

# **EXECUTIVE SUMMERY**

**“category 5 (f)– A”**

**(Synthetic Resin industry)**

**(Aromatic Compound for Perfumery Products)**

**OF**

**JANAK CHEM PVT. LTD.**

**S. No. 158/2, Village Narnaka,**

**Tal. Padadhari, Dist. Rajkot, Gujarat**

**Proposed Capacity: Expansion from 0.1 TPM to 5.5 TPM**

**Project Cost: Rs. 40.56 Lakhs**

**Study Period – Post Monsoon 2012**

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## **ENKAY ENVIRO SERVICES**

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with RSPCB and NABET accreditation listed at serial no. 28)**

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## 1.0 INTRODUCTION

Janak Chem Pvt. Ltd. is an existing small scale unit manufacturing aromatic compound-Indole, which is covered under Synthetic Organic Chemicals. The unit is located at S. No. 158/2, Village Narnaka, Tal. Padadhari, Dist. Rajkot, Gujarat. The installed capacity of the unit for the manufacturing of Indole is @ 0.1 TPM. Now looking to the market demand, the unit proposes to expand its existing production capacity of Indole from 0.1 TPM to 5.0 TPM and also augmentation of one new product of same category i.e. Skatole with the production of 0.5 TPM. The total land area acquired by the 'Janak Chem Pvt. Ltd.' is 2040.6sq.m. The proposed expansion will be carried out within the same premises. The existing green cover area is 480sq.m (23.5%) and the same will be expanded up to 480sq.m (34.3%) after the proposed expansion. The existing project cost is about 8.62 Lacs and proposed project cost is estimated at Rs. 35 Lacs. About Rs.15 Lacs is proposed for the environment protection measures as capital cost.

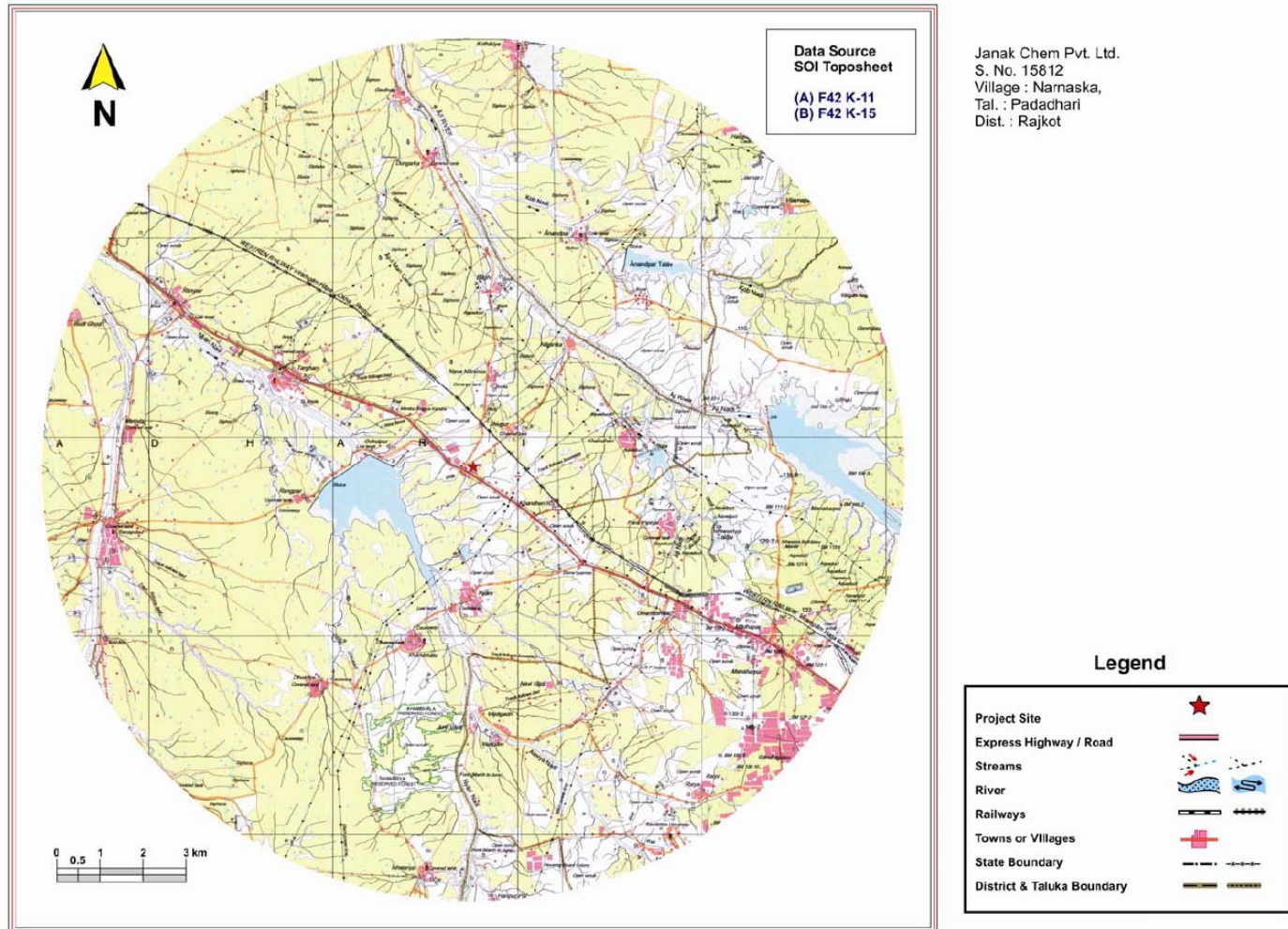
The details of environmental setting are given below. The map showing the project site and 10 km study area is shown in **Figure-1.1**

**Table 1.1:**  
**Details of Environmental Setting**

Sr. No.	Particulars	Details
1	<b>Location</b>	
A	Village	S. No. 158/2, Village Narnaka,
B	Teluka	Padadhari
C	District	Rajkot
D	State	Gujarat
E	Latitude	N 22° 22' 2.84" N E 22° 22' 1.81" N W 22° 22' 2.34" N S 22° 22' 1.22" N
F	Longitude	N 70° 42' 5.97" E E 70° 42' 6.42" E W 70° 42' 4.18" E S 70° 42' 4.68" E
G	SOI Toposheet No.	F42K11 (41J/11)
H	Total Plant Area	2040.6 sq. m

Sr. No.	Particulars	Details
2	Land use at the project area	Industrial Use
3	Nearest habitation	Shivpur Village at 1.15 km (NNE)
4	Nearest Town	Padadhari at 12.0 km (NW)
5	Nearest major City	Rajkot at 11.5 km (SE)
6	Nearest highway	<b>SH-25</b> which is connecting Rajkot to Jamnagar is about 0.25km (SW) <b>NH-8B</b> which is connecting Rajkot to Ahmedabad is about 13 km (SE)
7	Nearest railway track from Project site	Khandheri at 1.8 km, SE Padadhari at 12.0 km, NW Rajkot at 13.5, SE
8	Nearest airport	Domestic - Rajkot : 10.6 km, SE International - Ahmedabad : 205 km, ENE
9	Nearest tourist places	International Cricket Stadium, Rajkot – 1.0 km, SE Aji Dam – 6.7 km, East
10	Defence installations	Nil with in 10 km radius
11	Protected forest/ National Parks/ Wildlife Sanctuary	There is no protected area notified under the Wild Life (Protection) Act (1972) & Eco - sensitive area notified under Section 3 of the Environment (Protection) Act – 1986 within 10 Km radius areas from the Plant Site.  There are two Reserved forests, Khambhalia and Ishwariya, falling at distance of 7.0 km & 8.5km respectively in SSE direction from the project site, as shown in <b>Annexure- VIII</b> .
12	Water Body	Aji Reservoir : 6.7 Km, East Nyari Reservoir : 2.0 Km, West
13	Seismic zone	The area is falling in Zone- III having moderate Damage Risk Zone (MSK- VII).

**Fig. 1.1:**  
**Topographical Map showing the project site and 10 km study area**



(The legible copy of Topographical Map showing the project site and 10 km study area is enclosed as **Annexure- VIII**)

## 2.0 DESCRIPTION OF THE PROJECT

The salient features of the proposed plant are given below:

**Table 2.1:  
Salient Features of Proposed Plant**

Sl. no.	Particulars		Details					
1.	Project Name		Janak Chem Pvt. Ltd.					
2.	Location		S. No. 158/2, Village Narnaka, Tal. Padadhari, Dist. Rajkot, Gujarat					
3.	Production & its Capacity		The unit will manufacture Synthetic Organic Chemicals (Aromatic Compounds) to the tune of 5.5 TPM.					
4.	Land requirement		2040.6 sq.m					
5.	Source of power		Pashchim Gujarat Vij Company Ltd (PGVCL).					
6.	Water Requirement		Daily fresh water demand – Ext.- 0.6 KLD Total after Exp.-10.65 KLD					
7.	Source of Water		Ground water (bore well – 1 no. existing)					
8.	Manpower		27 persons					
9.	Industrials Wastewater generation		Ext.- 0.2 KLD Total after Exp.-4.2 KLD					
10.	Domestic Wastewater generation		Ext.- 0.1 KLD Total after Exp.-2.0 KLD					
11	<b>Solid waste generation</b>							
	<b>Waste Source</b>	<b>Type of waste</b>	<b>Category as per HWMR Rules</b>	<b>Quantity, per Annum*</b>			<b>Physical-Chemical Form</b>	<b>Method of Disposal</b>
				<b>E</b>	<b>P</b>	<b>T</b>		
	ETP	ETP Sludge (Chemical Sludge & Residue after effluent evaporation)	34.3	0.6 MT	2.4 MT	3.0 MT	Solid inorganic	Collection, Storage Disposal at GPCB approved TSDF site
	Mfg. Process	Distillation Residue	20.3	Nil	10.2 MT	10.2 MT	Solid Organic	Collection, Storage Disposal by Incineration at GPCB approved CHWIF
	Raw Material Storage & Handling	Discarded Drums/bags	33.3	100 Nos.	500 Nos.	600 Nos.	Solid-Inorganic	Decontaminate and Reuse/ sell
	Plant and Machineries	Used / Spent Oil	5.1	0.01 KL	0.09 KL	0.1 KL	Liquid-Organic	Reused as lubricant within premises/ sold to the MoEF registered recycler/ reprocessor
* E-Existing, P-Proposed Expansion, T-Total After Expansion								
11.	Project Cost		35 Lakh					
12.	EMP costs		<b>Capital Cost:</b> 15 Lakh <b>Recurring Cost:</b> 15 Lakh per Annum					
13.	Cost towards CSR activities		Rs. 1.5 to be incurred every year					

### 3.0 DESCRIPTION OF ENVIRONMENT

#### 3.1 Land use

The study area is prominently covered by agriculture land, which is about 54.56 % and forest cover is only 1.9 % of the total area. The settlement is mostly confined to the 'rural & urban settlement' (built up-rural) 7.18 % and the total industrial area 2.27 % has noticed in the 10 km study area. The scrub area constitutes the category of land use covering as much as 9.29 % of the total area. Active river channels of the study area and its tributaries flowing into it cover about 9.28 % and other rock outcrop 11.67 % of the total study area.

#### 3.2 Environmental Monitoring

For monitoring of the environmental parameters like meteorology, air, water, soil and noise quality, the monitoring stations have been established at different locations in and around the project area. The base line data has been collected in the post monsoon season during 2012.

#### 3.3 Meteorology

The recorded meteorological data for the study period at project site is presented below:

**Table 3.1:**  
**Micro meteorological data for the study period at project site**

Parameter	Max	Min
Temperature (°C)	29.55	19.1
Relative Humidity (%)	100	17
Wind Speed km/h	26	2.0
Rainfall (in)	0.00	
Predominant direction	Blowing from SW to NE	

#### 3.4 Ambient Air Quality

Ambient air quality monitoring has been carried out with a frequency of two days per week at six locations. The summary of these results for all the locations is presented below. These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for rural and residential zone.

**Table 3.2:**  
**Summary of Ambient Air Quality for all the locations**

Locations	PM <sub>10</sub> µg/m <sup>3</sup>		PM <sub>2.5</sub> µg/m <sup>3</sup>		SO <sub>2</sub> µg/m <sup>3</sup>		NO <sub>x</sub> µg/m <sup>3</sup>		NH <sub>3</sub> µg/m <sup>3</sup>	VOC as Benzene µg/m <sup>3</sup>
	Max	Min	Max	Min	Max	Min	Max	Min		
Project Site	82.4	59.2	52.3	34.6	18.3	11.6	34.9	21.2	< 20	BDL
Shivpur Village	75.2	60.2	43.3	36.4	15.2	12.3	26.8	16.1	< 20	BDL
Khanderi Village	78.1	59.4	48.7	38.4	17.3	13.1	29.1	17.2	< 20	BDL
Nyara Village	70.2	52.7	37.1	29.8	14.9	9.6	23.3	13.3	< 20	BDL
Taragadi Village	88.1	62.3	50.2	32.8	18.6	13.2	31.2	19.0	< 20	BDL
Naranka Village	73.2	51.6	35.6	28.4	15.4	10.8	26.1	15.6	< 20	BDL
<b>NAAQS*</b>	<b>100</b>		<b>60</b>		<b>80</b>		<b>80</b>		<b>400</b>	<b>5.0</b>

All values were found to be well within the latest national standards.

### 3.5 Ground water quality

Six ground water samples and two surface water samples have been considered in and around the proposed project site within the periphery of 10 km taking in to account the various uses, these water resources are put to. The analysis results indicate that the pH of the ground waters was to be in the range of 7.10 – 7.97. The TDS were found to be in the range of 696-1102 mg/L for the ground water and 60-560 mg/L for the surface water. The monitoring reports show that Dissolved Solids, Total Hardness, Calcium, Magnesium, Alkalinity and Chlorides in the ground water samples at all the location is higher than Desirable Limit prescribed under IS: 10500, however all these parameters are within the Permissible Limit prescribed under IS: 10500. All other parameters are well within the Desirable Limit prescribed under IS:10500.

### 3.6 Noise Quality

The noise monitoring has been conducted for determination of noise levels at seven locations covering 10 km study area. The noise levels at each location were recorded for 24-hrs. The results obtained were compared with the national standards and were found to be within limits.

### 3.7 Ecology

The project site is already surrounded by the urban environment and does not hold any critical habitat/ecosystem as well as any threatened floral or faunal species. So project site will not have any adverse impact on the environment.



### 3.8 Socio-economic

A wide variation of population in the study area has been observed by the surveyors. The Schedule Caste and Schedule Tribe population in the study area is not much. Illiteracy rate in the study area is lower, as only 1 village have illiteracy less than 1500, 2 villages has an illiteracy between 1000-1500, 11 villages has between 500- 1000 individuals are illiterate and 15 villages in the study area constitutes of less than 500 individuals.

The basic amenities are available in study area with reference to education, medical, water resources, post and telegraph, communication, power supply. All villages of the study area have primary school and college. Good number of Medical facilities is available in study area.

In the study area drinking water facility is good as well water, tube well water and hand pump is available almost in all the villages. Post office facility and telephone connection is available in all villages. In the study all the villages are well connected through a network of Pucca road. Bus and railway station is the main mode of transportation in all villages of the study area. The electricity is available in all the villages of study area.

## 4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The summary of anticipated adverse environmental impacts due to the proposed project and mitigation measures are given below.

### 4.1 Air Environment

The main point sources of air pollution in the unit will be process emission, flue gasses from Thermic Fluid Boiler and D.G. set. For process emission wet scrubber and condenser will be installed while for flue gas stack of Thermic Fluid Boiler dust collector with stack height of 18 m will be installed and for flue gas stack of DG Set height of 9 m will be installed. Fugitive emissions will be generated from transportation and material handling. The gaseous emissions likely to be emitted from the process stack is NH<sub>3</sub> and from boiler and Thermopac stacks are PM, SO<sub>2</sub> and NO<sub>x</sub>.

The impact on air quality is assessed based on emissions of the proposed stacks in the plant. PM, SO<sub>2</sub>, NO<sub>x</sub> and NH<sub>3</sub> will be the important pollutants emitting from the stacks. Prediction of impacts on air environment has been carried out employing mathematical model based on a steady state Gaussian plume dispersion model designed for multiple point sources for short term. In the present case, **Industrial Source Complex [ISC3]** dispersion model based on steady state Gaussian plume dispersion, designed for multiple point sources for short term and developed by United States Environmental Protection Agency [USEPA] has been used for simulations from point sources.

## Model Input Data

In the present case, model simulations have been carried out for the study period. The Ground level concentrations are computed for 24-hrs average. Maximum Ground level concentrations of PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub> and NH<sub>3</sub> for study period were 1.450 µg/m<sup>3</sup>, 0.948µg/m<sup>3</sup>, 0.685µg/m<sup>3</sup> and 0.075µg/m<sup>3</sup> respectively and were falling at 500m from the point source. The obtained GLC's are well within the stipulated CPCB standards. The incremental ground level concentrations for various pollutants are given in **Table 4.1**.

**Table 4.1:**  
**Predicted 24-Hourly Short Term Incremental Concentrations**

Pollutant	Maximum Incremental Concentration (µg/m <sup>3</sup> )	Distance(m)	Towards Direction
PM <sub>10</sub>	1.450	500	NE
SO <sub>2</sub>	0.948	500	NE
NO <sub>x</sub>	0.685	500	NE
NH <sub>3</sub>	0.075	500	NE

## 4.2 Water Environment

### A. Waste water from industrial process

There will be 4.0 KLD industrial waste water generation for proposed industrial activities, which will be treated in the well-designed effluent treatment plant and ultimately evaporated using thermic fluid base heating system.

### B. Domestic waste water from the different sections of building

Waste water will be generated from the domestic activities of working staff will be about 1.9 KLD due to proposed expansion, which will be treated in the septic tank followed by soak pit.

## 4.3 Noise Environment

- D.G. set is proposed to be housed in an inbuilt acoustic enclosure. The acoustic enclosure will be designed for minimum 25dB (A) insertion loss for meeting the ambient noise standards, whichever is on the higher side.
- Necessary safety and personal protective equipment such as ear plugs, ear muffs, helmet etc will be provided to the workers.
- Noise levels generated will be maintained to comply with the Factories Act & Rules and will not exceed 75 dB (A) at 1 m distance.

#### 4.4 Socio-Economic Environment

The requirement of unskilled and semi-skilled manpower will be met from nearby villages during construction and operational phase. The project will also help in generation of the indirect employment apart from direct employment. This will be a positive socio-economic development for the region. There will be a general upliftment of standard of living in the region.

#### 4.5 Solid Waste

The anticipated quantities of some major solid hazardous waste is given below in table

**Table: 4.2:  
The Anticipated Quantities of Hazardous Waste**

Waste Source	Type of waste	Category as per HWMR Rules	Quantity, per Annum*			Physical-Chemical Form	Method of Disposal
			E	P	T		
ETP	ETP Sludge (Chemical Sludge & Residue after effluent evaporation)	34.3	0.6 MT	2.4 MT	3.0 MT	Solid inorganic	Collection, Storage Disposal at GPCB approved TSDF site
Mfg. Process	Distillation Residue	20.3	Nil	10.2 MT	10.2 MT	Solid Organic	Collection, Storage Disposal by Incineration at GPCB approved CHWIF
Raw Material Storage & Handling	Discarded Drums/bags	33.3	100 Nos.	500 Nos.	600 Nos.	Solid-Inorganic	Decontaminate and Reuse/ sell
Plant and Machineries	Used / Spent Oil	5.1	0.01 KL	0.09 KL	0.1 KL	Liquid-Organic	Reused as lubricant within premises/ sold to the MoEF registered recycler/ reprocessor

\* E-Existing, P-Proposed Expansion, T-Total After Expansion

#### Management

- The use of water based solvents will be preferred for waste reduction
- Continuous rather than batch operations will be explore to reduce spillage and other material losses.

- The Spent solvent will be recycled and reuse, through distillation, evaporation, decantation, centrifugation and filtration
- Used and discarded Drums/bags will be collected, decontaminated and reuse within the plant as far as possible.
- The hazardous waste will be collected in HDPE bags and will be sent to TSDF of M/s. Saurashtra Enviro Project Pvt. Ltd.

## 5.0 ENVIRONMENTAL MONITORING PROGRAMME

### Environmental Monitoring Cell

A centralized environmental monitoring cell will be established for monitoring of important and crucial environmental parameters which are of immense importance to assess the status of environment during operation.

The following routine monitoring programme as detailed under shall be implemented at site. Besides to this monitoring, the compliances to all environmental clearance conditions and regular permits from SPCB/MoEF shall be monitored and reported periodically.

**Table: 5.1:**  
**Environmental Monitoring Programme**

S. No.	Potential Impact	Action to be Followed	Parameters for Monitoring	Frequency of Monitoring	Location
1	AAQ & Gaseous Emissions	Ambient air quality within the premises	PM10, PM2.5, SO <sub>2</sub> , NO <sub>x</sub> , CO, VOC, Benzene, NH <sub>3</sub>	As per CPCB/SPCB requirement or on monthly basis whichever is earlier	At least two locations inside premises
		Flue Gas emission	PM, SO <sub>2</sub> , NO <sub>x</sub>	As per CPCB/SPCB requirement or on monthly basis whichever is earlier	Thermic Fluid Boiler
		Process Gas emission	NH <sub>3</sub>	As per CPCB/SPCB requirement or on monthly basis whichever is earlier	Reactor of Skatole
		Workspace Monitoring	Total VOC and NH <sub>3</sub>	As per CPCB/SPCB requirement or on quarterly basis whichever is earlier	Process Area, Storage Area
		Exhaust from vehicles to be minimized by use of fuel efficient vehicles and well maintained vehicles having PUC certificate.	Vehicle logs to be maintained	-	-

S. No.	Potential Impact	Action to be Followed	Parameters for Monitoring	Frequency of Monitoring	Location
		Vehicle trips to be minimized to the extent possible	Vehicle logs	Daily records	Main gate
2	Noise	Noise Level Monitoring	Spot Noise Level recording; Leq (night), Leq (day), Leq (dn)	Periodic during operation phase	Various plant operations and worker area in the plant
		Generation of vehicular noise	Maintain records of vehicles	Periodic during operation phase	-
3	Wastewater Discharge	No discharge to be made to surface water, groundwater or soil.	Complete evaporation of the treated wastewater	Periodic during operation phase	-
		Take care in handling & disposal of wastewater generated such that soil and groundwater resources are protected	No seepage/leakage during the process	Periodic during operation phase	-
		Compliance of sewage disposal in to soak pit through septic tank	No seepage/leakage/ overflow during the handling	Periodic during operation phase	-
4	Drainage and effluent Management	Ensure drainage system and specific design measures are working effectively.  Design to incorporate existing drainage pattern and avoid disturbing the same.	Visual inspection of drainage and records thereof	Periodic during operation phase	-
5	Water Quality and Water Levels	Monitoring used water quality & groundwater quality and levels	Comprehensive monitoring as per IS 10500 Groundwater level bgl	Periodic during operation phase	Own bore well within project site
6	Energy Usage	Energy usage for air-conditioning and other activities to be minimized  Conduct annual energy audit for the buildings	Energy audit report	Annual audits and periodic checks during operational phase	-
7	Emergency preparedness, such as fire	Fire protection and safety measures to take care of fire	Mock drill records, on site emergency plan,	Periodic during operation phase	-

S. No.	Potential Impact	Action to be Followed	Parameters for Monitoring	Frequency of Monitoring	Location
	fighting	and explosion hazards, to be assessed and steps taken for their prevention.	evacuation plan		
8	Maintenance of flora and fauna	Vegetation, greenbelt / green cover development	No. of plants, species	Periodic during operation phase	-
9	Waste Management	Implement waste management plan that identifies and characterizes every waste arising associated with proposed activities and which identifies the procedures for collection, handling & disposal of each waste arising.	Records of solid waste generation, handling and disposal	Periodic during operation phase	
10	Soil quality	Maintenance of good soil quality	Physico-chemical parameters and metals.	Periodical monitoring	Plantation areas
11	Health	Employees and migrant labour health check ups	All relevant parameters including HIV	Regular check ups	-

## 6.0 PROJECT BENEFITS

The unit is located in Rajkot district of Gujarat, which is only 11 km far from the Rajkot City. Rajkot city hosts several small scale manufacturing industries. Some of the industrial products for which Rajkot is known include bearings, diesel engines, automotive parts, forging industry, casting industry, and machine tools. Due to huge investments by the Government and private sector in local infrastructure such as highways, ports, power plants etc., many more companies are expected to join them. In last decades many chemical industries for the manufacturing of bulk drug, dyes & pharma intermediates, synthetic resin etc., most of them are small and medium scale unit, came-up to take the benefits of readily available infrastructure. With a population more than 1.6 million, Rajkot is the 23<sup>rd</sup> largest urban agglomeration in India and is the 22<sup>nd</sup> fastest growing city in the world. The finished product of the Janak Chem Pvt. Ltd. being an 'Aromatic Compound', there is a huge potential of requirement in Rajkot, Gujarat as well around the world.

## 7.0 ENVIRONMENT MANAGEMENT PLAN DURING OPERATION PHASE

Environmental Management Plan (EMP) aims at the preservation of ecological system by considering in-built pollution abatement facilities at the proposed site. Some of the major criteria governing the environmental measures will be adopted, and the same is described in ensuing paragraphs.

### 7.1 Air Pollution Management

➤ **To control the fugitive emissions generated during various operations in the industry, plant authorities will adopt following mitigation measures.**

- The entire manufacturing activities will be carried out in the closed system.
- All reactors will be provided by vapor condensers
- Mechanical seals will be provided for all the reactors for improving emission control measures.
- All solvent storage tanks will be provided with vent condensers having chilled water and brine circulation
- Dedicated pipe lines for transfer of solvents from respective solvent storage tanks to reactors in the production blocks.
- All the electrical motors of pumps for the handling of hazardous chemicals will be flame proof and all pumps provided with suitable mechanical seal with stand by arrangement.

➤ **To control the process emissions generated during various operations in the industry, plant authorities will adopt following mitigation measures.**

- The process gas generated will be scrubbed using two stage water scrubber, some of the process gas like Nitrogen will be also vented out into atmosphere through a process stack attached to scrubber.
- The scrubbed solutions will be sent for ETP for further treatment and disposal.
- The condenser is the first condenser located after the process equipment and supports a vapour-to-liquid phase change for the vapours produced in the process equipment. The primary purpose of a condenser used as an air pollution control device is to remove VOCs prior to venting. In this method, gas streams from vents containing VOCs are cooled to below their saturation temperatures, converting the gas into a VOC liquid. This removes some VOCs from the gas, but some remains. The amount of VOCs remaining in the gas depends on the temperature and vapour-liquid equilibrium of the VOC.
- Regular post project air monitoring schedule will be planned and record will be maintained to track any problem in Air Pollution Control Equipment.

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## 7.2 Water Pollution Management

- Measures will be implemented to prevent seepage of liquid materials into ground where it could contaminate groundwater and soil
- Ensure prompt cleaning up of accidental spillages
- Measures will be followed to prevent the contamination of hydrological features by diesel, grease, oil, etc. derived from the working area
- The machinery / equipment will be maintained in a good operating condition
- Specially designated areas will be created for vehicle maintenance
- Accidental spillages will be cleaned up promptly
- Curing water will be sprayed and after liberal curing, all concrete structures will be covered with gunny bags this will conserves water
- Provisions will be made to ensure the construction vehicles stick to the access track to prevent mud & dirt being deposited on roads
- Fence will be constructed around the site to trap sediments whilst allowing the water to flow through
- All mud & dirt deposited on the roads from the construction activities will be cleaned.
- Adopting good construction and engineering practices will help in mitigating the water pollution

## 7.3 Noise Pollution Management

- All possible measures will be taken to minimize the noise.
- The insulation provided for prevention and loss of heat and personnel safety shall also act as noise reducer.
- Foundations and structures will be designed to minimize vibrations and noise.
- Regular equipment maintenance and better work habits will be adopted.
- Proper lubrication and housekeeping will be usually done to avoid excessive noise generation.
- D.G. set is proposed to be housed in an inbuilt acoustic enclosure. The acoustic enclosure will be designed for minimum 25dB (A) insertion loss for meeting the ambient noise standards, whichever is on the higher side.

## 7.4 Solid Waste Management

- The use of water based solvents will be preferred for waste reduction
- Continuous rather than batch operations will be in explore to reduce spillage and other material losses
- The Spent solvent will be recycled and reuse, through distillation, evaporation, decantation, centrifugation and filtration



- Used and discarded Drums/bags will be collected, decontaminated and reuse within the plant as far as possible.
- The hazardous waste will be collected in HDPE bags and will be sent to CHWIF/TSDf at M/s. Saurashtra Enviro Project Pvt. Ltd., Kutch.

## 7.5 Socioeconomic

The study area has been analyzed and surveyed. The results reveal that the literacy is fair in study area. Schedule caste people are much higher in number than Schedule Tribe population in all village except Kerala Rangpar Village of Padadhari Taluka and Vajdigadh village of Rajkot taluka.

As the people of the study area lacks better employment opportunities and there are many agriculturists or cultivators. A CSR activity has been designed which will help in generating income to the people of the study area.

The following CSR activities have been proposed for the people of the study area:

- Medicinal Plants will be distributed to the people in the study area free of cost. These plants include Aloe Vera, Garden Asparagus, Brahmi, Tulsi Plant. These plants will be grown at the boundaries of the fields. It will help them in generating the study area people extra income. These plants are greatly valued in India and abroad. A proper channel of marketing will be provided by tie up with institutes like Central Institute of Medicinal and Aromatic Plants (CIMAP). It will provide them value for the plants they will grow.
- The proponent will organize medical camps in the study region. In the survey it was reported by the interviewee that anemia, viral fever, cold, cough etc are the common health problems in the study region. The medical camps for these diseases will be organized.
- The unit will give their adequate and reasonable contribution for the following CSR activities in the nearby villages,
  1. Plantation all along the road side in nearby villages and development of garden/greenbelt on government barren land/common plots.
  2. Education aids & scholarship to poor students for higher education.
- Company will also cooperate and participate in the various activities conducted by the government for the socio-economic development and welfare of the society such as;
  1. Participate in the medical camp organized in the villages.
  2. Participate and cooperate in animal husbandry camp.
  3. Participate in the Forestry Programme of state government.

4. Participate and Cooperate in Education Camp of state government.
5. Award scholarship to students for higher education.
6. Participate in new school admission campaign.
7. Participate in Cleanliness Camp of state government.

## **8.0 CONCLUSIONS**

It is predicted that socio-economic impact due to this project will positively increase the chance of more employment opportunities for local inhabitants. There are no Resettlement and Rehabilitation issues involved in this project. The project infrastructures will be of use to people of the area. The revenue of the State Govt. will be definitely increasing due to the enhanced production. The entire project area is devoid of any endangered flora and fauna. Thus the proposed project is not likely to affect the environment or adjacent ecosystem adversely.

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