O/C

**GPCB ID: 23225**

ENV/05/17/0808

August 08, 2017

**Member Secretary**
Gujarat Pollution Control Board,
Paryavaran Bhavan
Sector-10 A
Gandhinagar

Sub: Environmental Statement for the Period of April-2016 to March2017

Dear Sir,

We are enclosing Environmental Statement in Form-V duly filled for the year ending 31st March 2017.

We hope you will find the same in Order.

Thanking you,
Yours faithfully,
**For Bayer Vapi Private Limited**
(Formerly Bilag Industries Private Limited)

**Narendra K Shah**
**Director and Site Manager**

**Encl: As stated**

Bayer Vapi Private Limited
(Formerly Bilag Industries Pvt. Ltd)

Registered Office & Factory
Plot No. 306/3, II Phase,
GIDC, Vapi – 396 195,
Gujarat, India

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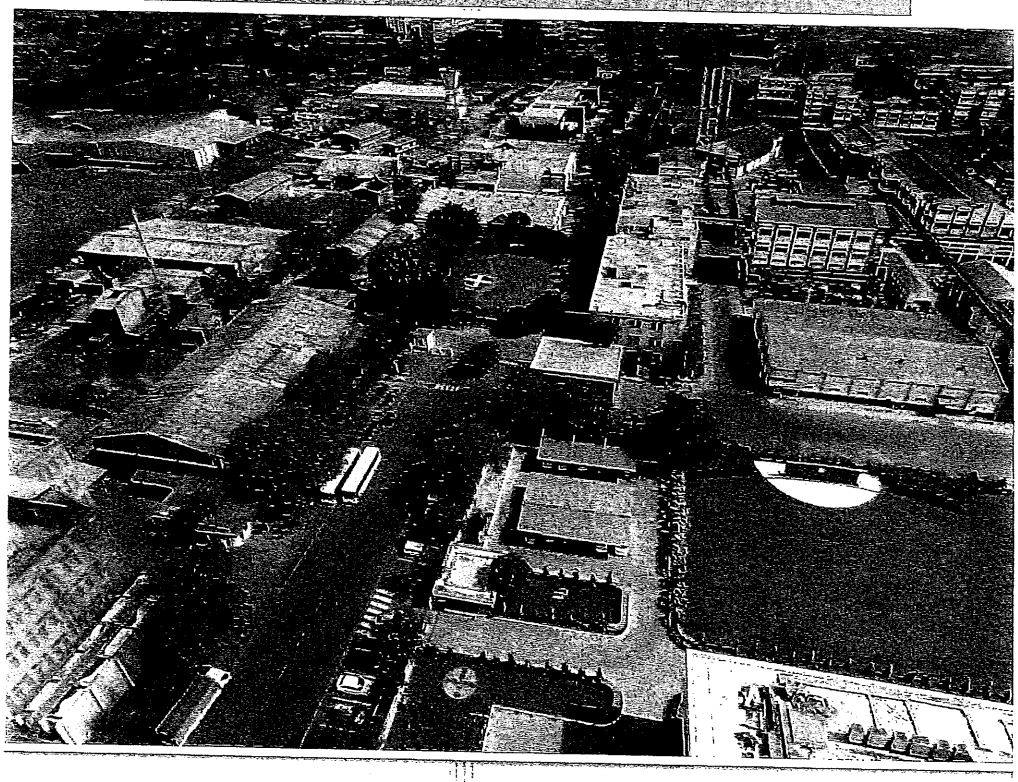
Fax: +91 260 2432774
www.vapi.bayer.com
www.bayer.in

# 2017

# ENVIRONMENTAL STATEMENT-FORM-V



*Submitted By:*


ENVIRONMENT DEPARTMENT

BAYER VAPI PRIVATE LTD


02/08/2017

FORM – V

(See Rule 14)

ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31st MARCH-2017

PART-A

| | | | |
|---|---|---|---|
| (I) | Name and address of the owner/Occupier of the industry operation or process | : | *Mr Narendra K Shah,*<br>*Bayer Vapi Pvt Ltd.*<br>*(Formerly, Bilag Industries Pvt. Ltd.)*<br>*Plot No. 306/3, Phase II,*<br>*GIDC Estate, Vapi – 396195.* |
| (II) | Industry category -<br>Primary – (STC Code)<br>Secondary- (SIC Code) | : | *Red Category(Large Scale)*<br>*Manufacturing of Pesticides & Pesticides Intermediates* |
| (III) | Production capacity Units | : | *Details are attached as Annexure-A* |
| (IV) | Year of establishment | : | *1999* |
| (V) | Date of the last Environmental Statement submitted | : | *09/09/2016* |

## PART-B

### Water and Raw Material Consumption

### (I) Water Consumption (m3/d)

| Sr. No. | Category | Water Consumption, m3/d | |
|---|---|---|---|
| | | Apr 15 to Mar 16 | Apr 16 to Mar 17 |
| A | Process | 558.73 | 495.55 |
| B | Cooling | 627.79 | 721.44 |
| C | Domestic | 71.79 | 85.06 |
| **Grand Total** | | **1258.31** | **1302.05** |

| Sr. No. | Product Name | Process water consumption in m3 per MT of product | |
|---|---|---|---|
| | | During Apr-2015 to Mar-2016 | During Apr-2016 to Mar-2017 |
| 1. | Cypermethrin | 27.13 | 23.06 |
| 2. | Alphamethrin | | |
| 3. | Permethrin | | |
| 4. | Deltamethrin | | |
| 5. | D & D-Trans Allethrin | | |
| 6. | Acrinathrin | | |
| 7. | Transfluthrin | | |
| 8. | Beta Cyfluthrin | | |
| 9. | Cyfluthrin | | |
| 10. | Imidacloprid | | |
| 11. | NaCMTS | | |
| 12. | Cypermethric acid chloride | | |
| 13. | Cypermethric acid chloride from D.V. Ester | | |
| 14. | Metaphenoxy Benzaldehyde | | |
| 15. | Metaphenoxy Benzyl Alcohol | | |
| 16. | Besicthemic Acid | | |
| 17. | Allethrolone | | |
| 18. | Chrysanthemic acid | | |
| 19. | TCA | | |
| 20. | RTCMA | | |
| 21. | DM Base | | |
| 22. | Ethofumesate | | |
| 23. | NC 9770 | | |

(II) Raw material consumption

| *Name of Raw materials | Name of Products | Consumption of raw material per unit of output | |
|---|---|---|---|
| | | During the previous financial year | During the current financial year |
| *Details are attached as Annexure-B* | | | |

* Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

## PART – C

**Pollution discharged to environment/unit of output**
**(Parameter as specified in the consent issue)**

| Pollutants | Quantity of pollutants discharged (Mass/day) | Concentration of Pollutants in discharged (Mass/volume) | Percentage of variation from prescribed standards with reasons. |
|---|---|---|---|
| a) Water | *Details are attached as Annexure-C* | | |
| b) Air | | | |

## PART-D

### HAZARDOUS WASTES

(As specified under Hazardous Wastes (Management, Handling and transboundary movement) Rules, 2008)*1

| Hazardous Waste | Total Quantity (Kg.) | |
|---|---|---|
| | During the previous financial year | During the current financial year |
| a) From Process | *Details are attached as Annexure-D* | |
| b) From Pollution Control Facilities | | |

*1: The Hazardous Wastes (Management, Handling and transboundary movement) Rules, 2008 notified vide S.O 2265(E) dated 24.09.2008.

## PART-E

### SOLID WASTES

| Hazardous Waste | Total Quantity (Kg.) | |
|---|---|---|
| | During the previous financial year | During the current financial year |
| a) From Process | *Not Applicable* | |
| b) From Pollution Control Facilities | | |
| C) (1) Quantity recycled or re-utilized Within the unit<br>(2)Sold<br>(3) Disposed | | |

## PART – F

Please specify the characterizations (in terms of composition and quantity) of hazardous as well as solid and indicate disposal practice adopted for both these categories of wastes.

*Details are attached as Annexure-E*

## PART – G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

***Details are attached as Annexure-F***

## PART – H

Additional measure/investment proposal for environmental protection including abatement of pollution prevention of pollution.

***Details are attached as Annexure-G***

## PART – I

Any other particulars for improving the quality of the environment.

***Details are attached as Annexure-H***

(Signature of a person carrying out an

Industry, operation or process)

Date: **02/08/17**

Name : ***Mr Narendra K Shah***

Designation : ***Director& Site manager***

Address : **Bayer Vapi Private Limited**

**(Formerly *Bilag Industries Pvt.Ltd)***

***Plot no. 306/3, Phase II***
***GIDC Estate, Vapi – 396195.***

# BAYER VAPI PRIVATE LIMITED, VAPI.

## ANNEXURE -A

## LIST OF PRODUCTS & CAPACITY

| SR. NO. | PRODUCT NAME | CAPACITY MT/ MONTH | PRODUCTION MT/ MONTH |
|---|---|---|---|
| 1. | Cypermethrin | 208.00 | 132.6 |
| 2. | Alphamethrin | 40.00 | 8.4 |
| 3. | Permethrin (As alternate to Transfluthrin) | 114.50 | 39.7 |
| 4. | Transfluthrin (As alternate to Permethrin) | 114.50 | 8.2 |
| 5. | Deltamethrin | 42.00 | 23.9 |
| 6. | D & D-Trans Allethrin | 15.00 | 0.0 |
| 7. | Acrinathrin | 3.75 | 0.3 |
| 8. | Beta Cyfluthrin (As alternate to Cyfluthrin) | 65.00 | 35.3 |
| 9. | Cyfluthrin (As alternate to Beta Cyfluthrin) | 81.86 | 4.8 |
| 10. | Imidacloprid | 60.00 | 0.0 |
| 11. | Cypermethric acid chloride/CMA | 200.00 | 121.4 |
| 12. | Cypermethric acid chloride from D.V. Ester/Acid Chloride preparation | 50.00 | 2.8 |
| 13. | Metaphenoxy Benzaldehyde | 350.00 | 101.3 |
| 14. | Metaphenoxy Benzyl Alcohol | 100.00 | 39.6 |
| 15. | Besicthemic Acid | 15.00 | 0.0 |
| 16. | Allethrolone (As alternate to Chrysanthemic acid) | 15.00 | 0.0 |
| 17. | Chrysanthemic acid (As alternate to Allethrolone) | 15.00 | 0.0 |
| 18. | TCA | 34.20 | 14.9 |
| 19. | RTCMA (As alternate to TCA) | 34.20 | 7.3 |
| 20. | DM Base | 4.20 | 0.0 |
| 21. | Acid Chloride preparation (As alternate to CMAC from DVE at Sr. No. 12) | 50.00 | 4.8 |
| 22. | Ethofumesate (As alternate to NC 9770) | 130.00 | 86.2 |
| 23. | NC 9770 (As alternate to Ethofumesate) | 130.00 | 0.0 |
| 24. | NaCMTS | 100 | 22.1 |

# BAYER VAPI PRIVATE LIMITED, VAPI.

## ANNEXURE – B

## RAW MATERIAL CONSUMPTION

| SR. NO. | RAW MATERIAL | Consumption in Kg/Kg of product Apr-'15- Mar-'16 | Consumption in Kg/Kg of product Apr-'16- Mar-'17 |
|---|---|---|---|
| A) | **Cypermethrin:** | | |
| 1 | Cypermethric acid chloride | 0.552 | 0.561 |
| 2 | Hexane | 0.026 | 0.028 |
| 3 | Metaphenoxy benzaldehyde | 0.470 | 0.476 |
| 4 | Sodium Cyanide | 0.125 | 0.128 |
| 5 | Triethyl amine | 0.021 | 0.021 |
| 6 | Sodium hypochlorite | 0.260 | 0.124 |
| B) | **Cypermethric Acid Chloride:** | | |
| 1 | Acetonitrile | 0.011 | 0.014 |
| 2 | Acrylonitrile | 0.415 | 0.404 |
| 3 | Carbon tetra chloride | 1.160 | 1.145 |
| 4 | Caustic soda lye | 2.280 | 2.116 |
| 5 | Hexane | 0.325 | 0.142 |
| 6 | Isobutylene | 0.415 | 0.395 |
| 7 | Sodium bi carbonate | 0.032 | 0.000 |
| 8 | Soda ash | 0.680 | 0.000 |
| 9 | Sulfuric acid - conc. | 0.400 | 0.278 |
| 10 | Thionyl chloride | 1.400 | 1.023 |
| 11 | Triethyl amine | 0.038 | 0.041 |
| 12 | 30% Hydrochloric acid | 0.014 | 0.011 |
| 13 | Catalysts | 0.012 | 0.010 |
| C) | **CMAC from DVE** | | |
| 1 | D.V. Ester | 1.049 | 1.045 |
| 2 | Catalysts | 0.001 | 0.000 |
| 3 | Thionyl Chloride | 0.550 | 0.566 |
| 4 | Caustic Soda Lye | 1.000 | 1.230 |
| 5 | Sulphuric Acid | 0.272 | 0.272 |
| 6 | Solvent | 0.110 | 0.000 |
| | | | |
| D) | **Alphamethrin:** | | |
| 1 | Cypermethrin | 1.027 | 1.037 |
| 2 | Hexane | 0.31 | 0.266 |
| 3 | Triethyl amine | 0.073 | 0.050 |
| E) | **Metaphenoxy benzaldehyde** | | |
| 1 | Aluminium chloride | 1.06 | 1.055 |
| 2 | Benzaldehyde | 0.65 | 0.628 |
| 3 | Bromine | 0.567 | 0.560 |
| 4 | Caustic potash flakes | 0.38 | 0.379 |

| SR. NO. | RAW MATERIAL | Consumption in Kg/Kg of product Apr-'15- Mar-'16 | Consumption in Kg/Kg of product Apr-'16- Mar-'17 |
|---|---|---|---|
| 5 | Caustic soda lye | 0.1951 | 0.202 |
| 6 | Chlorine | 0.218 | 0.220 |
| 7 | Ethylene dichloride | 0.0654 | 0.040 |
| 8 | 30% HCl. | 0.076 | 0.158 |
| 9 | Mono ethylene glycol | 0.0562 | 0.049 |
| 10 | Phenol | 0.563 | 0.560 |
| 11 | Salt | 0.00197 | 0.000 |
| 12 | Soda ash | 0.0016 | 0.015 |
| 13 | Sodium thiosulfate | 0.0316 | 0.035 |
| 14 | Sulfuric acid - conc. | 0.0314 | 0.031 |
| 15 | Toluene | 0.0104 | 0.023 |
| F) | **Deltamethrin:** | | |
| 1 | Aluminium Chloride | 0.537 | 0.536 |
| 2 | Bromine | 3.063 | 2.967 |
| 3 | Caustic soda lye | 2.806 | 2.713 |
| 4 | Ethylene dichloride | 0.400 | 0.341 |
| 5 | Isopropyl alcohol | 0.099 | 0.120 |
| 6 | Meta phenoxy benzaldehyde | 0.4306 | 0.434 |
| 7 | Methanol | 0.2366 | 0.235 |
| 8 | Soda ash | 0.0789 | 0.082 |
| 9 | Sodium Cyanide | 0.1137 | 0.114 |
| 10 | Sodium hypochlorite 10% | 0.4272 | 0.393 |
| 11 | Sulphuric acid 98% | 0.438 | 0.023 |
| 12 | Thionyl chloride | 0.3008 | 0.301 |
| 13 | Toluene | 1.845 | 1.764 |
| 14 | TCA | 0.598 | 0.599 |
| G) | **Permethrin:** | | |
| 1 | Cypermethric acid chloride | 0.5897 | 0.592 |
| 2 | Metaphenoxy benzaldehyde | 0.541 | 0.521 |
| 3 | Hydrogen | 0.006 | 0.006 |
| 4 | Hexane | 0.029 | 0.016 |
| 5 | Soda ash | 0.01428 | 0.010 |
| 6 | Catalyst | 0.001 | 0.001 |
| H) | **D.T. Allethrin:** | | |
| 1 | Ethylene dichloride | 0.000 | 0.000 |
| 2 | Caustic Soda lye | 0.000 | 0.000 |
| 3 | Hydrochloric acid (30%) | 0.000 | 0.000 |
| 4 | DIPE | 0.000 | 0.000 |
| 5 | Methanol | 0.000 | 0.000 |
| 6 | Sulfuric Acid (98%) | 0.000 | 0.000 |
| 7 | Soda Ash | 0.000 | 0.000 |
| 8 | Thionyl Chloride | 0.000 | 0.000 |
| 9 | Diene | 0.000 | 0.000 |
| 10 | Sodium Nitrite | 0.000 | 0.000 |
| 11 | DMB | 0.000 | 0.000 |

| SR. NO. | RAW MATERIAL | Consumption in Kg/Kg of product Apr-'15- Mar-'16 | Consumption in Kg/Kg of product Apr-'16- Mar-'17 |
|---|---|---|---|
| 12 | GL-100 | 0.000 | 0.000 |
| 13 | Cyclohexane | 0.000 | 0.000 |
| 14 | Di methyl formamide | 0.000 | 0.000 |
| 15 | 2-Methyl furan | 0.000 | 0.000 |
| 16 | Phosphorus oxychloride | 0.000 | 0.000 |
| 17 | THF | 0.000 | 0.000 |
| 18 | Allyl chloride | 0.000 | 0.000 |
| I) | **Acrinathrin :** | | |
| 1 | Butanediol | 0.726 | 0.622 |
| 2 | 30% hydrochloric acid | 1.559 | 1.866 |
| 3 | N-004 | 0.717 | 0.609 |
| 4 | Caustic lye 48% | 4.885 | 3.821 |
| 5 | Dicyclo hexyl carbodiimide | 0.491 | 0.407 |
| 6 | Hexafluoro isopropanol | 0.461 | 0.413 |
| 7 | Hexane | 0.581 | 0.409 |
| 8 | Isopropyl alcohol | 0.866 | 0.742 |
| 9 | Lithium bromide | 1.346 | 1.146 |
| 10 | M.D.C. | 3.096 | 1.977 |
| 11 | Meta phenoxy benzaldehyde | 0.58 | 0.470 |
| 12 | Methanol | 3.333 | 3.648 |
| 13 | Phosphorus Trichloride | 1.159 | 0.996 |
| 14 | Sodium cynide | 0.336 | 0.279 |
| 15 | TBBA | 1.379 | 1.177 |
| 16 | THF | 0.905 | 0.352 |
| 17 | Thionyl Chloride | 0.536 | 0.425 |
| 18 | Toluene | 1.728 | 1.258 |
| 19 | Triethyl amine | 0.313 | 0 |
| J) | **Meta Phenoxy benzyl Alcohol** | | |
| 1 | Metaphenoxy Benzaldehyde | 1.038 | 1.037 |
| 2 | Catalyst | 0.002 | 0.0122 |
| 3 | Hydrogen | 0.012 | 0.002 |
| K) | **Besicthemic Acid** | | |
| 1 | TCA | 0.926 | 0.926 |
| 2 | Soda Ash | 0.098 | 0.101 |
| 3 | Aluminum Chloride | 0.832 | 0.829 |
| 4 | Bromine | 4.749 | 4.589 |
| 5 | Caustic soda Lye | 3.515 | 3.505 |
| 6 | Ethylene Dichloride | 0.318 | 0.286 |
| 7 | Methanol | 0.297 | 0.303 |
| 8 | Sulphuric Acid | 0.582 | 0.926 |
| 9 | Toluene | 2.860 | 2.728 |
| L) | **Allethrolones** | | |
| 1 | DMF | 0 | 0 |
| 2 | Allyl Chloride | 0 | 0 |
| 3 | Ethylene dichloride | 0 | 0 |

| SR. NO. | RAW MATERIAL | Consumption in Kg/Kg of product Apr-'15- Mar-'16 | Consumption in Kg/Kg of product Apr-'16- Mar-'17 |
|---|---|---|---|
| 4 | Methyl Furan | 0 | 0 |
| 5 | $POCl_3$ | 0 | 0 |
| 6 | THF | 0 | 0 |
| M) | **Transfluthrin** | | |
| 1 | Cypermethric acid chloride | 0.625 | 0.620 |
| 2 | Caustic Soda Lye | 0.763 | 0.224 |
| 3 | TFBA | 0.495 | 0.495 |
| 4 | Toluene | 0.146 | 0.091 |
| N) | **Beta Cyfluthrin** | | |
| 1 | Cypermethric acid chloride | 0.631 | 0.632 |
| 2 | Catalyst | 0.0035 | 0.004 |
| 3 | Fluorinated MPBD | 0.587 | 0.588 |
| 4 | Isopropyl Alcohol | 0.1045 | 0.098 |
| 5 | Soda Ash | 0.0173 | 0.017 |
| 6 | Sodium bi-sulphite | 0.293 | 0.294 |
| 7 | Sodium Hypochloride Soln.(10%) | 1.51 | 0.244 |
| 8 | Sodium Cyanide | 0.2053 | 0.193 |
| 9 | Sulphuric Acid | 0.0573 | 0.060 |
| 10 | Toluene | 0.0535 | 0.043 |
| O) | **Cyfluthrin** | | |
| 1 | Cypermethric acid chloride | 0.5429 | 0.543 |
| 2 | Catalyst | 0.003 | 0.003 |
| 3 | Fluorinated MPBD | 0.505 | 0.505 |
| 4 | Soda Ash | 0.0148 | 0.014 |
| 5 | Sodium bi-sulphite | 0.2522 | 0.252 |
| 6 | Sodium Hypochloride Soln.(10%) | 1.299 | 0.210 |
| 7 | Sodium Cyanide | 0.1765 | 0.166 |
| 8 | Toluene | 0.0459 | 0.037 |
| P) | **Imidacloprid** | | |
| 1 | Acetonitrile | 0 | 0 |
| 2 | Catalyst | 0 | 0 |
| 3 | Caustic Lye | 0 | 0 |
| 4 | Chlorine | 0 | 0 |
| 5 | CMP | 0 | 0 |
| 6 | EDA | 0 | 0 |
| 7 | Guinidine Nitrate | 0 | 0 |
| 8 | Hydrochloric Acid | 0 | 0 |
| 9 | Methanol | 0 | 0 |
| 10 | Potassium Carbonate | 0 | 0 |
| 11 | Propyonitrile | 0 | 0 |
| 12 | Sulphuric acid | 0 | 0 |
| Q) | **TCA** | | |
| 1 | Cypermethric acid | 1.079 | 2.432 |
| 2 | Sol – 1 | 0.125 | – |

| SR. NO. | RAW MATERIAL | Consumption in Kg/Kg of product Apr-'15- Mar-'16 | Consumption in Kg/Kg of product Apr-'16- Mar-'17 |
|---|---|---|---|
| 3 | Caustic soda lye | 2.6 | 2.961 |
| 4 | Hydrochloric acid | 2.067 | 2.186 |
| 5 | Ethylene Dichloride | 0.742 | 0.527 |
| | | | |
| R) | **RTCMA** | | |
| 1 | Cypermethric acid | 1.262 | 2.743 |
| 2 | Sol – 1 | 0.139 | _ |
| 3 | Caustic soda lye | 3.417 | 2.374 |
| 4 | Hydrochloric acid | 2.035 | 1.163 |
| 5 | Ethylene Dichloride | 0.766 | 0.535 |
| 6 | Hexane | 0.664 | _ |
| 7 | Xylene | 0 | _ |
| 8 | Acetic Anhydride | 0 | _ |
| 9 | Sulphuric acid | 0 | _ |
| 10 | PTSA | 0 | _ |
| 11 | Soda Ash | 0.0863 | 0.077 |
| 12 | TEBA Chloride | 0.0169 | 0.141 |
| S) | **DM Base** | | |
| 1 | L Base | 0 | 0 |
| 2 | Formic acid | 0 | 0 |
| 3 | Formalin | 0 | 0 |
| 4 | Caustic soda lye | 0 | 0 |
| T) | **Ethofumesate** | | |
| 1 | Isobutrldehyde | 0.347 | 0.346 |
| 2 | Benzoquinone | 0.428 | 0.428 |
| 3 | Morpholine | 0.076 | 0.078 |
| 4 | Mesyl chloride | 0.449 | 0.450 |
| 5 | TEA | 0.016 | 0.018 |
| 6 | Ethanol | 0.332 | 0.332 |
| 7 | 30% hydrochloric acid | 1.034 | 1.036 |
| 8 | Soda ash | 0.019 | 0.020 |
| 9 | Caustic soda lye | 0.835 | 0.855 |
| 10 | Toluene | 0.099 | 0.082 |
| U) | **NC 9770** | | |
| 1 | Isobutrldehyde | 0 | 0 |
| 2 | Benzoquinone | 0 | 0 |
| 3 | Morpholine | 0 | 0 |
| 4 | Mesyl chloride | 0 | 0 |
| 5 | TEA | 0 | 0 |
| 6 | 30% hydrochloric acid | 0 | 0 |
| 7 | Soda ash | 0 | 0 |
| 8 | Caustic soda lye | 0 | 0 |
| 9 | Toluene | 0 | 0 |
| V) | **NaCMTS** | | |
| 1 | MeOH | 0.052 | 0.000 |

| SR. NO. | RAW MATERIAL | Consumption in Kg/Kg of product Apr-'15- Mar-'16 | Consumption in Kg/Kg of product Apr-'16- Mar-'17 |
|---|---|---|---|
| 2 | KOH | 0.412 | 0.406 |
| 3 | DMM | 0.825 | 0.811 |
| 4 | Xylene | 0.133 | 0.097 |
| 5 | TBAB | 0.049 | 0.045 |
| 6 | MCA | 0.710 | 0.701 |
| 7 | NaOMe | 1.137 | 1.119 |

# BAYER VAPI PRIVATE LIMITED, VAPI.

## ANNEXURE - C

## POLLUTANTS DISCHARGE

| SR.NO. | POLLUTANTS | QUNTITY OF POLLUTANTS KGS/DAY | CONC. OF DISCHRGED mg/L | % VARIATION FROM PRESCRIBED STANDARDS |
|---|---|---|---|---|
| A) Water : | | | | |
| 1 | Color | 21.82 | 39.2 | The all parameters are below the prescribed norms of CETP except TDS. The treated effluent is discharged to CETP of Vapi Green Enviro limited for further treatment. |
| 2 | pH | - | 7.5 | |
| 3 | Total Suspended solids | 13.37 | 24 | |
| 4 | Total Dissolved solids | 1172.90 | 2105.8 | |
| 5 | Chloride as Cl | 331.79 | 595.7 | |
| 6 | Oil and grease | 0.84 | 1.5 | |
| 7 | Phenolic Compound as $C_6H_5OH$ | 0.01 | 0.02 | |
| 8 | Hexavalent Chromium as $Cr^{+6}$ | BDL* | BDL* | |
| 9 | Total chromium as $Cr^{+3}$ | 0.02 | 0.03 | |
| 10 | Cadmium as Cd | BDL* | BDL* | |
| 11 | Copper as Cu | 0.34 | 0.6 | |
| 12 | Zinc as Zn | 0.10 | 0.2 | |
| 13 | Iron as Fe | 0.28 | 0.5 | |
| 14 | Nickel as Ni | 0.08 | 0.1 | |
| 15 | Lead as Pb | 0.04 | 0.1 | |
| 16 | Mercury as Hg | BDL* | BDL* | |
| 17 | Arsenic as As | BDL* | BDL* | |
| 18 | Sulphate as $SO_4$ | 69.52 | 124.8 | |
| 19 | Cyanide as CN | | BDL* | |
| 20 | Fluoride as F | 0.33 | 0.6 | |
| 21 | Sodium Percent | - | 48.5 % | |
| 22 | COD | 102.26 | 183.6 | |
| 23 | Sulphide as S | 0.46 | 0.8 | |
| 24 | Ammonical Nitrogen-$NH_3$ | 1.48 | 2.6 | |
| 25 | Pesticides/Insecticides | BDL* | BDL* | |
| 26 | BOD (5 days @ 20°C) | 15.68 | 28.2 | |
| | | | | |
| *BDL: Below Detection Limit | | | | |

**Note :**

1) Values are calculated on the basis of around 557 m3/day Effluent Discharge
2) Calculation has been done on the annual average concentration.

| SR.NO. | POLLUTANTS | QUNTITY OF POLLUTANTS KGS/DAY | CONC. OF DISCHRGED mg/NM3 | % VARIATION FROM PRESCRIBED STANDARDS |
|---|---|---|---|---|
| B) Air : | **From Incinerator Stack** | | | |
| 1 | Particulate matter | 11.6 | 24.66 | The limits of various pollutants are below the prescribed limit |
| 2 | SO2 | 6.7 | 14.24 | |
| 3 | NOx | 14.98 | 31.84 | |
| 4 | HCl | 1.89 | 4.02 | |
| 5 | Cl2 | 1.84 | 3.91 | |
| | | | | |
| Air | **From Utility Stack** | | | |
| | Particulate matter | BDL* | BDL* | The limits of various pollutants are below the prescribed limit |
| | SO2 | 1.33 | 5.63 | |
| | NOx | 12.08 | 54.04 | |
| *BDL: Below detection limit | | | | |
| Air | **From Process Vent** | | | |
| 1) | Vent attached to MPB reactor drowning vessels & ventilation system | | | |
| | HCl | 0.032 | 3.61 | The limits of various pollutants are below the prescribed limit |
| | $Cl_2$ | 0.032 | 3.51 | |
| | HBr | 0.010 | 1.26 | |
| 2) | Vent attached to CMAC Reactors | | | |
| | HCl | 0.004 | 7.62 | The limits of various pollutants are below the prescribed limit |
| | $SO_2$ | 0.015 | 20.75 | |
| 3) | Vent attached to TBAC Reactors | | | |
| | HCl | 0.005 | 8.69 | The limits of various pollutants are below the prescribed limit |
| | $SO_2$ | 0.010 | 16.27 | |
| 4) | Vent attached to Bromination reaction reactor in Deltamethrin | | | |
| | HBr | 0.003 | 2.59 | The limits of various pollutants are below the prescribed limit |
| | HCl | 0.012 | 10.93 | |
| 5) | Vent attached to Acylation reaction reactor in Deltamethrin | | | |
| | HCl | 0.002 | 6.27 | The limits of various pollutants are below the prescribed limit |
| | $SO_2$ | 0.008 | 20.15 | |
| 6) | Vent attached to Acylation reactor of Transfluthrin | | | |
| | HCl | 0.015 | 12.56 | The limits of various pollutants are below the prescribed limit |
| 7) | Vent attached to condensation reactor of Permethrin | | | |
| | HCl | 0.004 | 12.23 | The limits of various pollutants are below the prescribed limit |

| | | | | |
|---|---|---|---|---|
| 8) | Vent attached to CPPL preparation reactor of Acrinathrin Plant | | | |
| | HCl | 0.001 | 7.22 | The limits of various pollutants are below the prescribed limit |
| 9) | Vent attached to acid chloride preparation Reactor of Acrinathrin | | | |
| | HCl | 0.001 | 7.54 | The limits of various pollutants are below the prescribed limit |
| | $SO_2$ | 0.0003 | 21.23 | |

**Note :**

1) Calculation has been done on the annual average concentration.

# BAYER VAPI PRIVATE LIMITED, VAPI.

## ANNEXURE - D

## HAZARDOUS WASTES GENERATION AND DISPOSAL

| Hazardous Wastes | Total Quantity (Kg) | |
|---|---|---|
| | During The Previous Financial Year(2015-16) | During The Current Financial Year(2016-17) |
| **a. From Process** | | |
| Process Waste (Residue left after distillation) | 1925984 | 1817268 |
| Chemical Sludge, Oil & Grease skimming residue | 28990 | 14680 |
| Used oil | 9520 | 5763 |
| Organic Solvent | 308569 | 162424 |
| Discarded Container/Bags | 242702 | 141400 |
| Spent Catalyst | 1095 | 850 |
| Off specification date expired pesticides | 0 | 0 |
| Spent Resins | 0 | 0 |
| Used filter cloth or filter material | 4001 | 2288 |
| **b. From Pollution Control Facility** | | |
| ETP Waste + Waste left after evaporation I.e. Chemical Sludge from waste water treatment | 7492123 | 8211239 |
| Incineration Ash | 89175 | 78787 |

# BAYER VAPI PRIVATE LIMITED, VAPI.

## ANNEXURE - E

| Waste | Physical Form | Chemical Form | Quantity in MT | Mode of Disposal |
|---|---|---|---|---|
| ETP Waste + Waste left after evaporation I.e. Chemical Sludge from waste water treatment | Solid | Lime + Inorganic Salts | 7997.21 | Disposal at TSDF |
| Process Waste (Residue left after distillation) | Solid/Semi-solid/viscous fluid | Organic Compound | 1763.465 | Disposal by incineration within premises and at common incinerator |
| Incineration Ash | Solid | Inorganic Salts | 89.895 | Disposal at TSDF |
| Chemical Sludge, Oil & Grease skimming residue | Liquid | Organic material Consist of Oil & grease | 16.16 | Disposal by incineration within premises |
| Used oil | Liquid | Used Oil | 5.575 | Disposal by incineration within premises |
| Organic Solvent | Liquid | Organic Solvent | 154.324 | Disposal by incineration within premises |
| Discarded Container/Bags | Solid | MS/HDPE/Containers/plastic bags | 141.400 | Decontaminated and Sale |
| Spent Catalyst | Solid | Deactivated catalyst | 1.705 | Recycled |
| Off specification date expired pesticides | Solid | Mainly Organic | 0 | Disposal by incineration within premises |
| Spent Resins | Solid | Resins | 0 | Disposal by incineration within premises |
| Used filter cloth or filter material | Solid | | 2.291 | Disposal by incineration within premises |

# BAYER VAPI PRIVATE LIMITED, VAPI.

## ANNEXURE - F

## POLLUTION ABATEMENT MEASURES

| Sr.No. | Pollution abatement measures | Impact on Conservation of resources |
|---|---|---|
| 1 | Conversion of single stage calendria into double effect evaporator. | Reduction in steam consumption |
| 2 | Cleaning of ATFD with process condensate instead of Raw water | Reduction in fresh raw water consumption |
| 3 | Reuse of DM regenerated wastewater in Incinerator scrubbers. | Reduction in fresh raw water consumption |
| 4 | Generation of steam from waste heat recovery boiler of incinerator | Reduction in Natural gas consumption |
| 5 | Incineration of high calorific value residue in burner instead of natural gas | Reduction in Natural gas consumption |

# BAYER VAPI PRIVATE LIMITED, VAPI.

## ANNEXURE – G

Additional measure/investment proposal for environmental protection including abatement of pollution prevention of pollution.

| Sr.No | Items | Cost (INR) |
|---|---|---|
| 1 | Total Cost of installation of various water and Air Pollution Control Equipment | 49,068,612 |
| 2 | Interest on Investment (8.5 % per year) | 4,170,832 |
| 3 | Depreciation per year | 88,563,816 |
| 4 | Total Operational cost of various Pollution Control Equipment/year | 408,760,635 |
| 5 | Total expenses /year (Operating cost + Interest +Depreciation) | 550,563,896 |
| 6 | Total Production (In MT) | 7843.56 |
| 7 | Total expenses per Ton of Production | 70193 |

# BAYER VAPI PRIVATE LIMITED, VAPI.

## ANNEXURE – H

It is ensured that waste water pretreatment plant, Effluent treatment plant and other pollution control facilities are effectively operated round the clock. Further we have taken additional preventive measures. The brief of the system is stated below.

1. We have obtained ISO-14001 (EMS) for Better Environment Management System and Control.
2. Full-fledged Environment laboratory installed at site for monitoring Environment Parameters.
3. Major TDS contributing stream was segregated and treated in Evaporator, its help in reducing TDS reduction in final discharge.
4. Additional Salt storage facility provided to Store salt generated from WWPT Plant during the monsoon season.
5. Regular monitoring of all process vents, incinerator stack, boiler stack, ambient air quality monitoring and noise monitoring carried out by NABL and MoEF &CC approved Laboratory to ensure emission standards.
6. We have implemented 5 S concepts in all departments of factory which is useful in minimizing waste and helpful in maintaining better housekeeping.
7. Third party Environment audit was carried out by M/s. Precitech laboratory and all recommendation is being implemented at site.
8. Tree plantation was carried out as a part of celebration world environment day on 5$^{th}$ June.
9. Additional 5.4 ha land was purchased for developing green belt area.
10. Partial Automation done through PLC in ETP for Continuous monitoring of flow and pH.
11. Storm water collection sump is being constructed and norms are being verified before discharge storm water.
12. Industry has taken membership of M/s. ECO Green Recycling for environment friendly disposal of E-waste.
13. Ejectors are replaced by vacuum pump to reduction VOC emission.
14. Online TOC, TSS and Flow monitoring device installed at the discharge point of site for continuous monitoring and online data is being transferred to CPCB/GPCB server.
15. We have valid membership of TSDF Vapi and TSDF SEPPL for better and effective handling of hazardous waste.