SNF
SNF FLOPAM INDIA PVT. LTD.
Survey No 141 1 2 N 142 1, NH 8A East, Varsana,Gandhidham Kutch,
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Email: info@snfflopam-india.com Web: www.snf-group.com

SNF FLOPAM INDIA

To,

Date: 26/04/2019.

The Member Secretary(IND-2 Sector),
M/o Environment Forest and Climate Change
Indira Paryavaran Bhavan,
Aliganj, Jorbagh Road,
New Delhi-110003

Subject: Synthetic organic chemicals industry (dyes & dye intermediates; bulk by M/s SNF Flopam India Pvt Ltd at Survey No.141/1/2 and 142/1 National Highway 8A, Varsana, PO: Gopalpuri, Gandhidham Kutch (Gujarat) - For Environmental Clearance

.

Ref: Proposal No. IA/GJ/IND2/74435/2017.for environmental clearance, 38th EAC minutes of meeting held on 26th June 2018 and 41st EAC minutes of meeting held on 25th September 2018.

Respected Sir,

With reference to above mentioned subject I would like to draw your kind attention regarding proposal for synthetic organic chemicals industry (dyes & dye intermediates) at Survey No.141/1/2 and 142/1 National Highway 8A, Varsana, PO: Gopalpuri, Gandhidham Kutch (Gujarat) which was presented before the EAC committee meeting first time in 38th EAC meeting on 26-6-2018. The EAC, after deliberations, desired for inputs, clarifications and necessary actions in respect of the following:

(i) Discrepancy in the survey no and plot area vis-a-vis the Form-1 submitted and the ToR dated 7th July, 2017.

(ii) As per the ToR dated 7th July, 2017 and accordingly the public hearing conducted by the SPCB, was for Survey No.141/1/2 & 142/1 covering an area of 42 acres. Whereas, the present proposal involves more survey nos.139/1, 141/1/2, 142/1 & 147/1 having total area of 70 acres. As such, the said public hearing not in conformity with the EIA Notification, 2006, may not be acceptable.

(iii) Firm commitment from the concerned regulatory authority to meet the surface water requirement of 2945 cum/day.

2. In response to above additional details sought by Committee, we have submitted the reply dated 8th August 2018 **(Annexure-I)** online to the MoEF&CC and on the basis of reply the proposal was again presented in 41st EAC meeting on 25-09-2018, in which, **"The Committee, after deliberations, insisted for correction in public hearing proceedings to include the survey numbers 139/1 and 147/1 with the total area as 70 acres.** ***The proposal was, therefore, not taken forward for the needful.***

3. Further, I submit that at the time of submission of ToR application alongwith PFR and Layout plan we have mentioned total area as 70.33 Acre (42 Acre already utilized as industrial land and 28 Acre proposed for future expansion, total 70.33 Acre or 2,84,615 m^2)

SNF FLOPAM INDIA PRIVATE LIMITED Gujarat

SNFLH:15.09.18

which includes survey numbers 139/1 and 147/1. The ToR issued vide MoEF&CC letter No.J-11011/74/2017/-IA.II(I) dated 7th July, 2017 has also mentioned total area of land is 70 acres, however, the survey no. desired by EAC was not mentioned. Without mentioning the survey no. 139/1 and 147/1, in the ToR issued by the Ministry our company is not in a position to include/correct the survey no. in the Public Hearing dated 6th February, 2018 issued by the Gujarat Pollution Control Board, as desired by the EAC.

4. We had also presented at the time of Public Hearing Presentation (Page no. 2, 7 & 8) the total area break-up and the plant layout, which accumulates **to 2,84,615 m^2 or 70.33 Acres** of land. We had also submitted online Pre-Feasibility Report (section 3.8, page number 15 and 24) the total area break-up and the plant layout which accumulates **to 2,84,615 m^2 or 70.33 Acres** of land. The below Table for Survey Numbers that are integral part of SNF Flopam India Pvt Ltd, which was submitted at the time of ToR application as well as EC application.

Survey No.	Village Limit	Area
141/1	Varsana	22.11
139/P	Varsana	0.19
139/P1	Varsana	0.69
147/1	Padana	19.09
138/1/P2	Padana	19.19
143/P1	Padana	6.08
139/1	Padana	2.23
140/P	Padana	0.02
	Total Area: -	**70.33 (2,84,615 m^2)**

5. We request you to kindly look into the matter and give the opportunity to present the proposal before the EAC and issue the environmental clearance as early as possible. We honor your decision and looking forward to a positive reply.

Encl:-

(i) Copy of pre-feasibility report submitted at the time of ToR application
(ii) Copy of lay out plan submitted at the time of ToR application
(iii) Total break up of land submitted at the time of ToR application
(iv) Copy of land possession letter before the submission of ToR application
(v) EC Query reply to Expert Appraisal Committee for file No.IA-J-11011/74/2017-IA-II(I) dated 08/08/2018.

Yours truly,

SNF FLOPAM INDIA PRIVATE LIMITED Gujarat

M/s SNF Flopam India Pvt Ltd
(Shital Bapu Khot - MD)

SNF/CS.15.09.18

SNF FLOPAM INDIA Pvt Ltd.
Survy No.141-1-2-N-142-1
National Highway 8A East, Varsana
PO. Gopalpuri, Gandhidham Kutch,
Gujarat, 370 240 INDIA
Phone : +91 2836 313 311
www.snf-group.com

SNF FLOPAMINDIA

Date: 08/08/2018

To,
Expert Appraisal Committee
Indira Paryavaran Bhavan,
Aliganj, Jorbagh Road
New Delhi – 110 003

Kind Attn: Hon. Member Secretary

Subject : Additional details are sought by concerned Member Secretary after consideration of proposal in EAC Meeting

Ref :
1. **EC Application dated 4/Feb/2017 (subsequent TOR meeting dated 17/04/2017)**
2. **TOR Letter no: J-11011/74/2017-IA.II (I) dated on 07-July-2017**
3. **Public Hearing dated 06-Feb-2018.**

Respected Sir,

Our case was heard for Environmental Appraisal on 25/06/2018.

As per the additional information asked by committee, we are giving our point wise reply as below:

Sr. No.	Query	Replies
1.	As per the ToR dated 7th July, 2017 and accordingly the public hearing conducted by the SPCB, was for Survey No.141/1/2 &142/1 covering an area of 42 acres. Whereas, the present proposal involves more survey nos.139/1, 141/1/2, 142/1 & 147/1 having total area of 70 acres. As such, they said public hearing not in conformity with the EIA Notification, 2006, may not be acceptable.	In our TOR application and all correspondence and the copy of layout, we have mentioned total area as 70 Acre (42 Acre Already utilized as industrial land and 28 Acre Additional proposed). However, as the correspondence address, we have mentioned S no. 141/1/2 and 142/1 only.

For SNF FLOPAM INDIA PVT. LTD.

SHITAL KHOT
Managing Director

SNF FLOPAM INDIA Pvt Ltd.
Survy No.141-1-2-N-142-1
National Highway 8A East, Varsana
PO. Gopalpuri, Gandhidham Kutch,
Gujarat, 370 240 INDIA
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		The other survey numbers 139/1, & 147/1 are part of land parcel and shall be considered in our EC application. We have already given details of Land breakup area in PFR report, **section no. 3.8** during our application applied. EC Application dated 04/02/2017 (subsequent TOR meeting dated 17/04/2017), we have also given details and mentioned about Land Break-up area during Public Hearing Presentation held on 06/02/2018.
2.	Firm commitment from the concerned regulatory authority to meet the surface water requirement of 2945 cum/day.	Unit had applied for the Water supply connection for Gujarat Water Supply & Sewage Board (GWSSB) and we have received confirmation from authority for supply of water. Please refer **Annexure-I.**

In view of above kindly consider our justification and process application for grant of Environment Clearance for our proposed expansion.

Thanking You,

Yours faithfully,

For SNF FLOPAM INDIA PVT. LTD.

SHITAL KHOT
Managing Director

PREFEASIBILITY REPORT

FOR

SYNTHETIC ORGANIC CHEMICAL (PLOYACRYLAMIDE) MANUFACTURING PLANT

SNF FLOERGER®

PROJECT PROPONENT:

SNF Flopam India Pvt Ltd

Survey No 141-1-2-N-142-1
National Highway 8A East, Varsana
P.O. Gopalpuri, Gandhidham Kutch,
Gujarat, 370201 INDIA
skhot@snf-group.com

FEBRUARY 2017

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CHAPTER 1

1.1 Introduction to the Project and proponent

M/s. SNF Flopam India Pvt. Ltd., is subsidiary of SPCM SA France, holding company of SNF Floerger group; a Leader in manufacturing and processing water-soluble polymers, SNF has developed a range of more than 1000 products that help to preserve the natural resources, encourage recycling and improve efficiencies of industrial processes. The said polymers have several complementary functionalities: flocculation which enables solids to be separated from Liquids, viscosification and friction reduction.

The products are used in all the fields in which water present: drinking water production, wastewater treatment, sludge dewatering, oil and gas extraction, mining, agriculture, and the manufacture of paper, textiles and cosmetic preparation.

The company is backed by the support of hardworking professionals who hold immense experience and knowledge of the domain. They understand the varied industrial applications and adapt innovative approach to serve exact requirements of the clients/customers. The company have also constructed a modern infrastructure that forms the base of successful business growth. Apart from this, they have a widespread distribution network that helps to ensure prompt delivery schedules in the market.

The Indian subsidiary under consideration in this report, SNF FLOPAM is managed by Directors, Mr. Shital Bapu Khot, Mr. Pascal Remy and Mr. Arnaud Lefevre.

PolyAcrylamide has huge demand in manufacturing of water and wastewater treatment chemicals. Till now, this chemical is imported in India by water treatment chemical manufacturers. Now, SNF is coming forward to install a plant in Gujarat for manufacturing of PolyAcrylamide with the production capacity up to 2,58,000 MTPA. This project is being set up to cater Indian market as well as other clients in nearby countries.

CHAPTER 2
Project Description

2.1 Project Location

Location of the Project with Surroundings (within 500 m)

The project is being set up at Survey no. 141/1/2 and 142/1 of village: Varsana, Ta: Anjar, Dist: Kutch. The geographical location of the site is as follows:

Latitude: 23°10'10.03"N
Longitude 70°12'40.42"E

2.2 Criteria for Site selection

The project proponent wishes to install a large scale chemical manufacturing unit. Few Raw materials are to be imported from foreign countries and also the product has good potential in overseas market. Further, following are major forces which drove the decision of current location

- Vicinity of National highway
- Part of land already put to industrial purpose
- Availability of skilled and unskilled manpower
- Number of industries in surrounding area
- Residential zone is more than 2 km away
- Vicinity of environmental infrastructure; like CETP and CHWTF
- Vicinity of Kandla and Mundra ports
- The site is not covered in forest land, wildlife sanctuary and coastal zone.

2.3.1 Product Details

As per given profile, Acrylamide, PolyAcrylamide Powder, Poly Acrylamide Liquid and Poly Acrylamide Emulsions would be manufactured. Total manufacturing capacity shall be 2,58,000 MT/Year (considering 300 working days a year, 860 MT/Day).

The Details of products are given in following table:

Name of Product	Total capacity
Acrylamide	120000 MT/Year
Poly Acrylamide Powder	60000 MT/Year
Poly Acrylamide Liquid	42000 MT/Year
Poly Acrylamide Emulsions	36000 MT/Year
Total	2,58,000 MT/Year

For said group of products, Acrylamide is basic Raw material, which is also consumed in manufacturing of other products.

2.3.2 Raw Material Details

2.3.2.1 DETAILS OF RAW MATERIALS WITH QUANTITY FOR PRODUCT

Sr. No.	Name of Proposed Product	Name of Raw Materials	Raw Materials Quantity in MT/Year
1.	Acrylamide	Acrylonitrile	44,924
		Acrylic Acid	130
		Caustic Soda	130
		Demineralized Water	74,473
2.	Poly Acrylamide Powder	Acrylic Acid	14074
		Caustic Soda	14074
		Acrylamide	74940
		Process water	89462
3.	Poly Acrylamide Liquid	Acrylic Acid	9600
		Caustic Soda	5850
		Acrylamide	12600
		Process water	26750
4.	Poly Acrylamide Emulsions	Acrylic Acid	10800
		Caustic Soda	1800
		Acrylamide	9000
		Process water	26750
		Oil	6800

2.3.2.2 Raw Material Properties

Raw material spec.	Acrylonitrile	Acrylic Acid	Caustic Soda	Oil
Chemical name	Acrylonitrile	Acrylic Acid	Sodium Hydroxide solution	
Synonyms	Vinyl Cyanide, Propenitrile	Propenoic Acid Ethylenecarboxylic Acid	Lye, Sodium Hydrate, White Caustic, Caustic Soda, Soda Lye, Soda	

			Ash, Ascarite	
Molecular weight (gm/mole)	53.06	72.06	40.01	
Molecular formula	C_3H_3N	$C_3H_4O_2$	NaOH	
Physical form	Liquid	Liquid	Solid	
Colour	Colour less	Colour less	White pellets	
Solubility	Soluble in diethyl ether acetone. Very slightly soluble in cold water, hot water.	Soluble in cold water. Very slightly soluble in acetone. Insoluble in diethyl ether	Soluble in water	
Melting point, °C	-82	14	318	
Boiling point, °C	77.3	111	140	
Specific gravity	0.806	1.05	2.13 at 20 °C	

2.3.3 Source, Transportation and Storage of raw materials:

The Raw materials are procured from different manufactures/vendors across the world. All raw materials are transported to site in truck load by Road transport. At site, dedicated storage facility is provided for storage of raw materials.

Name of chemical	Source country / City	Mode of transport up to site	Mode of storage
Acrylonitrile	Overseas	Ship/Truck	Tank Farm: 2 tanks of 450 m^3 each at atmospheric pressure/temp
Acrylic Acid	Overseas	Ship /Truck	Tank Farm: 6 tanks of 250 m^3 each at 23 °C
Caustic Soda	Gujarat	Truck	Shed: 2 tanks of 360 m^3 each at atmospheric pressure
Oil	Overseas	Ship/Truck	Shed: 1 tank of 350 m^3

2.4 Manufacturing Process:

2.4.1 Acrylamide production

SNF has patented in 1977 with the High School of Agriculture of Montpellier (ENSAM) the first bacteria with a Nitrilasic group for the production of Acrylamide from Acrylonitrile. A licence has been given to Nitto (Japan) in 1982 and a co-operation established with this company from this date. The process SNF will use in China is a continuous fixed bacteria process giving the highest quality of Acrylamide necessary for the production of very high molecular weight, very high solubility polymers necessary for paper production, sugar production, EOR.

This process gives a far better industrial quality than:
- Copper process (by reactions at high temperature)
- Non fixed bacteria's (dissolution of bacteria cells interfering with the polymerisation)

Raw Materials used for production

The raw materials needed are the following:
Acrylonitrile: commercially available, ordinary grade (Oxazole : less than 5 ppm),

Water Demineralized, specific conductivity < 1 µ S/cm,
Acrylic Acid: commercially available
Caustic Soda: commercially available in 50% concentration;
Catalyst: Procured from overseas
A production line is designed for 60,000 T per year of dry product or 1,20,000 T per year of 50 % purity.

Product Name	Annual production (MT)	Daily production (MT)
AM 50%	1,20,000	360

Following raw materials are consumed for a production of above product

RawMaterials	MT/year
Acrylonitrile	44 924
DM Water	74 473
Caustic Soda	130
Acrylic Acid	130

Process Descriptions

- The main technologies and processes descriptions are given below for each product to be manufactured in proposed plant.
- The production line has a production capacity of 60,000 MT of dry Acrylamide per year.
- Acrylamide is stored in a day storage tank before being transfer to PAM production lines.
- Acrylamide is the product of the reaction between water and Acrylonitrile using a biocatalyst:

$$Acrylonitrile + Water \xrightarrow{Catalyst} Acrylamide$$

RAW MATERIALS

Raw materials coming by pipe are from the storage area are:

- Caustic Soda 50%
- Acrylic Acid 90%
- Acrylonitrile

Raw material coming by drums from cold room storage is:

- Bio-catalyst stored at 2 °C (1 – 4°C)

Sodium Acrylate is used to Ensure the stability of the catalyst and the conductivity in the reactors.

- Stabilize the Acrylamide produced to avoid polymerisation trouble in storage tanks.

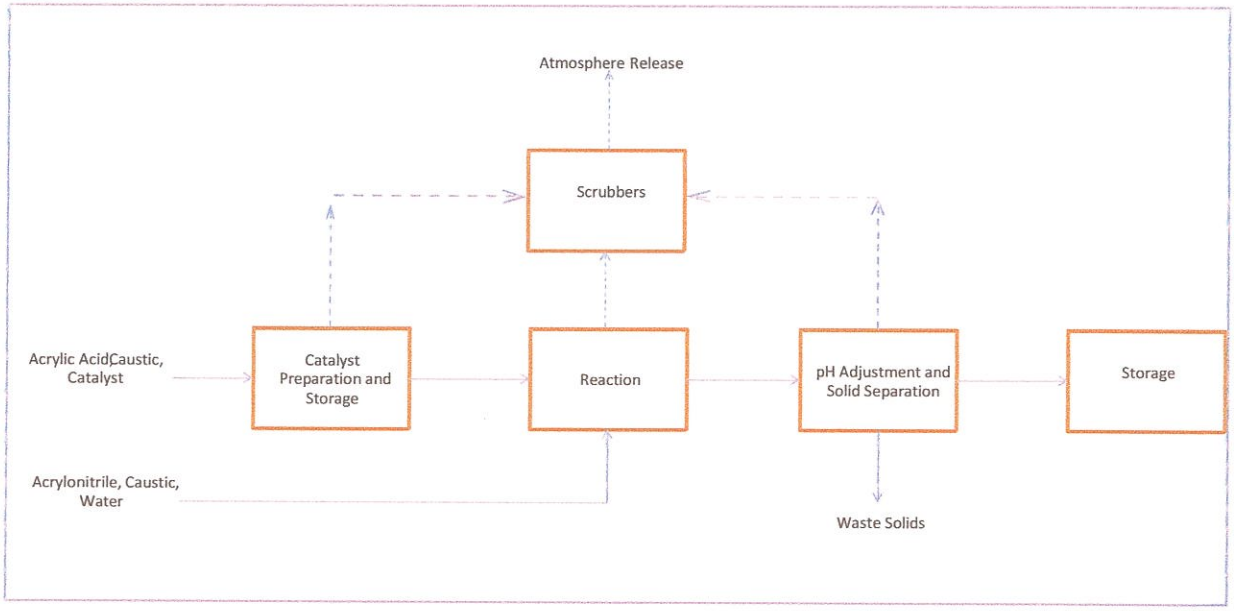
Sodium acetate is transferred to sodium Acrylate preparation tank by compressed air. Preparation of sodium acetate procedure is done to have sodium Acrylate solution preparation tank.
Acrylic acid solution is used to adjust the pH in pH adjustment tank.
Transfer from the drum to the tank is done with 20 L drums and adjustment is done by a dosing pump regulated by a pH-meter installed on the recirculation loop of the pH adjustment tank. One day tank of AA 90% may be installed to prepare 10% AA solution by dilution with demineralised water.
NaOH tank is used to maintain pH in reactors (in order to increase the catalyst activity). One day tank of 50% caustic soda may be installed to prepare the 2% NaOH solution by dilution with demineralised water

Reaction

Production of Acrylamide 50% is done in 4 reactors. All flowrates (Acrylonitrile, process water, catalyst, NaOH and AaNa + AcNa) and all reaction conditions (temperature and pH) have to be set accordingly to the operating conditions reported in relevant procedures.
Concentration in Acrylonitrile in reactors should not exceed specified limits to avoid catalyst deactivation.
Reaction is followed by 2 finishing tanks in order to convert all Acrylonitrile into Acrylamide and reach specification (C_{AN}< 100 ppm).
Sodium Acrylate and sodium acetate are added to stabilize the catalyst and the Acrylamide produced.
Caustic soda solution is used to control the pH.
Nitrogen can be injected on top of the reactors in case of fire.

It has been decided cool down the temperature to reduce polymerisation trouble risk.
To remove the heat of reaction and reach the specified temperatures, reactors are equipped with an inner coil. On reactors 1 and 2, external tubular heat exchangers have been put to improve cooling.

Block Diagram: The diagram below describes the Acrylamide production process.



POLYACRYLAMIDE POLYMERS

SNF is worldwide leader for the manufacture of PolyAcrylamides.
The know-how necessary for high quantity production is difficult to achieve in this field and the extrapolation lab - industrial production needs a lot of expertise obtained in nearly 50 years (1968-2016) of production in SNF.

2.4.2 PolyAcrylamide powder

RAW MATERIALS

A workshop will be designed to produce either 30 000 tons per year of copolymer anionic product or 20 000 tons per year of post hydrolyzed product.

- Copolymer product

Main raw materials needed to produce anionic polyAcrylamide are the following:

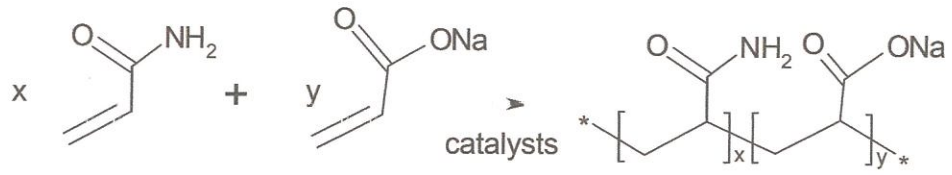
The production line is designed for 30,000 T/year for this product. Here below is the consumption for two powder workshops:

Rawmaterials	MT/yearly
Acrylamide	74940
Acrylic acid	14074
Caustic soda	14074
Process water	89462

Reaction

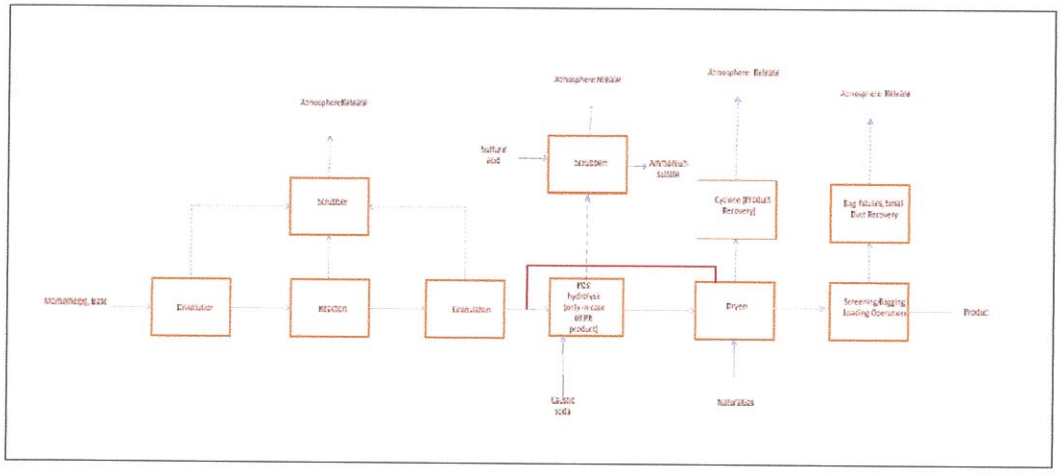
The solution is transferred into the reactor; it is then sparged with high purity nitrogen to remove oxygen (which is an inhibitor of the polymerisation).
Catalysts are added and the reaction starts.At the end of the reaction, the temperature is around 90°C; due to the exothermicity of the reaction (each percent of concentration of Acrylamide increases the temperature of 3°C).

Then, the gel is aged during 3 hours and after transferred into the granulator Anionic polyAcrylamides are produced by copolymerisation of Acrylamide and acrylic acid sodium salt.



Block diagram

PolyAcrylamide Powder Process Block Diagram is schematized below:



2.4.3 PolyAcrylamide liquid

RAW MATERIALS

Main raw materials needed to produce polyAcrylamide are the following:

The production line is designed for 42,000 T/year for this product.
Here below is the consumption for one Liquid workshops:

Rawmaterials	T/yearly
Acrylamide	12 600
Acrylic acid	9 600
Caustic soda	5 850
Process water	26 750

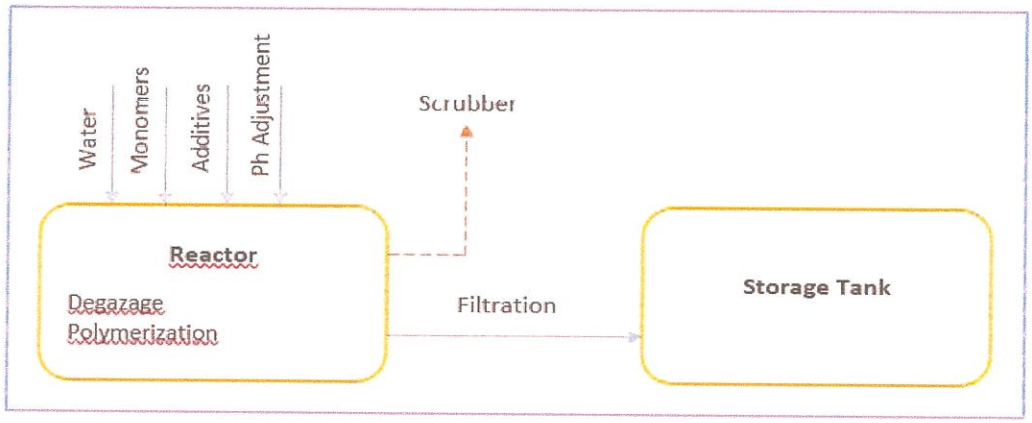
Reaction

Liquid PolyAcrylamide is manufactured by adding Acrylamic Acid and Acrylamide while stirring. After checking set pH and temperature, Nitrogen degassing is done from the bottom of the reactor. At the end of degassing, catalyst is added to start the polymerization. Nitrogen blanketing is maintained. Mass is allowed to cool after the reaction under stirring. After sampling and analysis, filtration is done and filled into containers.

Dispersants are manufactures by addition of Acrylic Acid into polymerization reactor and stirred. Sample is checked and blanked with Nitrogen. To start the reaction, catalysts are added into the reactor. When the reaction is over, mass is cooled and sample is taken and filtered before conditioning.

Block diagram

PolyAcrylamide Liquid Process Block Diagram is schematized below:



2.4.4 PolyAcrylamide emulsion

RAW MATERIALS

Main raw materials needed to are the following:

The production line is designed for 36,000 T/year for this product.
Here below is the consumption for three emulsion workshops:

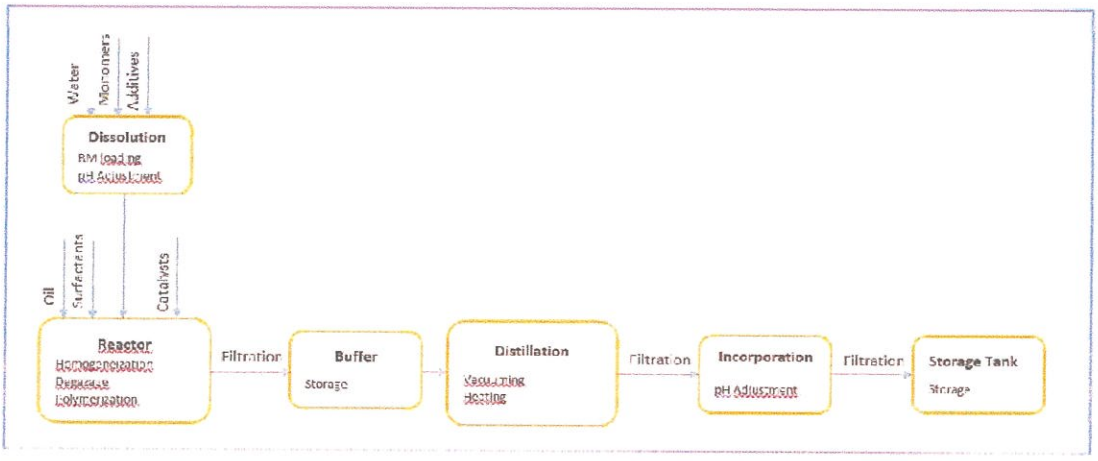
Rawmaterials	MT/yearly
Acrylamide	9 000
Acrylic acid	10 800
Caustic soda	1 800
Process water	12 600
Oil	6 800

Reaction

The solution is transferred into the reactor to make water suspension in the solvent. The suspension in homogenized through a rotator to get the right viscosity. Nitrogen degassing is done to remove Oxygen in the system which may inhibit the reaction.
Catalysts are added and the reaction starts. When the temperature reached is around 40°C; due to the exothermicity of the reaction. The temperature is maintained around 40°C by cooling.
Nitrogen degassing and Catalyst addition are continuous.
At the end of the reaction, Hydrophilic surfactant is introduced to the product soluble in water. PolyAcrylamide emulsions are filtered and packed.
In case of Distilled Emulsions:
The Emulsion base is manufactured as above and fed into an evaporator heated with steam. Distilled Emulsions are collected and conditioned. Solvent is recycled in the process.

Block Diagram

PolyAcrylamide Emulsion Process Block Diagram is schematized below:



2.5 Utilities Requirement

All utilities required for the project would be developed in the existing facility and the utility requirements are as under.

Sr. No.	Particulars	Consumption	Source
1	Power Consumption	16300 kW	PGVCL
2	Proposed total fresh water Requirement	1482 KL/day	GWIL
3	Natural Gas	2200 Nm^3/Hr	Local supply

2.6 List of machinery

2.6.1 Powder Plant

For 2 powder lines

Item	Specification	Material	Quantity
Dissolution tank	30 m^3	SS304L	8
Reactor	15 MT	SS304L	16
Knife granulator	12 T/hr		4
Paddle dryer	5 m	SS304L	2
Cyclone	2240 mm diameter	SS304L	4
Fluidized bed dryer	17m^2	SS304L	4
Cyclone	1600 mm diameter	SS304L	20
Powder hopper	9 m^3	SS304L	12
Roll grinder			4
Vibrated sifter			4
Blender	3 MT	SS304L	4
Bagging machine			2
Bulk bags machine			2

2.6.2 Acrylamide Plant:

Per line

Item	Specification	Material	Quantity
Reactors	24 m^3	SS304L	4
Finishing Tank	24 m^3	SS304L	2
Product Liquid Receiver Tank	30 m^3	SS304L	1
Day Tank + Off-spec	200 m^3	SS304L	3 + 1
Reactor pump	120 m^3/h		2
Finishing tank pump	20 m^3/h		1
Reactor stirrer		SS304L	6

2.6.3 Liquids Plant:

Per line

Item	Specification	Material	Quantity
Reactors	30 T	SS304L	2
Reactors	20 T	SS304L	1

2.6.4 Emulsions Plant

Per line

Item	Specification	Material	Quantity
Dissolution Reactors	20 T	SS304L	3
Reactors	20 T	SS304L	3
Buffers	40 T	SS304L	3
Distillation Reactors	20 T	SS304L	3
Incorporation Rectors	27 T		3

2.7 Air Pollution Sources

2.7.1 Details of Proposed Air Pollution Sources

FLUE GAS EMISSION				
Sr. No.	Type of Emission	Fuel	APCM	Details of Stack
1.	Boiler / Heater	Natural Gas	None	12 m

Note: Natural gas is a clean fuel therefore; there is no requirement of APCM.

FLUE GAS EMISSION			
Sr. No.	Type of Emission	APCM	Details of Stack (m)
1.	Powder dissolution Vessels	Scrubber	12 m
2.	Powder Reaction Vessels	Scrubber	12 m
3.	Powder Dryers	Scrubber	12 m
4.	Finish goods Tank – 1	None	12 m
5.	Finish goods Tank – 2	None	12 m

FLUE GAS EMISSION			
Sr. No.	Type of Emission	APCM	Details of Stack (m)
6.	Emulsion product line	Scrubber	12 m
7.	Liquid production line	Scrubber	12 m

2.8 Water balance

(Category-wise water consumption and wastewater generation)

Sr. No.	Source	Water Consumption (KL/Day)	Wastewater Generation(KL/Day)
		Proposed Quantity	Proposed Quantity
A	Industrial		
1.	Process	1095	17
2.	Boiler	5	1
3.	Cooling	240	80
4.	Washing	133	133
	Industrial Total	1473	231
B	**DomesticTotal**	9	8
	Total	1482	239

2.9 Manpower Requirement

Required specialized man power & talent would be recruited / hired locally and supporting services would be made available from our existing plant. Approximately 125 people will be employed on company pay-roll. Further, for ancillary activities and supporting services, approx. 125 more people would get direct employment. In addition, there would be indirect employment in various other activities.

CHAPTER 3
Site Analysis
3.1 Connectivity

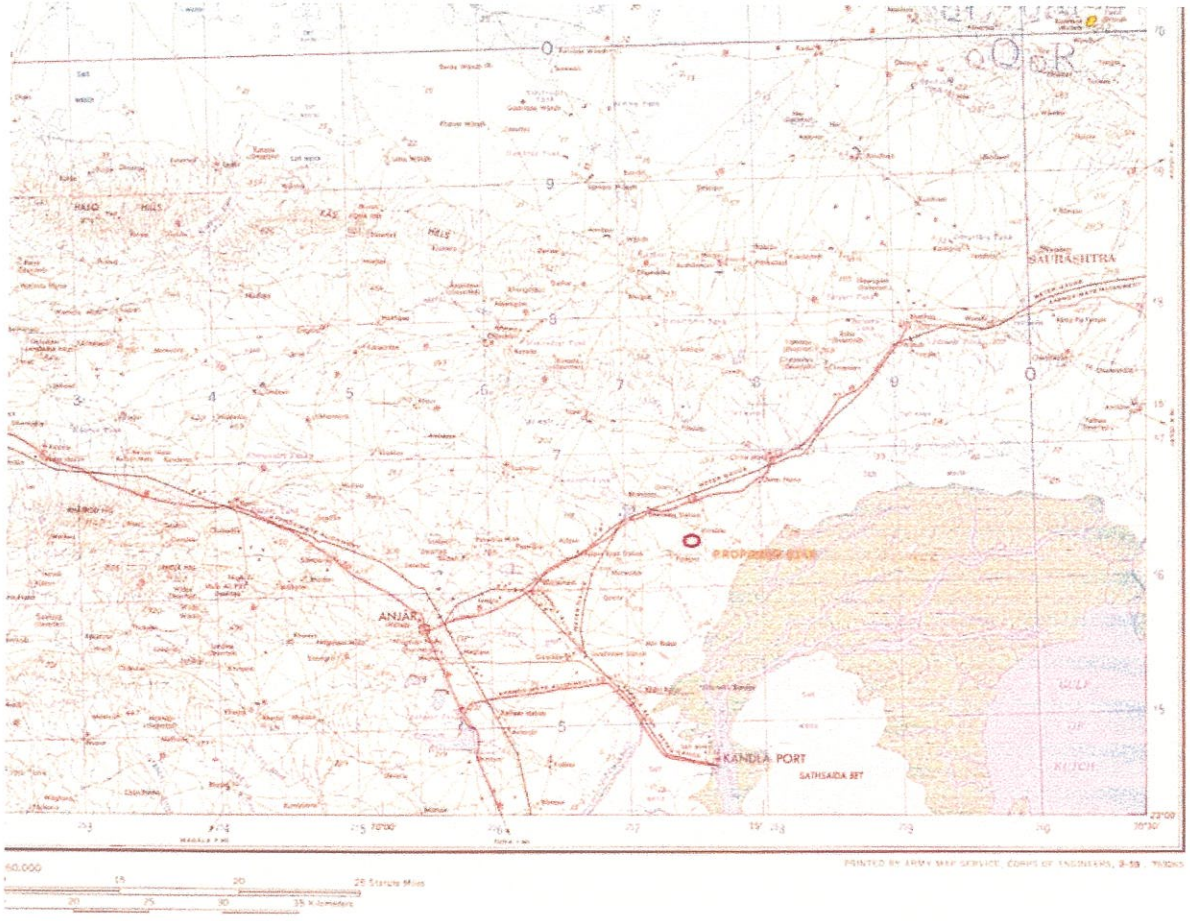
The site is only 1 km away from National Highway 8A connecting Bhachau to Gandhidham. Nearest Airport is Bhuj, which is approximately 55 km away from site. Nearest railway station is Bhachau, which is approximately 12 km away from site. Nearest port is Kandla, which is approximately 25 km away from site.

3.2 Existing Land Use Pattern

Currently the land (42.02 Acres) is occupied by Project Proponent. No agricultural activities are done on this land. Further, adjoining land of 28.31 Acres have been occupied and will be converted to industrial land as per prevailing norms. The same shall be merged in layout for final utilization.

3.3 Topography

The area is flat in nature. It is a build up plot. The average elevation above mean sea level is 12 m. Toposheet of the area covering site is as follows:



3.4 Social Infrastructure Available:

The social infrastructure available at Gandhidham is listed below.

- Housing colonies
- Public School
- ITI center
- Healthcare Centre
- Children's Park
- Community Centers
- Pharmacy
- Market
- And all very well developed urban facilities

3.5 Detail of CSR activity

It will be ensured that the unit contributes to the locally arranged Social welfare activities.

The land has been recently procured by client and hence it is too early to plan CSR activity. However, during the EIA study and based on baseline study, required gap analysis would be carried out and appropriate CSR activity will be carried out.

3.6 Emergency management services

Logistic facility /Tel Nos.	Destination	Distance km.
Nearest Hospital	Rambaug Government Hospital, Gandhidham	16 KM
Fire Brigade (101)	Gandhidham fire Brigade	15 KM
Nearest Police Station (100)	Gandhidham Police Station	16 KM

The unit will establish Emergency response team to take care of emergency. Periodical mock-drills will be arranged and people will be trained. Assembly points will be defined on layout map and awareness on this will be created.

3.7 Rehabilitation & Resettlement Plan

The land is already in the possession of the project proponent. The NA permission will be obtained for additional land. There is no human settlement on newly proposed land. Therefore, resettlement and rehabilitation is not involved.

3.8 Land Use Breakup

This plant will be located in Survey No 141-1-2-N-142-1, having an area of 42.02 +28.31 acres.

The land currently procured is already been developed as an industrial unit with some infrastructure ready to use. Newly procured land will be developed for future expansion after getting necessary permission.

In all the cases, minimum 33 % land will be allocated for development of green belt.

Particular	**Detail**
Manufacturing facility	34,726 m^2
Staff Quarter & Canteen	8646 m^2
Storage Area	5670 m^2
Electrical Sub Stations	4552 m^3
Admin building	600 m^2
Green belt (33 %)	56,000 m^2
Kept for future expansion	1,74,421 m^2
Total Land sq. m	2,84,615 m^2

CHAPTER 4

Proposed Environmental Infrastructure

The company will take into account all environmental aspects for expansion also so that no pollution hazard is ever created in and around the plant. Every effort is being made to keep zero air pollution as well as water pollution. In addition to the above, care has been taken to provide green belt around the plant.

4.1 Management of Domestic Waste Water

The domestic effluent (8000 Liter/day) shall be disposed through septic tank/ soak pit.

4.2 Management of INDUSTRIAL WASTE Water

The industrial effluent generation is 158 m^3/day; out of which approximately 133 m^3/day effluent from washing activity and other is from ancillary activities like cooling tower and boiler blow downs. Total effluent shall be treated at inhouse ETP and it(meeting GPCB norms) will be either re-used for suitable purposes or would be used for plantation within premises.

The product-wise quantity of water consumption and wastewater generation is as follows:

Acrylamide

Waste Description	Classification	Treatment	Quantity (MT/d)	Composition
Sanitary	-	Sanitary waste water treatment	4	COD 650 mg/l TSS 587 mg/l
Floor cleaning		sent to sewage after pH adjustment		
Cooling tower tower blowdonw			155	COD** 43,7 mg/l TDS** 150 mg/L
Reverse osmosis concentrate	-	sent to sewage after pH adjustment	50,4	**
Cross flow filter cleaning	-	sent to sewage after pH adjustment	20,75*	TOC : 130 ppm (AM 260 ppm) NaOH 0,3% Catalyst cell 0,3 %
AM DIATOMITE HYDRATION			0	

Liquid

Waste Description	COD	Treatment	Quantity (T/y)
Waste Water from process	2000 - 3000 mg/l		8400
Floor cleaning + Sanitary	< 2000 mg/l	sent to sewage	2800
Cooling tower tower blowdown	300 mg/l		2800
Waste water after reactor cleaning	2000 mg/l	To Water Treatment Station	10000

Powder

Waste Description	COD	Treatment	Quantity (T/d)
Floor cleaning + Sanitary	2000 mg/l	sent to sewage	1
Cooling tower tower blowdown			0
Waste water after reactor cleaning	-	To Water Treatment Station	Not Applicable

Emulsion

Waste Description	COD	Treatment	Quantity (T/y)
Waste Water from process + reactor cleaning	15000 mg/l		18000
Floor cleaning + Sanitary	< 2000 mg/l	sent to sewage	6000
Cooling tower tower blowdown	300 mg/l		6000

Description of Effluent Treatment process

The incoming effluent will be collected in equalization tank for homogenization of different effluent streams. After equalization it will go to flash mixer by gravity, where chemicals dosing takes place and physico-chemical treatment is given. After flash mixer, effluent is taken to flocculation tank fitted with Flocculator. Here, coagulation & flocculation will take place. The sludge generated during chemical treatment shall be removed in primary settling tank. In primary settling tank, settlement of effluent takes place and generated sludge shall be disposed to sludge drying bed.

The supernatant from primary settling tank shall flow to aeration tank for further biological treatment. The supernatant from aeration tank will go to secondary settling tank by gravity for settling. From the secondary settling tank, the supernatant shall be collected in treated water tank. The sludge from second settling tank will also be sent to sludge drying bed, where sludge gets dried.

For polishing treatment, the treated effluent shall be pumped to pressure sand filter & carbon Filter for removal of suspended solids & residual organics. The outlet from filters shall be sent for final disposal.

Sr. No	Description	Nos	Capacity, m^3
1	Equalization Tank	1	150
2	Flash Mixer	1	10
3	Flocculator	1	10
4	Primary Settling Tank	1	20
5	Aeration Tank	1	150
6	Secondary Settling Tank	1	20
7	Treated Water Tank	1	100
8	Pressure Sand/Carbon Filter	1+1	1.0 m dia each
9	Sludge Drying Beds	4	1. 5 X1.5 X 4 nos.

The schematic flow diagram is represented in Annexure.

4.3 Air Quality Management:

The source of air pollution is Boiler/Heater, which will consumes natural gas (2200 Nm3/Hr). Plant area has well ventilated, cross air flow and exhaust fans have been provided for extra air flow.

4.4 Solid & Hazardous Waste Management

The details of hazardous wastes generation from the proposed project & its management & Handling are listed in the following tables. All the requirements of hazardous waste rules shall be complied with.

Details of Hazardous & Other Waste Rule as per 2016

Detail of Hazardous Waste	Category	Total Quantity
Bag filter ash	35.1	20.5 MT/Yr
Catalyst empty bags	33.1	2 MT/Yr
Glass contaminated Lab equipment	23.1	2.75 MT/Yr
ETP Sludge	35.3	60 MT/year

4.5 Hazardous Chemicals Details

TABLE of MSDS properties for RM

Trade Name	*Common Chemical name*	*IUPAC nomenclature*	*Physical State*	*M (g/mol)*	*Boiling point (°C)*	*Fusion point (°C)*	*Density kg/m3*	*Viscosity (mPa.s)*	*Vapour Pressure (kPa)*	*Flash Point (°C)*	*LEL %vol*	*HEL %vol*	*SEL 30 min(ppm)*	*SEL 1h(ppm)*	*DL50 Oral (rat) mg/kg*	*OES/TWA/VME (ppm)*
Acrylamide 50%	Acrylamide	Prop-2-enamide	Liquid	71.08	98.8-104.4	12-14 (Crystallization)	1040	2,7	2,93 at 25°C	NA					490-565	0,1
Acrylic Acid Glacial	Acrylic Acid	Prop-2-enoic acid	Liquid	72.06	141	13	1049	1,149	0,529 at 25 °C		3,9	19,8		750	617-1405	2
Acrylic Acid 90% in water	Acrylic Acid	Prop-2-enoic acid	Liquid	72.06	111	2	1060	2,2	16 at 20°C	72°C	3,9	19,8		750	617-1405	2
Acrylic Acid 30% in water	Acrylic Acid	Prop-2-enoic acid	Liquid	72.06	111	2	1060	2,2	16 at 20°C	72°C	3,9	19,8		750	617-1405	2
Acrylic Acid 10% in water	Acrylic Acid	Prop-2-enoic acid	Liquid	72.06	111	2	1060	2,2	16 at 20°C	72°C	3,9	19,8		750	617-1405	2

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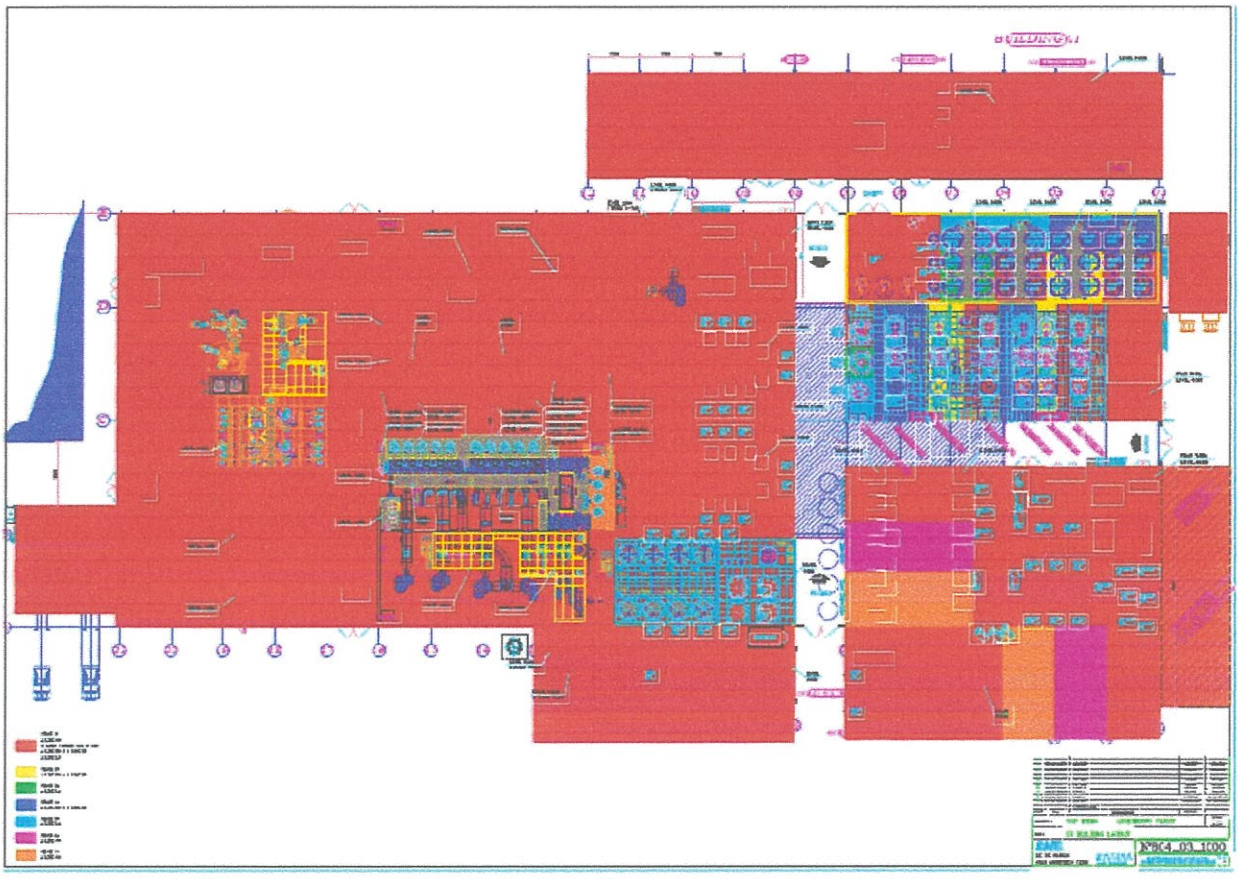
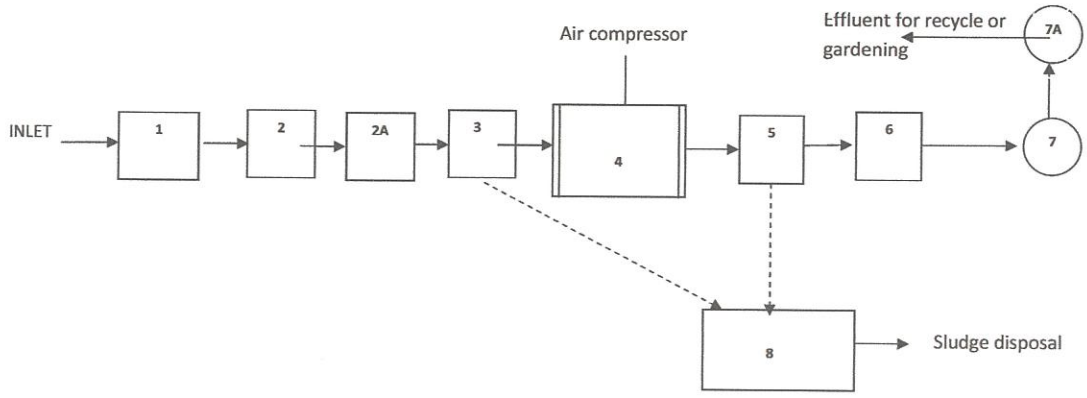


Line Diagram Of Effluent Treatment Plant



Note: All Dimensions are in meter

Sr.No.	Description of unit	Capacity
8	Sludge drying beds	1.5 X 1.5 X 4 nos
7/7A	Pressure sand / Carbon Filter	1.0 m dia each
6	Treated Water Tank	100
5	Secondary Settling Tank	20
4	Aeration tank	150
3	Primary Settling Tank	20
2A	Flocculator	10
2	Flash mixer	10
1	Equalization Tank	150

Unit:	SNF Flopam India Pvt ltd, Kutch, Gujarat		
Project:	Conceptual Design of Effluent Treatment Plant		
Drawing:	Flow diagram of Effluent Treatment Plant		
Date: 24/02/2017	Chkd: M.N.JAIN	Drawn	Drg. No. EET/New/2017/02

Presentation
for
Terms of Reference
to
Expert Appraisal Committee
for
Synthetic Organic Chemicals Project
of
M/s. SNF Flopam India Pvt Ltd
S. No 141/1/2 and 142/1, National Highway 8A, Varsana,
Ta: Gandhidham Kutch, Gujarat, 370201
(Case No. IA/GJ/IND2/62913/2017)

Date : 17/04/2017 **Agenda No. 22.4.6**

Consultant :
ECO-CARE SOLUTIONS
306-307, 3rd floor, Dwarkesh Complex,
Sun Pharma Road, Atladara, Vadodara (Gujarat)

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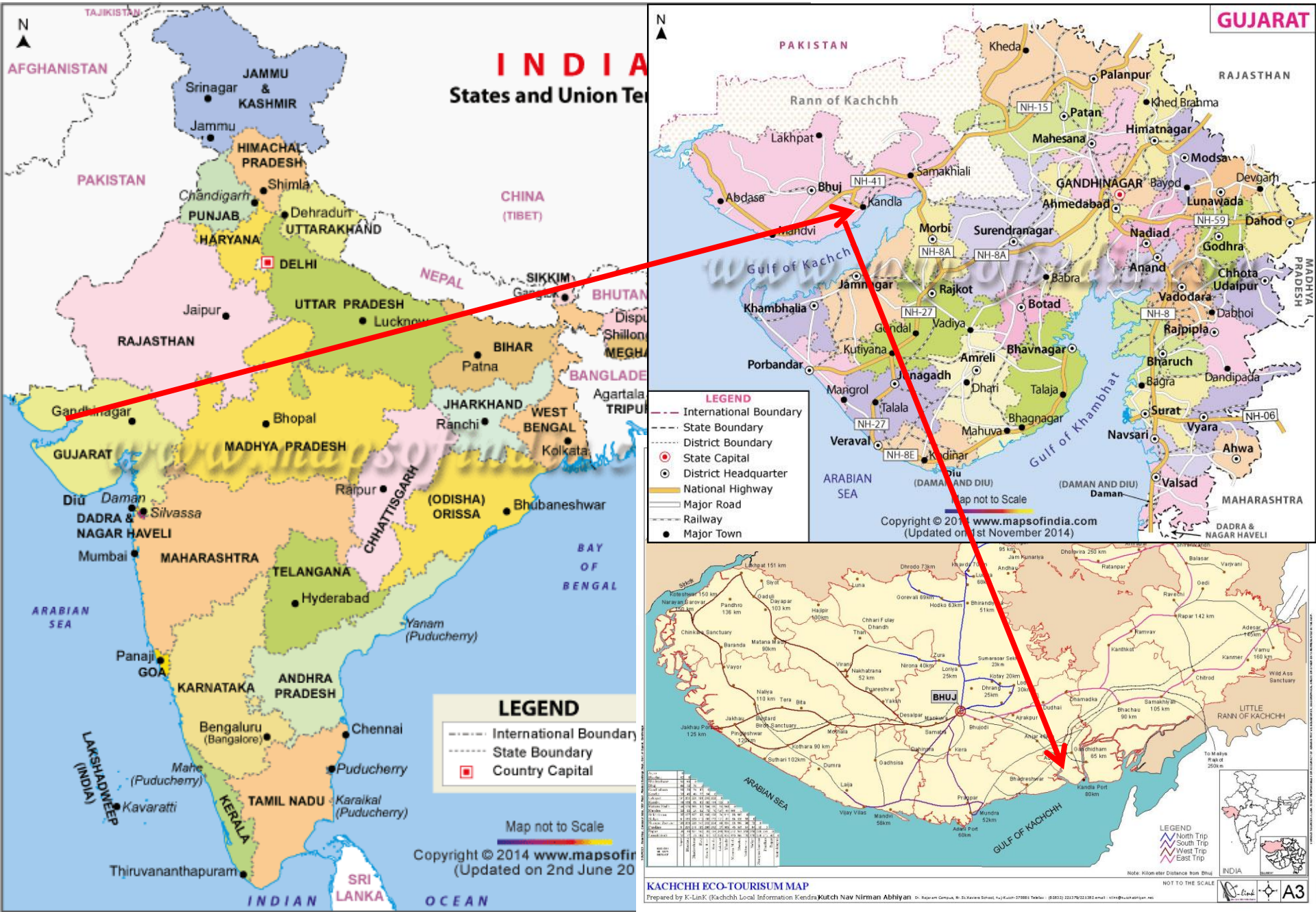
Project Proponents

- **M/s. SNF Flopam India Pvt. Ltd.**, is subsidiary of SPCM SA France, holding company of SNF Floerger group; a Leader in manufacturing and processing water-soluble polymers, SNF has developed a range of more than 1000 products that help to preserve the natural resources, encourage recycling and improve efficiencies of industrial processes.
- The said polymers have several complementary functionalities: flocculation which enables solids to be separated from Liquids, viscosification and friction reduction.
- The products are used in all the fields in which water present: drinking water production, wastewater treatment, sludge dewatering, oil and gas extraction, mining, agriculture, and the manufacture of paper, textiles and cosmetic preparation.
- Polyacrylamide has huge demand in manufacturing of water and wastewater treatment chemicals.
- Till now, this chemical is imported in India by water treatment chemical manufacturers. Now, SNF is coming forward to install a plant in Gujarat for manufacturing of Polyacrylamide with the production capacity up to 2,58,000 MTPA. This project is being set up to cater Indian market as well as other clients in nearby countries.
- The main product is Polyacrylamide, then it will be processed further to get its derivative, i.e. liquid, powder or emulsion as per the requirement

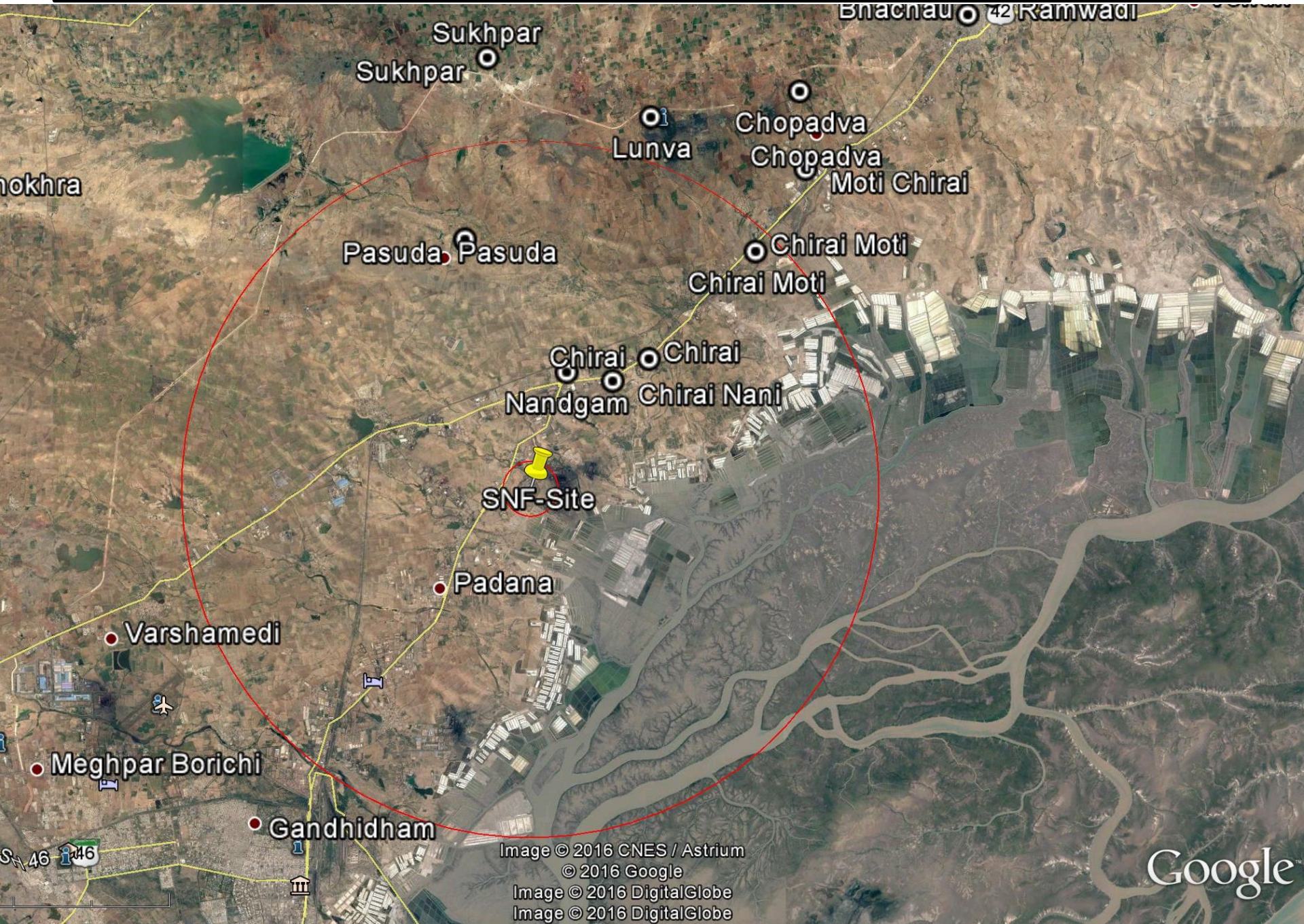
GENERAL INFORMATION

Name and of the Project	**M/s. SNF Flopam India Pvt Ltd** Survey No 141/1/2 and 142/1, National Highway 8A, Varsana, PO: Gopalpuri, Ta: Anjar, Kutch, Gujarat, 370201
Has any construction work started at site?	No Project proponent has purchased old cylinder manufacturing unit (Everest Kanto Cylinder), where required modification will be done after getting Environment clearance
Details of Applicant	
Full name	Mr. Shital Khot - Managing Director
Address:	**M/s. SNF Flopam India Pvt Ltd** S. No 141/1/2 and 142/1, National Highway 8A, Varsana, PO: Gopalpuri, Gandhidham Kutch, Gujarat, 370201 skhot@snf-group.com
Phone	+91 9604791254
Website	www.snf-group.com
Type of Application	New (first application for EC)
Is **land** procured or to be procured?	Land already procured

Location of site on India and Gujarat Map



SATELLITE IMAGE OF SITE AND SURROUNDING (10 Km)



SATELLITE IMAGE OF SITE 500 m from periphery

Site selection Criteria

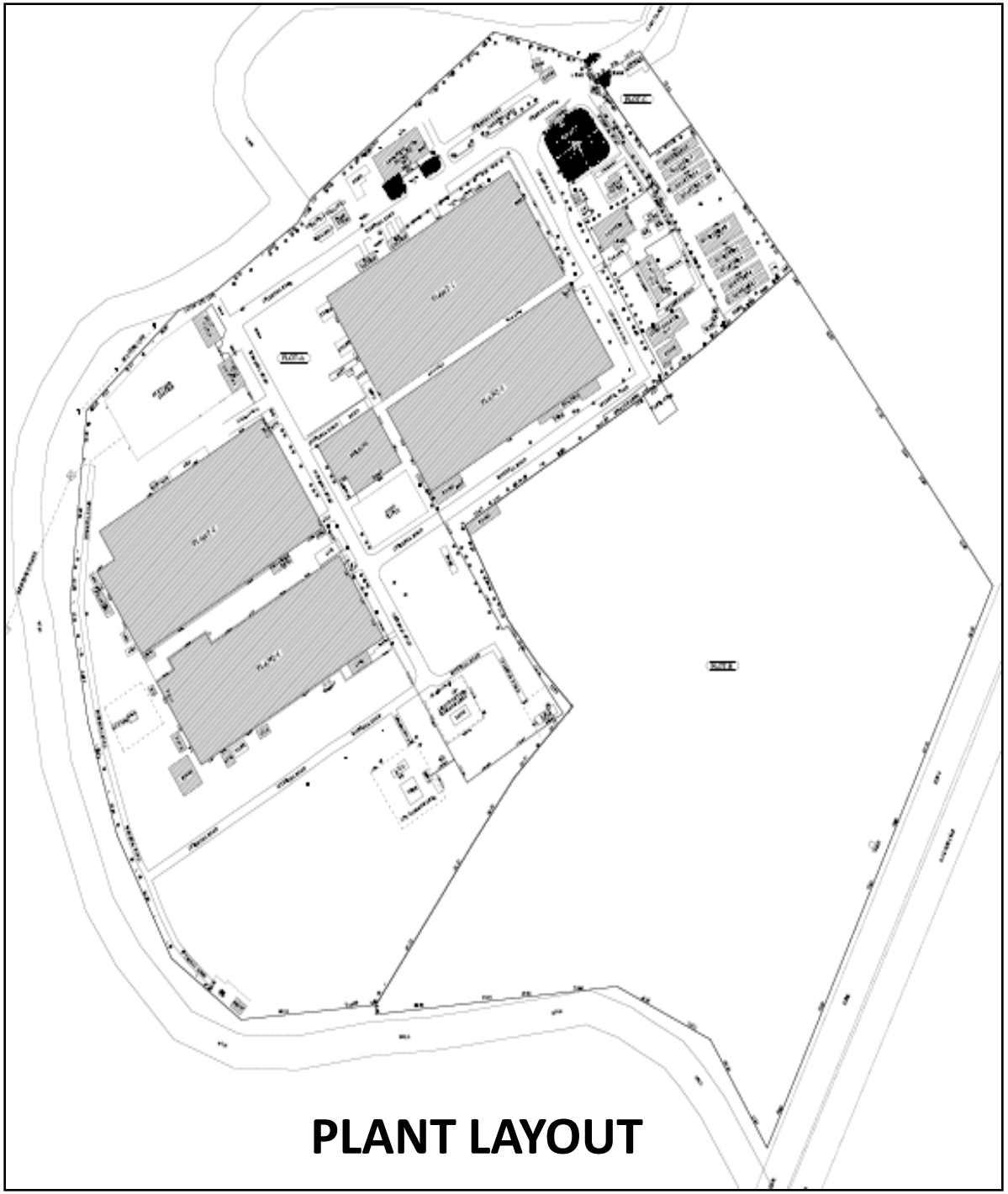
The project proponent wishes to install a large scale chemical manufacturing unit. Few Raw materials are to be imported from foreign countries and also the product has good potential in overseas market.

Following are major forces which drove the decision of current location

- Vicinity of National highway
- Part of land already put to industrial purpose
- Availability of skilled and unskilled manpower
- Number of industries in surrounding area
- Residential zone is more than 2 km away
- Vicinity of environmental infrastructure; like CETP and CHWTF
- Vicinity of Kandla and Mundra ports
- The site is not covered in forest land, wildlife sanctuary and coastal zone

NEAREST DISTANCE FROM PROJECT SITE

Particular	Location Name	Aerial Distance in km
Village/Residential Zone	Varsana	2.0 km
Railway Station	Bhachau	19.5 km
Airport	Bhuj	55.0 km
National Highway	NH 8A	0.5 km
State Highway	SH 6	2.4 km
Nearest River	Sang River	9.8 km
Nearest Lake	Padana Lake	2.4 km
TSDF Site	SEPPL	42 km
Critically Polluted Area	None within 50 km	



PLANT LAYOUT

AREA BREAK UP

Sr. No.	Description of Area	Approx. Area (m^2)
1	Manufacturing facility	34,726
2	Staff Quarter & Canteen	8,646
3	Storage Area	5,670
4	Electrical Sub Stations	4,552
5	Admin building	600
6	Green belt (33 %)	56,000
7	Kept for future expansion	1,74,421
Total		2,84,615

DETAILS OF PRODUCTS

Sr. No.	Name of Product	Total capacity
1	Acrylamide	120000 MT/Year
2	Poly Acrylamide Powder	60000 MT/Year
3	Poly Acrylamide Liquid	42000 MT/Year
4	Poly Acrylamide Emulsions	36000 MT/Year
5	Total	2,58,000 MT/Year

DETAILS OF RAW MATERIAL

Sr.No.	Name of Raw Materials	Raw Materials Quantity in MT/Year
1	Acrylonitrile	44,924
2	Acrylic Acid	34,604
3	Caustic Soda	21,854
4	Demineralized Water	74,473
5	Acrylamide	96,540
6	Process water	1,42,962
7	Oil	6800

MAJOR PLANT AND MACHINERY

POWDER PLANT

Item	Specification	Material	Quantity
Dissolution tank	30 m^3	SS304L	8
Reactor	15 MT	SS304L	16
Knife granulator	12 T/hr	-	4
Paddle dryer	5 m	SS304L	2
Cyclone	2240 mm diameter	SS304L	4
Fluidized bed dryer	17m^2	SS304L	4
Cyclone	1600 mm diameter	SS304L	20
Powder hopper	9 m^3	SS304L	12
Roll grinder	-	-	4
Vibrated sifter	-	-	4
Blender	3 MT	SS304L	4
Bagging machine	-	-	2
Bulk bags machine	-	-	2

MAJOR PLANT AND MACHINERY

Acrylamide Plant

Item	Specification	Material	Quantity
Reactors	24 m^3	SS304L	4
Finishing Tank	24 m^3	SS304L	2
Product Liquid Receiver Tank	30 m^3	SS304L	1
Day Tank + Off-spec	200 m^3	SS304L	3 + 1
Reactor pump	120 m^3/h	-	2
Finishing tank pump	20 m^3/h	-	1
Reactor stirrer		SS304L	6

Liquid's Plant

Item	Specification	Material	Quantity
Reactors	30 T	SS304L	2
Reactors	20 T	SS304L	1

Emulsion Plant

Item	Specification	Material	Quantity
Dissolution Reactors	20 T	SS304L	3
Reactors	20 T	SS304L	3
Buffers	40 T	SS304L	3
Distillation Reactors	20 T	SS304L	3
Incorporation Rectors	27 T		3

MANUFACTURING PROCESS

1. Acrylamide production

Raw Materials: A production line is designed for 60,000 T per year of dry product or 1,20,000 T per year of 50 % purity.

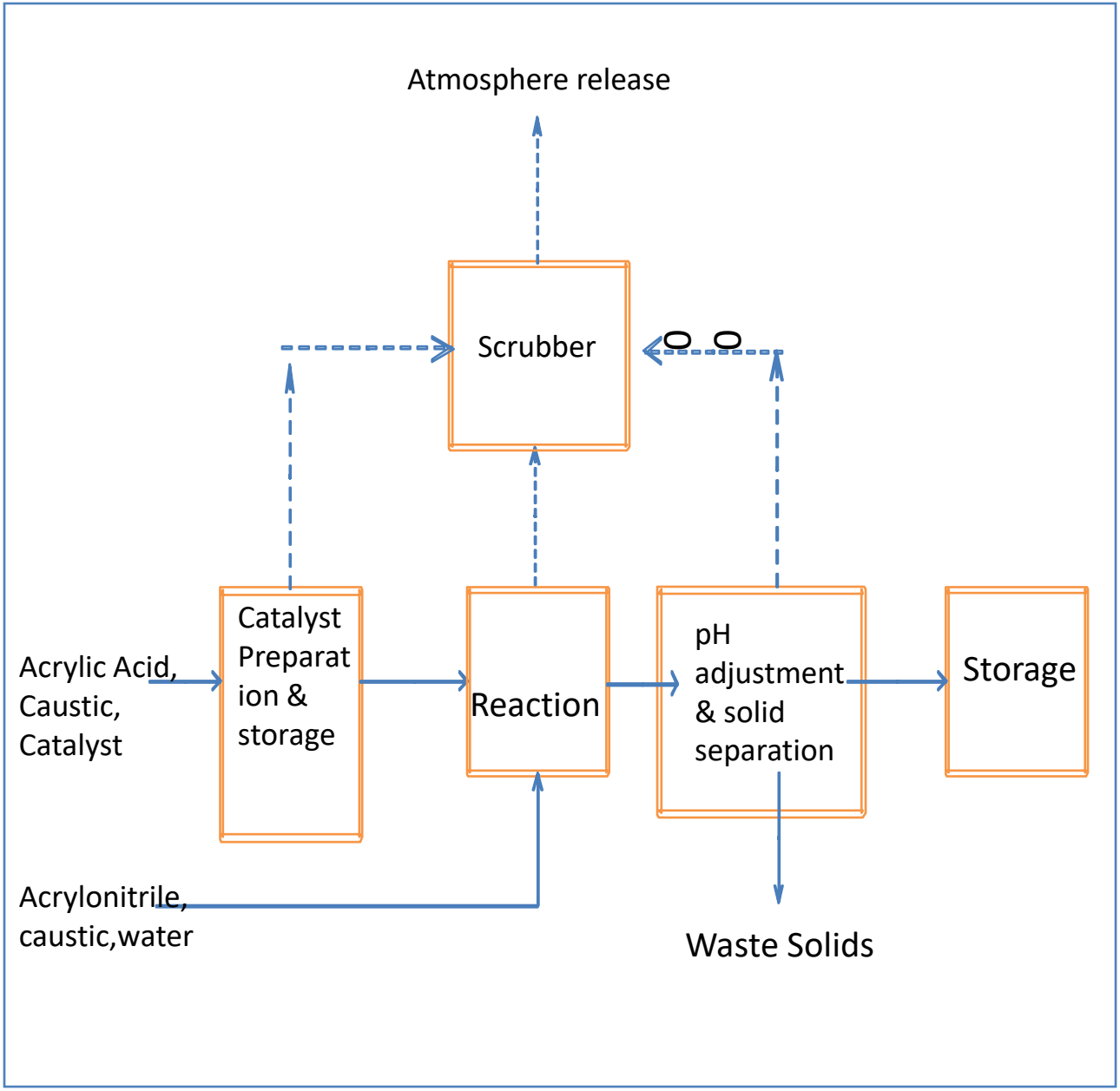
Raw Materials	MT/year
Acrylonitrile	44 924
DM Water	74 473
Caustic Soda	130

Process Descriptions

- Production of Acrylamide 50% is done in 4 reactors. All flow rates (Acrylonitrile, process water, catalyst, NaOH and AaNa + AcNa) and all reaction conditions (temperature and pH) have to be set accordingly to the operating conditions reported in relevant procedures.
- Concentration in Acrylonitrile in reactors should not exceed specified limits to avoid catalyst deactivation.
- Reaction is followed by 2 finishing tanks in order to convert Acrylonitrile into Acrylamide and reach specification (CAN< 100 ppm).
- Sodium Acrylate and sodium acetate are added to stabilize the catalyst and the Acrylamide produced.
- Caustic soda solution is used to control the pH.
- Nitrogen can be injected on top of the reactors in case of fire.
- Cool down the temperature to reduce polymerisation trouble risk.
- To remove the heat of reaction and reach the specified temperatures, reactors are equipped with an inner coil. On reactors 1 and 2, external tubular heat exchangers have been put to improve cooling.

$$Acrylonitrile + Water \xrightarrow{Catalyst} Acrylamide$$

Block Diagram: The diagram below describes the Acrylamide production process.



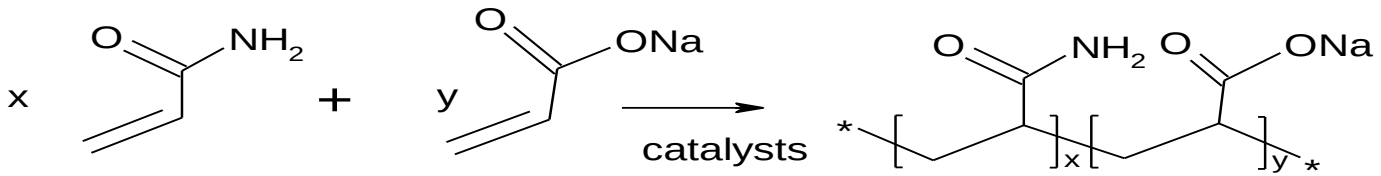
2. Poly-Acrylamide powder

Raw Materials: The production line is designed for 30,000 T/year for this product. Here below is the consumption for two powder workshops:

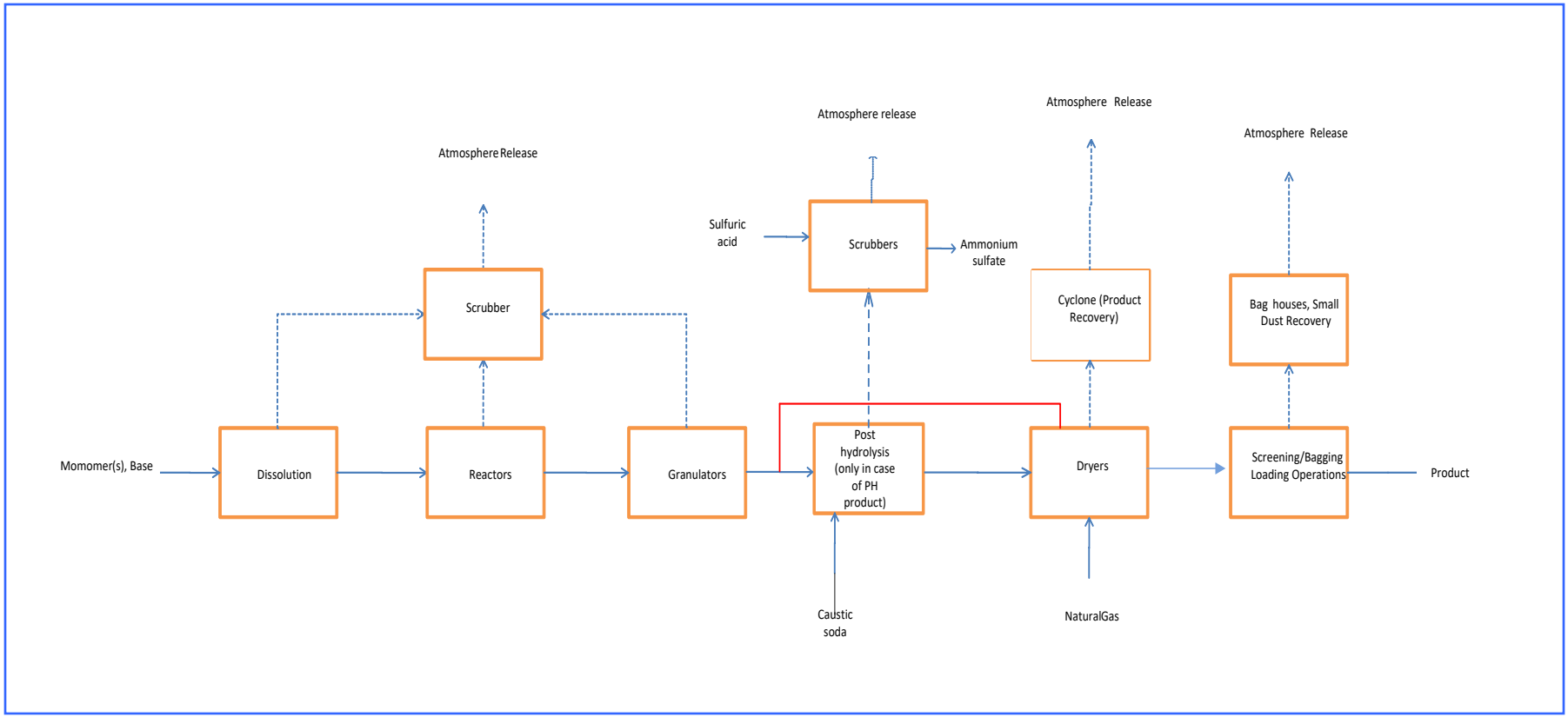
Raw Materials	MT/Year
Acrylic acid	14074
Caustic soda	14074
Process water	89462
Acrylamide	74940

Process Descriptions

- The solution is transferred into the reactor; it is then sprayed with high purity nitrogen to remove oxygen (which is an inhibitor of the polymerisation).
- Catalysts are added and the reaction starts. At the end of the reaction, the temperature is around 90°C; due to the exothermicity of the reaction (each percent of concentration of Acrylamide increases the temperature of 3°C).
- Then, the gel is aged during 3 hours and after transferred into the granulator. Anionic poly-acrylamides are produced by co-polymerisation of Acrylamide and acrylic acid sodium salt.



Block diagram: PolyAcrylamide Powder Process Block Diagram is schematized below



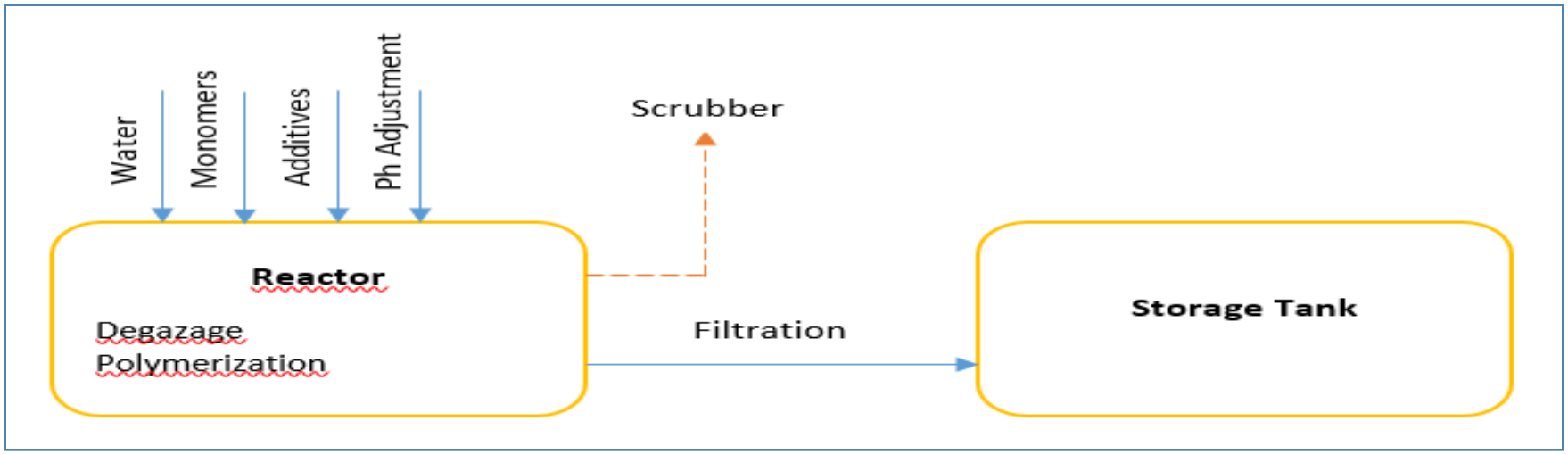
3. PolyAcrylamide liquid

Raw Materials: The production line is designed for 42,000 T/year for this product. Here below is the consumption for one Liquid workshops:

Raw Materials	MT/Year
Acrylamide	12 600
Acrylic acid	9 600
Caustic soda	5 850
Process water	26 750

Process descriptions

- Liquid poly-acrylamide is manufactured by adding acrylamic acid and acrylamide while stirring. After checking set ph and temperature, nitrogen degassing is done from the bottom of the reactor. At the end of degassing, catalyst is added to start the polymerization. Nitrogen blanketing is maintained. Mass is allowed to cool after the reaction under stirring. After sampling and analysis, filtration is done and filled into containers.
- Dispersants are manufactures by addition of acrylic acid into polymerization reactor and stirred. Sample is checked and blanked with nitrogen. To start the reaction, catalysts are added into the reactor. When the reaction is over, mass is cooled and sample is taken and filtered before conditioning.



4. Poly-Acrylamide emulsion

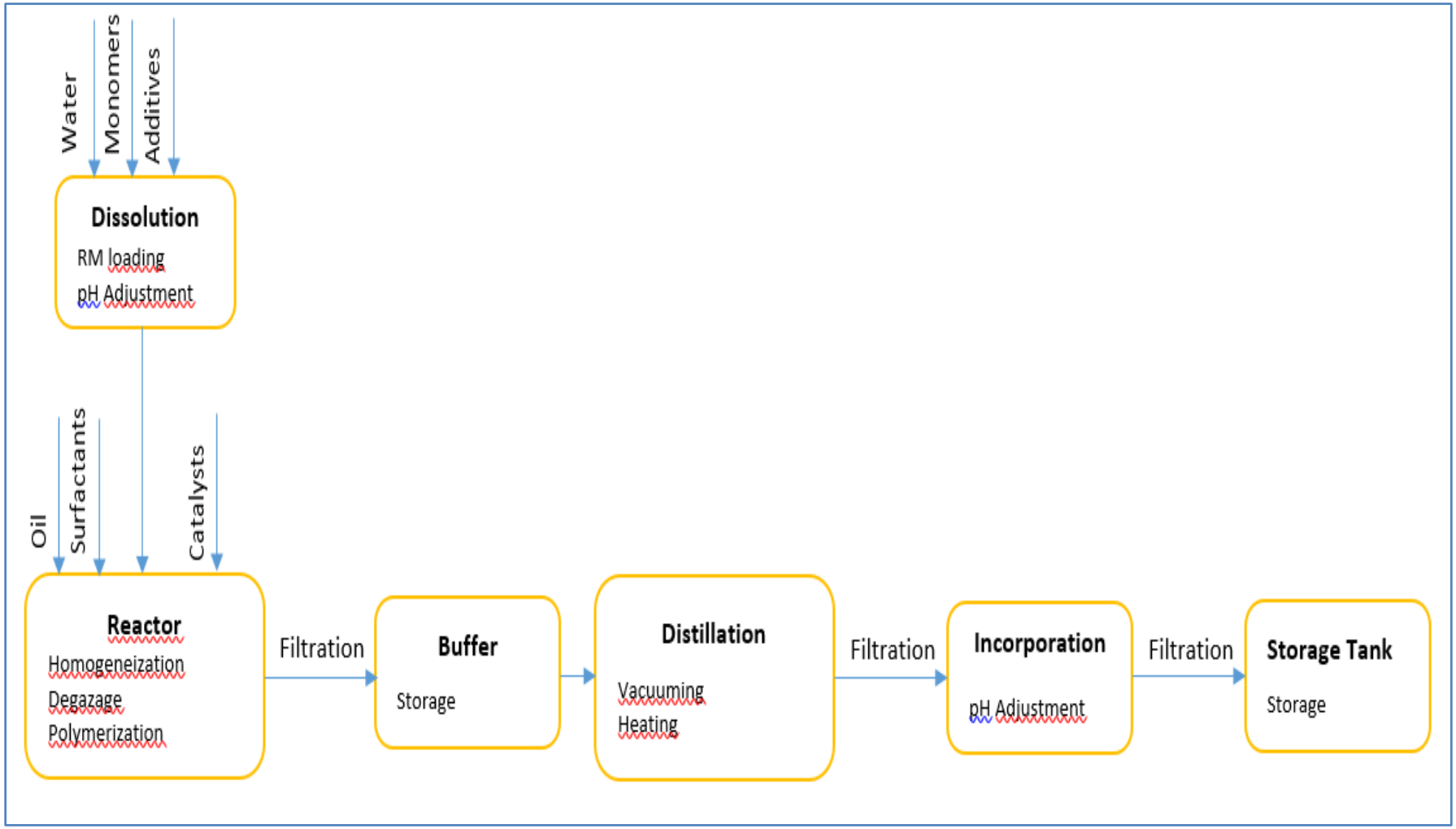
Raw Materials: The production line is designed for 36,000 T/year for this product. Here below is the consumption for three emulsion workshops:

Raw Materials	MT/Year
Acrylamide	9 000
Acrylic acid	10 800
Caustic soda	1 800
Process water	12 600
Oil	6 800

Process Descriptions

- The solution is transferred into the reactor to make water suspension in the solvent. The suspension in homogenized through a rotator to get the right viscosity. Nitrogen degassing is done to remove Oxygen in the system which may inhibit the reaction.
- Catalysts are added and the reaction starts. When the temperature reached is around 40°C; due to the exothermicity of the reaction. The temperature is maintained around 40°C by cooling. Nitrogen degassing and Catalyst addition are continuous.
- At the end of the reaction, Hydrophilic surfactant is introduced to the product soluble in water. PolyAcrylamide emulsions are filtered and packed.
- In case of Distilled Emulsions:The Emulsion base is manufactured as above and fed into an evaporator heated with steam. Distilled Emulsions are collected and conditioned. Solvent is recycled in the process.

Block Diagram of process



PRODUCTS PROPERTIES

Sr. No	Full name of the products and production capacity MT/Month	Physical Phase	Nos. Of Container detail	Main properties (refer MSDS)				
				B.P. °C	F.P. °C	Vapor Density	Specific gravity	LD50 mg/Kg LC50 mg/l
1	Acrylamide	Solid	160 Nos. HDPE Drums (25 Kg)	125° C (257 °F)	Closed Cup: 138°C (280.4 °F)	2.45	1.122	ORAL (LD50): Acute: 124 mg/kg [Rat.]. 107 mg/kg [Mouse]. 150 mg/kg [Rabbit]. DERMAL (LD50): Acute: 400 mg/kg [Rat]. 1680 mg/kg [Rabbit]

Characteristics of raw materials

Raw material spec.	Acrylonitrile	Acrylic Acid	Caustic Soda	Oil
Chemical name	Acrylonitrile	Acrylic Acid	Sodium Hydroxide solution	N.A.
Synonyms	Vinyl Cyanide, Propenitrile	Propeonic Acid, Ethylene Carboxylic Acid	Lye, Sodium Hydrate, White Caustic, Caustic Soda, Soda Lye, Soda Ash, Ascarite	N.A.
Molecular weight (gm/mole)	53.06	72.06	40.01	N.A.
Molecular formula	C_3H_3N	$C_3H_40_2$	NaOH	N.A.
Physical form	Liquid	Liquid	Solid	N.A.
Colour	Colour less	Colour less	White pellets	
Solubility	Soluble in diethyl ether acetone. Very slightly soluble in cold water, hot water.	Soluble in cold water. Very slightly soluble in acetone. Insoluble in diethyl ether	Soluble in water	N.A.
Melting point, ^oC	-82	14	318	N.A.
Boiling point, ^oC	77.3	111	140	N.A.
Specific gravity	0.806	1.05	2.13 at 20^oC	N.A.

SOURCE AND TRANSPORTATION OF RAW MATERIAL

Name of chemical	Source country / City	Mode of transport up to site	Mode of storage
Acrylonitrile	Overseas	Ship/Truck	Tank Farm: 2 tanks of 450 m^3 each at atmospheric pressure/temp
Acrylic Acid	Overseas	Ship /Truck	Tank Farm: 6 tanks of 250 m^3 each at 23 ^oC
Caustic Soda	Gujarat	Truck	Shed: 2 tanks of 360 m^3 each at atmospheric pressure
Oil	Overseas	Ship/Truck	Shed: 1 tank of 350 m^3

UTILITIES

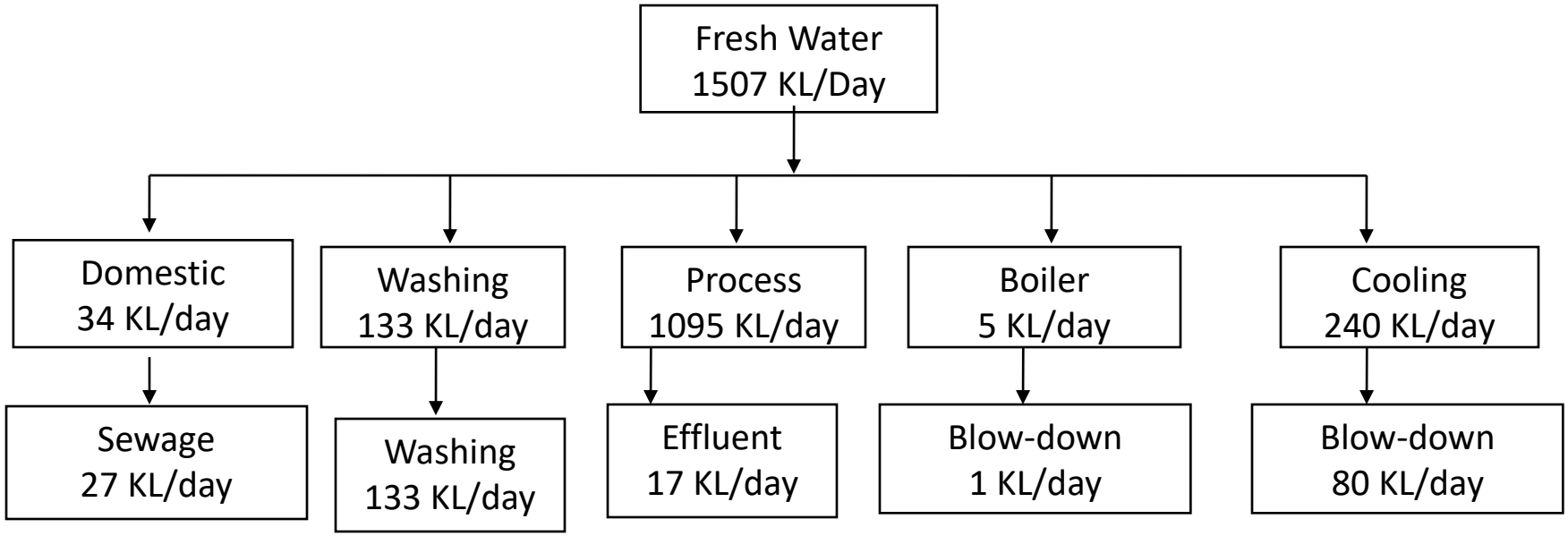
Sr. No.	Particulars	Consumption
1	Power Consumption	16300 kW
2	Proposed total fresh water Requirement	1482 KL/day
3	Natural Gas	2200 Nm^3/Hr

FLUE GAS EMISSION

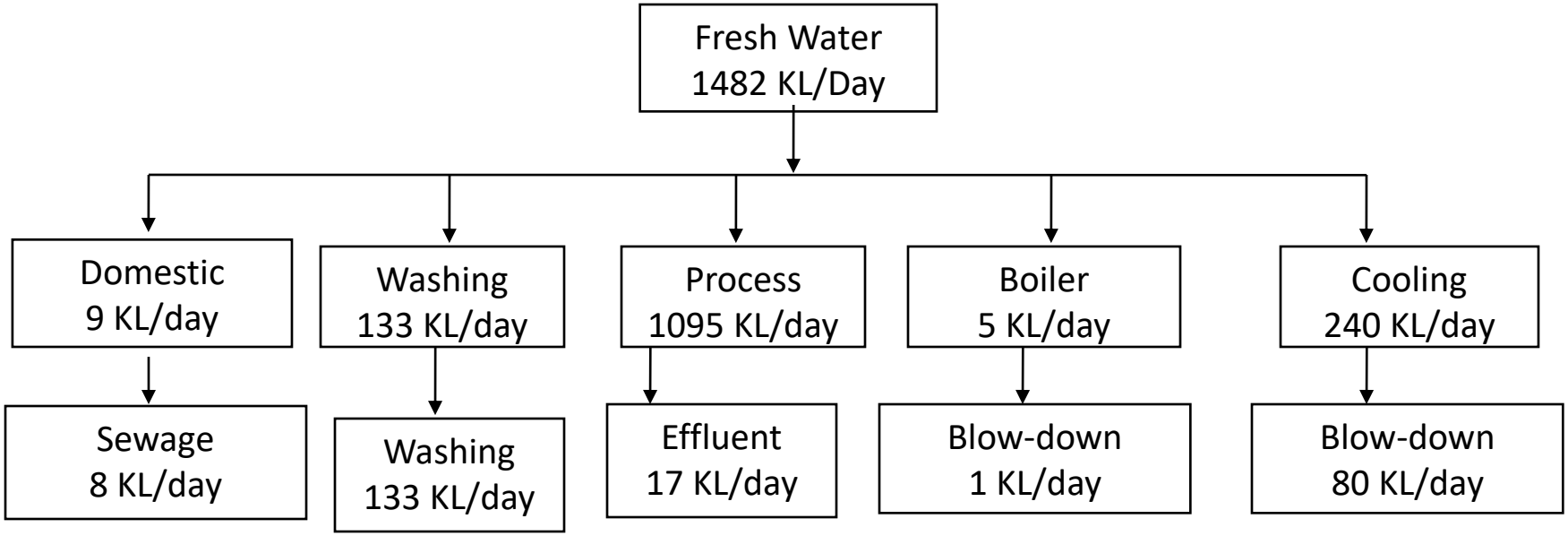
Sr. No.	Type of Emission	Fuel	APCM	Details of Stack
1	Boiler / Heater	Natural Gas	None	12 m

FUGITIVE EMISSION			
Sr. No.	**Type of Emission**	**APCM**	**Details of Stack (m)**
1	Powder dissolution Vessels	Scrubber	12 m
2	Powder Reaction Vessels	Scrubber	12 m
3	Powder Dryers	Scrubber	12 m
4	Finish goods Tank – 1	None	12 m
5	Finish goods Tank – 2	None	12 m
6	Emulsion product line	Scrubber	12 m
7	Liquid production line	Scrubber	12 m

NEW WB as on 12-09-2017



WATER CONSUMPTION AND WASTEWATER GENERATION



Sr. No.	Source	Water Consumption (KL/Day)	Wastewater Generation(KL/Day)
		Proposed Quantity	Proposed Quantity
A	Industrial		
	Process	1095	17
	Boiler	5	1
	Cooling	240	80
	Washing	133	133
	Total	1473	231
B	Domestic	9	8
	Total	1482	239

EFFLUENT TREATMENT PLANT

❑ The industrial effluent generation is 231 m^3/day; out of which approximately 133 m^3/day effluent from washing activity and other is from ancillary activities like cooling tower and boiler blow downs. Total effluent shall be treated at in-house ETP and it (meeting GPCB norms) will be either re-used for suitable purposes or would be used for plantation within premises.

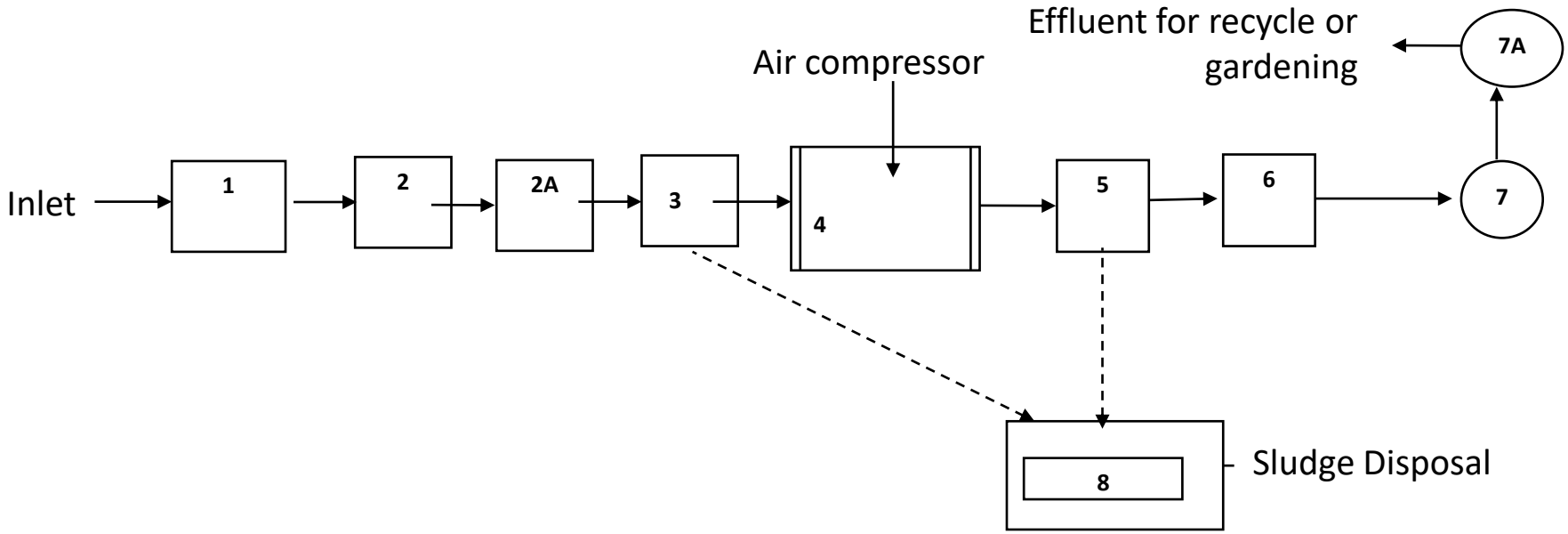
❖**Treatment scheme:**

❑ The incoming effluent will be collected in equalization tank for homogenization of different effluent streams. After equalization it will go to flash mixer by gravity, where chemicals dosing takes place and physico-chemical treatment is given. After flash mixer, effluent is taken to flocculation tank fitted with Flocculator. Here, coagulation & flocculation will take place. The sludge generated during chemical treatment shall be removed in primary settling tank. In primary settling tank, settlement of effluent takes place and generated sludge shall be disposed to sludge drying bed.

❑ The supernatant from primary settling tank shall flow to aeration tank for further biological treatment. The supernatant from aeration tank will go to secondary settling tank by gravity for settling. From the secondary settling tank, the supernatant shall be collected in treated water tank. The sludge from second settling tank will also be sent to sludge drying bed, where sludge gets dried.

❑ For polishing treatment, the treated effluent shall be pumped to pressure sand filter & carbon Filter for removal of suspended solids & residual organics. The outlet from filters shall be sent for final disposal.

ETP Process diagram:



Name and size of the ETP units :

Sr. No	Description	Nos	Capacity, m^3
1	Equalization Tank	1	150
2	Flash Mixer	1	10
2(A)	Flocculator	1	10
3	Primary Settling Tank	1	20
4	Aeration Tank	1	150
5	Secondary Settling Tank	1	20
6	Treated Water Tank	1	100
7/7A	Pressure Sand/Carbon Filter	1+1	1.0 m dia each
8	Sludge Drying Beds	4	1. 5 X1.5 X 4 nos.

WASTE GENERATION, HAZARDS AND CONTROLS

Detail of Hazardous Waste	Category	Total Quantity
Air Filter ash	35.1	20.5 MT/Year
Catalyst empty bags	33.1	2 MT/Year
Glass contaminated Lab equipment	23.1	2.75 MT/Year
ETP Sludge	35.3	60 MT/year

Detail of Environment Management Cell

Sr. No.	Designation	Proposed responsibility
1	Factory Manager	• Environmental policy and Procedures • Overall responsibility for environmental management and decision making for all environmental issues • Ensuring legal compliance by properly conducting activities as required by various regulatory agencies from time to time and interacting with the same
2	Manager - EHS and Executives	• Ensure environmental monitoring as per appropriate procedures. • Ensure correct records of production, raw material, fuel consumption, water consumption, solid hazardous wastes. • Ensure of compliance of Stack Emissions, Ambient Air, Noise as per the GPCB norms
3	Visiting Doctors	• Regular Health Checkups.

Environment Monitoring Plan

Sr. No	Activity	Schedule
AIR QUALITY MONITORING		
1	Ambient air monitoring of parameters specified by GPCB in their air consents	Quarterly
2	Stack monitoring of flue gas stacks as given in air consent from time to time	Quarterly
WASTE QUALITY MONITORING		
1	Treated and untreated wastewater analysis for parameters in CC&A	Monthly
NOISE MONITORING		
1	Noise Monitoring and maintaining records	Quarterly
HEALTH RECORD KEEPING		
1	Heath checkups of worker as per GFR	Six monthly
WORKPLACE MONITORING		
1	Workplace parameter	Six monthly

SAFETY ASPECT

❑ **Process Hazard :**

• Exothermic Run-away reaction

• Release of Heat and Flammable gases

• Fire, Toxic gas release and Explosion

❑ **Control measured provided**

• Raw Materials quantity will be controlled either volumetrically or gravimetrically through pump.

• High Temperature indicator valve and sensor must be provided

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

• Pressure gauge is must provided.

• Safety Control valve is must be provided.

• The Vessel Emergency Relief vent should discharge to a suitably designed catch pot or should be so positioned that people working in the area and members of the public will not be in danger if the contents of the vessel are discharged.

• Boiler cut off temperature will be 160 ^{o}C , Thermic fluid heater cut off temperature will be 210 ^{o}C and pressure will be 5 kg for steam boiler should be maintain for safety.

• Separate isolated storage is provided for solvent like toluene , Acetone.

•Use skilled worker for process control.

• Proper selection of MOC.

•Mechanical seal in all pumps and reactors.

Measures Proposed For Noise Pollution Abatement & Its Monitoring

• There are few sources generating noise, such as loading/unloading of the material, transportation. Following measures are proposed for reduction of noise in ambient air.

• Loading/unloading shall be done from minimum height
• Proper lubrication and other maintenance shall be undertaken periodically in all the moving parts of machinery.
• Green belt will be developed along the periphery.
• Ear-muffs, Ear Plug will be provided to the workers in the high noise area.
• Noise is controlled by installing machine on vibration damping base and separate isolation of noisy machine.

Scope of Monitoring	Parameter	Frequency of Monitoring
Noise	6 location at plant site	Quarterly

DRAFT TERMS OF REFERENCE

Present land use within 5 km aerial distance based on satellite imagery
Layout Plan of the Factory Premises.
Chemical name of each product and raw material along with chemical reactions of unit processes.
Details of manufacturing process / operations of each product. Details on Strategy for the implementation of cleaner production activities.
Source of water supply
Existing and propped raw water consumption and waste water generation
Mass balance and water balance (Including reuse and recycle if any) to be generated from the process.
The possibilities of reuse / recycle and other cleaner production options for reduction of wastes. Details of methods to be adopted for the water conservation.
Characteristics of untreated and treated waste water.
Details of ETP for treatment, including size of each unit, retention time, other technical parameters etc.
Details of provisions to be made for complete evaporation of industrial effluent. Technical details of effluent evaporation / incineration system including its capacity, stream required for evaporation, proposed boiler to supply steam for evaporation in addition to the steam required for the process etc.
One season meteorological data including temperature, relative humidity, hourly wind speed, and direction and rainfall shall be provided.
One complete season AAQ data (except monsoon). The location of monitoring stations should be so decided so as to take into consideration the pre-dominant downwind direction, population zone and sensitive receptiors. There should be at least one monitoring station in the pre dominant downwind direction at a location where maximum GLC is likely to occur.
Impact of the project on the AAQ of the area. Details of the model used and the input parameters used for modeling should be provided. The quality contours may be plotted on a location map showing the location of project site, habitation, and sensitive receptors, if any. The wind roses should also be shown on this map.

Specific details of (i) Process gas emission from each unit process with its quantification (ii) Air pollution control measure proposed for process gas emission, (iii) Air pollution control measures for process gas emission measures to achieve GPCB norms, (iv) Details of the utilities required, (v) Type and quality of fuel to be used for each utility, (vi) Flue gas emission rate emission from each utility, (vii) air Pollution control measures proposed to each of the utility, (viii) List of sources of fugitive emission along with its proposed measures to control it.
Details of Hazardous waste to be generated from the project stating detail of storage area for each type of waste, its handling, its utilization and disposal etc. How the manual handling of the Hazardous waste will be minimized.
Methodology of de-contamination and disposal of discarded containers and its record keeping
Membership of Common Environmental Infrastructure including the TSDF and Common evaporation facility
Details of Measures proposed for the noise pollution abetment and its monitoring.
A detailed EMP including the protection and mitigation measures for impacts on human health and environment as well as detailed monitoring plan and environmental management cell proposed for implementation and monitoring of EMP. The EMP should also include the concept of waste minimization, recycle/reuse/recover techniques, energy conservation, and natural resource conservation. Total Capital cost and recurring cost/annum earmarked for environmental pollution control measures.
Occupational health impacts on workers and mitigation measures proposed to avoid the human health hazardous along with the personal protective equipment to be provided to the workers. Plan for pre-employment and post-employment medical checkup of the workers.
Details of work place ambient air quality monitoring plan as per GFR.
Details of specific safety control measures proposed for solvent handling and storage.
Measures to guard against fire hazards including details of automatic detection and control system and detailed control plan showing hydrant pipeline network, provision of DG Sets, fire pumps jockey pump, toxic gas detectors etc should be provided.

Risk Assessment Report including prediction of the worst case scenario and maximum credible accident scenario should be carried out. The worst case scenario should take into account the maximum inventory of storage at site at any point in time. The risk contours should be plotted on the plant layout map clearly showing which of the facilities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures including On-Site / Off-Site Emergency plan should be prepared.
Submit checklist of Do's and Don'ts of preventive maintenance strengthening of HSE, manufacturing utility staff for safety related measures.
Proposal for socio economic development activities including community welfare program most useful in the project area for the overall improvement of the environment. Submit a detailed plan for social corporate responsibilities, with appropriate budgetary provisions for the next 5 years and activities proposed to be carried out. Specific to the current demographic status of the area.
Plan for compliance of the CREP guidelines.
Details of any fatal and non-fatal accidents and dangerous occurrences under the GFR 1963 for factories for the last 3 years and actions taken then after for prevention of accidents.
Copy of Consent to Operate order obtained for the existing products of the company, along with point wise compliance of all the conditions stipulated therein.
Details of any show-cause notice, closure etc received for the last 3 years for any legal breach of Environmental & Safety laws etc. and actions taken then after for prevention of pollution.

Baseline monitoring started from March 2017 and to be carried out till May 2017.
We request EAC to grant proposed Terms of Reference

CSR Activity

- We will contribute to programs arranged by local Industries association.
- We will donate to other community as well as child welfare activities.
- We will spare some fund in the education and health of poor peoples of nearby localities.
- We will contribute to government supported social welfare programs in surrounding villages.
- As part of EIA, baseline Socio-economic Survey will be carried out and based on gap analysis, detailed CSR plan would be drafted

We sincerely request Expert Appraisal Committee to approve the Terms of Reference

THANK YOU


EKC
અકસ્માત થતા પળતર મને
કપાયેલ અંગે વેચાતાના મને
અકસ્માત એ કુદરતી ટેલ નથી,
આપણી ભુલનું પરિણામ છે