

60

SP:OLPAD <394540>  
EG418885833IN

Counter No:1 OP-Code:1

To:MOEF BHOPAL,BHOPAL

RAVI SHANKAR NAGAR, PIN:462016

From:H CC OLPAD . OLPAD

Wt:700grams

Amt:104.00 .06/06/2017 .12:40

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भारतीय डाक



India Post



# HINDUSTHAN CHEMICALS COMPANY

GIDC OLPAD, TALUKA: OLPAD,  
DIST: SURAT, Gujarat

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## Six Monthly Environmental Compliance Report (From May 2016 to October 2016)

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**PREPARED BY: ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**



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**HINDUSTHAN CHEMICALS COMPANY**  
**Six Monthly Report: (May 2016 to October 2016)**

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## LIST OF ANNEXURE

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## MEMBERS ASSOCIATED WITH REPORT

### **Project Proponent**

Mr. A. K. Singh (Executive Director Technical)

### **Team leader**

Mrs. Rekha Shah (CEO – Eco Chem Sales & Services)

### **Team Member (ECSS):**

Environmental Monitoring & : Team Leader – Mr. Rajesh Parekh  
Data Collection : Team Member –1. Mr. Dipak Maru  
2. Mr. Harsh Shah  
3. Mr. Sameer Patel

Sample Analysis : Lab. Incharge – Mr. Sunilkumar Pandey  
Chemist – 1. Ms. Riddhi Patel  
2. Mr. Bharat Patel  
3. Ms. Chaitali Patel

Report Preparation By : Mr. Harsh Shah  
Report Reviewed By : Mr. Jacob Tharakan & Mr. Dipakkumar Maru  
Report Checked By : Dr. Ashok K. Rathoure  
Report Approved By : Ms. Rekha Shah





## **INTRODUCTION**

Hindusthan Engineering & Industries Ltd. (HEIL) (previously Hindusthan Development Corporation) was set up in 1944 with track materials plant at Tiljala. In the year 1964, Sri R. P. Mody acquired the company which had only one plant at Tiljala producing fabricated points, switches and turnouts, steel sleepers and other railway track components. The company witnessed aggressive and all round growth in 1970's when the expansion in the Indian Railways took place for industrialization in the country. HEIL became the major supplier of railway track materials and enjoyed a major market share with Indian Railways. In tune with the demand of economic growth, HEIL continued its thrust on further diversification and in the process either acquired existing projects in the Core Sector or set up Greenfield Projects in a wide spectrum of industrial activities. HEIL acquired a Wagon Building Plant at Santragachi while a Green field Project for manufacture of Cyanide and Calcined Petroleum Coke was established in Olpad in the state of Gujarat & Haldia in the state of West Bengal, respectively.

The company was also in the forefront for bringing state of the art technology from global leaders for the benefit of the Indian Economy. It has brought to India CMS Crossings tie-up with Bethlehem Steel Corporation, USA, Steel Wire tie-up with Kokon Company, Japan, Electro Porcelain tie-up with Reinsinch Werke, Germany, Calcium Coke Calcination from Alcom International, Canada. During this period, HEIL was instrumental in providing a vision for globalization in the areas of its operation. HEIL made rapid inroads in the International Market with its products. HEIL products viz. Steel Castings Cyanides, Track materials found ready acceptance all over the world. HEIL developed a parallel export market for many of its products.

With the spread of globalization and emergence of fierce competition, HEIL realized the need to restructure and is in the process of reorienting its priorities to become a cost effective, customer friendly industrial conglomerate with focus on Research & Development. The Govt. of India has recognized its Research and Development Cell in the Steel foundry as an accredited Research and Development Center for carrying out all the research in the areas of Steel Castings. In the domestic market, HEIL primarily caters to Indian Railways, Ministry of Defence and other Public Sector undertakings. HEIL is the market leader in the area it



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## HINDUSTHAN CHEMICALS COMPANY

### Six Monthly Report: (May 2016 to October 2016)

operates. HEIL is the sole supplier of special containers to CONCOR for the last ten years and no other Indian Company can claim this unique distinction.

#### Quality Policy:

*"It is the quality policy of HEIL's Points & Crossing, Steel Sleeper and wagon division to provide products that satisfy the customer quality requirements. It strives to achieve and maintain excellence through development and absorption of appropriate technologies."* - Mr. R.R. Mehta, Executive Director

#### Achievements:

HEIL has received prestigious export order worth \$18 Crores from a USA based company for supply of Steel Castings. The company has also been receiving Export Excellence Awards given by the Ministry of Commerce, Government of India for the last 8 years in a row.

We have received the Export Excellence Award for the year 2001-02 from Shri Arun Jaitley, Honorable Minister of Commerce in New Delhi on 26<sup>th</sup> September 2003. In India very few companies can claim the distinction of receiving Export Excellence Awards for 8 years in a row.

#### Hindusthan Chemicals Company (HCC) - Project Proponent Unit

Hindusthan Chemical Company, formerly known as Cyanides & Chemicals Company, is a unit of HEIL. The unit was set up in the year 1982 in GIDC Industrial Estate at Olpad Taluka of Surat District in Gujarat State. The unit is engaged in manufacture of Hydrogen Cyanide (HCN) and Cyanide based products. The unique feature of the HCN manufacturing technology is that the whole system of manufacturing process is working under vacuum hence in any case hazardous gas is not released-out into the atmosphere from the production system. The unit manufactured Sodium Cyanide and Potassium Cyanide for the first time in our country. Thus the unit is pioneer in manufacture of HCN and its derivatives in India.

The unit is primarily engaged in the manufacturing of Hydrogen cyanide, Sodium Cyanide, Potassium Cyanide, Sodium/Potassium Ferro Cyanide, Diphenyl Guanidine, Heat Treatment Salt, Sodium



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Dicyanamide, Cyanohydrins, Nitriles, Cyanide based products, Mandelonitrile and Natural Gas based Captive Power Plant.

The present sales turnover of HCC is approximately Rs. 200.00 Crore. We are currently exporting different types of cyanide derivatives to countries like Zimbabwe, Thailand, Indonesia, Morocco etc.. Exports account for around Rs. 57.00 Crore (2015-16) of the total turnover of the Unit.



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**HINDUSTHAN CHEMICALS COMPANY**  
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**DATA SHEET**

Date: 26/11/2016

1. Project type: River-Valley / Mining / : **Industry**  
Industry / Thermal / Nuclear Other (specify) : **Project category – 5 (b) “A”**
2. Name of the project : **Manufacturing of Sodium Cyanide & other Cyanide based Products**
3. Clearance letter (s) O.M. No. and date : **F. No. J – 11011 / 466 / 2011 – IA II (I), dated 22/01/2016.**
4. Location : **Plot no. 26-37, 54-57, 122, 143, Village Asnabad, Tehsil Olpad.**
  - a. District : **Surat-394540**
  - b. State : **Gujarat**
  - c. Latitude / Longitude : **Latitude 21<sup>0</sup>19’8.40” N**  
**Longitude 72<sup>0</sup>45’3.73” E**
5. Address for Correspondence
  - a. Address of concerned Project Chief : **Mr. A. K. Singh (Executive Director**  
Engineer (with pin code & telephone / **Technical)**  
telex / fax number) **Hindusthan Chemicals Company,**  
**GIDC Industrial Estate, Olpad – 394 540**  
**District Surat, Gujarat.**  
**Phone: 02621 221681-83, 324222**  
**Fax: 02621-221235**  
**E-mail : [aks@hcc-cyanides.com](mailto:aks@hcc-cyanides.com)**
  - b. Address of Executive Project Engineer : **As Above**  
/Manager (with pin code /fax numbers)
6. Salient features



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- a. of the project : Attached as Annexure – 1.
- b. of the environmental management plans :
  - The whole plant is working under vacuum and all vents are connected to the incinerator.
  - We have full-fledged Effluent Treatment Plants (2 Nos.) for the treatment of cyanide contaminated effluent and high TDS effluent with adequate capacity.
  - We have implemented Zero Liquid Discharge scheme from 1<sup>st</sup> April, 2016 with waste minimization for the existing ETP plants.
  - We have a valid membership of TSDF site – NECL, Nandesari and BEIL, Ankleshwar for incineration, treatment and disposal of hazardous waste.
  - We have developed greenbelt area which is approx. 43% of the total plot area.
  - We have facility for in-house monitoring and analysis of effluent and air pollutant parameters.
  - Environmental Audit and Environment Monitoring through third party are being conducted regularly.

7. Breakup of the project area **Total Land: 2,04,995 m<sup>2</sup>**  
: **Green Belt Area: 92,247 m<sup>2</sup>**
- a. Submergence area: forest & non forest : **Not Applicable (NA)**
- b. Others : **NA**



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**HINDUSTHAN CHEMICALS COMPANY**  
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8. Breakup of the project affected population with enumeration of those losing houses/dwelling units only agriculture land only, both dwelling units and agricultural land & landless labourers / artisan : **NA**
- a. SC.ST / Adivasis : **NA**
- b. Others : **NA**
9. Financial details
- a. Project cost as originally planned & subsequent revised estimates and the year of price reference : **Project Cost Rs. 202.50 Crores**
- b. Allocation made for environmental management plans with item-wise & year wise break up : **Allocation made for environmental management plans with item-wise & year wise break up is attached as Annexure – 2.**
10. Forest Land requirement
- a. The status of approval for diversion of forest land and non-forestry use : **NA**
- b. The status of clearing falling : **NA**
- c. The status of compensatory afforestation, if any : **NA**
- d. Comments on the viability and sustainability of compensatory afforestation Programme in the light of actual field experience so far : **NA**
11. The status of clear falling in non areas (much as submergence area of reservoir , approach roads) If any with quantitative information : **NA**



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12. The status of construction

a. Date of commencement (actual and / or : **NA**  
planned)

b. Date of completion (actual) and or : **NA**  
planned

13. Reasons for the delay if the project is yet to : **NA**  
start

14. Dates of site visits

a. The dates on which the project was : **30/05/2016 & 06/10/2016**  
monitored by the Regional office on : **Analysis reports of GPCB are attached as**  
previous occasion, if any : **Annexure – 3.**

b. Date of site visit for this monitoring report : **Dates of sampling are mentioned in respective**  
analysis report.

15. Details of correspondence with project : **Last Six Monthly Report (Nov-2015 to Apr-**  
authorities for obtaining action plans / **2016) was submitted in May-2016.**  
information on status of compliance to : **Form–V-Environmental Audit Statement for**  
safeguards other than the routine letters for : **the financial year 2015 – 2016 was submitted**  
logistic support for site visits : **to MoEF & CC, Bhopal on 31/05/2016. Copy**  
(The first manufacturing report may contain : **of the same is attached as Annexure – 4.**  
the details of all the letters issued so far, but :  
the letter reports may cover only the letters  
issued subsequently)



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**ENVIRONMENTAL CLEARANCE (EC) BY MOEF&CC, NEW DELHI**

**F.No. J-11011/466/2011-IA II (I) dated 22/01/2016**



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F. No. J-11011/466/2011-IA II (I)  
Government of India  
Ministry of Environment, Forest and Climate Change  
(I.A. Division)

Indira Paryavaran Bhawan  
Aliganj, Jorbagh Road,  
New Delhi -110003

E-mail : lk.bokolia@nic.in  
Telefax: 011-24695313  
Dated 22<sup>nd</sup> January, 2016

To,

Shri A.K. Singh, President (Plant)  
M/s Hindustan Chemicals Company  
(Formerly known as Cyanides & Chemicals Company)  
GIDC Industrial Estate, P.O. Olpad - 394540  
Surat, Gujarat

E-mail: [hccolp@sify.com](mailto:hccolp@sify.com) ; Fax No.02621-221235:

**Subject :** Manufacturing of Sodium Cyanide & other Cyanide based products at plot no. 26-37, 54-57, 122, 143, Village Asnabad, Tehsil Olpad, District Surat, Gujarat by M/s Hindusthan Chemicals Company (Formerly known as M/s Cyanide & Chemicals Company)- Reg Environment Clearance.

**Ref.:** Your letter no. nil dated 29<sup>th</sup> January, 2013.

Sir,

Kindly refer your letter dated 29th January, 2013 alongwith project documents including Form I, Terms of References, Pre-feasibility Report, EIA/EMP Report alongwith Public Hearing Report and subsequent submission of additional information vide letters dated 24th December, 2013 and 17<sup>th</sup> December, 2014 regarding above mentioned project. PP vide letter no. HCC/Tech/17/RPS/264 dated 10<sup>th</sup> December, 2015 has submitted 'Zero' effluent discharged scheme for effluent treatment.

2.0 The Ministry of Environment, Forest and Climate Change has examined the application. It is noted that proposal is for manufacturing of Sodium Cyanide & other Cyanide based products at plot no. 26-37, 54-57, 122, 143, Village Asnabad, Tehsil Olpad, District Surat, Gujarat by M/s Hindusthan Chemicals Company (Formerly known as M/s Cyanide & Chemicals Company). Total plot area is 2,04,995 m<sup>2</sup> of which 15,963 sq.m will be used for expansion. Total cost of the proposed expansion project is Rs. 202.50 Crore. Out of which, Rs. 2.50 Crore and Rs. 1.25 Crore per annum are earmarked towards capital cost and recurring cost per annum for pollution control measures. River Tapi is flowing at a distance of 9.5 km. No national park/wildlife sanctuary/reserve forest is located within 10 km distance. Details of existing and proposed products will be as follows:

| S.N | Name of Products        | Production Capacity (MT/Annum) |          |       |
|-----|-------------------------|--------------------------------|----------|-------|
|     |                         | Existing                       | Proposed | Total |
| 1   | Hydrogen Cyanide        | 5100                           | --       | 5100  |
| 2   | Sodium Cyanide          | 6372                           | 15000    | 21372 |
| 3   | Potassium Cyanide       | 2000                           | -        |       |
| 4   | Sodium Ferro cyanide    | 1000                           | -        |       |
| 5   | Potassium Ferro cyanide |                                | -        |       |
| 6   | Diphenyl Guanidine      | 1260                           | -        |       |
| 7   | Sodium Dicyanide        | 300                            | -        |       |

|       |  |      |      |      |
|-------|--|------|------|------|
| 8     | Mandelonitrile   | 2500 | -    |      |
| 9     | Heat Treatment Salt  | 720  | -    |      |
| 10    | <b>CYNOHYDRINES GROUP</b>  |      |      |      |
| i)    | Meta phenoxy Benzaldehyde Cyanohydrin (MPBAD Cyanohydrin))                 | 5000 |      |      |
| ii)   | Formaldehyde Cyanohydrin (Glycolonitrile)                                  |      |      |      |
| iii)  | Acetone Cyanohydrin  |      |      |      |
| iv)   | Methyl Ethyl Ketone Cyanohydrin  |      |      |      |
| v)    | Acetaldehyde Cyanohydrin (Lactonitrile)                                    |      |      |      |
| vi)   | Para Anisaldehyde Cyanohydrin  |      |      |      |
| vii)  | Cyclohexanone Cyanohydrin  |      |      |      |
| viii) | Methyl Propyl Ketone Cyanohydrin   |      |      |      |
| ix)   | Methyl Mercapto Butyronitrile (Methyl MercaptoPropionaldehyde Cyanohydrin) |      |      |      |
| x)    | Cyclo Pentanone Cyanohydrin  |      | 500  |      |
| xi)   | 2-Chloro BenzaldehydeCyanohydrin (2- Chloro Mandelonitrile)                |      | 500  |      |
| xii)  | Ortho Toly Benzaldehyde Cyanohydrin (Ortho Toly Mandelonitrile)            |      | 100  |      |
|       | Total of Cyanohydrines Group   | 5000 | 2000 | 7000 |
| 11    | <b>NITRILES GROUP</b>  |      |      |      |
| i)    | Isophoron Nitrile  | 3000 |      |      |
| ii)   | Imino Diacetoneitrile  |      |      |      |
| iii)  | Succinonitrile   |      |      |      |
| iv)   | 3-Hydroxy Propionitrile  |      |      |      |
| v)    | Methyl Amino Acetonitrile Hydrochloride                                    |      |      |      |
| vi)   | Methylene Amino Aceto Nitrile (MAAN)                                       |      | 300  |      |
|       | Total of Nitriles Group  | 3000 | 300  | 3300 |
| 12    | <b>CYANIDE BASE PRODUCTS</b>   | 3500 | 6300 | 9800 |
| i)    | Sodium Cyano Acetate   | 3500 |      |      |
| ii)   | Cyanamide (Crystals & Aqueous Solution)                                    |      |      |      |
| iii)  | Para Anisaldehyde Cyanohydrin  |      |      |      |
| iv)   | DiorthoTolyl Guanidine (DOTG)  |      |      |      |
| v)    | Zinc Cyanide   |      | 300  |      |
| vi)   | Isophoron Diamine  |      | 6000 |      |
|       | Total of Cyanide based Products  | 3500 | 6300 | 9800 |
| 13    | N G based CPP  | 2 MW | --   | --   |
| 14    | Ammonia Sulphate (By-Product)  | 2649 | --   | --   |

3.0 Adequate stack height will be provided to gas fired boiler (4 Nos. x 3.5 TPH). All the gas from the process containing HCN will be incinerated in the incinerator. Scrubber and Stack of adequate height will be provided to incinerator. Bagfilter, water scrubber and stack of adequate height will be provided to heat treatment salt plant, ammonia absorption column to ammonium sulphate recovery plant and Cyclone separator to control particulate emissions. Total water requirement will be increased from 651.2 m<sup>3</sup>/day to 1105.2 m<sup>3</sup>/day after expansion. Out of which, fresh water requirement from Kakrapar Canal will be 605 m<sup>3</sup>/day and remaining water requirement will be met from recycled water 500 m<sup>3</sup>/day. Industrial effluent generation will be increased from 265.9 m<sup>3</sup>/day to 512 m<sup>3</sup>/day after expansion. Effluent will be segregated into high TDS/COD and Low COD/TDS effluent streams. High TDS/COD effluent stream will be evaporated in Multiple Effect Evaporator (MEE). Condensate will be treated in the condensate treatment unit. Low TDS/COD effluent stream will be treated in the effluent treatment plant (ETP) comprising primary, secondary and tertiary treatment ( Reverse Osmosis). Permeate will be reused/recycled for cooling tower make up. The proposed effluent treatment scheme for the existing unit as well as

proposed expansion is based on 'Zero effluent discharge'. Incinerator will be designed as per CPCB guidelines. ETP sludge, tar residues/distillate residues, spent resin, MEE salt will be sent to TSDF. Activated carbon, ferric hydroxide and iron sludge will be sent for incineration. Waste / used oil will be sold to authorized recyclers/re-processors.

4.0 Public hearing / consultation was exempted as per stage Section 7 (i), III Stage (3), Para (i)(b) of EIA Notification 2006.

5.0 All units producing technical grade pesticides are listed at S.N. 5(b) under category 'A' and appraised at Central level.

6.0 The proposal was considered by the Expert Appraisal Committee (Industry) in its meetings held during 16<sup>th</sup> - 17<sup>th</sup> February, 2012, 16<sup>th</sup> - 17<sup>th</sup> May, 2013 and 19<sup>th</sup>-20<sup>th</sup> December, 2013 respectively. Project Proponent and the EIA Consultant namely M/s Eco-Chem Sales & Services, have presented EIA / EMP report as per the TOR. EAC has found the EIA / EMP Report and additional information to be satisfactory and in full consonance with the presented TORs. The Committee recommended the proposal for environmental clearance.

7.0 Based on the information submitted by the project proponent, the Ministry of Environment and Forests hereby accords environmental clearance to above project under the provisions of EIA Notification dated 14<sup>th</sup> September 2006, subject to the compliance of the following Specific and General Conditions:

**A. SPECIFIC CONDITIONS:**

- i) National Emission Standards for Pesticide Manufacturing and Formulation Industry issued by the Ministry vide G.S.R. 46(E) dated 3<sup>rd</sup> February, 2006 and amended time to time shall be followed by the unit.
- ii) Adequate stack height shall be provided to gas fired boilers.
- iii) All the gas from the process containing HCN shall be incinerated in the incinerator. Scrubber and Stack of adequate height shall be provided to incinerator. Bagfilter, water scrubber and stack of adequate height shall be provided to heat treatment salt plant, ammonia absorption column to ammonium sulphate recovery plant and Cyclone separator to control particulate emissions. Efficiency of pollution control device shall be monitored regularly and maintained properly. Scrubbers vent shall be provided with on-line detection and alarm system to indicate higher than permissible value of controlled parameters. At no time, the emission levels shall go beyond the prescribed standards. The system should be interlocked with the pollution control equipments so that in case of any increase in pollutants beyond permissible limits, plant should be automatically stopped.
- iv) In plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Fugitive emissions shall be controlled by providing closed storage, closed handling & conveyance of chemicals/materials, multi cyclone separator and water sprinkling system. Dust suppression system including water sprinkling system shall be provided at loading and unloading areas to control dust emissions. Fugitive emissions in the work zone environment, product, raw materials storage area etc. shall be regularly monitored and records maintained. The emissions shall conform to the limits stipulated by the GPCB.
- v) For further control of fugitive emissions, following steps shall be followed :
  - i. Closed handling system shall be provided for chemicals.

- ii. Reflux condenser shall be provided over reactor.
- iii. System of leak detection and repair of pump/pipeline based on preventive maintenance.
- iv. The acids shall be taken from storage tanks to reactors through closed pipeline. Storage tanks shall be vented through trap receiver and condenser operated on chilled water.
- v. Cathodic protection shall be provided to the underground solvent storage tanks.
- vi) A proper Leak Detection And Repair (LDAR) Program for pesticide industry shall be prepared and implemented as per CPCB guidelines. Focus shall be given for prevention of fugitive emissions for which preventive maintenance of pumps, valves, pipelines are required. Proper maintenance of mechanical seals of pumps and valves shall be given. A preventive maintenance schedule for each unit shall be prepared and adhered to.
- vii) Continuous monitoring system for HCN, chlorine, HCl and  $\text{NH}_3$  as well as VOCs, shall be installed at all important places/areas. Effective measures shall be taken immediately, when monitoring results indicate above the permissible limits. All necessary steps should be taken for monitoring of HCN, chlorine, HCl and  $\text{NH}_3$  as well as VOCs in the proposed plant.
- viii) Alarm for chlorine leakage if any in the liquid chlorine storage area shall be provided alongwith automatic start of the scrubbing system.
- ix) The gaseous emissions from DG set shall be dispersed through adequate stack height as per CPCB standards. Acoustic enclosure shall be provided to the DG sets to mitigate the noise pollution.
- x) Ambient air quality data shall be collected as per NAAQES standards notified by the Ministry vide G.S.R. No. 826(E) dated 16<sup>th</sup> September, 2009. The levels of  $\text{PM}_{2.5}$ ,  $\text{PM}_{10}$ ,  $\text{SO}_2$ ,  $\text{NO}_x$ , CO and VOC shall be monitored in the ambient air and displayed at a convenient location near the main gate of the company and at important public places. The company shall upload the results of monitored data on its website and shall update the same periodically. It shall simultaneously be sent to the Regional office of MOEF, the respective Zonal office of CPCB and GPCB.
- xi) Solvent management shall be carried out as follows :
  - i. Chilled brine circulation system shall be provided to condensate solvent vapors and reduce solvent losses. It shall be ensured that solvent recovery should not be less than 95%.
  - ii. Reactor and solvent handling pump shall have mechanical seals to prevent leakages.
  - iii. The condensers shall be provided with sufficient HTA and residence time so as to achieve more than 95% recovery
  - iv. Solvents shall be stored in a separate space specified with all safety measures.
  - v. Proper earthing shall be provided in all the electrical equipment wherever solvent handling is done.
  - vi. Entire plant shall be flame proof. The solvent storage tanks should be provided with breather valve to prevent losses.
- xii) Total water requirement from Kakrapar Canal shall not exceed  $600.3 \text{ m}^3/\text{day}$  after expansion in effect of ZLD scheme submitted by PP and prior permission should be obtained from the Competent Authority.

- xiii) Industrial effluent generation should not exceed 512 m<sup>3</sup>/day. Effluent will be segregated into high TDS/COD and Low COD/TDS effluent streams. High TDS/COD effluent stream will be evaporated in Multiple Effect Evaporator (MEE). Condensate will be treated in the condensate treatment unit. Low TDS/COD effluent stream will be treated in the effluent treatment plant (ETP) comprising primary, secondary and tertiary treatment (Reverse Osmosis). Permeate will be reused/recycled for cooling tower make up. The proposed effluent treatment scheme for the existing unit as well as proposed expansion is based on 'Zero effluent discharge'. Water quality of treated effluent should meet the norms prescribed by CPCB/SPCB.
- xiv) 'Zero' effluent discharge shall be adopted and no effluent shall be discharged outside the premises.
- xv) Automatic /online monitoring system (24x7 monitoring devices) for flow measurement and relevant pollutants in the treatment system to be installed. The data to be made available to the respective SPCB and in the Company's website.
- xvi) Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.
- xvii) Incinerator should be designed as per CPCB guidelines. SO<sub>2</sub>, NO<sub>x</sub>, HCN, HCl and CO emissions shall be monitored in the stack regularly.
- xviii) Hazardous chemicals shall be stored in tanks in tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm. Solvent transfer shall be by pumps.
- xix) The company shall obtain Authorization for collection, storage and disposal of hazardous waste under the Hazardous Waste (Management, Handling and Trans-Boundary Movement) Rules, 2008 and amended as on date for management of Hazardous wastes and prior permission from GPCB shall be obtained for disposal of solid / hazardous waste in the TSDF. Measures shall be taken for fire fighting facilities in case of emergency. Membership of TSDF for hazardous waste disposal shall be obtained.
- xx) As proposed, ETP sludge, incineration ash and evaporation residue shall be sent to TSDF site. High calorific value waste such as spent organic shall be sent to cement factory/incinerated.
- xxi) The Company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended in October, 1994 and January, 2000. All Transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.
- xxii) The company shall undertake following waste minimization measures :-
  - a. Metering and control of quantities of active ingredients to minimize waste.
  - b. Reuse of by-products from the process as raw materials or as raw material substitutes in other processes.
  - c. Use of automated filling to minimize spillage.
  - d. Use of Close Feed system into batch reactors.
  - e. Venting equipment through vapour recovery system.
  - f. Use of high pressure hoses for equipment clearing to reduce wastewater generation.
- xxiii) The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Fire fighting system shall be as per the norms.

*Signature*

- xxiv) Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
- xxv) As proposed, green belt over 33 % of the total project area should be developed within plant premises with at least 10 meter wide green belt on all sides along the periphery of the project area, in downward direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the DFO.
- xxvi) The company shall make the arrangement for protection of possible fire and explosion hazards during manufacturing process in material handling.
- xxvii) Provision shall be made for the housing for the construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile sewage treatment plant, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structure to be removed after the completion of the project. All the construction wastes shall be managed so that there is no impact on the surrounding environment.
- xxviii) At least 2.5 % of the total cost of the project should be earmarked towards the Enterprise Social Commitment (ESC) based on local needs and action plan with financial and physical breakup/details should be prepared and submitted to the Ministry's Regional Office of MoEF&CC. Implementation of such program should be ensured accordingly in a time bound manner.

**B. GENERAL CONDITIONS:**

- i. The project authorities must strictly adhere to the stipulations made by the Gujarat Pollution Control Board (GPCB), State Government and any other statutory authority.
- ii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.
- iii. The locations of ambient air quality monitoring stations shall be decided in consultation with the Gujarat Pollution Control Board (GPCB) and it shall be ensured that at least one station is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.
- iv. The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).
- v. The Company shall harvest rainwater from the roof-tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water.
- vi. During transfer of materials, spillages shall be avoided and gulland drains be constructed to avoid mixing of accidental spillages with domestic wastewater and storm water drains.
- vii. Usage of Personnel Protection Equipments by all employees/ workers shall be ensured.

- viii. Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.
- ix. The company shall also comply with all the environmental protection measures and safeguards proposed in the project report submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing relating to the project shall be implemented.
- x. The company shall undertake CSR activities and all relevant measures for improving the socio-economic conditions of the surrounding area.
- xi. The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.
- xii. A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.
- xiii. The company shall earmark sufficient funds for recurring cost per annum to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/ pollution control measures shall not be diverted for any other purpose.
- xiv. A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, ZilaParisad/Municipal Corporation, Urban local Body and the local NGO, if any, from who suggestions/ representations, if any, were received while processing the proposal.
- xv. The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the Gujarat Pollution Control Board. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.
- xvi. The environmental statement for each financial year ending 31<sup>st</sup> March in Form-V as is mandated shall be submitted to the Gujarat Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the Bhopal Regional Offices of MoEF by e-mail.
- xvii. The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at <http://envfor.nic.in>. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the

locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.

xviii. The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.

- 8.0 The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
- 9.0 The Ministry reserves the right to stipulate additional conditions, if found necessary. The company in a time bound manner will implement these conditions.
- 10.0 The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Water Pollution) Act, 1981, the Environment (Protection) Act, 1986 Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

  
(Lalit Bokolia)  
Additional Director

**Copy to :-**

1. The Principal Secretary, Environment Department, Government of Maharashtra, 15th Floor, New Administrative Building, Mantralaya, Mumbai - 400 032.
2. The Chief Conservator of Forests (Central), Kendriya Paryavaran Bhavan, Link Road No.3, Bhopal-462016.
3. The Chairman, Central Pollution Control Board Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
4. The Chairman, Maharashtra Pollution Control Board, Kalpataru Point, 3<sup>rd</sup> and 4<sup>th</sup> floor, Opp. Cine Planet, Sion Circle, Mumbai-400 022.
5. Monitoring Cell, Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhavan, Jor Bagh Road, New Delhi.
6. Guard File/Monitoring File/Record File.

  
(Lalit Bokolia)  
Additional Director



## **EC COMPLIANCE REPORT**



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**HINDUSTHAN CHEMICALS COMPANY**  
**Six Monthly Report: (May 2016 to October 2016)**

**Status of Compliance on Specific & General Conditions for Environmental Clearance  
by MoEF&CC, New Delhi.**

| S. No. | Condition  | Status   |
|--------|--|--|
| A.     | <b>SPECIFIC CONDITIONS</b>   |  |
| i)     | National Emission Standard for Pesticide Manufacturing and Formulation Industry issued by the Ministry vide G.S.R 46(E) dated 3 <sup>rd</sup> February, 2006 and amended time to time shall be followed by the unit.   | <b>Complied.</b><br>Industry meets with the National Emission Standard for Pesticide Manufacturing and Formulation Industry issued by the Ministry vide G.S.R 46(E) dated 3 <sup>rd</sup> February, 2006 it will comply with amendments when required.   |
| ii)    | Adequate stack height shall be provided to gas fired boiler.   | <b>Complied.</b><br>Adequate stack height <i>i.e.</i> 30 m has been provided for gas fired boiler.   |
| iii)   | All the gases from the process containing HCN shall be incinerated in the incinerator. Scrubber and Stack of adequate height shall be provided to incinerator. Bag filter, Water scrubber and stack of adequate height shall be provided to heat treatment salt plant, ammonia absorption column to ammonium sulphate recovery plant and cyclone separator to control particulate emissions. Efficiency of pollution control device shall be monitored regularly and maintained properly. Scrubber vent shall be provided with on-line detection and | <b>Complied.</b><br>Proper air pollution control equipment with adequate stack height has been provided to check the flue gas emission as well as process gas emission from incinerator, heat treatment salt plant and ammonium sulphate recovery and boilers.<br>HCC has installed and commissioned online stack monitoring gas analyzer and TOC meter.<br>Waste gas from all plants is driven under vacuum to existing Incinerator. HCN content in flue gas and efficiency of pollution control devices are being monitored on monthly basis by external NABL approved laboratory and also by internal Environmental Quality Lab, twice in a month basis. Bag Filter & Water |



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| S. No. | Condition  | Status   |
|--------|--|--|
|        | alarm system to indicate higher than permissible value of controlled parameters. At no time, the emission levels shall go beyond the prescribed standards. The system should be interlocked with the pollution control equipment so that in case of any increase in pollutants beyond permissible limits, plant should be automatically stopped.   | Scrubber have been provided at Incinerator while Cyclone Separator has also been provided at auxiliary boiler.<br><br>Interlocking system has been provided with the pollution control equipment to plant automatically stopped in case of any increase in pollution level.<br><br>Stack Monitoring & Analysis Methodology, Analysis Report & Month Wise Comparison is being attached as <b>Annexure- 14.</b>  |
| iv)    | In plant control measures for checking fugitive emissions from all the vulnerable source shall be provided. Fugitive emissions shall be controlled by providing closed storage, closed handling & conveyance of chemicals/materials, multi cyclone separator and water sprinkling system. Dust suppression system including water sprinkling system shall be providing at loading and unloading areas to control dust emissions. Fugitive emissions in the work zone environment, products, raw materials storage area etc. shall be regularly monitored and records maintained. The emissions shall confirm to the limits stipulated by the GPCB. | <b>Complied.</b> <ul style="list-style-type: none"><li>• Fugitive emissions in the work zone environment, raw-material storage area are being regularly monitored by on-line detectors like HCN Detectors in HCN, NaCN, and DPG &amp; Mandelonitrile / Cyanohydrin plant. Portable gas detectors are also available at all plants. Company has also engaged a third party for monitoring of finished godown for HCN, HCl, VOC, Moisture and ventilation.</li><li>• Water sprinkling system is /will be providing at loading and unloading areas to control dust emissions.</li></ul> |
| v)     | For further control of fugitive emissions,   | <b>Complied.</b>   |



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|--------|---|---|
|        | following steps shall be followed:  | Point wise all control measure has been taken to prevent fugitive emission.   |
|        | a) Closed handling system shall be provided for chemicals.  |   |
|        | b) Reflux condenser shall be provided over reactor.   |   |
|        | c) System of leak detection and repair of pump/pipeline based on preventive maintenance.  |   |
|        | d) The acids shall be taken from storage tanks to reactors through closed pipeline. Storage tanks shall be vented through trap receiver and condenser operated on chilled water.  |   |
|        | e) Cathodic protection shall be provided to the underground solvent storage tanks.  |   |
| vi)    | A proper leak detection and repair (LDAR) program for pesticide industry shall be prepared and implemented as per CPCB guidelines. Focus shall be given for prevention of fugitive emission for which preventive maintenance of pumps, valves, pipelines are required. Proper maintenance of mechanical seals of pumps and valves shall be given. A preventive maintenance schedule for | <b>Complied.</b> <ul style="list-style-type: none"><li>• Intermediate storage/dosing tank of HCN in HCN Plant, NaCN Plant, and DPG &amp; Mandelonitrile /Cyanohydrin plant have been kept under vacuum and vent is connected to the existing incinerator. Hence, there is no chance of any leakage.</li><li>• Magnetic Seals have been provided to reactors of Mandelonitrile/Cyanohydrin Plant. Reactors of other plants are closed and connected under vacuum to the incinerator. No pump is used for HCN transfer; it is</li></ul> |



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|------------------|---|---|-----------|--|--|--|--|--------|--------|-----|-----|------|------|------|------|-----|---------|------|------|-------|---------------|---------|-----|---------|-------|-----|-----|---------|-----|----|----------|-----------|-----------|-----------|----|------------------|---------|---------|---------|----|
|                  | each unit shall be prepared and adhered to.   | done by gravity through double walled chilled brine cooled SS 316 pipe line.<br><br>• Condensers with chilled brine cooling at $-5^{\circ}\text{C}$ are provided wherever required (e.g. Reactors of Mandelonitrile/Cyanohydrin) to prevent emission or vent to incinerator.  |           |  |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |
| vii)             | Continuous monitoring system for HCN, chlorine, HCL and $\text{NH}_3$ as well as VOCs shall be installed at all important places/areas. Effective measures shall be taken immediately, when monitoring results indicate above the permissible limits. All necessary steps should be taken for monitoring of HCN, chlorine, HCL and $\text{NH}_3$ as well as VOCs in the proposed plant. | <b>Complied.</b><br>Summary of work place air quality monitoring for this period is as under: <table><tr><th rowspan="2">Parameter</th><th colspan="3">Locations for Godown</th><th rowspan="2">Permissible limits for work place (Factories Act, 1948) for 8 hrs exposure</th></tr><tr><th>NACN-1</th><th>DPG -1</th><th>MDN</th></tr><tr><td>HCl</td><td>&lt;3.6</td><td>&lt;3.6</td><td>&lt;3.6</td><td>7000</td></tr><tr><td>HCN</td><td>0.5-0.6</td><td>&lt;0.4</td><td>&lt;0.4</td><td>10000</td></tr><tr><td><math>\text{NH}_3</math></td><td>3.0-3.6</td><td>3.0</td><td>4.8-5.4</td><td>18000</td></tr><tr><td>VOC</td><td>N.D</td><td>0.4-0.5</td><td>0.3</td><td>NA</td></tr><tr><td>Moisture</td><td>30.2-35.7</td><td>33.0-34.9</td><td>35.1-36.0</td><td>NA</td></tr><tr><td>Ventilation Rate</td><td>5.8-6.1</td><td>3.2-3.5</td><td>3.4-3.6</td><td>NA</td></tr></table> <b>Note:</b><br>HCl, HCN, $\text{NH}_3$ are in $\mu\text{g}/\text{m}^3$ , VOC in ppm, Moisture in $\text{g}/\text{m}^3$ and ventilation rate in $\text{m}^3/\text{sec}$ .<br>VOC has been measured as a reference of Isobutylene and detection limit of instrument is 0.1 ppm. | Parameter | Locations for Godown   |  |  | Permissible limits for work place (Factories Act, 1948) for 8 hrs exposure | NACN-1 | DPG -1 | MDN | HCl | <3.6 | <3.6 | <3.6 | 7000 | HCN | 0.5-0.6 | <0.4 | <0.4 | 10000 | $\text{NH}_3$ | 3.0-3.6 | 3.0 | 4.8-5.4 | 18000 | VOC | N.D | 0.4-0.5 | 0.3 | NA | Moisture | 30.2-35.7 | 33.0-34.9 | 35.1-36.0 | NA | Ventilation Rate | 5.8-6.1 | 3.2-3.5 | 3.4-3.6 | NA |
| Parameter        | Locations for Godown  |   |           | Permissible limits for work place (Factories Act, 1948) for 8 hrs exposure |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |
|                  | NACN-1  | DPG -1  | MDN       |  |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |
| HCl              | <3.6  | <3.6  | <3.6      | 7000   |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |
| HCN              | 0.5-0.6   | <0.4  | <0.4      | 10000  |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |
| $\text{NH}_3$    | 3.0-3.6   | 3.0   | 4.8-5.4   | 18000  |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |
| VOC              | N.D   | 0.4-0.5   | 0.3       | NA   |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |
| Moisture         | 30.2-35.7   | 33.0-34.9   | 35.1-36.0 | NA   |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |
| Ventilation Rate | 5.8-6.1   | 3.2-3.5   | 3.4-3.6   | NA   |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |
| viii)            | Alarm of chlorine leakage if any in the liquid chlorine storage area shall be provided along with automatic start of  | <b>Complied.</b><br>Alarm system has been provided for any leakage occurred in the liquid chlorine storage area.  |           |  |  |  |  |        |        |     |     |      |      |      |      |     |         |      |      |       |               |         |     |         |       |     |     |         |     |    |          |           |           |           |    |                  |         |         |         |    |



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| S. No.            | Condition  | Status  |           |           |           |     |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
|-------------------|--|---|-----------|-----------|-----------|-----|---|---|---|------------------|-----------|-----------|-----------|-----------|-----------|-----|-------------------|-----------|-----------|-----------|-----------|-----------|----|-----------------|-----------|-----------|-----------|-----------|-----------|----|-----------------|-----------|-----------|-----------|-----------|-----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----------------|---------|---------|---------|---------|---------|-----|-----|-----|-----|-----|-----|-----|-----|
|                   | the scrubbing system.  |   |           |           |           |     |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| ix)               | The gaseous emissions from DG set shall be dispersed through adequate stack height as per CPCB standards. Acoustic enclosure shall be provided to the DG sets to mitigate the noise pollution.   | <b>Complied.</b><br>Adequate measures have been taken to minimize gaseous emission from DG sets by providing air pollution control equipment and stacks at adequate height (as per CPCB norms).   |           |           |           |     |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| x)                | Ambient air quality data shall be collected as per NAAQES standards notified by the Ministry vide G.S.R. No. 826(E) dated 16 September, 2009. The levels of PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO and VOC shall be monitored in the ambient air and displayed at a convenient location near the main gate of the company and at important public places. The company shall upload the results of monitored data on its website and shall update the same periodically. It shall simultaneously be sent to the Regional office of MOEF, the respective Zonal office of CPCB and GPCB. | <b>Complied.</b><br>Ambient Air quality monitoring is carried out at five locations within the premises. Summary of ambient air monitoring is as under: <table><tr><th>Parameter</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th></tr><tr><td>PM<sub>10</sub></td><td>41.8-94.9</td><td>40.0-92.4</td><td>44.5-93.0</td><td>39.7-93.3</td><td>41.3-95.4</td><td>100</td></tr><tr><td>PM<sub>2.5</sub></td><td>19.6-45.4</td><td>18.2-43.2</td><td>20.1-48.2</td><td>18.8-41.1</td><td>18.3-45.1</td><td>60</td></tr><tr><td>SO<sub>2</sub></td><td>12.5-20.1</td><td>11.0-18.9</td><td>13.5-24.0</td><td>11.7-19.0</td><td>12.8-22.8</td><td>80</td></tr><tr><td>NO<sub>x</sub></td><td>16.6-26.4</td><td>15.0-25.1</td><td>17.3-29.0</td><td>15.0-21.8</td><td>16.8-25.3</td><td>80</td></tr><tr><td>HCN</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>200</td></tr><tr><td>HCl</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>80</td></tr><tr><td>NH<sub>3</sub></td><td>2.4-4.7</td><td>2.1-4.2</td><td>3.0-4.6</td><td>2.2-3.8</td><td>3.3-5.5</td><td>400</td></tr><tr><td>VOC</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>---</td></tr></table> <div><div>1. HCN Plant (Near C. R.)</div><div>2. Near ADM Office</div><div>3. Near R &amp; D Lab</div><div>4. Near Security Office</div><div>5. Near Ammonia Bullet Area</div><div>6. GPCB Limit</div></div> <p>Note: All the results are expressed in µg/m<sup>3</sup> and VOC is expressed in ppm</p> <p>BDL= Below Detection Limit</p> <p>HCN, NaCN &amp; DPG Plant’s vents are connected under</p> | Parameter | 1         | 2         | 3   | 4 | 5 | 6 | PM <sub>10</sub> | 41.8-94.9 | 40.0-92.4 | 44.5-93.0 | 39.7-93.3 | 41.3-95.4 | 100 | PM <sub>2.5</sub> | 19.6-45.4 | 18.2-43.2 | 20.1-48.2 | 18.8-41.1 | 18.3-45.1 | 60 | SO <sub>2</sub> | 12.5-20.1 | 11.0-18.9 | 13.5-24.0 | 11.7-19.0 | 12.8-22.8 | 80 | NO <sub>x</sub> | 16.6-26.4 | 15.0-25.1 | 17.3-29.0 | 15.0-21.8 | 16.8-25.3 | 80 | HCN | BDL | BDL | BDL | BDL | BDL | 200 | HCl | BDL | BDL | BDL | BDL | BDL | 80 | NH <sub>3</sub> | 2.4-4.7 | 2.1-4.2 | 3.0-4.6 | 2.2-3.8 | 3.3-5.5 | 400 | VOC | BDL | BDL | BDL | BDL | BDL | --- |
| Parameter         | 1  | 2   | 3         | 4         | 5         | 6   |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| PM <sub>10</sub>  | 41.8-94.9  | 40.0-92.4   | 44.5-93.0 | 39.7-93.3 | 41.3-95.4 | 100 |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| PM <sub>2.5</sub> | 19.6-45.4  | 18.2-43.2   | 20.1-48.2 | 18.8-41.1 | 18.3-45.1 | 60  |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| SO <sub>2</sub>   | 12.5-20.1  | 11.0-18.9   | 13.5-24.0 | 11.7-19.0 | 12.8-22.8 | 80  |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| NO <sub>x</sub>   | 16.6-26.4  | 15.0-25.1   | 17.3-29.0 | 15.0-21.8 | 16.8-25.3 | 80  |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| HCN               | BDL  | BDL   | BDL       | BDL       | BDL       | 200 |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| HCl               | BDL  | BDL   | BDL       | BDL       | BDL       | 80  |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| NH <sub>3</sub>   | 2.4-4.7  | 2.1-4.2   | 3.0-4.6   | 2.2-3.8   | 3.3-5.5   | 400 |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |
| VOC               | BDL  | BDL   | BDL       | BDL       | BDL       | --- |   |   |   |                  |           |           |           |           |           |     |                   |           |           |           |           |           |    |                 |           |           |           |           |           |    |                 |           |           |           |           |           |    |     |     |     |     |     |     |     |     |     |     |     |     |     |    |                 |         |         |         |         |         |     |     |     |     |     |     |     |     |



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|        |  | vacuum to Incinerator which is facilitated by Wet Scrubber before emitting burnt gases through 40 m stack height. All the vents of Mandelonitrile / Cyanohydrin Plant are connected with the Scrubber. Results of Ambient Air quality monitoring parameters are displayed near the main gate and summary of the report will be updated on company website <a href="http://www.hcc-cyanide.com">www.hcc-cyanide.com</a> |
| xi)    | Solvent management shall be carried out as follows:  | <b>Complied.</b>   |
|        | a) Chilled brine circulation system shall be provided to condensate solvent vapors and reduce solvent losses, it shall be ensured that solvent recovery should not be less than 95%. | Chilled brine circulation system has been provided to condensate solvent vapors and reduce solvent losses,   |
|        | b) Reactor and solvent handling pump shall have mechanical seals to prevent leakages.  | Mechanical seals are provided wherever required in reactors and pumps.   |
|        | c) The condensers shall be provided with sufficient HTA and residence time so as to achieve more than 95% recovery   | Condensers are provided with sufficient HTA & residence time to achieve more than 95% recovery   |
|        | d) Solvents shall be stored in a separate space specified with all safety measures.  | Separate space has been already provided as per requirement of Petroleum Act for storage of solvent.   |
|        | e) Proper earthing shall be provided   | Unit has been provided with proper earthing for all  |



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|        | in all the electrical equipment wherever solvent handling is done.  | electrical equipments.  |
|        | f) Entire plant shall be flame proof. The solvent storage tanks should be provided with breather valve to prevent losses.   | Where ever flammable chemicals are being used, flame-proof motors & fittings are provided   |
| xii)   | Total water requirement from Kakrapar Canal shall not exceed 600.3 m <sup>3</sup> /day after expansion in effect of ZLD scheme submitted by PP and prior permission should be obtained from the Competent Authority.  | <b>Complied.</b><br>Total water requirement has been increased from 651.2 m <sup>3</sup> /day to 1105.2 m <sup>3</sup> /day after expansion. Out of which, fresh water requirement from Kakrapar canal are only 600.3 m <sup>3</sup> /day and remaining water requirement are being met through recycled water <i>i.e.</i> 500 m <sup>3</sup> /day.<br>Total average wastewater generation is nil as company has implemented ZLD scheme from 1 <sup>st</sup> April, 2016.   |
| xiii)  | Industrial effluent generation should not exceed 512 m <sup>3</sup> /day. Effluent will be segregated into high TDS/COD and Low COD/TDS effluent streams. High TDS/COD effluent stream will be evaporated in Multiple Effect Evaporator (MEE). Condensate will be treated in the condensate treatment unit. Low TDS/COD effluent stream will be treated in the effluent treatment plant (ETP) comprising primary, secondary and tertiary treatment (Reverse Osmosis). | <b>Complied.</b> <ul style="list-style-type: none"><li>• Effluent generated from different plants of HCC are segregated &amp; divided for the treatment in two schemes.</li></ul> <b>1. Scheme – 1: Cyanide containing effluent with Ammonical Nitrogen, low TDS &amp; very low COD-BOD:</b> Effluent from following plants is combined for the treatment–HCN, NaCN, Ammonium Sulphate & SFCN – partly (only condensate water, which is major).<br><b>2. Scheme – 2: Effluent containing high TDS &amp; high COD – BOD:</b> |



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|        | Permeate will be reused/recycled for cooling tower make up. The proposed effluent treatment scheme for the existing unit as well as proposed expansion is based on 'Zero effluent discharge'. Water quality of treated effluent should meet the norms prescribed by CPCB/SPCB. | <p>a. SFCN Plant - Mother liquor after removing SFCN.</p> <p>b. DPG Plant - Alkaline effluent.</p> <p>c. SDCN Plant</p> <p>d. DOTG</p> <ul style="list-style-type: none"><li>Both schemes are successfully implemented &amp; treated effluent meets all norms of GPCB.</li><li>Industry have implemented Zero Liquid Discharge scheme from 1<sup>st</sup> April, 2016 with waste minimization for the existing ETP plants which is attached as <b>Annexure – 5</b>.</li></ul> <p>Analysis reports of GPCB are also attached as <b>Annexure – 3</b>.</p> |
| xiv)   | 'Zero' effluent discharge shall be adopted and no effluent shall be discharged outside the premises.   | <b>Complied.</b><br>Industry have implemented Zero Liquid Discharge scheme from 1 <sup>st</sup> April, 2016 with waste minimization for the existing ETP plants which is attached as <b>Annexure – 5</b> . No effluent is being discharged outside the premises.  |
| xv)    | Automatic /online monitoring system (24x7 monitoring devices) for flow measurement and relevant pollutants in the treatment system to be installed. The data to be made available to the respective SPCB and in the Company's website.   | <b>Complied.</b><br>Automatic /online monitoring system (24x7 monitoring devices) for flow measurement and relevant pollutants in the treatment system has been already installed.  |
| xvi)   | Process effluent/any wastewater shall not  | <b>Complied.</b>  |



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|        | be allowed to mix with storm water. Storm water drain shall be passed through guard pond.   | Utmost care is taken to avoid spillage of chemicals. All the plant area has been already covered with Dyke Wall and floor pit has also been provided to recycle/transfer spillage back to plant or to ETP.   |
| xvii)  | Incinerator should be designed as per CPCB guidelines. SO <sub>2</sub> , NO <sub>x</sub> , HCN, HCI and CO emissions shall be monitored in the stack regularly.   | <b>Complied.</b><br>Strictly follow the CPCB guidelines for any environmental concern. Gaseous pollutants like SO <sub>2</sub> , NO <sub>x</sub> , HCN, HCI and CO emissions in flue gas emission and process emission are being monitored on monthly basis by external NABL approved laboratory and also by internal Environmental Quality Lab, twice in a month basis. |
| xviii) | Hazardous chemicals shall be stored in tanks in tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm. Solvent transfer shall be by pumps.   | <b>Complied</b><br>Hazardous chemicals are being stored with proper care in tank farm, drums etc. transfer of liquid material is transferred by pipes through pumps.   |
| xix)   | The company shall obtain Authorization for collection, storage and disposal of hazardous waste under the Hazardous Waste (Management, Handling and Trans Boundary Movement) Rules, 2008 and amended as on date for management of Hazardous wastes and prior permission from GPCB shall be obtained for disposal of solid / hazardous waste in the TSDF. Measures shall be taken for | <b>Complied.</b><br>The industry has obtained authorization for the storage and disposal from GPCB and has valid membership of Nandesari Environment Control Ltd. (NECL), Baroda & Bharuch Enviro Infrastructure Ltd. (BEIL), Ankleswar. Membership copies of the same are enclosed as <b>Annexure – 6</b> .   |



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|        | firefighting facilities in case of emergency. Membership of TSDF for hazardous waste disposal shall be obtained.  |  |
| xx)    | As proposed, ETP sludge, incineration ash and evaporation residue shall be sent to TSDF site. High calorific value waste such as spent organic shall be sent to cement factory/incinerated.   | <b>Complied.</b><br>The industry has obtained authorization for the storage and disposal of incineration ash, treatment and disposal of hazardous waste from GPCB and has valid membership of Nandesari Environment Control Ltd. (NECL), Baroda and Bharuch Enviro Infrastructure Ltd. (BEIL), Ankleswar. Membership copies of the same are enclosed as <b>Annexure –6</b> .   |
| xxi)   | The Company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 11989 as amended in October, 1994 and January, 2000. All Transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989. | <b>Complied.</b> <ul style="list-style-type: none"><li>• Company has carried out various technical studies like HAZOP, Risk Assessment, Safety Audit etc. to understand work operation and their hazards to minimize the potential risk.</li><li>• Company has a comprehensive emergency action plan, contingency report and is also member of the District Crisis Group.</li><li>• Company regularly conducts Mock Drills for various scenarios such as ON-SITE Mock Drill and observations are evaluated and implemented.</li><li>• Company has got adequate firefighting &amp; hydrant system network to cope with the emergency. Company has freeze assembly points at strategic</li></ul> |



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|        |   | <p>locations &amp; emergency escape routes. Due to low movement of vehicle, HCC used to operate one gate out of two for entry and exit purpose of employees &amp; vehicle and the second gate is being kept as an emergency exit.</p> <ul style="list-style-type: none"><li>• Company has got 3 bed OHC within the premises which is managed by qualified Doctor and trained nurse round the clock. Also sufficient stock of Cyanide antidote kits is available in OHC.</li><li>• Company organizes training on various topics regarding occupational hazard to create awareness among the workforce.</li><li>• Company has organized various awareness programmes for local Students, Teachers &amp; Doctors.</li></ul> |
| xxii)  | The company shall undertake following waste minimization measures :-                                      | <b>Complied</b>  |
| a)     | Metering and control of quantities of active ingredients to minimize waste                                | Industry has already implemented sophisticated close charging system with instrumentation for metering & control of active ingredients.  |
| b)     | Reuse of by-products from the process as raw materials or as raw material substitutes in other processes. | <p>Industry is already using the Ammonium Sulphate – by-product generated from HCN Plant. This is sold as fertilizer.</p> <p>Sodium Cyanide waste &amp; mother liquor of NaCN are used for Sodium Ferro-cyanide manufacturing process.</p> <p>Acidic waste water (dilute HCl) generated from DPG Plant during the manufacture of Ferrous Chloride is</p>   |



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|        |   | being used as a raw-material.  |
| c)     | Use of automated filling to minimize spillage.  | To minimize the spillage, all finished products, <i>e.g.</i> Sodium Cyanide, Diphenyl Guanidine & Sodium Dicyanamide etc. are filled in drums/bags automatically. Spillage is almost eliminated.   |
| d)     | Use of Close Feed system into batch reactors.   | Raw-materials and process chemicals feeding system into batch reactors are in a closed system with sophisticated instrumentation   |
| e)     | Venting equipment through vapour recovery system  | Venting equipments, <i>e.g.</i> condensers, scrubbers & incinerators have been provided to the reactor to destruct hazardous vapour & hence there will be no toxic/hazardous release to atmosphere.  |
| f)     | Use of high pressure hoses for equipment clearing to reduce wastewater generation.  | Company is already using water at high pressure for cleaning the equipment.  |
| xxiii) | The unit shall make the arrangement for protection of possible fire hazards during Manufacturing process in material handling. Firefighting system shall be as per the norms, | <b>Complied.</b><br>Company has made arrangement for the protection of possible fire hazard right from the beginning. Fire water pipe line network with fire water pond & pumps have been provided to meet any emergency. Different types of required fire extinguishers have been provided in all plants & other strategic locations. Firefighting training is also given to employees. |
| xxiv)  | Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.   | <b>Complied.</b><br>Occupational Health Surveillance of all workers & employees is being done regularly by industry at least once in a year by qualified medical officer & also by an  |



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|        |  | external agency, Dr. Agarwal Diagnostic Centre, Kalyan, Mumbai. Records of the same are maintained as per the Factories Act.  |
| xxv)   | As proposed, green belt over 33 % of the total project area should be developed within plant premises with at least 10 meter wide green belt on all sides along the periphery of the project area, in downward direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the DFO. | <b>Complied</b><br>Total plot area is 2,04,995 m <sup>2</sup> out of which Greenbelt has already been developed in 92,247 sq. m., which is 45% of total land. Selected plant species is as per the CPCB guidelines in consultation with the DFO.  |
| xxvi)  | The company shall make the arrangement for protection of possible fire and explosion hazards during manufacturing process in material handling.  | <b>Complied.</b> <ul style="list-style-type: none"><li>• Company has made arrangement for the protection of possible fire hazard right from the beginning. Fire water pipe line network with fire water pond &amp; pumps have been provided to meet any emergency. Different types of required fire extinguishers have been provided in all plants &amp; other strategic locations. Firefighting training is also given to employees.</li><li>• Safety training is given to all employees on joining, followed by written test and refresher safety training is also given to all employees once in a period of two years, which includes use of PPEs.</li><li>• Pre-employment and routine medical examination for all employees handling chemicals is conducted</li></ul> |



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**HINDUSTHAN CHEMICALS COMPANY**  
**Six Monthly Report: (May 2016 to October 2016)**

| S. No.  | Condition  | Status   |
|---------|--|--|
|         |  | regularly.   |
| xxvii)  | Provision shall be made for the housing for the construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile sewage treatment plant, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structure to be removed after the completion of the project. All the construction wastes shall be managed so that there is no impact on the surrounding environment. | <b>Complied.</b><br>Industry has already made provision for the housing of construction laborers in the company's housing colony, which is nearby the plant & has all required facilities. |
| xxviii) | At least 2.5% of the total cost of the project should be earmarked towards the Enterprise Social Commitment (ESC) based on local needs and action plan with financial and physical breakup/details should be prepared and submitted to the Ministry's Regional Office of MoEF&CC. Implementation of such program should be ensured accordingly in a time bound manner.   | <b>Complied.</b> <ul style="list-style-type: none"><li>• The company has allocated a budget of 2.5% of project cost for ESC.</li></ul>   |
| B       | <b>GENERAL CONDITIONS</b>  |  |
| i)      | The project authorities must strictly adhere to the stipulations made by the   | <b>Complied</b><br>HCC has received renewed CC&A vide order no.  |



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| S. No. | Condition   | Status   |
|--------|---|--|
|        | Gujarat Pollution Control Board (GPCB), State Government and any other statutory authority.   | <p>AWH-58577 dated 25/11/2013 valid up to 14/07/2018 which is attached as <b>Annexure - 8</b>.</p> <p>HCC has also received NOC vide order No. CTE-60692 dated 23/04/2014 valid up to 23/02/2019 for standby D. G. Set.</p> <p>HCC has received CC&amp;A–Amendment vide order no. GPCB / CCA – SRT - 50 (8) / ID_20643 / CCA-Amendment (A-66818) dated 06/05/2015 for standby D. G. Set which is attached as <b>Annexure - 9</b>.</p> <p>Company adheres to all the stipulations made by GPCB for the obtained CC&amp;A and NOC.</p> |
| ii)    | No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any. | <p><b>Complied.</b></p> <p>Company assures that no further expansion or modification in the plant shall be carried out without prior approval of MoEF&amp;CC. A fresh reference shall be made for any deviation &amp; change in the plant.</p>   |
| iii)   | The locations of ambient air quality monitoring stations shall be decided in consultation with the Gujarat Pollution Control Board (GPCB) and it shall be ensured that at least one station is  | <p><b>Complied.</b></p> <p>Industry has already decided the following four ambient air locations as under in consultation with GPCB.</p> <ol style="list-style-type: none"><li>1. HCN plant</li><li>2. ADM Office</li></ol>  |



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**HINDUSTHAN CHEMICALS COMPANY**  
**Six Monthly Report: (May 2016 to October 2016)**

| S. No. | Condition  | Status   |
|--------|--|--|
|        | installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.   | 3. R&D lab.<br>4. Security Office  |
| iv)    | The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time). | <b>Complied.</b><br>Overall ambient noise level was found in the range of 45– 75 db(A) in day time and 40 – 68 db(A) in night time during the study period.<br>During the study period, the ambient noise level was within the limit as per the standard prescribed under Environment (Protection) Act, 1986, Rules, 1989 for day time and night time.                                       |
| v)     | The Company shall harvest rainwater from the roof-tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water.  | <b>Complied.</b><br>Industry has already implemented rain water harvesting. During last six months, 14,800 m <sup>3</sup> of rain water was harvested.<br>Since water table of surrounding area of the unit is very high, hence re-charging of ground water is quite difficult, so the industry uses harvested water for gardening, washing & in process to reduce consumption of raw water. |
| vi)    | During transfer of materials, spillages shall be avoided and garland drains be   | <b>Complied.</b><br>Utmost care is taken to avoid spillage of chemicals.   |



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**HINDUSTHAN CHEMICALS COMPANY**  
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| S. No. | Condition   | Status  |
|--------|---|---|
|        | constructed to avoid mixing of accidental spillages with domestic wastewater and storm water drains.  | All the plant area has been already covered with Dyke Wall and floor pit has also been provided to recycle/transfer spillage back to plant or to ETP.   |
| vii)   | Usage of Personnel Protection Equipments by all employees/ workers shall be ensured.  | <b>Complied.</b><br>All necessary PPEs such as Hand Gloves, Dust mask, Gas mask, Face mask, Safety shoes, Helmet etc. & other safety equipment's/materials are being provided as per the requirements of safe workplace condition.  |
| viii)  | Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.  | <b>Complied.</b><br>Safety training is given to all employees on joining, followed by written test and refresher safety training is also given to all employees once in a period of two years, which includes use of PPEs.<br>Pre-employment and routine medical examination for all employees handling chemicals is conducted regularly. |
| ix)    | The company shall also comply with all the environmental protection measures and safeguards proposed in the project report submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing relating to the project shall be implemented. | <b>Complied.</b><br>Industry has provided scrubber, dust collector, bag filter and cyclone separator wherever required.   |
| x)     | The company shall undertake CSR   | <b>Partially Complied.</b>  |



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**HINDUSTHAN CHEMICALS COMPANY**  
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| S. No. | Condition   | Status   |
|--------|---|--|
|        | activities and all relevant measures for improving the socio-economic conditions of the surrounding area. .   | <ul style="list-style-type: none"><li>• HCC Management believes in socio-economic upliftment and undertakes various CSR activities based on requirement of surrounding areas.</li><li>• Company is actively working on improving socio-economic conditions of the surrounding area by way of organizing medical camps, blood donation camps, donation to schools &amp; villages.</li><li>• Awareness training on hazards of chemicals used/produced in plant &amp; their preventive measures are being given to people of surrounding villages.</li><li>• Below mentioned CSR activity was carried out by HCC during the period of May 2016 to October 2016:</li><li>• Donated Rs. 2,00,000/- for mass marriage of 151 couple from economically weaker section of the society, held on 8th May, 2016 which was organized by “Samarth Kalyan Seva” Charitable Trust, Olpad.</li></ul> |
| xi)    | The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment. | <b>Complied.</b> <ul style="list-style-type: none"><li>• Company is actively working on eco-developmental measures in the project area. New tree plantation is done every year on Safety Day, World Environment Day &amp; before monsoon.</li><li>• Company has organized various safety and environment awareness programs and also planted 3,000 nos. of trees within premises in the month of May 2016 to October 2016.</li></ul>   |



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**HINDUSTHAN CHEMICALS COMPANY**  
**Six Monthly Report: (May 2016 to October 2016)**

| S. No. | Condition  | Status   |
|--------|--|--|
| xii)   | A separate Environmental Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.  | <b>Complied.</b><br>Company has already set up Environmental Management Cell (EMC) equipped with full-fledged laboratory facility. Company has also appointed qualified Environmental Officer, who looks after day-to-day monitoring and management activity of the EMC. |
| xiii)  | The company shall earmark sufficient funds for recurring cost per annum to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management pollution control measures shall not be diverted for any other purpose. | <b>Agreed.</b><br>HCC Management believes in sustainable management of natural resources and environment of project site as well as surrounding areas. Adequate funds are available for the same.  |
| xiv)   | A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, ZilaParisad/Municipal Corporation, Urban local Body and the local NGO, if any, from who suggestions/representations, if any, were received while processing the proposal.  | <b>Partially Complied.</b><br>Copy of the clearance letter has been sent to concerned authorities but has not put on the company's website.  |



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| S. No. | Condition   | Status   |
|--------|---|--|
| xv)    | The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the Gujarat Pollution Control Board. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company. | <b>Agreed &amp; Complied.</b><br>HCC is regularly submitting summary of six monthly report on status of compliance of EC conditions by e-mail to Regional Office of MoEF & CC and the same comprehensive physical report by post to the Regional office of MoEF&CC, the respective zonal office of CPCB and the State Pollution Control Board. |
| xvi)   | The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-V as is mandated shall be submitted to the Gujarat Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the Bhopal Regional Offices of MoEF by e-mail.                | <b>Complied.</b><br>Environmental statement for each financial year in Form – V is being submitted to GPCB.<br>HCC has sent copy of Form – V through courier for the financial year 2015 – 2016 to MoEF, Bhopal on 31 <sup>st</sup> May, 2015.   |
| xvii)  | The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry  | <b>Complied.</b><br>Information on Environmental Clearance for new projects has already been advertised in two local   |



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| S. No. | Condition   | Status  |
|--------|---|---|
|        | and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at <a href="http://envfor.nic.in">http://envfor.nic.in</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional office to the ministry. | newspapers as detailed below and also sent to Regional Office, GPCB.<br>Gujarat Mitra on 30 <sup>th</sup> January 2016<br>Rajasthan Patrika on 30 <sup>th</sup> January 2016  |
| xviii) | The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.  | <b>Complied.</b><br>In case of EC already granted, the new products are proposed to be manufactured in the existing facility and the project cost is financed from internal accruals. Further, major part of the proposed cost, <i>i.e.</i> 2 MW CPP has still not been established.<br>However, when the proposed EC shall be granted for new expansion, we shall inform the Regional Office as well as Ministry regarding the details of financial closure and financial approval of the project. |



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## **SUMMARY**

Hindusthan Chemical Company, formerly known as Cyanides & Chemicals Company, is a unit of HEIL. The unit was set up in the year 1982 in GIDC Industrial Estate at Olpad Taluka of Surat District in Gujarat State. The unit is engaged in manufacture of Hydrogen Cyanide (HCN) and Cyanide based products. The unique feature of the HCN manufacturing technology is that the whole system of manufacturing process is working under vacuum hence in any case hazardous gas is not released-out into the atmosphere from the production system. The unit is manufacturing of Hydrogen Cyanide, Sodium Cyanide, Potassium Cyanide, Sodium/Potassium Ferro Cyanide, Diphenyl Guanidine, Heat Treatment Salt, Sodium Dicyanamide, Cyanohydrins, Nitriles, Cyanide based products, Mandelonitrile and Natural Gas based Captive power Plant.

Under environment legislation, it is mandatory to submit six monthly compliance reports on the conditions mentioned in the Environment Clearance (EC) vide letter no.: No. J – 11011/ 466/2011 – IA II (I) dated 22/01/2016 issued by Ministry of Environment & Forests (MoEF), Govt. of India, New Delhi. Hindusthan Chemicals Company at Olpad Dist: Surat has obtained valid EC, NOC & CC&A from concerned authorities.

The industry has awarded contract for the Environmental monitoring and preparation of six monthly EC compliance report to Ecosystem Resource Management Pvt. Ltd. The consultancy firm has its own well equipped laboratory to measure the pollution parameters related to Environmental Monitoring (Air, Water, Wastewater, Soil) with National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation. All monitoring equipments are available to measure Stack emissions, Ambient Air quality and noise level of various plants.

Six monthly compliance report along with monitoring data are regularly submitted to the concerned department and during monitoring period of this report RO visit was also done. All the conditions stipulated in EC clearance was compiled by the project proponent.





## **OBSERVATIONS & RECOMMENDATIONS**

- HCC has obtained valid EC, NOC & CC&A from concerned authorities.
- HCC used to operate one gate out of two for entry & exit purpose of employees & vehicle and the second gate is being kept as an emergency exit.
- All the analysis report of ambient air, stack, effluent & noise are well within the GPCB norms.
- Industry has implemented ZLD scheme and no effluent discharge outside the industry premises.
- Industry has carried out regularly pre-employment & routine medical examination for all employees.
- HCC has greenbelt area of 22 acres (45%) within premises.
- HCC has installed and commissioned online stack monitoring gas analyzer and TOC meter.
- HCC has implemented rain water harvesting.
- HCC has been regularly carried out CSR activities.
- It is recommended to upload regularly six monthly compliance report of EC conditions, EC letter, Form – V, Latest CC&A and NOC on company's website.
- HCC has obtained membership certificate of BEIL, Ankleshwar & NECL, Baroda for disposal of hazardous waste.



### ANNEXURE 1 - Salient Features of Project

| S. No. | Description      | Details                                     |
|--------|------------------|---|
| 1.     | Airport          | Surat (@ 22 km) in S direction              |
| 2.     | Railway station  | Surat (@ 19 km) in SE direction             |
| 3.     | Port             | Magdalla (@ 26 km) in S direction           |
| 4.     | National Highway | NH-8 (@ 21 km) in E direction               |
| 5.     | State Highway    | SH-6 (@ 350 m) in E direction               |
| 6.     | Town/City        | Surat (@ 15 km) in SE direction             |
| 7.     | Village          | Olpad (@ 1.5 km) From nearest main locality |
| 8.     | River            | Tapi (@ 9.5 km) in SE direction             |
| 9.     | Sea              | Arabian Sea (@ 18.5 km) in SW direction     |

**ANNEXURE 2 - Details of Expenditure Allocated on Environment Management Plan**

| <b>S.<br/>No.</b> | <b>Head of Expenses</b>               | <b>Expenditure (Rs. In Lakhs)</b> |                     |
|-------------------|---------------------------------------|-----------------------------------|---------------------|
|                   |                                       | <b>Year 2015-16</b>               | <b>Year 2016-17</b> |
| 1.                | Effluent Treatment Facility           | 2000.00                           | 60.00               |
| 2.                | Hazardous Waste Management Facility   | 156.00                            | 200.00              |
| 3.                | Green Belt Development                | 9.00                              | 9.00                |
| 4.                | Electricity charge to run ETP for GEB | 94.50                             | 94.66               |
| 5.                | Environment Monitoring & Audit        | 20.00                             | 30.00               |
| <b>Total</b>      |                                       | <b>2279.50</b>                    | <b>393.66</b>       |

## ANNEXURE 3 – GPCB Analysis Report



### ANALYSIS REPORT FOR Hazardous WASTE TYPE : SOL

Sample ID: 188099 - Analysis Completion 21/06/2016

Chemicals & Products / LAB Inward : 25439

Gujarat Pollution Control Board  
Surat  
338, Belgium Square  
Typical 1st Floor, Opp. Linear Bus Stand  
Ring Road, SURAT  
Telen(0261) 2442696

1. Name & : Hindusthan Chemicals Company Old Name: Cyanides & Chemicals Company) - 20643  
2. Address of the Unit : ,GIDC IND. ESTATE, P.O. - OLPAD  
OLPAD - 394540 , Taluka : Olpad, District : Surat, GIDC : Not In Gide  
3. Nature of Sample : REP-Representative/Grab , (Insp Type : VIG-By Vigilance Team)  
4. Sample Collected By : J.M.Chaudhary, DEE  
5. Date & Time of Collection & Receipt : 30-May-2016, (1320 to 1330)  
6. Date of Start & Completion of Analysis : 31/05/2016 17:48:20 & 21/06/2016  
7. Sampling Point : Accumulated solid mass discharged outside premises -  
8. Physical State : Solid  
9. Disposal Mode : In to Masma Khadi  
10. Waste Category :  
11. Temperature on Collection : 32 & Color & Appearance : white  
12. Hazardous Sampled (SPM-M3) : - & Carboys Marks : SUR-7A5FLC

| Sr | Parameter                             | Unit  | Test Method  | Range of Testing | Result |
|----|---------------------------------------|-------|--|------------------|--------|
| 1  | pH                                    | Unit  | 4500 B APHA, Std Methods 22nd edn-2012                 | 1 - 14           | 0.16   |
| 2  | Total Dissolved Solids                | gm/kg | 2540 C APHA 21st edn)                                  | 20-500000mg/kg   | 507.32 |
| 3  | Total Inorganic Solids (TIS)          | gm/kg | 2540 G APHA Standard Methods 22nd edn-2012             | 1-1000 gm/kg     | 482.1  |
| 4  | Ammonical Nitrogen                    | gm/kg | 1). Titrimetric method. 2). Nesslerization method. (4) | 0.5 - 5000 mg/l  | 0.05   |
| 5  | Cyanide                               | gm/kg | Titrimetric method. (4500 - CN? D APHA Standard        | 0.05-10 mg/l     | 0.01   |
| 6  | BioChemical Oxygen Demand (3 Days 27o | gm/kg | 5 day BOD test (IS 3025 Method )                       | 1-600000mg/kg    | 3.0    |
| 7  | Chemical Oxygen Demand                | gm/kg | APHA (22nd Edition)- 5220 E Open Reflux Method         | 5.0- 50000 &     | 5.99   |

Laboratory Remarks : Approve By-SB-r.o\_98 Dt: 22/06/2016

B.Y. Rathod, Lab Head

Field Observation :

27/06/2016



# ANALYSIS REPORT FOR WATER / WASTE WATER SAMPLE

Sample ID: 188095 - Analysis Completed: 22/06/2016

Chemicals & Products / LAB Inward : 25449

Gujarat Pollution Control Board, Surat  
338, Belgium Square  
Typical 1st Floor, Opp. Linear Bus Stand  
Ring Road, SURAT  
Tele: (0261) 2442696

## TEST REPORT

Test Report No. : 25449

Date: 22/06/2016

1. Name of the Customer : Hindosthan Chemicals Company Old Name: Cyanides & Chemicals Company) - 20643
2. Address : GIDC INDUSTRIAL ESTATE, P.O. - OLPAD  
OLPAD-394540, Taluka : Olpad, District : Surat, GIDC : Not In Gide
3. Nature of Sample : REP-Representative/Grab, (Insp Type : VIG-By Vigilance Team)
4. Sample Collected By : J.M.Chaudhary, DEE
5. Quantity of Sample Received : 5 Lit
6. Code No. of the Sample : 188095
7. Date & Time of Collection & Inwarding : 30/05/2016, (1350 to 1350) & 31/05/2016
8. Date of Start & Completion of Analysis : 01/06/2016 & 21/06/2016
9. Sampling Point : From MEE feed tank -
10. Flow Details (Remarks) :
11. Mode of Disposal : for further treatment in CETP
12. Ultimate Receiving Body : Arabian sea through masma khadi
13. Temperature on Collection : 34 & pH Range on pH Strip : @ 7 to 8 on pH strip
14. Carboys Nos for : SUR-4C5LUL & Color & Appearance : Milky white
15. Water Consumption & W.W.G (KLPD) : Ind : 643,200 , Dom : 8,000 & Ind : 265,900 , Dom : 8,000

| Sr | Parameter              | Unit       | Test Method   | Range of Testing        | Result |
|----|------------------------|------------|---|-------------------------|--------|
| 1  | Temperature            | Centigrade | IS: 3025 (Part - 9) - 1984 (Reaffirmed 2000)          | Ambient oC - 60 oC      | 34     |
| 2  | pH                     | pH Units   | 4500 H+ B APHA Standard Methods 22nd ed. 2012         | 1 - 14 - pH value As or | 7.95   |
| 3  | Colour                 | Pt.Co.Ir.  | 2120 B APHA Standard Methods 22nd ed. 2012            | 2 - to 99 Hazen & 1-50  | 5      |
| 4  | Total Dissolved Solids | mg/l       | Gravimetric method. (2540 C APHA Standard Method      | 10 - 200000 mg/l.       | 7582   |
| 5  | Suspended Solids       | mg/l       | Gravimetric method. (2540 D APHA Standard Method      | 2 - 10000 mg/l.         | 58     |
| 6  | Ammonical Nitrogen     | mg/l       | 1). Titrimetric method (4500 NH3 B & C APHA Standa    | 1 - 2000 mg/l           | 0.58   |
| 7  | Chloride               | mg/l       | Argentometric method. (4500 Cl? B APHA Standard       | 1 - 50000 mg/l          | 3920   |
| 8  | Sulphate               | mg/l       | APHA (22nd ed) (4500 SO4 E                            | 2-40mg/l                | 622    |
| 9  | Chemical Oxygen Demand | mg/l       | APHA (22nd Edition)- 5220 B Open Reflux Method-2      | 5.0- 50000 mg/l         | 81     |
| 10 | Oil & Grease           | mg/l       | Liquid - Liquid Partition Gravimetric method. (5520 B | 0.1 - 1000 mg/l         | 0.4    |
| 11 | Phenolic Compounds     | mg/l       | 4 Amino Antipyrine method without Chloroform Extra    | 0.1 - 50 mg/l           | BDL    |
| 12 | Cyanide                | mg/l       | Titrimetric method. (4500 - CN? D APHA Standard M     | 1-10 mg/l               | BDL    |
| 13 | Sulphide               | mg/l       | APHA (22nd Ed) (4500-s2-F -Iodometric Method          | 1-500.0 mg/l            | BDL    |
| 14 | B.O.D (3 Days @ 20°C)  | mg/l       | 5 - Day BOD test. (IS 3025 (Part 44) 1993 Reaffirm    | 05-50000 mg/l           | 25     |

Laboratory Remarks : Approved (BDL-Below Detection limit, Minimum detection limit of Phenol- 0.1mg/l, Sulphide- 1.0mg/l, Cyanide- 0.02 mg/l) By: 96-ra\_98 OL, 22/06/2016

**B.Y. Rathod, Lab Head**

Field Observation :

### Note

1. \* - These parameters are covered under the scope of NABL.
2. The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
3. Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
4. This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
5. The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
6. Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
7. Permissible Limits: as per Schedule VI of EPA Rules, 1986 as amended by Second and Third amendment 1993 for Effluents.
8. Physicochemical and microbiological parameters, Std. Methods for Water and Waste Water- 22nd Edition by APHA.
9. Bioassay test (for toxicity) - IS 6582-Part-2-2001, Reaffirmed 2007.



# ANALYSIS REPORT FOR WATER / WASTE WATER SAMPLE

Sample ID: 188096 - Analysis Completion: 21/06/2016

Chemicals & Products / LAB Inward : 25450

Gujarat Pollution Control Board, Surat  
33B, Belgium Square  
Typical 1st Floor, Opp. Linear Bus Stand  
Rag Road, SURAT  
Tele: (0261) 2442695

## TEST REPORT

Test Report No. : 25450

Date: 22/06/2016

1. Name of the Customer : Hindusthan Chemicals Company Old Name: Cyanides & Chemicals Company) - 20643
2. Address : GIDC IND.ESTATE.P.O. - OLPAD  
OLPAD-394540, Taluka : Olpad, District : Surat, GIDC : Not In Gidc
3. Nature of Sample : REP-Representative/Grab, (Insp Type : VIG-By Vigilance Team)
4. Sample Collected By : J.M.Chaudhary, DEE
5. Quantity of Sample Received : 5 Lit
6. Code No. of the Sample : 188096
7. Date & Time of Collection & Inwarding : 30/05/2016, (1355 to 1355) & 31/05/2016
8. Date of Start & Completion of Analysis : 01/06/2016 & 21/06/2016
9. Sampling Point : From MEE condenset storage tank -
10. Flow Details (Remarks) :
11. Mode of Disposal : reuse
12. Ultimate Receiving Body : Arabian sea through masma khadi
13. Temperature on Collection : 32 & pH Range on pH Strip : @ 7 to 8 on pH strip
14. Carboys Not for : SUR-7U424S & Color & Appearance : Colourless
15. Water Consumption & W.W.G (KLPD) : Ind :643.200 , Dom :8.000 & Ind :265.900 , Dom :8.000

| Sr | Parameter              | Unit       | Test Method   | Range of Testing       | Result |
|----|------------------------|------------|---|------------------------|--------|
| 1  | Temperature            | Centigrade | IS: 3025 (Part - 9) - 1984(Reaffirmed 2008)           | Ambient oC - 60 oC     | 32     |
| 2  | pH                     | pH Units   | 4500 H+ B APHA Standard Methods 22nd ed. 2012         | 1 - 14 pH value As or  | 8.45   |
| 3  | Colour                 | Pt.Co.Sc   | 2120 B APHA Standard Methods 22nd ed. 2012            | 2 - to 90 Hazen & 1-50 | 5      |
| 4  | Total Dissolved Solids | mg/l       | Gravimetric method. (2540 C APHA Standard Method      | 10 - 200000 mg/L       | 218    |
| 5  | Suspended Solids       | mg/l       | Gravimetric method. (2540 D APHA Standard Method      | 2 - 10000 mg/L         | 10     |
| 6  | Ammonical Nitrogen     | mg/l       | 1). Titrimetric method (4500 NH3 B & C APHA Stando    | 1 - 2000 mg/l          | BDL    |
| 7  | Chloride               | mg/l       | Argentometric method. (4500 Cl7 B APHA Standard M     | 1 - 50000 mg/l         | 40     |
| 8  | Sulphate               | mg/l       | APHA(22nd ed)4500 SO4 E                               | 2-40mg/l               | 8      |
| 9  | Chemical Oxygen Demand | mg/l       | APHA (22nd Edition)- 5220 B Open Reflux Method-2      | 5.0- 50000 mg/l        | 7      |
| 10 | Oil & Grease           | mg/l       | Liquid - Liquid Partition Gravimetric method. (5520 B | 01 - 1000 mg/l         | BDL    |
| 11 | Phenolic Compounds     | mg/l       | 4 Amino Antipyrine method without Chloroform Extra    | 0.1 - 50 mg/l          | BDL    |
| 12 | Cyanide                | mg/l       | Titrimetric method. (4500 - CN7 D APHA Standard M     | 1-10 mg/l              | BDL    |
| 13 | Sulphide               | mg/l       | APHA (22nd Ed)4500-s2-F -Iodometric Method            | 1-500.0 mg/l           | BDL    |
| 14 | B.O.D (3 Days 20°C)    | mg/l       | 3 - Day BOD test. (IS 3025 (Part-44) 1993 Reaffirm    | 05-50000 mg/l          | <5     |

Laboratory Remarks : Approve BDL-Below Detection limit, Minimum detection limit of Phenol-  
0.1mg/l, Oil and grease-0.2mg/l, Sulphide- 1.0mg/l, Cyanide-0.02 mg/l) By 95-r.r., 98 DL  
22/06/2016

B.Y. Rathod, Lab Head

Field Observation :

### Notes

1. \* - These parameters are covered under the scope of NABL.
2. The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
3. Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
4. This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
5. The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
6. Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
7. Permissible limits as per Schedule VI of EPA Rules, 1986 as amended by Second and Third amendment 1993 for Effluents.
8. Physicochemical and microbiological parameters, Std. Methods for Water and Waste Water- 22nd Edition by APHA.
9. Biotox test (for toxicity) -IS:6582-Part-2:2001; Reaffirmed 2007.



27/06/2016



# ANALYSIS REPORT FOR WATER / WASTE WATER SAMPLE

Sample ID: IX8094 - Analysis Completion: 23/06/2016

Chemicals & Products / LAB Inward : 25448

Gujarat Pollution Control Board, Surat  
338, Belgium Square  
Typical 1st Floor, Opp. Linear Bus Stand  
Ring Road, SURAT  
Tele: (0361) 2442696

## TEST REPORT

Test Report No. : 25448

Date: 22/06/2016

1. Name of the Customer : Hindusthan Chemicals Company Old Name: Cyanides & Chemicals Company) - 20643
2. Address : ,GIDC INDUSTRIAL P.O. - OLPAD  
OLPAD-394540, Taluka : Olpad, District : Surat, GIDC : Not In Gidc
3. Nature of Sample : REP-Representative/Grab, (Insp Type : VIG-By Vigilance Team)
4. Sample Collected By : J.M.Chaudhary, DEE
5. Quantity of Sample Received : 5 Lit
6. Code No. of the Sample : I88094
7. Date & Time of Collection & Inwarding : 30/05/2016 , (1310 to 1310) & 31/05/2016
8. Date of Start & Completion of Analysis : 01/06/2016 & 21/06/2016
9. Sampling Point : From storm water drain outlet of Industry -
10. Flow Details (Remarks) : Minor flow
11. Mode of Disposal : In to Masma Khadi
12. Ultimate Receiving Body : Arabian sea through masma khadi
13. Temperature on Collection : 34 & pH Range on pH Strip : @7-8 on pH strip
14. Carboys Not for : SUR-SV6Y8E & Color & Appearance : Greenish
15. Water Consumption & W.W.G (KLPD) : Ind :643.200 , Dom :8.000 & Ind :265.900 , Dom :8.000

| Sr | Parameter              | Unit       | Test Method   | Range of Testing       | Result |
|----|------------------------|------------|---|------------------------|--------|
| 1  | Temperature            | Centigrade | IS: 3025 (Part - 8) - 1984 (Reaffirmed 2006)          | Ambient oC - 80 oC     | 34     |
| 2  | pH                     | pH Units   | 4500 H+ B APHA Standard Methods 22nd ed. 2012         | 1 - 14 pH value As or  | 7.65   |
| 3  | Color                  | PCU/c.c.   | 2120 B APHA Standard Methods 22nd ed. 2012            | 2 - to 99 Hazen & 1-50 | 700    |
| 4  | Total Dissolved Solids | mg/l       | Gravimetric method. (2540 C APHA Standard Method      | 10 - 200000 mg/l       | 15670  |
| 5  | Suspended Solids       | mg/l       | Gravimetric method. (2540 D APHA Standard Method      | 2 - 10000 mg/l         | 452    |
| 6  | Ammonical Nitrogen     | mg/l       | 1) Titrimetric method (4500 NH3 B & C APHA Standa     | 1 - 2000 mg/l          | 25.2   |
| 7  | Chloride               | mg/l       | Argentometric method. (4500 Cl7 B APHA Standard I     | 1 - 50000 mg/l         | 8400   |
| 8  | Sulphate               | mg/l       | APHA (22nd ed.) 4500 SO4 E                            | 2-40mg/l               | 3803   |
| 9  | Chemical Oxygen Demand | mg/l       | APHA (22nd Edition)- 5220 B Open Reflux Method-2      | 5.0- 50000 mg/l        | 639    |
| 10 | Oil & Grease           | mg/l       | Liquid - Liquid Partition Gravimetric method. (5520 B | 0.1 - 1000 mg/l        | 2.9    |
| 11 | Phenolic Compounds     | mg/l       | 4 Amino Antipyrine method without Chloroform Extra    | 0.1 - 50 mg/l          | 0.34   |
| 12 | Cyanide                | mg/l       | Titrimetric method. (4500 - CN7 D APHA Standard M     | 1-10 mg/l              | 801    |
| 13 | Sulphide               | mg/l       | APHA (22nd Ed.) 4500-s2 F -Iodometric Method          | 1-500.0 mg/l           | 0.27   |
| 14 | B.O.D (5 Days 20°C)    | mg/l       | 3 - Day BOD test. (IS 3025 (Part 44) 1993 Reaffirm    | 05-50000 mg/l          | 128    |

Laboratory Remarks : Approved By: 196-c-o\_95 Dt: 22/06/2016

B.Y. Rathod, Lab Head

Field Observation :

### Note

1. \* - These particulars are covered under the scope of NABL.
2. The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
3. Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
4. This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
5. The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
6. Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
7. Permissible Limits: as per Schedule VI of EPA Rules, 1986 as amended by Second and Third amendment 1993 for Effluents
8. Physicochemical and microbiological parameters, Std Methods for Water and Waste Water- 22nd Edition by APHA.
9. Bioassay test (for toxicity) - IS:6582-Part-2:2001; Reaffirmed 2007.

13 1 23

27/06/2016



# ANALYSIS REPORT FOR WATER / WASTE WATER SAMPLE

Sample ID: 188098 - Analysis Completion: 21/06/2016

Chemicals & Products / LAB Inward : 25452

Gujarat Pollution Control Board, Surat  
338, Belgium Square  
Typical 1st Floor, Opp. Linear Bus Stand  
Ring Road, SURAT  
Tele: (0261) 2442696

## TEST REPORT

Test Report No. : 25452

Date: 22/06/2016

1. Name of the Customer : Hindusthan Chemicals Company Old Name: Cyanides & Chemicals Company) - 20643
2. Address : ,GIDC INDUSTRIAL ESTATE, P.O. - OLPAD  
OLPAD-394540, Taluka : Olpad, District : Surat, GIDC : Not In Gide
3. Nature of Sample : REP-Representative/Grab, (Insp Type : VIG-By Vigilance Team)
4. Sample Collected By : J.M. Chaudhary, DEE
5. Quantity of Sample Received : 5 Lit
6. Code No. of the Sample : 188098
7. Date & Time of Collection & Inwarding : 30/05/2016 , (1415 to 1415) & 31/05/2016
8. Date of Start & Completion of Analysis : 01/06/2016 & 21/06/2016
9. Sampling Point : From collection tank of STP -
10. Flow Details (Remarks) : Yes
11. Mode of Disposal : for further treatment in ETP
12. Ultimate Receiving Body : Arabian sea through masma khadi
13. Temperature on Collection : 35 & pH Range on pH Strip : @ 7 to 8 on pH strip
14. Carboys Nos for : SUR-142MFU & Color & Appearance : Grey
15. Water Consumption & W.W.G (KLPD) : Ind : 643.200 , Dom : 8.000 & Ind : 265.900 , Dom : 8.000

| Sr | Parameter              | Unit       | Test Method   | Range of Testing       | Result |
|----|------------------------|------------|---|------------------------|--------|
| 1  | Temperature            | Centigrade | IS: 3025 (Part - 9) - 1984 (Reaffirmed 2005)          | Ambient °C - 80 °C     | 35     |
| 2  | pH                     | pH Units   | 4500 H+ B APHA Standard Methods 22nd ed. 2012         | 1 - 14 pH value As or  | 7.38   |
| 3  | Color                  | Pl.Co.Sc   | 2120 B APHA Standard Methods 22nd ed. 2012            | 2 - to 50 Hazen & 1-50 | 10     |
| 4  | Total Dissolved Solids | mg/l       | Gravimetric method, (2540 C APHA Standard Method      | 10 - 200000 mg/l       | 3888   |
| 5  | Suspended Solids       | mg/l       | Gravimetric method, (2540 D APHA Standard Method      | 2 - 10000 mg/l         | 370    |
| 6  | Ammonical Nitrogen     | mg/l       | 1) Titrimetric method (4500 NH3 B & C APHA Stan       | 1 - 2000 mg/l          | 0.50   |
| 7  | Cyanide                | mg/l       | Argentometric method, (4500 CN- B APHA Standard       | 1 - 50000 mg/l         | 1600   |
| 8  | Sulphate               | mg/l       | APHA (22nd ed) 4500 SO4 E                             | 2-40 mg/l              | 139    |
| 9  | Chemical Oxygen Demand | mg/l       | APHA (22nd Edition)- 5220 B Open Reflux Method-2      | 5.0 - 50000 mg/l       | 54     |
| 10 | Oil & Grease           | mg/l       | Liquid - Liquid Partition Gravimetric method, (5520 B | 01 - 1000 mg/l         | 804    |
| 11 | Phenolic Compounds     | mg/l       | 4 Amino Antipyrone method without Chloroform Extra    | 0.1 - 50 mg/l          | 0.04   |
| 12 | Cyanide                | mg/l       | Titrimetric method, (4500 - CN- D APHA Standard Me    | 1-10 mg/l              | 504    |
| 13 | Sulphide               | mg/l       | APHA (22nd Ed) 4500-s2-F -Iodometric Method           | 1-500.0 mg/l           | 2.12   |
| 14 | BOD (5 Days @ 20°C)    | mg/l       | 5 - Day BOD test, (5 3025 (Part 44) 1993 Reaffirmec   | 05 - 50000 mg/l        | 8      |

Laboratory Remarks : Approve By: 96-r-o\_96 Dt: 22/05/2016

B.Y. Rathod, Lab Head

Field Observation :

### Note

1. \* These parameters are covered under the scope of NABL.
2. The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
3. Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
4. This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
5. The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
6. Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
7. Permissible Limits: as per Schedule VI of EPA Rules, 1986 as amended by Second and Third amendment 1963 for Effluents
8. Physicochemical and microbiological parameters, Std. Methods for Water and Waste Water- 22nd Edition by APHA.
9. Bioassay test (for toxicity) - 45-6562 Part-2-2001; Reaffirmed 2007.



# ANALYSIS REPORT FOR WATER / WASTE WATER SAMPLE

Sample ID: 188097 - Analysis Completed: 21/06/2016

Chemicals & Products / LAB Inward : 25451

Gujarat Pollution Control Board, Surat  
358, Belgium Square  
Typical 1st Floor, Opp. Linear Bus Stand  
Ring Road, SURAT  
Tele: (0261) 2442696

## TEST REPORT

Test Report No. : 25451

Date: 22/06/2016

1. Name of the Customer : Hindusthan Chemicals Company Old Name: Cyanides & Chemicals Company) - 20643
2. Address : GIDC INDUSTRIAL ESTATE, P.O. - OLPAD  
OLPAD-394540, Taluka : Olpad, District : Surat, GIDC : Not In Gide
3. Nature of Sample : REP-Representative/Grab, (Insp Type : VIG-By Vigilance Team)
4. Sample Collected By : J.M.Chaudhary, DEE
5. Quantity of Sample Received : 5 Lit
6. Code No. of the Sample : 188097
7. Date & Time of Collection & Inwarding : 30/05/2016, (1410 to 1415) & 31/05/2016
8. Date of Start & Completion of Analysis : 01/06/2016 & 21/06/2016
9. Sampling Point : From Final outlet of STP -
10. Flow Details (Remarks) : Yes
11. Mode of Disposal : on land for plantation
12. Ultimate Receiving Body : Arabian sea through masma khadi
13. Temperature on Collection : 30 & pH Range on pH Strip : 7 to 8 on pH strip
14. Carboys Nos for : SUR-V2H671 & Color & Appearance : Colourless
15. Water Consumption & W.W.G (KLPD) : Ind : 643.209, Dom : 8.000 & Ind : 265.990, Dom : 8.000

| Sr | Parameter              | Unit       | Test Method   | Range of Testing       | Result |
|----|------------------------|------------|---|------------------------|--------|
| 1  | Temperature            | Centigrade | IS: 3025 (Part - S) - 1954 (Reaffirmed 2006)          | Ambient oC - 60 oC     | 30     |
| 2  | pH                     | pH Units   | 4500 H+ B APHA Standard Methods 22nd ed. 2012         | 1 - 14 pH value As or  | 7.62   |
| 3  | Colour                 | Pt.Co.Sc.  | 2120 B APHA Standard Methods 22nd ed. 2012            | 2 - to 99 Hazen & 1-50 | 5      |
| 4  | Total Dissolved Solids | mg/l       | Gravimetric method. (2540 C APHA Standard Method      | 10 - 200000 mg/L       | 2618   |
| 5  | Suspended Solids       | mg/l       | Gravimetric method. (2540 D APHA Standard Method      | 2 - 10000 mg/L         | 26     |
| 6  | Ammonical Nitrogen     | mg/l       | 1). Titrimetric method (4500 NH3 B & C APHA Stand     | 1 - 2000 mg/l          | 0.56   |
| 7  | Chloride               | mg/l       | Argentometric method. (4500 Cl? B APHA Standard M     | 1 - 50000 mg/l         | 1500   |
| 8  | Sulphate               | mg/l       | APHA (22nd ed.) 4500 SO4 E                            | 2-40 mg/l              | 141    |
| 9  | Chemical Oxygen Demand | mg/l       | APHA (22nd Edition)- 5220 B Open Reflux Method-2      | 5.0- 50000 mg/l        | 27     |
| 10 | Oil & Grease           | mg/l       | Liquid - Liquid Partition Gravimetric method. (5520 B | 01 - 1000 mg/l         | BDL    |
| 11 | Phenolic Compounds     | mg/l       | 4 Amino Antipyrine method without Chloroform Extra    | 0.1 - 50 mg/l          | BDL    |
| 12 | Cyanide                | mg/l       | Titrimetric method. (4500 - CN? D APHA Standard M     | 1-10 mg/l              | BDL    |
| 13 | Sulphide               | mg/l       | APHA (22nd Ed.) 4500-s2 F - iodometric Method         | 1-500.0 mg/l           | 0.27   |
| 14 | B.O.D (5 Days 27oC)    | mg/l       | 3 - Day BOD test, (IS 3025 (Part 44) 1963 Reaffirm    | 05-50000 mg/l          | <5     |

**Laboratory Remarks :** Approve (BDL-Below Detection limit. Minimum detection limit of Phenol- 0.1mg/l, Oil and grease 0.2mg/l, Cyanide 0.02 mg/l) By-95-r.o\_95 DL: 22/06/2016

B.Y. Rathod, Lab Head

Field Observation :

### Note:

1. \* - These parameters are covered under the scope of NABL.
2. The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
3. Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
4. This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
5. The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
6. Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
7. Permissible Limits: as per Schedule VI of EPA Rules, 1986 as amended by Second and Third amendment 1993 for Effluents
8. Physicochemical and microbiological parameters, Std Methods for Water and Waste Water- 22nd Edition by APHA.
9. Bioassay test (for toxicity) -IS:6582-Part-2:2001; Reaffirmed 2007.



# ANALYSIS REPORT FOR WATER / WASTE WATER SAMPLE

Sample ID: 197392 - Analysis Completed: 30/10/2016

Chemicals & Products / LAB inward : 26603

Gujarat Pollution Control Board, Surat  
338, Belgium Square  
Typical 1st Floor, Opp. Linear Bus Stand  
Ring Road, SURAT  
Tel: (0261) 2442696

## TEST REPORT

Test Report No. : 26603

Date: 02/11/2016

1. Name of the Customer : Hindusthan Chemicals Company Old Name: Cyanides & Chemicals Company) - 26643
2. Address : GIDC INDUSTRIAL, P.O. - OLPAD  
OLPAD-394540, Taluka : Olpad, District : Surat, GIDC : Not In Gide
3. Nature of Sample : REP-Representative/Grab, (Imp Type : VIC-By Vigilance Team)
4. Sample Collected By : T.B. Shah, Unit Head
5. Quantity of Sample Received : 5 Lit
6. Code No. of the Sample : 197392
7. Date & Time of Collection & Inwarding : 06/10/2016, (1310 to 1310) & 10/10/2016
8. Date of Start & Completion of Analysis : 13/10/2016 & 30/10/2016
9. Sampling Point : From accumulated water in storm water drain within premises -
10. Flow Details (Remarks) : -
11. Mode of Disposal : Into Maxma khadi
12. Ultimate Receiving Body : Arabian sea through maxma khadi
13. Temperature on Collection : 28 & pH Range on pH Strip : 7-8 on pH strip
14. Carboys Nos for : 1 & Color & Appearance : light yellowish
15. Water Consumption & W.W.G (KLPD) : Ind :643.200 , Dom :8.000 & Ind :265.900 , Dom :8.000

| Sr | Parameter              | Unit       | Test Method   | Range of Testing          | Result |
|----|------------------------|------------|---|---------------------------|--------|
| 1  | Temperature            | Centigrade | IS: 3025 (Part - 9) - 1984 (Reaffirmed 2008)          | Ambient oC - 60 oC        | 28     |
| 2  | pH                     | pH Unit    | 4500 H+ B APHA Standard Methods 22nd ed. 2012         | 1 - 14 - pH value As or   | 8.14   |
| 3  | Colour                 | Pl Co Sc   | 2120 B APHA Standard Methods 22nd ed. 2012            | 2 - 10 to 10 Hazen & 1-50 | 10     |
| 4  | Total Dissolved Solids | mg/l       | Gravimetric method (2540 C APHA Standard Method       | 10 - 200000 mg/l          | 3716   |
| 5  | Suspended Solids       | mg/l       | Gravimetric method (2540 D APHA Standard Method       | 2 - 10000 mg/L            | 20     |
| 6  | Ammonical Nitrogen     | mg/l       | 1) Titrimetric method (4500 NH3 B & C APHA Stand      | 1 - 2000 mg/l             | 14.4   |
| 7  | Chloride               | mg/l       | Argentometric method (4500 Cl? B APHA Standard        | 1 - 50000 mg/l            | 1620.0 |
| 8  | Sulfate                | mg/l       | APHA (22nd ed) 4500 SO4 E                             | 2-40 mg/l                 | 340.0  |
| 9  | Chemical Oxygen Demand | mg/l       | APHA (22nd Edition)- 5520 B Open Reflux Method        | 5.0- 50000 mg/l           | 65     |
| 10 | Oil & Grease           | mg/l       | Liquid - Liquid Partition Gravimetric method: (5520 B | 0.1 - 1000 mg/l           | BDL    |
| 11 | Phenolic Compounds     | mg/l       | 4 Amino Antipyrone method without Chloroform Extra    | 0.1 - 50 mg/l             | BDL    |
| 12 | Cyanide                | mg/l       | Titrimetric method (4500 - CN? D APHA Standard M      | 1-10 mg/l                 | BDL    |
| 13 | Sulphide               | mg/l       | APHA (22nd Ed) 4500-s2-F -Iodometric Method           | 1-500.0 mg/l              | 0.8    |
| 14 | B.O.D (5 Days 20°C)    | mg/l       | 3 - Day BOD test. (IS 3025 (Part 44) 1993 Reaffirm    | 05-50000 mg/L             | 15     |

Laboratory Remarks : Approve By: 05-10-96 Dt: 02/11/2016

B.Y. Rathod, Lab Head

Field Observation : IS:3025 method

### Note

1. \* - These parameters are covered under the scope of NABL.
2. The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
3. Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
4. This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
5. The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
6. Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
7. Permissible Limits: as per Schedule VI of EPA Rules, 1986 as amended by Second and Third amendment 1993 for Effluents.
8. Physicochemical and microbiological parameters, Std Methods for Water and Waste Water- 22nd Edition by APHA.
9. Biodegradability test (for toxicity) - IS 5582 Part-2:2001, Reaffirmed 2007.



04/11/2016



ANALYSIS REPORT FOR AIR  
TYPE : Stack-Process

Gujarat Pollution Control Board  
Surat  
338, Belgium Square  
Typical 1st Floor, Opp. Linear Bus Stand  
Ring Road, SURAT  
Tele:0261 2442696

Sample ID:197393 - Analysis Completion:20/10/2016

Chemicals & Products / LAB Inward : 26612

1. Name & : Hindusthan Chemicals Company Old Name: Cyanides & Chemicals Company) - 20643
2. Address of the Unit : ,GIDC INDUSTRIAL ESTATE, P.O. - OLPAD  
OLPAD - 394540, Taluka : Olpad, District : Surat, GIDC : Not In Gide
3. Nature of Sample : REP-Representative/Grab , (Insp Type : VIG-By Vigilance Team)
4. Sample Collected By : T.B. Shah, Unit Head
5. Date & Time of Collection & Receipt : 06/10/2016, (1330 to 1400)
6. Date of Start & Completion of Analysis : 13/10/2016 & 30/10/2016
7. Sampling Point : Stack attached to Tail gas Incinerator -
8. Fuel : -
9. APCM : -
10. Thimble & Weight (gm) : -
11. Temperature on Collection : 30 & Volume-Absorb Media : 50 ml Distilled water for HCL and HCN gas
12. Volume-Gas Passed : 60 liter for each gas
13. Parameters : 2 & Oper Time(Min) : 30 minute

| Sr | Parameter | Unit   | Test Method   | Range of Testing | Result |
|----|-----------|--------|---------------|------------------|--------|
| 1  | HCL-Stack | MG/NM3 | Argentometric | -                | 17.18  |
| 2  | HCN-Stack | MG/NM3 | -             | -                | BDL    |

Laboratory Remarks : Approve By 95-i.u. 02/11/2016

B.Y. Rathod, Lab Head

Field Observation : is 17255,absorbing media 50ml distilled water for hcl and hcn gas

ANNEXURE 4 – Form V

F.HCC-TECH:17:AKK: 55

May 31, 2016

The Unit Head  
Gujarat Pollution Control Board  
Paryavaran Bhavan  
Sector – 10 A  
Gandhinagar – 382 010

Through Courier

Sub : Environmental Audit Statement for the Fin. Year Ended on 31<sup>st</sup> March, 2016.

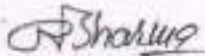
Dear Sir,

As per Notification dated 13<sup>th</sup> March, 1992 of Govt. of India, Ministry of Environment & Forests, New Delhi, we are enclosing herewith our Environmental Audit Statement for the financial year ended on 31st March, 2016 for your perusal.

We hope, you will find the same in order.

Thanking you,

Yours faithfully,  
for Hindusthan Chemicals Company



R.P. Sharma  
Sr. General Manager (Plant)

encl : a/a

- c.c. : 1. The Regional Officer  
Gujarat Pollution Control Board  
338, Belgium Square, Typical 1<sup>st</sup> floor  
Silver Plaza Complex  
Near Linear Bus Stand  
Ring Road, Surat – 395 003
2. The Director (Environment)  
Ministry of Environment & Forests  
Regional Office (Western Region)  
Link Road No. 3, E-5, Ravi Shankar Nagar  
Bhopal – 462 016 (M.P.)

– By Reg. A/D



Sri. AKS

co-hm-1

**Form - V**

(See Rule 14)

**ENVIRONMENTAL AUDIT REPORT FOR THE FINANCIAL YEAR ENDED ON 31<sup>ST</sup> MARCH, 2016**

**PART - A**

- |  |  |
|--|--|
| 1. Name and address of the Owner/<br>Occupier of the industry operation<br>or process. | : Hindusthan Chemicals Company<br>Prop. Hindusthan Engineering & Industries Ltd<br>GIDC Industrial Estate<br>P.O. Olpad - 394 540, Dist. Surat (Gujarat) |
| 2. Production capacity unit  | : As per enclosed Annexure - 1.  |
| 3. Date of the last environmental audit<br>report submitted                            | : 05 05 2015   |

**PART - B**

**WATER AND RAW-MATERIAL CONSUMPTION**

- |  |                                   |
|--|-----------------------------------|
| 1. Water Consumption M <sup>3</sup> /day |                                   |
| (A) Domestic                             | : 8.80 M <sup>3</sup> /day        |
| (B) Industrial:                          |                                   |
| i) Process                               | : 34.80 M <sup>3</sup> /day       |
| ii) Cooling                              | : 307.10 M <sup>3</sup> /day      |
| iii) Boiler                              | : 44.00 M <sup>3</sup> /day       |
| <b>Total</b>                             | <b>: 385.70 M<sup>3</sup>/day</b> |

Name of the Products

Water Consumption per unit of Products

|                           | <u>During the previous Financial Year</u> | <u>During the current Financial Year</u> |
|---------------------------|---|--|
|                           | (2014-15)                                 | (2015-16)                                |
| 1. Hydrocyanic Acid       | 5.99 M <sup>3</sup> /day                  | 4.29 M <sup>3</sup> /day                 |
| 2. Sodium Cyanide }       |   |  |
| 3. Potassium Cyanide }    | 11.77 M <sup>3</sup> /day                 | 7.16 M <sup>3</sup> /day                 |
| 4. Ammonium Sulphate      | 2.65 M <sup>3</sup> /day                  | 2.07 M <sup>3</sup> /day                 |
| 5. Sodium Ferrocyanide    | 9.55 M <sup>3</sup> /day                  | 4.10 M <sup>3</sup> /day                 |
| 6. Diphenyl Gualdine      | 9.42 M <sup>3</sup> /day                  | 7.22 M <sup>3</sup> /day                 |
| 7. Heat Treatment Salt    | Nil                                       | Nil                                      |
| 8. Potassium Ferrocyanide | Nil                                       | Nil                                      |
| 9. Mandelonitrile         | Nil                                       | Nil                                      |
| 10. Sodium Dicyanamide    | 5.70 M <sup>3</sup> /day                  | Nil                                      |
| 11. Cyanohydrines         | Nil                                       | Nil                                      |
| 12. Nitriels              | Nil                                       | Nil                                      |

Contd.....2

**PART - C**  
**POLLUTION GENERATED**  
(Parameters as specified in the Consent Issued)

| (i) | Pollutants | Quantity of pollution Generated | Percentage of variation from prescribed standards with reasons |
|-----|------------|---------------------------------|--|
| a)  | Water      | As per enclosed Annexure - 2.   |  |
| b)  | Air        |                                 |  |

**PART - D**  
**HAZARDOUS WASTE**  
(As specified under Hazardous Waste Management and Handling Rules, 1989)

| <u>Hazardous Wastes</u> |                                   | <u>Total Quantity (Kgs)</u>               |  |
|-------------------------|-----------------------------------|---|--|
|                         |                                   | <u>During the previous Financial Year</u> | <u>During the current Financial Year</u> |
|                         |                                   | (2014-15)                                 | (2015-16)                                |
| a)                      | From Process                      | 296089.00                                 | 104545.00                                |
| b)                      | From Pollution control facilities |   |  |

Above whole quantity was dried in impervious solid waste collection pan and then sent to M/s Nandesari Environment Control Ltd., Nandesari and M/s Bharuch Enviro Infrastructure Ltd. Ankleshwar for incineration, treatment and disposal.

**PART - E**  
**SOLID WASTES**

|                                     | <u>T o t a l                      Q u a n t i t y</u>  |   |
|-------------------------------------|--|---|
|                                     | <u>During the Previous Fin. Year (2014-15)</u>   | <u>During the Current Fin. Year (2015-16)</u>   |
| a) From Process                     | Whole quantity of solid waste was dried and then sent to M/s Nandesari Environment Control Ltd. & M/s Bharuch Enviro Infrastructure Ltd. for incineration, treatment and disposal. | Whole quantity of solid waste was dried and then sent to M/s Nandesari Environment Control Ltd. & M/s Bharuch Enviro Infrastructure Ltd. or incineration, treatment and disposal. |
| b) From Pollution Control Facility  |  |   |
| c) Quantity Recycled or re-utilized |  |   |

Contd.....3

## PART – F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

### Hazardous Waste:

|      |                     |   |        |
|------|---------------------|---|--------|
| i)   | Activated Carbon    | - Semi solid  |        |
|      |                     | Activated Carbon  | 7.0%   |
|      |                     | Water   | 58.0%  |
|      |                     | Oxidized Polymer of DPG<br>(Loss on ignition at 500° C) | 35.0%  |
| ii)  | Ferri Ferrocyanoide | - Ferri Ferrocyanoide                                   | 34.1%  |
|      |                     | Water   | 65.9%  |
| iii) | Ferric Hydroxide    | - Ferric Hydroxide                                      | 30.0%  |
|      |                     | Water   | 69.55% |
|      |                     | Sodium Ferrocyanoide                                    | 0.45%  |

### Solid Waste:

|     |                   |                 |        |
|-----|-------------------|-----------------|--------|
| i)  | Contaminated Salt | Sodium Chloride | 96%    |
| ii) | ETP sludge        | Cyanide content | Traces |

## PART – G

Impact of the Pollution control Measures on conservation of natural resources and consequently on the cost of production.

### Impact on conservation of natural resources

#### 1. Water Pollution

Since the effluent discharged by us conforms to the norms described by the Pollution Control Board, it does not have any impact on Conservation of natural resources.

#### 2. Hazardous Waste

Hazardous waste get completely dried in Impervious pan by solar evaporation

### Impact of cost of production

An amount of Rs. 2000 lacs is spent annually in Effluent Treatment Plants. We have installed Zero Liquid Discharge Plant and commissioned on 14 03 2016.

Constituents present in hazardous waste was sent to M/s Nandesari Env. Control Ltd., Nandesari & M/s Bharuch Enviro Infrastructure Ltd, Ankleshwar, for Incineration, treatment and disposal. An amount of 84 lacs was spent annually.

Contd.....4

### 3. Air Pollution

The toxic gases are completely burnt in Incinerator resulting into generation of inert gases, i.e. CO<sub>2</sub>/N<sub>2</sub> and simultaneously generation of steam which is effectively used in plants. Therefore, there is no impact of conservation of natural resources.

Approx. 20,808 MT/year steam was generated in incinerator, otherwise to generate 20,208 MT steam we would have burnt 1734 K.L. of Furnace Oil.

### PART – H

#### **Additional investment proposal for environmental protection including abatement of pollution**

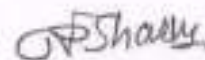
1. We are already fully equipped to handle hazardous waste, liquid effluents and air pollutants and detoxicate the same conforming to the norms specified by Pollution Control Board.
2. We are having On-line Stack Monitoring Gas Analyser and records are being maintained.
3. We are having On-line TOC Meter. Records are being maintained.
4. We have installed and commissioned Zero Liquid Discharge Plant on 14 03 2016 and stopped discharge of waste water to Masna Khadi from 01 04 2016. All the treated water is being recycled in Cooling Tower and in Process.

### PART – I

#### Miscellaneous

**Any other particulars in respect of environment protection and abatement of pollution.**

About 2000 additional trees were planted within our battery limit.



(R. P. Sharma)  
Sr. General Manager (Plant)

**PRODUCTION DETAILS**

| Sl No | Name of product                | Consent Capacity MT/Annum | Actual production MT/Annum |
|-------|--------------------------------|---------------------------|----------------------------|
| 1     | Hydrocyanic Acid               | 5100                      | 3054.300                   |
| 2     | Sodium Cyanide                 | 6372                      | 5113.078                   |
| 3     | Potassium Cyanide              | 2000                      | 134.203                    |
| 4     | Sodium/Potassium Ferrocyanide  | 1000                      | 228.000/Nil                |
| 5     | Diphenyl Guanidine             | 1260                      | 46.500                     |
| 6     | Sodium Dicyanamide             | 300                       | Nil                        |
| 7     | Mandelonitrile                 | 2500                      | 222.640                    |
| 8     | Heat Treatment Salt            | 720                       | Nil                        |
| 9     | Cyanohydrines                  | 5000                      | 69.300                     |
| 10    | Nitriles                       | 3000                      | Nil                        |
| 11    | Cyanide Based Products         | 3500                      | Nil                        |
| 12    | Ammonium Sulphate (By-product) | 2649                      | 1483.500                   |

**POLLUTION GENERATED**

| Sl No | Pollutants   | Quantity of pollution   | Parameters  | As specified in the consent issued                     | Percentage of variation from prescribed standard with reason |
|-------|--------------|-------------------------|---|--|--|
| a)    | <u>Water</u> | 126 M <sup>3</sup> /day | pH<br>BOD mg/l<br>COD mg/l<br>Ammonical Nitrogen mg/l<br>Cyanide content mg/l | 6.5 – 8.5<br>30 max.<br>100 max<br>50 max.<br>0.2 max. | Nil  |
| b)    | <u>Air</u>   |                         | Suspended particulate matter (SPM) In mg/NM <sup>3</sup>                      | 150 max.   | Nil  |
|       | Boiler       | 2000 M <sup>3</sup> /hr | Sox (PPM)   | 100 max.   |  |
|       | Incinerator  | 7000 M <sup>3</sup> /hr | Nox (PPM)   | 50 max.  |  |
|       |              |                         | Cyanide as HCN (NMg/M <sup>3</sup> )  | 30 max.  |  |
|       |              |                         | HCl (NMg/M <sup>3</sup> )   | 20 max.  |  |

## ANNEXURE 5 – Zero Liquid Discharge Scheme With Waste Minimization

### **TREATMENT OF EFFLUENT STREAMS AT EXISTING AND PROPOSED SCENARIO**

#### **Existing treatment scheme:**

The total process effluent generated from the plant is segregated into two streams as under.

##### **1. Low TDS and low COD process effluent**

Over head Condensate generated from NaCN, SFCN & Ammonium Sulfate, contains High Ammonical Nitrogen & Cyanide collected in V511. This effluent passed through Cation based Ammonical Nitrogen Removal Unit, resulting in reduction of Ammonical Nitrogen less than 50 ppm, and gets mixed with Lean water from HCN plant, containing high cyanides.

Removal of high cyanide is being done through air stripping, (equipped with caustic scrubber where CN gets convert to NaCN slurry, this slurry is transferred to NaCN plant to recover NaCN. The bottom effluent from air stripper containing CN - <5 ppm, is finally passes through Anion based cyanide removal Unit, in which CN contain gets minimized less than 0.2 ppm.

Above treated effluent of 114 KLD, along with blow-downs of boiler & cooling tower of 128 KLD sent to equalization tank of existing conventional treatment plant of 300 KLD consisting of primary and secondary units. The treated effluent is then sent to final treated effluent collection unit (guard pond no 1) The treated effluent conforming the GPCB norms sent to Guard Pond No.2 for final discharge to Masma Khadi.

##### **2. High TDS and high COD process effluent**

Combined effluent of alkaline nature from DPG, SDCN & SFCN is treated with Chlorine to detoxify free Cyanide and convert volatile organic impurities into stable high boiling chloro derivatives.

Mixed effluent of 50 KLD after chlornation is passed through Nutch filter for filtration. The filtrate is fed to multi-stage evaporator of 80 KLD. The overhead condensate is obtained which is having very low TDS & COD. This condensate is being recycled to our existing plants. The contaminated salt approximately 2.5 MT/day recovered after evaporation through centrifuge is isolated & filled in HDPE Bag and sent to approved TSDF site for incineration for final disposal.

#### **Proposed treatment scheme to achieve ZERO LIQUID DISCHARGE with waste minimization:**

To achieve Zero Liquid Discharge, the existing segregated process effluent streams shall be treated in following manner.

##### **1. Low TDS and low COD process effluent:**

Over head Condensate generated from NaCN, SFCN & Ammonium Sulfate, contains High Ammonical Nitrogen & Cyanide collected in V511. This effluent passed through Cation based Ammonical Nitrogen Removal Unit, resulting in reduction of Ammonical Nitrogen less than 50 ppm, and gets mixed with Lean water from HCN plant, containing high cyanides.

Removal of high cyanide is being done through air stripping, (equipped with caustic scrubber where CN gets convert to NaCN slurry, this slurry is transferred to NaCN plant to recover NaCN. The bottom effluent from air stripper containing CN - < 5 ppm, is finally passes through Anion based cyanide removal Unit. In which CN contain gets minimized less than 0.2 ppm.

Above treated effluent of 114 KLD, along with blow downs of boiler & cooling tower of 128 KLD sent to equalization tank of existing conventional treatment plant of 300 KLD consisting of primary and secondary units. The treated effluent is then sent to final treated effluent collection unit (guard pond no. 1). The treated effluent confirming the GPCB norms sent to Guard Pond No.2.

The treated effluent from existing ETP, which is being presently discharged in Khadi, will be further treated in tertiary treatment plant which will include Pressure Sand Filter (PSF), Activated Carbon Tower (ACT) and Reverse Osmosis (RO) plant. The permeate from RO plant shall be recycled for reuse in the cooling tower. The reject from RO plant will sent to proposed MEE for further treatment. The over head condensate from MEE will be recycled for reuse in the cooling tower. Approximately 0.75 MT/day evaporated salt recovered after evaporation through centrifuge is isolated & filled in HDPE Bag and sent to approved TSDF site for land filling for final disposal.

## **2. High TDS and high COD process effluent**

The existing mixed effluent of 50 KLD shall be segregated in two streams and shall be treated as under

### **A. Spent acid stream containing HCl of 12 KLD.**

Another stream of spent Acid from DPG plant containing HCl less than 5 %, will be neutralized & evaporated in an evaporator for removal of TDS as salt & overhead condensate will be recycled in cooling tower. Approximately 0.84 MT/day industrial salt recovered after evaporation through centrifuge is isolated & filled in HDPE Bag and sent to approved TSDF site for land filling for final disposal. We shall explore the possibility of selling as industrial salt to actual users.

### **B. High TDS & high COD stream with cyanide contamination of 38 KLD.**

Mixed effluent of 38 KLD after chlorination is passed through Nutch filter for filtration. The filtrate is fed to multi-stage evaporator of 96 KLD. The overhead condensate is obtained which is having very low TDS & COD. This condensate shall be recycled to existing plants or shall be incinerated in proposed liquid waste incinerator of 100 KLD capacity. The contaminated salt approximately 1.5 MT/day recovered after evaporation through centrifuge shall be isolated & filled in HDPE Bag sent to approved TSDF site for incineration for final disposal. The ash from the incinerator of approximately 0.025 MT/day shall be isolated & filled in HDPE Bag sent to approved TSDF site for land filling for final disposal.

HCC Having two number of Membership of Approved TSDF Site

1. M/s. NECL, Vadodara and

2. M/s. BEIL, Ankleswar

ANNEXURE 6 – Membership Certificate of BEIL, Ankleshwar & NECL, Baroda




**NANDESARI ENVIRONMENT CONTROL LTD.**

SURVEY NO. 519/P, G.I.D.C. ESTATE, NANDESARI-391 340, DIST. VADODARA  
PHONE : (0265) 2840 818 FAX : (0265) 2841017 E-mail : necl\_text@yahoo.co.in

TO WHOMSOEVER IT MAY CONCERN

THIS IS TO CERTIFY THAT M/S. **HINDUSTHAN CHEMICALS COMPANY, GIDC INDUSTRIAL ESTATE, P.O.-OLPAD-394 540, DIST: SURAT** IS OUR VALID MEMBER (MEMBERSHIP NO.206) OF COMMON HAZARDOUS WASTE INCINERATION FACILITY DEVELOPED BY NECL AT 519/P GIDC, NANDESARI, DIST. VADODARA

FOR & ON BEHALF OF  
NANDESARI ENVIRONMENT CONTROL LTD.

  
BABUBHAI C. PATEL  
CHAIRMAN

16.08.2010  
NANDESARI

Common Solid Waste Disposal and Incineration Facility





## BHARUCH ENVIRO INFRASTRUCTURE

DATE: 24/07/2012

To,  
**Hindusthan Chemicals Company**  
(Prop: Hindusthan Engg. & Industries Ltd.)  
GIDC Industrial Estate,  
P.O. Olpad - 394 540,  
Dist. Surat.

Sub : Membership Certificate for Common Incineration Facility.

Dear Sir,

We hereby certify that you have become member for the common incineration facility of Bharuch Enviro Infrastructure Ltd., at CIDC, Ankleshwar. You have booked quantity of 10 MT/Year. You have paid Registration fees for common incinerator membership. Your Membership No. is CIOED/085.

Waste will be accepted after submitting valid authorization of GPCB.

Thanking you,

Yours faithfully,  
For **BHARUCH ENVIRO INFRASTRUCTURE LTD.**

  
AUTHORISED SIGNATORY

### ANNEXURE 7 - Category Wise Hazardous Waste Generation & Disposal Details

| Category                     | Opening | May, 2016  |          | June, 2016 |          | July, 2016 |          | August, 2016 |          | September, 2016 |          | October, 2016 |          | Closing        |
|------------------------------|---------|------------|----------|------------|----------|------------|----------|--------------|----------|-----------------|----------|---------------|----------|----------------|
|                              | Stock   | Generation | Disposal | Generation | Disposal | Generation | Disposal | Generation   | Disposal | Generation      | Disposal | Generation    | Disposal | Stock          |
|                              | kg      |            |          |            |          |            |          |              |          |                 |          |               |          |                |
| Activated Carbon             | 0       | 560        | 0        | 1100       | 0        | 1200       | 0        | 1220         | 0        | 0               | 0        | 0             | 0        | 4080           |
| Ferric Hydroxide             | 504     | 640        | 0        | 1160       | 0        | 1040       | 0        | 960          | 0        | 920             | 0        | 960           | 0        | 6184           |
| Contaminated Salt            | 21910   | 12000      | 17180    | 17745      | 7230     | 17220      | 16720    | 23890        | 23790    | 19140           | 17490    | 15890         | 12200    | 33185          |
| Iron Sludge                  | 0       | 0          | 0        | 0          | 0        | 0          | 0        | 0            | 0        | 0               | 0        | 0             | 0        | 0              |
| ETP Sludge                   | 0       | 0          | 0        | 0          | 0        | 0          | 0        | 0            | 0        | 0               | 0        | 0             | 0        | 0              |
| Contaminated Polythene Liner | 16      | 0          | 0        | 0          | 0        | 0          | 0        | 0            | 0        | 0               | 0        | 0             | 0        | 16             |
| Drums                        | 0       | 0          | 0        | 0          | 0        | 0          | 0        |              | 0        | 0               | 0        | 0             | 0        | 0              |
| <b>Total</b>                 |         |            |          |            |          |            |          |              |          |                 |          |               |          | <b>43465</b>   |
| Used Oil                     |         |            |          |            |          |            |          |              |          |                 |          |               |          | <b>600 lit</b> |
| Spent Catalyst               |         |            |          |            |          |            |          |              |          |                 |          |               |          | <b>Nil</b>     |



FOR GENERATOR BY NECL

**NANDESARI ENVIRONMENT CONTROL LTD.**

SURVEY NO. 516P, G.I.D.C., NANDESARI - 391 340, DIST. VADODARA.

PHONE : (0265) 2840518 FAX : (0265) 2841017

Hazardous Waste Manifest

(Information of Hazardous Waste for disposal)

Member  
Seal with  
Sign

Sr. No.

1125

ISO 14001 Certified Company

|  |  |  |  |
|--|--|--|--|
| 1. Occupier's Unit's Name Address & Phone No. :<br>Gandhi Medicals Company<br>GIDC Indl. Estate<br>P.O. Clped 394 540, Dist. Surat.  |  | 2. Occupier's Registration No. 206   |  |
| 4. Transporter's Name Address & Phone No. :<br>Nandan Transport Co.<br>30-F, Purvam Park Soc.<br>Opp. Punit Park Soc.<br>GIDC Clped, Dist. Vadodra.  |  | 5. Transporter's Registration No. 6337                                       |  |
| 7. Designated Facility Name & Site Address :<br>NANDESARI ENVIRONMENT CONTROL LTD.<br>Plot No. 516P, G.I.D.C., Nandesari - 391 340, Dist. Vadodra.<br>Phone : (0265) 2840518 Fax : (0265) 2841017  |  | 6. Vehicle Registration No. GJ-60-6662                                       |  |
| 10. Waste Description :<br>Solid waste for incineration,<br>treatment and disposal.  |  | 7. Facility Registration No. : 5834<br>Date 29.11.2007                       |  |
| 13. Transporter Description of Waste   |  | 8. Facility's Phone No. : 2840518  |  |
| 14. Containers<br>No. Type   |  | 11. Total Quantity of Waste<br>M <sup>3</sup> Ton 8.200                      |  |
| 15. Total Quantity   |  | 12. Consistency :<br>Solid<br>Semi-Solid<br>Sludge<br>Oil<br>Tarry<br>Slurry |  |
| 16. Unit<br>WL / Vol.  |  | 17. Waste<br>Category No.<br>As per Act.                                     |  |
| Contaminated salt  |  | 1  |  |
| Truck  |  | 8.500  |  |
| 8.500  |  | A.T.   |  |
|  |  | Sch.-1   |  |
|  |  | Cat. 17.1  |  |
| 18. Special Handling Instruction & Additional Information<br>Use dust mask and cotton hand gloves while handling.  |  |  |  |
| 19. OCCUPIER'S CERTIFICATE : I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labelled, and are in all respects in proper condition for transport by road according to applicable national government regulations. The same is as per OPGS norms. |  |  |  |
| Name & Stamp of Unit :<br>GANDHI MEDICALS COMPANY<br>GIDC INDUSTRIAL ESTATE<br>P.O. CLPED, DIST. SURAT   |  | Time _____ Hrs.<br>DAY MONTH YEAR<br>05 05 2016                              |  |
| Signature with Designation<br>With Rubber Stamp  |  |  |  |
| 20. Transporter's Acknowledgment of Receipt of Materials   |  |  |  |
| Name & Stamp of Transporter :<br>Nandan Transport Co.<br>30-F, Purvam Park Soc.<br>Opp. Punit Park Soc.<br>GIDC Clped, Dist. Vadodra.  |  | Time _____ Hrs.<br>DAY MONTH YEAR<br>05 05 2016                              |  |
| Signature with Designation   |  |  |  |
| 21. Discrepancy Note Space   |  |  |  |
| 22. Facility Owner or Operator's Certification of Receipt of Hazardous Waste   |  |  |  |
| NANDESARI ENVIRONMENT CONTROL LTD.<br>Plot No. 516P, G.I.D.C.,<br>Nandesari - 391 340, Dist. Vadodra.<br>Phone : (0265) 2840518 Fax : (0265) 2841017   |  | Time _____ Hrs.<br>DAY MONTH YEAR<br>05 MAY 2016                             |  |
| Signature with Designation   |  |  |  |

**BHARUCH ENVIRO INFRASTRUCTURE LTD.**


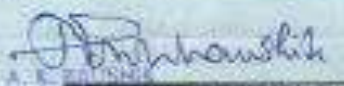


Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch

Form - 13 (See Rule 21 (1))

**Hazardous Waste Manifest**

(Information of Hazardous Waste for disposal)

Sr. No. **29392**

|  |  |  |                                       |
|--|--|--|---------------------------------------|
| 1. Occupier's Unit Name & Mailing Address<br>(Including Phone No.)<br><b>Hindusheh Chemicals Company</b><br><b>GIDC Indl. Estate, P.O. Gidpad-394 540</b><br><b>Dist. Bharuch</b>  |  | 2. Occupier's Registration No.<br><b>01/080/085</b>  |                                       |
|  |  | 3. Manifest Document No.<br><b>29392</b>   |                                       |
| 4. Transporter's Name & Address:<br><b>JAY DASANI TRANSPORT</b><br><b>At. S. Vaghapure,</b><br><b>1-1, Jagadia, Dist. Bharuch</b>  | 5. Type of Vehicle<br><br>Truck/Dumper/<br>Special Vehicle | 6. Transporter's Registration No.<br><b>BEIL/AMB/JDT/088</b>   |                                       |
|  |  | 7. Vehicle Registration No.<br><b>GJ-16-1-6370</b>   |                                       |
| 8. Designated Facility Name & Site Address:<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br><b>Site: Plot No. 9701-9716, GIDC Estate, Ankleshwar.</b>  |  | 9. Facility's Registration No.<br><b>50800</b>   |                                       |
|  |  | 10. Facility's Phone No.: <b>225228 / 253135</b>   |                                       |
| 11. Waste Description:<br><br><b>Solid waste for incineration, treatment and disposal.</b>   |  | 12. Total Quantity of Waste<br><br><b>MT 8.880 MT</b>  |                                       |
|  |  | 13. Consistency<br><br>Solid _____<br>Semi-Solid _____<br>Sludge _____<br>Oil _____<br>Tarry _____<br>Slurry _____ |                                       |
| 14. Transport Description of Waste   | 15. Containers<br>No. Type                                 | 16. Total Quantity in MT   | 17. Unit Wt/Vol in MT                 |
| <b>Contaminated salt</b>   | <b>1 Truck</b>   | <b>8.880</b>   | <b>P.T.</b>                           |
|  |  |  | <b>Waste category No. As per Act.</b> |
|  |  |  | <b>Sch.1</b>                          |
|  |  |  | <b>Sent.17.1</b>                      |
| 19. Special Handling Instruction & Additional Information:<br><b>Use dust mask and cotton hand gloves while handling.</b>  |  |  |                                       |
| 20. OCCUPIER'S CERTIFICATE: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labelled, and are in all respects in proper condition for transport by road according to applicable national government regulations. (Signature of Occupier)<br><br>Typed Name & Stamp of Unit:<br><br><br>A. K. Bhatnagar<br>General Manager<br>Signature with Designation<br>With Rubber Stamp<br><br>In Time _____ Hrs.<br>DAY MONTH YEAR<br><b>09 05 2016</b> |  |  |                                       |
| 21. Transporter's Acknowledgement of Receipt of Materials<br><br>Typed Name & Stamp of Transporter:<br><b>JAY DASANI TRANSPORT</b><br><b>At. S. Vaghapure,</b><br><b>1-1, Jagadia, Dist. Bharuch</b><br><br><br>Signature with Designation<br><br>Out Time _____ Hrs.<br>DAY MONTH YEAR<br><b>09 05 2016</b>   |  |  |                                       |
| 22. Discrepancy Note Space   |  |  |                                       |
| 23. Facility Owner or Operator's Certification of Receipt of Hazardous Waste<br><br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br>Phone No.: (02646) 225228, 253135 Fax No.: (02646) 222849<br><b>Manifest Valid for 3 Months</b><br><b>From the Date of Issue</b><br><br>For BEIL<br><br>Authorized Signatory<br>Signature with Designation<br><br>Time <b>11:25</b> Hrs.<br>DAY MONTH YEAR<br><b>09 05 2016</b>   |  |  |                                       |

BLUE COPY

necl

# FOR GENERATOR BY NECL **NANDESARI ENVIRONMENT CONTROL LTD.**

SURVEY NO. 519P, G.I.D.C., NANDESARI - 391 340, DIST. VADODARA.

PHONE : (0265) 2840818 FAX : (0265) 2841017

Hazardous Waste Manifest


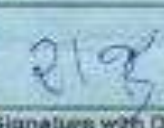

(Information of Hazardous Waste for disposal)

Member  
Seal with  
Sign

Sr. No.

2684

ISO 14001 Certified Company

|   |  |   |  |
|---|--|---|--|
| 1. Occupier's Unit's Name Address & Phone No. :<br><b>Hindusthan Chemicals Company</b><br><b>GIDC Industrial Estate</b><br><b>P.O. Road-394540, Dist. Surat</b>   |  | 2. Occupier's Registration No. <b>206</b>                               |  |
| 4. Transporter's Name Address & Phone No. :<br><b>Roshan Transport Co.</b><br><b>20-F, Purvam Park Soc.,</b><br><b>Opp. Puneet Park Soc.,</b><br><b>Old Chhani Road, Baroda-2</b>   |  | 5. Transporter's Registration No. <b>6337</b>                           |  |
| 7. Designated Facility Name & Site Address :<br><b>NANDESARI ENVIRONMENT CONTROL LTD.</b><br><b>Plot No. 519P, G.I.D.C., Nandesari - 391 340, Dist. Vadodara.</b><br><b>Phone : (0265) 2840818 Fax : (0265) 2841017</b>   |  | 7. Facility Registration No. : <b>9834</b><br>Date 10.11.2007           |  |
| 10. Waste Description :<br><b>Solid waste for incineration,</b><br><b>Treatment and disposal</b>  |  | 11. Total Quantity of Waste<br>M <sup>3</sup> Ton <b>7.230</b>          |  |
| 13. Transporter Description of Waste<br><b>Contaminated Salt</b>  |  | 14. Containers<br>No. Type<br><b>1 Truck</b>                            |  |
|   |  | 15. Total Quantity<br><b>7.230</b><br><b>7.215</b>                      |  |
|   |  | 17. Waste Category No. As per Act.<br><b>Sub. -1</b><br><b>Cat. -17</b> |  |
| 16. Special Handling Instruction & Additional Information<br><b>Use dust mask and cotton hand gloves while handling</b>   |  |   |  |
| 19. OCCUPIER'S CERTIFICATE : I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked and labeled, and are in all respects in proper condition for transport by road according to applicable national government regulations. The same is as per GPCB norms.   |  |   |  |
| Name & Stamp of Unit :<br><br><b>for, Shrinani</b>   |  | Time _____ Hrs.<br>DAY MONTH YEAR<br><b>12 06 2016</b>                  |  |
| 20. Transporter's Acknowledgment of Receipt of Materials<br>Name & Stamp of Transporter :<br><b>Roshan Transport Co.</b><br><b>20-F, Purvam Park Soc.,</b><br><b>Opp. Puneet Park Soc.,</b><br><b>Old Chhani Road, Baroda-2</b><br><br><b>219</b><br>Signature with Designation<br>Time _____ Hrs.<br>DAY MONTH YEAR<br><b>12 06 2016</b>                      |  |   |  |
| 21. Disposal Receipt<br><b>22550 Kg</b>   |  |   |  |
| 22. Facility Owner or Operator's Certification of Receipt of Hazardous Waste<br><b>NANDESARI ENVIRONMENT CONTROL LTD.</b><br><b>Plot No. 519P, G.I.D.C.,</b><br><b>Nandesari - 391 340, Dist. Vadodara.</b><br><b>Phone : (0265) 2840818 Fax : (0265) 2841017</b><br><br>Signature with Designation<br>Time _____ Hrs.<br>DAY MONTH YEAR<br><b>13 JUN 2016</b> |  |   |  |

**BHARUCH ENVIRO INFRASTRUCTURE LTD.**

Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch.

Form - 13 (See Rule 21 (1))

Hazardous Waste Manifest

(Information of Hazardous Waste for disposal)

Sr. No. **30135**

|  |                            |   |                           |
|--|----------------------------|---|---------------------------|
| 1. Occupier's Unit's Name & Mailing Address:<br>(Including Phone No.)<br>G. I. D. Estate,<br>P.O. Ghodasda,<br>Dist. Surat (Gujarat)   |                            | 2. Occupier's Registration No.<br><b>GI/030/005</b>   |                           |
| 4. Transporter's Name & Address:<br>(Including Phone No.)<br><b>JAY DASAMA TRANSPORT</b><br>At. S. Vaghapura   |                            | 3. Manifest Document No.<br><b>30135</b>  |                           |
| 5. Type of Vehicle<br>Truck/Dumper/<br>Special Vehicle   |                            | 6. Transporter's Registration No.<br><b>BEIL/AHK/JDT/000</b>  |                           |
| 8. Designated Responsible Person's Address:<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br>Site: Plot No. 9701-9716, GIDC Estate, Ankleshwar.   |                            | 7. Vehicle Registration No.<br><b>GJ-16-J-6370</b>  |                           |
|  |                            | 9. Facility's Registration No.<br>50809   |                           |
|  |                            | 10. Facility's Phone No.: 225228 / 253135   |                           |
| 11. Waste Description:<br><b>Solid waste for incineration,<br/>treatment and disposal.</b>   |                            | 12. Net Quantity of Waste<br>M <sup>3</sup> <b>7.870</b> MT   |                           |
|  |                            | 13. Consistency<br>Solid<br>Semi-Solid<br>Sludge<br>City<br>Tarry<br>Slurry   |                           |
| 14. Transport Description of Waste:  | 15. Containers<br>No. Type | 16. Total Quantity in MT  | 17. Unit<br>WL/Vol. in MT |
| Contaminated soil  | 1 Truck                    | 7.870   | N/A                       |
| 18. Waste category No. As per Act.   |                            | 19. Special Handling Instruction & Additional Information:<br><b>Use dust mask and cotton hand gloves while handling.</b> |                           |
| 20. OCCUPIER'S CERTIFICATE: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labelled, and are in all respects in proper condition for transport by road according to applicable national government regulations. |                            | 21. Transporter's Acknowledgement of Receipt of Materials   |                           |
| Typed Name & Stamp of Unit:<br>Hunkar Chemicals & Industries Ltd.<br>Prop. Industries Division<br>G. I. D. C. Estate,<br>P.O. Ghodasda,<br>Dist. Surat (Gujarat)   |                            | Signature with Designation<br>With Rubber Stamp<br>DAY MONTH YEAR<br>1 0 0 7 2 0 1 0                                      |                           |
| 22. Discrepancy Note Space   |                            | 23. Facility Owner or Operator's Certification of Receipt of Hazardous Waste  |                           |
| Bharuch Enviro Infrastructure Ltd.<br>Phone No.: (02648) 225228, 253135 Fax No.: (02648) 222649  |                            | For BEIL<br>Time 10:15 Hrs.<br>DAY MONTH YEAR<br>1 0 0 7 2 0 1 0  |                           |
| Manifest Valid for 3 Months<br>From the Date of Issue  |                            | Authorized Signatory<br>Signature with Designation  |                           |

**BHARUCH ENVIRO INFRASTRUCTURE LTD.**

Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch.

Form - 13 (See Rule 21 (1))

Hazardous Waste Manifest

(Information of Hazardous Waste for disposal)

Sr. No. **30173**

|   |  |  |  |
|---|--|--|--|
| 1. Occupier's Unit's Name & Mailing Address:<br>(Including Phone No.)<br><b>Hindusthan Chemicals Company</b><br><b>GIDC Indl. Estate, P.O.-Olpad-394 540</b><br><b>Dist.-Gujarat</b>  |  | 2. Occupier's Registration No.<br><b>01/080/005</b>          |  |
| 3. Transporter's Name & Address:<br>(Including Phone No.)<br><b>JAY DASAMA TRANSPORT</b><br><b>At S. Vaghapura</b><br><b>Tal. Jagadia, Dist. Bharuch</b><br><b>Pin-390025</b>   |  | 3. Manifest Document No.<br><b>30173</b>                     |  |
| 4. Type of Vehicle<br><input checked="" type="checkbox"/> Truck/Dumper/<br><input type="checkbox"/> Special Vehicle   |  | 6. Transporter's Registration No.<br><b>BEIL/ANK/JDT/008</b> |  |
| 5. Designated Person's Name & Address:<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br>Site: Plot No. 9701-9716, GIDC Estate, Ankleshwar.   |  | 7. Vehicle Registration No.<br><b>GJ-5V-2033</b>             |  |
| 8. Facility's Registration No.<br><b>56800</b>  |  | 9. Facility's Phone No. <b>225228 / 253135</b>               |  |
| 11. Waste Description<br><b>Solid waste for incineration,<br/>treatment and disposal.</b>   |  | 12. Total Quantity of Waste<br><b>8.850 MT</b>               |  |
| 13. Consistency<br><input checked="" type="checkbox"/> Solid<br><input type="checkbox"/> Semi-Solid<br><input type="checkbox"/> Sludge  |  | 14. Consistency<br><input type="checkbox"/> Slurry           |  |
| 14. Transport Description of Waste  |  | 15. Containers   |  |
| No. Type  |  | 16. Total Quantity in MT                                     |  |
| 17. Unit Wt./Vol. in MT   |  | 18. Waste category No. As per Act.                           |  |
| <b>Contaminated soil</b>  |  | <b>1 Truck</b>   |  |
| <b>8.850</b>  |  | <b>Sub. 1</b>  |  |
| <b>Category 17</b>  |  |  |  |
| 19. Special Handling Instruction & Additional Information:<br><b>Use dust mask and cotton hand gloves while handling.</b>   |  |  |  |
| 20. OCCUPIER'S CERTIFICATE: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labeled, and are in all respects in proper condition for transport by road according to applicable national government regulations. |  |  |  |
| Typed Name & Stamp of Unit<br><b>Hindusthan Chemicals Company</b><br><b>Group: Hindusthan Engineering &amp; Industries Ltd.</b>   |  |  |  |
| In Time _____ Hrs.  |  |  |  |
| Signature with Designation<br>With Rubber Stamp   |  |  |  |
| DAY MONTH YEAR<br><b>2 2 0 7 2 0 1 6</b>  |  |  |  |
| 21. Transporter's Acknowledgement of Receipt of Hazardous Waste (If any)  |  |  |  |
| Typed Name & Stamp of Transporter:<br><b>JAY DASAMA TRANSPORT</b><br><b>At S. Vaghapura</b><br><b>Tal. Jagadia, Dist. Bharuch</b><br><b>Pin-390025</b>  |  |  |  |
| Out Time _____ Hrs.   |  |  |  |
| Signature with Designation  |  |  |  |
| DAY MONTH YEAR<br><b>2 2 0 7 2 0 1 6</b>  |  |  |  |
| 22. Discrepancy Note Space  |  |  |  |
| 23. Facility Owner or Operator's Certification of Receipt of Hazardous Waste  |  |  |  |
| <b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b>   |  |  |  |
| Phone No.: (02646) 225228, 253135 Fax No.: (02646) 222849   |  |  |  |
| For BEIL  |  |  |  |
| Time _____ Hrs.   |  |  |  |
| Manifest Valid for 3 Months<br>From the Date of Issue <b>22 JUL 2016</b>  |  |  |  |
| Authorized Signatory  |  |  |  |
| Signature with Designation  |  |  |  |
| DAY MONTH YEAR  |  |  |  |

**17 JUL 2016**

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**BHARUCH ENVIRO INFRASTRUCTURE LTD.**

Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch.

Form - 13 (See Rule 21 (1))

**Hazardous Waste Manifest**

(Information of Hazardous Waste for disposal)



Sr. No.

**30337**

|   |  |                 |  |                          |    |
|---|--|-----------------|--|--------------------------|----|
| 1. Occupier's Unit's Name & Mailing Address:<br>(Including Phone No.)<br><b>Prashanth Chemicals Company</b><br><b>GIDC Industrial Estate, P.O. Olpad</b><br><b>Dist. Surat - 394540</b>   |  |                 | 2. Occupier's Registration No.<br><b>01/080/055</b>  |                          |    |
| 3. Manifest Document No.<br><b>30337</b>  |  |                 | 4. Transporter's Name & Address:<br>(Including Phone No.)<br><b>JAY DASAMA TRANSPORT</b><br><b>At. S. Vaghapure</b><br><b>Tal. Jhagadia, Dist. Bharuch</b> |                          |    |
| 5. Type of Vehicle<br><br>Truck/Outer/<br>Special Vehicle   |  |                 | 6. Transporter's Registration No.<br><b>BEIL/ANK/JDT/068</b>   |                          |    |
| 7. Vehicle Registration No.<br><b>GJ-58-2033</b>  |  |                 | 8. Facility's Name & Site Address<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br>Site: Plot No. 9701-9716, GIDC Estate, Ankleshwar.                       |                          |    |
| 9. Facility's Registration No.<br>50509   |  |                 | 10. Facility's Phone No.: 225228 / 253135  |                          |    |
| 11. Waste Description:<br><b>Solid waste for incineration, treatments and disposal</b>  |  |                 | 12. Gross Quantity of Waste  |                          |    |
|   |  |                 | MP   |                          | MT |
| 13. Consistency:  |  |                 |  |                          |    |
| Solid   |  |                 | Dry  |                          |    |
| Semi-Solid  |  |                 | Tarry  |                          |    |
| Sludge  |  |                 | Slurry   |                          |    |
| 14. Transport Description of Waste  |  | 15. Containers: |  | 16. Total Quantity in MT |    |
|   |  | No. Type        |  | 17. Unit Wt./Vol. in MT  |    |
| <b>Contaminated Soil</b>  |  | <b>1 Truck</b>  |  | <b>7.350</b>             |    |
|   |  |                 |  | <b>2.2</b>               |    |
|   |  |                 |  | <b>Vol. 17.1</b>         |    |
| 18. Waste category No. As per Act.  |  |                 |  |                          |    |
|   |  |                 |  |                          |    |
| 19. Special Handling Instruction & Additional Information:<br><b>Use dust mask and/or cotton hand gloves while handling</b>   |  |                 |  |                          |    |
| 20. OCCUPIER'S CERTIFICATE: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labeled, and are in all respects in proper condition for transport by road according to applicable national government regulations. |  |                 |  |                          |    |
| Typed Name & Stamp of Unit:<br><b>Prashanth Chemicals Company</b><br><b>(Prop. Prashanth Engineering &amp; Industries LP)</b>   |  |                 |  |                          |    |
| In Time _____ Hrs.  |  |                 |  |                          |    |
| Signature with Designation<br>With Rubber Stamp   |  |                 |  |                          |    |
| DAY MONTH YEAR<br><b>01 08 16</b>   |  |                 |  |                          |    |
| 21. Transporter's Acknowledgement of Receipt of Material (For)  |  |                 |  |                          |    |
| Typed Name & Stamp of Transporter:<br><b>JAY DASAMA TRANSPORT</b><br><b>At. S. Vaghapure</b><br><b>Tal. Jhagadia, Dist. Bharuch</b><br><b>Mob. 800885467</b>  |  |                 |  |                          |    |
| Out Time _____ Hrs.   |  |                 |  |                          |    |
| Signature with Designation  |  |                 |  |                          |    |
| DAY MONTH YEAR<br><b>01 08 16</b>   |  |                 |  |                          |    |
| 22. Discrepancy Note Space  |  |                 |  |                          |    |
| 23. Facility Owner or Operator's Certification of Receipt of Hazardous Waste  |  |                 |  |                          |    |
| <b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b>   |  |                 |  |                          |    |
| Phone No.: (02648) 225228, 253135 Fax No.: (02648) 222840   |  |                 |  |                          |    |
| For BEIL  |  |                 |  |                          |    |
| Time _____ Hrs.   |  |                 |  |                          |    |
| Manifest Valid for 3 Months<br>From the Date of Issue   |  |                 |  |                          |    |
| Authorised Signatory  |  |                 |  |                          |    |
| Signature with Designation  |  |                 |  |                          |    |
| DAY MONTH YEAR<br><b>01 08 16</b>   |  |                 |  |                          |    |

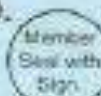
**BHARUCH ENVIRO INFRASTRUCTURE LTD.**

Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch.

Form - 13 (See Rule 21 (1))

Hazardous Waste Manifest

(Information of Hazardous Waste for Disposal)



Sr. No.

**30461**

|   |  |  |  |
|---|--|--|--|
| 1. Consignor's Name, Location and Address:<br><b>Shree. S. S. Chaudhary &amp; Co.</b><br><b>GIDC Industrial Estate, P.O. Olpad</b><br><b>Dist. Surat-394540</b> |  | 2. Occupier's Registration No.<br><b>30461</b>   |  |
| 3. Manifest Document No.<br><b>BEIL/ANK/417/006</b>   |  | 4. Transporter's Registration No.<br><b>30461</b>  |  |
| 5. Type of Vehicle<br><b>Truck/Dumper/<br/>Special Vehicle</b>  |  | 6. Facility's Registration No.<br><b>50809</b>   |  |
| 7. Facility's Phone No. <b>225228 / 253135</b>  |  | 8. Facility's Name & Address:<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br><b>Site: Plot No. 9701-9716, GIDC Estate, Ankleshwar</b>   |  |
| 9. Solid waste for incineration, treatment and disposal.  |  | 10. Quantity of Waste<br><b>MP 3920 MT</b>   |  |
| 11. Consistency<br><b>Solid</b>   |  | 12. Waste Category/No.<br><b>001</b>   |  |
| 13. Containers<br><b>No. Type</b>   |  | 14. Total Quantity in MT<br><b>3920</b>  |  |
| 15. Transport Description of Waste<br><b>Contaminated Soil</b>  |  | 16. Waste Category/No.<br><b>001</b>   |  |
| 17. Special Handling Instructions & Additional Information<br><b>Wear gloves while handling</b>   |  | 18. Occupier's Certificate: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labelled, and are in all respects in proper condition for transport by road according to applicable national government regulations. |  |
| 19. Typed Name & Stamp of Unit<br><b>Shree. S. S. Chaudhary &amp; Co.</b>   |  | 20. Signature with Designation<br><b>A. H. KALSI-RE</b>  |  |
| 21. Transporter's Acknowledgement of Receipt of Materials<br><b>JAY DASAMA TRANSPORT</b>  |  | 22. Facility Owner or Operator's Certification of Receipt of Hazardous Waste<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b>  |  |
| 23. Discrepancy Note Space  |  | 24. Manifest Valid for 3 Months From the Date of Issue   |  |

BLUE COPY



# BHARUCH ENVIRO INFRASTRUCTURE LTD.

Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch

Form - 13 (See Rule 21 (1))

Hazardous Waste Manifest

(Information of Hazardous Waste for disposal)



Sl. No.

30462

|  |  |  |  |
|--|--|--|--|
| 1. Occupier's Unit's Name & Mailing Address:<br>(Including Phone No.)<br>Hindustan Chemicals Company<br>GIDC Industrial Estate, P.O. Road<br>Dist. Surat - 39540 |  | 2. Occupier's Registration No.<br>01/030/085   |  |
| 3. Transporter's Name & Address:<br>(Including Phone No.)<br>JAY TRISANA TRANSPORT<br>At. S. Vaghapura<br>Tal. Jhagadia, Dist. Bharuch<br>Mob. 8000885467        |  | 4. Manifest Document No. 30462   |  |
| 5. Type of Vehicle<br>Truck/Dumper/<br>Special Vehicle   |  | 6. Transporter's Registration No.<br>B-11 / AH / JDT / 088   |  |
| 7. Designated Facility Name & Site Address:<br>BHARUCH ENVIRO INFRASTRUCTURE LTD.<br>Site: Plot No. 9701-9716, GIDC Estate, Ankleshwar.                          |  | 8. Vehicle Registration No.<br>GJ-5-8-2035   |  |
| 9. Facility's Registration No.<br>50509  |  | 10. Facility's Phone No.: 225228 / 253135  |  |
| 11. Waste Description:<br>Solid waste for incineration,<br>treatment and disposal  |  | 12. Gross Quantity of Waste<br>MT 8.520 MT   |  |
| 13. Consistency<br>Solid<br>Semi-Solid<br>Sludge   |  | 14. Consistency<br>Oily<br>Tarry<br>Slurry   |  |
| 15. Transport Description of Waste   |  | 16. Containers   |  |
| 17. Total Quantity in MT   |  | 18. Waste category No. As per Act  |  |
| 19. Special Handling Instruction & Additional Information<br>Use dust mask protection and gloves while handling  |  | 20. OCCUPIER'S CERTIFICATE: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labelled, and are in all respects in proper condition for transport by road according to applicable national government regulations. |  |
| 21. Transporter's Acknowledgement of Receipt of Material   |  | 22. Discrepancy Note Space   |  |
| 23. Facility Owner or Operator's Certification of Receipt of Hazardous Waste   |  | 24. Facility Owner or Operator's Certification of Receipt of Hazardous Waste   |  |

**BHARUCH ENVIRO INFRASTRUCTURE LTD.**

Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch.

Form - 13 (See Rule 21 (1))

Hazardous Waste Manifest

(Information of Hazardous Waste for disposal)

Sr. No. **30683**

|   |  |   |  |
|---|--|---|--|
| 1. Occupier's Unit Name & Mailing Address:<br><b>Hindustan Chemicals Company</b><br><b>GIDC Industrial Estate, P.O. Olpad-394540</b><br><b>Dist. Surat.</b>   |  | 2. Occupier's Registration No.<br><b>01/080/005</b>   |  |
| 3. Manifest Document No.<br><b>30683</b>  |  | 4. Transporter's Name & Address:<br>(Including Phone No.)<br><b>JAY DASAMA TRANSPORT</b><br><b>At. S. Vaghapura</b><br><b>Tal. Jagadri, Dist. Bharuch</b><br><b>Mobile: 989854567</b> |  |
| 5. Type of Vehicle<br><b>Truck/Dumper/<br/>Special Vehicle</b>  |  | 6. Transporter's Registration No.<br><b>RAIL/ANK/JAG/008</b>  |  |
| 7. Vehicle Registration No.<br><b>GJ-161-6370</b>   |  | 8. Facility's Registration No.<br><b>00809</b>  |  |
| 9. Facility's Phone No.: <b>225228 / 253135</b>   |  | 10. Facility's Phone No.: <b>225228 / 253135</b>  |  |
| 11. Waste Description<br><b>Solid waste for incineration,<br/>treatment and disposal.</b>   |  | 12. Total Quantity of Waste<br><b>WT</b> <b>8.810 MT</b>  |  |
| 13. Consistency<br><b>Solid</b><br><b>Semi-Solid</b><br><b>Sludge</b><br><b>Oily</b><br><b>Tarry</b><br><b>Summy</b>  |  | 14. Transport Description of Waste<br><b>Contaminated soil</b>  |  |
| 15. Containers<br>No. <b>1</b> Type <b>Truck</b>  |  | 16. Total Quantity in MT<br><b>8.810</b>  |  |
| 17. Unit Wt./Vol. in MT<br><b>K.T.</b>  |  | 18. Waste category No. As per Act.<br><b>Sch. 1</b><br><b>Cat. 17.1</b>   |  |
| 19. Special Handling Instruction & Additional Information:<br><b>Use dust mask and cotton hand gloves while handling.</b>   |  |   |  |
| 20. OCCUPIER'S CERTIFICATE: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked and labeled, and are in all respects in proper condition for transport by road according to applicable national government regulations. |  |   |  |
| Typed Name & Stamp of Unit:<br><b>Hindustan Engineering &amp; Industries Co.</b>  |  | In Time _____ Hrs.<br>DAY MONTH YEAR<br><b>01 08 2016</b>   |  |
| Signature with Designation<br><b>With Rubber Stamp</b>  |  | DAY MONTH YEAR<br><b>01 08 2016</b>   |  |
| 21. Transporter's Acknowledgement of Receipt of Materials:<br>Typed Name & Stamp of Transporter:<br><b>JAY DASAMA TRANSPORT</b><br><b>At. S. Vaghapura</b><br><b>Tal. Jagadri, Dist. Bharuch</b><br><b>Mobile: 989854567</b>  |  |   |  |
| Signature with Designation  |  | Out Time _____ Hrs.<br>DAY MONTH YEAR<br><b>01 08 2016</b>  |  |
| 22. Discrepancy, If any   |  |   |  |
| 23. Facility Owner or Operator's Certification of Receipt of Hazardous Waste:<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br>Phone No.: (02646) 225228, 253135. Fax No.: (02646) 222649<br><b>Manifest Valid for 3 Months</b><br><b>From the Date of Issue</b><br><b>20 SEP 2016</b>   |  |   |  |
| For BEIL<br><b>Authorised Signatory</b><br>Signature with Designation   |  | Time <b>12:28</b> Hrs.<br>DAY MONTH YEAR<br><b>01 08 2016</b>   |  |

**BHARUCH ENVIRO INFRASTRUCTURE LTD.**

Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch

Form - 13 (See Rule 21 (1))

Hazardous Waste Manifest

(Information of Hazardous Waste for disposal)

Sr. No. **30824**

|  |  |   |  |
|--|--|---|--|
| 1. Occupier's Unit's Name & Mailing Address<br>(Including Phone No.)<br><b>Kinvaathan Chemicals Company</b><br><b>GIDC Industrial Estate, P.O. Olpad-394540</b>  |  | 2. Occupier's Registration No.<br><b>GL/051/095</b>   |  |
| 3. Occupier's Name & Address<br><b>JAY DASANIA TRANSPORT</b><br><b>At. S. Vaghapura</b><br><b>Tal. Jhagadia, Dist. Bharuch</b><br><b>MOB. 980885467</b>  |  | 3. Manifest Document No.<br><b>30824</b>  |  |
| 4. Type of Vehicle<br>Truck/Dumper/<br>Special Vehicle   |  | 6. Transporter's Registration No.<br><b>2B12/ANK/2BT/095</b>  |  |
| 8. Occupier's Facility Name & Site Address<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br>Site: Plot No. 9701-9716, GIDC Estate, Ankleshwar.  |  | 7. Vehicle Registration No.<br><b>GU-1AT-4370</b>   |  |
| 11. Waste Description:<br><b>Solid waste for incineration, treatment and disposal.</b>   |  | 8. Facility's Registration No.<br><b>00609</b>  |  |
| 12. Total Quantity of Waste<br><b>MT</b> <b>8.660 MT</b>   |  | 10. Facility's Phone No. <b>225238/253135</b>   |  |
| 13. Consistency<br>Solid<br>Semi-Solid<br>Sludge<br>Oily<br>Tarry<br>Slurry  |  | 12. Total Quantity of Waste<br><b>MT</b> <b>8.660 MT</b>  |  |
| 14. Transport Description of Waste   |  | 15. Containers<br>No. Type  |  |
| 16. Total Quantity in MT   |  | 17. Unit Wt./Vol. in MT   |  |
| 18. Waste category No. As per Act.   |  | 19. Special Handling Instruction & Additional Information:<br><b>Use dust mask and cotton hand gloves while handling.</b>   |  |
| 20. OCCUPIER'S CERTIFICATE. I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labelled and are in all respects in proper condition for transport by road according to applicable national government regulations & instructions. |  | 21. Transporter's Acknowledgement of Receipt of Materials<br>Typed Name & Stamp of Transporter:<br><b>JAY DASANIA TRANSPORT</b><br><b>At. S. Vaghapura</b><br><b>Tal. Jhagadia, Dist. Bharuch</b><br><b>MOB. 980885467</b>                            |  |
| 22. Discrepancy Note Space   |  | 23. Facility Owner or Operator's Certification of Receipt of Hazardous Waste<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br>Phone No. : (02646) 225238, 253135 Fax No. : (02646) 222849<br><b>Manifest Valid for 3 Months From the Date of Issue</b> |  |

**BHARUCH ENVIRO INFRASTRUCTURE LTD.**

Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch.

Form - 13 (See Rule 21 (1))

Hazardous Waste Manifest

(Information of Hazardous Waste for disposal)

Sr. No. **31042**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 1. Occupier's Unit's Name & Mailing Address:<br><b>Industrial Chemicals Company</b><br><b>GIDC Industrial Estate, P.O. Olpad-394 540</b><br><b>Dist. Surat.</b>  |  | 2. Occupier's Registration No.<br><b>029693/009</b>  |  |  |  |  |  |  |  |  |  |  |  |
| 3. Manifest Document No.<br><b>31042</b>   |  | 4. Transporter's Name & Address:<br><b>Jay Transport</b><br><b>At S. Vaghapura, Tal. Jhagadia</b><br><b>Dist. Bharuch.</b>                           |  |  |  |  |  |  |  |  |  |  |  |
| 5. Type of Vehicle:<br><b>Truck/Dumper/</b><br><b>Special Vehicle</b>  |  | 6. Transporter's Registration No.<br><b>029693/009</b>   |  |  |  |  |  |  |  |  |  |  |  |
| 7. Vehicle Registration No.<br><b>029693/009</b>   |  | 8. Designated Facility Name & Site Address:<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br><b>Site: Plot No. 9701-9716, GIDC Estate, Ankleshwar</b> |  |  |  |  |  |  |  |  |  |  |  |
| 9. Facility's Registration No.<br><b>50909</b>   |  | 10. Facility's Phone No. <b>225228 / 253135</b>  |  |  |  |  |  |  |  |  |  |  |  |
| 11. Waste Description:<br><b>Solid waste for incineration,</b><br><b>treatment and disposal.</b>   |  | 12. Total Quantity of Waste<br><b>MT</b> <b>4.230 MT.</b>  |  |  |  |  |  |  |  |  |  |  |  |
| 13. Consistency<br><b>Solid</b><br><b>Semi-Solid</b><br><b>Sludge</b><br><b>Slurry</b>   |  | 14. Transport Description of Waste<br><b>Activated Carbon</b>  |  |  |  |  |  |  |  |  |  |  |  |
| 15. Containers<br>No. <b>1</b> Type <b>Truck</b>   |  | 16. Total Quantity in MT<br><b>4.230</b>   |  |  |  |  |  |  |  |  |  |  |  |
| 17. Unit Wt/Vol in MT<br><b>M.T.</b>   |  | 18. Waste category No. As per Act.<br><b>Sub.1</b><br><b>Cat.17.1</b>  |  |  |  |  |  |  |  |  |  |  |  |
| 19. Special Handling Instruction & Additional Information:<br><b>Use dust mask and cotton hand gloves while handling.</b>  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20. OCCUPIER'S CERTIFICATE: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked and labelled, and are in all respects in proper condition for transport by road according to applicable national government regulations & Industries Ltd.<br>Typed Name & Stamp of Unit:<br><br><b>A.K. KAUSHIK</b> Signature with Designation<br><b>Gen. Manager</b> With Rubber Stamp<br>In Time _____ Hrs.<br>DAY MONTH YEAR<br><table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21. Transporter's Acknowledgement of Receipt of Materials<br>Typed Name & Stamp of Transporter:<br><b>Jay Transport</b><br><b>At S. Vaghapura</b><br><b>Tal. Jhagadia, Dist. Bharuch</b><br><br>Signature with Designation<br>Out Time _____ Hrs.<br>DAY MONTH YEAR<br><table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>   |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22. Discrepancy Note Space   |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23. Facility Owner or Operator's Certification of Receipt of Hazardous Waste<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br>Phone No.: (02646) 225228, 253135 Fax No.: (02646) 222649<br><b>Manifest Valid for 3 Months</b><br><b>From the Date of Issue</b><br>For BEIL<br>Time <b>15:47</b> Hrs.<br>Authorised Signatory<br><br>Signature with Designation<br>DAY MONTH YEAR<br><table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>   |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**BHARUCH ENVIRO INFRASTRUCTURE LTD.**

Site: Plot No. 9701-9716, GIDC, Ankleshwar, Dist. Bharuch

Form - 13 (See Rule 21 (1))

Hazardous Waste Manifest

(Information of Hazardous Waste for disposal)

Sr. No. **31055**

|   |  |   |  |
|---|--|---|--|
| 1. Occupier's Unit's Name & Mailing Address<br>(Including Phone No.)<br><b>Hindustan Chemicals Company</b><br><b>GIDC Indl. Estate</b><br><b>P.O. Vinod-396540, Dist. Surat</b>   |  | 2. Occupier's Registration No.<br><b>01/098/095</b>         |  |
| 3. Transporter's Name & Address<br>(Including Phone No.)<br><b>JAY DASAMA TRANSPORT</b><br><b>At. S. Vaghapara</b>  |  | 4. Manifest Document No.<br><b>31055</b>                    |  |
| 5. Type of Vehicle<br>Truck/Dumper/<br>Special Vehicle  |  | 6. Transporter's Registration No.<br><b>MH/148/2017/088</b> |  |
| 7. Facility's Name & Address<br><b>BHARUCH ENVIRO INFRASTRUCTURE LTD.</b><br><b>Site: Plot No. 9701-9716, GIDC Estate, Ankleshwar</b>   |  | 8. Vehicle Registration No.<br><b>MH-14X-6370</b>           |  |
| 9. Facility's Registration No.<br>50809   |  | 10. Facility's Phone No.: 225228 / 253135                   |  |
| 11. Waste Description:<br><b>Solid waste for incineration, treatment and disposal.</b>  |  | 12. Total Quantity of Waste<br>MT <b>7.970 MT</b>           |  |
| 13. Consistency<br>Solid<br>Semi-Solid<br>Sludge  |  | City<br>Tarry<br>Slurry                                     |  |
| 14. Transport Description of Waste:<br><b>Contaminated Salt</b>   | 15. Containers<br>No. <b>1</b> Type <b>Truck</b> | 16. Total Quantity in MT<br><b>7.970</b>                    | 17. Unit<br>Wt/Vol. in MT<br><b>M.T.</b> |
| 18. Waste Category No. As per Act<br><b>Sch. I</b>  |  | 19. Special Handling Instruction & Additional Information   |  |
| 20. OCCUPIER'S CERTIFICATE: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked and labeled, and are in all respects in proper condition for transport by road according to applicable national government regulations. |  |   |  |
| Typed Name & Stamp of Unit:<br>   |  | In Time _____ Hrs.<br>DAY MONTH YEAR<br><b>15 10 2016</b>   |  |
| Signature with Designation<br>With Rubber Stamp<br>   |  | Signature with Designation<br>                              |  |
| 21. Transporter's Acknowledgement of Receipt of Materials   |  |   |  |
| Typed Name & Stamp of Transporter:<br><b>JAY DASAMA TRANSPORT</b><br><b>At. S. Vaghapara</b><br><b>Tal. Jhagadia, Dist. Bharuch</b><br><b>Mob. 999885467</b>  |  | Out Time _____ Hrs.<br>DAY MONTH YEAR<br><b>15 10 2016</b>  |  |
| Signature with Designation<br>  |  | Signature with Designation<br>                              |  |
| 22. Discrepancy Note, Space   |  |   |  |
| 23. Facility Owner or Operator's Certification of Receipt of Hazardous Waste  |  |   |  |
| Bharuch Enviro Infrastructure Ltd.<br>Phone No.: (02648) 225228, 253135 Fax No.: (02648) 222849   |  | For BEIL<br>Time <b>15.15</b> Hrs.                          |  |
| Manifest Valid for 3 Months<br>From the Date of Issue   |  | Authorized Signatory<br>Signature with Designation<br>      |  |
|   |  | DAY MONTH YEAR<br><b>15 10 2016</b>                         |  |

BLUE COPY

## ANNEXURE 8 – CCA



|                                     |          |       |              |
|-------------------------------------|----------|-------|--------------|
| Form No.                            | V.P. (P) | DM(P) | DDMAGM (A&A) |
| ECR. OR                             | 23       | DEC   | 2013         |
| Hindustan Chemicals Company - Olpad |          |       |              |

### GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN

Sector 10-A, Gandhinagar 382 010

Phone : (079) 23226295

Fax : (079) 23232156

Website : [www.gpcb.gov.in](http://www.gpcb.gov.in)

By, RPAD

In exercise of the power conferred under section-25 of the Water (Prevention and Control of Pollution) Act-1974, under section-21 of the Air (Prevention and Control of Pollution)-1981 and Authorization under rule 3(c) & 5(5) of the Hazardous Waste (Management and Handling & Trans boundary Movement ) Rules'2008 framed under the Environmental (Protection) Act-1986. This Board is empowered to Grant CC&A.

And whereas Board has received consolidated consent application letter No- 68779 dated:-15/07/2013 for the Renewal of Consolidated Consent and Authorization (CC & A) of this Board under the provisions / rules of the aforesaid Acts. Consents & Authorization are hereby granted as under:

#### CONSENTS AND AUTHORISATION:

(Under the provisions /rules of the aforesaid environmental acts)

To,  
M/s. HINDUSTAN CHEMICALS COMPANY  
(OLD NAME: CYANIDES & CHEMICALS COMPANY)  
GIDC INDUSTRIAL ESTATE,  
P.O. OLPAD,  
OLPAD-394 540  
TAL: OLPAD  
DIST: SURAT

1. Consent Order No. AWH-58572 Date of issue: 25/11/2013
- 2.
3. The consents shall be valid up to 14/07/2018 for the use of outlet for the discharge of treated effluent & air emission and to operate industrial plant for manufacture of the following items/ products:

| Sr. No. | Product                 | Quantity      |
|---------|-------------------------|---------------|
| 1.      | Hydrogen Cyanide        | 5100 MT/Annum |
| 2.      | Sodium Cyanide          | 6372 MT/Annum |
| 3.      | Potassium Cyanide       | 2000 MT/Annum |
| 4.      | Sodium Ferro Cyanide    | 1000 MT/Annum |
| 5.      | Potassium Ferro Cyanide | 1000 MT/Annum |
| 6.      | Diphenyl Guanidine      | 1260 MT/Annum |
| 7.      | Sodium Dicyanide        | 300 MT/Annum  |
| 8.      | Mandelonitrile          | 2500 MT/Annum |
| 9.      | Heat Treatment Salt     | 720 MT/Annum  |
| 10.     | Cyano hydrines          | 5000 MT/Annum |
| 11.     | Nitrites                | 3000 MT/Annum |

**Clean Gujarat Green Gujarat**

ISO - 9001 - 2008 & ISO - 14001 - 2004 Certified Organisation

|                   |                        |               |
|-------------------|------------------------|---------------|
| 12.               | Cyanide based products | 3500 MT/Annum |
| 13.               | NG based CPP           | 2 MW          |
| <b>BY Product</b> |                        |               |
| 1.                | Ammonium Sulphate      | 2649 MT/Annum |

**Subject to Specific Conditions:-**

1. Unit shall strictly follow conditions mentioned EC issued by MOEF on date: 05/10/2010 & CTE order issued by GPCB vide letter NO: GPCB/CTE/SRT-50(6)/88114.
2. Cyanide stream & High TDS Stream shall be separated & Cyanide stream shall be given cyanide removal treatment & High TDS Stream shall be evaporated in Multi Effect Evaporator.
3. Unit shall follow & implement applicable recommendation of cleaner production in Chemical industry, which is enclosed herewith this order.

**3. CONDITIONS UNDER THE WATER ACT:**

- 3.1 The quantity of trade effluent from the factory shall not exceed **258 KL/Day** Of which 208 m<sup>3</sup>/Day of treated effluent shall be discharged in to Masma Khadi & remaining 50 m<sup>3</sup>/Day shall be evaporated in Multi Effect Evaporator & its condensate water shall be used in cooling tower of DPG Plant.

- 3.2 The quantity of Domestic effluent from the factory shall not exceed **8 KL/Day**

**3.3 TRADE EFFLUENT:**

- 3.3.1. The applicant shall provide adequate effluent treatment system so that effluent from the industrial unit shall conform to the GPCB norms mentioned below.

| Sr. No | Parameter              | Unit  | GPCB Norms |
|--------|------------------------|-------|------------|
| 1      | pH                     |       | 6.5~8.5    |
| 2      | Temperature            | C     | 40.0       |
| 3      | Colour (Pt. Co. Scale) | units | 100.0      |
| 4      | Suspended Solids       | mg/l  | 100.0      |
| 5      | Oil & Grease           | mg/l  | 10.0       |
| 6      | Phenolic compounds     | mg/l  | 1.0        |
| 7      | Cyanides               | mg/l  | 0.2        |
| 8      | Fluorides              | mg/l  | 1.5        |
| 9      | Sulphides              | mg/l  | 2.0        |
| 10     | Ammonical Nitrogen     | mg/l  | 50.0       |
| 11     | Total Chromium         | mg/l  | 2.0        |
| 12     | Hexavalent Chromium    | mg/l  | 0.1        |

|    |                         |      |   |
|----|-------------------------|------|---|
| 13 | Copper                  | mg/l | 2.0   |
| 14 | Lead                    | mg/l | 0.1   |
| 15 | Mercury                 | mg/l | 0.01  |
| 16 | Nickel                  | mg/l | 2.0   |
| 17 | Zinc                    | mg/l | 5.0   |
| 18 | BOD (5 days, 20°C)      | mg/l | 30.0  |
| 19 | COD                     | mg/l | 250.0   |
| 20 | Insecticides/Pesticides |      | Absent  |
| 21 | Bio assay test          |      | 90 % survival of fish after 96 hours in 100 %effluent |

3.3.2 Effluent conforming to above standards shall be discharged in to Masma Khadi through underground pipeline.

3.3.3 Unit shall also provide flow meter at ETP.

3.3.4 Domestic effluent shall be disposed off through septic tank/soak pit system.

#### 4. CONDITIONS UNDER THE AIR ACT:

4.1 The following shall be used as a fuel.

| Sr. No. | Product     | Quantity                   |
|---------|-------------|----------------------------|
| 1       | Natural Gas | 14,000 m <sup>3</sup> /Day |
| 2       | FO          | 5 Lit/Hr                   |
| 3       | LDO         | 10 Lit/Hr                  |

4.2 The applicant shall install & operate comprehensive adequate air pollution Control system in order to achieve prescribed norms.

4.2.1 The flue gas emission through stack attached to Boiler/CPP shall conform to the following standards:

| Stack No. | Stack attached to | Stack height in Meter | Air Pollution Control System | Parameters   | Permissible Limit                           |
|-----------|-------------------|-----------------------|------------------------------|--|---|
| 1         | Boiler 2 Nos.     | 30                    | Cyclone Separator            | Particulate Matter<br>SO <sub>2</sub><br>NO <sub>x</sub> | 150 mg/NM <sup>3</sup><br>100 ppm<br>50 ppm |

|   |                         |    |                |  |   |
|---|-------------------------|----|----------------|--|---|
| 2 | Solid Waste Incinerator | 30 | Water Scrubber | Particulate Matter<br>SO <sub>2</sub><br>NO <sub>x</sub> | 150 mg/NM <sup>3</sup><br>100 ppm<br>50 ppm |
| 3 | Salt Incinerator        | 15 | Water Scrubber | Particulate Matter<br>SO <sub>2</sub><br>NO <sub>x</sub> | 150 mg/NM <sup>3</sup><br>100 ppm<br>50 ppm |
| 4 | CPP-1 no. 2 MW          | 30 | -----          | Particulate Matter<br>SO <sub>2</sub><br>NO <sub>x</sub> | 150 mg/NM <sup>3</sup><br>100 ppm<br>50 ppm |

4.2.2 The process emission through various stacks/vent of reactors, process, vessel shall conform to the following standards:

| Stack Nos. | Process vessel to which the stack / vent is attached | Vent Height in Meter | Air Pollution Control Measures | Parameters      | Permissible Limit                               |
|------------|--|----------------------|--------------------------------|-----------------|---|
| 1          | Tail Gas Incinerator                                 | 40                   | -----                          | HCN<br>HCL      | 30 mg/Nm <sup>3</sup><br>20 mg/Nm <sup>3</sup>  |
| 2          | Scrubber<br>H.T. Plant                               | 19                   | Water Scrubber & Bag Filter    | PM<br>HCN       | 150 mg/Nm <sup>3</sup><br>30 mg/Nm <sup>3</sup> |
| 3          | Ammonium Sulphate Recovery                           | 20                   | Ammonia absorption Column      | NH <sub>3</sub> | 175 mg/Nm <sup>3</sup>                          |

4.2.3 The concentration of the following parameters in the ambient air within the premises of the industry and a distance of 10meters from the source) other than the stack/vent) shall not exceed the following levels.

| PARAMETER                        | PERMISSIBLE LIMIT             |
|----------------------------------|-------------------------------|
| Particulate matter <sub>10</sub> | 100 Microgram Per cubic meter |
| PM <sub>2.5</sub>                | 60 Microgram Per cubic meter  |
| Oxides of Sulphur                | 80 Microgram Per cubic meter  |
| Oxides of Nitrogen               | 80 Microgram Per cubic meter  |

4.2.4 The applicant shall provide portholes, ladder, platform etc at chimney(s) for monitoring the air emissions and the same shall be open for inspection to/and for use of Board's staff. The chimney(s) vents attached to various sources of emission shall be designed by numbers such as S-1, S-2, etc. and these shall be painted/displayed to facilitate identification.

4.2.5. The industry shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standards in respect of noise to less than 75dB(a) during day time and 70 dB (A) during night time. Daytime is reckoned in between 6a.m. and 10 p.m. and nighttime is reckoned between 10 p.m. and 6 a.m.

**5. GENERAL CONDITIONS:-**

5.1 Any change in personnel, equipment or working conditions as mentioned in the consents form/order should immediately be intimated to this Board.

5.2 If it is established by any competent authority that the damage is caused due to their industrial activities to any person or his property in that case they are obliged to pay the compensation as determined by the competent authority.

**6. AUTHORISATION FOR THE MANAGEMENT & HANDLING OF HAZARDOUS WASTES Form-2 (See rule 3 (c) & 5 (5))**

6.1 Number of authorization No: AWH-58577 Date of issue: 25/11/2013

6.1.1. **M/s. HINDUSTAN CHEMICALS COMPANY (OLD NAME: CYANIDES & CHEMICALS COMPANY)** is hereby granted an authorization to operate facility for following hazardous wastes on the premises situated at: **GIDC INDUSTRIAL ESTATE, P.O. OLPAD, OLPAD-394 540 TAL: OLPAD DIST: SURAT**

| Sr. No. | Waste                | Quantity     | Schedule-I Process No. | Facility  |
|---------|----------------------|--------------|------------------------|---|
| 1       | ETP Sludge           | 14 MT/Year   | 34.3                   | Collection, Storage, Transportation and Disposal Incineration at CHWT Facility of NECL, Nandesari.        |
| 2       | Used Oil             | 800 Lit/Year | 5.1                    | Collection, Storage, Transportation and Disposal by selling to Registered Refiners approved by GPCB/MOEF. |
| 3       | Discarded Containers | 200 #/Year   | 33.3                   | Collection, Storage, Decontamination  |
| 4       | Activated Carbon     | 170 Kg/Day   | A-10 Sch - II          | Collection, Storage, Transportation and Disposal by   |

|    |  |                        |                  |   |
|----|--|------------------------|------------------|---|
|    |  |                        |                  | incineration at CHWT Facility of NECL, Nandesari.   |
| 5  | Ferric Hydroxide                                 | 40 Kg/Day              | A-10<br>Sch - II | Collection, Storage, Transportation and Disposal by incineration at CHWT Facility of NECL, Nandesari. |
| 6  | Iron Sludge                                      | 8 MT/Year              | A-10<br>Sch - II | Collection, Storage, Transportation and Disposal by incineration at CHWT Facility of NECL, Nandesari. |
| 7  | Spent Catalyst                                   | What So ever Generated | A-10<br>Sch - II | Collection, Storage, Transportation and Disposal by incineration at CHWT Facility of NECL, Nandesari. |
| 8  | Residues from ETP (MEE) (in place of DPG Lagoon) | 330 MT/Year            | 17.1             | Collection, Storage, Transportation and Disposal by incineration at CHWT Facility of NECL, Nandesari. |
| 9  | SFCN Lagoon (Contaminated Salt)                  | 700 Kg/Day             | A-10<br>Sch - II | Collection, Storage, Transportation and Disposal by incineration at CHWT Facility of NECL, Nandesari. |
| 10 | SDCN Plant (Contaminated Salt)                   | 500 Kg/Day             | A-10<br>Sch - II | Collection, Storage, Transportation and Disposal by incineration at CHWT Facility of NECL, Nandesari. |

6.1.2 The authorization is granted to operate a facility for collection, storage, within the factory premises transportation and ultimate disposal of Hazardous Waste at incineration at CHWT Facility of NECL, Nandesari.

6.1.3 The authorization shall be valid up to 14/07/2018

6.1.4 The authorization is subject to the conditions stated below and such other conditions as may be specified in the rules from time to time under the Environment (Protection) Act-1986 and Haz. Waste ( M & H and T M) Rules 2008.

**6.1.5 TERMS AND CONDITIONS OF AUTHORIZATION :**

- The applicant shall comply with the provisions of the Environment (Protection) Act - 1986 and the rules made there under.
- The authorization shall be produced for inspection at the request of an officer authorized by the Gujarat Pollution Control Board.

- c) The persons authorized shall not rent, lend, sell, transfer or otherwise transport the hazardous wastes without obtaining prior permission of the Gujarat Pollution Control Board.
  - d) Any unauthorized change in personnel, equipment or working conditions as mentioned in the authorization order by the persons authorized shall constitute a breach of this authorization.
  - e) It is the duty of the authorized person to take prior permission of the Gujarat Pollution Control Board to close down the facility.
  - f) An application for the renewal of an authorization shall be made as laid down in rule 5 (6) (ii).
  - g) Industry shall have to manage waste oil, discarded containers etc. as per amended rules 2003.
  - h) Industry shall submit annual report within 15 days and subsequently by 31<sup>st</sup> January every year.
7. Industry shall have to display the relevant information with regard to hazardous waste as indicated in the Supreme Court's order in W.P. No.657 of 1995 dated 14<sup>th</sup> October 2003.
8. Industry shall have to display on-line data outside the main factory gate with regard to quantity and nature of hazardous chemicals being handled in the plant, including waste water and air emissions and solid hazardous wastes generated within the factory premises.

For and on behalf of  
Gujarat Pollution Control Board

*D.M. Thaker*  
19/12

(D.M.THAKER)  
DEE & UNIT HEAD

NO: GPCB/CCA-SRT-50(7)/ID\_20643/168742

Date: 19/12/2013

Issued to:

M/s. HINDUSTAN CHEMICALS COMPANY  
(OLD NAME: CYANIDES & CHEMICALS COMPANY)  
GIDC INDUSTRIAL ESTATE,  
P.O. OLPAD,  
OLPAD-394 540  
TAL: OLPAD  
DIST: SURAT

## ANNEXURE 9 – CCA Amendment



### GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN  
Sector-10-A, Gandhinagar-382 021.  
Website : www.gpcb.gov.in

R. P. A. D.

No: GPCB /CCA-SRT-50 (8)/ ID\_20643/

Date: \_\_\_\_/\_\_\_\_/2013

CCA-Amendment (A-66818)

Amendment to CONSENTS AND AUTHORISATION Order No: - AWH-58577 Dated: 25/11/2013

(Under the provisions /rules of the aforesaid environmental acts)

To,  
M/s. Hindusthan Chemicals Company,  
Plot No:- GIDC Ind. Estate,  
P.O.- Olpad:- 394540,  
Tal:- Olpad, Dist:- Surat.

SUB: Consolidated Consent and Authorization ( CC & A) under various provision Environmental Acts/Rules.

REF.: 1) Your application no. 82438 dated 13/06/2014

1) Your letter no. Nil received dated 25/07/2012

2) This office letter CCA order No: AWH-58577 Dated: 25/11/2013 under various Environmental Acts/Rules.

In exercise of the power conferred by clause (b) of sub-section (4) of Section 25 of the Water (Prevention & Control of Pollution) Act, 1974 and sub-section (4) of Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and rule 6 of Hazardous Waste (Management Handling & Trans-boundary Movement) Rules 2008, framed under Environment (Protection) Act, 1986. The Consolidated Consent and Authorization (CC & A) granted vide his office Consent order No: AWH-58577 Dated: 25/11/2013 Valid up to Dated – 14/07/2018 is being subjected to amendment for the following conditions only.

#### SPECIFIC CONDITIONS:

- Unit shall provide arrangement for acoustic enclosure to keep Noise levels within Norms.

#### The Conditions under Air Act 1981 shall be read as:

1. The following shall be used as fuel only in D.G. Set (Stand By).

| Sr.No. | Fuel   | Total Quantity |
|--------|--------|----------------|
| 1      | Diesel | 200 Lit/Hr     |

Page 1

No: CCA-SRT-50 (8)/ID-20643

Clean Gujarat Green Gujarat  
ISO - 9001 - 2008 & ISO - 14001 - 2004 Certified Organisation

2. The applicant shall install & operate a comprehensive adequate air pollution control system in order to achieve prescribed norms.
3. The flue gas emission through Proposed D.G. Sets stack shall conform to the following standards;

| Stack No. | Stack attached to                   | Stack height in Meter | Air Pollution Control System | Parameters                               | Permissible Limit                           |
|-----------|-------------------------------------|-----------------------|------------------------------|--|---|
| 1.        | D.G. Set -I No. (Stand By) 2250 KVA | 20                    | ---                          | PM<br>SO <sub>2</sub><br>NO <sub>x</sub> | 150 mg/NM <sup>3</sup><br>100 ppm<br>50 ppm |

4. Stack monitoring facilities like port hole, platform/ladder etc., shall be provided with stacks/vents chimney in order to facilitate sampling of gases being emitted into the atmosphere.
5. Ambient air quality within the premises of the industry shall conform to the following standards:-

| PARAMETERS      | PERMISSIBLE LIMIT |
|-----------------|-------------------|
| PM 10           | 100 Microgram/M3  |
| PM 2.5          | 60 Microgram/M3   |
| SO <sub>2</sub> | 80 Microgram/M3   |
| NO <sub>x</sub> | 80 Microgram/M3   |

6. All measures for the control of environmental pollution shall be provided before commencing production.
7. The other conditions of the Consent order No: AWH-58577 Dated: 25/11/2013 Valid up to Dated - 14/07/2018 shall remain unchanged.

For and on behalf of  
Gujarat Pollution Control Board

*D. M. Thaker* 5/5

(D. M. Thaker)  
Environmental Engineer

## ANNEXURE 10 – License for Ammonia Storage



GOVERNMENT OF INDIA  
MINISTRY OF COMMERCE & INDUSTRY  
PETROLEUM AND EXPLOSIVES SAFETY ORGANISATION (PESO)  
VADODARA SUB CIRCLE OFFICE

Tel:2225159,  
Fax:(265)-  
Email:dycebaroda@explosives.gov.in

8th Floor, Yash Kamal Building,  
Sayajigunj  
Vadodara -390020

LIC. No. :S/HO/GJ/03/56 (S1147)  
(Old No :PV(WC)S-94/GJ)

Date :11 Apr,2016

To,  
M/s Hindusthan Chemicals Company, Prop.M/s Hindusthan Engg. & Ind. Ltd.,  
Plot No(s) 26 to28,29C,30,32 to 36,37p,  
53p,55to57,122 ,GIDC Industrial Estate,  
Asanabad P O Olpad SURAT--304540,  
District : SURAT  
State : Gujarat .

Sub:- Storage of AMMONIA, gas in pressure vessels at Village 26-37,53p,55-57,122 &143 Surat -  
Ankleshwar State Highway Asanabad GIDC Ind Estate- District : SURAT , State : Gujarat -LIC. No.  
S/HO/GJ/03/56 (S1147) Renewal Granted under SMPV(U)Rules,1981

Sir/s,

Reference: Your letter No.NIL dated: 4/2/2016

Licence Number: S/HO/GJ/03/56 is renewed and is valid upto to 31/3/2017 is forwarded herewith.

The provisions of the Rule 55 of the above said rules shall be followed for further renewal of the licence beyond 31/3/2017. The renewal application along with fees, Original licence and other documents shall reach in the Office of Vadodara Sub Circle Office, Vadodara latest by 2nd March, 2017 positively to avoid late fees.

Please acknowledge the receipt of the licence

| Exec.D.<br>(M/O)                   | Asstt.D.<br>(M/O) | Asstt.D.<br>(M/O) | Asstt.D.<br>(M/O) | Asstt.D.<br>(M/O) | Asstt.D.<br>(M/O) |
|------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                                    |                   |                   |                   |                   |                   |
| RECD. 12 APR 2016                  |                   |                   |                   |                   |                   |
| ON                                 |                   |                   |                   |                   |                   |
| Hindusthan Chemicals Company-Olpad |                   |                   |                   |                   |                   |

Yours faithfully,

(Dr. P. K. Rana)

Controller of Explosives

for Dy. Chief Controller of Explosives  
Vadodara Sub Circle Office, Vadodara

(For more information regarding status, fees and other details please visit our website <http://peso.gov.in>)



**Form III**  
(See Rules 49 and 50)

**Licence to Store Compressed gas in pressure vessel or vessels**

Licence Number : S/HO/GJ/03/56 (S1147)

Fee Rs : 10000/-

Licence is hereby granted to **M/s. Hindusthan Chemicals Company, Prop. M/s Hindusthan Engg. & Ind. Ltd., Plot No(s) 26 to 28, 29C, 30, 32 to 36, 37p, 53p, 55 to 57, 122, GIDC Industrial Estate Asanabad P O Olpad SURAT-304540, District : SURAT, State : Gujarat** valid only for the storage of compressed gas in 1 Number/s. of pressure vessel/s as indicated below in the licensed premises described below and shown in the plan No. S/HO/GJ/03/56 dtd 9 June, 2009 subject to the provisions of the Indian Explosives Act, 1884 (4 of 1884) and the rules made thereunder and to the further conditions of this licence.

| Vessel No. | Name of Gas          | Gas State | Volume in Cubic M | Max Pressure (kg/cm <sup>2</sup> g) | Quantity Granted in kgs (Liquified gases) |
|------------|----------------------|-----------|-------------------|-------------------------------------|---|
| V-1004     | AMMONIA              | Liquified | 220               | 4.35                                | 115786                                    |
|            | Total Water capacity |           | 220               |                                     |   |

The licence shall remain in force upto 31st day of March, 2010.

The 20, October, 1984.

*[Signature]*  
for Chief Controller of Explosives

Amendment dated 09/06/2009

**DESCRIPTION AND LOCATION OF THE LICENSED PREMISES**

The licensed premises, the layout boundaries and other particulars of which are shown in the attached approved plan No S/HO/GJ/03/56 Amendment dated 09/06/2009 are situated at Asanabad GIDC Ind Estate and consists of 1 vessel/s for storage of:

a) Flammable/Corrosive/Toxic Gases : AMMONIA,

नवीनीकृत 31/03/2017 तक

b) Non-toxic Gases :

*[Signature]*  
उप मुख्य विस्फोटक निगरान, कोटा

and situated at Plot No : 26-37, 53p, 55-57, 122 & 143 Name of Street : Surat - Ankleshwar State High Village/Town : Asanabad GIDC Ind Estate Police Station : Olpad District : SURAT

Renewed up to 31/03/2014

नवीनीकृत 31/03/2013 तक

for Chief Controller of Explosives

उप मुख्य विस्फोटक निगरान, कोटा

नवीनीकृत 31/03/2016 तक

नवीनीकृत 31/03/2015 तक

**ANNEXURE 11 - Ambient Air Sampling & Analysis Methodology, Analysis Report of Ambient Air and Work Place & Month Wise Comparison of Ambient Air Quality**

| Sr. No. | Particulars                             | Details   |
|---------|---|---|
| 1.      | Sampling Procedure                      | The PM <sub>2.5</sub> micron dust sampler and RSPM sampler were used for the sampling of PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> & NO <sub>x</sub> . Micrometeorological data were also collected by mechanical instruments like wind vane, anemometer, hygrometer & thermometer as per CPCB guideline. Sampling was carried out as per instrument manual & IS 5182 guideline.   |
| 2.      | Analysis Methodology                    |   |
| i.      | Particulate Matter (PM <sub>10</sub> )  | For the sampling of PM <sub>10</sub> Envirotech & Yash make Respirable Dust Sampler was used. Pre weighed filter media GFA 8"x10" was used for the collection of PM <sub>10</sub> . Samples were collected on 24 hr basis at a flow rate of 1.0 to 1.3 m <sup>3</sup> /min. Samples were transported to the laboratory after packing as per standard procedure. After receiving the sample, sample conditioning was done before taking final weight. Concentration was measured gravimetrically as per IS 5182 (part XXIII) 2006. |
| ii.     | Particulate Matter (PM <sub>2.5</sub> ) | PM <sub>2.5</sub> micron dust samplers Polltech make and Yash make were used. Filter media used for the collection of PM <sub>2.5</sub> were PTFE filter paper. Samples were collected for 24 hr at the flow rate of 16.67 lpm. Conditioning was done before taking the initial and final weight of filter paper. Concentration was measured gravimetrically as per the EPA method.   |
| iii.    | Sulphur Dioxide (SO <sub>2</sub> )      | Sulphur Dioxide was absorbed from air in a solution of Sodium Tetrachloromercurate; which forms a stable Dichloro Sulphitomercurate complex. Sulphur Dioxide is estimated from the colour after the addition of p-rosaniline Hydrochloride indicator and concentration was measured spectrophotometrically as per IS 5182 (Part II) 2001.   |
| iv.     | Oxide of Nitrogen (NO <sub>x</sub> )    | Nitrogen oxide as nitrogen dioxide was collected by bubbling air through a sodium hydroxide solution to form a stable solution of sodium nitrate. The nitrate ion produced during sampling was determined calorimetrically by reacting the exposed absorbing reagent with sulphanilamide and N (1-Naphthyl) ethylenediamine dihydrochloride as per IS 5182 (part VI) 2006.  |



Issue Date: 16/05/2016

Page 1 of 2

**Test Report**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/05-2016**

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.<br>Olpad, Dist. Surat  |
| Sample Collected On     | : | 10/05/2016 to 11/05/2016   |
| Date of Analysis        | : | 11/05/2016 to 12/05/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/05/862, 863, 864, 869, 870   |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature (°C)   | : | 31.0   |
| Avg. Humidity (%)       | : | 43.0   |
| Avg. Wind Speed (km/hr) | : | 10   |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 84.6                                     | 43.4                                      | 18.9                                    | 23.2                                    |
| 2.         | Near ADM Office         | 80.4                                     | 41.3                                      | 16.7                                    | 21.7                                    |
| 3.         | Near R&D Lab.           | 93.0                                     | 47.7                                      | 22.7                                    | 26.1                                    |
| 4.         | Near Security office    | 83.7                                     | 40.0                                      | 16.2                                    | 19.7                                    |
| 5.         | Nr. Ammonia bullet area | 91.1                                     | 44.0                                      | 20.5                                    | 23.0                                    |
| GPCB Limit |                         | 100                                      | 60  | 60                                      | 80                                      |
| Method     |                         | IS 5182 Part 23 2006                     | As per CPCB                               | As per CPCB                             | IS 5182 Part-6 2006                     |

Note : (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.



| Sr. No.    | LOCATION                | Result                              |  |   |              |
|------------|-------------------------|-------------------------------------|--|---|--------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )              | NH <sub>3</sub><br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(ppm) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL  | 4.0   | BDL          |
| 2.         | Near ADM Office         | BDL                                 | BDL  | 3.6   | BDL          |
| 3.         | Near R&D Lab.           | BDL                                 | BDL  | 3.9   | BDL          |
| 4.         | Near Security office    | BDL                                 | BDL  | 3.3   | BDL          |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL  | 5.5   | BDL          |
| GPCB Limit |                         | --                                  | --   | --  | --           |
| Method     |                         | Agentometric<br>Titration           | Coloromate-T<br>(Pyridine<br>barbicuric<br>acid) | CPCB Guideline<br>Nessler Method                | GC<br>Method |

Note : (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

  
CHEMIST

  
AUTHORIZED SIGNATORY  
(Sunilkumar Pandey)



Issue Date: 02/06/2016

Page 1 of 2

**Test Report**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/04-2016**

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.<br>Olpad, Dist. Surat  |
| Sample Collected On     | : | 27/05/2016 to 30/05/2016   |
| Date of Analysis        | : | 30/05/2016 to 31/05/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/05/968, 969, 970, 971, 972   |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature (°C)   | : | 30.0   |
| Avg. Humidity (%)       | : | 63   |
| Avg. Wind Speed (km/hr) | : | 05   |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 78.0                                     | 44.0                                      | 18.3                                    | 22.6                                    |
| 2.         | Near ADM Office         | 68.2                                     | 39.7                                      | 16.6                                    | 20.7                                    |
| 3.         | Near R&D Lab.           | 84.7                                     | 48.2                                      | 22.7                                    | 26.1                                    |
| 4.         | Near Security office    | 66.0                                     | 38.0                                      | 14.0                                    | 17.0                                    |
| 5.         | Nr. Ammonia bullet area | 82.3                                     | 45.1                                      | 20.4                                    | 24.1                                    |
| GPCB Limit |                         | 100                                      | 60  | 60                                      | 80                                      |
| Method     |                         | IS 5182 Part 23 2006                     | As per CPCB                               | As per CPCB                             | IS 5182 Part-6 2006                     |

Note : (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.



| Sr. No.    | LOCATION                | Result                              |   |   |              |
|------------|-------------------------|-------------------------------------|---|---|--------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )     | NH <sub>3</sub><br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(ppm) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL                                     | 2.6   | BDL          |
| 2.         | Near ADM Office         | BDL                                 | BDL                                     | 2.1   | BDL          |
| 3.         | Near R&D Lab.           | BDL                                 | BDL                                     | 3.9   | BDL          |
| 4.         | Near Security office    | BDL                                 | BDL                                     | 2.8   | BDL          |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL                                     | 3.5   | BDL          |
| GPCB Limit |                         | --                                  | --                                      | --  | --           |
| Method     |                         | Agentometric Titration              | Colorimetric (Pyridine barbituric acid) | CPCB Guideline Nessler Method                   | GC Method    |

Note : (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

  
**CHEMIST**

  
**AUTHORIZED SIGNATORY**  
**(Sunilkumar Pandey)**

Issue Date: 16/06/2016

Page 1 of 2

**Test Report**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/06-2016**

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.  |
|                         | : | Olpad, Dist. Surat   |
| Sample Collected On     | : | 10/06/2016 to 13/06/2016   |
| Date of Analysis        | : | 13/06/2016 to 14/06/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/06/1064, 1065, 1066, 1067, 1070  |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature        | : | 32°C   |
| Avg. Humidity           | : | 70 %   |
| Avg. Wind Speed         | : | 10 km/ hour  |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 94.9                                     | 45.4                                      | 20.1                                    | 26.4                                    |
| 2.         | Near ADM Office         | 92.4                                     | 43.2                                      | 18.9                                    | 25.1                                    |
| 3.         | Near R&D Lab.           | 92.7                                     | 46.3                                      | 24.0                                    | 29.0                                    |
| 4.         | Near Security office    | 93.3                                     | 41.1                                      | 19.0                                    | 21.8                                    |
| 5.         | Nr. Ammonia-bullet area | 95.4                                     | 42.3                                      | 22.8                                    | 25.3                                    |
| GPCB Limit |                         | 100                                      | 60  | 60                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per<br>CPCB                            | As per<br>CPCB                          | IS 5182 Part-6<br>2006                  |

Note : (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.



| Sr. No.    | LOCATION                | Result                              |  |   |                       |
|------------|-------------------------|-------------------------------------|--|---|-----------------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )        | $\text{NH}_3$<br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(ppm)<br>(BTX) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL  | 4.7   | BDL                   |
| 2.         | Near ADM Office         | BDL                                 | BDL  | 4.2   | BDL                   |
| 3.         | Near R&D Lab.           | BDL                                 | BDL  | 4.6   | BDL                   |
| 4.         | Near Security office    | BDL                                 | BDL  | 3.8   | BDL                   |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL  | 5.4   | BDL                   |
| GPCB Limit |                         | --                                  | --   | --  | --                    |
| Method     |                         | Argentometric Titration             | Coloromate-T<br>(Pyridine barbituric acid) | CPCB<br>Gludeline<br>Nessler<br>Method        | GC Method             |

Note : (1) These results relate to the sample tested only.

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Issue Date: 30/06/2016

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**Test Report**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/06-2016**

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.<br>Olpad, Dist. Surat  |
| Sample Collected On     | : | 26/06/2016 to 29/06/2016   |
| Date of Analysis        | : | 29/06/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/06/1161, 1162, 1163, 1164, 1165  |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature        | : | 28.0°C   |
| Avg. Humidity           | : | 72%  |
| Avg. Wind Speed         | : | 04km/ hour   |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 75.2                                     | 41.3                                      | 16.8                                    | 21.0                                    |
| 2.         | Near ADM Office         | 72.5                                     | 40.0                                      | 14.4                                    | 19.4                                    |
| 3.         | Near R&D Lab.           | 88.1                                     | 46.2                                      | 21.5                                    | 25.0                                    |
| 4.         | Near Security office    | 71.4                                     | 38.4                                      | 13.8                                    | 18.9                                    |
| 5.         | Nr. Ammonia bullet area | 79.0                                     | 42.8                                      | 19.7                                    | 22.7                                    |
| GPCB Limit |                         | 100                                      | 60  | 60                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per CPCB                               | As per CPCB                             | IS 5182 Part-6<br>2006                  |

Note : (1) These results relate to the sample tested only.

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| Sr. No.    | LOCATION                | Result                              |   |   |              |
|------------|-------------------------|-------------------------------------|---|---|--------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )           | $\text{NH}_3$<br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(ppm) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL   | 2.9   | BDL          |
| 2.         | Near ADM Office         | BDL                                 | BDL   | 2.5   | BDL          |
| 3.         | Near R&D Lab.           | BDL                                 | BDL   | 3.5   | BDL          |
| 4.         | Near Security office    | BDL                                 | BDL   | 2.2   | BDL          |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL   | 3.9   | BDL          |
| GPCB Limit |                         | --                                  | --  | --  | --           |
| Method     |                         | Agentometric<br>Titration           | Coloromate-T<br>(Pyridine<br>barbicuric acid) | CPCB<br>Guideline<br>Nessler<br>Method        | GC Method    |

Note : (1) These results relate to the sample tested only.

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Issue Date: 12/07/2016

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**Test Report**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/07-2016**

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.<br>Olpad, Dist. Surat  |
| Sample Collected On     | : | 06/07/2016 to 07/07/2016   |
| Date of Analysis        | : | 07/07/2016 to 08/07/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/07/1201, 1202, 1203, 1207, 1208  |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature        | : | 32°C   |
| Avg. Humidity           | : | 74.5 %   |
| Avg. Wind Speed         | : | 08 km/ hour  |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 78.7                                     | 39.5                                      | 18.6                                    | 24.3                                    |
| 2.         | Near ADM Office         | 80.1                                     | 37.5                                      | 17.0                                    | 22.6                                    |
| 3.         | Near R&D Lab.           | 81.7                                     | 40.4                                      | 22.1                                    | 25.0                                    |
| 4.         | Near Security office    | 75.8                                     | 38.7                                      | 18.3                                    | 21.0                                    |
| 5.         | Nr. Ammonia bullet area | 76.9                                     | 39.3                                      | 20.2                                    | 23.8                                    |
| GPCB Limit |                         | 100                                      | 60  | 60                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per<br>CPCB                            | As per<br>CPCB                          | IS 5182 Part-6<br>2006                  |

Note : (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.



| Sr. No.    | LOCATION                | Result                              |   |   |                       |
|------------|-------------------------|-------------------------------------|---|---|-----------------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )           | NH <sub>3</sub><br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(ppm)<br>(BTX) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL   | 4.3   | BDL                   |
| 2.         | Near ADM Office         | BDL                                 | BDL   | 3.8   | BDL                   |
| 3.         | Near R&D Lab.           | BDL                                 | BDL   | 4.3   | BDL                   |
| 4.         | Near Security office    | BDL                                 | BDL   | 3.4   | BDL                   |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL   | 5.1   | BDL                   |
| GPCB Limit |                         | --                                  | --  | --  | --                    |
| Method     |                         | Agentometric<br>Titration           | Coloromate-T<br>(Pyridine<br>barbicuric acid) | CPCB<br>Gludeline<br>Nessler<br>Method          | GC Method             |

Note : (1) These results relate to the sample tested only.

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Issue Date: 29/07/2016

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Test Report

AMBIENT AIR QUALITY MONITORING REPORT

TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/07-2016

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.<br>Olpad, Dist. Surat  |
| Sample Collected On     | : | 25/07/2016 to 26/07/2016   |
| Date of Analysis        | : | 26/07/2016 to 27/07/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/07/1330, 1331, 1332, 1333, 1334  |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature        | : | 02°C   |
| Avg. Humidity           | : | 77%  |
| Avg. Wind Speed         | : | 06 km/ hour  |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 56.8                                     | 22.9                                      | 16.2                                    | 21.2                                    |
| 2.         | Near ADM Office         | 60.4                                     | 21.9                                      | 15.9                                    | 19.5                                    |
| 3.         | Near R&D Lab.           | 62.0                                     | 24.0                                      | 17.4                                    | 21.7                                    |
| 4.         | Near Security office    | 53.6                                     | 22.9                                      | 16.0                                    | 19.5                                    |
| 5.         | Nr. Ammonia bullet area | 55.8                                     | 22.1                                      | 17.8                                    | 20.9                                    |
| GPCB Limit |                         | 100                                      | 60  | 60                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per<br>CPCB                            | As per<br>CPCB                          | IS 5182 Part-6<br>2006                  |

Note : (1) These results relate to the sample tested only.

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| Sr. No.    | LOCATION                | Result                              |   |   |                       |
|------------|-------------------------|-------------------------------------|---|---|-----------------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )           | $\text{NH}_3$<br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(BTX)<br>(ppm) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL   | 3.3   | BDL                   |
| 2.         | Near ADM Office         | BDL                                 | BDL   | 3.8   | BDL                   |
| 3.         | Near R&D Lab.           | BDL                                 | BDL   | 3.3   | BDL                   |
| 4.         | Near Security office    | BDL                                 | BDL   | 2.9   | BDL                   |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL   | 3.8   | BDL                   |
| GPCB Limit |                         | --                                  | --  | --  | --                    |
| Method     |                         | Agentometric<br>tartion             | Coloromate-T<br>(Pyridine<br>barbicuric acid) | CPCB<br>Gludeline<br>Nessler<br>Method        | GC Method             |

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Issue Date: 12/08/2016

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**Test Report**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/08-2016**

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.<br>Olpad, Dist. Surat  |
| Sample Collected On     | : | 05/08/2016 to 06/08/2016   |
| Date of Analysis        | : | 06/08/2016 to 08/08/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/08/1378, 1379, 1383, 1384  |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature (°C)   | : | 28   |
| Avg. Humidity(%)        | : | 83   |
| Avg. Wind Speed (Km/hr) | : | 06   |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 45.8                                     | 20.7                                      | 14.3                                    | 18.1                                    |
| 2.         | Near ADM Office         | 48.6                                     | 19.2                                      | 14.0                                    | 17.0                                    |
| 3.         | Near R&D Lab.           | 50.4                                     | 21.5                                      | 15.2                                    | 19.3                                    |
| 4.         | Near Security office    | 42.1                                     | 20.9                                      | 13.1                                    | 16.3                                    |
| 5.         | Nr. Ammonia bullet area | 45.3                                     | 19.2                                      | 14.0                                    | 18.2                                    |
| GPCB Limit |                         | 100                                      | 60  | 60                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per<br>CPCB                            | As per<br>CPCB                          | IS 5182 Part-6<br>2006                  |


Note : (1) These results relate to the sample tested only.


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| Sr. No.    | LOCATION                | Result                              |  |   |                       |
|------------|-------------------------|-------------------------------------|--|---|-----------------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )        | NH <sub>3</sub><br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(ppm)<br>(BTX) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL  | 2.8   | BDL                   |
| 2.         | Near ADM Office         | BDL                                 | BDL  | 3.3   | BDL                   |
| 3.         | Near R&D Lab.           | BDL                                 | BDL  | 3.3   | BDL                   |
| 4.         | Near Security office    | BDL                                 | BDL  | 2.4   | BDL                   |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL  | 3.3   | BDL                   |
| GPCB Limit |                         | --                                  | --   | --  | --                    |
| Method     |                         | Agentometric Titration              | Coloromate-T<br>(Pyridine barbituric acid) | CPCB<br>Guideline<br>Nessler<br>Method          | GC Method             |

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Issue Date: 31/08/2016

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**Test Report**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02\_B/AAQM/HCC/01/08-2016**

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.<br>Olpad, Dist. Surat  |
| Sample Collected On     | : | 26/08/2016 to 27/08/2016   |
| Date of Analysis        | : | 29/08/2016 to 30/08/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/08/1501, 1502, 1503, 1504, 1505  |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature (°C)   | : | 28   |
| Avg. Humidity (%)       | : | 83   |
| Avg. Wind Speed (Km/hr) | : | 05   |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 51.8                                     | 30.7                                      | 13.8                                    | 17.2                                    |
| 2.         | Near ADM Office         | 45.0                                     | 26.1                                      | 11.0                                    | 15.9                                    |
| 3.         | Near R&D Lab.           | 53.8                                     | 31.4                                      | 15.4                                    | 18.6                                    |
| 4.         | Near Security office    | 49.0                                     | 28.2                                      | 12.4                                    | 16.3                                    |
| 5.         | Nr. Ammonia bullet area | 58.1                                     | 33.4                                      | 16.7                                    | 21.1                                    |
| GPCB Limit |                         | 100                                      | 60  | 60                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per CPCB                               | As per<br>CPCB                          | IS 5182 Part-6<br>2006                  |

Note: (1) These results relate to the sample tested only.

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| Sr. No.    | LOCATION                | Result                              |  |   |                       |
|------------|-------------------------|-------------------------------------|--|---|-----------------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )        | $\text{NH}_3$<br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(ppm)<br>(BTX) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL  | 3.0   | BDL                   |
| 2.         | Near ADM Office         | BDL                                 | BDL  | 2.1   | BDL                   |
| 3.         | Near R&D Lab.           | BDL                                 | BDL  | 3.4   | BDL                   |
| 4.         | Near Security office    | BDL                                 | BDL  | 2.6   | BDL                   |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL  | 3.8   | BDL                   |
| GPCB Limit |                         | --                                  | --   | --  | --                    |
| Method     |                         | Agentometric titration              | Coloromate-T<br>(Pyridine barbituric acid) | CPCB Guideline<br>Nessler Method              | GC Method             |

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Issue Date: 14/09/2016

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**TEST REPORT**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/09-2016**

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.<br>Olpad, Dist. Surat  |
| Sample Collected On     | : | 08/09/2016 to 09/09/2016   |
| Date of Analysis        | : | 10/09/2016 to 11/09/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/09/1564, 1565, 1566, 1569, 1570  |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature (°C)   | : | 32   |
| Avg. Humidity (%)       | : | 67   |
| Avg. Wind Speed (Km/hr) | : | 06   |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 41.8                                     | 19.6                                      | 13.1                                    | 16.7                                    |
| 2.         | Near ADM Office         | 44.1                                     | 18.2                                      | 12.5                                    | 16.0                                    |
| 3.         | Near R&D Lab.           | 47.5                                     | 20.1                                      | 14.0                                    | 17.3                                    |
| 4.         | Near Security office    | 39.7                                     | 18.8                                      | 12.0                                    | 15.2                                    |
| 5.         | Nr. Ammonia bullet area | 43.0                                     | 18.3                                      | 12.8                                    | 16.8                                    |
| GPCB Limit |                         | 100                                      | 60  | 80                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per<br>CPCB                            | IS 5182<br>Part II<br>2001              | IS 5182 Part-6<br>2006                  |

Note: (1) These results relate to the sample tested only.

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| Sr. No.    | LOCATION                | Result                              |   |   |                       |
|------------|-------------------------|-------------------------------------|---|---|-----------------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )           | $\text{NH}_3$<br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(ppm)<br>(BTX) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL   | 2.4   | BDL                   |
| 2.         | Near ADM Office         | BDL                                 | BDL   | 2.9   | BDL                   |
| 3.         | Near R&D Lab.           | BDL                                 | BDL   | 3.3   | BDL                   |
| 4.         | Near Security office    | BDL                                 | BDL   | 2.9   | BDL                   |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL   | 3.8   | BDL                   |
| GPCB Limit |                         | --                                  | --  | --  | --                    |
| Method     |                         | Agentometric<br>Titration           | Coloromate-T<br>(Pyridine<br>barbicuric acid) | CPCB<br>Giudeline<br>Nessler<br>Method        | GC Method             |

Remark: The parameters HCl, HCN,  $\text{NH}_3$ , VOC are not incorporate in consent order. Therefore, Standard limit is not given.

Note: (1) These results relate to the sample tested only.

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 (Sunilkumar Pandey)



Issue Date: 02/10/2016

Page 1 of 2

**TEST REPORT**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/09-2016**

|                         |   |  |
|-------------------------|---|--|
| Name of the Industry    | : | Hindusthan Chemicals Company.  |
|                         | : | Olpad, Dist. Surat   |
| Sample Collected On     | : | 28/09/2016 to 29/09/2016   |
| Date of Analysis        | : | 29/09/2016 to 30/09/2016   |
| Sample ID No.           | : | ERM/ECSS/2016/09/1675, 1676, 1677, 1678, 1678A   |
| Height from G.L.        | : | 3.5 meter  |
| Dominant Wind Direction | : | SW-NE  |
| Avg. Temperature (°C)   | : | 28   |
| Avg. Humidity (%)       | : | 76   |
| Avg. Wind Speed (Km/hr) | : | 05   |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> &PM <sub>10</sub> , Approx 30 -30ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCL, HCN and ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed   |
| Protocol (Purpose)      | : | As per Work Order  |
| Sample Collected By     | : | Mr. Bhavesh Patel  |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 42.6                                     | 20.7                                      | 12.5                                    | 17.0                                    |
| 2.         | Near ADM Office         | 40.0                                     | 19.3                                      | 12.2                                    | 15.6                                    |
| 3.         | Near R&D Lab.           | 44.5                                     | 22.9                                      | 14.6                                    | 18.5                                    |
| 4.         | Near Security office    | 40.7                                     | 20.1                                      | 11.7                                    | 15.0                                    |
| 5.         | Nr. Ammonia bullet area | 41.3                                     | 18.5                                      | 13.1                                    | 18.0                                    |
| GPCB Limit |                         | 100                                      | 60  | 80                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per CPCB                               | IS 5182<br>Part II<br>2001              | IS 5182 Part-6<br>2006                  |

Note: (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

| Sr. No.    | LOCATION                | Result                              |   |   |                       |
|------------|-------------------------|-------------------------------------|---|---|-----------------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )           | NH <sub>3</sub><br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(BTX)<br>(ppm) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL   | 2.6   | BDL                   |
| 2.         | Near ADM Office         | BDL                                 | BDL   | 2.6   | BDL                   |
| 3.         | Near R&D Lab.           | BDL                                 | BDL   | 3.0   | BDL                   |
| 4.         | Near Security office    | BDL                                 | BDL   | 2.6   | BDL                   |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL   | 3.6   | BDL                   |
| GPCB Limit |                         | --                                  | --  | --  | --                    |
| Method     |                         | Agentometric<br>Titration           | Coloromate-T<br>(Pyridine<br>barbicuric acid) | CPCB<br>Gludellne<br>Nessler<br>Method          | GC Method             |

Remark: The parameters HCl, HCN, NH<sub>3</sub>, VOC are not incorporate in consent order. Therefore, Standard limit is not given.

Note: (1) These results relate to the sample tested only.

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(Sunilkumar Pandey)



Issue Date: 22/10/2016

Page 1 of 2

**TEST REPORT**  
**AMBIENT AIR QUALITY MONITORING REPORT**  
**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/10-2016**

Name of the Industry : Hindusthan Chemicals Company.  
 Olpad, Dist. Surat  
 Sample Collected On : 14/10/2016 to 15/10/2016  
 Date of Analysis : 17/10/2016 to 18/10/2016  
 Sample ID No. : ERM/ECSS/2016/10/1709, 1710, 1711, 1714, 1715  
 Height from G.L. : 3.5 meter  
 Dominant Wind Direction : SW-NE  
 Avg. Temperature (°C) : 28  
 Avg. Humidity (%) : 71  
 Avg. Wind Speed (Km/hr) : 02  
 Quantity/No. of Sample : 5-5 Nos. Filter Paper for PM<sub>2.5</sub>&PM<sub>10</sub>, Approx 30 -30ml exposed scrubbing Media for SO<sub>2</sub>, NO<sub>x</sub>, HCL, HCN and ammonia in 20 No. of plastic bottles.  
 Packing/Seal : Packed  
 Protocol (Purpose) : As per Work Order  
 Sample Collected By : Mr. Bhavesh Patel

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 50.8                                     | 24.2                                      | 13.2                                    | 17.8                                    |
| 2.         | Near ADM Office         | 46.9                                     | 22.8                                      | 13.8                                    | 16.5                                    |
| 3.         | Near R&D Lab.           | 51.0                                     | 26.8                                      | 14.0                                    | 18.2                                    |
| 4.         | Near Security office    | 47.1                                     | 23.2                                      | 12.4                                    | 16.0                                    |
| 5.         | Nr. Ammonia bullet area | 49.0                                     | 23.0                                      | 12.8                                    | 18.6                                    |
| GP&B Limit |                         | 100                                      | 60  | 80                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per<br>CPCB                            | IS 5182<br>Part II<br>2001              | IS 5182 Part-6<br>2006                  |

Note: (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

| Sr. No.    | LOCATION                | Result                              |   |   |                       |
|------------|-------------------------|-------------------------------------|---|---|-----------------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )           | $\text{NH}_3$<br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(ppm)<br>(BTX) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL   | 2.9   | BDL                   |
| 2.         | Near ADM Office         | BDL                                 | BDL   | 2.4   | BDL                   |
| 3.         | Near R&D Lab.           | BDL                                 | BDL   | 3.3   | BDL                   |
| 4.         | Near Security office    | BDL                                 | BDL   | 3.0   | BDL                   |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL   | 3.4   | BDL                   |
| GPCB Limit |                         | --                                  | --  | --  | --                    |
| Method     |                         | Agentometric<br>Titration           | Coloromate-T<br>(Pyridine<br>barbicuric acid) | CPCB<br>Guideline<br>Nessler<br>Method        | GC Method             |

Remark: The parameters HCl, HCN,  $\text{NH}_3$ , VOC are not incorporate in consent order. Therefore, Standard limit is not given.

Note: (1) These results relate to the sample tested only.

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Issue Date: 29/10/2016

Page 1 of 2

**TEST REPORT**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/AAQM/HCC/01/10-2016**

|                         |   |   |
|-------------------------|---|---|
| Name of the Industry    | : | Hindusthan Chemicals Company.   |
|                         | : | Olpad, Dist. Surat  |
| Sample Collected On     | : | 26/10/2016 to 27/10/2016  |
| Date of Analysis        | : | 27/10/2016 to 28/10/2016  |
| Sample ID No.           | : | ERM/ECSS/2016/10/1836, 1837, 1838, 1839, 1840   |
| Height from G.L.        | : | 3.5 m.  |
| Dominant Wind Direction | : | SW-NE   |
| Avg. Temperature (°C)   | : | 27  |
| Avg. Humidity (%)       | : | 56  |
| Avg. Wind Speed (km/h)  | : | 01  |
| Quantity/No. of Sample  | : | 5-5 Nos. Filter Paper for PM <sub>2.5</sub> & PM <sub>10</sub> Approx 30-30 ml exposed scrubbing Media for SO <sub>2</sub> , NO <sub>x</sub> , HCl, HCN and Ammonia in 20 No. of plastic bottles. |
| Packing/Seal            | : | Packed  |
| Protocol (Purpose)      | : | As per Work Order   |
| Sample Collected By     | : | Mr. Bhavesh Patel   |

| Sr. No.    | LOCATION                | RESULT                                   |   |   |   |
|------------|-------------------------|--|---|---|---|
|            |                         | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) |
| 1.         | HCN Plant (Near C.R.)   | 52.6                                     | 30.1                                      | 12.7                                    | 16.6                                    |
| 2.         | Near ADM Office         | 50.3                                     | 29.4                                      | 11.3                                    | 15.0                                    |
| 3.         | Near R&D Lab.           | 57.1                                     | 32.5                                      | 13.5                                    | 17.9                                    |
| 4.         | Near Security office    | 54.4                                     | 31.1                                      | 14.0                                    | 18.2                                    |
| 5.         | Nr. Ammonia bullet area | 61.1                                     | 33.9                                      | 16.5                                    | 20.0                                    |
| GPCB Limit |                         | 100                                      | 60  | 80                                      | 80                                      |
| Method     |                         | IS 5182 Part 23<br>2006                  | As per CPCB                               | IS 5182<br>Part II<br>2001              | IS 5182 Part-6<br>2006                  |

Note: (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

| Sr. No.    | LOCATION                | Result                              |   |   |                       |
|------------|-------------------------|-------------------------------------|---|---|-----------------------|
|            |                         | HCl<br>( $\mu\text{g}/\text{m}^3$ ) | HCN<br>( $\mu\text{g}/\text{m}^3$ )           | NH <sub>3</sub><br>( $\mu\text{g}/\text{m}^3$ ) | VOC<br>(BTX)<br>(ppm) |
| 1.         | HCN Plant (Near C.R.)   | BDL                                 | BDL   | 2.5   | BDL                   |
| 2.         | Near ADM Office         | BDL                                 | BDL   | 2.2   | BDL                   |
| 3.         | Near R&D Lab.           | BDL                                 | BDL   | 3.1   | BDL                   |
| 4.         | Near Security office    | BDL                                 | BDL   | 2.8   | BDL                   |
| 5.         | Nr. Ammonia bullet area | BDL                                 | BDL   | 3.4   | BDL                   |
| GPCB Limit |                         | --                                  | --  | --  | --                    |
| Method     |                         | Agentometric<br>Titration           | Coloromate-T<br>(Pyridine<br>barbicuric acid) | CPCB<br>Gludellne<br>Nessler<br>Method          | GC Method             |

Remark: The parameters HCl, HCN, NH<sub>3</sub>, VOC are not incorporate in consent order. Therefore, Standard limit is not given.

Note: (1) These results relate to the sample tested only.

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(Sunilkumar Pandey)



Issue Date: 16/06/2016

Test Report

WORK PLACE AIR QUALITY MONITORING REPORT


TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/work place/HCC/01/06/2016

|                        |   |  |
|------------------------|---|--|
| Name of the Industry   | : | Hindusthan Chemicals Company.  |
|                        | : | Olpad, Dist. Surat   |
| Sample Collected On    | : | 10/06/2016   |
| Date of Analysis       | : | 13/06/2016 to 14/06/2016   |
| Quantity/No. of Sample | : | Approx 30-30ml exposed scrubbing media for HCl, HCN & NH <sub>3</sub><br>In plastic Bottles. |
| Packing/Seal           | : | Packed   |
| Protocol (Purpose)     | : | As per Work Order  |
| Sample ID              | : | ERM/ECSS/2016/06/ 1071, 1072, 1073   |
| Sample Collected By    | : | Mr. Bhavesh Patel  |

| Sr. No. | Parameter        | Unit                | Locations for Godown |        |      | Permissible limits for work place (Factories Act, 1948) for 8 hrs exposure |
|---------|------------------|---------------------|----------------------|--------|------|--|
|         |                  |                     | NACN-1               | DPG -1 | MDN  |  |
| 1.      | HCl              | µg/m <sup>3</sup>   | <3.6                 | <3.6   | <3.6 | 7000   |
| 2.      | HCN              | µg/m <sup>3</sup>   | 0.6                  | <0.4   | <0.4 | 10000  |
| 3.      | NH <sub>3</sub>  | µg/m <sup>3</sup>   | 3.6                  | 3.0    | 5.4  | 18000  |
| 4.      | VOC              | ppm                 | N.D.                 | 0.5    | 0.3  | NA   |
| 5.      | Moisture         | g/m <sup>3</sup>    | 30.2                 | 33.0   | 35.1 | NA   |
| 6.      | Ventilation Rate | m <sup>3</sup> /Sec | 6.1                  | 3.2    | 3.6  | NA   |

Note: VOC has been measured as a reference of Isobutylene and detection limit of instrument is 0.1 ppm.

  
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(Sunilkumar Pandey)



**ECOCHEM**  
**SALES & SERVICES**

POLLUTION CONTROL CONSULTANT,  
ENGINEERS & CONTRACTORS

Issue Date: 16/09/2016

**TEST REPORT**

**WORK PLACE AIR QUALITY MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 B/work place/HCC/01/09/2016**

Name of the Industry : Hindusthan Chemicals Company.  
Olpad, Dist. Surat  
Sample Collected On : 09/09/2016  
Date of Analysis : 10/09/2016 to 12/09/2016  
Quantity/No. of Sample : Approx 30-30ml exposed scrubbing media for HCl, HCN & NH<sub>3</sub>  
In plastic Bottles.  
Packing/Seal : Packed  
Protocol (Purpose) : As per Work Order  
Sample ID : ERM/ECSS/2016/09/ 1571, 1572, 1573  
Sample Collected By : Mr. Bhavesh Patel

| Sr. No. | Parameter        | Unit                | Locations for Godown |        |      | Permissible limits for work place (Factorles Act, 1948) for 8 hrs exposure |
|---------|------------------|---------------------|----------------------|--------|------|--|
|         |                  |                     | NACN-1               | DPG -1 | MDN  |  |
| 1.      | HCl              | µg/m <sup>3</sup>   | <3.6                 | <3.6   | <3.6 | 7000   |
| 2.      | HCN              | µg/m <sup>3</sup>   | 0.5                  | <0.4   | <0.4 | 10000  |
| 3.      | NH <sub>3</sub>  | µg/m <sup>3</sup>   | 3.0                  | 3.0    | 4.8  | 18000  |
| 4.      | VOC              | ppm                 | N.D.                 | 0.4    | 0.3  | NA   |
| 5.      | Moisture         | g/m <sup>3</sup>    | 35.7                 | 34.9   | 36.0 | NA   |
| 6.      | Ventilation Rate | m <sup>3</sup> /Sec | 5.8                  | 3.5    | 3.4  | NA   |

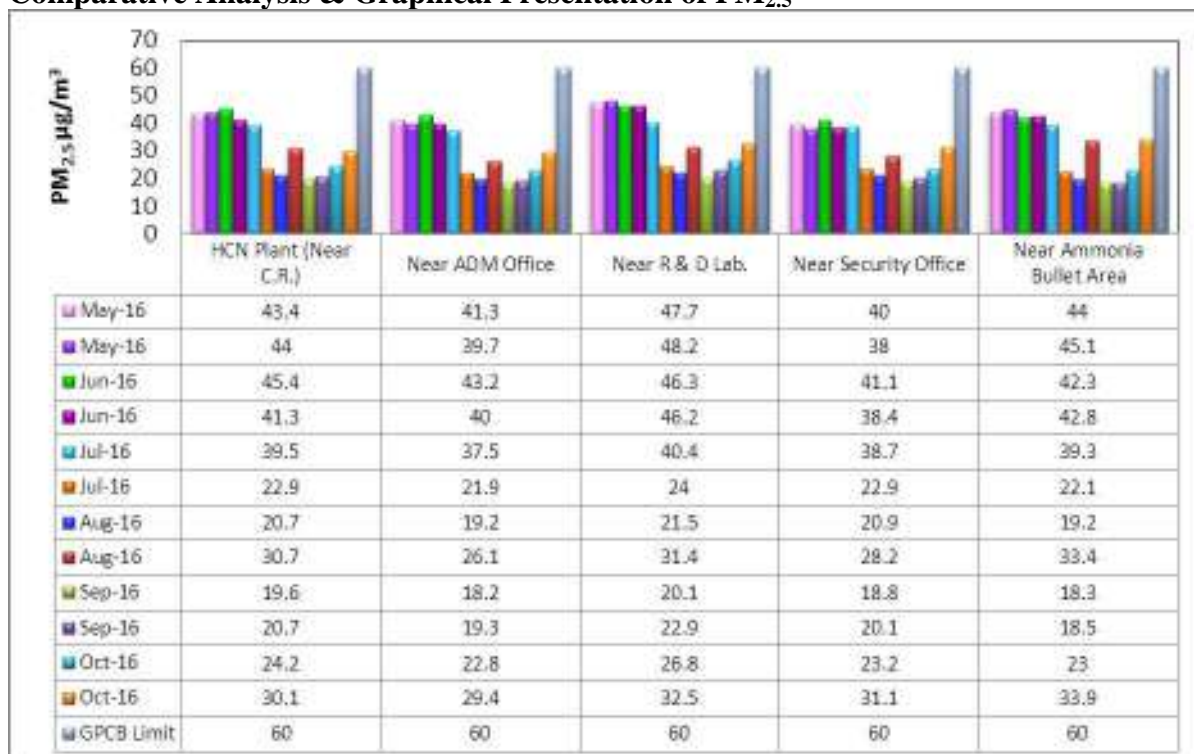
Note: VOC has been measured as a reference of Isobutylene and detection limit of Instrument is 0.1 ppm.

  
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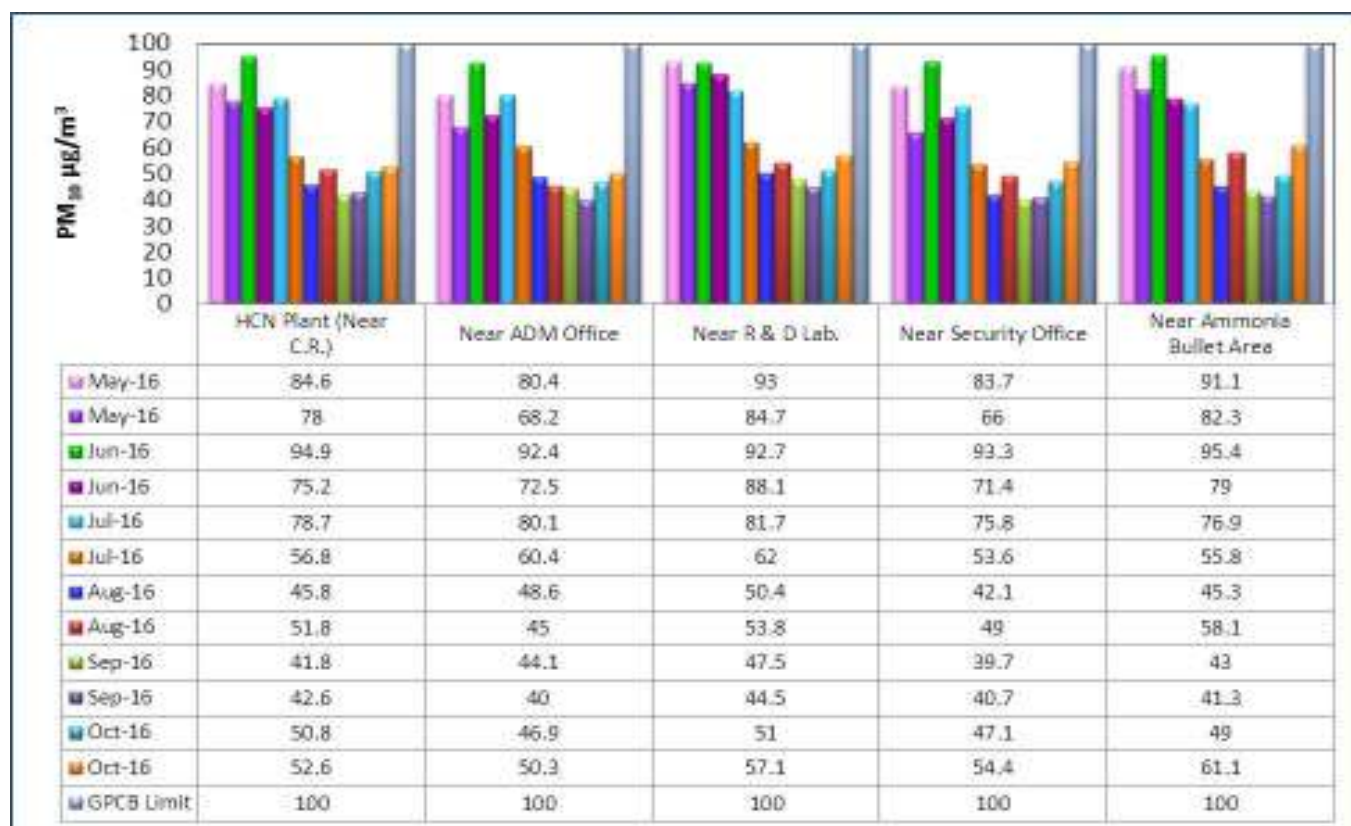
## Monthly Variation in Ambient Air Quality for the period of May 2016 to October 2016

### 1. Comparative Analysis & Graphical Presentation of PM<sub>2.5</sub>



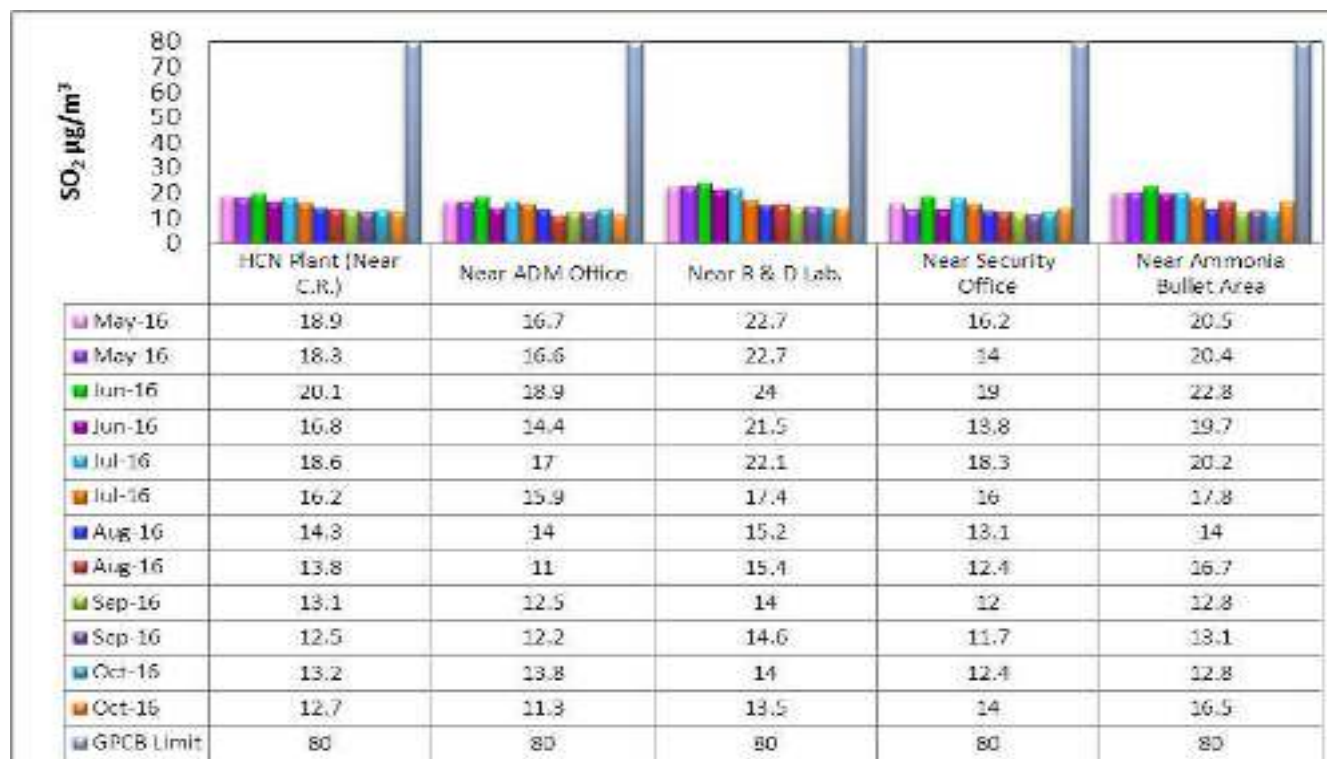
Note: All the values are expressed in  $\mu\text{g}/\text{m}^3$

## 2. Comparative Analysis & Graphical Presentation of PM<sub>10</sub>



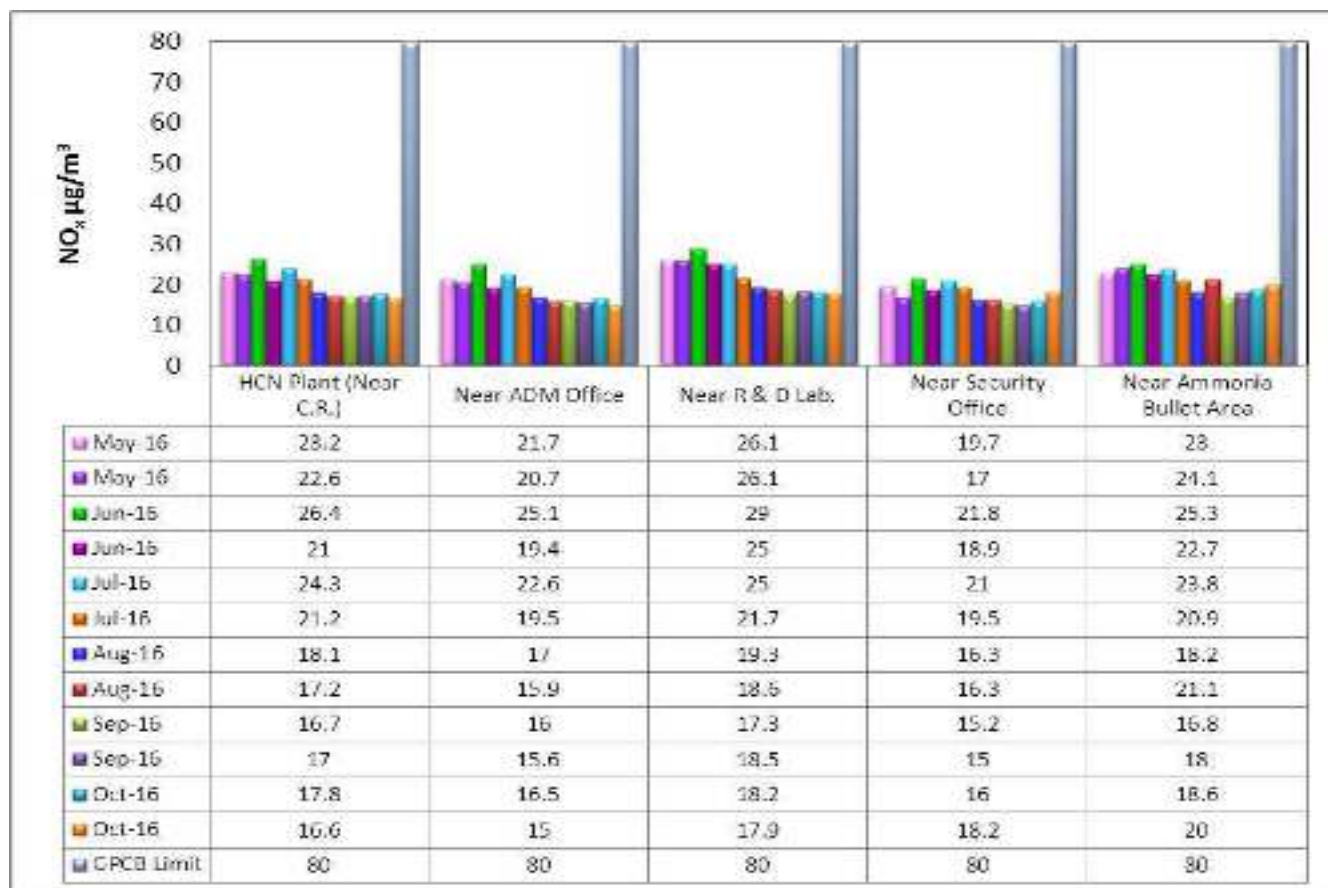
Note: All the values are expressed in  $\mu\text{g}/\text{m}^3$

### 3. Comparative Analysis & Graphical Presentation of SO<sub>2</sub>



Note: All the values are expressed in µg/m<sup>3</sup>

#### 4. Comparative Analysis & Graphical Presentation of NO<sub>x</sub>



Note: All the values are expressed in µg/m<sup>3</sup>

## ANNEXURE 12 – Micrometeorological Analysis Data



**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS


Issue Date: 16/05/2016

### MICRO-METEOROLOGICAL DATA

| Name of the Industry |              | :                 | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat. |                |          |
|----------------------|--------------|-------------------|--|----------------|----------|
| Date of Monitoring   |              | :                 | 10/05/2016 to 11/05/2016                             |                |          |
| Data Collected by    |              | :                 | ERM  |                |          |
| Sr. No.              | Time in Hrs. | Rel. Humidity (%) | Wind Speed (Km/hr)                                   | Wind Direction | Temp. °C |
| 1.                   | 11.00        | 47                | 10.5   | SW-NE          | 33.0     |
| 2.                   | 12.00        | 43                | 11.3   | SW-NE          | 32.5     |
| 3.                   | 13.00        | 37                | 11.8   | SW-NE          | 33.5     |
| 4.                   | 14.00        | 38                | 12.0   | W-E            | 33.0     |
| 5.                   | 15.00        | 40                | 11.9   | W-E            | 33.5     |
| 6.                   | 16.00        | 43                | 12.5   | W-E            | 32.0     |
| 7.                   | 17.00        | 47                | 11.8   | W-E            | 31.5     |
| 8.                   | 18.00        | 49                | 10.4   | W-E            | 3.0      |
| 9.                   | 19.00        | 53                | 9.7  | SW-NE          | 29.0     |
| 10.                  | 20.00        | 58                | 8.9  | SW-NE          | 28.0     |
| 11.                  | 21.00        | 55                | 8.6  | SW-NE          | 28.0     |
| 12.                  | 22.00        | 67                | 8.2  | SW-NE          | 27.5     |
| 13.                  | 23.00        | 64                | 7.7  | SW-NE          | 27.0     |
| 14.                  | 00.00        | 70                | 6.8  | SW-NE          | 26.5     |
| 15.                  | 01.00        | 72                | 6.3  | SW-NE          | 26.0     |
| 16.                  | 02.00        | 77                | 5.8  | SW-NE          | 25.0     |
| 17.                  | 03.00        | 75                | 5.3  | SW-NE          | 25.5     |
| 18.                  | 04.00        | 72                | 5.0  | W-E            | 25.0     |
| 19.                  | 05.00        | 78                | 4.8  | W-E            | 24.0     |
| 20.                  | 06.00        | 72                | 4.4  | W-E            | 25.5     |
| 21.                  | 07.00        | 68                | 5.9  | W-E            | 26.0     |
| 22.                  | 08.00        | 65                | 6.3  | W-E            | 27.0     |
| 23.                  | 09.00        | 58                | 6.9  | W-E            | 28.0     |
| 24.                  | 10.00        | 54                | 7.5  | W-E            | 28.5     |
| 24 hrs. Max.         |              | 78.0              | 12.5   | SW-NE          | 33.5     |
| 24 hrs. Min.         |              | 37.0              | 4.4  | W-E            | 24.0     |
| 24 hrs. Avg.         |              | 57.5              | 8.4  | SW-NE          | 28.7     |

Note: Micrometeorological data are collected by mechanical instrument

Reference: CPCB Guideline.

  
CHEMIST

  
AUTHORIZED SIGNATORY

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 16/06/2016

**MICRO-METEOROLOGICAL DATA**

| Name of the Industry |              | :                 | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat. |                |          |
|----------------------|--------------|-------------------|--|----------------|----------|
| Date of Monitoring   |              | :                 | 10/06/2016 to 13/06/2016                             |                |          |
| Data Collected by    |              | :                 | ERM  |                |          |
| Sr. No.              | Time in Hrs. | Rel. Humidity (%) | Wind Speed (Km/hr)                                   | Wind Direction | Temp. °C |
| 1.                   | 11.00        | 49                | 11.5   | SW-NE          | 33.5     |
| 2.                   | 12.00        | 44                | 11.0   | SW-NE          | 32.0     |
| 3.                   | 13.00        | 39                | 11.8   | W-E            | 33.0     |
| 4.                   | 14.00        | 36                | 12.2   | W-E            | 32.0     |
| 5.                   | 15.00        | 42                | 11.6   | W-E            | 33.5     |
| 6.                   | 16.00        | 45                | 12.4   | W-E            | 32.0     |
| 7.                   | 17.00        | 49                | 11.8   | W-E            | 31.5     |
| 8.                   | 18.00        | 50                | 10.4   | W-E            | 30.0     |
| 9.                   | 19.00        | 53                | 9.9  | W-E            | 29.0     |
| 10.                  | 20.00        | 59                | 8.5  | SW-NE          | 28.0     |
| 11.                  | 21.00        | 56                | 8.2  | SW-NE          | 28.0     |
| 12.                  | 22.00        | 69                | 7.8  | SW-NE          | 27.0     |
| 13.                  | 23.00        | 65                | 7.5  | SW-NE          | 26.5     |
| 14.                  | 00.00        | 71                | 6.6  | SW-NE          | 26.5     |
| 15.                  | 01.00        | 74                | 6.0  | SW-NE          | 26.0     |
| 16.                  | 02.00        | 79                | 5.9  | SW-NE          | 25.0     |
| 17.                  | 03.00        | 76                | 5.5  | SW-NE          | 25.5     |
| 18.                  | 04.00        | 73                | 4.5  | W-E            | 25.0     |
| 19.                  | 05.00        | 80                | 4.8  | W-E            | 23.5     |
| 20.                  | 06.00        | 74                | 4.3  | SW-NE          | 24.0     |
| 21.                  | 07.00        | 67                | 5.9  | SW-NE          | 25.5     |
| 22.                  | 08.00        | 66                | 6.3  | SW-NE          | 26.5     |
| 23.                  | 09.00        | 57                | 6.9  | W-E            | 27.0     |
| 24.                  | 10.00        | 55                | 7.8  | W-E            | 28.5     |
| 24 hrs. Max.         |              | 80.0              | 12.4   | SW-NE          | 33.5     |
| 24 hrs. Min.         |              | 36.0              | 4.5  | W-E            | 23.5     |
| 24 hrs. Avg.         |              | 58.0              | 16.9   | SW-NE          | 28.5     |

Note: Micrometeorological data are collected by mechanical instrument

Reference: CPCB Guideline.

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 12/07/2016

**MICRO-METEOROLOGICAL DATA**

|                      |   |   |
|----------------------|---|---|
| Name of the Industry | : | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat |
| Date of Monitoring   | : | 06/07/2016 to 07/07/2016                            |
| Data Collected by    | : | ERM   |

| Sr. No.      | Time In Hrs. | Rel. Humidity (%) | Wind Speed (Km/hr) | Wind Direction | Temp. °C |
|--------------|--------------|-------------------|--------------------|----------------|----------|
| 1.           | 11.00        | 44                | 9.2                | W-E            | 29.0     |
| 2.           | 12.00        | 42                | 8.0                | W-E            | 30.9     |
| 3.           | 13.00        | 40                | 10.1               | W-E            | 31.2     |
| 4.           | 14.00        | 47                | 11.3               | S-N            | 32.5     |
| 5.           | 15.00        | 43                | 12.6               | S-N            | 31.0     |
| 6.           | 16.00        | 52                | 13.3               | W-E            | 29.6     |
| 7.           | 17.00        | 50                | 12.8               | W-E            | 28.8     |
| 8.           | 18.00        | 55                | 13.0               | W-E            | 28.0     |
| 9.           | 19.00        | 60                | 9.6                | SW-NE          | 28.1     |
| 10.          | 20.00        | 62                | 8.2                | SW-NE          | 27.5     |
| 11.          | 21.00        | 65                | 9.2                | SW-NE          | 26.5     |
| 12.          | 22.00        | 68                | 6.0                | SW-NE          | 26.0     |
| 13.          | 23.00        | 72                | 10.2               | SW-NE          | 25.0     |
| 14.          | 00.00        | 70                | 7.0                | SW-NE          | 25.0     |
| 15.          | 01.00        | 72                | 5.3                | W-E            | 24.0     |
| 16.          | 02.00        | 76                | 4.9                | W-E            | 23.0     |
| 17.          | 03.00        | 80                | 5.2                | W-E            | 22.5     |
| 18.          | 04.00        | 74                | 6.9                | W-E            | 21.5     |
| 19.          | 05.00        | 70                | 4.3                | W-E            | 20.5     |
| 20.          | 06.00        | 64                | 4.0                | W-E            | 21.5     |
| 21.          | 07.00        | 59                | 5.6                | W-E            | 22.0     |
| 22.          | 08.00        | 63                | 6.9                | SW-NE          | 24.5     |
| 23.          | 09.00        | 56                | 7.5                | SW-NE          | 25.0     |
| 24.          | 10.00        | 52                | 10.0               | SW-NE          | 27.0     |
| 24 hrs. Max. |              | 80.0              | 13.3               | W-E            | 32.5     |
| 24 hrs. Min. |              | 40.0              | 4.0                | S-N            | 20.5     |
| 24 hrs. Avg. |              | 60.0              | 8.6                | W-E            | 26.5     |

**Note:** Micrometeorological data are collected by mechanical instrument

**Reference:** CPCB Guideline.

  
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Issue Date: 12/08/2016

**MICRO-METEOROLOGICAL DATA**


|                      |   |   |
|----------------------|---|---|
| Name of the Industry | : | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat |
| Date of Monitoring   | : | 05/08/2016 to 06/08/2016                            |
| Data Collected by    | : | ERM   |

| Sr. No.      | Time in Hrs. | Rel. Humidity (%) | Wind Speed (Km/hr) | Wind Direction | Temp. °C |
|--------------|--------------|-------------------|--------------------|----------------|----------|
| 1.           | 11.00        | 67                | 6.9                | SW-NE          | 29.5     |
| 2.           | 12.00        | 58                | 5.5                | SW-NE          | 28.0     |
| 3.           | 13.00        | 56                | 0.0                | calm           | 30.5     |
| 4.           | 14.00        | 67                | 7.0                | SW-NE          | 29.0     |
| 5.           | 15.00        | 59                | 7.3                | W-E            | 27.5     |
| 6.           | 16.00        | 75                | 8.2                | SW-NE          | 28.0     |
| 7.           | 17.00        | 70                | 10.5               | SW-NE          | 28.0     |
| 8.           | 18.00        | 66                | 9.5                | SW-NE          | 27.0     |
| 9.           | 19.00        | 70                | 6.0                | SW-NE          | 27.5     |
| 10.          | 20.00        | 75                | 7.5                | SW-NE          | 26.5     |
| 11.          | 21.00        | 74                | 8.2                | W-E            | 26.0     |
| 12.          | 22.00        | 70                | 10.5               | W-E            | 26.5     |
| 13.          | 23.00        | 68                | 10.0               | SW-NE          | 25.5     |
| 14.          | 00.00        | 81                | 8.5                | SW-NE          | 25.0     |
| 15.          | 01.00        | 78                | 6.8                | SW-NE          | 24.0     |
| 16.          | 02.00        | 84                | 10.1               | W-E            | 24.5     |
| 17.          | 03.00        | 82                | 7.5                | W-E            | 23.5     |
| 18.          | 04.00        | 86                | 7.0                | SW-NE          | 24.5     |
| 19.          | 05.00        | 81                | 8.5                | W-E            | 25.5     |
| 20.          | 06.00        | 79                | 5.5                | SW-NE          | 25.0     |
| 21.          | 07.00        | 75                | 6.1                | SW-NE          | 26.5     |
| 22.          | 08.00        | 73                | 7.5                | SW-NE          | 26.0     |
| 23.          | 09.00        | 67                | 8.0                | W-E            | 27.0     |
| 24.          | 10.00        | 64                | 7.6                | W-E            | 29.0     |
| 24 hrs. Max. |              | 86.0              | 10.5               | SW-NE          | 30.5     |
| 24 hrs. Min. |              | 64.0              | 0.0                | Calm           | 23.5     |
| 24 hrs. Avg. |              | 75.0              | 5.2                | SW-NE          | 27.0     |

**Note:** Micrometeorological data are collected by mechanical instrument

**Reference:** CPCB Guideline.

  
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Issue Date: 14/09/2016

**MICRO-METEOROLOGICAL DATA**

| Name of the Industry |              | :                 | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat. |                |          |
|----------------------|--------------|-------------------|--|----------------|----------|
| Date of Monitoring   |              | :                 | 08/09/2016 to 09/09/2016                             |                |          |
| Data Collected by    |              | :                 | ERM  |                |          |
| Sr. No.              | Time In Hrs. | Rel. Humidity (%) | Wind Speed (Km/hr)                                   | Wind Direction | Temp. °C |
| 1.                   | 11.00        | 67                | 7.5  | W-E            | 27.5     |
| 2.                   | 12.00        | 70                | 6.7  | W-E            | 27.0     |
| 3.                   | 13.00        | 63                | 6.3  | SW-NE          | 28.0     |
| 4.                   | 14.00        | 64                | 5.5  | SW-NE          | 30.5     |
| 5.                   | 15.00        | 60                | 0.0  | Calm           | 29.0     |
| 6.                   | 16.00        | 72                | 0.0  | Calm           | 28.5     |
| 7.                   | 17.00        | 75                | 10.1   | W-E            | 28.0     |
| 8.                   | 18.00        | 77                | 10.5   | SW-NE          | 27.0     |
| 9.                   | 19.00        | 80                | 8.5  | SW-NE          | 27.0     |
| 10.                  | 20.00        | 82                | 8.1  | SW-NE          | 27.5     |
| 11.                  | 21.00        | 75                | 9.5  | SW-NE          | 26.0     |
| 12.                  | 22.00        | 72                | 8.8  | W-E            | 26.5     |
| 13.                  | 23.00        | 70                | 8.7  | W-E            | 27.5     |
| 14.                  | 00.00        | 74                | 8.2  | W-E            | 25.0     |
| 15.                  | 01.00        | 82                | 7.4  | W-E            | 25.5     |
| 16.                  | 02.00        | 86                | 9.5  | SW-NE          | 24.5     |
| 17.                  | 03.00        | 88                | 7.1  | W-E            | 23.5     |
| 18.                  | 04.00        | 86                | 6.8  | W-E            | 24.0     |
| 19.                  | 05.00        | 82                | 8.5  | SW-NE          | 25.0     |
| 20.                  | 06.00        | 77                | 6.4  | SW-NE          | 25.0     |
| 21.                  | 07.00        | 74                | 5.5  | SW-NE          | 26.5     |
| 22.                  | 08.00        | 70                | 6.6  | SW-NE          | 26.0     |
| 23.                  | 09.00        | 68                | 8.0  | W-E            | 26.5     |
| 24.                  | 10.00        | 62                | 7.9  | SW-NE          | 27.5     |
| 24 hrs. Max.         |              | 88                | 10.5   | SW - NE        | 30.5     |
| 24 hrs. Min.         |              | 60                | 0.0  | Calm           | 23.5     |
| 24 hrs. Avg.         |              | 74                | 5.2  | SW - NE        | 27.0     |

Note: Micrometeorological data are collected by mechanical instrument

Reference: CPCB Guideline.

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Issue Date: 22/10/2016

**MICRO-METEOROLOGICAL DATA**

|                      |   |  |
|----------------------|---|--|
| Name of the Industry | : | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat. |
| Date of Monitoring   | : | 14/10/2016 to 15/10/2016                             |
| Data Collected by    | : | ERM  |

| Sr. No.      | Time in Hrs. | Rel. Humidity (%) | Wind Speed (Km/hr) | Wind Direction | Temp. °C |
|--------------|--------------|-------------------|--------------------|----------------|----------|
| 1.           | 11.00        | 57                | 6.5                | S-N            | 29.0     |
| 2.           | 12.00        | 59                | 6.0                | S-N            | 28.5     |
| 3.           | 13.00        | 61                | 6.5                | S-N            | 28.0     |
| 4.           | 14.00        | 63                | 7.0                | S-N            | 29.5     |
| 5.           | 15.00        | 62                | 0.0                | Calm           | 30.0     |
| 6.           | 16.00        | 71                | 0.0                | Calm           | 28.5     |
| 7.           | 17.00        | 65                | 0.0                | Calm           | 28.0     |
| 8.           | 18.00        | 62                | 11.5               | S-N            | 27.5     |
| 9.           | 19.00        | 70                | 10.5               | S-N            | 27.0     |
| 10.          | 20.00        | 69                | 8.9                | SW-NE          | 26.5     |
| 11.          | 21.00        | 67                | 9.0                | SW-NE          | 26.0     |
| 12.          | 22.00        | 70                | 8.5                | SW-NE          | 25.0     |
| 13.          | 23.00        | 75                | 9.0                | SW-NE          | 27.5     |
| 14.          | 00.00        | 77                | 8.5                | S-N            | 26.5     |
| 15.          | 01.00        | 79                | 7.5                | SW-NE          | 26.0     |
| 16.          | 02.00        | 81                | 11.0               | SW-NE          | 24.0     |
| 17.          | 03.00        | 83                | 7.0                | S-N            | 23.5     |
| 18.          | 04.00        | 86                | 6.5                | SW-NE          | 24.0     |
| 19.          | 05.00        | 72                | 7.6                | S-N            | 25.5     |
| 20.          | 06.00        | 74                | 5.8                | SW-NE          | 25.0     |
| 21.          | 07.00        | 78                | 5.4                | SW-NE          | 26.5     |
| 22.          | 08.00        | 72                | 6.7                | SW-NE          | 26.0     |
| 23.          | 09.00        | 64                | 8.5                | SW-NE          | 26.5     |
| 24.          | 10.00        | 59                | 8.2                | SW-NE          | 27.0     |
| 24 hrs. Max. |              | 86                | 11.5               | SW - NE        | 30.0     |
| 24 hrs. Min. |              | 59                | 0.0                | Calm           | 23.5     |
| 24 hrs. Avg. |              | 72.5              | 5.7                | SW - NE        | 26.7     |

Note: Micrometeorological data are collected by mechanical instrument

Reference: CPCB Guideline.

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### **ANNEXURE 13 - Noise Level Monitoring Methodology, Noise Level Report & Month Wise Comparison**

#### **Noise level monitoring:**

Noise level monitoring was carried out in the vicinity of the source, and nearby area within the factory premises where there is continuous presence of humans. Noise level monitoring was carried out during day time and night time at 15 locations in the premises and total 30 nos. of noise levels were recorded. Sound level meter was used for the noise monitoring.

Issue Date: 16/05/2016

**Test Report**

**NOISE LEVEL MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 D/NOISE/HCC/Rev.0-01/05-2016**

|                          |   |   |
|--------------------------|---|---|
| Name of the Industry     | : | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat |
| Sample Description       | : | Noise Level Monitoring                              |
| Date of Monitoring       | : | 11/05/2016  |
| Sample ID No.            | : | ERM/ECSS/2016/05/874                                |
| Quantity/No. of Stations | : | 30 Nos.   |
| Protocol (Purpose)       | : | As per Work Order                                   |
| Noise level monitored by | : | Mr. Bhavesh Patel                                   |

| Sr. No.    | Location                  | Distance From the Location | Noise level in dB(A) (Day Time) | Noise level in dB(A) (Night Time) |
|------------|---------------------------|----------------------------|---------------------------------|-----------------------------------|
| 1.         | Security Office           | 10 meter                   | 57                              | 50                                |
| 2.         | ADM Office                | 10 meter                   | 49                              | 43                                |
| 3.         | Canteen                   | 10 meter                   | 48                              | 42                                |
| 4.         | Nr. Brine Chilling Centre | 15 meter                   | 73                              | 66                                |
| 5.         | Near DG Room              | 10 meter                   | 71                              | 64                                |
| 6.         | Nr. HCN Control Room      | 10 meter                   | 64                              | 60                                |
| 7.         | R&D Lab Area              | 15 meter                   | 69                              | 63                                |
| 8.         | Nr. Boiler area           | 20 meter                   | 75                              | 67                                |
| 9.         | NaCN Plant                | Inside                     | 73                              | 66                                |
| 10.        | Engineering Stores        | 10 meter                   | 62                              | 56                                |
| 11.        | SFCN Plant                | 10 meter                   | 72                              | 58                                |
| 12.        | Maintenance Workshop      | 10 meter                   | 71                              | 53                                |
| 13.        | Effluent Treatment plant  | 15 meter                   | 63                              | 56                                |
| 14.        | DPG plant                 | 10 meter                   | 68                              | 57                                |
| 15.        | Fire pump House           | 10 meter                   | 48                              | 42                                |
| GPCB limit |                           |                            | 75                              | 70                                |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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Issue Date: 20/06/2016

**Test Report**

**NOISE LEVEL MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 D/NOISE/HCC/Rev.0-01/06-2016**

|                          |   |   |
|--------------------------|---|---|
| Name of the Industry     | : | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat |
| Sample Description       | : | Noise Level Monitoring                              |
| Date of Monitoring       | : | 11/06/2016  |
| Sample ID No.            | : | ERM/ECSS/2016/06/1079                               |
| Quantity/No. of Stations | : | 30 Nos.   |
| Protocol (Purpose)       | : | As per Work Order                                   |
| Noise level monitored by | : | Mr. Bhavesh Patel                                   |

| Sr. No.    | Location                  | Distance From the Location | Noise level in dB(A) (Day Time) | Noise level in dB(A) (Night Time) |
|------------|---------------------------|----------------------------|---------------------------------|-----------------------------------|
| 1.         | Security Office           | 10 meter                   | 57                              | 50                                |
| 2.         | ADM Office                | 10 meter                   | 49                              | 43                                |
| 3.         | Canteen                   | 10 meter                   | 48                              | 42                                |
| 4.         | Nr. Brine Chilling Centre | 15 meter                   | 73                              | 66                                |
| 5.         | Near DG Room              | 10 meter                   | 71                              | 64                                |
| 6.         | Nr. HCN Control Room      | 10 meter                   | 64                              | 60                                |
| 7.         | R&D Lab Area              | 15 meter                   | 69                              | 63                                |
| 8.         | Nr. Boiler area           | 20 meter                   | 75                              | 67                                |
| 9.         | NaCN Plant                | Inside                     | 73                              | 66                                |
| 10.        | Engineering Stores        | 10 meter                   | 62                              | 56                                |
| 11.        | SFCN Plant                | 10 meter                   | 72                              | 58                                |
| 12.        | Maintenance Workshop      | 10 meter                   | 71                              | 53                                |
| 13.        | Effluent Treatment plant  | 15 meter                   | 63                              | 56                                |
| 14.        | DPG plant                 | 10 meter                   | 68                              | 57                                |
| 15.        | Fire pump House           | 10 meter                   | 48                              | 42                                |
| GPCB limit |                           |                            | 75                              | 70                                |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 12/07/2016

**Test Report**

**NOISE LEVEL MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 D/NOISE/HCC/Rev.0-01/07-2016**

|                          |   |   |
|--------------------------|---|---|
| Name of the Industry     | : | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat |
| Sample Description       | : | Noise Level Monitoring                              |
| Date of Monitoring       | : | 06/07/2016  |
| Sample ID No.            | : | ERM/ECSS/2016/07/1206                               |
| Quantity/No. of Stations | : | 30 Nos.   |
| Protocol (Purpose)       | : | As per Work Order                                   |
| Noise level monitored by | : | Mr. Bhavesh Patel                                   |

| Sr. No.    | Location                  | Distance From the Location | Noise level in dB(A) (Day Time) | Noise level in dB(A) (Night Time) |
|------------|---------------------------|----------------------------|---------------------------------|-----------------------------------|
| 1.         | Security Office           | 10 meter                   | 56                              | 51                                |
| 2.         | ADM Office                | 10 meter                   | 48                              | 42                                |
| 3.         | Canteen                   | 10 meter                   | 50                              | 46                                |
| 4.         | Nr. Brine Chilling Centre | 15 meter                   | 74                              | 67                                |
| 5.         | Near DG Room              | 10 meter                   | 65                              | 62                                |
| 6.         | Nr. HCN Control Room      | 10 meter                   | 66                              | 61                                |
| 7.         | R&D Lab Area              | 15 meter                   | 68                              | 64                                |
| 8.         | Nr. Boiler area           | 20 meter                   | 73                              | 66                                |
| 9.         | NaCN Plant                | Inside                     | 70                              | 64                                |
| 10.        | Engineering Stores        | 10 meter                   | 60                              | 54                                |
| 11.        | SFCN Plant                | 10 meter                   | 73                              | 67                                |
| 12.        | Maintenance Workshop      | 10 meter                   | 72                              | 65                                |
| 13.        | Effluent Treatment plant  | 15 meter                   | 60                              | 56                                |
| 14.        | DPG plant                 | 10 meter                   | 66                              | 61                                |
| 15.        | Fire pump House           | 10 meter                   | 45                              | 42                                |
| GPCB limit |                           |                            | 75                              | 70                                |

**Note: (1)** These results relate to the sample tested only.

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Issue Date: 12/08/2016

**Test Report**

**NOISE LEVEL MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 D/NOISE/HCC/Rev.0-01/08-2016**

|                          |   |   |
|--------------------------|---|---|
| Name of the Industry     | : | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat |
| Sample Description       | : | Noise Level Monitoring                              |
| Date of Monitoring       | : | 06/08/2016  |
| Sample ID No.            | : | ERM/ECSS/2016/08/1390                               |
| Quantity/No. of Stations | : | 30 Nos.   |
| Protocol (Purpose)       | : | As per Work Order                                   |
| Noise level monitored by | : | Mr. Bhavesh Patel                                   |

| Sr. No.    | Location                  | Distance From the Location | Noise level In dB(A) (Day Time) | Noise level In dB(A) (Night Time) |
|------------|---------------------------|----------------------------|---------------------------------|-----------------------------------|
| 1.         | Security Office           | 10 meter                   | 53                              | 48                                |
| 2.         | ADM Office                | 10 meter                   | 47                              | 43                                |
| 3.         | Canteen                   | 10 meter                   | 45                              | 41                                |
| 4.         | Nr. Brine Chilling Centre | 15 meter                   | 73                              | 66                                |
| 5.         | Near DG Room              | 10 meter                   | 67                              | 62                                |
| 6.         | Nr. HCN Control Room      | 10 meter                   | 66                              | 63                                |
| 7.         | R&D Lab Area              | 15 meter                   | 67                              | 64                                |
| 8.         | Nr. Boiler area           | 20 meter                   | 74                              | 67                                |
| 9.         | NaCN Plant                | Inside                     | 73                              | 63                                |
| 10.        | Engineering Stores        | 10 meter                   | 64                              | 57                                |
| 11.        | SFCN Plant                | 10 meter                   | 72                              | 64                                |
| 12.        | Maintenance Workshop      | 10 meter                   | 73                              | 63                                |
| 13.        | Effluent Treatment plant  | 15 meter                   | 58                              | 55                                |
| 14.        | DPG plant                 | 10 meter                   | 68                              | 62                                |
| 15.        | Fire pump House           | 10 meter                   | 45                              | 40                                |
| GPCB limit |                           |                            | 75                              | 70                                |

Note: (1) These results relate to the sample tested only.

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 14/09/2016

**TEST REPORT**

**NOISE LEVEL MONITORING REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 D/NOISE/HCC/Rev.0-01/09-2016**

|                          |   |   |
|--------------------------|---|---|
| Name of the Industry     | : | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat |
| Sample Description       | : | Noise Level Monitoring                              |
| Date of Monitoring       | : | 08/09/2016  |
| Sample ID No.            | : | ERM/ECSS/2016/09/1578A                              |
| Quantity/No. of Stations | : | 30 Nos.   |
| Protocol (Purpose)       | : | As per Work Order                                   |
| Noise level monitored by | : | Mr. Bhavesh Patel                                   |

| Sr. No.    | Location                  | Distance From the Location | Noise level in dB(A) (Day Time) | Noise level in dB(A) (Night Time) |
|------------|---------------------------|----------------------------|---------------------------------|-----------------------------------|
| 1.         | Security Office           | 10 meter                   | 52                              | 46                                |
| 2.         | ADM Office                | 10 meter                   | 48                              | 42                                |
| 3.         | Canteen                   | 10 meter                   | 49                              | 43                                |
| 4.         | Nr. Brine Chilling Centre | 15 meter                   | 74                              | 67                                |
| 5.         | Near DG Room              | 10 meter                   | 70                              | 63                                |
| 6.         | Nr. HCN Control Room      | 10 meter                   | 60                              | 56                                |
| 7.         | R&D Lab Area              | 15 meter                   | 64                              | 60                                |
| 8.         | Nr. Boiler area           | 20 meter                   | 72                              | 63                                |
| 9.         | NaCN Plant                | Inside                     | 73                              | 66                                |
| 10.        | Engineering Stores        | 10 meter                   | 60                              | 56                                |
| 11.        | SFCN Plant                | 10 meter                   | 72                              | 63                                |
| 12.        | Maintenance Workshop      | 10 meter                   | 70                              | 66                                |
| 13.        | Effluent Treatment plant  | 15 meter                   | 58                              | 54                                |
| 14.        | DPG plant                 | 10 meter                   | 62                              | 56                                |
| 15.        | Fire pump House           | 10 meter                   | 46                              | 43                                |
| GPCB limit |                           |                            | 75                              | 70                                |

Note: (1) These results relate to the sample tested only.

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Issue Date: 22/10/2016

**TEST REPORT**  
**NOISE LEVEL MONITORING REPORT**  
**TEST REPORT NO: ERM/ECSS/QF/5.10/02 D/NOISE/HCC/Rev.0-01/10-2016**


|                          |   |   |
|--------------------------|---|---|
| Name of the Industry     | : | Hindusthan Chemicals Company,<br>Olpad, Dist. Surat |
| Sample Description       | : | Noise Level Monitoring                              |
| Date of Monitoring       | : | 14/10/2016  |
| Sample ID No.            | : | ERM/ECSS/2016/10/1721                               |
| Quantity/No. of Stations | : | 30 Nos.   |
| Protocol (Purpose)       | : | As per Work Order                                   |
| Noise level monitored by | : | Mr. Bhavesh Patel                                   |

| Sr. No.    | Location                  | Distance From the Location | Noise level in dB(A) (Day Time) | Noise level in dB(A) (Night Time) |
|------------|---------------------------|----------------------------|---------------------------------|-----------------------------------|
| 1.         | Security Office           | 10 meter                   | 52                              | 46                                |
| 2.         | ADM Office                | 10 meter                   | 48                              | 42                                |
| 3.         | Canteen                   | 10 meter                   | 49                              | 43                                |
| 4.         | Nr. Brine Chilling Centre | 15 meter                   | 74                              | 65                                |
| 5.         | Near DG Room              | 10 meter                   | 68                              | 63                                |
| 6.         | Nr. HCN Control Room      | 10 meter                   | 74                              | 66                                |
| 7.         | R&D Lab Area              | 15 meter                   | 65                              | 60                                |
| 8.         | Nr. Boller area           | 20 meter                   | 75                              | 68                                |
| 9.         | NaCN Plant                | Inside                     | 73                              | 63                                |
| 10.        | Engineering Stores        | 10 meter                   | 62                              | 57                                |
| 11.        | SFCN Plant                | 10 meter                   | 70                              | 66                                |
| 12.        | Maintenance Workshop      | 10 meter                   | 69                              | 64                                |
| 13.        | Effluent Treatment plant  | 15 meter                   | 59                              | 52                                |
| 14.        | DPG plant                 | 10 meter                   | 64                              | 59                                |
| 15.        | Fire pump House           | 10 meter                   | 46                              | 42                                |
| GPCB limit |                           |                            | 75                              | 70                                |

Note: (1) These results relate to the sample tested only.

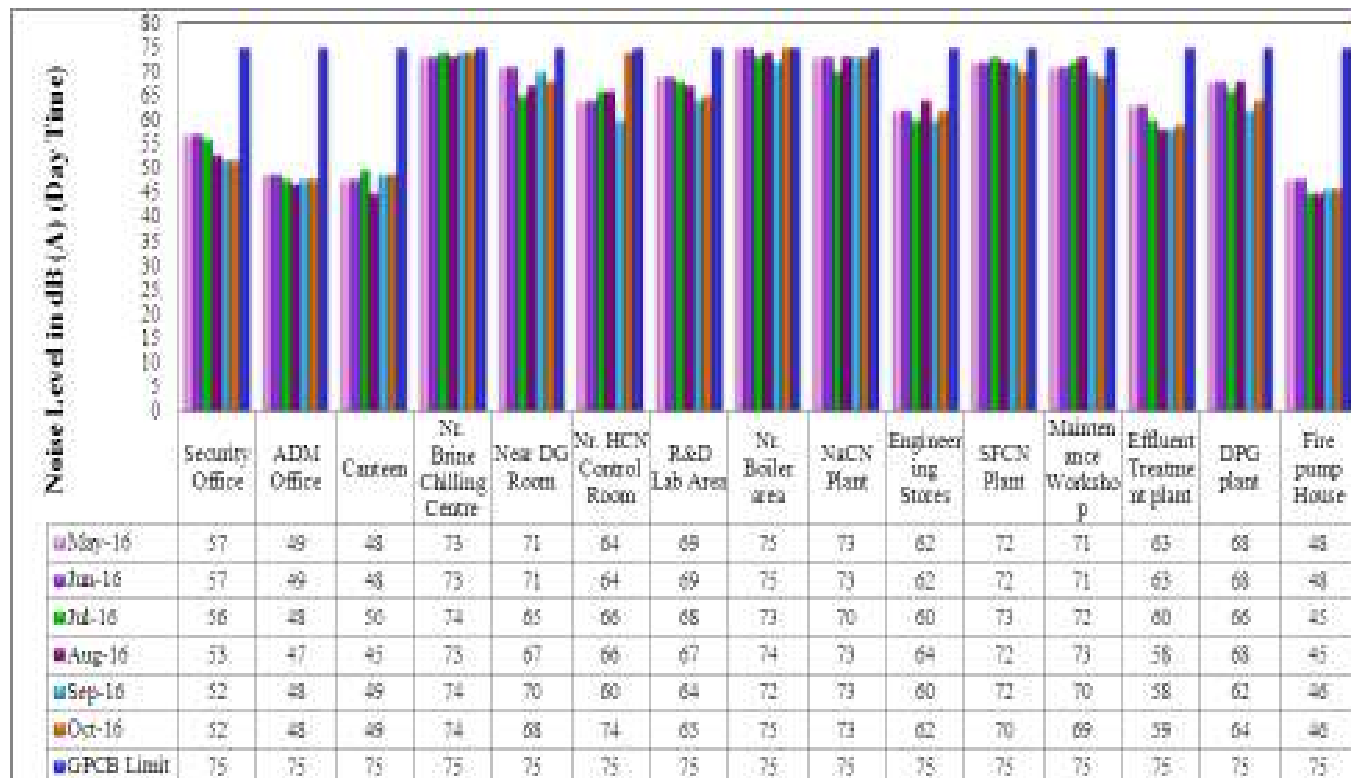
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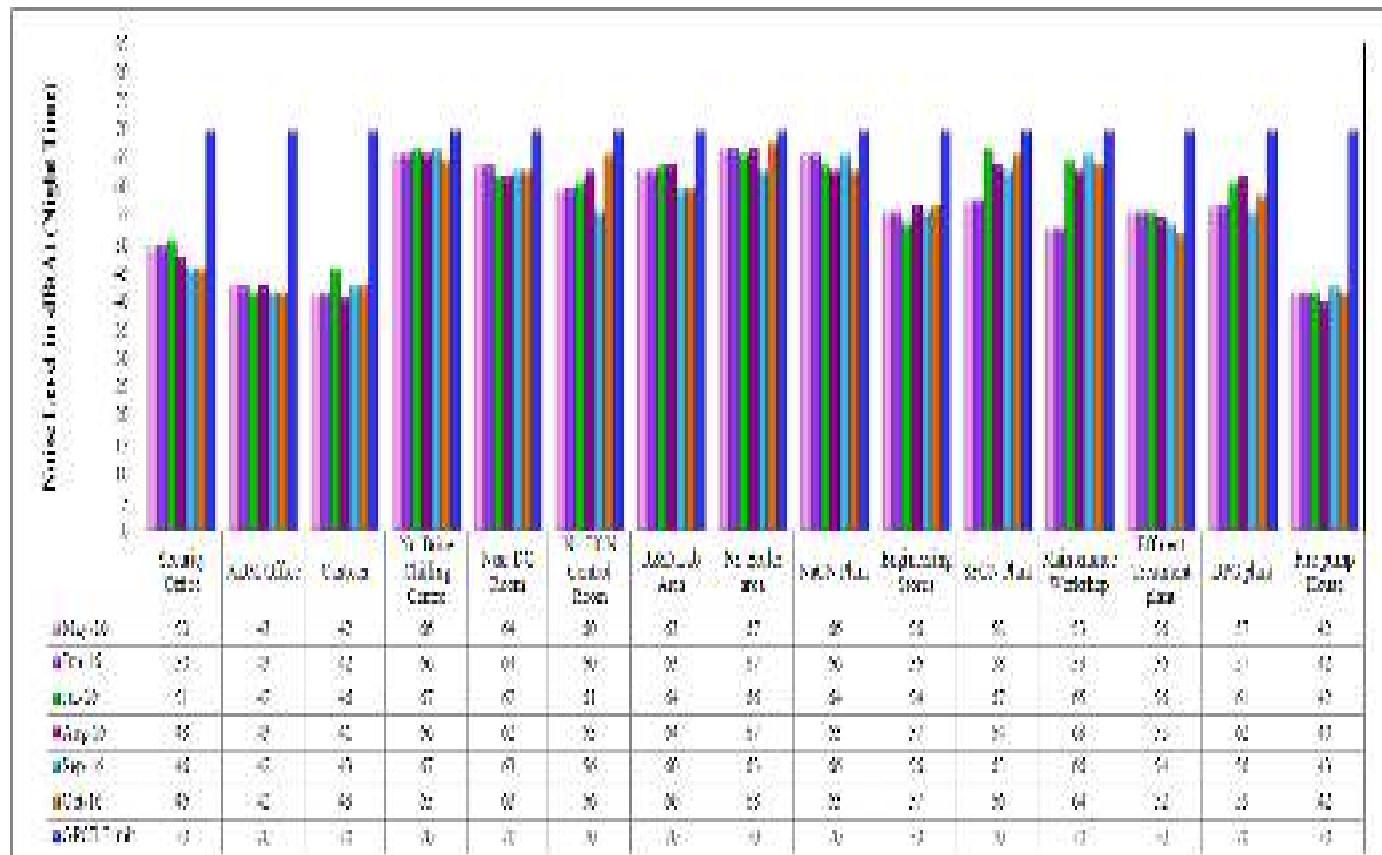
  
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(Sunilkumar Pandey)

## Monthly Variation in Noise Level for the period of May 2016 to October 2016

### 1. Comparative Analysis & Graphical Presentation of Noise Level (Day Time)



## 2. Comparative Analysis & Graphical Presentation of Noise Level (Night Time)



## ANNEXURE 14 – Stack Monitoring & Analysis Methodology, Analysis Report & Month Wise Comparison

| Sr. No. | Particulars                  | Details  |
|---------|------------------------------|--|
| 1.      | Sampling Procedure           | Sampling & analysis was carried out as per the instruction manual and IS: 11255. PM sample was collected as per IS: 11255 Part I and SO <sub>2</sub> sample as per IS 11255 Part II, NO <sub>x</sub> sampling was carried out as per method given by EPA (PDA Method)  |
| 2.      | Analysis Methodology         |  |
| i.      | Suspended Particulate matter | Sampling of SPM was done at isokinetic flow rate and SPM was determined from the difference in initial and final weight by using the following formula.<br>$PM = \text{Weight diff. in gram} \times 10^6 / \text{flow rate} \times \text{time in minute}$  |
| ii.     | Sulphur dioxide              | Sulphur Dioxide was absorbed at the flow rate of 2 lpm in 3% H <sub>2</sub> O <sub>2</sub> solution. After the absorption the exposed solution was transferred to Polyethylene bottle. Above scrubbed sample is titrated against known Sodium Hydroxide normal solution by using mixed indicator. Burette reading is noted when the colour of solution changes from red to green.  |
| iii.    | Oxides of Nitrogen           | Sampling flask was evaluated and gas was passed in the equated flask containing 0.1 N H <sub>2</sub> SO <sub>4</sub> and H <sub>2</sub> O <sub>2</sub> . Sample was kept for 24 hr in closed condition of flask. Initial and final pressure is noted before the sampling and analysis. The absorbing media is transferred in the dish. It is dried on hot plate and Phenol Disulphonic Acid is then added and rubbed with the help of glass rod for dissolution of residue. Water is added and neutralized by Sodium Hydroxide solution. Yellow color develops and the color intensity is measured Spectrophotometrically on 'Abs' mode. |



**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
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Issue Date: 16/05/2016

**Test Report**  
**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/01/05-2016**

|                               |   |   |
|-------------------------------|---|---|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT   |
| Sample Description            | : | Stack Monitoring  |
| Stack Identification          | : | Stack Attached to Auxiliary Boiler  |
| Type of Fuel                  | : | Natural Gas   |
| Date of Stack Monitoring      | : | 10/05/2016  |
| Sample Received on            | : | 12/05/2016  |
| Date of Analysis & Completion | : | 12/05/2016 & 13/05/2016   |
| Sample ID No.                 | : | ERM/ECSS/2016/05/865  |
| Quantity/No. of Sample        | : | 1 nos. Thimble for PM, Approx 50 ml exposed scrubbing media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas in a bladder for NO <sub>x</sub> . |
| Stack Height                  | : | 31  |
| Stack Diameter                | : | 0.7   |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed  |
| Sample Collected By           | : | Mr. Bhavesh Patel   |

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method                         |
|---------|-----------------|--------------------|---------|-------------------|--------------------------------|
| 1.      | Temperature     | °C                 | 168     | --                | --                             |
| 2.      | Velocity        | m/sec              | 7.3     | --                | IS 11255 (PART-3)              |
| 3.      | PM              | mg/Nm <sup>3</sup> | 18.4    | 150               | IS 11255 (PART-1)-1985         |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985         |
| 5.      | NO <sub>x</sub> | ppm                | 25.4    | 50                | Emission of CPCB (PART-3)-1985 |

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Issue Date: 16/05/2016

**Test Report**  
**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/02/05-2016**

Name of the Industry : Hindusthan Chemicals Company,  
Olpad, Dist. SURAT  
Sample Description : Stack Monitoring  
Stack Identification : Stack Attached To Incinerator  
Date of Stack Monitoring : 10/05/2016  
Sample Received on : 12/05/2016  
Date of Analysis & Completion : 12/05/2016 & 13/05/2016  
Sample ID No. : ERM/ECSS/2016/05/866  
Quantity/No. of Sample : 1 no. Thimble for PM, Approx 30 ml exposed scrubbing media in 1 nos. Plastic bottle for SO<sub>2</sub> & Gas in a bladder for NO<sub>x</sub>.  
Stack Height : 40  
Stack Diameter : 1.4  
Protocol (Purpose)/Packing : As per Work Order/Packed  
Sample Collected By : Mr. Bhavesh Patel

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method                         |
|---------|-----------------|--------------------|---------|-------------------|--------------------------------|
| 1.      | Temperature     | °C                 | 122     | -                 | -                              |
| 2.      | Velocity        | m/sec              | 6.8     | -                 | IS 11255 (PART-3)              |
| 3.      | PM              | mg/Nm <sup>3</sup> | 19.5    | 150               | IS 11255 (PART-1)-1985         |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985         |
| 5.      | NO <sub>x</sub> | ppm                | 22.6    | 50                | Emission of CPCB (PART-3)-1985 |
| 6.      | HCl             | mg/Nm <sup>3</sup> | <01     | 20                | -                              |
| 7.      | HCN             | mg/Nm <sup>3</sup> | 0.7     | 30                | -                              |
| 8.      | HC              | mg/Nm <sup>3</sup> | 1.3     | -                 | -                              |

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Issue Date: 16/06/2016

**Test Report**

**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/01/06-2016**

|                               |   |   |
|-------------------------------|---|---|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT   |
| Sample Description            | : | Stack Monitoring  |
| Stack Identification          | : | Stack Attached to Auxiliary Boiler  |
| Type of Fuel                  | : | Natural Gas   |
| Date of Stack Monitoring      | : | 10/06/2016  |
| Sample Received on            | : | 13/06/2016  |
| Date of Analysis & Completion | : | 13/06/2016 & 14/06/2016   |
| Sample ID No.                 | : | ERM/ECSS/2016/06/1068   |
| Quantity/No. of Sample        | : | 1 nos. Thimble for PM, Approx 30 ml exposed scrubbing media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas In a bladder for NO <sub>x</sub> . |
| Stack Height                  | : | 31  |
| Stack Diameter                | : | 0.7   |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed  |
| Sample Collected By           | : | Mr. Bhavesh Patel   |

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method                         |
|---------|-----------------|--------------------|---------|-------------------|--------------------------------|
| 1.      | Temperature     | °C                 | 164     | --                | --                             |
| 2.      | Velocity        | m/sec              | 7.6     | --                | IS 11255 (PART-3)              |
| 3.      | PM              | mg/Nm <sup>3</sup> | 16.9    | 150               | IS 11255 (PART-1)-1985         |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985         |
| 5.      | NO <sub>x</sub> | ppm                | 23.7    | 50                | Emission of CPCB (PART-3)-1985 |

**Note: (1)** These results relate to the sample tested only.

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Issue Date: 16/06/2016

**Test Report**

**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/02/06-2016**

|                               |   |  |
|-------------------------------|---|--|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT  |
| Sample Description            | : | Stack Monitoring   |
| Stack Identification          | : | Stack Attached To Incinerator  |
| Date of Stack Monitoring      | : | 10/06/2016   |
| Sample Received on            | : | 13/06/2016   |
| Date of Analysis & Completion | : | 13/06/2016 & 14/06/2016  |
| Sample ID No.                 | : | ERM/ECSS/2016/06/1069  |
| Quantity/No. of Sample        | : | 1 no. Thimble for PM, Approx 30 ml exposed scrubbing<br>media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas in a bladder<br>for NO <sub>x</sub> . |
| Stack Height                  | : | 40   |
| Stack Diameter                | : | 1.4  |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed   |
| Sample Collected By           | : | Mr. Bhavesh Patel  |

| Sr. No. | Parameters      | Unit               | Results | Permissible<br>limit | Method  |
|---------|-----------------|--------------------|---------|----------------------|---|
| 1.      | Temperature     | °C                 | 118     | -                    | -   |
| 2.      | Velocity        | m/sec              | 7.0     | -                    | IS 11255 (PART-3)                               |
| 3.      | PM              | mg/Nm <sup>3</sup> | 20.0    | 150                  | IS 11255 (PART-1)-1985                          |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100                  | IS 11255 (PART-2)-<br>1985                      |
| 5.      | NO <sub>x</sub> | ppm                | 22.0    | 50                   | Emission of CPCB<br>(PART-3)-1985               |
| 6.      | HCl             | mg/Nm <sup>3</sup> | <01     | 20                   | Argentometric<br>Titration                      |
| 7.      | HCN             | mg/Nm <sup>3</sup> | 0.6     | 30                   | Colorimetric-T<br>(Pyridine barbituric<br>acid) |
| 8.      | HC              | mg/Nm <sup>3</sup> | 1.2     | -                    | Colorimetric Method<br>(Detector Tube)          |

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Issue Date: 12/07/2016

**Test Report**

**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/01/07-2016**

|                               |   |   |
|-------------------------------|---|---|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT   |
| Sample Description            | : | Stack Monitoring  |
| Stack Identification          | : | Stack Attached to Auxiliary Boiler  |
| Type of Fuel                  | : | Natural Gas   |
| Date of Stack Monitoring      | : | 06/07/2016  |
| Sample Received on            | : | 07/07/2016  |
| Date of Analysis & Completion | : | 07/07/2016 & 08/07/2016   |
| Sample ID No.                 | : | ERM/ECSS/2016/07/1204   |
| Quantity/No. of Sample        | : | 1 nos. Thimble for PM, Approx 30 ml exposed scrubbing media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas in a bladder for NO <sub>x</sub> . |
| Stack Height                  | : | 31  |
| Stack Diameter                | : | 0.7   |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed  |
| Sample Collected By           | : | Mr. Bhavesh Patel   |

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method                         |
|---------|-----------------|--------------------|---------|-------------------|--------------------------------|
| 1.      | Temperature     | °C                 | 162     | --                | --                             |
| 2.      | Velocity        | m/sec              | 7.1     | --                | IS 11255 (PART-3)              |
| 3.      | PM              | mg/Nm <sup>3</sup> | 17.2    | 150               | IS 11255 (PART-1)-1985         |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985         |
| 5.      | NO <sub>x</sub> | ppm                | 24.3    | 50                | Emission of CPCB (PART-3)-1985 |

**Note: (1)** These results relate to the sample tested only.

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Issue Date: 12/07/2016

**Test Report**  
**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/02/07-2016**

|                               |   |   |
|-------------------------------|---|---|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT   |
| Sample Description            | : | Stack Monitoring  |
| Stack Identification          | : | Stack Attached To Incinerator   |
| Date of Stack Monitoring      | : | 06/07/2016  |
| Sample Received on            | : | 07/07/2016  |
| Date of Analysis & Completion | : | 07/07/2016 & 08/07/2016   |
| Sample ID No.                 | : | ERM/ECSS/2016/07/1205   |
| Quantity/No. of Sample        | : | 1 no. Thimble for PM, Approx 30 ml exposed scrubbing media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas in a bladder for NOx. |
| Stack Height                  | : | 40  |
| Stack Diameter                | : | 1.4   |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed  |
| Sample Collected By           | : | Mr. Bhavesh Patel   |

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method                                    |
|---------|-----------------|--------------------|---------|-------------------|---|
| 1.      | Temperature     | °C                 | 118     | -                 | -   |
| 2.      | Velocity        | m/sec              | 7.0     | -                 | IS 11255 (PART-3)                         |
| 3.      | PM              | mg/Nm <sup>3</sup> | 18.7    | 150               | IS 11255 (PART-1)-1985                    |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985                    |
| 5.      | NOx             | ppm                | 21.8    | 50                | Emission of CPCB (PART-3)-1985            |
| 6.      | HCl             | mg/Nm <sup>3</sup> | <01     | 20                | Agentometric Titration                    |
| 7.      | HCN             | mg/Nm <sup>3</sup> | 0.7     | 30                | Colorimetric-T (Pyridine barbituric acid) |
| 8.      | HC              | mg/Nm <sup>3</sup> | 1.2     | -                 | Colorimetric Method (Detector Tube)       |

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Issue Date: 12/08/2016

**Test Report**  
**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/01/08-2016**


|                               |   |   |
|-------------------------------|---|---|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT   |
| Sample Description            | : | Stack Monitoring  |
| Stack Identification          | : | Stack Attached to Auxilliary Boiler   |
| Type of Fuel                  | : | Natural Gas   |
| Date of Stack Monitoring      | : | 05/08/2016  |
| Sample Received on            | : | 06/08/2016  |
| Date of Analysis & Completion | : | 06/08/2016 & 08/08/2016   |
| Sample ID No.                 | : | ERM/ECSS/2016/08/1381   |
| Quantity/No. of Sample        | : | 1 nos. Thimble for PM, Approx 30 ml exposed scrubbing media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas in a bladder for NO <sub>x</sub> . |
| Stack Height                  | : | 31  |
| Stack Diameter                | : | 0.7   |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed  |
| Sample Collected By           | : | Mr. Bhavesh Patel   |

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method                         |
|---------|-----------------|--------------------|---------|-------------------|--------------------------------|
| 1.      | Temperature     | °C                 | 179     | --                | --                             |
| 2.      | Velocity        | m/sec              | 6.9     | --                | IS 11255 (PART-3)              |
| 3.      | PM              | mg/Nm <sup>3</sup> | 15.1    | 150               | IS 11255 (PART-1)-1985         |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985         |
| 5.      | NO <sub>x</sub> | ppm                | 23.0    | 50                | Emission of CPCB (PART-3)-1985 |

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Issue Date: 12/08/2016

**Test Report**

**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/02/08-2016**

Name of the Industry : Hindusthan Chemicals Company,  
Olpad, Dist. SURAT

Sample Description : Stack Monitoring

Stack Identification : Stack Attached To Incinerator

Date of Stack Monitoring : 05/08/2016

Sample Received on : 06/08/2016

Date of Analysis & Completion : 06/08/2016 & 08/08/2016

Sample ID No. : ERM/ECSS/2016/08/1382

Quantity/No. of Sample : 1 no. Thimble for PM, Approx 30 ml exposed scrubbing media in 1 nos. Plastic bottle for SO<sub>2</sub> & Gas in a bladder for NO<sub>x</sub>.

Stack Height : 40

Stack Diameter : 1.4

Protocol (Purpose)/Packing : As per Work Order/Packed

Sample Collected By : Mr. Bhavesh Patel

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method                                  |
|---------|-----------------|--------------------|---------|-------------------|---|
| 1.      | Temperature     | °C                 | 119     | -                 | -                                       |
| 2.      | Velocity        | m/sec              | 6.8     | -                 | IS 11255 (PART-3)                       |
| 3.      | PM              | mg/Nm <sup>3</sup> | 16.5    | 150               | IS 11255 (PART-1)-1985                  |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985                  |
| 5.      | NO <sub>x</sub> | ppm                | 20.2    | 50                | Emission of CPCB (PART-3)-1985          |
| 6.      | HCl             | mg/Nm <sup>3</sup> | <01     | 20                | Agentometric Titration                  |
| 7.      | HCN             | mg/Nm <sup>3</sup> | <0.5    | 30                | Coloromate-T (Pyridine barbicuric acid) |
| 8.      | HC              | mg/Nm <sup>3</sup> | 1.0     | -                 | Colorimetric Method (Detector Tube)     |

Note: (1) These results relate to the sample tested only.

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 14/09/2016

**TEST REPORT**  
**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/01/09-2016**

|                               |   |   |
|-------------------------------|---|---|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT   |
| Sample Description            | : | Stack Monitoring  |
| Stack Identification          | : | Stack Attached to Auxiliary Boiler  |
| Type of Fuel                  | : | Natural Gas   |
| Date of Stack Monitoring      | : | 08/09/2016  |
| Sample Received on            | : | 10/09/2016  |
| Date of Analysis & Completion | : | 10/09/2016 & 12/09/2016   |
| Sample ID No.                 | : | ERM/ECSS/2016/09/1567   |
| Quantity/No. of Sample        | : | 1 nos. Thimble for PM, Approx 30 ml exposed scrubbing media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas in a bladder for NO <sub>x</sub> . |
| Stack Height                  | : | 31  |
| Stack Diameter                | : | 0.7   |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed  |
| Sample Collected By           | : | Mr. Bhavesh Patel   |

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method                         |
|---------|-----------------|--------------------|---------|-------------------|--------------------------------|
| 1.      | Temperature     | °C                 | 189     | --                | --                             |
| 2.      | Velocity        | m/sec              | 6.8     | --                | IS 11255 (PART-3)              |
| 3.      | PM              | mg/Nm <sup>3</sup> | 14.7    | 150               | IS 11255 (PART-1)-1985         |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985         |
| 5.      | NO <sub>x</sub> | ppm                | 22.2    | 50                | Emission of CPCB (PART-3)-1985 |

Note: (1) These results relate to the sample tested only.

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Issue Date: 14/09/2016

**TEST REPORT**

**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/02/09-2016**

|                               |   |  |
|-------------------------------|---|--|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT  |
| Sample Description            | : | Stack Monitoring   |
| Stack Identification          | : | Stack Attached To Incinerator  |
| Date of Stack Monitoring      | : | 08/09/2016   |
| Sample Received on            | : | 10/09/2016   |
| Date of Analysis & Completion | : | 10/09/2016 & 12/09/2016  |
| Sample ID No.                 | : | ERM/ECSS/2016/09/1568  |
| Quantity/No. of Sample        | : | 1 no. Thimble for PM, Approx 30 ml exposed scrubbing<br>media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas in a bladder<br>for NO <sub>x</sub> . |
| Stack Height                  | : | 40   |
| Stack Diameter                | : | 1.4  |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed   |
| Sample Collected By           | : | Mr. Bhavesh Patel  |

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method  |
|---------|-----------------|--------------------|---------|-------------------|---|
| 1.      | Temperature     | °C                 | 122     | -                 | -   |
| 2.      | Velocity        | m/sec              | 7.0     | -                 | IS 11255 (PART-3)                                 |
| 3.      | PM              | mg/Nm <sup>3</sup> | 15.9    | 150               | IS 11255 (PART-1)-1985                            |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985                            |
| 5.      | NO <sub>x</sub> | ppm                | 19.6    | 50                | Emission of CPCB (PART-3)-<br>1985                |
| 6.      | HCl             | mg/Nm <sup>3</sup> | <01     | 20                | Argentometric Titration                           |
| 7.      | HCN             | mg/Nm <sup>3</sup> | <0.5    | 30                | Colorimetric Method (Pyridine<br>barbituric acid) |
| 8.      | HC              | mg/Nm <sup>3</sup> | 0.9     | -                 | Colorimetric Method<br>(Detector Tube)            |

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Issue Date: 22/10/2016

**TEST REPORT**  
**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/01/10-2016**


|                               |   |   |
|-------------------------------|---|---|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT   |
| Sample Description            | : | Stack Monitoring  |
| Stack Identification          | : | Stack Attached to Auxiliary Boiler  |
| Type of Fuel                  | : | Natural Gas   |
| Date of Stack Monitoring      | : | 14/10/2016  |
| Sample Received on            | : | 15/10/2016  |
| Date of Analysis & Completion | : | 15/10/2016 & 17/10/2016   |
| Sample ID No.                 | : | ERM/ECSS/2016/10/1712   |
| Quantity/No. of Sample        | : | 1 nos. Thimble for PM, Approx 30 ml exposed scrubbing media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas in a bladder for NO <sub>x</sub> . |
| Stack Height                  | : | 31  |
| Stack Diameter                | : | 0.7   |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed  |
| Sample Collected By           | : | Mr. Bhavesh Patel   |

| Sr. No. | Parameters      | Unit               | Results | Permissible limit | Method                         |
|---------|-----------------|--------------------|---------|-------------------|--------------------------------|
| 1.      | Temperature     | °C                 | 174     | --                | --                             |
| 2.      | Velocity        | m/sec              | 6.7     | --                | IS 11255 (PART-3)              |
| 3.      | PM              | mg/Nm <sup>3</sup> | 13.0    | 150               | IS 11255 (PART-1)-1985         |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985         |
| 5.      | NO <sub>x</sub> | ppm                | 20.7    | 50                | Emission of CPCB (PART-3)-1985 |

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Issue Date: 22/10/2016

**TEST REPORT**

**STACK ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 C/Stack /HCC/02/10-2016**

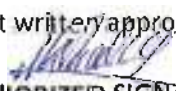
|                               |   |  |
|-------------------------------|---|--|
| Name of the Industry          | : | Hindusthan Chemicals Company,<br>Olpad, Dist. SURAT  |
| Sample Description            | : | Stack Monitoring   |
| Stack Identification          | : | Stack Attached To Incinerator  |
| Date of Stack Monitoring      | : | 14/10/2016   |
| Sample Received on            | : | 15/10/2016   |
| Date of Analysis & Completion | : | 15/10/2016 & 17/10/2016  |
| Sample ID No.                 | : | ERM/ECSS/2016/10/1713  |
| Quantity/No. of Sample        | : | 1 no. Thimble for PM, Approx 30 ml exposed scrubbing<br>media in 1 nos. Plastic bottle for SO <sub>2</sub> & Gas in a bladder<br>for NO <sub>x</sub> . |
| Stack Height                  | : | 40   |
| Stack Diameter                | : | 1.4  |
| Protocol (Purpose)/Packing    | : | As per Work Order/Packed   |
| Sample Collected By           | : | Mr. Bhavesh Patel  |

| Sr. No. | Parameters      | Unit               | Results | Permissible Limit | Method   |
|---------|-----------------|--------------------|---------|-------------------|--|
| 1.      | Temperature     | °C                 | 119     | -                 | -  |
| 2.      | Velocity        | m/sec              | 7.3     | -                 | IS 11255 (PART-3)                              |
| 3.      | PM              | mg/Nm <sup>3</sup> | 14.8    | 150               | IS 11255 (PART-1)-1985                         |
| 4.      | SO <sub>2</sub> | ppm                | <4.9    | 100               | IS 11255 (PART-2)-1985                         |
| 5.      | NO <sub>x</sub> | ppm                | 17.9    | 50                | Emission of CPCB (PART-3)-1985                 |
| 6.      | HCl             | mg/Nm <sup>3</sup> | <01     | 20                | Argentometric Titration                        |
| 7.      | HCN             | mg/Nm <sup>3</sup> | <0.5    | 30                | Colorimetric Method (Pyridine barbituric acid) |
| 8.      | HC              | mg/Nm <sup>3</sup> | 0.8     | -                 | Colorimetric Method (Detector Tube)            |

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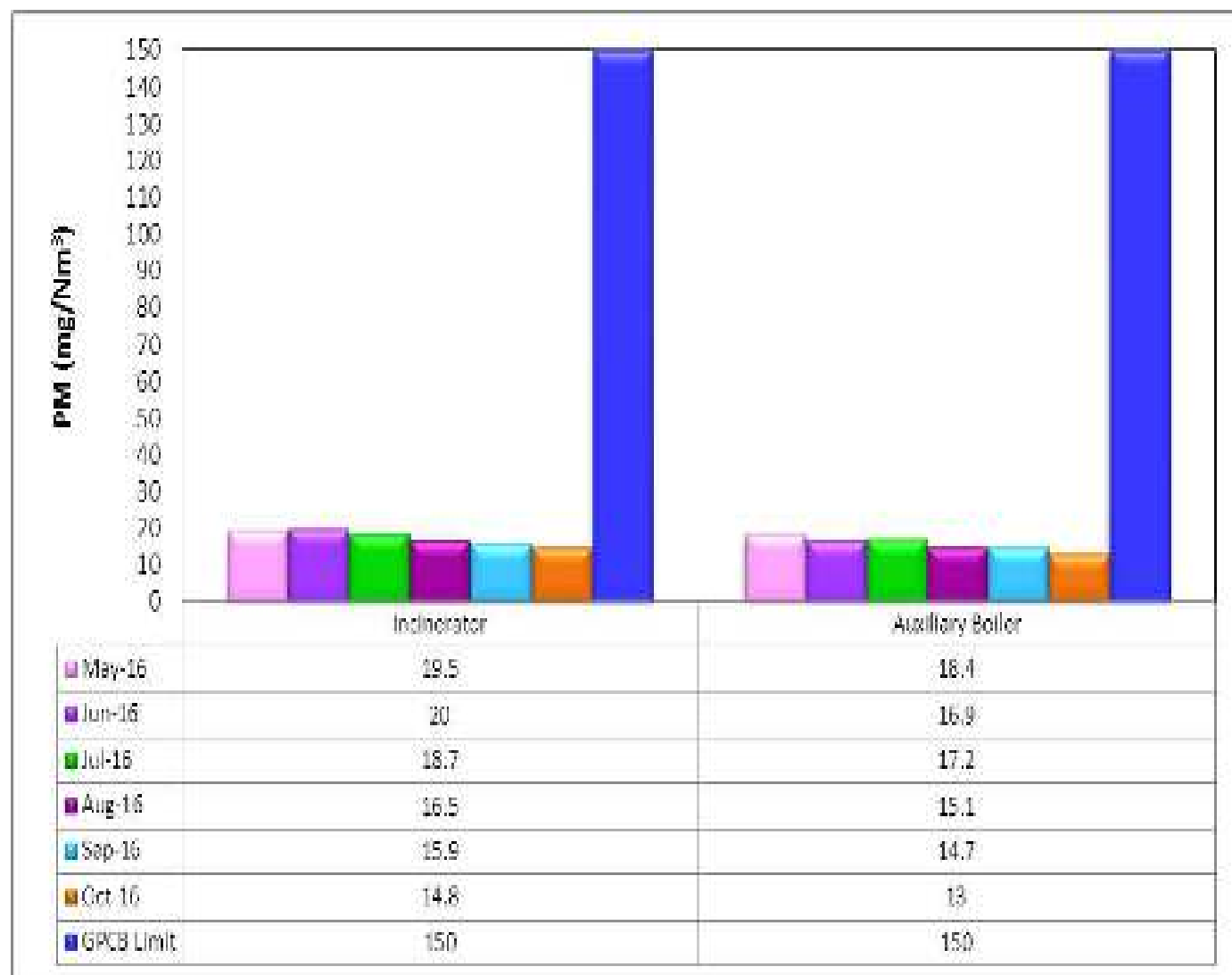
CIN No.: U72200GJ2000PTC038265

Branch Off.: Shop No. 7/8, Saffron City, Opp. Bharat Petrol Pump, Vill. Jolwa, Dahej - Bharuch Road. Mo.: 98250 94443

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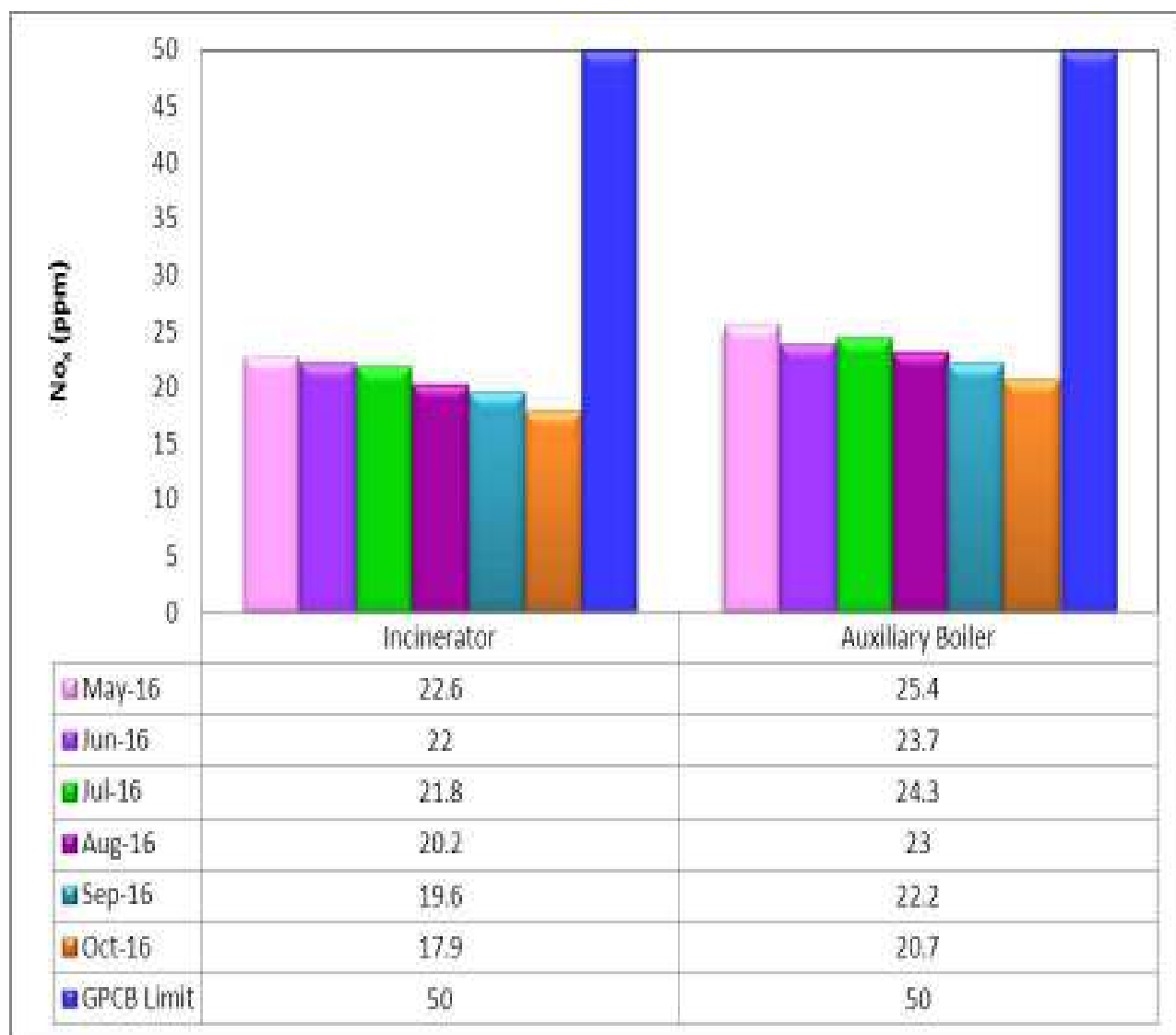
## Monthly Variation in Stack Emission for the period of May 2016 to October 2016

### 1. Comparative Analysis & Graphical Presentation of PM



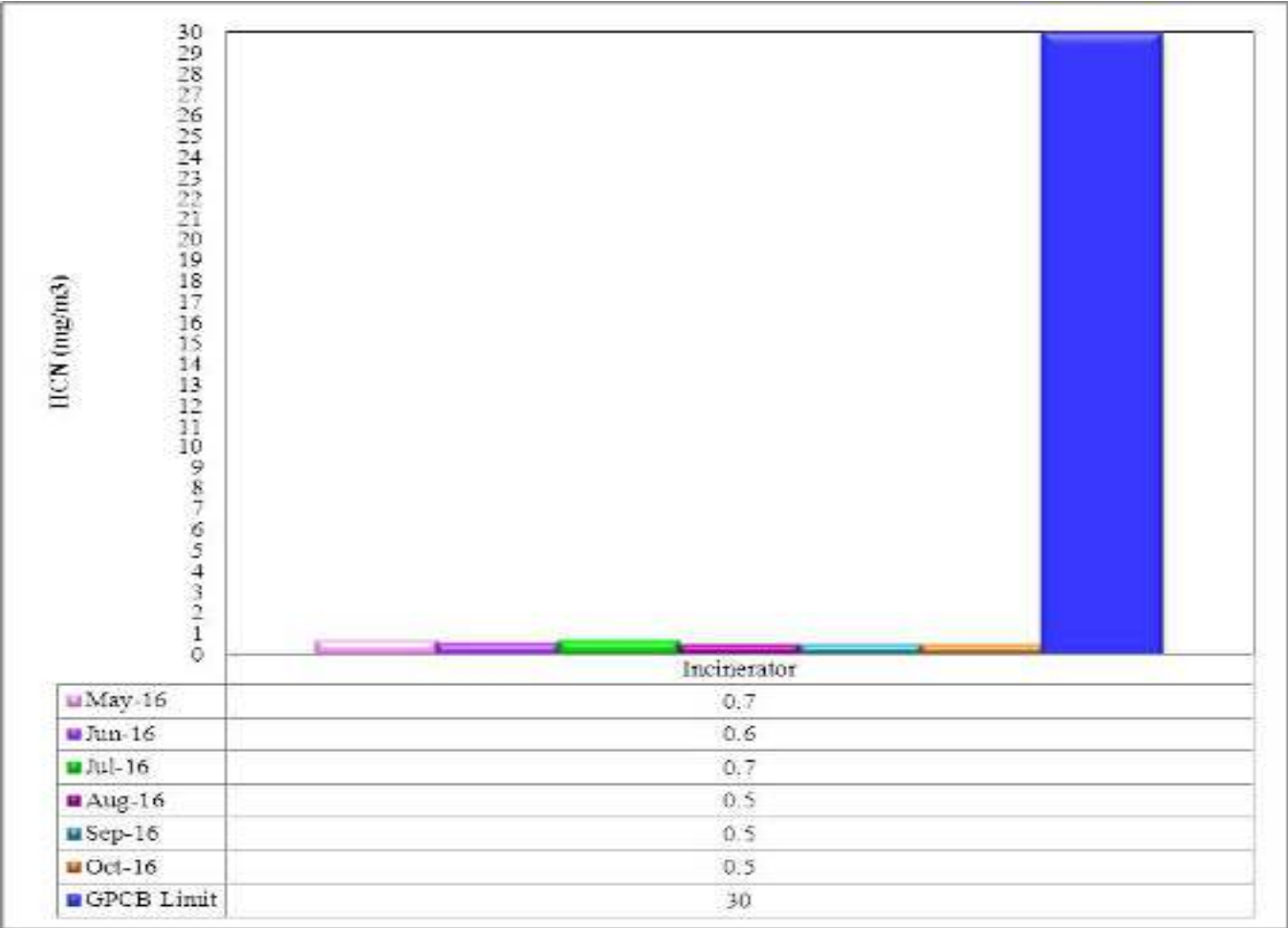
Note: All the values are expressed in mg/Nm<sup>3</sup>

## 2. Comparative Analysis & Graphical Presentation of NO<sub>x</sub>



Note: All the values are expressed in ppm

3. Comparative Analysis & Graphical Presentation of HCN



Note: All the values are expressed in mg/Nm<sup>3</sup>

## ANNEXURE 15 – Water Sampling & Analysis Methodology, Analysis Report & Month Wise Comparison

| S. No. | Particulars    | Details   |
|--------|----------------|---|
| 1.     | Temperature    | Temperature was measured by using calibrated thermometer.   |
| 2.     | pH             | pH analysis was carried out on site with the help of handy pH meter. pH analysis was also carried out in the laboratory after receiving the sample at room temperature. Only laboratory pH results have been reported in test report.   |
| 3.     | TDS            | Measured quantity of filtered sample was evaporated into previously weighed evaporating dish. TDS was calculated on weight difference basis.  |
| 4.     | Turbidity      | Turbidity measurement was carried out with Nephelo turbidity meter. Before the estimation calibration was done by standard turbidity solution and then the sample was run for the turbidity measurement. Display shown by the instrument was noted and reported.                |
| 5.     | Total Hardness | Total Hardness was determined by EDTA method. Sample was titrated against 0.01 M EDTA solution in alkaline medium (ammonia buffer) using Errichrome Black-T indicator.  |
| 6.     | Calcium        | Calcium ion was determined by EDTA method. Sample was titrated with EDTA solution using ammonium purpurate as an indicator.   |
| 7.     | Magnesium      | Magnesium was estimated on the basis of difference between total hardness and calcium hardness.   |
| 8.     | Alkalinity     | A measured volume of sample was titrated against known $H_2SO_4$ solution using Phenolphthalein and Methyl Orange as an indicator.  |
| 9.     | Chloride       | Sample of measured quantity was titrated against standard Silver Nitrate using potassium chromate as indicator. Chloride was calculated from the volume of $AgNO_3$ standard solution used during the titration.  |
| 10.    | Sulphate       | A measured volume of sample was acidified by Concentrated HCl and evaporated on hot plate till the dryness of the sample. Re added HCl and distilled water and Sulphate was precipitated as $BaSO_4$ using 5 % $BaCl_2$ . Precipitate were dried and gravimetrically estimated. |
| 11.    | Silica         | Suitable aliquot of the sample was taken and 1:1 HCl was added. Ammonium molybdate was also added for colour development. Colour intensity was measured spectrophotometrically after the addition of 1.5 ml oxalic acid at 410 nm.  |
| 12.    | Nitrate        | Estimated volume of sample was dried. Dried precipitate of nitrate was dissolved in phenol disulphonic acid by rubbing with rod and water was added for complete dissolution. pH was raised with KOH solution, yellow   |

|     |                            |  |
|-----|----------------------------|--|
|     |                            | color developed and color intensity was measured spectrophotometrically.   |
| 13. | DO                         | Suitable aliquot of the sample was taken in BOD bottle. Manganous Sulphate solution and Alkali Iodide Azide solution were added in the sample. Precipitates developed are dissolved by the addition of conc. Sulphuric acid. Sample was brought to titration against known sodium thiosulphate solution using starch as an indicator.  |
| 14. | BOD                        | Measured quantity of sample was placed in airtight bottle along with bacterial and nutrient chemical. It was kept under incubation at specific temperature (usually 27°C) and for specific time usually 3 Days). The dissolved Oxygen quantity was measured before and after incubation, Iodometrically. BOD was estimated on DO difference basis.   |
| 15. | Chromium                   | Chromium was oxidized by permanganate to chromate after digestion with HNO <sub>3</sub> and H <sub>2</sub> SO <sub>4</sub> and violet colour produced after the reaction of symmetrical diphenyl carbazide to chromate ion and intensity of colour was measured spectrophotometrically at 510 nm.  |
| 16. | Copper                     | Cuprous ion in neutral or slightly acidic solution react with 2, 9 dimethyl 1,10 phenanthroline (neocuproin) form a complex in which 2 moles of neocuproin are bound by 1 mole of cuprous ion. The complex was then extracted by chloroform in presence of hydroxyl amine hydrochloride and sodium citrate. Colour intensity was measured spectrophotometrically.  |
| 17. | Iron                       | Iron was reduced to ferrous state by boiling with acid and hydroxylamine. Then it was treated with 1,10 Phenanthroline at pH 5.2 to 6.0 and orange or red color developed. Optical density was measured on spectrophotometer.  |
| 18. | Most Probable Number (MPN) | Multiple fermentation Technique was applied for the estimation of MPN.   |
| 19. | Phosphate                  | Take 50 ml of sample and add 4.0 ml ammonium molybdate reagent and 0.5 ml stannous chloride reagent. Mix it and dilute the aliquot up to 100 ml with distilled water. Let the colour develop. Measure OD at 690 nm after 10 min, but before 12 min.  |
| 20. | Zinc                       | Take a suitable amount of sample in 50ml measuring flask. Now add 1ml conc. HCl in each flask. Then heat till its volume becomes half. Cool it at room temperature. Now add a piece of pH paper in each flask and add NaOH solution till its pH becomes 7.0 to 7.5. Make up the volume to 50 ml in each flask. Take 10 ml from each of the flask and add 0.5 g Sodium ascorbate, 1 ml KCN add solution, 5ml Borate buffer and 3ml Zincon solution. Swirl to mix all the reagents and cyclohexanone fresh solution till the colour change is not obtained. Take Absorbance at 620 nm. |
| 21. | Cyanide                    | From the absorption solution take measured volume of sample in a conical   |

|  |  |   |
|--|--|---|
|  |  | flask. Titrate with standard $\text{AgNO}_3$ solution using p-dimethylaminobenzalrhodanine as an indicator to the first change in color from a canary yellow to a Salmon hue. |
|--|--|---|

Issue Date: 20/05/2016

**Test Report**  
**BORE WATER ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/BORE WATER/HCC/Rev.-01/05-2016**

Name of the Industry : Hindusthan Chemicals Company.  
Olpad, Dist. Surat  
Sample Collected On : 11/05/2016  
Sample Received on : 12/05/2016  
Sample Analyzed & Completion : 12/05/2016 to 16/05/2016  
Sample ID No. : ERM/ECSS/2016/05/871, 872, 873  
Quantity/No. of Sample : 2 lit for each location in plastic carboy for Physico chemical and 500-500ml for each location in sterilized bottle for MPN testing/6 Nos.  
Protocol (Purpose) : As per Work Order  
Packing/ Seal : Packed  
Sample Collected By : Mr. Bhavesh Patel  
Analysis Method Followed : Standard methods for the examination of water & waste water, APHA-22<sup>nd</sup> Edition, 2012 & IS 3025

| Sr. No. | Parameters                                       | Unit      | Surat Drums Factory Bore Well | Nemlaxmi Books Bore well | Ganesh Automobile Bore well |
|---------|--|-----------|-------------------------------|--------------------------|-----------------------------|
| 1       | Temperature                                      | °C        | 31.5                          | 32.5                     | 32.0                        |
| 2       | pH   | pH-Unit   | 7.25                          | 7.39                     | 7.45                        |
| 3       | Total Dissolved Solids (TDS)                     | mg/L      | 1185                          | 260                      | 624                         |
| 4       | Turbidity  | NTU       | 2.0                           | 1.4                      | 1.9                         |
| 5       | Nitrate as (NO <sub>3</sub> )                    | mg/L      | 0.8                           | 0.4                      | 0.6                         |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/L      | 5.8                           | 0.8                      | 1.0                         |
| 7       | Dissolved Oxygen                                 | mg/L      | 6.2                           | 5.0                      | 5.4                         |
| 8       | BOD  | mg/L      | <04                           | <04                      | <04                         |
| 9       | Total alkalinity                                 | mg/L      | 316                           | 200                      | 282                         |
| 10      | Total Hardness                                   | mg/L      | 576                           | 130                      | 350                         |
| 11      | Chloride   | mg/L      | 508                           | 38                       | 195                         |
| 12      | Sulphate   | mg/L      | 29                            | 10                       | 20                          |
| 13      | Chromium   | mg/L      | <0.03                         | <0.03                    | <0.03                       |
| 14      | Cyanide  | mg/L      | Nil                           | Nil                      | Nil                         |
| 15      | Copper   | mg/L      | <0.01                         | <0.01                    | <0.01                       |
| 16      | Lead   | mg/L      | <0.005                        | <0.005                   | <0.005                      |
| 17      | Iron   | mg/L      | <0.1                          | <0.1                     | <0.1                        |
| 18      | Zinc   | mg/L      | <0.02                         | <0.02                    | <0.02                       |
| 19      | Calcium  | mg/L      | 192                           | 26                       | 83                          |
| 20      | Magnesium  | mg/L      | 23                            | 16                       | 35                          |
| 21      | Silica   | mg/L      | 6.5                           | 5.7                      | 6.0                         |
| 22      | MPN ( Total Coliform)                            | No./100ml | NIL                           | NIL                      | NIL                         |

Note: (1) These results relate to the sample tested only.

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
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Issue Date: 20/06/2016

**Test Report**

**BORE WATER ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/BORE WATER/HCC/Rev.-01/06-2016**

|                              |   |  |
|------------------------------|---|--|
| Name of the Industry         | : | Hindusthan Chemicals Company.  |
|                              | : | Olpad, Dist. Surat   |
| Sample Collected On          | : | 11/06/2016   |
| Sample Received on           | : | 13/06/2016   |
| Sample Analyzed & Completion | : | 13/06/2016 to 16/06/2016   |
| Sample ID No.                | : | ERM/ECSS/2016/06/1076, 1077, 1078  |
| Quantity/No. of Sample       | : | 2 lit for each location in plastic carboy for Physico chemical and<br>500-500ml for each location in sterilized bottle for MPN testing/6<br>Nos. |
| Protocol (Purpose)           | : | As per Work Order  |
| Packing/ Seal                | : | Packed   |
| Sample Collected By          | : | Mr. Bhavesh Patel  |
| Analysis Method Followed     | : | Standard methods for the examination of water & waste water,<br>APHA-22 <sup>nd</sup> Edition, 2012 & IS 3025                                    |

| Sr. No. | Parameters                                       | Unit      | Surat Drums Factory Bore Well | Nemlaxmi Books Bore well | Ganesh Automobile Bore well |
|---------|--|-----------|-------------------------------|--------------------------|-----------------------------|
| 1       | Temperature                                      | °C        | 31.0                          | 31.7                     | 31.9                        |
| 2       | pH   | pH-Unit   | 7.17                          | 7.35                     | 7.42                        |
| 3       | Total Dissolved Solids (TDS)                     | mg/L      | 1164                          | 248                      | 589                         |
| 4       | Turbidity  | NTU       | 2.4                           | 1.0                      | 1.6                         |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )       | mg/L      | 0.6                           | 0.2                      | 0.4                         |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/L      | 4.6                           | 0.6                      | 1.4                         |
| 7       | Dissolved Oxygen                                 | mg/L      | 6.1                           | 5.2                      | 5.9                         |
| 8       | BOD  | mg/L      | <04                           | <04                      | <04                         |
| 9       | Total alkalinity                                 | mg/L      | 326                           | 208                      | 288                         |
| 10      | Total Hardness                                   | mg/L      | 584                           | 136                      | 356                         |
| 11      | Chloride   | mg/L      | 517                           | 52                       | 210                         |
| 12      | Sulphate   | mg/L      | 34                            | 14                       | 28                          |
| 13      | Chromium   | mg/L      | <0.03                         | <0.03                    | <0.03                       |
| 14      | Cyanide  | mg/L      | Nil                           | Nil                      | Nil                         |
| 15      | Copper   | mg/L      | <0.01                         | <0.01                    | <0.01                       |
| 16      | Lead   | mg/L      | <0.005                        | <0.005                   | <0.005                      |
| 17      | Iron   | mg/L      | <0.1                          | <0.1                     | <0.1                        |
| 18      | Zinc   | mg/L      | <0.02                         | <0.02                    | <0.02                       |
| 19      | Calcium  | mg/L      | 199                           | 29                       | 90                          |
| 20      | Magnesium  | mg/L      | 21                            | 16                       | 32                          |
| 21      | Silica   | mg/L      | 6.9                           | 5.0                      | 6.2                         |
| 22      | MPN ( Total Coliform)                            | No./100ml | NIL                           | NIL                      | NIL                         |

Note: (1) These results relate to the sample tested only.

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CIN No.: U72200GJ2000PTC038265

Branch Off.: Shop No. 7/8, Saffron City, Opp. Bharat Petrol Pump, Vill. Jolwa, Dahej - Bharuch Road. Mo.: 98250 94443



Issue Date: 16/07/2016

**Test Report**

**BORE WATER ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/BORE WATER/HCC/Rev.-01/07-2016**

|                              |   |   |
|------------------------------|---|---|
| Name of the Industry         | : | Hindusthan Chemicals Company.<br>Olpad, Dist. Surat   |
| Sample Collected On          | : | 07/07/2016  |
| Sample Received on           | : | 08/07/2016  |
| Sample Analyzed & Completion | : | 08/07/2016 to 12/07/2016  |
| Sample ID No.                | : | ERM/ECSS/2016/07/1211, 1212, 1213   |
| Quantity/No. of Sample       | : | 2 litres for each location in plastic carboy for Physico chemical and<br>500-500ml for each location in sterilized bottle for MPN testing/6<br>Nos. |
| Protocol (Purpose)           | : | As per Work Order   |
| Packing/ Seal                | : | Packed  |
| Sample Collected By          | : | Mr. Bhavesh Patel   |
| Analysis Method Followed     | : | Standard methods for the examination of water & waste water,<br>APHA-22 <sup>nd</sup> Edition, 2012 & IS 3025                                       |

| Sr. No. | Parameters                                       | Unit      | Surat Drums<br>Factory<br>Bore Well | Olpad Forzen Foods<br>Pvt. Ltd.<br>Bore well | Ganesh<br>AutoMobile<br>Bore well |
|---------|--|-----------|-------------------------------------|--|-----------------------------------|
| 1       | Temperature                                      | °C        | 31.0                                | 31.0   | 30.0                              |
| 2       | pH   | pH-Unit   | 7.29                                | 7.38   | 7.49                              |
| 3       | Total Dissolved Solids (TDS)                     | mg/L      | 1133                                | 231  | 611                               |
| 4       | Turbidity  | NTU       | 2.0                                 | 1.4  | 1.2                               |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )       | mg/L      | 0.8                                 | 0.4  | 0.2                               |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/L      | 4.2                                 | 0.4  | 1.8                               |
| 7       | Dissolved Oxygen                                 | mg/L      | 6.0                                 | 5.4  | 5.8                               |
| 8       | BOD  | mg/L      | <04                                 | <04  | <04                               |
| 9       | Total alkalinity                                 | mg/L      | 316                                 | 200  | 282                               |
| 10      | Total Hardness                                   | mg/L      | 576                                 | 129  | 348                               |
| 11      | Chloride   | mg/L      | 507                                 | 38   | 195                               |
| 12      | Sulphate   | mg/L      | 39                                  | 19   | 34                                |
| 13      | Chromium   | mg/L      | <0.03                               | <0.03  | <0.03                             |
| 14      | Cyanide  | mg/L      | Nil                                 | Nil  | Nil                               |
| 15      | Copper   | mg/L      | <0.01                               | <0.01  | <0.01                             |
| 16      | Lead   | mg/L      | <0.005                              | <0.005                                       | <0.005                            |
| 17      | Iron   | mg/L      | <0.1                                | <0.1   | <0.1                              |
| 18      | Zinc   | mg/L      | <0.02                               | <0.02  | <0.02                             |
| 19      | Calcium  | mg/L      | 184                                 | 21   | 80                                |
| 20      | Magnesium  | mg/L      | 28.2                                | 19   | 36                                |
| 21      | Silica   | mg/L      | 7.8                                 | 7.8  | 5.1                               |
| 22      | MPN ( Total Coliform)                            | No./100ml | NIL                                 | NIL  | NIL                               |

Note: (1) These results relate to the sample tested only.

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Issue Date: 30/08/2016

**Test Report**

**BORE WATER ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/BORE WATER/HCC/Rev.-01/08-2016**

|                              |   |   |
|------------------------------|---|---|
| Name of the Industry         | : | Hindusthan Chemicals Company.   |
|                              | : | Olpad, Dist. Surat  |
| Sample Collected On          | : | 06/08/2016  |
| Sample Received on           | : | 08/08/2016  |
| Sample Analyzed & Completion | : | 08/08/2016 to 12/08/2016  |
| Sample ID No.                | : | ERM/ECSS/2016/08/1387, 1388, 1389   |
| Quantity/No. of Sample       | : | 2 litres for each location in plastic carboy for Physico chemical and 500-500ml for each location in sterilized bottle for MPN testing/6 Nos. |
| Protocol (Purpose)           | : | As per Work Order   |
| Packing/ Seal                | : | Packed  |
| Sample Collected By          | : | Mr. Bhavesh Patel   |
| Analysis Method Followed     | : | Standard methods for the examination of water & waste water, APHA-22 <sup>nd</sup> Edition, 2012 & IS 3025                                    |

| Sr. No. | Parameters                                       | Unit      | Surat Drums Factory Bore Well | Amar Honda Bore well | Ganesh Automobile Bore well |
|---------|--|-----------|-------------------------------|----------------------|-----------------------------|
| 1       | Temperature                                      | °C        | 30.5                          | 30.0                 | 29.5                        |
| 2       | pH   | pH-Unit   | 7.22                          | 7.51                 | 7.36                        |
| 3       | Total Dissolved Solids (TDS)                     | mg/L      | 1284                          | 231                  | 708                         |
| 4       | Turbidity  | NTU       | 2.6                           | 1.9                  | 1.6                         |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )       | mg/L      | 0.9                           | 0.6                  | 0.8                         |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/L      | 4.8                           | 0.2                  | 2.1                         |
| 7       | Dissolved Oxygen                                 | mg/L      | 6.4                           | 5.1                  | 6.0                         |
| 8       | BOD  | mg/L      | <04                           | <04                  | <04                         |
| 9       | Total alkalinity                                 | mg/L      | 385                           | 285                  | 301                         |
| 10      | Total Hardness                                   | mg/L      | 612                           | 185                  | 450                         |
| 11      | Chloride   | mg/L      | 525                           | 42                   | 210                         |
| 12      | Sulphate   | mg/L      | 45                            | 23                   | 38                          |
| 13      | Chromium   | mg/L      | <0.03                         | <0.03                | <0.03                       |
| 14      | Cyanide  | mg/L      | Nil                           | Nil                  | Nil                         |
| 15      | Copper   | mg/L      | <0.01                         | <0.01                | <0.01                       |
| 16      | Lead   | mg/L      | <0.005                        | <0.005               | <0.005                      |
| 17      | Iron   | mg/L      | <0.1                          | <0.1                 | <0.1                        |
| 18      | Zinc   | mg/L      | <0.02                         | <0.02                | <0.02                       |
| 19      | Calcium  | mg/L      | 148                           | 26                   | 90                          |
| 20      | Magnesium  | mg/L      | 59                            | 29                   | 55                          |
| 21      | Silica   | mg/L      | 6.8                           | 4.3                  | 5.8                         |
| 22      | MPN ( Total Coliform)                            | No./100ml | NIL                           | NIL                  | NIL                         |

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 16/09/2016

**TEST REPORT**

**BORE WATER ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/BORE WATER/HCC/Rev.-01/09-2016**

Name of the Industry : Hindusthan Chemicals Company.  
Olpad, Dist. Surat  
Sample Collected On : 09/09/2016  
Sample Received on : 10/09/2016  
Sample Analyzed & Completion : 10/09/2016 to 14/09/2016  
Sample ID No. : ERM/ECSS/2016/09/1576, 1577, 1578  
Quantity/No. of Sample : 2 litres for each location in plastic carboy for Physico chemical and 500-500ml for each location in sterilized bottle for MPN testing/6 Nos.  
Protocol (Purpose) : As per Work Order  
Packing/ Seal : Packed  
Sample Collected By : Mr. Bhavesh Patel  
Analysis Method Followed : Standard methods for the examination of water & waste water, APHA-22<sup>nd</sup> Edition, 2012 & IS 3025

| Sr. No. | Parameters                                      | Unit      | Surat Drums Factory Bore Well | Amar Honda Bore well | Ganesh Automobile Bore well |
|---------|---|-----------|-------------------------------|----------------------|-----------------------------|
| 1       | Temperature                                     | °C        | 29.5                          | 29                   | 29.5                        |
| 2       | pH  | pH-Unit   | 7.85                          | 7.51                 | 7.62                        |
| 3       | Total Dissolved Solids (TDS)                    | mg/L      | 1075                          | 201                  | 654                         |
| 4       | Turbidity                                       | NTU       | 2.2                           | 1.4                  | 1.2                         |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )      | mg/L      | 0.8                           | 0.5                  | 0.6                         |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>-</sup> | mg/L      | 3.6                           | 0.8                  | 2.6                         |
| 7       | Dissolved Oxygen                                | mg/L      | 6.2                           | 5.6                  | 6.4                         |
| 8       | BOD   | mg/L      | <04                           | <04                  | <04                         |
| 9       | Total alkalinity                                | mg/L      | 324                           | 220                  | 265                         |
| 10      | Total Hardness                                  | mg/L      | 510                           | 130                  | 296                         |
| 11      | Chloride  | mg/L      | 384                           | 86                   | 185                         |
| 12      | Sulphate  | mg/L      | 50                            | 28                   | 43                          |
| 13      | Chromium  | mg/L      | <0.03                         | <0.03                | <0.03                       |
| 14      | Cyanide   | mg/L      | NIL                           | NIL                  | NIL                         |
| 15      | Copper  | mg/L      | <0.01                         | <0.01                | <0.01                       |
| 16      | Lead  | mg/L      | <0.005                        | <0.005               | <0.005                      |
| 17      | Iron  | mg/L      | <0.1                          | <0.1                 | <0.1                        |
| 18      | Zinc  | mg/L      | <0.02                         | <0.02                | <0.02                       |
| 19      | Calcium   | mg/L      | 127                           | 32                   | 87                          |
| 20      | Magnesium                                       | mg/L      | 47                            | 12                   | 19                          |
| 21      | Silica  | mg/L      | 6.2                           | 4.8                  | 5.6                         |
| 22      | MPN ( Total Coliform)                           | No./100ml | NIL                           | NIL                  | NIL                         |

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# ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.

## ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 22/10/2016

### TEST REPORT

### BORE WATER ANALYSIS REPORT

TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/BORE WATER/HCC/Rev.-01/10-2016

Name of the Industry : Hindusthan Chemicals Company.  
 Olpad, Dist. Surat  
 Sample Collected On : 14/10/2016  
 Sample Received on : 15/10/2016  
 Sample Analyzed & Completion : 15/10/2016 to 14/10/2016  
 Sample ID No. : ERM/ECSS/2016/10/1718, 1719, 1720  
 Quantity/No. of Sample : 2 litres for each location in plastic carboy for Physico chemical and 500-500ml for each location in sterilized bottle for MPN testing/6 Nos.  
 Protocol (Purpose) : As per Work Order  
 Packing/ Seal : Packed  
 Sample Collected By : Mr. Bhavesh Patel  
 Analysis Method Followed : Standard methods for the examination of water & waste water, APHA-22<sup>nd</sup> Edition, 2012 & IS 3025

| Sr. No. | Parameters                                       | Unit      | Surat Drums Factory Bore Well | Amar Honda Bore well | Ganesh Automobile Bore well |
|---------|--|-----------|-------------------------------|----------------------|-----------------------------|
| 1       | Temperature                                      | °C        | 28.5                          | 28                   | 28.5                        |
| 2       | pH   | pH-Unit   | 7.69                          | 7.80                 | 7.36                        |
| 3       | Total Dissolved Solids (TDS)                     | mg/L      | 911                           | 284                  | 544                         |
| 4       | Turbidity  | NTU       | 2.0                           | 1.8                  | 1.4                         |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )       | mg/L      | 0.4                           | 0.6                  | 0.8                         |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/L      | 4                             | 0.6                  | 1.9                         |
| 7       | Dissolved Oxygen                                 | mg/L      | 5.6                           | 5.0                  | 6.0                         |
| 8       | BOD  | mg/L      | <04                           | <04                  | <04                         |
| 9       | Total alkalinity                                 | mg/L      | 348                           | 216                  | 250                         |
| 10      | Total Hardness                                   | mg/L      | 488                           | 142                  | 276                         |
| 11      | Chloride   | mg/L      | 320                           | 43                   | 162                         |
| 12      | Sulphate   | mg/L      | 36                            | 20                   | 31                          |
| 13      | Chromium   | mg/L      | <0.03                         | <0.03                | <0.03                       |
| 14      | Cyanide  | mg/L      | Nil                           | Nil                  | Nil                         |
| 15      | Copper   | mg/L      | <0.01                         | <0.01                | <0.01                       |
| 16      | Lead   | mg/L      | <0.005                        | <0.005               | <0.005                      |
| 17      | Iron   | mg/L      | <0.1                          | <0.1                 | <0.1                        |
| 18      | Zinc   | mg/L      | <0.02                         | <0.02                | <0.02                       |
| 19      | Calcium  | mg/L      | 112                           | 24                   | 59                          |
| 20      | Magnesium  | mg/L      | 51                            | 20                   | 31                          |
| 21      | Silica   | mg/L      | 5.6                           | 5.2                  | 4.2                         |
| 22      | MPN ( Total Coliform)                            | No./100ml | NIL                           | NIL                  | NIL                         |

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**Monthly Comparison of Water sample of Surat Drums Factory Borewell**

| Sr. No. | Parameters                                       | Unit       | May-16 | Jun-16 | July-16 | Aug-16 | Sept-16 | Oct-16 |
|---------|--|------------|--------|--------|---------|--------|---------|--------|
| 1       | Temperature                                      | °C         | 31.5   | 31.0   | 31.0    | 30.5   | 29.5    | 28.5   |
| 2       | pH   | pH-Unit    | 7.25   | 7.17   | 7.29    | 7.22   | 7.85    | 7.69   |
| 3       | Total Dissolved Solids (TDS)                     | mg/l       | 1185   | 1164   | 1133    | 1284   | 1075    | 911    |
| 4       | Turbidity  | NTU        | 2.0    | 2.4    | 2.0     | 2.6    | 2.2     | 2.0    |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )       | mg/l       | 0.8    | 0.6    | 0.8     | 0.9    | 0.8     | 0.4    |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/l       | 5.8    | 4.6    | 4.2     | 4.8    | 3.6     | 4      |
| 7       | Dissolved Oxygen                                 | mg/l       | 6.2    | 6.1    | 6.0     | 6.4    | 6.2     | 5.6    |
| 8       | BOD  | mg/l       | <04    | <04    | <04     | <04    | <04     | <04    |
| 9       | Total alkalinity                                 | mg/l       | 316    | 326    | 316     | 385    | 324     | 348    |
| 10      | Total Hardness                                   | mg/l       | 576    | 584    | 576     | 612    | 510     | 488    |
| 11      | Chloride   | mg/l       | 508    | 517    | 507     | 525    | 384     | 320    |
| 12      | Sulphate   | mg/l       | 29     | 34     | 39      | 45     | 50      | 36     |
| 13      | Chromium   | mg/l       | <0.03  | <0.03  | <0.03   | <0.03  | <0.03   | <0.03  |
| 14      | Cyanide  | mg/l       | Nil    | Nil    | Nil     | Nil    | Nil     | Nil    |
| 15      | Copper   | mg/l       | <0.01  | <0.01  | <0.01   | <0.01  | <0.01   | <0.01  |
| 16      | Lead   | mg/l       | <0.005 | <0.005 | <0.005  | <0.005 | <0.005  | <0.005 |
| 17      | Iron   | mg/l       | <0.1   | <0.1   | <0.1    | <0.1   | <0.1    | <0.1   |
| 18      | Zinc   | mg/l       | <0.02  | <0.02  | <0.02   | <0.02  | <0.02   | <0.02  |
| 19      | Calcium  | mg/l       | 192    | 199    | 184     | 148    | 127     | 112    |
| 20      | Magnesium  | mg/l       | 23     | 21     | 28.2    | 59     | 47      | 51     |
| 21      | Silica   | mg/l       | 6.5    | 6.9    | 7.8     | 6.8    | 6.2     | 5.6    |
| 22      | MPN (Total Coliform)                             | No./100 ml | NIL    | NIL    | NIL     | NIL    | NIL     | NIL    |

**Monthly Comparison of Water sample of Amar Honda Borewell**

| Sr. No. | Parameters                                      | Unit       | May-16 | Jun-16 | July-16 | Aug-16 | Sept-16 | Oct-16 |
|---------|---|------------|--------|--------|---------|--------|---------|--------|
| 1       | Temperature                                     | °C         | -      | -      | -       | 30.0   | 29      | 28     |
| 2       | pH  | pH-Unit    | -      | -      | -       | 7.51   | 7.51    | 7.80   |
| 3       | Total Dissolved Solids (TDS)                    | mg/l       | -      | -      | -       | 231    | 201     | 284    |
| 4       | Turbidity                                       | NTU        | -      | -      | -       | 1.9    | 1.4     | 1.8    |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )      | mg/l       | -      | -      | -       | 0.6    | 0.5     | 0.6    |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>-</sup> | mg/l       | -      | -      | -       | 0.2    | 0.8     | 0.6    |
| 7       | Dissolved Oxygen                                | mg/l       | -      | -      | -       | 5.1    | 5.6     | 5.0    |
| 8       | BOD   | mg/l       | -      | -      | -       | <04    | <04     | <04    |
| 9       | Total alkalinity                                | mg/l       | -      | -      | -       | 285    | 220     | 216    |
| 10      | Total Hardness                                  | mg/l       | -      | -      | -       | 185    | 130     | 142    |
| 11      | Chloride  | mg/l       | -      | -      | -       | 42     | 86      | 43     |
| 12      | Sulphate  | mg/l       | -      | -      | -       | 23     | 28      | 20     |
| 13      | Chromium  | mg/l       | -      | -      | -       | <0.03  | <0.03   | <0.03  |
| 14      | Cyanide   | mg/l       | -      | -      | -       | Nil    | Nil     | Nil    |
| 15      | Copper  | mg/l       | -      | -      | -       | <0.01  | <0.01   | <0.01  |
| 16      | Lead  | mg/l       | -      | -      | -       | <0.005 | <0.005  | <0.005 |
| 17      | Iron  | mg/l       | -      | -      | -       | <0.1   | <0.1    | <0.1   |
| 18      | Zinc  | mg/l       | -      | -      | -       | <0.02  | <0.02   | <0.02  |
| 19      | Calcium   | mg/l       | -      | -      | -       | 26     | 32      | 24     |
| 20      | Magnesium                                       | mg/l       | -      | -      | -       | 29     | 12      | 20     |
| 21      | Silica  | mg/l       | -      | -      | -       | 4.3    | 4.8     | 5.2    |
| 22      | MPN (Total Coliform)                            | No./100 ml | NIL    | NIL    | NIL     | NIL    | NIL     | NIL    |

**Monthly Comparison of Water sample of Ganesh Automobile Borewell**

| Sr. No. | Parameters                                      | Unit       | May-16 | Jun-16 | July-16 | Aug-16 | Sept-16 | Oct-16 |
|---------|---|------------|--------|--------|---------|--------|---------|--------|
| 1       | Temperature                                     | °C         | 32.0   | 31.9   | 30.0    | 29.5   | 29.5    | 28.5   |
| 2       | pH  | pH-Unit    | 7.45   | 7.42   | 7.49    | 7.36   | 7.62    | 7.36   |
| 3       | Total Dissolved Solids (TDS)                    | mg/l       | 624    | 589    | 611     | 708    | 654     | 544    |
| 4       | Turbidity                                       | NTU        | 1.9    | 1.6    | 1.2     | 1.6    | 1.2     | 1.4    |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )      | mg/l       | 0.6    | 0.4    | 0.2     | 0.8    | 0.6     | 0.8    |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>-</sup> | mg/l       | 1.0    | 1.4    | 1.8     | 2.1    | 2.6     | 1.9    |
| 7       | Dissolved Oxygen                                | mg/l       | 5.4    | 5.9    | 5.8     | 6.0    | 6.4     | 6.0    |
| 8       | BOD   | mg/l       | <04    | <04    | <04     | <04    | <04     | <04    |
| 9       | Total alkalinity                                | mg/l       | 282    | 288    | 282     | 301    | 265     | 250    |
| 10      | Total Hardness                                  | mg/l       | 350    | 356    | 348     | 450    | 296     | 276    |
| 11      | Chloride  | mg/l       | 195    | 210    | 195     | 210    | 185     | 162    |
| 12      | Sulphate  | mg/l       | 20     | 28     | 34      | 38     | 43      | 31     |
| 13      | Chromium  | mg/l       | <0.03  | <0.03  | <0.03   | <0.03  | <0.03   | <0.03  |
| 14      | Cyanide   | mg/l       | Nil    | Nil    | Nil     | Nil    | Nil     | Nil    |
| 15      | Copper  | mg/l       | <0.01  | <0.01  | <0.01   | <0.01  | <0.01   | <0.01  |
| 16      | Lead  | mg/l       | <0.005 | <0.005 | <0.005  | <0.005 | <0.005  | <0.005 |
| 17      | Iron  | mg/l       | <0.1   | <0.1   | <0.1    | <0.1   | <0.1    | <0.1   |
| 18      | Zinc  | mg/l       | <0.02  | <0.02  | <0.02   | <0.02  | <0.02   | <0.02  |
| 19      | Calcium   | mg/l       | 83     | 90     | 80      | 90     | 87      | 59     |
| 20      | Magnesium                                       | mg/l       | 35     | 32     | 36      | 55     | 19      | 31     |
| 21      | Silica  | mg/l       | 6.0    | 6.2    | 5.1     | 5.8    | 5.6     | 4.2    |
| 22      | MPN (Total Coliform)                            | No./100 ml | NIL    | NIL    | NIL     | NIL    | NIL     | NIL    |

**Monthly Comparison of Water sample of Olpad Frozen Foods Pvt. Ltd. Borewell**

| Sr. No. | Parameters                                       | Unit       | May-16 | Jun-16 | July-16 | Aug-16 | Sept-16 | Oct-16 |
|---------|--|------------|--------|--------|---------|--------|---------|--------|
| 1       | Temperature                                      | °C         | -      | -      | 31.0    | -      | -       | -      |
| 2       | pH   | pH-Unit    | -      | -      | 7.38    | -      | -       | -      |
| 3       | Total Dissolved Solids (TDS)                     | mg/l       | -      | -      | 231     | -      | -       | -      |
| 4       | Turbidity  | NTU        | -      | -      | 1.4     | -      | -       | -      |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )       | mg/l       | -      | -      | 0.4     | -      | -       | -      |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/l       | -      | -      | 0.4     | -      | -       | -      |
| 7       | Dissolved Oxygen                                 | mg/l       | -      | -      | 5.4     | -      | -       | -      |
| 8       | BOD  | mg/l       | -      | -      | <04     | -      | -       | -      |
| 9       | Total alkalinity                                 | mg/l       | -      | -      | 200     | -      | -       | -      |
| 10      | Total Hardness                                   | mg/l       | -      | -      | 129     | -      | -       | -      |
| 11      | Chloride   | mg/l       | -      | -      | 38      | -      | -       | -      |
| 12      | Sulphate   | mg/l       | -      | -      | 19      | -      | -       | -      |
| 13      | Chromium   | mg/l       | -      | -      | <0.03   | -      | -       | -      |
| 14      | Cyanide  | mg/l       | -      | -      | Nil     | -      | -       | -      |
| 15      | Copper   | mg/l       | -      | -      | <0.01   | -      | -       | -      |
| 16      | Lead   | mg/l       | -      | -      | <0.005  | -      | -       | -      |
| 17      | Iron   | mg/l       | -      | -      | <0.1    | -      | -       | -      |
| 18      | Zinc   | mg/l       | -      | -      | <0.02   | -      | -       | -      |
| 19      | Calcium  | mg/l       | -      | -      | 21      | -      | -       | -      |
| 20      | Magnesium  | mg/l       | -      | -      | 19      | -      | -       | -      |
| 21      | Silica   | mg/l       | -      | -      | 7.8     | -      | -       | -      |
| 22      | MPN (Total Coliform)                             | No./100 ml | NIL    | NIL    | NIL     | NIL    | NIL     | NIL    |

**Monthly Comparison of Water sample of Nemlaxmi Books Borewell**

| Sr. No. | Parameters                                      | Unit       | May-16 | Jun-16 | July-16 | Aug-16 | Sept-16 | Oct-16 |
|---------|---|------------|--------|--------|---------|--------|---------|--------|
| 1       | Temperature                                     | °C         | 32.5   | 31.7   | -       | -      | -       | -      |
| 2       | pH  | pH-Unit    | 7.39   | 7.35   | -       | -      | -       | -      |
| 3       | Total Dissolved Solids (TDS)                    | mg/l       | 260    | 248    | -       | -      | -       | -      |
| 4       | Turbidity                                       | NTU        | 1.4    | 1.0    | -       | -      | -       | -      |
| 5       | Nitrate as (NO <sub>3</sub> <sup>-</sup> )      | mg/l       | 0.4    | 0.2    | -       | -      | -       | -      |
| 6       | Total Phosphate as PO <sub>4</sub> <sup>-</sup> | mg/l       | 0.8    | 0.6    | -       | -      | -       | -      |
| 7       | Dissolved Oxygen                                | mg/l       | 5.0    | 5.2    | -       | -      | -       | -      |
| 8       | BOD   | mg/l       | <04    | <04    | -       | -      | -       | -      |
| 9       | Total alkalinity                                | mg/l       | 200    | 208    | -       | -      | -       | -      |
| 10      | Total Hardness                                  | mg/l       | 130    | 136    | -       | -      | -       | -      |
| 11      | Chloride  | mg/l       | 38     | 52     | -       | -      | -       | -      |
| 12      | Sulphate  | mg/l       | 10     | 14     | -       | -      | -       | -      |
| 13      | Chromium  | mg/l       | <0.03  | <0.03  | -       | -      | -       | -      |
| 14      | Cyanide   | mg/l       | Nil    | Nil    | -       | -      | -       | -      |
| 15      | Copper  | mg/l       | <0.01  | <0.01  | -       | -      | -       | -      |
| 16      | Lead  | mg/l       | <0.005 | <0.005 | -       | -      | -       | -      |
| 17      | Iron  | mg/l       | <0.1   | <0.1   | -       | -      | -       | -      |
| 18      | Zinc  | mg/l       | <0.02  | <0.02  | -       | -      | -       | -      |
| 19      | Calcium   | mg/l       | 26     | 29     | -       | -      | -       | -      |
| 20      | Magnesium                                       | mg/l       | 16     | 16     | -       | -      | -       | -      |
| 21      | Silica  | mg/l       | 5.7    | 5.0    | -       | -      | -       | -      |
| 22      | MPN (Total Coliform)                            | No./100 ml | NIL    | NIL    | NIL     | NIL    | NIL     | NIL    |

**ANNEXURE 16 – Effluent Sampling & Analysis Methodology, Analysis Report & Month Wise Comparison**

| Sr. No. | Particulars | Details   |
|---------|-------------|---|
| 1.      | Temperature | Temperature was measured by using calibrated thermometer.   |
| 2.      | pH          | pH analysis was carried out on site with the help of handy pH meter. pH analysis was also carried out in the laboratory after receiving the sample at room temperature. Only laboratory pH results have been reported in test report.   |
| 3.      | Colour      | Samples were filtered through whatman 40 filter paper to remove the turbidity and colour intensity was measured spectrophotometrically at 470 nm. Calculation was done by comparing the absorbance found during the measurement with standard calibration curve.  |
| 4.      | TDS         | Measured quantity of filtered sample was evaporated into previously weighed evaporating dish. TDS was calculated on weight difference basis.  |
| 5.      | Chloride    | Sample of measured quantity was titrated against standard Silver Nitrate using potassium chromate as indicator. Chloride was calculated from the volume of $\text{AgNO}_3$ standard solution used during the titration.   |
| 6.      | Sulphate    | A measured volume of sample was acidified by Concentrated HCl and evaporated on hot plate till the dryness of the sample. Re added HCl and distilled water and Sulphate was precipitated as $\text{BaSO}_4$ using 5 % $\text{BaCl}_2$ . Precipitate were dried and gravimetrically estimated.   |
| 7.      | Silica      | Suitable aliquot of the sample was taken and 1:1 HCl was added. Ammonium molybdate was also added for colour development. Colour intensity was measured spectrophotometrically after the addition of 1.5 ml oxalic acid at 410 nm.  |
| 8.      | Nitrate     | Estimated volume of sample was dried. Dried precipitate of nitrate was dissolved in phenol disulphonic acid by rubbing with rod and water was added for complete dissolution. pH was raised with KOH solution, yellow color developed and color intensity was measured spectrophotometrically.  |
| 9.      | DO          | Suitable aliquot of the sample was taken in BOD bottle. Manganous Sulphate solution and Alkali Iodide Azide solution were added in the sample. Precipitates developed are dissolved by the addition of conc. Sulphuric acid. Sample was brought to titration against known sodium thiosulphate solution using starch as an indicator.               |
| 10.     | BOD         | Measured quantity of sample was placed in airtight bottle along with bacterial and nutrient chemical. It was kept under incubation at specific temperature (usually 27o C) and for specific time usually 3 Days). The dissolved Oxygen quantity was measured before and after incubation, Iodometrically. BOD was estimated on DO difference basis. |
| 11.     | Chromium    | Chromium was oxidized by permanganate to chromate after digestion with $\text{HNO}_3$ and $\text{H}_2\text{SO}_4$ and violet colour produced after the reaction of symmetrical diphenyl carbazide to chromate ion and intensity of colour was measured spectrophotometrically at 510 nm.  |

|     |                            |  |
|-----|----------------------------|--|
| 12. | Copper                     | Cuprous ion in neutral or slightly acidic solution react with 2, 9 dimethyl 1,10 phenanthroline (neocuproin) form a complex in which 2 moles of neocuproin are bound by 1 mole of cuprous ion. The complex was then extracted by chloroform in presence of hydroxyl amine hydrochloride and sodium citrate. Colour intensity was measured spectrophotometrically.  |
| 13. | Iron                       | Iron was reduced to ferrous state by boiling with acid and hydroxylamine. Then it was treated with 1,10 Phenanthroline at pH 5.2 to 6.0 and orange or red color developed. Optical density was measured on spectrophotometer.  |
| 14. | Most Probable Number (MPN) | Multiple fermentation Technique was applied for the estimation of MPN.   |
| 15. | Oil & Grease               | Dissolved or emulsified oil and grease was extracted from water by petroleum ether at room temperature. Petroleum ether was evaporated in water bath. Remaining Oil and grease was measured gravimetrically.   |
| 16. | Boron                      | 4 ml of curcumin solution was added in known volume of water sample and it was dried at 550C and residues were dissolved in acetone solution. Intensity of colour was measured spectrophotometrically after the development of colour.   |
| 17. | Fluoride                   | Under acidic condition fluoride reacts with Zirconium oxy chloride and SPAND and bleaching of colour was measured specrophotometrically.   |
| 18. | Phenolic Compound          | Suitable aliquot was distilled out after adjusting the pH 4.0 with phosphoric acid. Ammonium hydroxide was added to adjust pH 10 and 4-aminoantipyrine was added followed by the addition of Potassium Ferricyanide. Colour intensity was measured spectrophotometrically at 510 nm wave length.   |
| 19. | COD                        | Take a suitable amount of sample make the volume upto 40 ml, add 0.4 gm HgSO <sub>4</sub> . Add 10 ml 0.25N Potassium Dichromate reagent. Add 30 ml Conc. H <sub>2</sub> SO <sub>4</sub> containing Ag <sub>2</sub> SO <sub>4</sub> , cool at room temperature. Continue swirling and mixing while adding the sulfuric Acid reagent. Attach Flask to Condenser and turn on cooling Water. Reflux for 2 Hrs at 150 °C. Cool & wash down condenser with distilled water. Disconnect reflux condenser & dilute mixture to about twice its volume with distilled water. Cool to Room Temperature. Titrate excess K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> with FAS, using ferroin as an indicator. End Point: - Wine Red colour same for blank. |
| 20. | Ammonical Nitrogen         | Take 250 ml sample or an aliquot of sample in a flask and add 10ML Sodium tetra borate buffer & adjust pH 9.5 with 6 N NaOH. Transfer it in distillation assembly & omit it in 25 ml plane boric acid solution. Take suitable aliquot of sample and make it up to 25 ml with ammonia free distilled water. Add 2 drops of Rochelle Solution and 1ml Nessler Reagent and make up the volume 50 ml with distilled water. Wait for 10 min. for color development. Set absorbance 0 at 410 nm using blank as reference. Now note the absorbance reading for each sample at 410 nm.   |
| 21. | Hexavalent Chromium        | Take 50ml of sample and add 1:1 sulphuric acid solution to adjust pH 1.0±0.3. Transfer quantitatively to each of these solutions in to 100 ml  |

|     |                              |  |
|-----|------------------------------|--|
|     |                              | volumetric flask and add 2.0 ml diphenyl carbazide solution. Adjust the volume 100 ml with distilled water and mix well. Stand for 10 to 15 minute. Run the blank in similar way. Take abs at 540 nm wave length and plot the curve Conc vs Abs and calculate the OD factor.   |
| 22. | Total<br>Suspended<br>Solids | Wet the filter paper with a small volume of double distilled water and dry at 103°C to 105°C for 1 hour in hot air oven, cool in a desiccator and Weigh. Now put the weighed filter paper in TSS assembly and add suitable amount of sample in it and again dry atleast for 1 hour at 103°C to 105°C in a hot air oven, cool in a desiccator and take final weigh. |



**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
**ENVIRONMENT ENGINEERS & AUDITORS**

Issue Date: 20/05/2016

**Test Report**

**EFFLUENT ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QE/5.10/02 A/Effluent/HCC/Rev.0-01/05-2016**

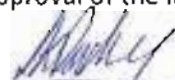
Name of Industry : Hindusthan Chemicals Company,  
 Olpad, Dist. Surat.  
 Sample Collected On : 10/05/2016  
 Sample Received on : 12/05/2016  
 Sample Analysed & Completion : 12/05/2016 to 17/05/2016  
 Sample ID No. : ERM/ECSS/2016/05/867, 868  
 Quantity/No. of Sample : 2+2+10 lit. /3 Nos.  
 Protocol (Purpose) : As per Work Order  
 Packing/ Seal : Packed  
 Sample Collected By : Mr. Bhavesh Patel  
 Analysis Method Followed : Standard methods for the examination of water & waste water,  
 APHA-22<sup>nd</sup> Edition, 2012 & IS 3025

| Sr. No. | Parameters             | Unit  | Results           |              | Limit   |
|---------|------------------------|---|-------------------|--------------|---------|
|         |                        |   | Equalization Tank | Final Outlet |         |
| 01.     | pH                     | pH Unit   | 7.30              | 7.45         | 6.5-8.5 |
| 02.     | Temperature            | °C  | 32.0              | 32.5         | 40      |
| 03.     | Colour                 | Hazen   | 17                | 15           | 100     |
| 04.     | Total Dissolved Solids | mg/L  | 1010              | 760          | 2100    |
| 05.     | Total Suspended Solids | mg/L  | 42                | 30           | 100     |
| 06.     | COD                    | mg/L  | 72                | 35           | 100     |
| 07.     | BOD (5 days at 20°C)   | mg/L  | 25                | 18           | 30      |
| 08.     | Oil & Grease           | mg/L  | 4.5               | 3.0          | 10      |
| 09.     | Phenolic compound      | mg/L  | <0.1              | <0.1         | 1.0     |
| 10.     | Cyanides               | mg/L  | 0.2               | 0.1          | 0.2     |
| 11.     | Ammonical Nitrogen     | mg/L  | 17.6              | 15.8         | 50      |
| 12.     | Hexavalent Chromium    | mg/L  | <0.03             | <0.03        | 0.1     |
| 13.     | Total Chromium         | mg/L  | <0.03             | <0.03        | 2.0     |
| 14.     | Chloride               | mg/L  | 181               | 125          | 600     |
| 15.     | Fluoride               | mg/l  | 0.6               | 0.4          | 1.5     |
| 16.     | Sulphates              | mg/L  | 73                | 64           | 1000    |
| 17.     | Sulphides              | mg/L  | <0.2              | <0.2         | 2       |
| 18.     | Bio-assay              | (Survival of Fish in 100% Effluent after 96 hrs.) | -                 | 90           | 90      |

Note: (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

  
 CHEMIST

  
 AUTHORIZED SIGNATORY  
 (Sunilkumar Pandey)

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 20/06/2016

Test Report

EFFLUENT ANALYSIS REPORT

TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/Effluent/HCC/Rev.0-01/06-2016

Name of Industry : Hindusthan Chemicals Company,  
Olpad, Dist. Surat.  
Sample Collected On : 11/06/2016  
Sample Received on : 13/06/2016  
Sample Analysed & Completion : 13/06/2016 to 18/06/2016  
Sample ID No. : ERM/ECSS/2016/06/1074, 1075  
Quantity/No. of Sample : 2+2+10 lit. /3 Nos.  
Protocol (Purpose) : As per Work Order  
Packing/ Seal : Packed  
Sample Collected By : Mr. Bhavesh Patel  
Analysis Method Followed : Standard methods for the examination of water & waste water,  
APHA-22<sup>nd</sup> Edition, 2012 & IS 3025

| Sr. No. | Parameters             | Unit  | Results           |              | Limit   |
|---------|------------------------|---|-------------------|--------------|---------|
|         |                        |   | Equalization Tank | Final Outlet |         |
| 01.     | pH                     | pH Unit   | 7.25              | 7.30         | 6.5-8.5 |
| 02.     | Temperature            | °C  | 31.5              | 31.0         | 40      |
| 03.     | Colour                 | Hazen   | 15                | 12           | 100     |
| 04.     | Total Dissolved Solids | mg/L  | 1154              | 813          | 2100    |
| 05.     | Total Suspended Solids | mg/L  | 47                | 36           | 100     |
| 06.     | COD                    | mg/L  | 58                | 34           | 100     |
| 07.     | BOD (5 days at 20°C)   | mg/L  | 20                | 13           | 30      |
| 08.     | Oil & Grease           | mg/L  | 4.0               | 3.4          | 10      |
| 09.     | Phenolic compound      | mg/L  | <0.1              | <0.1         | 1.0     |
| 10.     | Cyanides               | mg/L  | 0.1               | 0.05         | 0.2     |
| 11.     | Ammonical Nitrogen     | mg/L  | 15.1              | 12.8         | 50      |
| 12.     | Hexavalent Chromium    | mg/L  | <0.03             | <0.03        | 0.1     |
| 13.     | Total Chromium         | mg/L  | <0.03             | <0.03        | 2.0     |
| 14.     | Chloride               | mg/L  | 156               | 115          | 600     |
| 15.     | Fluoride               | mg/L  | 0.5               | 0.3          | 1.5     |
| 16.     | Sulphates              | mg/L  | 70                | 62           | 1000    |
| 17.     | Sulphides              | mg/L  | <0.2              | <0.2         | 2       |
| 18.     | Bio-assay              | (Survival of Fish in 100% Effluent after 96 hrs.) | -                 | 90           | 90      |

Note: (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

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Issue Date: 16/07/2016

**Test Report**

**EFFLUENT ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/Effluent/HCC/Rev.0-01/07-2016**

Name of Industry : Hindusthan Chemicals Company,  
Olpad, Dist. Surat.  
Sample Collected On : 07/07/2016  
Sample Received on : 08/07/2016  
Sample Analysed & Completion : 08/07/2016 to 12/07/2016  
Sample ID No. : ERM/ECSS/2016/07/1209, 1210  
Quantity/No. of Sample : 2+2+10 litres /3 Nos.  
Protocol (Purpose) : As per Work Order  
Packing/ Seal : Packed  
Sample Collected By : Mr. Bhavesh Patel  
Analysis Method Followed : Standard methods for the examination of water & waste water,  
APHA-22<sup>nd</sup> Edition, 2012 & IS 3025

| Sr. No. | Parameters             | Unit  | Results           |              | Limit   |
|---------|------------------------|---|-------------------|--------------|---------|
|         |                        |   | Equalization Tank | Final Outlet |         |
| 01.     | pH                     | pH Unit   | 7.18              | 7.45         | 6.5-8.5 |
| 02.     | Temperature            | °C  | 32.0              | 32.5         | 40      |
| 03.     | Colour                 | Hazen   | 18                | 15           | 100     |
| 04.     | Total Dissolved Solids | mg/L  | 1010              | 760          | 2100    |
| 05.     | Total Suspended Solids | mg/L  | 38                | 28           | 100     |
| 06.     | COD                    | mg/L  | 40                | 26           | 100     |
| 07.     | BOD (5 days at 20°C)   | mg/L  | 08                | <4           | 30      |
| 08.     | Oil & Grease           | mg/L  | 1.8               | <1           | 10      |
| 09.     | Phenolic compound      | mg/L  | <0.1              | <0.1         | 1.0     |
| 10.     | Cyanides               | mg/L  | NIL               | NIL          | 0.2     |
| 11.     | Ammonical Nitrogen     | mg/L  | 17.6              | 15.8         | 50      |
| 12.     | Hexavalent Chromium    | mg/L  | <0.03             | <0.03        | 0.1     |
| 13.     | Total Chromium         | mg/L  | <0.03             | <0.03        | 2.0     |
| 14.     | Chloride               | mg/L  | 54                | 44           | 600     |
| 15.     | Fluoride               | mg/L  | 0.6               | 0.4          | 1.5     |
| 16.     | Sulphates              | mg/L  | 73                | 64           | 1000    |
| 17.     | Sulphides              | mg/L  | <0.2              | <0.2         | 2       |
| 18.     | Bio-assay              | (Survival of Fish in 100% Effluent after 96 hrs.) | -                 | 100          | 90      |

Note: (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 30/08/2016

**Test Report**  
**EFFLUENT ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/Effluent/HCC/Rev.0-01/08-2016**

Name of Industry : Hindusthan Chemicals Company,  
Olpad, Dist. Surat.  
Sample Collected On : 05/08/2016  
Sample Received on : 06/08/2016  
Sample Analysed & Completion : 06/08/2016 to 10/08/2016  
Sample ID No. : ERM/ECSS/2016/08/1385, 1386  
Quantity/No. of Sample : 2+2+10 litres /3 Nos.  
Protocol (Purpose) : As per Work Order  
Packing/ Seal : Packed  
Sample Collected By : Mr. Bhavesh Patel  
Analysis Method Followed : Standard methods for the examination of water & waste water, APHA-22<sup>nd</sup> Edition, 2012 & IS 3025

| Sr. No. | Parameters             | Unit  | Results           |              | Limit   |
|---------|------------------------|---|-------------------|--------------|---------|
|         |                        |   | Equalization Tank | Final Outlet |         |
| 01.     | pH                     | pH Unit   | 7.35              | 7.85         | 6.5-8.5 |
| 02.     | Temperature            | °C  | 28                | 28           | 40      |
| 03.     | Colour                 | Hazen   | 19                | 16           | 100     |
| 04.     | Total Dissolved Solids | mg/L  | 1185              | 847          | 2100    |
| 05.     | Total Suspended Solids | mg/L  | 48                | 32           | 100     |
| 06.     | COD                    | mg/L  | 36                | 20           | 100     |
| 07.     | BOD (5 days at 20°C)   | mg/L  | 06                | <4           | 30      |
| 08.     | Oil & Grease           | mg/L  | 2.1               | <1           | 10      |
| 09.     | Phenolic compound      | mg/L  | <0.1              | <0.1         | 1.0     |
| 10.     | Cyanides               | mg/L  | 0.1               | 0.08         | 0.2     |
| 11.     | Ammonical Nitrogen     | mg/L  | 15.1              | 11.9         | 50      |
| 12.     | Hexavalent Chromium    | mg/L  | <0.03             | <0.03        | 0.1     |
| 13.     | Total Chromium         | mg/L  | <0.03             | <0.03        | 2.0     |
| 14.     | Chloride               | mg/L  | 59                | 48           | 600     |
| 15.     | Fluoride               | mg/L  | 0.5               | 0.3          | 1.5     |
| 16.     | Sulphates              | mg/L  | 78                | 69           | 1000    |
| 17.     | Sulphides              | mg/L  | <0.2              | <0.2         | 2       |
| 18.     | Bio-assay              | (Survival of Fish in 100% Effluent after 96 hrs.) | -                 | 100          | 90      |

Note: (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

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AUTHORIZED SIGNATORY  
(Sunilkumar Pandey)



**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 16/09/2016

**TEST REPORT**

**EFFLUENT ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/Effluent/HCC/Rev.0-01/09-2016**

Name of Industry : Hindusthan Chemicals Company,  
Olpad, Dist. Surat.  
Sample Collected On : 09/09/2016  
Sample Received on : 10/09/2016  
Sample Analysed & Completion : 10/09/2016 to 14/09/2016  
Sample ID No. : ERM/ECSS/2016/09/1574, 1575  
Quantity/No. of Sample : 2+2+10 litres /3 Nos. in plastic carboy  
Protocol (Purpose) : As per Work Order  
Packing/ Seal : Packed  
Sample Collected By : Mr. Bhavesh Patel  
Analysis Method Followed : Standard methods for the examination of water & waste water, APHA-22<sup>nd</sup> Edition, 2012 & IS 3025

| Sr. No. | Parameters             | Unit  | Results           |              | Limit   |
|---------|------------------------|---|-------------------|--------------|---------|
|         |                        |   | Equalization Tank | Final Outlet |         |
| 01.     | pH                     | pH Unit   | 7.67              | 7.42         | 6.5-8.5 |
| 02.     | Temperature            | °C  | 28                | 28           | 40      |
| 03.     | Colour                 | Hazen   | 14                | 12           | 100     |
| 04.     | Total Dissolved Solids | mg/L  | 1084              | 768          | 2100    |
| 05.     | Total Suspended Solids | mg/L  | 41                | 29           | 100     |
| 06.     | COD                    | mg/L  | 32                | 18           | 100     |
| 07.     | BOD (5 days at 20°C)   | mg/L  | 04                | <4           | 30      |
| 08.     | Oil & Grease           | mg/L  | 3.0               | <1           | 10      |
| 09.     | Phenolic compound      | mg/L  | <0.1              | <0.1         | 1.0     |
| 10.     | Cyanides               | mg/L  | 0.1               | 0.04         | 0.2     |
| 11.     | Ammonical Nitrogen     | mg/L  | 13.7              | 10.6         | 50      |
| 12.     | Hexavalent Chromium    | mg/L  | <0.03             | <0.03        | 0.1     |
| 13.     | Total Chromium         | mg/L  | <0.03             | <0.03        | 2.0     |
| 14.     | Chloride               | mg/L  | 52                | 44           | 600     |
| 15.     | Fluoride               | mg/L  | 0.4               | 0.2          | 1.5     |
| 16.     | Sulphates              | mg/L  | 68                | 58           | 1000    |
| 17.     | Sulphides              | mg/L  | <0.2              | <0.2         | 2       |
| 18.     | Bio-assay              | (Survival of Fish in 100% Effluent after 96 hrs.) | -                 | 90           | 90      |

Note: (1) These results relate to the sample tested only.

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**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**  
ENVIRONMENT ENGINEERS & AUDITORS

Issue Date: 22/10/2016

**TEST REPORT**

**EFFLUENT ANALYSIS REPORT**

**TEST REPORT NO: ERM/ECSS/QF/5.10/02 A/Effluent/HCC/Rev.0-01/10-2016**

Name of Industry : Hindusthan Chemicals Company,  
Olpad, Dist. Surat.  
Sample Collected On : 14/10/2016  
Sample Received on : 15/10/2016  
Sample Analysed & Completion : 15/10/2016 to 19/10/2016  
Sample ID No. : ERM/ECSS/2016/10/1716, 1717  
Quantity/No. of Sample : 2+2+10 litres /3 Nos. in plastic carboy  
Protocol (Purpose) : As per Work Order  
Packing/ Seal : Packed  
Sample Collected By : Mr. Bhavesh Patel  
Analysis Method Followed : Standard methods for the examination of water & waste water, APHA-22<sup>nd</sup> Edition, 2012 & IS 3025

| Sr. No. | Parameters             | Unit  | Results           |              | Limit   |
|---------|------------------------|---|-------------------|--------------|---------|
|         |                        |   | Equalization Tank | Final Outlet |         |
| 01.     | pH                     | pH Unit   | 7.85              | 7.67         | 6.5-8.5 |
| 02.     | Temperature            | °C  | 30                | 29           | 40      |
| 03.     | Colour                 | Hazen   | 16                | 14           | 100     |
| 04.     | Total Dissolved Solids | mg/L  | 1142              | 818          | 2100    |
| 05.     | Total Suspended Solids | mg/L  | 48                | 32           | 100     |
| 06.     | COD                    | mg/L  | 34                | 20           | 100     |
| 07.     | BOD (5 days at 20°C)   | mg/L  | 04                | <4           | 30      |
| 08.     | Oil & Grease           | mg/L  | 2.7               | <1           | 10      |
| 09.     | Phenolic compound      | mg/L  | <0.1              | <0.1         | 1.0     |
| 10.     | Cyanides               | mg/L  | 0.1               | 0.03         | 0.2     |
| 11.     | Ammonical Nitrogen     | mg/L  | 15.7              | 12.9         | 50      |
| 12.     | Hexavalent Chromium    | mg/L  | <0.03             | <0.03        | 0.1     |
| 13.     | Total Chromium         | mg/L  | <0.03             | <0.03        | 2.0     |
| 14.     | Chloride               | mg/L  | 58                | 51           | 600     |
| 15.     | Fluoride               | mg/L  | 0.6               | 0.4          | 1.5     |
| 16.     | Sulphates              | mg/L  | 72                | 62           | 1000    |
| 17.     | Sulphides              | mg/L  | <0.2              | <0.2         | 2       |
| 18.     | Bio-assay              | (Survival of Fish in 100% Effluent after 96 hrs.) | -                 | 90           | 90      |

Note: (1) These results relate to the sample tested only.

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**Monthly Comparison of Effluent sample (Equalization Tank)**

| Sr. No. | Parameters             | Unit  | May-16 | Jun-16 | July-16 | Aug-16 | Sept-16 | Oct-16 |
|---------|------------------------|---|--------|--------|---------|--------|---------|--------|
| 1       | pH                     | pH-Unit   | 7.30   | 7.25   | 7.18    | 7.35   | 7.67    | 7.85   |
| 2       | Temperature            | °C  | 32.0   | 31.5   | 32.0    | 28     | 28      | 30     |
| 3       | Colour                 | Hazen   | 17     | 15     | 18      | 19     | 14      | 16     |
| 4       | Total Dissolved Solids | mg/l  | 1010   | 1154   | 1010    | 1185   | 1084    | 1142   |
| 5       | Total Suspended Solids | mg/l  | 42     | 47     | 38      | 48     | 41      | 48     |
| 6       | COD                    | mg/l  | 72     | 58     | 40      | 36     | 32      | 34     |
| 7       | BOD (5 days at 20°C)   | mg/l  | 25     | 20     | 08      | 06     | 04      | 04     |
| 8       | Oil & Grease           | mg/l  | 4.5    | 4.0    | 1.8     | 2.1    | 3.0     | 2.7    |
| 9       | Phenolic compound      | mg/l  | <0.1   | <0.1   | <0.1    | <0.1   | <0.1    | <0.1   |
| 10      | Cyanides               | mg/l  | 0.2    | 0.1    | NIL     | 0.1    | 0.1     | 0.1    |
| 11      | Ammonical Nitrogen     | mg/l  | 17.6   | 15.1   | 17.6    | 15.1   | 13.7    | 15.7   |
| 12      | Hexavalent Chromium    | mg/l  | <0.03  | <0.03  | <0.03   | <0.03  | <0.03   | <0.03  |
| 13      | Total Chromium         | mg/l  | <0.03  | <0.03  | <0.03   | <0.03  | <0.03   | <0.03  |
| 14      | Chloride               | mg/l  | 181    | 156    | 54      | 59     | 52      | 58     |
| 15      | Fluoride               | mg/l  | 0.6    | 0.5    | 0.6     | 0.5    | 0.4     | 0.6    |
| 16      | Sulphates              | mg/l  | 73     | 70     | 73      | 78     | 68      | 72     |
| 17      | Sulphides              | mg/l  | <0.2   | <0.2   | <0.2    | <0.2   | <0.2    | <0.2   |
| 18      | Bio-assay              | (Survival of Fish in 100% Effluent after 96 hrs.) | -      | -      | -       | -      | -       | --     |

**Monthly Comparison of Effluent sample (Final Outlet)**

| Sr. No. | Parameters             | Unit  | May-16 | Jun-16 | July-16 | Aug-16 | Sept-16 | Oct-16 |
|---------|------------------------|---|--------|--------|---------|--------|---------|--------|
| 1       | pH                     | pH-Unit   | 7.45   | 7.30   | 7.45    | 7.85   | 7.42    | 7.67   |
| 2       | Temperature            | °C  | 32.5   | 31.0   | 32.5    | 28     | 28      | 29     |
| 3       | Colour                 | Hazen   | 15     | 12     | 15      | 16     | 12      | 14     |
| 4       | Total Dissolved Solids | mg/l  | 760    | 813    | 760     | 847    | 768     | 818    |
| 5       | Total Suspended Solids | mg/l  | 30     | 36     | 28      | 32     | 29      | 32     |
| 6       | COD                    | mg/l  | 35     | 34     | 26      | 20     | 18      | 20     |
| 7       | BOD (5 days at 20°C)   | mg/l  | 18     | 13     | <4      | <4     | <4      | <4     |
| 8       | Oil & Grease           | mg/l  | 3.0    | 3.4    | <1      | <1     | <1      | <1     |
| 9       | Phenolic compound      | mg/l  | <0.1   | <0.1   | <0.1    | <0.1   | <0.1    | <0.1   |
| 10      | Cyanides               | mg/l  | 0.1    | 0.05   | NIL     | 0.08   | 0.04    | 0.03   |
| 11      | Ammonical Nitrogen     | mg/l  | 15.8   | 12.8   | 15.8    | 11.9   | 10.6    | 12.9   |
| 12      | Hexavalent Chromium    | mg/l  | <0.03  | <0.03  | <0.03   | <0.03  | <0.03   | <0.03  |
| 13      | Total Chromium         | mg/l  | <0.03  | <0.03  | <0.03   | <0.03  | <0.03   | <0.03  |
| 14      | Chloride               | mg/l  | 125    | 115    | 44      | 48     | 44      | 51     |
| 15      | Fluoride               | mg/l  | 0.4    | 0.3    | 0.4     | 0.3    | 0.2     | 0.4    |
| 16      | Sulphates              | mg/l  | 64     | 62     | 64      | 69     | 58      | 62     |
| 17      | Sulphides              | mg/l  | <0.2   | <0.2   | <0.2    | <0.2   | <0.2    | <0.2   |
| 18      | Bio-assay              | (Survival of Fish in 100% Effluent after 96 hrs.) | 90     | 90     | 100     | 100    | 90      | 90     |