From: Vijay Ajmera
Sent: Saturday, September 21, 2024 5:07 PM
To: MS <ms-mppcb@mp.gov.in>
Cc: regional officer <romppcb_ujjain@yahoo.co.in>
Subject: Environmental Statement Report (FY 2023-2024) – M/s. Grasim Industries Ltd. (Chemical Division)

Respected Sir,

Please find attached herewith the Environmental Statement Report (Form-V) for the financial year April 2023 to March 2024 of Grasim Chemical Division, Birlagram Nagda.

Thanks and Regards,

Vijay Ajmera

Grasim Chemical Division, Nagda

ADITYA BIRLA
GRASIM

Ref. No. GRCD/EHS/241 Date 21.09.24

To,

The Member Secretary,
Madhya Pradesh Pollution Control Board,
Paryavran Parisar, E-5, Arera colony,
Bhopal, 462016 (MP)

Sub: Reg. submission of Environmental Statement Report (April, 2023-March, 2024) for the Expansion project of caustic chlorine products from and value-added derivatives along with installation of new chloromethane plant at village-Birlagram, Tehsil-Nagda, District-Ujjain (MP) by **M/s. Grasim Industries Ltd. (Chemical division)**

Ref.: EC Letter no. F. No. J-11011/119/2015-IA.II(I) dated 7.1.2020

Respected Sir,

With reference to aforesaid subject & reference matter, we are herewith submitting **Environmental Statement Report** (Form-V) for the **financial year 2023 - 2024.**

We Hope you will find it in order

Thanks & Regards,

M/s. Grasim Industries Ltd.
(Chemical division)

Vijay Ajmera
EHS-Head

Copy to: Regional Officer Madhya Pradesh Pollution Control Board ,17-Bharatpuri Ujjain

Grasim Industries Limited
Chemical Division
Birlagram - 456 331, Nagda (M.P.) INDIA Tele: +91 7366 246760-66 Fax : +91 7366 246176, 246767
E-mail : grasimchem@adityabirla.com Website : www.adityabirlachemicals.com CIN : L17124MP1947PLC000410
Regd. Office : P.O. Birlagram, Nagda - 456 331 (M.P.)

ENVIRONMENT STATEMENT REPORT

FY:2023-2024

FOR

GRASIM INDUSTRIES LTD.
(CHEMICAL DIVISION)

Grasim Industries Limited

(Unit: Chemical Division)

Village: Birlagram, Tehsil: Nagda,

District: Ujjain (Madhya Pradesh)- 456331

ENVIRONMENT STATEMENT REPORT FORM-V

(See rule 14)

Environmental Statement for the financial year ending with 31st March 2024

PART-A

General Information

(1)	**Name and address of the owner/occupier of the industry operation or process.**	Name: - Mr. Ashok Kumar Gupta M/s Grasim Industries Ltd. (Chemical Division) at Village: Birlagram, Tehsil: Nagda, District: Ujjain (Madhya Pradesh)			
(2)	**Industry category Primary**	4 (d) & 5 (f)			
(3)	**Production capacity**	**S.No**	**Product Name**	**Capacity as per EC (TPA)**	**Capacity as per CTO (TPA)**
		1	Caustic Soda/Caustic Soda Lye	450000	300,000
		2	Poly Aluminium Chloride	165000	36,500
		3	Stable Bleaching Powder	54750	43,800
		4	Chlorinated Paraffin	45645	27,000
		5	Chloromethane	36000	NA
		6	Chloro Sulphonic Acid	23400	23,400
		7	Calcium Chloride (100%)	54000	54,000
		8	DG-Set (Electricity Generation)	-	2x2000 KVA
		9	Chlorine	365000	2,39,111
		10	Hydrochloric Acid (100%)	135000	87,800
		11	Sodium Hypochlorite (100%)	90000	59,470
		12	Hydrogen	11400	7,480
		13	Compressed Hydrogen	1460	1,070
		14	Carbon Dioxide	23760	23,760
(4)	**Year of establishment**	Membrane Cell Caustic Soda Plant Unit-1-1995 Membrane Cell Caustic Soda Plant Unit-2-2007 Stable Bleaching Powder-1986 Poly-Aluminium Chloride- 1990 Chloro Sulphonic Acid-1992 Chlorinated Paraffin Plant -2010 Calcium Chloride Plant-2013			
(5)	**Date of the last environmental statement submitted**	29.09.2023			

PART-B

Water & Raw Material Consumption:

i. Water consumption m3/day

Category	Consent limit	Actual consumption
Cooling Water	1510	1297
Domestic Purpose	93	78
Mfg. Process	1690	1283

Water is not used in the main process, but used in the water scrubbing and absorption of HCL to control HCL emissions

S. No	Name of Product	Process Water Consumption per Unit of product Output (m3/MT)	
		During the previous financial year-2022-23	During the previous financial year-2023-24
1	Membrane Caustic Soda unit -1 & 2	3.360	3.350
2	Poly-Aluminium Chloride	0.799	0.744
3	Stable Bleaching Powder	0.422	0.380
4	Chlorinated Paraffin	2.142	2.390
5	Chlorosulphonic Acid	1.869	6.890
6	Calcium Chloride	2.094	1.970

ii. Raw Material Consumption

S. No	Name of Raw Material	Name of Product	Raw Material Consumption per Unit of product Output	
			During the previous financial year-2022-23	During the previous financial year-2023-24
1	Salt	Caustic Soda Lye	1.560 MT/MT	1.560 MT/MT
2	Barium Carbonate		7.155 Kg/MT	7.089 Kg/MT
3	Soda Ash		2.151 Kg/MT	1.876 Kg/MT
4	Alpha Cellulose		0.094 Kg/MT	0.122 Kg/MT
5	NaoH		14.117 Kg/MT	15.443 Kg/MT
6	Hydrochloric Acid		38.905 Kg/MT	45.200 Kg/MT
7	Sodium Bi Sulphite		0.619 Kg/MT	0.751 Kg/MT
8	Coagulant		0.009 Kg/MT	0.008 Kg/MT
9	Alumina Hydrate	Poly Aluminium Chloride	0.158 MT/MT	0.158 MT/MT
10	Hydrochloric Acid		0.118 MT/MT	0.117 MT/MT
11	Hydrated Lime	Stable Bleaching Powder	0.745 MT/MT	0.744 MT/MT
12	Liquid Chlorine		0.404 MT/MT	0.4054 MT/MT
13	HNP (High Normal Paraffin)	Chlorinated Paraffin wax	0.414 MT/MT	0.403 MT/MT
14	Chlorine		1.170 MT/MT	1.237 MT/MT
15	Hydrochloric acid	Chlorosulphonic Acid	0.326 MT/MT	0.000 MT/MT

16	Sulphur-Tri-oxide		0.693 MT/MT	0.000 MT/MT
17	Limestone	Calcium Chloride	1.056 MT/MT	1.065 MT/MT
18	Hydrochloric Acid		0.743 MT/MT	0.732 MT/MT

PART- C
Pollution discharged to environment/Unit of Output

Pollution		**Quantity of pollutant discharged (mass/day)**	**Concentration of pollutant in discharged (mass/volume)**	**Percentage of variation from prescribed standards with reason**
Air				
Stack Name	**Pollutant**			
Caustic Soda Unit-I, Sodium Hypo Chlorine Stack	Chlorine-mg/Nm3	0.02367 TPD	4.71 mg/Nm3	No Variation
Caustic Soda Unit-I, HCL Furnace-G Stack	HCL- mg/Nm3	0.00274 TPD	6.78 mg/Nm3	No Variation
Caustic Soda Unit-I, HCL Furnace-H Stack	HCL- mg/Nm3	0.00267 TPD	6.45 mg/Nm3	No Variation
Caustic Soda Unit-II, Sodium Hypo Chlorine Stack	Chlorine mg/Nm3	0.27059 TPD	4.70 mg/Nm3	No Variation
Caustic Soda Unit-II, HCL Furnace-50 TPD Stack	HCL- mg/Nm3	0.00330 TPD	6.46 mg/Nm3	No Variation
Caustic Soda Unit-II, HCL Furnace-H Stack	HCL- mg/Nm3	0.00331 TPD	7.13 mg/Nm3	No Variation
Stable Bleaching Powder Stack (Phase 1&2)	PM- mg/Nm3	0.10027 TPD	15.92 mg/Nm3	No Variation
	Chlorine- mg/Nm3	0.03399 TPD	5.40 mg/Nm3	
Stable Bleaching Powder Stack (Phase 3&4)	PM- mg/Nm3	0.09717 TPD	15.40 mg/Nm3	No Variation
	Chlorine- mg/Nm3	0.03181 TPD	5.04mg/Nm3	
Spray Liquid Stack-I, Poly Aluminium Chloride Plant	HCL- mg/Nm3	0.62506 TPD	10.18 mg/Nm3	No Variation
Spray Liquid Stack-II, Poly Aluminium Chloride Plant	HCL- mg/Nm3	0.68362 TPD	11.28 mg/Nm3	No Variation
Spray Liquid Stack-III, Poly Aluminium Chloride Plant	HCL- mg/Nm3	0.02856 TPD	7.58 mg/Nm3	No Variation
Chloro Sulphonic Acid (HCL water Scrubber Stack)	HCL- mg/Nm3	0.00165 TPD	5.44 mg/Nm3	No Variation
Chloro Sulphonic Acid (SO3 Scrubber Stack)	PM- mg/Nm3	0.00197 TPD	6.50 mg/Nm3	No Variation
	Sulphur Trioxide (SO3)- mg/Nm3	0.00187 TPD	4.87 mg/Nm3	
Chlorinated Paraffin Plant	HCL- mg/Nm3	0.02153 TPD	5.11 mg/Nm3	No Variation
	Chlorine- mg/Nm3	0.01140 TPD	2.81 mg/Nm3	

Calcium Chloride stack	HCL- mg/Nm3	0.00460 TPD	7.43 mg/Nm3	No Variation
D.G. Set 2000 KVA (Near CAP Area)	PM- mg/Nm3	0.00827 TPH	47.50 mg/Nm3	No Variation
	Oxide of Nitrogen-PPMv	0.08366 TPH	221.98 PPMv	
	Sulphur Dioxide-mg/Nm3	0.00359 TPH	20.59 mg/Nm3	
	Hydrocarbons-mg/Nm3	0.00331 TPH	18.98 mg/Nm3	
	Non-Methane Hydrocarbons-mg/Nm3	0.00148 TPH	8.54 mg/Nm3	
	Carbon Monoxide-mg/Nm3	0.05044TPH	290.23 mg/Nm3	
	Carbon dioxide (%)	2.55	2.55	
D.G. Set 2000 KVA (Near VAP Area)	PM- mg/Nm3	0.00777 TPH	44.08 mg/Nm3	No Variation
	Oxide of Nitrogen-PPMv	0.07848 TPH	255.30 PPMv	
	Sulphur Dioxide-mg/Nm3	0.00356 TPH	20.14 mg/Nm3	
	Hydrocarbons-mg/Nm3	0.00363 TPH	20.54 mg/Nm3	
	Non-Methane Hydrocarbons-mg/Nm3	0.00150 TPH	8.51 mg/Nm3	
	Carbon Monoxide-mg/Nm3	0.05827 TPH	330.46 mg/Nm3	
	Carbon dioxide (%)	2.59%	2.6 (%)	
Fugitive emission	**Plant Location**		**Concentration in (µg/m3)**	
	Membrane caustic soda plant-1 (near HCL Plant)		163	
	Membrane caustic soda plant-2		189	
	ZLD area (near ETP)		171	
	Stable bleaching powder Plant (Near cooling tower area)		166	
	Poly Aluminium Chloride (PAC Plant)		161	
	Chloro Sulphonic Acid plant		194	
	Calcium chloride Plant (near Control Room)		187	
Water	Unit has been maintained the zero liquid discharge at site and there will be no effluent discharge.			

PART – D
HAZARDOUS WASTE
(As specified under Hazardous & Other Waste Management and Handling Rules 1989)

S. No	Name of Hazardous Waste & Cat No	Total Quantity- MT	
		During the previous financial year-2022-23	During the previous financial year-2023-24
1	Used Oil – 5.1	11.69	6.38
2	Brine Sludge - 16.3	3976.85	4221.58
3	Empty barrels/containers/liners contaminated with hazardous chemicals/wastes-33.1	10.56	6.79
4	Oil and Grease skimming Residues -5.2	0.0	0.0
5	Chemical Sludge from waste water treatment(ETP Sludge)-	277.30	347.75

	35.3		
6	Chemical Sludge from waste water treatment (ATFD/ZLD Salt)-35.3	820.38	1069.89
7	Rubber waste-X08	0.0	0.0
8	Asbestos waste/sheets-Z 16	0.93	4.0
9	Filter Waste –Z37	9.83	9.78
10	PVC and Plastic waste –Z46	181.85	269.95
11	Glass wool Insulation Waste –Z 22	4.79	13.23
12	Chemical Waste Solid –Z33	190.0	35.5
13	Thermocol (cold insulation)	0	0.298
14	Residue sludge & Filter cake-16.2	336.63	1587.15
16	Spent ion exchange resin containing toxic metals(35.2)	2.0	0.0
17	Contaminated cotton rags or other cleaning materials(33.2)	0.80	0.0
18	Spent Carbon-28.3	0.0	0.0

PART-E
SOLID WASTE

S. No		Total Quantity- MT			
		During the previous financial year-2022-23		During the previous financial year-2023-24	
(a)	From Process	(a). 8.0 MT/Month in form of unreacted Alumina Hydrate is reused in the process.		(a). 8.2 MT/Month in form of unreacted Alumina Hydrate is reused in the process. (b). 2040.00 MTA Solid Waste generated from Calcium Chloride Unit and same is disposed in our Captive SLF.	
(b)	From Pollution Control Facility	No any		No any	
(c)	Quantity recycled or re- utilized within the unit			800-900 Kg/Month in the form of sediment lime which is reused in plant	
	Sold	Metal Scrap, Valves& Pipe, Copper & Aluminium Cables	2190.0	Metal Scrap, Valves& Pipe, Copper & Aluminium Cables	998.21
		Discarded Equipment & Machinery	94.73	Discarded Equipment & Machinery	113.42
		Wooden Waste	21.5	Wooden Waste	36.17
	Disposed	Food waste	0.39	Food waste	0.27
		STP Sludge	18.27	STP Sludge	21.00

PART-F

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

S. No	Name of Hazardous Waste & Cat No	Consented Qty (MTA)	Characterization	Mode of Disposal
1	Used Oil – 5.1	40.25	Generated from the machinery /rotatory parts in plants	Collection, storage and disposal to authorized recyclers, (Co-processing & Pre-processing if not suitable for recycling)
2	Brine Sludge - 16.3	7500.00	Generated from the brine purification system.	Captive Land fill
3	Empty barrels/containers/liners contaminated with hazardous chemicals/wastes-33.1	25.00	Containing traces of paints and chemicals used in plant	CTSDF, Co-processing, Pre-processing, authorized recyclers
4	Oil and Grease skimming Residues -35.4	2.00	Containing traces of oils & grease used in machinery	CTSDF, Co-processing, Pre-processing,
5	Chemical Sludge from waste water treatment (ETP Sludge)-35.3	500.00	Sludge generated from waste water treatment in ETP	Captive Land fill
6	Chemical Sludge from waste water treatment (ATFD/ZLD Salt)-35.3	3000.00	Sludge generated from the waste water treatment plant	CTSDF
7	Rubber waste-X08	10.00	Generated from maintenance (gaskets & liners)	Authorized recyclers,
8	Asbestos waste/sheets-Z 16	10.00	Generated from the replacement of old sheets	Captive Land fill
9	Filter Waste –Z37	10.0	Generated from the filter press & water treatment plant	CTSDF, Co-processing, pre-processing
10	PVC and Plastic waste – Z46	600.00	Generated from the replacement of liner, packing material etc.	Authorized Recyclers, consented recyclers
11	Glass wool Insulation Waste –Z 22	25.00	Generated form maintenance of steam lines/jackets	Captive Land fill
12	Chemical Waste Solid – Z33	50.00	It is generated from reactor cleaning etc.	Captive Land fill
13	Thermocol (cold insulation)	1.00	Generated form maintenance of steam lines/jackets	Captive Land fill
14	Residue sludge & Filter cake- 16.2	4400.00	Generated from the filter press from manufacturing process	CTSDF, Co-processing, pre-processing
16	Spent ion exchange resin containing toxic metals (35.2)	2.00	Particles of resin used in water treatment.	CTSDF, Co-processing, Pre-processing, co-incineration in boilers
17	Contaminated cotton rags or other cleaning materials (33.2)	2.00	Cotton generated during cleaning, dedusting of machinery/equipment's	CTSDF, Co-processing, Pre-processing
18	Spent Carbon-28.3	5.00	Generated from water treatment plant filters	CTSDF, Co-processing, Pre-processing

PART-G
Impact of the pollution abatement measures taken up on conservation of natural resources and on the cost of production.

The mitigation Measures/ pollution abatement measures taken are as follows:

S. No	Air Pollution Abatement Measures	Water Pollution for Industrial Effluent & Domestic Sewage Abatement Measures	Noise Pollution Abatement Measures
1	• Bag Filters are provided in manufacturing unit (SBP) to maintain the PM (Particulate Matter) emission level within the prescribed limit. • Providing Alkali and water scrubbers for removal of chlorine vapors and absorption of untreated HCL. • Online continuous monitoring system has been installed to monitor the real time emission data and same is being transmitted to the state pollution control board as well as CPCB. • All the roads inside the plant premises are paved and maintained for future. • Water spraying to reduce the PM emission level is being practiced	• Waste water generated from the manufacturing process is being treated in full-fledged operational Effluent Treatment of capacity 1000 m3/day, ETP plant is followed by ultrafiltration and Reverse Osmosis (RO plant) MEE & ATFD & treated effluent is being reused in utility and process. • Multi effect (Four effect) evaporator plant is installed to treat RO reject followed by Agitated Thin Film dryer. • The domestic wastewater generated from plant is being treated in two Sewage Treatment Plant (STP) and treated sewage water is being used for greenbelt/ plantation development.	• Properly insulated enclosures have been provided to equipment's making excessive noise. • Ear plugs have been provided to persons working in high noise zone. • Development of greenbelt with carefully selected plant species is of prime importance due to their capacity to reduce noise and air pollution impacts by attenuation/assimilation and for providing food and habitat for local macro and micro fauna. • Development of Greenbelt in and around the plant site.

PART – H
Additional measures/ investment proposal for environment protection including abatement of pollution/ prevention of pollution

Various equipment's are installed in the plants to minimize inevitable air pollutants. Alkali scrubbers, water scrubbers, Bag Filters, Cyclone, Dust Collector, Gravity Settling Chamber, Hood Cover and H2SO4 Scrubber are installed to control chlorine, HCL, PM and S03. Efficient running of these equipment's is ensured round the clock.

PART-I
Any other particulars in respect of environmental protection and abatement of pollution.

POLLUTION ABATEMENT IN CAUSTIC SODA MEMBRANE CELL PLANT

GRASIM'S Caustic soda plant at Nagda has a lot of in-built design features, which go a long way towards pollution abatement. Besides the in-built design features, requisite steps have been taken by the company towards complete reuse of liquid effluent and proper treatment of air and proper disposal of solid waste, so as to minimize pollution.

1. WATER POLLUTION CONTROL

We take care to minimize effluent generation through recycle / reuse of wastewater within the process. A lot of in- built design features, which go a long way towards pollution abatement are incorporated in the system. Besides the in-built design features, requisite steps have been taken by the company towards proper treatment of liquid effluent. Through use of various segregations and recycle schemes, the volume of wastewater is reduced.

Arrangements for collection and reuse have been made in all the sections of the plant.

1.1 TREATMENT OF EFFLUENT GENERATED FROM CAUSTIC SODA PLANT UTILITIES:

All plants have collection pits constructed in each of the sections. The wastewater generated is collected in the collection pits/tanks and same is pumped to ETP for treatment.

Up gradation of Effluent Treatment Plant

The effluent treatment plant has manual control for pH correction and TSS removal. To strengthen the system and ensure proper treatment of effluent 1000 KLD capacity Effluent Treatment Plant has been installed with auto control dosing system of different chemical. New equipment has been installed like Pipe mixture, floculator, Lamella Clarifier and Filter press, sand and activated carbon filter for removal of suspended particle. The suspended matter after clarification in lamella clarifier passed through filter press to get sludge and dispose of in secured landfill.

1.2 Double Stage Effluent RO Plant

To achieve ZLD status double stage RO plant of 600 KLD capacity has been installed which comprises of Ultra Filtration system, brackish water RO and Sea Water RO. The treated effluent passed through BWRO where 60 % permeate water received having TDS below

100 mg/l, while reject again feed into the SWRO to get further 60 % permeate water having TDS below 200 mg/l.

All permeate water received as above are using in different cooling towers while reject of SWRO treat through MEE and ATFD plant.

MEE & ATFD

To treat reject of SWRO unit has installed MEE and ATFD plant having capacity 120 KLD. The SWRO reject feed in Multi Effect Evaporator plant under vacuum to get 85 % water as condensate having TDS below 100 mg/ll while concentrate feed in Agitated Thin Film Dryer to get condensate having TDS below 200 mg/l and dry salt.

List of equipment's installed in the upgraded effluent treatment system:

1. Collection pits 3 nos.: Capacity: 80+80+160 M^3.

2. Aeration system includes 3 nos. air blowers

3. Flocculation*:* Capacity: 6 M3, with agitator & continuous flow arrangement.

4. Clarifier: Capacity: 40 M3 with residence time of 25 min. The tank is equipped with moving racker arm device.

5. Lamella Settler

6. Sludge drying beds: 2 nos. RCC storage tank structures with sand laid at the bottom and having sludge holding capacity of 25 M^3 each.

7. Treated water Collection tank: Capacity: 50 M^3

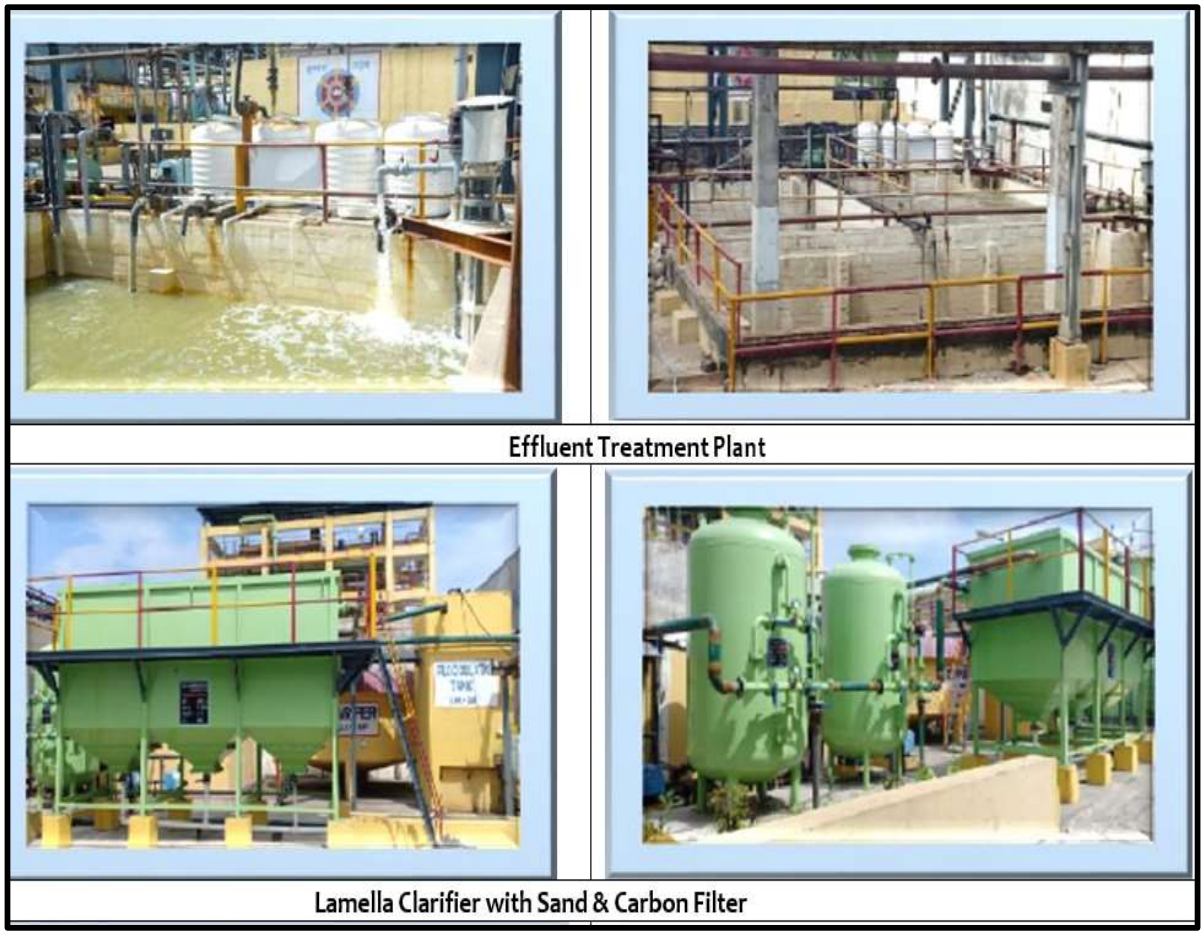
8. Sand filter: A MS tank filter with sand as filter media and is provided with pressurized inlet/outlet facility**.**

9. Activated carbon filter: A MS tank filter with activated carbon as adsorbing media and is provided with pressurized inlet/outlet facility**.**

10. Treatment_methodology: The influent is collected in the collection pits by pumping arrangement. This forms a batch process for treatment. The collected effluent is aerated from bottom by means of air blowers. During aeration the process of chemical and coagulant dosing is carried out so that it ensures proper mixing and neutralization. The effluent is then pumped to flocculator. Vigorous mixing takes place in flocculator tank. Here the flocculation takes place by means of chemical reaction enhanced by coagulant. Then effluent flows into the clarifier by gravity flow.

In the clarifier/lamella the suspended particles settle down at the clarifier tank/lamella bottom in form of sludge, which is drained out from the bottom. Suspended solids in the effluent are removed in form of sludge. The sludge from clarifier/lamella is drained in a pit. Collected sludge in a pit and pass-through filter press for moisture removal and semi- solid sludge disposed to our secured land fill. If filter press is in maintenance, we have two nos sludge drying beds. Liquid sludge pumped on drying beds, the sludge is then allowed for sun drying and disposed off.

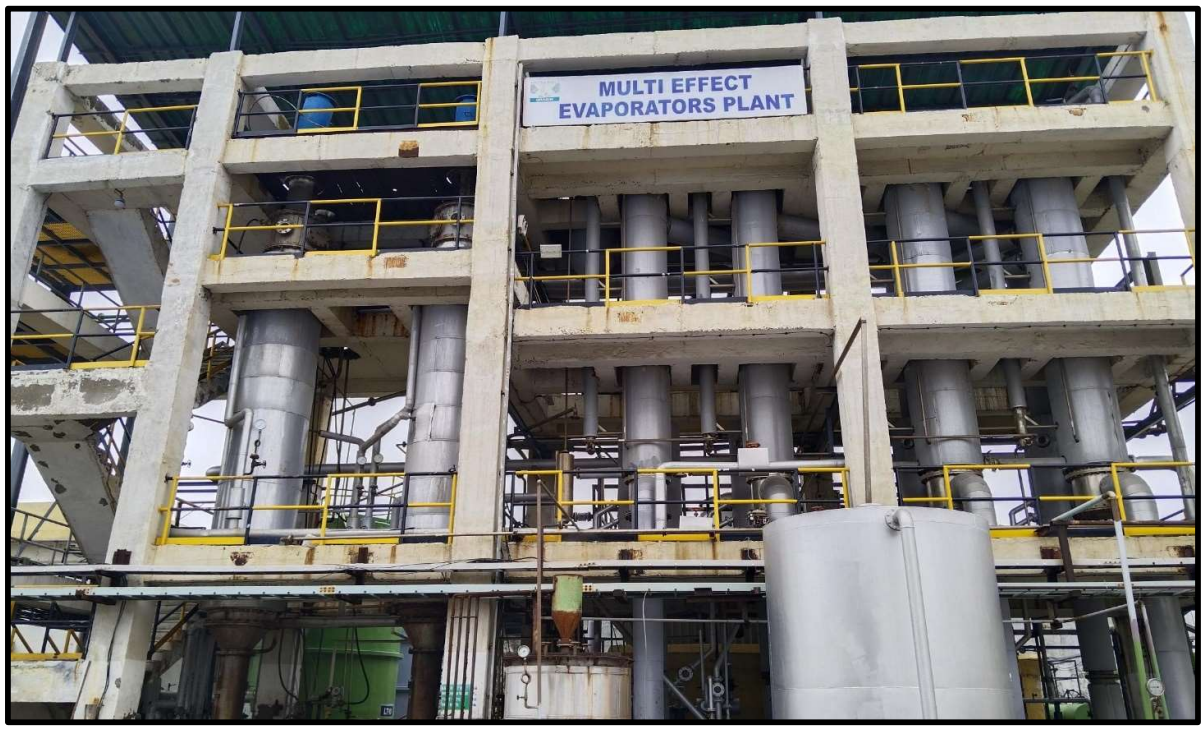
Photographs of Pollution Control Equipment



Effluent Treatment Plant

Lamella Clarifier with Sand & Carbon Filter

MULTI EFFECT EVAPORATORS PLANT



ALKALI & WATER SCRUBBERS

ENVIRONMENTAL MANAGEMENT

The company has always laid most importance on conservation of environment in and around its various plants. The technology selection and continuous updating of existing plants is done carefully keeping the environmental aspects in view. A number of steps have been taken to control environmental discharge and to ensure conservation of natural resources. Modernization and strict surveillance are continuous process.

EXPENDITURE FOR ENVIRONMENTAL MANAGEMENT:

Capital investment as well as incur operating expenditure to maintain the pollution control equipment as well as hazardous waste management.

- Rs. 10.33 Crores invested for development of Captive SLF.
- Rs. 52630.00 /- approx. per day for water, emission control and Effluent treatment. Hazardous & Solid waste.

Preventive maintenance expenses in the various sections of the whole plant for good housekeeping and maintenance for avoiding leakages are not included in the above-mentioned figures.