene in the reactor. Then mixture is centrifuged, where roots wasteis removed and liquid part is sent for filtration to remove fine traces of roots. After filtration abovesolution id distilled to recover toluene. Final product obtained then is collected and sent forpackaging.

Chemical Reaction:



Mass Balance:

Stag-1

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	Heracleum Roots	625	Roots Waste	575
2	Toluene	6000	Toluene Recovered	5975
3			Toluene Loss	30
4			Product	25
	Total	**6625**	**Total**	**6625**

Stag-2

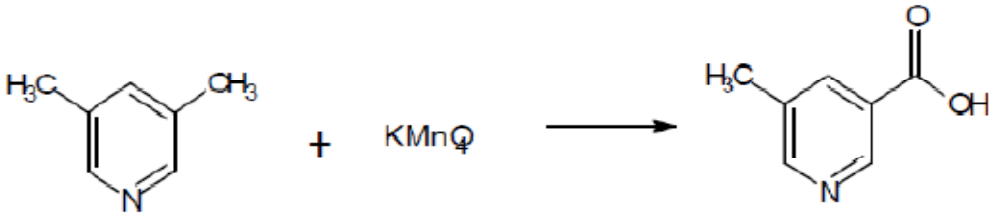
Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	Product	25	Waste	42
2	NaOH	10	Hexane Recovered	5
3	Dimethyl Sulphate	32	Hexane Loss	595
4	Hexane	600	Silica Gel Recovered	100
5	Silica Gel	100	Product	25
	Total	**767**	**Total**	**767**

18.5-Methyl Nicotinic Acid

Process Description:

- 3,5-dimethyl pyridine, Potassium Permangante, Methanol and water are fed into reaction vessel in prescribed quantities.
- After prescribed reaction time the reaction mixture is filtered, where ManganeseDioxide is obtained as by-product.
- Obtained mixture is sent for distillation, where waste water obtained is sent to
- ETP for treatment and process waste obtained is sent to hazardous waste storagearea.
- After that extra methanol is recovered and final product is obtained

Chemical Reaction:



Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	3,5-Dimethyl Pyridine	20	Manganese Dioxide (By-Products)	22
2	Potassium Permanganate	40	Water	70
3	Methanol	70	Process waste	44
4	Water	100	Methanol Recovered	60
5			Methanol Loss	10
6			Product	24
	Total	**230**	**Total**	**230**

19. Ciprofloxacin Lactate

Process Description:

- Ciprofloxacin, Lactic Acid, Acetone and Water are fed into reaction vessel in prescribedquantities.
- After prescribed reaction time the reaction mixture is centrifuged, where Acetone isrecovered.
- Obtained mixture is sent to filtration unit.
- Product wet cake is obtained.
- The wet cake is dried to obtained final product and sent for packaging.

Chemical Reaction:

$$C_{17}H_{18}FN_3O_3 + C_3H_6O_3 = C_{20}H_{24}FN_3O_6$$

331 Mol + 90 Mol = 421 Mol

Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	Ciprofloxacin	15	Acetone + Water	20
2	Lactic Acid	20	Product	35
3	Acetone	10		
4	Water	10		
	Total	**55**	**Total**	**55**

20.Ciprofloxacin Base

Process Description:

- Ciprofloxacin HCl, Aqueous Ammonia and water are fed into reaction vesselin prescribed quantities.
- After prescribed reaction time the reaction mixture is centrifuged, where Ciprofloxacin HCl, Ammonium Chloride and Water Mixture is recovered.
- Obtained mixture is sent to filtration unit.
- Product wet cake is obtained.
- The wet cake is dried to obtained final product and sent for packaging.

Chemical Reaction:

$$C_{17}H_{21}ClFN_3O_4 + NH_3 = C_{17}H_{18}FN_3O_3 + NH_4Cl + H_2O$$

Mass Balance:

Sr. No.	Input	Qty. per Batch (Kg)	Output	Qty. per Batch (Kg)
1	Ciprofloxacin HCl	25	Ammonia Gas	1.1
2	Ammonia Aqueous	2.3	ML to ETP	14.2
3	Water	10	Product	22
	Total	**37.3**	**Total**	**37.3**

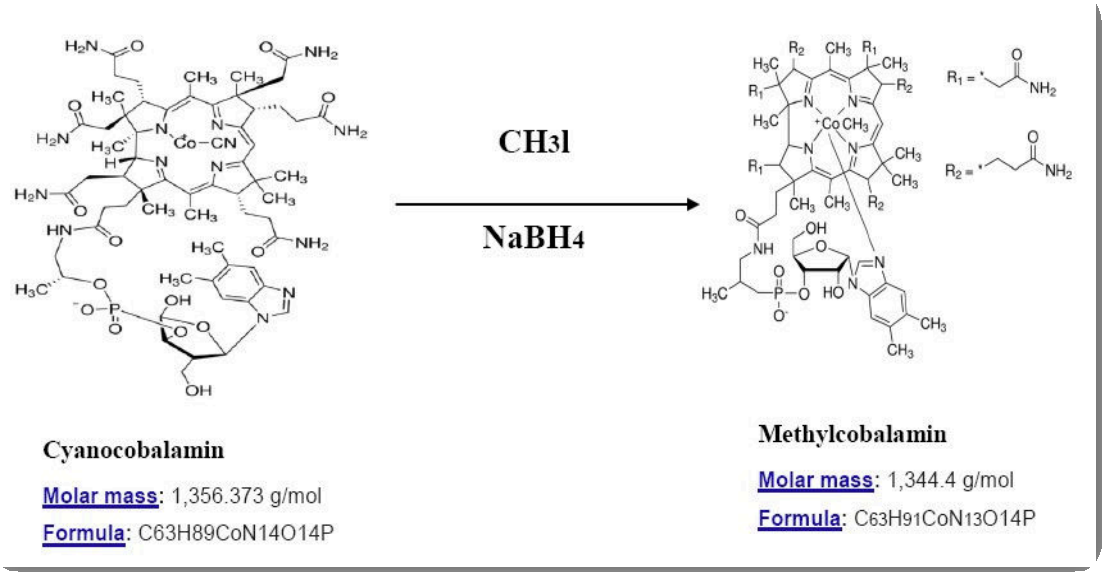
21.Mecobalamin

Process Description:

Step-I: Check the Glass flask is cleaned and dry. Charge Process water, heating and addition of cynocobalamin. Cooling and addition of sodium borohydride, stirring and addition of methyl iodide.Addition of chloroform and phenol mixure, stirring, settling for layer separation.

Step-II: Check the Glass flask clean and dry. Charge process water, organic layer, chloroform and acetone.Stirring settling, layer separation, distillation of process water.Addition of acetone, cooling, filtration, drying, sieving.

Chemical Reaction:



Cyanocobalamin

Molar mass: 1,356.373 g/mol

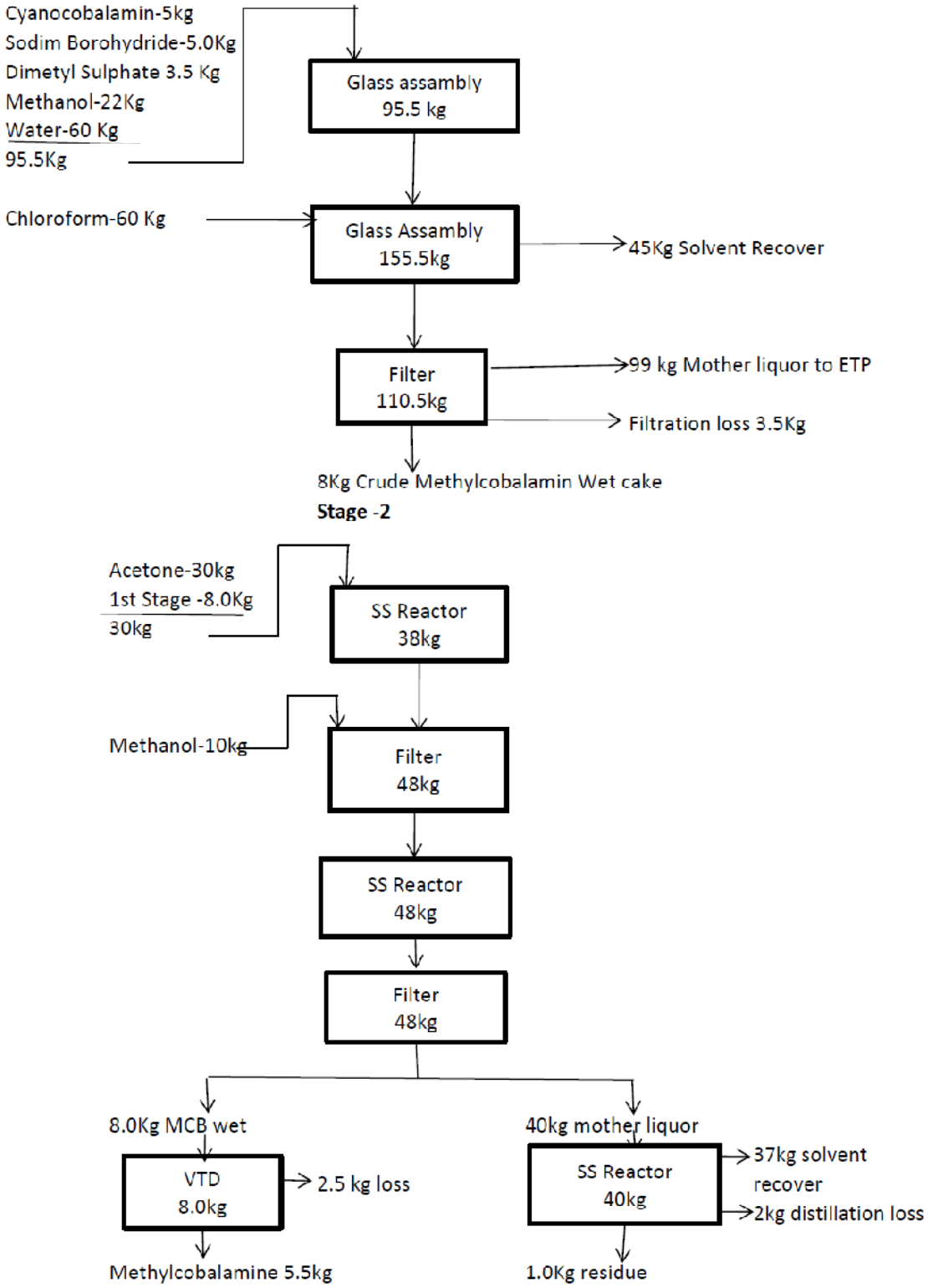
Formula: C63H89CoN14O14P

Methylcobalamin

Molar mass: 1,344.4 g/mol

Formula: C63H91CoN13O14P

Mass Balance:



ANNEXURE-IV

DETAILS OF WATER CONSUMPTION & WASTE WATER GENERATION

SR NO	DESCRIPTION	WATERCONSUMPTION (KL/Day)	WASTE WATER GENERATION (KL/Day)
1	Process	2.86	1.73
2	Boiler	6.0	0.6
3	Cooling	5.0	0.5
4	Washing	0.4	0.4
	Total Industrial	**14.26**	**3.23**
5	Domestic*	2.7	2.7
6	Gardening	0.8	--
	Grand Total	**17.76**	**5.93**

***** Domestic waste water will be disposed through septic tank & soak pit.

Note: Industrial waste water will be sent to CETP of M/s. PETL after primary & tertiary treatments.

ANNEXURE-V

DETAILS OF EFFLUENT TREATMENT PLANT

M/s. Lycos Chemtech proposes Effluent Treatment Plant (ETP) to be contained Primary and Tertiary Treatment Facilities. Treated effluent will send to Common Effluent Treatment Plant (CETP) of M/s. Panoli Enviro Technology Ltd. (PETL), Panoli for further treatment and disposal. Details of ETP are as follows.

First all non-toxic and biodegradable streams of wastewater shall pass through Oil & Grease Trap (OGT-01) where floating oil, grease and other floating material shall be manually removed from top and collected in O & G Collection Tank(OGCT-01). Thereafter effluent shall be collected in Equalization cum Neutralization Tank (ENT-01) where the continuous addition and stirring of Lime solution is done to maintain neutral pH of wastewater from Lime Dosing Tank (LDT-01) as per requirement by gravity. Pipe grid will be provided at bottom of the ENT-01 to keep all suspended solids in suspension and to provide proper mixing by air supplied through air blowers (B-01).

Thereafter, neutralized wastewater shall be pumped to Flash Mixer (FM-01). Alum and Polyelectrolyte shall be dosed from Alum Dosing Tank (ADT-01) and Polyelectrolyte Dosing Tank (PEDT-1) respectively by gravity into FM-01 to carry out coagulation by using a Flash Mixer. Thereafter, coagulated wastewater shall be settled in Primary Settling tank (PST-01). Clear supernatant from PST-01 shall be collected in Intermediate Sump(IS-01).

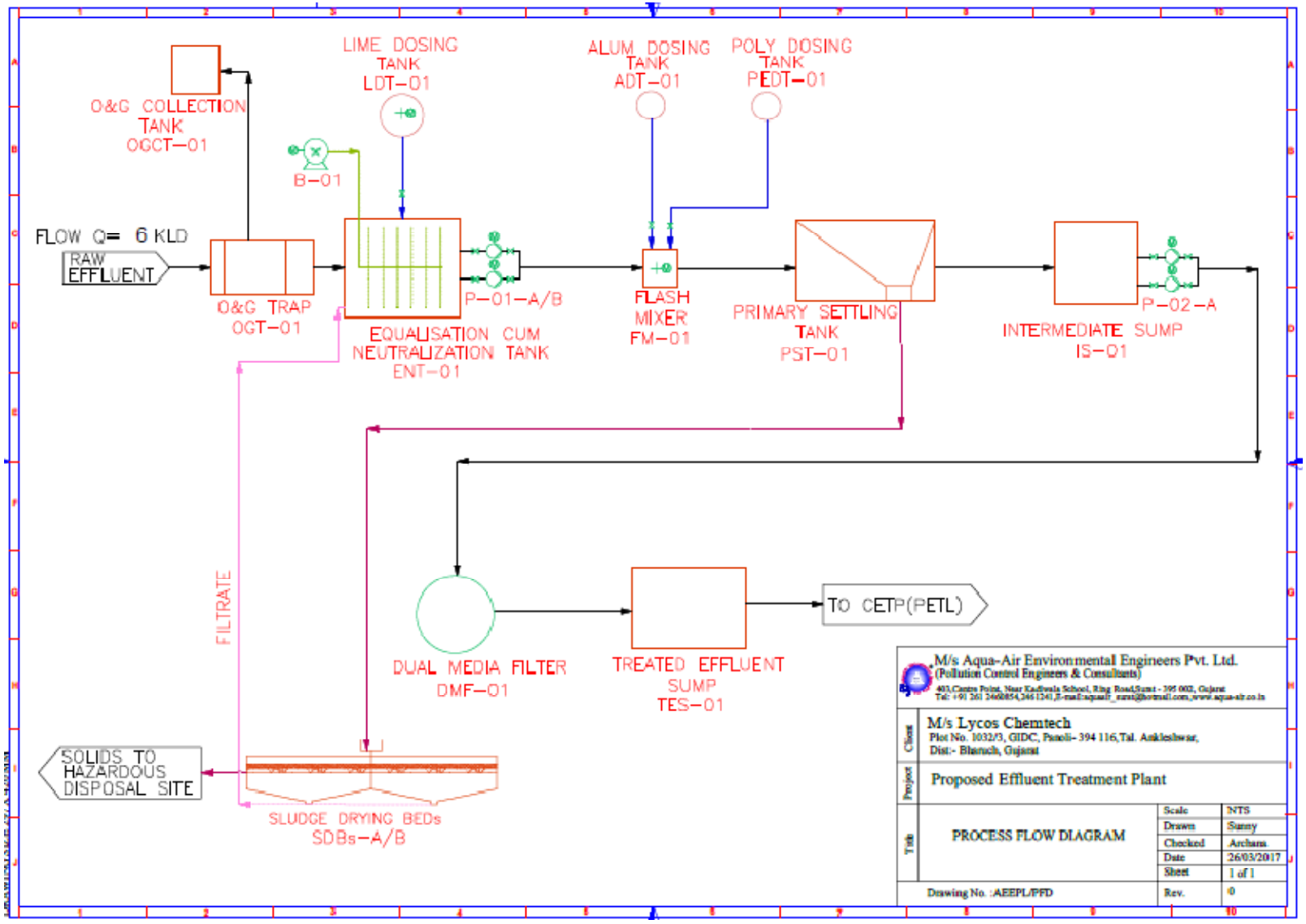
Treated effluent from IS-01 then passed through Dual Media Filter (DMF-01) to remove remaining SS from effluent. Then clear water shall be collected in treated effluent Sump (TES-01) before sent to Common Effluent Treatment Plant (CETP) of M/s. PanoliEnviro Technology Ltd. (PETL), Panoli for further treatment and disposal.

Sludge settled in PST-01 shall be sent to Sludge Drying Beds (SDBs-A/B) where, dewatering shall be carried out before storage in HWSA and ultimate disposal to TSDF. Leachate from SDBs-A/B shall be pumped back to ENT-01 for further treatment.

ETP Units:

Sr. No.	Name of unit	Size (m x m x m)	No.	MOC/ Remark
Flow = 6 KLD				
1	Oil & Grease Trap (OGT-01)	2.0 x 1.0 x 1.0	1	RCC M25
2	O & G Collection Tank (OGCT-01)	1.0 x 1.0 x 0.8	1	RCC M25
3	Equalization cum Neutralization Tank (ENT-01)	1.6 x 1.6 x 2.0	1	RCC M25
4	Flash Mixer (FM-01)	0.8x 0.8 x 1.5 LD	1	MSEP
5	Primary Settling Tank(PST-01)	1.5 x 1.0 x 1.2	1	MSEP
6	Intermediate Sump (IS-01)	1.5 x 1.0 x 1.2LD	1	MSEP
7	Dual Media Filter (DMF-01)	300 lit/hr	1	MSEP
8	Treated Effluent Sump (TES-01)	2.5 x 2.0 x 2.0	1	RCC M25
9	Lime Dosing Tank (LDT-01)	250 lit.	1	HDPE
10	Alum Dosing Tank (ADT-01)	250 lit.	1	HDPE
11	Poly Dosing Tank (PDT-01)	100 lit.	1	HDPE
12	Sludge Drying Beds (SDBs-A/B)	2.0 x 3.0	2	Bk. Mas. With PCC Bedding+ filling Media

PROCESS FLOW DIAGRAM:



ANNEXURE-VI

DETAILS OF HAZARDOUS WASTE GENERATION AND DISPOSAL

SR. NO.	TYPE OF WASTE	CATEGORY NO.	QUANTITY	DISPOSAL
1	ETP Sludge	34.3	4 MT/Month	Collection, Storage, Transportation and sent to common TSDF site for disposal.
2	Process Waste	28.1	5 MT/Month	Collection, Storage, Transportation and sent to common TSDF site for disposal.
2	Used Oil	5.1	30 Liter/Month	Collection, Storage, Transportation and sell to GPCB registered reprocessor/refiner
4	Discarded Drums/Bags	33.1	300 nos./Year	Collection, Storage, Decontamination, Transportation & given to GPCB authorized Vendor
5	Distillation Residue	20.3	2.7 MT/Month	Collection, Storage, Transportation and sentfor co-processing in cement industries or to CHWIF.

ANNEXURE-VII

DETAILS OFHAZARDOUS CHEMICAL STORAGE AND HANDLING

Sr. No.	Name of Hazardous chemical	Quantity		Places of its Storage (Storage tank /drums/cylinders/barrels)	No. of Storages	Places of its Storage	State	Type of Hazards	Control measures provided
		Max. that Can be Stored	Actually stored (Including in process & handling)						
1	Toluene	200 Liter	200 Liter	Drum	50#	Storage Area	Liquid	Flammable/ Toxic	• Closed handling and transferring systems for Hazardous chemicals. • Fire Extinguishers and absorbents will be available near storage area. • Drums to be stored on pallet with the suitable trap.
2	Methanol	200 Liter	200 Liter	Drum	50#	Storage Area	Liquid	Flammable	
3	Acetone	200 Liter	200 Liter	Drum	50#	Storage Area	Liquid	Flammable	
4	o-Xylene	200 Liter	200 Liter	Drum	50#	Storage Area	Liquid	Flammable	
5	IPA	200 Liter	200 Liter	Drum	50#	Storage Area	Liquid	Flammable	
6	Sodium Methoxide	200 Liter	200 Liter	Drum	50#	Storage Area	Liquid	Flammable	
7	n-Hexane	200 Liter	200 Liter	Drum	50#	Storage Area	Liquid	Flammable	
8	Chloroform	200 Liter	200 Liter	Drum	25#	Storage Area	Liquid	Toxic	
9	HCl (30%)	200 Liter	200 Liter	Drum	50#	Storage Area	Liquid	Corrosive	

ANNEXURE-VIII

DETAILS OF SOURCE OF EMISSIONS

Sr. No.	Stack/Vent attached to	Stack Height (meter)	Stack Diameter (meter)	Fuel name & Quantity	Type of Emission	APCM
Proposed						
1.	Boiler-I (1 TPH)	12	0.225	Agro Waste/Imported coal (1250 Kg/Day)	PM SO_2 NOx	Multicyclone Separator with bag filter
2.	Thermic Fluid Heater (1 Lac KL/hr.)	12	0.225	Agro Waste/Imported coal (500 Kg/Day)	PM SO_2 NOx	
3.	D.G. Set* (125 KVA)	5	0.1	Diesel 25 Liter/hr.	PM SO_2 NOx	--

*** To be used in emergency only.**

ANNEXURE-IX

SOCIO - ECONOMIC IMPACTS

1) EMPLOYMENT OPPORTUNITIES

The manpower requirement is expected to generate some permanent jobs and secondary jobs for the operation and maintenance of plant. This will increase direct/indirect employment opportunities and ancillary business development to some extent for the local population. This phase is expected to create a beneficial impact on the local socio-economic environment.

2) INDUSTRIES

Require raw materials and skilled & unskilled laborers will be utilized maximum from local area. The increasing industrial activity will boost the commercial and economical status of the locality, to some extent.

3) PUBLIC HEALTH

The company will regularly examine, inspects and tests its emission from sources to make sure that the emission will keep below the permissible limit. Hence, there will not be any significant change in the status of sanitation and the community health of the area, as sufficient measures will be taken under the EMP.

4) TRANSPORTATION AND COMMUNICATION

Since the existing Panoli GIDC estate is having proper linkage for transport and communication, the development of this project will not cause any additional impact.

In brief, as a result of the proposed project, there will be no adverse impact on sanitation, communication and community health, as sufficient measures will be proposed to be taken under the EMP. Hence, proposed project is not expected to make any significant change in the existing status of the socio - economic environment of this region.

ANNEXURE – X

PROPOSED DRAFT TERMS OF REFERENCE

1. **Project Description**

- Justification of project.
- Promoters and their back ground
- Project site location along with site map of 10 km area and site details providing various industries, surface water bodies, forests etc.
- Project cost
- Project location and Plant layout.
- Infrastructure facilities
- Water source and utilization including water balance.
- List of Products & their production capacity
- Details of manufacturing process of proposed products
- List of hazardous chemicals
- Storage and Transportation of raw materials and products.

2. **Description of the Environment and Baseline Data Collection**

- Micrometeorological data for wind speed, direction, temperature, humidity and rainfall in 5 km area.
- Other industries in the impact area
- Prevailing environment quality standards
- Existing environmental statusvis a vis air, water, noise, soil in 10 km area from the project site.
- Ground water quality at 5-6 locations within 10 km.
- Complete water balance

3. **Socio Economic Data**

- Existing socio-economic status, land use pattern and infrastructure facilities available in the study area were surveyed.

4. **Impacts Identification and Mitigatory Measures**

- Identification of impacting activities from the proposed project during construction and operational phase.
- Impact on air and mitigation measures including green belt
- Impact on water environment and mitigation measures
- Soil pollution source and mitigation measures
- Noise generation and control.
- Hazardous/Solid waste quantification and disposal.
- Control of fugitive emissions

5. **Environmental Management Plan**

- Details of pollution control measures
- Environment management team
- Proposed schedule for environmental monitoring including

6. **Risk Assessment**

- Objectives, Philosophy and methodology of risk assessment
- Details on storage facilities
- Process safety, transportation, fire fighting systems, safety features and emergency capabilities to be adopted.
- Identification of hazards
- Consequence analysis
- Recommendations on the basis of risk assessment done
- Disaster Management Plan.

7. **Information for Control of Fugitive Emissions**
8. **Information on Rain Water Harvesting**
9. **Green Belt Development plan**

ANNEXURE – XI

LAND POSSESSION / PLOT ALLOTMENT DOCUMENT

Gujarat Industrial Development Corporation
(A Govt. of Gujarat Undertaking)

Administrative office building,
Plot no. 624/B, GIDC, Ankleshwar.
Dist. Bharuch.
Phone: +91-02646-221351, 221451, 221403
Fax: +91-02646-251451
Email- rmank@gidcgujarat.org

No: GIDC/RM/ANK/ 292 Date: 23 JAN 2017
BY R.P.A.D

Sub: Transfer of Plot No.1032/3 area admeasuring 1040 sq.mtrs at Panoli Industrial Estate.

" OFFICE ORDER "

Plot No.1032/3 area admeasuring about 1040 sq.mtrs was transferred to M/s. Neel Kamal Company by virtue of final transfer order No.GIDC/RM/ANK/2259 dated 16-06-2016 in Panoli Industrial Estate. The Agreement was executed on dated 22-01-2007. The Licensee has applied to the Corporation for transfer of the said plot in favour of M/s. Lycos Chem Tech having partners 1) Shri Bhaveshkumar Vallabhbhai Gadhiya 33.34% 2(Smt. Ripal Samirbhai Parikh 33.33% 3) Smt.Reenaben Rupeshbhai Varasada 33.33%. Permission for transfer of plot, with certain terms and conditions has been issued by the Regional Manager, GIDC, Ankleshwar as per letter No.GIDC/RM/ANK/116 dated 10-01-2017.

The licensee has paid all dues of the Corporation up to March-2017. According to the policy of the corporation, you have paid Rs.2,93,280/- being 20% transfer fee on present land price & also paid Rs.43,992/- being 3% NU penalty on present land price. The Supplementary Agreement has therefore been executed between the licensee, transferee and corporation on dated 21-01-2017.

This permission will not be in any case considered as a permission for building bye-laws of the corporation. This transfer order will not be taken into cognisance as an order for regularization of unauthorized construction, if any unauthorized construction exist on the allotted property said can not be considered as authorized one and it shall be the sole responsibility of the trasnsferee to get such construction regularized or removed as per the building bye laws of the corporation.

The plot now therefore stands transferred in the name of M/s. Lycos Chem Tech having partners 1) Shri Bhaveshkumar Vallabhbhai Gadhiya 33.34% 2(Smt. Ripal Samirbhai Parikh 33.33% 3) Smt.Reenaben Rupeshbhai Varasada 33.33%. with effect from 21-01-2017.

...2...

The transferee's water requirement, power requirement and quantity of liquid Effluent discharge of the proposed project are as under:-

YEAR	WATER REQUIREMENT	POWER REQUIREMENT	DRAINAGE
First Year	3650 liters per day	40 HP	--
Second Year	3650 liters per day	40 HP	--
Third year	3650 liters per day	40 HP	--

Regional Manager
GIDC Ankleshwar

To
1)M/s.Lycos Chemtech
210 Centre Square B/h Sardar Patel complex
Dr Beck road, GIDC, Ankleshwar
2)M/s. Neel Kamal Company
Plot No.1032/3 Behind Rama Fertilizer
GIDC Panoli Dist.Bharuch

Copy Fwcs to :
1. Executive Engineer, G.I.D.C., Ankleshwar
2. SAO, GIDC, Ankleshwar
3. Deputy Executive Engineer GIDC Panoli
4. Chief Officer NA GIDC Panoli
5. DEO GIDC Ankleshwar

ANNEXURE – XII

CETP MEMBERSHIP LETTER

PANOLI ENVIRO TECHNOLOGY LIMITED

Plot No. 619-619/1, GIDC Estate, Panoli - 394116, Dist. Bharuch (Gujarat)
Ph. : (02646) 272822, Fax : (02546) 272022, e-mail : petlpanoli@gmail.com

International Standards Certification Pty. Ltd.

JAS-ANZ Accredited

MEMBERSHIP CERTIFICATE

Ref : PETL/21/2016

To Whom So Ever It May Concern:

This is to certify that **M/s. LYCOS CHEMTECH** having their unit located at **Plot No.1032/3**, GIDC Estate, Panoli-394116, Dist. Bharuch is member of our Common Effluent Treatment Plant (C.E.T.P.).

Their total booked quantity of waste water with PETL is as under :

01.	Industrial Effluent	:	03.33 -M^3/Day.
	Total Booked Qty.	:	**03.33 -M^3/Day**

For, PANOLI ENVIRO TECHNOLOGY LTD.

PANKAJ BHARWADA
CHAIRMAN

PANOLI ENVIRO TECHNOLOGY LTD.

Date : 29-12-2016
Place : Panoli

ANNEXURE – XIII

COMMON TSDF and CHWIF MEMBERSHIP LETTER

BHARUCH ENVIRO INFRASTRUCTURE LIMITED

Ref. BEIL/ANK/2017

11 February, 2017

To,
Lycos Chemtech
Plot No.1032/3,
GIDC, Panoli
Ankleshwar.

Sub : NOC for receiving Landfilling waste and Incinerable waste.

Dear Sir,

We have received your letter dtd.10-02-2017. We would like to inform you that we have no objection in granting you our membership.

We shall be accepting your **hazardous landfill waste Qty.20 MT/Year and Incinerable Waste Qty.1.2 MT/Year** subject to verification of quality and it should be as per GPCB authorization.

Thanking you

Yours faithfully,
For, BHARUCH ENVIRO INFRASTRUCTURE LTD.

AUTHORISED SIGNATORY

CIN No.: U45300GJ1997PLC032696
Works Office : Plot No. 9701-16 GIDC Estate, Post Box No. 82, Ankleshwar 393 002, Dist. : Bharuch (Gujarat)
Phones (02646) 253135, 225228 • Fax : (02646) 222849 • E-mail : panjwania@uniphos.com
Regd. Office : Plot No. 117-118, GIDC Estate, Ankleshwar 393 002,Dist.: Bharuch. (Gujarat)

BHARUCH ENVIRO INFRASTRUCTURE LIMITED

Ref. BEIL/ANK/2017

4 April, 2017

To,
Lycos Chemtech
Plot No.1032/3,
GIDC,
Panoli.

Sub : NOC for receiving Landfilling waste and Incinerable waste.

Dear Sir,

We have received your letter dtd.01-04-2017. We would like to inform you that we have no objection in granting you our membership.

We shall be accepting your **hazardous landfill waste Qty.115 MT/Year and Incinerable Waste Qty.56 MT/Year** subject to verification of quality and it should be as per GPCB authorization.

Thanking you

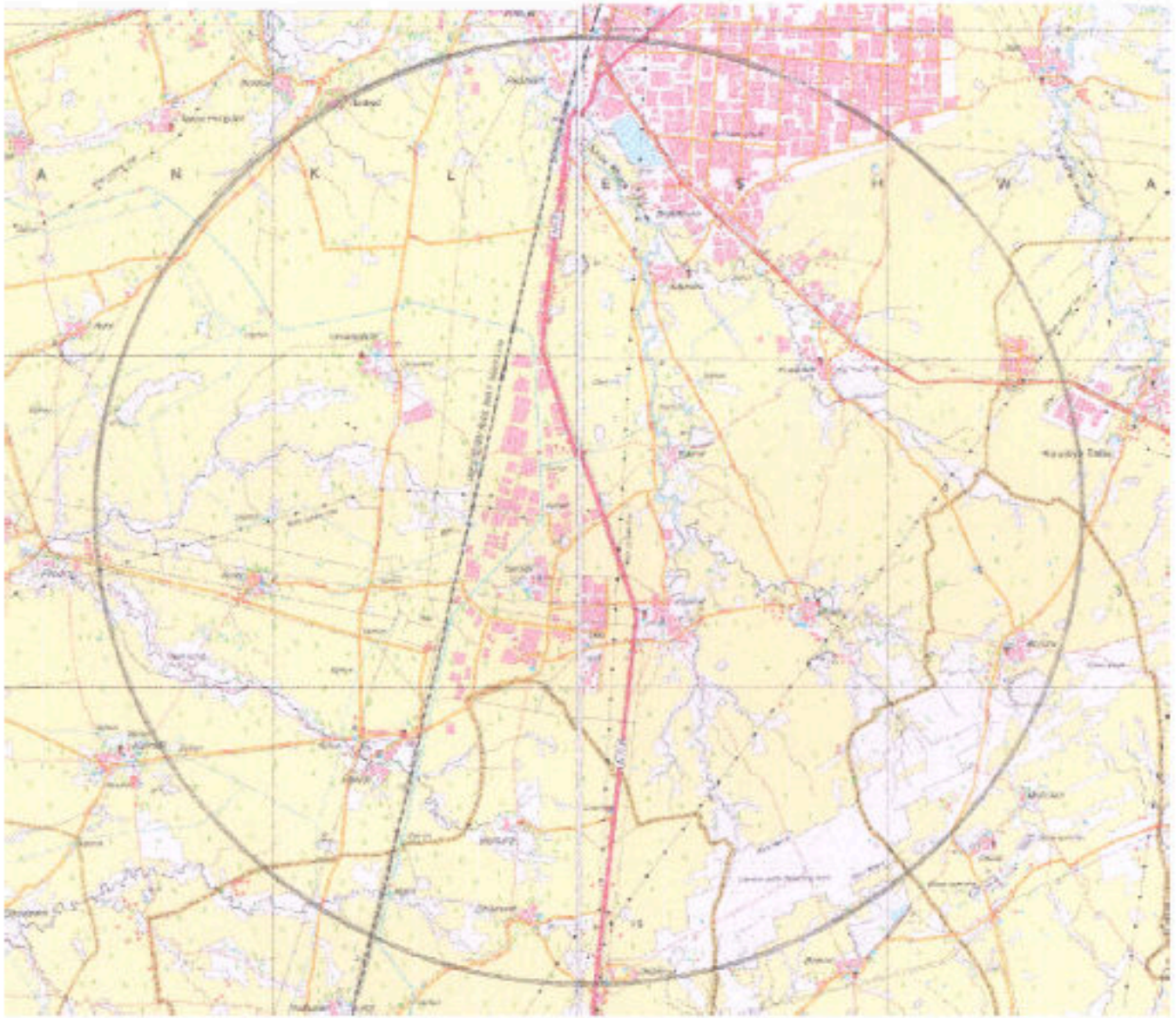
Yours faithfully,
For, BHARUCH ENVIRO INFRASTRUCTURE LTD.

AUTHORISED SIGNATORY

CIN No.: U45300GJ1997PLC032696
Works Office : Plot No. 9701-16 GIDC Estate, Post Box No. 82, Ankleshwar 393 002, Dist. : Bharuch (Gujarat)
Phones (02646) 253135, 225228 • Fax : (02646) 222849 • E-mail : panjwania@uniphos.com
Regd. Office : Plot No. 117-118, GIDC Estate, Ankleshwar 393 002,Dist.: Bharuch. (Gujarat)

ANNEXURE – XIV

TOPOSHEET



ANNEXURE – XV

GIDC LETTER FOR WATER SUPPLY

GUJARAT INDUSTRIAL DEVELOPMENT CORPORATION

(A GOVT. OF GUJARAT UNDERTAKING)

Dy. Executive Engineer
Fire station Building, 409/A, Industrial Estate, GIDC Panoli, Ta.Ankleshwar, Dist.Bharuch.

NO/GIDC/DEE/PNL/1498 Date- 1 /4/2017

To,
M/s .Laycos chem Tech
Plot No. /Shed No. 1032-3
GIDC, PANOLI

Sub:-Change in water requirement of **M/s. Laycos chem Tech** Plot No. /Shed No.**1032-3** at GIDC Panoli.

With reference to the above, it is to inform that GIDC may supply water **17.76KL/day** to the Industry as per GIDC water supply norms and GPCB consent if this Qty is approved by GPCB/MoEF.

Thanking You.

O/C

Dy. Executive Engineer
GIDC, Panoli.