

Executive summary

OF

Environmental Impact Assessment Report

For

Public Hearing

OF

Expansion project

PROPOSED BY



M/s. Pidilite Industries Ltd.

**Plot No. A 22/1, MIDC- Mahad, Dist. – Raigad,
State – Maharashtra**

FOR

Speciality Polymers Manufacturing Facility

PREPARED BY

GOLDFINCH
One-stop Environmental Solution...

Goldfinch Engineering Systems Pvt. Ltd.
NABET Accredited EIA Consultant
Thane, Maharashtra

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1.0 Introduction

Pidilite Industries Limited, pioneer in consumer and specialty chemicals in India, has proposed an expansion project for manufacturing of polymers based on Vinyl Acetate Monomer (VAM), Acrylate, Styrene and adhesives based on Poly Vinyl Alcohol (PVA) to increase production to 41100 MT per year, at Plot no. A 22/1, MIDC- Mahad, Dist. Raigad, Maharashtra.

The activity is Synthetic Organic Chemical manufacture classified under 5(f) in the Schedule of projects/activities that requires prior environmental clearance from authorities before being set up as per EIA notification SO1533 dated 14th September 2006 issued by MoEF.

The case was discussed on the basis of presentation made by the project proponent. The committee had decided to consider the proposed activities under B2 Category in previous meeting (i.e. 73rd SEAC). The committee again examined the various provisions in this regard. The Notification of Ministry of Environment and Forest dated 14th September, 2006 envisages the Expert Appraisal Committee to decide on due diligence whether EIA is required or not for expansion/ Modernization/ change of product mix in existing projects. The guidelines issued by Ministry of Environment and Forest dated 24th December, 2013 provides for categorization of several projects in B1 or B2 Category.

The majority of members felt that, this, being Speciality Polymer Industry, hazard potential of raw material and the process is of concern. The Committee also noted that no EIA was carried out previously for existing activities. Project proponent is therefore directed to carry out EIA studies covering risk assessment and HAZOP studies based on the model ToR for synthetic organic chemicals. PP may utilize one season data for the same. The case may be taken on priority for appraisal after submission of EIA report.

However, based on the OM dated 16th May 2014 by Director MoEF, Public Hearing is required for the proposals in Industrial Estates / Parks which have not taken Environmental Clearance.

EIA was prepared based on the model TOR given by SEAC for preparation of EIA for synthetic chemical industry. The copy of the same is listed as Annexure-I. The present environmental impact assessment report is prepared by M/s. Goldfinch Engineering Systems Private Limited, NABET accredited EIA consultant organization for this category (Synthetic Organic Chemicals sector) considering mainly the risk assessment and the impacts due to project proposals on surrounding environment.

2.0 Identification of the Project

M/s. Pidilite Industries Limited has been pioneer in consumer and specialty chemicals in India, propose an expansion project for manufacturing of polymers based on Vinyl acetate monomer, Acrylate, Styrene and adhesives based on poly vinyl alcohol to increase in production to 41100 MT per year from existing 34664 MT, at plot No. A 22/1, in Mahad MIDC, Raigad, Maharashtra.

The proposed expansion is for the manufacture of following products

List of Products for Environmental Clearance

Proposed products for Environmental Clearance	Proposed products quantity (MT/A)	
	Existing	Proposed (After Expansion)
Polymeric based on VAM, Acrylate, Styrene monomers and Adhesive based on PVA	34664	41100

2.2 Location of the Project

The proposed expansion activity will be carried out at existing plot no. A 22/1, MIDC Mahad, Dist. Raigad, Maharashtra. The premises are a part of Notified Industrial Estate; the expansion will be done at existing site. The expansion is a result of process improvement, reduction in batch cycle time and increase in yield of the product. The site is located at about 5 km from Mahad city, 8 km from Mahad railway station. The factory building will be sufficiently away from highway and railway. It is geographically located at Latitude 18° 06' N and Longitude 73° 28' E. The elevation above MSL is 95 ft. (29 m).

Area Statement

The area statement of the unit is as under:

Total Plot Area	28744.00 SQM
Less Plinth Area (Safety Area and Tank Storage)	2172 SQM
Net Plot Area	26572.88 SQM
Total Built – Up Area	13094.51 SQM

2.3 Extent of Study & Study Covered

Environmental Impact Assessment report is prepared based on the baseline studies carried out during March – May 2014. The Environmental parameters such as ambient air, water, soil, noise, were those selected for study areas which are likely to be affected by the project. The study area is defined as an area within 10kms radius around site as per the model ToR specified by SEAC, Maharashtra for Synthetic Organic Chemical Industry sector.

3.0 Baseline Environment

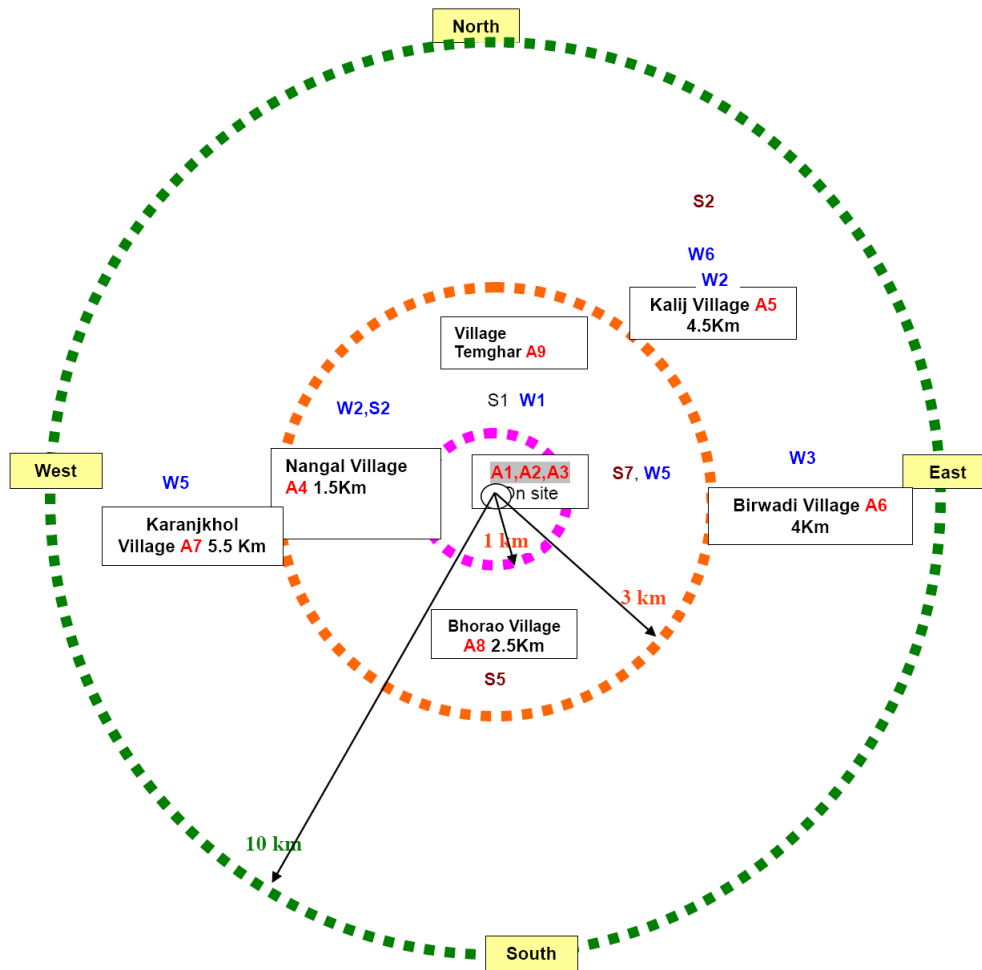
3.1 Method of Study

Based on the MoEF guidelines studies were carried out and identified based on the nature of activities involved and their impacts caused on various environmental parameters. It subsequently suggests mitigation measures to be executed for safeguarding against any environmental degradation. Finally it suggests methods of implementing the environmental management plan.

The baseline data is collected for the period during March 2014- May 2014. The primary data is collected to establish baseline scenario for the micro meteorology, ambient air quality, soil, water quality (surface and ground), and noise levels. Baseline environment incorporates the description of the various existing environmental settings within the area encompassed by a circle of 10 km radius around the proposed project site.

Below Table and Figure illustrates Air, Water, Soil and Noise monitoring locations and specific parameters of significance. The samples were collected from various locations around the periphery of the plant.

Sr No	Location	Air & Noise	Water		Soil
			Surface	Ground	
1	Near Main Gate	+			
2	Near Drum Storage	+			
3	Near New Utility (DM plant)	+			
4	Nangal Wadi Village	+		+	+
5	Temghar village	+			+
6	Birwadi Village	+		+	+
7	Kalig Village	+		+	+
8	Bhorao village	+			+
9	Karanjhol village	+		+	+
10	Pidilite MIDC Water		+		
11	Kaal River		+		
12	Savitri River		+		
13	MIDC				+



3.2 Water Balance

Dry Season

Source	Consumption			Loss			Effluent		
	Existing	Proposed	Total	Existing	Proposed	Total	Existing	Proposed	Total
Domestic	8	2	10	1	1	2	7 (To STP & Gardening)	1 (To STP & Gardening)	8 (To STP & Gardening)
Industrial Processing	92	18	110	58.5	10.5	69	33.5	7.5	41
Cooling Tower	30	40 + (12 from RO) = 52	70 + (12 from RO)	29.5	39.0	68.5	0.5	1.0	1.5
Gardening	25 (7 from Domestic)	- (1 from domestic)	25 (8 from domestic)	32	1	33	-	-	-
Total	155	60	215	121	51.5	172.5	34	8.5	42.5
Net Water Requirement	155	60	215						30.5 to CETP & 12 RO recycle

Wet Season

Source	Consumption			Loss			Effluent		
	Existing	Proposed	Total	Existing	Proposed	Total	Existing	Proposed	Total
Domestic	8	2	10	1	1	2	7	1	8
Industrial Processing	92	18	110	58.5	10.5	69	33.5	7.5	41
Cooling Tower	30	32 + (20 from RO)	62 + (20 from RO)	29.5	39.0	68.5	0.5	1.0	1.5
Gardening	-	-	-	32	1	33	-	-	-
Total	130	52	182	121	51.5	172.5	34	8.5	50.5
RWH	38	-	38	-	-	-	-	-	-
Net Water Requirement	92	52	144						30.5 to CETP & 20 RO recycle

3.3 Biological Environment

The contents of this subsection are based primarily on reconnaissance survey carried out by the team of Goldfinch Engineering Systems Pvt. Ltd. in order to review the present status of natural ecology and biodiversity elements in the Core area and surrounding region of 10 km. Data were collected on flora (Herbs, Shrubs and Trees) and fauna (Birds, Insects, Spiders, Reptiles, and Mammals).

Ecological and biodiversity status of the site: Characteristic of industrial habitat. No rare, endangered or legally protected species were found in the project site.

Ecological richness and value of the actual project site location: Very low.

Ecological richness of areas within 10 km range: Ecologically rich and fragmented areas.

National parks and sanctuaries within 10 km: None.

Ecologically rich areas within 10km: All of these areas are 10 km away from the project site

3.4 Air Environment

Ambient air was sampled at 9 locations selected and each station was sampled for continuously 24 hr in each month. Parameters monitored were Particulate matter (PM₁₀ and PM_{2.5}), NO_x and SO₂. Ambient air was found to be within the prescribed regulatory limits. Within study area the average Ambient air quality is shown below:

	March 2014	April 2014	May 2014	CPCB Standards
PM ₁₀ (µg/m ³)	41.5-68.0	42.9-66.2	42.5-65.4	100
PM _{2.5} (µg/m ³)	15.4-31.0	20.9-39.3	22.6-43.5	60
SO ₂ (µg/m ³)	13.33-67.5	6.87-13.7	35.0-37.29	80
NO _x (µg/m ³)	ND-41.0	3.92-9.05	3.41-26.3	80

3.5 Noise Environment

Ambient Noise levels in the study area were recorded to be within the limits stipulated by regulatory limits in the project area. The equivalent Noise levels during day and night time within study area are shown below:

Leq	Industrial	Residential	CPCB Standards Industrial/ Residential
Day time	60.3-66.8	49.0-54.0	75/55 dB(A)
Night time	57.5-63.3	38.9-43.9	70/45 dB(A)

3.6 Water Environment

Surface and ground water (bore well water) were sampled at 7 stations respectively. 15 Parameters were monitored and found to be within the prescribed regulatory limits.

3.7 Soil Environment

Soil sampling was done at 7 locations in the study area. Parameters were monitored and found to be within the prescribed regulatory limits

3.8 Public Amenities

Govt./ MIDC has provided all basic infrastructures like assured electrical power, continuous water supply with purification from water works having RSF (Rapid Sand Filtration) and disinfection, the internal road network, external approach road and networking with CHWSTDF (Common Hazardous Waste Storage Treatment and Disposal Facility). There is no sensitive establishment in the vicinity such as health resort, hospital, archaeological monuments, sanctuaries, etc. All nearby villages are provided with drinking water from wells or Government Water Supply Schemes RWS. Adequate water supply from MIDC is available. Hence the project does not encroach upon their supply. The city of Mahad, Railway line, National highway is at a sufficiently safe distance.

4.0 Environmental Impacts

4.1 Water Environment

The baseline water environment was investigated by analyzing the samples of surface water and ground water for physical and chemical characteristics. Water requirement for process use water budget and effluent generation have been estimated and treatment scheme for additional domestic and industrial effluent has been provided. The quantity of effluent recycle proposed is more than the additional generation anticipated due to provision of RO which will result in discharge of lesser quantity of treated effluent of quality within consented limits to CETP than the existing permissible. As there will not be any additional discharge of effluent even to CETP, it can be concluded that there is no adverse effects on the surface water quality. It was found that the quality of ground water collected from the vicinity had no harmful pollutants present in the water samples. Also TDS, TSS, BOD and COD values were low.

4.2 Air Environment

NIL as no additional construction activity is anticipated. Ambient air quality inside the plant area as well as within the study area was found to be under the specified limit. The hazardous raw materials stored as well as in process will not have zone of influence outside factory premises as per the risk analysis.

Air Pollution Dispersion Modelling of Stack Emissions: Not required as there are no fuel burning stacks and no additional DG is proposed

Mitigation Measures for Air Pollution Control: To reduce the dispersion of pollutants into the atmosphere, Pidilite has already provided control equipment to process vents. No additional is envisaged.

4.3 Noise Environment

The noise levels around the proposed area during the day and night times did not exceed the applicable MPCB standards, at selected locations on site as well as off site. The noise levels at offsite locations within 5 km radius in the villages are slightly above the prescribed limits for residential area. Chemical

processing equipment, reactors, closed circuit handling does not involve any heavy machinery that generate noise. The rotating machinery used will be new and shall confirm to international standards of noise and vibration. No significant noise problem is expected due to proposed activity.

4.4 Ecological Environment

Suggested Mitigation measures for biodiversity conservation

The objective of mitigation is to firstly avoid and minimize impacts where possible and where these cannot be completely avoided, to compensate for the negative impacts of the development on vegetation and animal habitats and to maximize re-vegetation of disturbed areas. For each impact identified, appropriate mitigation measures to reduce or otherwise avoid the potential impacts are suggested. All impacts are assessed without mitigation and with the mitigation measures as suggested appropriately implemented.

Following are some mitigation measures suggested for this project:

1. The water effluent discharge should be treated as per guidelines of MPCB and MIDC
2. The air emissions should follow strict guidelines of MPCB, as harmful air emissions may cause disturbance to the epiphytic species in the nearby forest areas
3. Fencing should be erected to exclude conflict with wild and domestic animals
4. Create native species dominated green belt and gardens to enhance bird life in the campus
5. Bird boxes should be placed on mature and standard trees at a density of 10 per hectare. A variety of boxes should be used in order to encourage a diversity of species.

4.5 Socio Economic Impact

The socio economic impact of the MIDC industries as a whole was observed and reported by the people in nearby villages. MIDC has provided an opportunity for economic growth to the people. The industries have positively contributed to the growth and development of the region. No specific adverse socio economic impact due to Pidilite Industries was noticed or reported.

5.0 Environmental Management Plan

An environmental management plan has been proposed to implement the mitigation measures. The plan will ensure that the adverse environmental impacts are minimized and the beneficial impacts area maximized.

5.1 Domestic Sewage

Maximum sewage effluent quantity will be 8 CMD. The sewage will be treated well-designed treatment plant and recycled by using it for Gardening purpose

5.2 Industrial Effluent

42.5 CMD effluent will be generated from industrial processing and cooling tower, from which 12 CMD effluent will be sent to RO plant from which it will be recycled for cooling tower makeup. Remaining 30.5 CMD effluent will be sent to CETP. To treat the industrial effluent, the industry has full-fledged Effluent treatment plant to comply the MPCB prescribed standards; the entire treated effluent will be sent to CETP for further treatment. The industry has a membership of the CETP for discharge of treated effluent.

5.3 Air Pollution Management

There is no gaseous emission from the Pidilite site.

5.4 Solid & Hazardous Waste Management

The Hazardous Wastes generated will be sent for further treatment and disposal to CHWSTDF (Common Hazardous Waste Storage Treatment and Disposal Facility)

5.5 Green Belt Development

Well developed and maintained green belt with 1825 nos. of trees of different species already exists at Pidilite Mahad site.

6.0 Additional Studies

6.1 Risk assessment

A detailed Risk Assessment (MCLS) and Hazop studies has been done by an expert (Chilworth Technology Limited) considering the various hazardous chemicals and solvents being handled and stored. The report on the same is available separately.

In MCLS study the some points were suggested/recommended to minimize the risk at site, which are already complied/set up by Pidilite, those points are as follows:

- It is observed that toxic release results have offsite impact, but probability this is very remote & results of fire & explosion are limited within the factory only.
- It is suggested to use non-asbestos appropriate packing (designed to withstand)
- Design pressure of pipe, to avoid leakage from flange joint.
- Preventive maintenance schedule should be adhered strictly.
- Include guidelines for periodic inspection & maintenance for insulation in
- Preventive Maintenance schedule
- It is suggested to carry out periodical Mock-Drill of EMP, with observers should place at following places:
- Emergency Control Centre

- At actual site
- At first aid Centre
- Security Cabin
- And observations of this observer are compiled and implemented for continual improvement.
- Provide HC detector diagonally opposite to the tank farm area.

Project Proponent has made safety arrangements that an industry using flammable material will provide. The extinguishing gadgets are provided; any risk from fuel stands automatically covered. This minimizes the risk to a great extent.

7.0 Corporate social responsibility:

Some of the CSR activities which are carried by Pidilite, Mahad are as follows:

- Arranged drawing competitions to school children on the occasion of World Environment Day 5th June 2014.
- Arranged Walking rally in residential area in MIDC to increase awareness to improve environment
- Organized training for Police personnel on chemical tanker safety on road in January 2014
- Bus Stop near Kamble village phata which is developed by M/s Pidilite, expenditure Rs. 350000/-
- Contribution in Mahad Manufacturing Association Hospital
- Ireland maintenance at National Highway 17 near Mahad MIDC turn
- Attending Road chemical tanker incident on National Highway as call received from police personnel
- Training to NCC student given at Mahad by Pidilite person leadership

8.0 Project Cost and Expenditure for Environmental Activities

The total estimated gross capital investment is approximately: Rs. 1.7 cr. only.

Land: Existing land (No cost)

Plant building and Machinery: Rs. 1.7 Cr

EMP Cost

Sr. No.	Particulars	Recurring Cost per Annum in Rs. Lakhs	Capital Cost in Rs. Lakhs
1	Air Pollution Control	-----	-----
2	Water Pollution Control	42.80225	170 (For RO system)
3	Noise Pollution Control	0.5	

4	Environment Monitoring and Management	0.75	
5	Reclamation	-----	-----
6	Occupational Health (1.5	
7	Green Belt	-----	-----
8	Hazardous waste management	7.5	-----
9	Others (CSR)	5.0	-----
Total		58.05225	

9.0 Conclusion

It can be concluded that proposed expansion activity of Pidilite Industries is in the interest of common man, the society, the state and as the country as a whole.

- Socio-economic benefits due to creation of direct/indirect employment. Moreover due to this project other direct and indirect businesses will be benefited.
- Country will save valuable foreign exchange as import of these products will reduce by corresponding amount.
- The products manufactured by Pidilite have export potential. Hence possibility of earning foreign exchange and increase in GDP.
- There is no gaseous emission from site. The project does not exhibit any adverse impact on air environment.
- Industrial waste water will be treated by ETP within the premises. The domestic waste water generated will be treated scientifically and used for gardening purpose. The treated industrial waste water complying MPCB standards will be discharged to CETP.
- The noise generation will be reduced due to the measures provided in Environmental Management Plan.
- The risk associated is identified by conducting risk assessment, HAZOP and recommendations of the same will be implemented. Moreover on site emergency plan also has been prepared to tackle any emergency if and when it arises.

Thus it can be concluded on a positive note that after the implementation of the mitigation measures and Environmental Management Plan the normal operation of M/s Pidilite Industries Ltd. will have negligible impact on environment and will benefit the country by way of saving foreign exchange and increase in the GDP and employment to the local people.