

INDORAMA

Indorama India Private Limited



ENVIRONMENTAL STATEMENT

2022-23

Prepared by –Environment
team, Indorama India Pvt Ltd

Form -V

ENVIRONMENTAL STATEMENT

[FORM-V]

Environmental Statement for the financial year ending the 31st March 2023

PART-A

(i) Name and address of the owner/occupier of the industry operation or process:

- Name : Mr. Rajveer Singh
- Address of Unit : Indorama India Pvt Ltd
P.O. Durgachak, Haldia
District Purba Medinipur
West Bengal - 721 602
- Address of Corporate Office :
Indorama India Pvt Ltd
Formerly IRC Agrochemicals Private Limited
Regd & Corporate Office: Ecocentre, EM-4, 12th floor, Unit No ECSL 1201, Sector V, Salt Lake,
Kolkata 700091
Telephone No. : 033-66343100
FAX No. : 033-66343102

(ii) Industry category: RED

(iii) Production capacity – Units

- Sulphuric Acid : 247500MT/Annum
- Di-ammonium Phosphate : 759000 MT/Annum
Or NPK : 924000 MT/Annum
- Single Super Phosphate : 208980MT/Annum

(iv) Year of establishment : 1979

(v) Date of the last environmental statement submitted: 1st Aug, 2022.

PART-B

Water and Raw Material Consumption

Raw water consumption m³/d (Yearly avg)

Process : 500
 Cooling & boiler feed : 1761
 Domestic : 77

Name of Product	Process water consumption per unit of product output (m ³ /MT of production)	
	During the current financial year (2021-22)	During the current financial year (2022-23)
Sulphuric Acid (cooling+ boiler feed water included)	2.82	3.04
Di-ammonium Phosphate/ NPK	0.11	0.17
Single Super Phosphate	0.020	0.022

Raw material consumption:

*Name of raw materials	Name of Products	Consumption of raw material per unit of output(Ton/Ton of production)	
		During the financial year (2021-22)	During the current financial year (2022-23)
Sulphur	Sulphuric Acid	0.332	0.331
Ammonia	Di-ammonium Phosphate	-	0.221
P ₂ O ₅		-	0.464
Ammonia	NPK 10:26:26	0.121	0.123
P ₂ O ₅		0.263	0.263
MOP		0.444	0.442
Ammonia	NPK 12:32:16	0.1472	0.151
P ₂ O ₅		0.323	0.325
MOP		0.273	0.274
Ammonia	NPK 14:35:14	0.171	0.170
P ₂ O ₅		0.359	0.355
MOP		0.245	0.243
Ammonia	NP 16:20	0.203	-
P ₂ O ₅		0.220	-

Ammonia	NP 20:20	-	0.247
P ₂ O ₅		-	0.214
Ammonia	NP 14:28	0.174	0.174
P ₂ O ₅		0.284	0.285
Rock Phosphate	Single Super Phosphate	0.608	0.608
Sulphuric Acid		0.359	0.358

PART-C

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

(a) Water

Pollutants	Quantity of Pollutants discharged (kg/d)	Concentration of Pollutants discharged (mg/L) except PH	Prescribed Standards (Consent Limits)
pH		7.51	Between 6.5 - 8.5
TSS	2.36	7.07	Not to exceed 100 mg/L
BOD	2.42	7.22	Not to exceed 30 mg/L
COD	8.06	24.08	Not to exceed 250 mg/L
Oil & Grease	0.67	2.00	Not to exceed 10 mg/L
Phosphate	0.06	0.19	Not to exceed 5 mg/L
Fluorides	0.19	0.57	Not to exceed 10 mg/L
Ammonical Nitrogen as N	2.41	7.21	Not to exceed 50 mg/L
Kjeldhal Nitrogen as N	8.00	23.89	Not to exceed 75 mg/L
Free Ammonical Nitrogen as N	0.19	0.57	Not to exceed 4 mg/L

(b) Air

Pollutants	Quantity of Pollutants discharged (kg/d)	Concentration of Pollutants discharged (mg/Nm ³)	Prescribed Standards (Consent Limits)***
Sulphuric Acid Plant -1			
SO ₂	116.3	218	<1250 mg/ Nm ³
Acid mist	20.8	39	< 70 mg/ Nm ³

Sulphuric Acid Plant -2			
SO ₂	56.4	124	<1250 mg/ Nm ³
Acid mist	11.1	24	< 70 mg/ Nm ³
DAP Plant -1			
Fluoride as HF	3.24	1.19	< 10 mg/ Nm ³
PM	210.76	78	< 150 mg/ Nm ³
NH ₃	413.88	152	<300 mg/Nm ³
DAP Plant -2			
Fluoride as HF	2.47	0.8	< 10 mg/ Nm ³
PM	236.05	79	< 150 mg/ Nm ³
NH ₃	357.51	119	<300 mg/Nm ³
SSP plant			
Fluoride as HF	0.31	1.2	< 20 mg/ Nm ³
PM	12.96	50	< 125 mg/ Nm ³

NOTE: Actual emissions are well within the permissible limits, there is no violation of prescribed standards. Ammonia terminal facility (erst while Sanjana Cryogenics storage Ltd) is part of Indorama Corporation. There is no emission from ammonia terminal facility except emergency.

PART-D

HAZARDOUS WASTES

(As specified under Hazardous Wastes / Management and handling Rules, 1989)
Hazardous Waste Generated

Hazardous Wastes	Total Quantity (MT/year)	
	During the previous financial year (2021-22)	During the current financial year (2022-23)
(a) From Process		
Vanadium Pentoxide Catalyst	11.64	15.2
Used Oil	4.17	2.95
Sludge and filters contaminated with oil	0.8	0
Residues from production of mineral acid	0	2.57

Sulphur Sludge	61.6	46.19
Spent Resin	-	-
(b) From pollution control facilities		
ETP Sludge	74.5	47.57

PART E

Solid Waste

Solid Waste	Mode of Disposal	Total Quantity (MT/year)	
		During the previous financial year (2021-22)	During the current financial year (2022-23)
(a) From Process			
Fly ash	Re-used in DAP	1615	1613
(b) From pollution control facilities			
NIL	--	--	-

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 the categories of wastes.

Hazardous waste / Solid Waste	Source	Quantity Disposal(MT/year)	Method of Disposal
(a) Hazardous Waste			
Vanadium Pentoxide Catalyst	Spent catalyst dust generated from Sulphuric acid plant	15.2	Sent to West Bengal Waste Management Ltd. (Common Hazardous Waste Transfer, Storage, Disposal Facility) for disposal
Used Oil	Spent lubricant oil generated from maintenance applications	2.95	Sold to CPCB registered used oil recyclers
Waste Oil	From FO , Diesel tank	0	Sold to CPCB registered used oil recyclers
Sulphur Sludge	Generated from Sulphuric Acid plant during cleaning of Raw Sulphur.	65.81	Sent to West Bengal Waste Management

ETP Sludge	Chemical sludge from waste water treatment	97.34	ETP Sludge sent to West Bengal Waste Management Ltd
Solid Waste			
Fly Ash	Generated from new hot air generator due to burning of biomass and coal	1613	Re-used in DAP

PART-G

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

Please refer to Annexure - 1 & 2

PART-H

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

Please refer to Annexure – 3

PART-I

Any other particular for improving the quality of the environment

Annexure -4

ANNEXURE - 1

Measures taken to reduce water consumption and for conservation of energy & pollution control measures are as follows.

Resource Conservation:-

A. Energy Conservation:

For GHG reduction and improvement in energy management system we have taken the initiative such as

- Solar panel of 500 kWp installed to increase the use of renewable energy as a part of Eco Sustainability measures in Feb 2023.



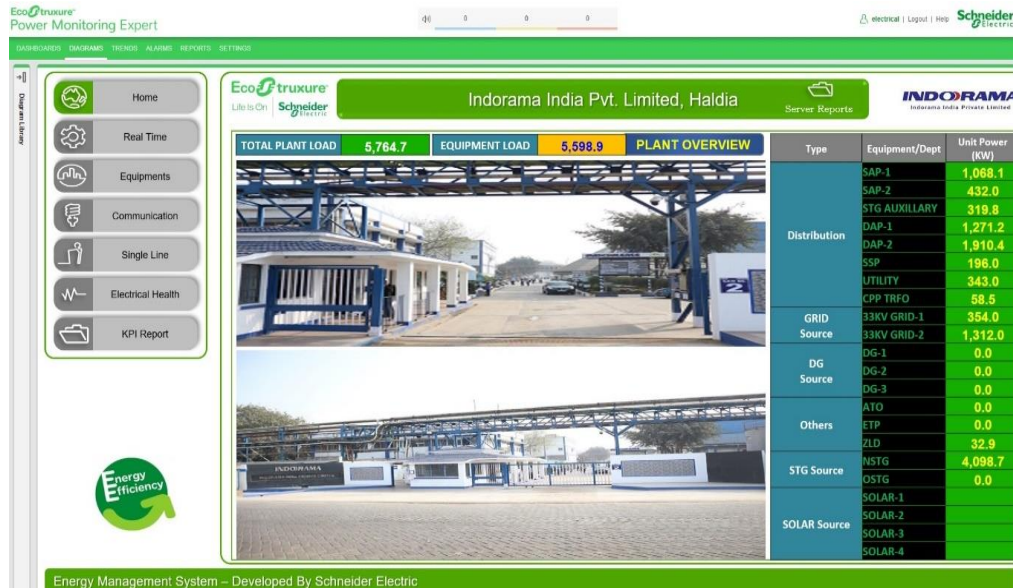
Carbon di oxide emissions mitigated calculation for Rooftop solar:

Carbon dioxide emission mitigated is 14145 tonnes. This installation will be equivalent to planting 22632 Teak trees over the life time (Data from IISc).

Solar Rooftop Calculator	
Average solar irradiation in WEST BENGAL state is 1156.39 W / sq.m 1kWp solar rooftop plant will generate on an average over the year 4.6 kWh of electricity per day (considering 5.5 sunshine hours)	
1. Size of Power Plant	
Feasible Plant size as per your Capacity :	500kW
2. Cost of the Plant :	
MNRE current Benchmark Cost (without GST) :	Rs. 35886 Rs. / kW
View Benchmark Cost List	
Without subsidy (Based on current MNRE benchmark without GST) :	Rs. 17943000
With subsidy 0 (Based on current MNRE benchmark without GST) :	Rs. 17943000
3. Total Electricity Generation from Solar Plant :	
Annual :	690000kWh
Life-Time (25 years):	17250000kWh
4) Financial Savings :	
a) Tariff @ Rs.8/ kWh (for top slab of traffic) - No increase assumed over 25 years :	
Monthly :	Rs. 460000
Annually :	Rs. 5520000
Life-Time (25 years) :	Rs. 138000000
Carbon dioxide emissions mitigated is	14145 tonnes.
This installation will be equivalent to planting	22632 Teak trees over the life time. (Data from IISc)

➤ **Online Energy monitoring system:**

Digital monitoring system of energy has been installed for better tracking of utility and improvement.



B. Water Conservation:-

- A effluent recycling plant of 40 m3/hr installed and commissioned in Sept 22 to adopt zero liquid effluent discharge practices. This has minimized the fresh water consumption. 100% effluent is used in process.

Components of effluent Recycling plant:

- High-rate Solid Contact Clarifier (HRSCC)
- Ultra-Filtration (UF)
- Reverse Osmosis (RO)

Permeate water from effluent recycling plant is used in cooling tower make up & high TDS water is used in DAP & SSP process.

- Rainwater in SSP plant enchantment area & part of cooling tower blowdown is utilized in scrubber system of SSP plant water to minimize the raw water consumption.
- Condensate recovery system in SAP Plant is working to reduce fresh water consumption.
- Construction of two rain water storage pond of 2700 and 2000 m3 completed in 2021. Stored rainwater is utilized in process to reduce fresh water consumption.

ANNEXURE - 2

Treatment facilities for Gaseous emission

Sulphuric Acid Plant:

- The plant was converted in DCDA Process in 1983 to improve conversion of SO₂ to SO₃ thereby reducing the SO₂ emissions. Both the plant has alkali scrubber system to control the emission of SO₂ through stack. Ammonia is used as scrubbing media. Generated scrubbed residue, ammonium sulphate is used in DAP/NPK plants. Use of ammonia for scrubbing SO₂ is first in fertiliser industry. We received patent for this technology in 2022.
- High Efficiency Mist Eliminators have been installed in the Absorption Tower to control acid mist in stack gas.
- All critical plant parameters are indicated in central control panel in the plant control room. Suitable alarms have been provided to warn the operators in case any critical control parameter goes beyond limits.
- An on line stack monitoring instrument has been installed to continuously measure SO₂ emissions from the stack. This has been connected to Distributed Control System for getting real time record of plant emission levels. This is connected to CPCB server also. The online analyzer has remote calibration facility.
- To comply with the provision of new notification for Sulphuric Acid plants 2008, pH recorders for on-line pH meters are installed and interlock facility provided with high level indication alarm and auto-trip along with the on-line monitoring system
- Interlock facility provided of Sulphur pump tripping in case of any high SO₂ emission from stack.

Di-ammonium Phosphate Plant:

- Ammonia Scrubber has been provided to recover ammonia from exhaust gas of reactor and granulator. A set of Cyclone separator followed by Gas Scrubber and Ventury scrubber has been provided to remove DAP dust from exhaust gases. Dust is scrubbed by water in gas scrubber.
- Fluorine Scrubber has been provided to remove any traces of Fluorides present in exhaust gases. The scrubbing medium is water. This is recycled back to the plant and thereby there is no liquid effluent coming out of the plant.
- PM, NH₃, HF online analyzer installed to the stack of both the plants and connected to CPCB server.
- In both the DAP plants system is designed such as in case of any scrubbing system failure, the plant will trip instantly. Interlocking system provided of dryer tripping with the gas scrubber pump failure.

SSP PLANT

- Bag filters are provided to arrest dust from the Ball Mill vent gases.
- A multi -stage fluorine scrubber is provided to efficiently scrub the vent gases from the main plant. The scrubbers are made of MSRL. The water is pumped to the scrubbers and sprayed inside void towers by means of nozzles.
- Ventury Scrubber was provided to undergo efficient scrubbing of pollutants. All Four Scrubber are now provided with ventury scrubber.
- Extra spray Lechler Nozzles provided into Gas duct for intimate contact and hence better scrubbing in the SSP scrubber SPM, HF analyser connected to SSP main stack. Data transferred to CPCB server real time basis.
- In SSP plant system is designed such as in case of any scrubbing system failure, the plant will trip instantly. Interlocking system provided of scrubber pump with RAL-1(Rotary valve- rock input to mixer)

Effluent Treatment plant

- In Effluent treatment plant treated water discharge online pH, flowmeter, TSS, BOD, COD analyzer installed and connected to CPCB server. Treated water discharge pump having interlock system with the discharge parameters of online analyser which is out of range.
- A effluent recycling plant of 40 m³/hr installed and commissioned in Sept 22 to adopt zero liquid effluent discharge practices. This has minimized the fresh water consumption. 100% effluent is used in process.

Components of effluent Recycling plant:

- High-rate Solid Contact Clarifier (HRSCC)
- Ultra-Filtration (UF)
- Reverse Osmosis (RO)

ETP treated effluent is treated in HRSCC. Effluent is fed to Ultra-Filter (UF) followed by Reverse Osmosis. From RO plant the permeate water generated is used in cooling tower and DM plant. The reject water from RO plant is used in DAP/NPK plant.

Photograph of effluent recycling plant

ANNEXURE - 3



Effluent Recycling Plant Overview (40 m³/hr)



RO Section

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

Total expenditure in various Environment protection measures in 2022-23.

Sl. No	Item wise Expenditure under Environmental control measures	Total Amount in Lacs (Approx.)
01	Effluent treatment plant operational raw material cost	40.3
02	Manpower charges for operation of ETP Plant	43.8
02	Hazardous and Biomedical Waste management	16.54
03	Stack, effluent, ground water monitoring charges	39.6
04	Green belt Development Cost(Purchase of plant , manpower for maintenance)	45.7
05	Capex project in Environmental measures	922.38
06	Stack and effluent analyzer maintenance cost	24
Total		1132.32

Major Capex in 2022-23 for Environment protection measure:-

1. Supply and installation and commissioning of effluent recycling plant of 40 m3/hr by Thermax Limited. Plant is operational from Sept 22. Major components of effluent recycling plants are: HRSCC (High rate solid contact clarifier) ,Multigrade filter , UF and RO membrane . **Total cost : 600 lakhs**
2. Installation of Digital flow meters with telemetric system for Fresh water withdrawal monitoring. **Cost- 21.95 lacs.**
3. Installation of 500 kWp rooftop solar. Cost - **264.14 lacs.**
4. Construction of RCC storm water drain & effluent pit. Cost – **36.29 lacs**

Total Cost - 922.38 lacs.

Capex planned in 2023-24 for improving the sustainability performance of the site:-

01. Installation of digital Piezometer for ground water level monitoring.
02. Installation of Night vision camera at final discharge of effluent drain.

Annexure-4

Eco development measures and community welfare measures are as below:

Environment Day Celebration 5th June, 2022

World Environment Day Celebration 2022:- **Theme: - Only One Earth**

Programme Details:-

- ❖ Welcome guests & opening speech by Environment Assistant General Manager.
- ❖ Speech by COO and S.H.E Assistant Vice President & Oath taken by all employees.
- ❖ Tree plantation at factory site by all employees.
- ❖ Saplings distribution to the employees. Total 500 no of saplings distributed.
- ❖ 500 nos. saplings distribution to the local peoples in collaboration with “Paschimbanga Bigyan Mancha”.
- ❖ Drawing competition on awareness of Environment day theme at Township (4 acre) and also at Srikrishnapur Housing.
- ❖ Tree plantation at township 100 no of trees planted in township.
- ❖ Spot quiz competition for ladies and children at Township.

Welcome address started with importance of Environment:



Tree Plantation programme in factory:



Saplings Distribution to Employees :



Env. Day Celebration in collaboration with 'Bigyan Mancha' :



Tree Plantation at Township :



Drawing Competition at Township:



Tree Plantation at outside of the plant with associate with 'Haldia Municipality':





INDORAMA
Essential materials. Better lives.

TREE PLANTATION PROGRAMME BY –
INDORAMA INDIA PVT. LTD.

IN ASSOCIATION WITH



HALDIA MUNICIPALITY



PLANT TREE, SAVE LIFE
গাছ লাগান, প্রাণ বাঁচান






In this year, 5000 no of trees planted outside the plant, in Haldia region after necessary approval from Haldia Municipality.



Office of the
Halidia Municipality
Dr. B.R. Ambedkar Bhawan, Administrative Building, City Centre
P.O.-Debbag, Haldia, Purba Medinipur, West Bengal

☎: 03224-252996 / 252997
255051/252644
☎: 03224-702154
E-mail: haldiamunicipality@gmail.com

Memo No. : 5073/HM/22 Date : 17-10-22

To,
M/S Indorama India Pvt Ltd
Sub: Completion Certificate for plantation of 5000 no of trees in Haldia region.
Reference: Your Letter no HPL/HAL/ENV/22-23/HM-03 dated 12th Oct , 2022

Sir,

This is in reference to your letter with the above-mentioned subject matter, it is to certify that total 5000 no of trees have been planted in Haldia region by your organisation. Our team visited on 13th Oct 22 and found different species of trees like Arjun, Neem, Chatim, Krishnachura , Baku1, Karanch , Jamun, Debdaru in 4 locations namely Subrana Jayanti Bhavan, Sutahata, Kadamtala to NH41 avenue & Haldia Govt sponsored school and Balar more Children park. We have also observed that proper fencing has been provided to protect these trees.

Municipality will assist you in supplying water to take utmost care of the newly planted trees so that these trees grows properly.

We appreciate this and hope you will undertake this kind of activities in future also.

Thank you.

Yours faithfully,

Executive Officer
Halidia Municipality.



CSR Report (April'22 - March '23)

We believe in creating synergy between business and the society at large by working closely with the local communities for the purpose of improving the quality of life of the communities we serve through long term stakeholder value creation. We believe in positively impacting the environment and supporting the communities we operate in, focusing on sustainability of our programs and empowerment of our communities.

➤ **Livelihood**

• **Beautician training**

Empowering women from underprivileged community and create opportunity for employment through beautician training. 60 underprivileged women from marginalized communities of South Kolkata have completed beautician training with the collaboration of Hope Kolkata Foundation. After completion of the training each trainee have receive the certificate and start-up kit.



• **Tailoring training**

Empowering women from underprivileged community and create opportunity for employment through tailoring training. 20 underprivileged women from marginalized communities of South Kolkata and 50 women from Haldia and Baruipur have completed tailoring training with the collaboration of Hope Kolkata Foundation and Abhyudaya Haldia. After completion of the training each trainee have receive the certificate and start-up kit.





- **Poultry farm management training**

100 women from economically backward community of the East Medinipur get the training on poultry farm management. After the training, they would be assisted with construction of the poultry farm and supported with chicks, poultry feed and medicines. The main objective of this project is to upgrade the skill on poultry management of the underserved women from the rural marginalized community.



➤ **Health**

- **Overall health camp**

To provide free medical benefits to the people from the underprivileged community the health camps have been organised at the local community. There are eight general health camp have been organised by Deulpota Seva Samitii at the villages in Sutahata block, Mahisadal Block. The health check-up have done for 2227 people

from the marginalised community. The specialist doctors from the Indian Cancer Society, Kolkata were present at the camp for the health check-up at the community.



- **Eye Screening camps**

2809 socially and economically backward people in Sutahata block and Mahishadal block and Haldia Municipality of Purba Medinipur district were screened in 7 free eye screening camps organised in collaboration with Medical Research Foundation (Sankar Nethralaya). Among the beneficiaries 1826 received free spectacle.



- **Water and Sanitation project at Govt. Schools**

We have provided safe sanitary blocks to students of the Govt. schools who still have little or no access to sanitary facilities within their school with proper light and ventilation and improved drainage system. Provided adequate supply of running water and wash water to sanitary blocks in the schools to support hygienic habits and safe drinking water.



- **Menstrual Hygiene Management project:**

2 sanitary napkin vending machines and incinerator have installed at 2 govt. high schools to create awareness on Menstrual Hygiene to the school going adolescent girls. There are 20 awareness camps have been organized at the schools to aware the adolescent girls on menstrual hygiene management and there are 1200 girls child have participated at these awareness camps. We also distributed menstrual hygiene kit to 700 adolescent girl child of 5 Govt. high schools.

