



**GPCB ID: 23225**

**ENV/05/18/3008**

**August 30, 2019**

**Member Secretary**

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

**Sub:** Environmental Statement for the Period of April-2018 to March-2019

Dear Sir,

We are enclosing Environmental Statement in Form-V dully filled for the year ending 31<sup>st</sup> March 2019.

We hope you will find the same in Order.

Thanking you,

Yours faithfully,

**For Bayer Vapi Private Limited**

(Formerly Bilag Industries Private Limited)

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

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

Tel +91 260 2407123

Fax : +91 260 2432774

[www.vapi.bayer.com](http://www.vapi.bayer.com)

[www.bayer.in](http://www.bayer.in)

*Narendra K Shah*  
**Narendra K Shah**

**Director and Site Manager**

**Encl: As stated**



# FORM-V

## ENVIRONMENTAL STATEMENT

For

FY 2018-2019

Submitted to

Gujarat Pollution Control Board  
Sector 10-A, Gandhinagar.

Submitted By:

Environment Department  
Bayer Vapi Pvt. Ltd.  
Date: 30.08.2019

**FORM – V**  
(See Rule 14)

**ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31<sup>st</sup> MARCH-2019**

**PART-A**

- (I) Name and address of the owner/Occupier of the industry operation or process : **Mr Narendra K Shah,  
Bayer Vapi Pvt Ltd.  
(Formerly, Bilag Industries Pvt. Ltd.)  
Plot No. 306/3, Phase II,  
GIDC Estate, Vapi – 396195.**
- (II) Industry category - : **Red Category (Large Scale)**  
Primary – (STC Code) : **2800**  
Secondary- (SIC Code) : **2879**  
**(Manufacturing of Pesticides & Pesticides Intermediates)**
- (III) Production capacity Units : **Details are attached as Annexure-A**
- (IV) Year of establishment : **1992**
- (V) Date of the last Environmental Statement submitted : **22.08.2018**

**PART-B**

**Water and Raw Material Consumption**

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

Sr. No.	Category	Water Consumption, m3/d	
		Apr 17 to Mar 18	Apr 18 to Mar 19
A	Process	516.13	511.98
B	Cooling	801.43	833.00
C	Domestic	91.48	89.98
Grand Total		1409.04	1434.96

Sr. No.	Name of Products	Process water consumption per MT of products	
		During the previous financial year (2017-18)	During the current financial year (2018-19)
PESTICIDES PRODUCTS & INTERMEDIATES			
1	Cypermethrin	19.81	18.99
2	Alphamethrin		
3	Deltamethrin		
4	Permethrin		
5	Transfluthrin		
6	Acrinathrin		
7	Imidacloprid		
8	Beta Cyfluthrin		
9	Cyfluthrin		
10	Ethofumesate		
11	NC 9770		
12	Aclonifen		
13	Triafamone		
14	Sulfonyl Indole		
15	Metaphenoxy Benzaldehyde		
16	NaCMTS		
17	Cypermethric Acid Chloride (CMAC)/ Cypermethric Acid (CMA)		
18	Cypermethric Acid Chloride from DV Ester		
19	Acid Chloride Preparation		
20	Metaphenoxy Benzyl Alcohol		
21	Becisthemic Acid		
22	Chrysanthemic Acid		
23	Allethrolones		
24	TCA		
25	RTCMA		
26	DM Base		
27	Fipronil		
28	Ethiprole		
29	Fluopyram		
30	PYACN		
31	Tembotrione		
32	Pyrasulfotle		
33	Amid Chloride		
34	Flumethrin		
35	R & D Products		

## (II) Raw material consumption

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

Enter-wise all industries have to submit the raw materials used.			
*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			

## 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	<i>Details are attached as Annexure-C</i>		
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	<i>Details are attached as Annexure-D</i>	
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**

Solid Waste	Total Quantity (Kg.)	
	During the previous financial year	During the current financial year
a) From Process	<b><i>Details are attached as Annexure-E</i></b>	
b) From Pollution Control Facilities		
c) (1) Quantity recycled or re-utilized Within the unit (2) Sold (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-F***

### **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-G***



**PART – H**

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

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

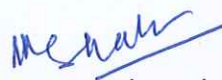
**PART – I**

Any other particulars for improving the quality of the environment.

***Details are attached as Annexure-I***

(Signature of a person carrying out an  
Industry, operation or process)

Date: 29/08/2019

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-396 195.

**Annexure-A**  
**Production Capacity Unit**

Sr. No.	Name of Products	Capacity	Production During (April 18 -March 19)
		MT/Annum	MT/Annum
PESTICIDES PRODUCTS & INTERMEDIATES			
1	Cypermethrin	2496	2343.751
2	Alphamethrin	480	345.850
3	Deltamethrin	504	485.150
4	Permethrin	1374	1010.159
5	Transfluthrin		
6	Acrinathrin	45	0.000
7	Imidacloprid	720	0.000
8	Beta Cyfluthrin	982	635.580
9	Cyfluthrin		
10	Ethofumesate	3300	1042.000
11	NC 9770		
12	Aclonifen		
13	Triafamone	180	0.000
14	Sulfonyl Indole		
15	Metaphenoxy Benzaldehyde	3000	151.175
16	NaCMTS	1200	212.000
17	Cypermethric Acid Chloride (CMAC)/ Cypermethric Acid (CMA)	2400	2392.591
18	Cypermethric Acid Chloride from DV Ester	600	248.030
19	Acid Chloride Preparation		
20	Metaphenoxy Benzyl Alcohol	1200	580.718
21	Becisthemic Acid	180	11.600
22	Chrysanthemic Acid	180	0.000
23	Allethrolones		
24	TCA	540	381.954
25	RTCMA		
26	DM Base	50	0.000
27	Fipronil	540	0.000
28	Ethiprole	1020	0.000
29	Fluopyram	3000	0.000
30	PYACN		
31	Tembotrione	1020	0.000
32	Pyrasulfotle	300	0.000
33	Amid Chloride	1020	0.000
34	Flumethrin	60	0.965
35	R & D Products	180	0.000



**Annexure-B**  
**Raw material Consumption Details**

Sr. No.	Name of Products	Name of Raw Materials	Raw Material consumption Ratio , Kg/Kg	
			For year 2017-2018	For year 2018-2019
1	Cypermethrin	Sodium Cyanide	0.122	0.121
		Sodium Hydroxide	0.004	0.003
		Metaphenoxy Benzaldehyde (MPBD)	0.467	0.465
		Try Ethyl Amine(TEA)	0.021	0.022
		Cypermethric acid chloride(CMAC)	0.540	0.543
		Hypochlorite	0.086	0.093
		Soda Ash	0.006	0.006
		Acetic acid	0.010	0.011
		Hexane	0.026	0.026
		Ferrous Sulphate	0.001	0.001
2	Alphamethrin	Cypermethrin	1.022	1.007
		DEA	0.048	0.046
		Hexane	0.211	0.201
		Acetic acid	0.038	0.045
		Sulphuric acid	0.043	0.004
		Sodium Hydroxide	0.024	0.000
		Sodium Hydroxide Flakes	0.008	0.000

Sr. No	Name of Products	Name of Raw Materials	Raw Material consumption Ratio , Kg/Kg	
			For year 2017-2018	For year 2018-2019
3	Deltamethrin	Toluene	1.850	1.853
		Ferric Chloride (FeCl <sub>3</sub> )	0.019	0.020
		Ethylene Dichloride (EDC)	0.365	0.341
		Bromine	3.080	3.105
		Trichloro Acid (TCA)	0.602	0.605
		Aluminium Chloride (AlCl <sub>3</sub> )	0.528	0.538
		Sodium Hydroxide	2.770	2.812
		Sulphuric Acid (H <sub>2</sub> SO <sub>4</sub> )	0.519	0.389
		Methanol	0.211	0.187
		Soda Ash	0.083	0.083
		Triethyl Benzyl Ammonium chloride	0.008	0.008
		Dimethylformamide (DMF)	0.000	0.001
		Thionyl Chloride (TC)	0.295	0.307
		Sodium Cyanide	0.114	0.116
		Triethyl Amine (TEA)	0.042	0.043
		Metaphenoxy Benzaldehyde	0.434	0.432
		Ferrous Sulphate	0.001	0.001
		Acetic Acid	0.009	0.007
		Isopropyl alcohol	0.099	0.092
		Hydrochloric Acid (30 %)	0.397	0.382
		Sodium Hypochlorite	0.363	0.335

Sr. No	Name of Products	Name of Raw Materials	Raw Material consumption Ratio , Kg/Kg	
			For year 2017-2018	For year 2018-2019
4	Permethrin (Alternate to Transfluthrin)	Cypermethric Acid Chloride (CMAC)	0.591	0.593
		Soda Ash	0.010	0.007
		Hexane	0.015	0.012
		Metaphenoxy Benzaldehyde	0.541	0.520
		Raney Nickle	0.001	0.001
		Hydrogen	0.006	0.007
5	Transfluthrin (Alternate to Permethrin)	Toluene	0.083	0.087
		Tetrafluoro Benzyl alcohol (TFBA)	0.494	0.491
		R Trans Permethric Acid Chloride (RTPAC)	0.627	0.624
		Soda ash	0.041	0.034
		Sodium hydroxide	0.241	0.237
		Acetic acid	0.000	0.000
		Filter aid	0.004	0.003
		Carbon	0.005	0.004

Sr. No	Name of Products	Name of Raw Materials	Raw Material consumption Ratio , Kg/Kg	
			For year 2017- 2018	For year 2018- 2019
6	Acrinathrin	Butanediol	0.000	0.000
		Phosphorous trichloride (PCl3)	0.000	0.000
		Sodium Hydroxide	0.000	0.000
		Hexane	0.000	0.000
		TEA	0.000	0.000
		Methanol	0.000	0.000
		TBBA (Tertiary Butyl bromoacetate)	0.000	0.000
		THF	0.000	0.000
		Lithium Bromide (LiBr)	0.000	0.000
		Hydrochloric Acid (HCl)	0.000	0.000
		Toluene	0.000	0.000
		MDC	0.000	0.000
		Thionyl chloride (SOCl2)	0.000	0.000
		Sodium Cyanide	0.000	0.000
		Metaphenoxy Benzaldehyde (MPBD)	0.000	0.000
		IPA	0.000	0.000
		HFIPA(Hexafluoroisopropylalcohol)	0.000	0.000
		DCC(Dicyclohexylcarbodiimide)	0.000	0.000

Sr. No	Name of Products	Name of Raw Materials	Raw Material consumption Ratio , Kg/Kg	
			For year 2017-2018	For year 2018-2019
7	Beta Cyfluthrin (Alternate to Cyfluthrin)	Toluene	0.040	0.041
		Fluorinated metaphenoxy benzaldehyde (FMPB)	0.593	0.588
		Sodium bisulphite (NaHSO <sub>3</sub> )	0.297	0.294
		Tetrabutylammonium bromide (TBAB)	0.003	0.004
		Sodium Cyanide	0.190	0.187
		Cypermethric Acid chloride	0.638	0.632
		Sodium hydroxide	0.173	0.171
		Soda ash	0.016	0.017
		Sodium hypochlorite	0.233	0.208
		Acetic acid	0.004	0.005
		Isopropyl aclohol (IPA)	0.100	0.092
		Triethylamine (TEA)	0.045	0.053
		Sulphuric acid (H <sub>2</sub> So <sub>4</sub> )	0.052	0.056
8	Cyfluthrin (Alternate to Beta Cyfluthrin)	Toluene	0.032	0.035
		Fluorinated metaphenoxy benzaldehyde(FMPB)	0.506	0.505
		Sodium bisulphite (NaHSO <sub>3</sub> )	0.297	0.253
		Tetrabutylammonium bromide (TBAB)	0.003	0.003
		Sodium Cyanide	0.190	0.161
		Cypermethric Acid chloride	0.543	0.542
		Sodium hydroxide	0.148	0.147
		Soda ash	0.014	0.015
		Sodium hypochlorite	0.199	0.179
		Acetic acid	0.001	0.000

Sr. No	Name of Products	Name of Raw Materials	Raw Material consumption Ratio , Kg/Kg	
			For year 2017-2018	For year 2018-2019
9	Ethofumesate (Alternate to NC9770)/aclinifen	Toluene	0.075	0.083
		Isobutyraldehyde	0.338	0.347
		Morpholine	0.077	0.084
		Benzoquinone	0.424	0.427
		Methanesulfonyl chloride	0.452	0.450
		Triethylamine (TEA)	0.014	0.015
		Sodium Hydroxide	0.841	0.826
		Hydrochloric acid (HCl)	1.046	1.046
		Ethanol	0.327	0.323
		Soda Ash	0.019	0.018
10	NC9770(on 100% basis)*alternate to Ethofumesate.	Toluene	0.328	0.000
		Isobutyraldehyde	0.315	0.000
		Morpholine	0.074	0.000
		Benzoquinone	0.369	0.000
		Ethanesulfonyl Chloride	0.390	0.000
		Triethylamine (TEA)	0.014	0.000
		Sodium hydroxide	0.706	0.000
		Hydrochloric acid (HCl)	0.678	0.000
		Soda Ash	0.002	0.000
11	NaCMTS	Methanol	0.000	0.062
		Potassium Hydroxide (KOH))	0.000	0.407
		Di methyl malonate (DMM))	0.000	0.814
		Xylene	0.000	0.082
		TBAB	0.000	0.045
		Chloro methyl acetate (MCA)	0.000	0.696
		Sodium Methoxide	0.000	1.118



Sr. No	Name of Products	Name of Raw Materials	Raw Material consumption Ratio , Kg/Kg	
			For year 2017-2018	For year 2018-2019
12	Cypermethric Acid Chloride (CMAC)/ Cypermethric Acid (CMA)	Hydrochloric acid (HCl)	0.011	0.010
		Diethylamine	0.007	0.007
		Acetonitrile	0.009	0.007
		Cupric Chloride	0.007	0.007
		Acrylonitrile	0.405	0.400
		Carbon TetraChloride (CTC)	1.149	1.140
		Liquid ammonia	0.161	0.154
		Dimethylformamide (DMF)	0.015	0.015
		Thionyl Chloride (TC)	0.973	0.935
		Sodium Hydroxide Solution	2.185	2.259
		Ethylene Dichloride (EDC)	0.003	0.001
		Hexane	0.108	0.103
		Isobutylene	0.412	0.416
		Triethylamine (TEA)	0.035	0.026
		Caustic Soda flake	0.106	0.074
		Sulphuric acid	0.277	0.216
		Boron F3 Etherate	0.010	0.010
		Filter aid	0.008	0.008
13	Cypermethric Acid Chloride from DV Ester	DV Ester	1.048	1.050
		Sodium hydroxide	0.973	0.566
		Toluene/Hexane	0.065	0.100
		Sulphuric acid (H2So4)	0.272	0.271
		Thionyl chloride (TC)	0.557	0.558
		N-Methyl-2-pyrrolidinone (NMP)/DMF	0.0004	0.0007
14	Acid Chloride Prep (Alternate to CMAC from DVE)	Toluene	0.044	0.050
		RTPA	0.945	0.945
		Thionyl Chloride (TC)	0.558	0.556
		Dimethylformamide (DMF)	0.001	0.001
		Sodium Hydroxide	0.925	0.831

Sr. No	Name of Products	Name of Raw Materials	Raw Material consumption Ratio , Kg/Kg	
			For year 2017-2018	For year 2018-2019
15	Metaphenoxy Benzyl Alcohol	Metaphenoxy Benzaldehyde	1.038	1.038
		Raney Nickle	0.002	0.002
		Hydrogen	0.012	0.013
16	Becisthemic Acid	Toluene	2.854	2.854
		Ferric Chloride (FeCl <sub>3</sub> )	0.030	0.030
		Ethylene dichloride (EDC)	0.280	0.317
		Bromine	4.747	4.750
		Trichloro acid (TCA)	0.926	0.926
		Aluminium Chloride (AlCl <sub>3</sub> )	0.812	0.824
		Sodium hydroxide	3.516	3.521
		Sulphuric acid (H <sub>2</sub> SO <sub>4</sub> )	0.624	0.556
		Methanol	0.284	0.260
		Soda Ash	0.101	0.100
		Benzyltriethylammonium chloride	0.013	0.012
17	TCA	Hydrochloric acid (30 %)	0.610	0.585
		Ethylene dichloride (EDC)	0.487	0.499
		High Cis CMA	2.414	2.058
		30% HCl	2.133	2.166
		Soda Ash	0.078	0.069
		Sodium hydroxide	2.853	2.869
		Ephedrine hydrochloride	0.149	0.106
		Hexane	0.168	0.167

Sr. No	Name of Products	Name of Raw Materials	Raw Material consumption Ratio , Kg/Kg	
			For year 2017-2018	For year 2018-2019
18	RTCMA(Alternate TCA)	TCMAC	1.368	1.279
		TEBA	0.014	0.015
		Ethylene dichloride (EDC)	0.504	0.524
		Sodium hydroxide	2.366	2.341
		Hydrochloric acid (30%)	1.080	1.010
		Ephedrine HCl	0.133	0.128
		Soda ash	0.076	0.050
19	Flumethrin	Bayticol Acid	0.642	0.638
		Thionyl Chloride	0.320	0.306
		Diethyl toluamide	0.001	0.001
		Sodium Cyanide	0.233	0.233
		4-FPBA	0.448	0.446
		SBS	0.118	0.110
		TBAB	0.002	0.002
		Toluene	0.855	0.155
		C.S.lye (47%)	2.055	1.639
		FeSO4	0.017	0.016
20	Metaphenoxy Benzaldehyde	Toluene	0.020	0.024
		Thionyl chloride	0.006	0.010
		Soda ash	0.005	0.006
		N-MPB	1.029	1.033

**Annexure-C**  
**Pollutant Discharge to Environment**

Sr.No.	Pollutants	Quantity of Pollutants (Kgs/Day)	Conc. Of Discharged (mg/L)	% Variation from prescribed standards
A) Water :				
1	pH	-	7.15	The all parameters are below the prescribed norms. The treated effluent is discharged to CETP of Vapi Green Enviro limited for further treatment.
2	Color	-	50.00 <sup>*1</sup>	
3	Total Suspended Solids	26.63	46.33	
4	Total Dissolved Solids	880.71	1532.50	
5	Chlorides as Cl	264.93	461.00	
6	Oil & Grease	2.02	3.51	
7	Phenolic Compounds as C6H5OH	BDL*	BDL*	
8	Hexavalent Chromium as Cr+6	BDL*	BDL*	
9	Total Chromium as Cr	0.03	0.04	
10	Cadmium as Cd	BDL*	BDL*	
11	Copper as Cu	0.01	0.01	
12	Zinc as Zn	0.07	0.13	
13	Iron as Fe	0.24	0.42	
14	Nickel as Ni	0.02	0.03	
15	Lead as Pb	BDL*	BDL*	
16	Mercury as Hg	BDL*	BDL*	
17	Arsenic as AS	BDL*	BDL*	
18	Sulphates as SO4	83.71	145.67	
19	Cyanides as CN	BDL*	BDL*	
20	Fluorides as F	0.16	0.29	
21	COD	55.55	96.67	
22	Sulphides as S	0.84	1.45	
23	Ammonical Nitrogen as NH3	2.87	5.00	
24	Temperature	-	30.31 <sup>*2</sup>	
25	BOD(5 Days @ 20 °C)	12.69	22.08	
*BDL: Below Detection Limit				

**Notes:**

1. Values are calculated on the basis of 575 m3/day effluent discharged
2. Calculation has been done on the annual average concentration.
3. \*1 Unit of Color is Co-pt Scale
4. \*2 Unit of Temperature is °C

<i>Sr.No.</i>	<i>Pollutants</i>	<i>Quantity of Pollutants (Kgs/Day)</i>	<i>Conc. Of Discharged (mg/L)</i>	<i>% Variation from prescribed standards</i>
B) Air :	From Incinerator Stack			
1	Particulate matter	11.80	31.12	The limits of various pollutants are below the prescribed limit
2	SO <sub>2</sub>	8.10	21.68	
3	NO <sub>x</sub>	15.04	41.10	
4	HCl	1.24	3.52	
5	CO	3.54	5.54	
6	TOC	BDL*	BDL*	
7	Total Dioxins & furans	0.006	0.010	
8	Cd+Th+ their compounds	0.005	0.008	
9	Hg+their compounds	BDL*	BDL*	
10	Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V+ their compounds	0.09	0.14	

\*BDL: Below detection limit

Air	From Utility Stack*			
	Particulate matter	BDL*	BDL*	The limits of various pollutants are below the prescribed limit
	SO2	2.08	3.44	
	NOx	16.19	26.72	
*it's includes Boiler stack and thermic fluid Heater stack				

**Notes:**

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

Sr.No.	Pollutants	Quantity of Pollutants (Kgs/Day)	Conc. Of Discharged (mg/L)	% Variation from prescribed standards
Air	From Process Vent			
1)	Vent attached to CMAC Reactors			
	HCl	0.013	12.80	The limits of various pollutants are below the prescribed limit
	SO <sub>2</sub>	0.039	28.94	
2)	Vent attached to TBAC Reactors			
	HCl	0.016	10.89	The limits of various pollutants are below the prescribed limit
	SO <sub>2</sub>	0.035	23.31	
3)	Vent attached to Bromination reaction reactor in Deltamethrin			
	HBr	0.006	1.81	The limits of various pollutants are below the prescribed limit
	HCl	0.031	9.28	
4)	Vent attached to Acylation reaction reactor in Deltamethrin			
	HCl	0.011	7.94	The limits of various pollutants are below the prescribed limit
	SO <sub>2</sub>	0.045	33.31	
5)	Vent attached to Acylation reactor of Transfluthrin			
	HCl	0.019	8.03	The limits of various pollutants are below the prescribed limit
6)	Vent attached to condensation reactor of Permethrin			
	HCl	0.003	6.93	The limits of various pollutants are below the prescribed limit

**Notes:**

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



**Annexure-D**  
**Details of Hazardous wastes**

Sr. No	Hazardous Wastes	Category	Total Quantity (Kg)	
			During the Previous Financial Year (2017-18)	During the Current Financial Year (2018-19)
a. From Process				
1	Distillation Residues	20.3	1498114	1762761
2	Oil and grease skimming residue	35.4	25700	16700
3	Used or Spent Oil	5.1	18177	9201
4	Spent Solvents	29.4	0	120274
5	Empty barrels/Containers/liners contaminated with hazardous chemicals/waste	33.1	88066	122724
6	Spent Catalyst	29.5	950	1055
7	Date Expired and off-Specification Pesticides	29.3	0	0
8	Spent Resin	35.2	7114	75
9	Waste or residue containing oil	5.2	0	0
10	Spent Carbon and filter medium	36.2	5837	1399
11	Process waste (Aq.Waste)	29.1	706310	706215
12	Contaminated cotton rag or other cleaning materials	33.2	245	7
13	Process waste (Waste Insulation material brick/Refractory )	29.1	155430	85800
14	Spent Acid (HCl)	29.6	0	0
15	Contaminated Soil/debris	35.3	582770	3764010

Sr. No	Hazardous Wastes	Category	Total Quantity (Kg)	
			During the Previous Financial Year (2017-18)	During the Current Financial Year (2018-19)
16	Aluminium Chloride Solution (28 %)	Sch.II B7	625200	1322400
17	Potassium bromide (30%) / sodium bromide (8%)	Sch.II B6	1150450	2345000
18	Potassium chloride Solution (20%)	Sch.II B7	0	0
19	Insulated Copper Wire Scrap or Copper with PVC sheathing including ISRI-Code metrail namely "Druid"*	Sch.IV	0	53970
20	Jelly Filled Copper Cable*	Sch.IV	0	0
21	Lead Scrap*	Sch.IV	0	0
22	Sludge from wet Scrubber*	37.1	0	0
<b>b. From Pollution Control Facility</b>				
1	Chemical Sludge from wastewater Treatment	35.3	974665	1149435
2	Evaporation Residue	37.3	9622065	10402586
3	Ash from Incinerator and flue gas cleaning residue	37.2	72775	87843
4	Chemical Containing Residue arising from decontamination facility*	37.1	0	0

**Notes:**

**\* Additional category added as per CTO amendment Order No. AWH-94492 dated 01.09.2018**

**Annexure-E**  
**Details of Solid wastes**

<b>Solid Waste</b>	<b>Total Quantity (Kg.)</b>	
	<b>During the previous financial year (Apr,17-Mar,18)</b>	<b>During the current financial year (Apr,18- Mar,19)</b>
<b>a) From Process - Generated</b>		
Wooden Scrap	126060	64240
MS Scrap	1511990	2023293
Paper	15460	25900
Electrical scrap	92840	19350
Aluminium Scrap	18730	27110
SS scrap	62783	43622
<b>b) From Pollution Control Facilities</b>		
<b>c) Quantity Sold</b>		
Wooden Scrap	126060	64240
MS Scrap	1511990	2023293
Paper	15460	25900
Electrical scrap	92840	19350
Aluminium Scrap	18730	27110
SS scrap	62783	43622

**Annexure-F**  
**Characteristics and Composition of Hazardous wastes**

Sr. No	Hazardous Wastes	Category	Physical Form	Chemical Form	Quantity of waste disposed in MT during April 18 - March 19	Disposal Practice adopted
<b>a. From Process</b>						
1	Distillation Residues	20.3	Semi-Solid	Organic Compound	1747.301	Collection, Storage, Transportation, disposal by Co-processing at recycling solution private limited (RSPL)/ Cement industries or incineration at captive incineration/ CHWIF of ACPTCL/ SEPPL, CHWIF of BEIL/Geohybrid industrial Solution Private limited (GSPL).
2	Oil and grease skimming residue	35.4	Liquid	Organic material Consist of Oil & grease	16.7	Collection, Storage, Transportation, disposal by incineration at captive incineration/ CHWIF of ACPTCL/SEPPL, CHWIF of BEIL/ Geohybrid Industrial Solution Private limited (GSPL).
3	Used or Spent Oil	5.1	Liquid	Organic material Consist of Oil	14.537	Collection, Storage, Transportation, disposal by selling registered Re-Refiners/ Recyclers/ by incineration at captive incineration/ CHWIF of ACPTCL /SEPPL, CHWIF of BEIL/ Geohybrid industrial Solution Private limited (GSPL)

Sr. No	Hazardous Wastes	Category	Physical Form	Chemical Form	Quantity of waste disposed in MT during April 18 - March 19	Disposal Practice adopted
4	Spent Solvents	29.4	Liquid	Organic Solvents	120.274	Collection, Storage, Transportation, disposal by Co-processing at recycling solution private limited (RSPL) / Cement industries or incineration at captive incineration/ CHWIF of ACPTCL/ SEPPL,CHWIF of BEIL / Geohybrid industrial Solution Private limited (GSPL)
5	Empty barrels/Containers/liners contaminated with hazardous chemicals/waste	33.1	Solid	-	122.724	Collection, Storage, Decontamination & Sale to authorized vendors/send to authorized decontamination facility
6	Spent Catalyst	29.5	Solid	-	2.47	Collection, Storage, Transportation, disposal by Selling registered recycler/ offsite recovery at units from where catalyst is procured/other units doing recovery
7	Date Expired and off-Specification Pesticides	29.3	Solid	Organic	0	Collection, Storage, Transportation, disposal by Co-processing at recycling solution private limited (RSPL)/ Cement industries or incineration at captive incineration/ CHWIF of ACPTCL /SEPPL, CHWIF of BEIL / Geohybrid industrial Solution Private limited (GSPL)

Sr. No	Hazardous Wastes	Category	Physical Form	Chemical Form	Quantity of waste disposed in MT during April 18 - March 19	Disposal Practice adopted
8	Spent Resin	35.2	Soild	-	0.075	Collection, Storage, Transportation, disposal by incineration at captive incineration/ CHWIF of ACPTCL / CHWIF of BEIL/ Geohybrid industrial Solution Private limited (GSPL) / sale to authorized industry having permission under rule-9 of Hazardous and other Wastes( Management and Transboundary Movement ) Rule-2016
9	Waste or residue containing oil	5.2	Liquid	Organic material Consist of Oil	0	Collection, Storage, Transportation, disposal by incineration at captive incineration/ CHWIF of ACPTCL /SEPPL, CHWIF of BEIL / Geohybrid industrial Solution Private limited (GSPL)
10	Spent Carbon and filter medium	36.2	Solid	-	4.494	Collection, Storage, Transportation, disposal by incineration at captive incineration/ CHWIF of ACPTCL /SEPPL, CHWIF of BEIL / Geohybrid industrial Solution Private limited (GSPL)/ Co-processing at recycling solution private limited (RSPL)/ Cement industries



Sr. No	Hazardous Wastes	Category	Physical Form	Chemical Form	Quantity of waste disposed in MT during April 18 - March 19	Disposal Practice adopted
11	Process waste (Aq.Waste)	29.1	Liquid	Organic	714.871	Collection, Storage, Transportation, disposal by Co-processing at recycling solution private limited (RSPL)/ Cement industries or incineration at captive incineration/ CHWIF of ACPTCL /SEPPL, CHWIF of BEIL / Geohybrid industrial Solution Private limited (GSPL)
12	Contaminated cotton rag or other cleaning materials	33.2	Solid	-	0.007	Collection, Storage, Transportation, disposal by incineration at captive incineration/ CHWIF of ACPTCL /SEPPL, CHWIF of BEIL/ Geohybrid industrial Solution Private limited (GSPL)
13	Process waste (Waste Insulation material brick/Refractory )	29.1	Solid	-	87.26	Collection, Storage, Transportation, disposal at authorised TSDF -Vapi / TSDF- ACPTCL / TSDF- BEIL
14	Spent Acid (HCl)	29.6	Liquid	HCl	0	Collection, storage, Transportation, reuse within the premises /sale to authorized industry having permission under rule-9 of Hazardous and other Wastes( Management and Transboundary Movement ) Rule-2016

Sr. No	Hazardous Wastes	Category	Physical Form	Chemical Form	Quantity of waste disposed in MT during April 18 - March 19	Disposal Practice adopted
15	Contaminated Soil/debris	35.3	Solid	Traces of organic & inorganic	3777.14	Collection, Storage, Treatment, Transportation, disposal at authorised TSDF –Vapi / TSDF-ACPTCL/ TSDF- BEIL
16	Aluminium Chloride Solution (28 %)	Sch.II B7	Liquid	Solution contain 28% aluminium Chloride & Water	1329.04	Collection, storage, Transportation and sale to authorised industry having permission under rule-9 of Hazardous and other Wastes( Management and Transboundary Movement ) Rule-2016
17	Potassium bromide (30%) / sodium bromide (8%)	Sch.II B6	Liquid	Solution contain 30% Potassium bromide / 8% sodium bromide & Water	2351.1	Collection, storage, Transportation and sale to authorised industry having permission under rule-9 of Hazardous and other Wastes( Management and Transboundary Movement ) Rule-2016
18	Potassium chloride Solution (20%)	Sch.II B7	Liquid	Solution contain 20% Potassium chloride Solution & Water	0	Collection, storage, Transportation and sale to authorised industry having permission under rule-9 of Hazardous and other Wastes( Management and Transboundary Movement ) Rule-2016
19	Insulated Copper Wire Scrap or Copper with PVC sheathing including ISRI- Code metrail namely "Druid"*	Sch. IV	Solid	-	53.97	Collection, Storage, Transportation, disposal to Registered Recyclers

Sr. No	Hazardous Wastes	Category	Physical Form	Chemical Form	Quantity of waste disposed in MT during April 18 - March 19	Disposal Practice adopted
20	Jelly Filled Copper Cable*	Sch.IV	Solid	-	0	Collection, Storage, Transportation, disposal to Registered Recyclers
21	Lead Scrap*	Sch.IV	Solid	-	0	Collection, Storage, Transportation, disposal to Registered Recyclers
22	Sludge from wet Scrubber*	37.1	Solid	Inorganic salt	0	Collection, Storage, Transportation, disposal at Authorised TSDF - Vapi & TSDF - SEPL

**b. From Pollution Control Facility**

1	Chemical Sludge from wastewater Treatment	35.3	Solid	Lime and inorganic salt	1111.27	Collection, Storage, Transportation, disposal at authorized TSDF –Vapi / TSDF-ACPTCL / TSDF – BEIL
2	Evaporation Residue	37.3	Solid	Inorganic salt	10159.1	Collection, Storage, Transportation, disposal at authorized TSDF –Vapi / TSDF-ACPTCL / TSDF – BEIL
3	Ash from Incinerator and flue gas cleaning residue	37.2	Solid	Inorganic salt	83.85	Collection, Storage, Transportation, disposal at authorized TSDF –Vapi / TSDF-ACPTCL / TSDF – BEIL
4	Chemical Containing Residue arising from decontamination facility*	37.1	Semi-Solid	Organic and Inorganic Traces	0	Collection, Storage, Transportation, disposal at authorized TSDF –Vapi / TSDF-ACPTCL / TSDF – BEIL

**Notes:**

**\* Additional category added as per CTO amendment Order No. AWH-94492 dated 01.09.2019**

**Annexure-G**

**Pollution abatement measures for conservation of Natural Resources**

<b><i>Sr.No.</i></b>	<b><i>Pollution abatement measures</i></b>	<b><i>Impact on Conservation of resources</i></b>
1	Reduction of Acid- Alkali Consumption	Reduce raw material consumption
2	Optimization of no of water washes & Recycling of water washes of production process steps	Reduce water consumption
3	Change in synthesis route of few pyrethroid Products e.g. Permethrin, Alphamethrin, Deltamethrin etc.	Reduce water and Raw material consumption
4	Optimization of steam by implementing various measures in plants	Reduce water consumption
5	Conversion of Single Effect Calendria in to double effect Calendria	Reduce water consumption
6	Optimization of electricity by implementing various measures e.g. $\Delta T$ improvement and nitrogen consumption	Reduce electricity consumption
7	Recovered steam condensate from the plants has improved boiler efficiency	Reduce natural gas consumption
8	Replaced energy efficient pump in Chilled water & chilled brine system	Reduce electricity consumption
9	Treated wastewater used in Solution preparation and filter press cloth cleaning	Reduce water consumption
10	Process condensate generated from wastewater pre-treatment plant used in cooling tower	Reduce water consumption

**Annexure-H**  
**Additional measure/investment proposal for environmental protection including abatement**  
**of pollution prevention of pollution**

<b>Sr.No</b>	<b>Items</b>	<b>Cost (INR)</b>
<b>1</b>	Total Cost of installation of various water and Air Pollution Control Equipment	147,322,165
<b>2</b>	Interest on Investment (8.5 % per year)	12,522,384
<b>3</b>	Depreciation per year	97,709,318
<b>4</b>	Total Operational cost of various Pollution Control Equipment/year	562,262,930
<b>5</b>	Total expenses /year (Operating cost + Interest +Depreciation)	819,816,796
<b>6</b>	Total Production (In MT)	9841.523
<b>7</b>	Total expenses per Ton of Production	83302

**Annexure-I**  
**Miscellaneous particulars for improving the quality of the environment**

It is ensured that wastewater pretreatment plant, Effluent treatment plant and other pollution control facilities are effectively operated round the clock. Further, we have taken following measures to improve quality of environment.

1. We have obtained ISO-14001:2015 (EMS) for Better Environment Management System and Control.
2. Full-fledged Environment laboratory installed at site for monitoring Environment Parameters
3. Additional evaporation residue storage facility provided to Store salt generated from WWPT Plant during the monsoon season.
4. 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.
5. We have implemented 5S concepts in all departments of factory which is useful in minimizing waste and helpful in maintaining better housekeeping.
6. Third party Environment audit was carried out by M/s. SHEF Research and Solutions, Sarigam and all recommendation is being implemented at site.
7. Tree plantation was carried out as a part of world environment day celebration on 5<sup>th</sup> June.
8. Storm water collection pond is constructed and critical parameters verified before discharge in creek. Construction of another storm collection pond is under progress.
9. Industry has taken membership of M/s. ECO Green Recycling for environment friendly disposal of E-waste.
10. Continuous 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.
11. We have valid membership of TSDF Vapi, TSDF BEIL, TSDF SEPPL/DIPL for better and effective disposal of hazardous waste.



12. A leak detection and repair (LDAR) Studies have been carried out in two plants through NABL and MOEF &CC accredited Laboratory for the prevention of fugitive emission from pumps, valve and flange joints.
13. Two stage scrubbers provided to control process emissions from process vents. Further online pH meter provided for continuous pH monitoring of scrubbing media.
14. We have installed Auto sampler at the final discharge of premises to collect composite sample of treated effluent.
15. Recover and sale of by-products



***LEAK DETECTION AND REPAIR (LDAR) STUDY***



***Green Belt inside the Company Premises***