

EXECUTIVE SUMMARY

E-1 BACKGROUND

The Chemicals industries have always played major role in the economic development of the country. Gujarat, being an industrialized State, has a significant contribution in industrial as well as economic development of the country. Besides, necessary infrastructure; availability of natural resources like water, mineral oil, natural gas; market potential; and easy of export/import of raw materials and finished products have also resulted in the substantial growth of industries in the State. Many industries are polluting nature it is essential to take adequate measures to maintain desirable environmental quality in the area.

E-2 PROJECT DESCRIPTION

Location of Project

M/s. Meghmani Organics Limited, proposed project located at G.I.D.C. Industrial, Dahej of Taluka Vagra of Bharuch District. The location map is shown at Figure 1.1

Site Selection

The selection of the project site at this location is primarily based on the availability of the following amenities.

Developed infrastructure suitable for almost any type of industries.

Easy availability of manpower.

Good transportation facilities.

No national park or wildlife Habitats falls within 10 km radius of location

Alternative Locations

The project location was determined by proximity to consumers and suppliers; suitability of port facilities; proximity to an existing effluent disposal pipeline network; and availability of existing infrastructure such as power, roads, telecommunications, and water. Meghmani has studied alternative locations in Gujarat and concluded that Dahej offers the most advantages because of its ready consumer access and availability of infrastructure.

E-3 PROPOSED PRODUCTION CAPACITIES OF PLANT

MOL envisages setting up the plant to produce caustic Soda & Chloro Methane product. List of proposed products with capacity to be manufactured are as shown bellow.

Sr. No.	Name of Products	Quantity Mt/M
1	Caustic Soda (100%)	16800
	(i) Caustic Soda Lye (100%)	
	(ii) Caustic Soda Flacks (100%)	
2	Chlorine Gas	14885
3	Hydrogen Gas	420
4	78% Dilute Sulphuric Acid	420
5	30% Hydrochloric Acid	5760
6	Sodium Hypo Chlorite	1350
7	Captive Power Plant (CPP)	45 MW

Investment of the project

Total investment cost of the proposed project is about Rs.460 Cr.

E-4 DESCRIPTION OF ENVIRONMENT

The base line data were monitored for December 2006 to February 2007, with regard to environmental quality in the area viz. ambient air quality, noise levels, water quality, soil characteristics, flora & fauna and parameters concerning human interest. The relevant impacts on various environmental components were predicted using appropriate mathematical models and impact assessment techniques. An appropriate environmental management plan delineated to minimize the adverse impacts.

E-5 AIR ENVIRONMENT

The ambient air quality monitoring was carried out at 5 AAQM locations, with a frequency of twice a week continuously for three months, to assess the existing sub-regional air quality status in winter season. The Respirable Dust Sampler and High Volume Sampler along with the analytical methods prescribed by CPCB were used for carrying out air quality monitoring. At all these sampling locations; RSPM, SPM, SO₂, and NO_x were monitored on 24-hourly basis and grab sample were collected and analyzed for the HCl, Cl₂,

CO and HC to enable the comparison with ambient air quality standards prescribed by CPCB.

The data on concentrations of various pollutants were processed for different statistical parameters like arithmetic mean, standard deviation, minimum and maximum concentration and various percentile values.

Suspended Particulate Matter (SPM)

The arithmetic mean and 98th percentile value of 24-hourly concentrations of SPM value at all the locations ranged between 134-177 $\mu\text{g}/\text{m}^3$ and 154-195 $\mu\text{g}/\text{m}^3$ respectively. The stipulated standard of SPM for industrial area is 500 $\mu\text{g}/\text{m}^3$ and 200 $\mu\text{g}/\text{m}^3$ for residential area. The 24-hourly concentration values show that the values are well within the prescribed limit.

Respirable Suspended Particulate Matter (RSPM)

The arithmetic mean and 98th percentile value of 24-hourly RSPM values at all the locations ranged between 51-68 $\mu\text{g}/\text{m}^3$ and 56-81 $\mu\text{g}/\text{m}^3$ and meeting the CPCB standards (residential areas -75 $\mu\text{g}/\text{m}^3$). The 24-hourly concentration values show that the values are well within the prescribed limit.

Sulphur Dioxide (SO₂)

The arithmetic mean and 98th percentile value of 24-hourly SO₂ at all the locations ranged between 8-11 $\mu\text{g}/\text{m}^3$ 8-14 $\mu\text{g}/\text{m}^3$ and respectively, which are well within the stipulated standards of 80 $\mu\text{g}/\text{m}^3$ for residential areas.

Oxides of Nitrogen (NO_x)

The arithmetic mean and 98th percentile value of 24-hourly NO_x at all the locations ranged between 11-17 $\mu\text{g}/\text{m}^3$ 13-19 $\mu\text{g}/\text{m}^3$ and respectively, which are much lower than the standards stipulated by CPCB for residential areas (i.e. 80 $\mu\text{g}/\text{m}^3$).

E-6 WATER ENVIRONMENT

Ground water quality

Collected ground water samples were analyzed for various desirable characteristics of drinking water.

Color: All the nine samples except one were color less meeting desirable norms.

pH: All the samples meet the desirable standards (pH ranges from 7.29 to 7.81)

Total Dissolved Solids (TDS): TDS in samples ranges from 1471 mg/l (Kadodara) to 2176 mg/l (Ambeta). All the samples meet the permissible limit of 2000 mg/l except Ambheta, (If alternate sources of potable water are not available).

Calcium: Calcium contents in the water ranges from 26 mg/l (Kadodara) to 47 mg/l (Village Ambheta), all the samples meet the permissible limit of 200 mg/l, (If alternate sources of potable water are not available).

Magnesium: Magnesium content in the water ranges from 14mg/l (Kadodar) to 25 mg/l (Village Jagheshwar). all samples meet the desirable limit of 30 mg/l.

Sulfate: Sulfate content in the water ranges from 39 mg/l (Ambheta) to 43 mg/l (Kadodara). All samples meet the desirable limit of 200 mg/l except this.

Total Alkalinity: Total alkalinity in the water samples ranges from 276 mg/l (Kadodara) to 332 mg/l (Rahiad). All the samples are within the permissible limit of drinking water 600 mg/l for drinking water (if alternate source of potable water is not available).

Chemical oxygen demand (COD): COD <14 mg/L in all sampling stations.

Heavy metals like copper, cadmium, lead, chromium, nickel and zinc are well below to prescribe limit in all samples.

Other Parameters: Potassium (ranges from 49 mg/l to 81 mg/l), Sodium (ranges from 372 mg/l to 612 mg/l), Chloride (ranges from 512 mg/l to 902 mg/l), Iron (ranges from 0.11 mg/l to 0.23 mg/l). Samples were also analyzed for Phenolic compound (less than 0.001 mg/l in all samples).

Conclusions: Ground water samples from villages meets the permissible limit set by the authority (BIS). Indian standard specification for drinking water is given in Table 3.7 Ambheta village.

Surface water quality

Collected surface water samples were analyzed for various desirable characteristics of drinking water.

Color: All the five samples were color less meeting desirable norms.

pH: All the samples meet the desirable standards (pH ranges from 7.32 to 7.71)

Total Dissolved Solids (TDS): TDS in samples ranges from 338 mg/l (Pond of Jagheshwar) to 24318 mg/l (Narmada estuary Ambheta). All the samples meet the permissible limit of 2000 mg/l, except Narmada estuary Ambheta (If alternate sources of potable water are not available).

Calcium: Calcium contents in the water ranges from 29 mg/l (Pond of Jageshwar) to 163 mg/l (Narmada estuary Ambheta), all the samples meet the permissible limit of 200 mg/l, (If alternate sources of potable water are not available).

Magnesium: Magnesium content in the water ranges from 8mg/l (Pond in Jolva) to 92 mg/l (Narmada estuary Ambheta). All samples meet the desirable limit of 30 mg/l, and rest of one sample Narmada estuary Ambheta not meet the permissible limit of 100 mg/l (if alternate sources of potable water are not available).

Sulfate: Sulfate content in the water ranges from 16 mg/l (Pond in Jageshwar) to 1317 mg/l (Narmada estuary Ambheta). All samples meet the desirable limit of 200 mg/l except Narmada estuary Ambheta.

Total Alkalinity: Total alkalinity in the water samples ranges from 109mg/l (Pond in Ambheta) to 510 mg/l (Narmada estuary Ambheta). All the samples are within the permissible limit of drinking water 600 mg/l for drinking water (if alternate source of potable water is not available).

Chemical oxygen demand (COD): For the entire water sample's COD have <15 COD except Narmada estuary Ambheta having COD-18.2 mg/l.

Heavy metals like copper, cadmium, lead, chromium, nickel and zinc are well below to prescribe limit in all samples.

Other Parameters: Potassium (ranges from 10 mg/l to 192 mg/l), Sodium (ranges from 56 mg/l to 8896 mg/l), Chloride (ranges from 91 mg/l to 13015 mg/l), Iron (ranges from 0.12 mg/l to 0.28 mg/l). Samples were also analyzed for Phenolic compound (less than 0.001 mg/l in all samples).

Conclusions: Surface water samples from ponds meets the permissible limit set by the authority (BIS) where as Sample of Narmada estuary Ambheta is not met the norms permissible limit set by BIS. High salinity and is due to high tide.

E-7 NOISE ENVIRONMENT

The Leq values of noise levels during day-time varied between 51.7 to 62.3 dB(A) Highest Leq daytime value was recorded near Ambheta Bus Stop, however it is less than the prescribed limit for the commercial (65 dB(A)). The Leq values of noise levels during night time varied between 37.9 to 46.4 dB(A) . Highest Leq night time value was recorded near GACL main gate (46.4dB (A)) which is less than prescribed limit (70 dB (A)).

E-8 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Construction Phase—Impacts and Mitigation Measures

Environmental Components	Potential Impacts	Source of Impact	Mitigation Measures	Remarks
Surface Water	Increase in suspended solids	Construction activity	Construction of septic tanks	Short term and negative
Groundwater	No impact	No impact	No impact	No Withdrawal of ground water
Air quality	Marginal increase in SPM and RPM	Due to vehicular movement, excavation & construction activities	water spray, roads to be paved	Short term and negative
Land	Construction waste	Construction activity	Sloping to be provided as per standard engineering	Short term and negative

			practices	
Noise Short term and negative	Increased noise level	Construction activities and vehicles movements	Equipment Selection with low noise	Short term and negative
Socioeconomic Environment	Immigration of labor, population, increase in stress on the natural resource and infrastructur e facilities	Construction activity	Deploy more local people in construction activities	Positive- long term; Negative- short term.

Operational Phase—Impacts and Mitigation Measures

Environmental Components	Potential Impacts	Source of Impact	Mitigation Measures	Remarks
Surface Water	Accidental Chemicals & oil spill	Accidental spill	Physical removal of oil and proper disposal	-
Groundwater	No impact	No impact	No impact	No Withdrawal of ground water
Air quality	Marginal increase in SPM, SO ₂ , NO _x , HCl & Cl ₂ in Ambient	Captive power generation and process	APCM as per the requirement like ESP, Scrubbers.	Negative and Marginal
Water balance	GIDC to water supply which will condensate in air and part will convert into wastewater	-	No impact Due to disposal into deep sea disposal	-
Noise Short term	Increased noise level	Construction activities and	Equipment Selection with	Short term and negative

and negative		vehicles movements	low noise	
Socioeconomic Environment	An Increase 500 employees	Operational activities	Deploy more local people in operational activities	Positive and long term;

E-9 ENVIRONMENT MONITORING

Nature of Analysis	Frequency of Analysis	Number of Sample
Stack Monitoring of each stack	Monthly except Cl ₂	At all stack
Ambient Air Quality Monitoring	Monthly for 24 hours or as per the statutory conditions	3 Location
Industrial Effluent for applicable parameters as per the Consents Conditions	Ones in a Month	One Sample
Ground Water Analysis near Captive Landfill site	Ones in a Month	4 Sample

E-10 ENVIRONMENTAL MANAGEMENT DURING CONSTRUCTION PHASE

Construction phase results in temporary environmental pollution except for the permanent change in local land use pattern and aesthetics, in certain cases. Such pollution is mainly due to site preparation, civil works, transportation, storage & handling of different kinds of materials including inflammable/hazardous materials, construction worker' sanitation etc. These are usually short-term impacts as compared to those during operational phase.

Construction work shall take about 12 months. During this time, air pollution is expected in the form of increased suspended particulate matter concentration, due to site preparation, civil construction works and transportation of the various materials required complete construction and installation of the proposed project.

Temporarily dumping of various supplies and equipment might be the aesthetics in the surrounding. Construction and installation work shall generate noise too. Dust will generate within working areas and measures will need to taken to protect workers.

In order to mitigate the adverse environment impact due to the construction phase, regular sprinkling of the water will be recommended along with the construction activities.

AIR ENVIRONMENT

In the proposed Chlor Alkali manufacturing unit, point sources emitting gaseous pollutants include the stacks from Boilers of captive power plant is a measure source of air pollution. There will be other five process emission sources. The major air pollutants, identified from this industry, are SPM, SO₂ and NO_x, HCl & Cl₂.

In the operational phase imported coal is being used in the boilers and ESP would be installed for pollution control measures.

GREENBELT

Meghamani plant will have 22 hector area available lands for greenbelt development. Meghmani propose to utilize this land for Green belt development and Eucalyptus plantation.

WATER ENVIRONMENT

The main sources of water pollution are from process and utilities with raw water treatments. There will no organic load in effluents. Adequate treatment facilities like pH correction tank, clarifier and finally effluent collection sump will be provided to treat the wastewater from the proposed Chlor Alkali plant to achieve the statutory discharge norms. It would be finally disposed off into deep sea disposal through approved disposal point by NIO.