Dr. Rajesh Kumar, IPS
Member Secretary

West Bengal Pollution Control Board
(Department of Environment, Government of West Bengal)
Paribesh Bhawan, Bldg. 10A, Block LA
Sector III, Salt Lake, Kolkata 700 106

Tel: 2335-8213
Fax: 2335 2813/6730
Email: ms@wbpcb.gov.in
Website: www.wbpcb.gov.in
City code: 33
Country code 91

Memo no. 528-397/WPB/OSE/2019 Date: 17/06/2019

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली-32
117782
21 JUN 2019
Central Pollution Control Board
Parivesh Bhavan, East Arjun Nagar, Delhi-32

To
The Member Secretary
Central Pollution Control Board
Paribesh Bhawan,
East Arjun Nagar, Delhi
Pin- 110 032.

117782/MS
24/6/19

MS
IPC-VII
SO (R-A)
24/6/19
25/6/19

Sub: Action Plan for Polluted Industrial Areas (PIAs) in West Bengal.

Ref: Order of Hon'ble NGT, Principal Bench, New Delhi dt. 13.12.2018 in the matter O.A. no. 1038/2018.

Dear sir,

Enclosed please find herewith a copy of 'Action Plan for Industrial Areas (PIAs) in West Bengal' prepared in compliance with the above referred order of Hon'ble NGT. The said action plan has been prepared by a Committee for restoration of Environment Qualities in West Bengal constituted by the Chief Secretary to the Government of West Bengal. A copy of the notification for constitution of committee and the minutes of the meeting of the committee held on 27.05.2019 are also enclosed herewith for your perusal.

Thanking you.

17/6/2019
Member Secretary
Enclosed: As stated

Annexure 406

27

Government of West Bengal
Environment Department
PraniSampadBhavan, 5th floor, LB-2,Sec-III, Salt Lake, Kolkata-700106

NOTIFICATION

No. EN/416 / 3C-030/2019

Kolkata, the 27th February, 2019.

The Hon'ble National Green Tribunal, Principal Bench New Delhi, was pleased to pass an order dated 13.12.2018 in O.A. no. 1038/2018 regarding " CPCB to rank industrial units on pollution levels "directing all the States and Union Territories to prepare and finalise time bound action plans within three months with regard to identified polluted industrial clusters in Howrah, Haldia, Asansole and Durgapur in accordance with revised norms laid down by the CPCB to restore environmental qualities within norms.

In compliance with the aforesaid directions of the Hon'ble National Green Tribunal, Principal Bench New Delhi, the Governor is pleased to form the Committee for Restoration of Environment Qualities of identified polluted industrial Clusters in West Bengal comprising of the following members-

1. Additional Chief Secretary / Principal Secretary, Department of Industry, Commerce and Enterprises – Chairman.
2. Additional Chief Secretary / Principal Secretary, Department of Micro ,small and medium Enterprise and Textile
3. Additional Chief Secretary / Principal Secretary, Department of Environment – Convenor.
4. Additional Chief Secretary / Principal Secretary, Department of Urban Development and Municipal Affairs Department
5. Member Secretary , West Bengal Pollution Control Board
6. Chief Executive Officer, Kolkata Metropolitan Development Authority
7. District Magistrate's - Paschim Bardhaman / Purba Medinipur/ Howrah
8. Commissioner, Howrah Municipal Corporation
9. Chief Executive Officer, Haldia Development Authority
10. Chief Executive Officer, Asansol Durgapur Development Authority

The Committee may co-opt any other members as required.

The Committee will function under the overall supervision of the Chief Secretary, Govt of West Bengal.

By Order,

Sd/ M.K.De

Chief Secretary to the Govt. of West Bengal.

o/c

Government of West Bengal
Environment Department

Minutes of the First Meeting of the Committee constituted for Restoration of Environment Qualities of Identified Polluted Industrial Clusters in West Bengal as per the Order of Hon'ble NGT Principal Bench, New Delhi dated 13.12.2018 in O.A. No. 1038/2018 held on 27.05.2019 at 11.00 A.M. at the Conference Room of the Department of Environment.

Member Secretary, WBPCB initiated the meeting. He informed the house that ACS, ICE & ACS, Environment are slightly delayed and they would join the meeting later. He briefly apprised the objective of the meeting and gave an overview of the action plans prepared for 5 PIAs as per the Direction of Hon'ble NGT Principal Bench, New Delhi dated 13.12.2018 in O.A. No. 1038/2018. During the meeting a copy of the Action Plan was distributed amongst the members present.

A PowerPoint presentation was made before the committee members highlighting the objective and contents of the action plan prepared for 5 PIAs namely Haldia, Howrah, Asansol, Durgapur and Bandel. Committee members discussed on the action plan prepared, at length. After threadbare discussion, following decisions were taken:

i. Committee members approved the action plan in principle for sending to the Central Pollution Control Board as per the order of Hon'ble NGT.
ii. Committee members were requested to provide their additional inputs, if any, for incorporation in the action plan which may be sent to the CPCB subsequently as supplement.
iii. District Magistrate, Paschim Bardahaman suggested that a committee may be formed at District Level to oversee the implementation of action plan for each PIA on quarterly basis. Composition of the committee may be as follows:
    a. District Magistrate or his nominee
    b. Representative from the local development authority
    c. Representative from municipal corporation
    d. Representative from WBPCB

Meeting was ended with thanks to all the members.

(Alapan Bandopadhyay)
Additional Chief Secretary
Industry Commerce & Enterprises Deptt.,
Government of West Bengal.
&
Convener

GOVERNMENT OF WEST BENGAL

Action Plan for Polluted Industrial Areas (PIAs) in West Bengal

Prepared in connection to the order of Hon'ble NGT dated 13.12.2018 in the matter of OA no. 1038/2018

by

Committee for Restoration of Environment Qualities of PIAs in West Bengal

(Constituted vide Notification No. EN/416/3C-030/2019 dated 27.02.2019)

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Government of West Bengal
Environment Department
PraniSampadBhavan, 5th floor, LB-2,Sec-III, Salt Lake, Kolkata-700106

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The Committee may co-opt any other members as required.

The Committee will function under the overall supervision of the Chief Secretary, Govt of West Bengal.

By Order,

Sd/ M.K.De

Chief Secretary to the Govt. of West Bengal.

2. INTRODUCTION

Ministry of Environment & Forests (MoEF), Government of India had issued an Office Memorandum dated 13.01.2010 imposing a moratorium on setting up of new industries and also expansion of existing industries requiring Environmental Clearance as per the EIA notification S. O. 1533(E) dated 14.09.2006 and its amendments thereof, located in critically polluted industrial areas (CPA) namely Haldia, Howrah and Asansol.

Based on the environmental load bearing capacity of sensitive areas like Haldia, Howrah and Asansol which have so many major industries, the West Bengal Pollution Control Board (WBPCB) has taken elaborate action plan since 2010 involving the major industries and Local Bodies of the concerned areas. WBPCB submitted reports to CPCB on implementation of such action plan for the critically polluted areas in the State of West Bengal.

Reassessment of CEPI score during 2013 revealed that continuous efforts initiated by WBPCB for implementation of Pollution Abatement Action Plans for up-gradation of environmental quality in these critically polluted areas show decreasing trend in CEPI score for all three Critically Polluted Areas as compared to CEPI score during 2010, both calculated by CPCB:

Name of the critically polluted area	CEPI Score during 2010	CEPI Score during 2013
Asansol	70.20	56.01
Haldia	75.43	61.58
Howrah	74.84	61.11

CPCB has undertaken a project for monitoring environmental qualities during 2017-18 of around 100 Polluted Industrial Areas (PIAs) throughout the country (which includes all 3 CPAs, one SPA and one additional site (Bandel) of our state) by engaging a third party; the monitored data of the project will subsequently be used for calculating CEPI score of the respective areas.

The latest CEPI scores for the above mentioned 5 PIAs in West Bengal have already been evaluated by CPCB. WBPCB has already communicated to CPCB vide letter no 14-4A-11/2010-Part II dated 05.03.2019 for sharing the same.

WBPCB also engaged third party in January 2019 for monitoring of environmental qualities in 5 PIAs in West Bengal. Based on the monitoring report and as per the order of the Hon'ble NGT dated 13.12.2018 in the matter of OA no. 1038/2018, (ANNEXURE I) action plan has been prepared for 5 PIAs in West Bengal in accordance with the revised norms laid down by CPCB.

For preparation of action plan large industries falling under 17 category, GPIs and highly polluting Red category have been considered. Also, action plan includes various action points of the ULB and developmental authorities.

ACTION PLAN FOR POLLUTED INDUSTRIAL AREA, HALDIA

3. ACTION PLAN FOR POLLUTED INDUSTRIAL AREA, HALDIA

3.1 Area Details

Haldia is one of the most rapidly growing towns in West Bengal and in on the deltaic tidal range of the Ganga basin. It is located at distance of 125 km South-West of Kolkata and 50 km from the Bay of Bengal at the confluence of three rivers Hooghly, Haldi & Rupnarayan in Purba Midnapore district, Haldia is also one of the biggest ports in the Eastern region and focal point for industrial development in West Bengal. The Haldia Planning Area (HPA) is bounded by the rivers Hooghly, Haldi & Hajli canal and covers a total area of around 2257 sq. km. spread over 1141 mouzas. The HPA is divided in four police stations namely, Haldia, Mahisadal, Sutahata & Durgachak. The area under Haldia police station is completely urbanized and fall within the Haldia Municipal area. The Sutahata police station, which consists of mouzas of both Sutahata I & II blocks, is the largest police station with 75% of the mouzas under rural occupation.

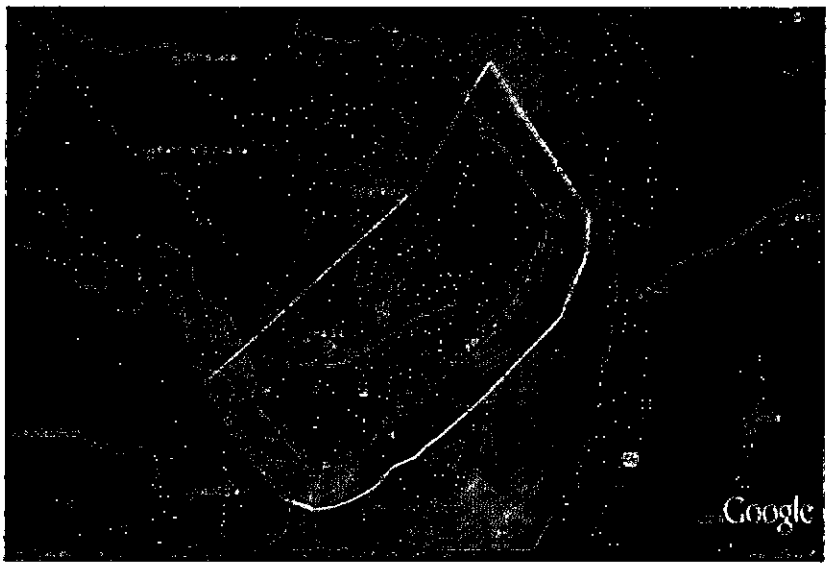
3.2 Location

Haldia is located at 22.03 ° N latitude & 88.06 ° E longitude. It has an average elevation of 8 metres MSL.

3.3 Demarcation of Geographical Boundaries and Impact Zones

Figure 3.1: Boundary of Polluted Industrial Area in Haldia

Figure 3.2 Map of Haldia PIA



A= Lat 22° 1'2.60"N Log 88° 3'33.69"E
B= Lat 22° 2'56.60"N Log 88° 1'42.35"E
C= Lat 22° 8'51.62"N Log 88° 9'47.71"E
D= Lat 22° 6'43.50"N Log 88°11'33.08"E

The total population of Haldia and adjoining Sutahata is around 4.17 lakhs (as per 2011 census) while the population of the Haldia Municipal region is around 2 lakhs. The sensitive receptors include one sub-divisional hospital, around 7 nursing homes, about twelve educational institutions, one sub-divisional court are located within Haldia Municipal region.

The river Ganga (locally Hooghly river) and its tributary the river Haldi and a number of small natural streams draining into them form the main inland water system. Besides, there exist several ponds and ditches in the area under concern. Ponds are utilized mainly for domestic purposes & fish rearing and occasionally for irrigation.

The Green Belt Canal (GBC) which was originally built for fire-water supply to the port area is presently carrying most of the trade effluent of the industries located at Haldia Municipal Area. The GBC has a stretch from the Oil Jetty-1 in the Haldia Dock Area to the Patikhali gate end.

3.4 Information on Pollution Sources Status in PIA

a.	Name of the Polluted Industrial Area	Haldia Industrial Area
b.	Demarcated Area of the PIA in Sq. Km	87
c.	Number of 17 Category Industries Covered under the area	9
d.	Number of Red Category Industry Covered under the area	30
e.	Total Human Population	4.17 lakhs
f.	At least three criteria pollutants in each air, surface water and ground water	Air - PM_{10}, NO_x, CO Surface Water - O&G, BOD, COD Ground Water - pH, Fluoride, Arsenic

Compliance Status of the Industries, Waste Management Facilities

Sl No.	Total Number of Units	Total Number of Units	Number of Units with inadequate facilities	Remarks if any
1.	Large Scale industries	39	All industries having adequate facility	-
2.	Medium and small-scale industries	Nil	N.A.	-
3.	CETPs	Not Required	N.A.	-
4.	TSDF	01	Adequate	-
5.	STPs	01	Adequate	-
6.	CBMWTF	01	Adequate	-
7.	MSW Management Facility	01	Adequate	-

3.5 Water Environment

The GBC and the Hooghly River are regularly monitored at specific locations. The GBC is guarded by metallic gates at both ends and does not seem to have a definite flow profile. The Patikhali gates are opened to discharge the effluent.

Table 3.1: Analysis Results of Green Belt Canal during the year 2018

Parameter *	Stations														
	Near Oil Jetty			Between Catchpit #1 & #2 near TTL Gate			Between Catchpit #2 & #3 of IOCL			Sample near Pillar No. 571			Between Catchpit #3 & #4 of IOCL		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
pH	7.43	6.37	6.85	7.25	6.40	6.81	8.23	5.35	6.86	8.75	6.62	7.11	7.57	6.53	6.96
TSS	15180.0	26.0	2380.83	6400.00	14.00	1220.30	47880.00	22.00	4116.50	27820.00	10.00	2467.92	7700.00	8.00	726.50
BOD	1037.5	5.29	184.71	3916.67	4.25	493.45	16562.50	3.43	1426.30	8125.00	1.88	714.63	418.75	1.78	77.17
COD	2977.2	40.08	542.34	21865.00	33.83	2391.53	78609.00	18.18	6740.44	34888.00	17.84	3030.52	892.00	15.05	222.24
O&G	6654.10	1.30	695.04	21.80	BDL	6.44	5576.90	BDL	626.82	8437.30	BDL	1206.93	696.00	1.10	71.49
Sulfide	51.84	0.194	7.70	144.00	0.194	18.99	426.24	0.20	39.93	322.56	0.194	37.03	9.72	0.396	2.74
Total Chromium	0.26	BDL	-	4.29	BDL	1.70	1.56	BDL	-	3.07	BDL	-	0.33	BDL	0.26
Copper	7.7	0.19	2.19	5.96	BDL	1.77	1.19	BDL	0.70	2.54	BDL	1.33	1.08	BDL	0.51
Cyanide	0.13	BDL	0.12	0.13	BDL	0.117	0.16	BDL	0.130	0.14	BDL	0.13	0.15	BDL	0.14
Flouride	0.73	0.36	0.52	0.67	0.38	0.49	1.93	0.36	0.61	0.62	0.35	0.47	0.85	0.29	0.48
Iron	382.4	0.13	34.59	313.00	BDL	34.35	639.50	0.32	56.60	59.00	0.18	9.32	58.00	BDL	10.46
Lead	2.76	BDL		7.25	BDL	2.65	0.15	BDL	0.15	11.03	BDL	5.63	8.79	BDL	8.79
Phenols	1.17	BDL	0.76	0.59	BDL		0.42	BDL	0.36	0.59	BDL	0.44	0.50	BDL	0.47
Phospate-P	0.71	0.06	0.25	0.60	0.07	0.24	1.17	0.07	0.35	0.61	0.04	0.24	0.72	0.08	0.23
Zinc	67.5	BDL	6.43	8.59	0.06	1.32	2.97	BDL	0.68	2.79	BDL	0.46	1.15	BDL	0.32

**All units in mg/l except pH, Cr +6 values are BDL for all monitoring stations*

Table 3.1 Contd.....: Analysis Results of Green Belt Canal during the year 2018

Parameter*	Stations																	
	Between Catchpit #4 & #5 of IOCL			Between Catchpit #5 & #6 of IOCL			After Catchpit #6 near HT/LT connection point			Near Rail Gate in front of the bridge			Infront of CFCL Main Gate			Near Patikhali Gate		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
pH	7.30	6.02	6.72	7.25	6.41	6.89	7.48	6.75	7.14	7.10	2.52	6.48	7.25	2.75	6.51	7.65	6.06	6.96
TSS	3440.00	8.00	493.67	4150.00	10.00	590.17	1108.00	16.00	247.17	1673.00	12.00	185.08	108.00	6.00	39.73	1436.00	14.00	422.33
BOD	1100.00	1.40	162.42	240.00	1.75	47.77	9.17	1.86	4.48	13.33	2.60	6.57	10.63	2.00	6.29	12.50	1.54	4.84
COD	4321.00	12.62	694.36	643.65	16.45	158.90	53.47	22.01	31.20	122.58	14.71	36.88	58.85	14.34	34.23	206.00	9.49	41.05
O&G	1329.70	<1.00	151.86	168.42	<1.00	20.51	2.75	BDL	1.71	1.50	BDL	1.28	1.70	BDL	1.32	1.50	BDL	1.17
Sulfide	17.088	BDL	4.09	9.892	BDL	2.32	1.139	BDL	0.62	3.92	BDL	1.51	1.763	BDL	1.05	3.456	BDL	1.27
Total Chromium	BDL		-	0.11	BDL	-	BDL	BDL	-	BDL		-	0.22	BDL	-	BDL		-
Copper	5.63	BDL	2.97	0.76	BDL	0.62	0.14	BDL	-	BDL-		-	BDL		-	BDL		-
Cyanide	0.22	BDL	0.19	2.41	BDL	1.28	BDL	BDL	-	0.12	BDL	-	0.10	BDL	-	-	-	-
Flouride	0.66	0.26	0.43	0.62	0.27	0.42	0.68	0.26	0.50	0.69	0.35	0.49	0.62	0.36	0.51	0.61	0.36	0.50
Iron	130.78	BDL	28.16	353.50	0.18	32.92	11.40	0.36	2.37	7.17	0.19	1.60	2.06	0.18	0.65	18.65	0.19	5.72
Lead	0.20	BDL	0.17	7.39	BDL	2.67	2.65	BDL	1.01	2.27	BDL	2.27	3.86	BDL	3.86	BDL		-
Phenols	0.41	BDL	0.35	BDL		-	BDL		-	BDL		-	BDL		-	BDL		-
Phospate-P	0.24	0.02	0.14	2.02	BDL	0.31	0.38	0.03	0.14	0.67	0.03	0.20	0.66	0.02	0.30	1.87	0.03	0.34
Zinc	2.76	BDL	0.56	5.61	0.05	0.74	0.85	BDL	0.25	0.49	BDL	0.17	0.39	BDL	0.15	4.30	BDL	0.65

**All units in mg/l except pH, Cr +6 values are BDL for all monitoring stations*

Table 3.2: Present Status of Surface Water Quality of Haldia (Monitored by Third Party during February 2019)

Sl. No.	Parameter	Unit	Haldi River Near IOCL Hospital, Haldia (Location Code- SW-1)	Hooghly River at Patikhali, Haldia (Location Code- SW-2)	Pond behind Sakuntala Housing Complex, Haldia (Location Code- SW-3)	Pond at Chiranjibpur Behind Haldia P.S. near CTP Colony, Haldia (Location Code- SW-4)
1	Sanitary Survey	----	Drainage system found & no Toilet nearby	Drainage system found & no Toilet nearby	Bathing, Domestic Washing found no Toilet system nearby	Drainage system found & no Toilet nearby
2	General appearance	----	Turbid	Turbid	Turbid	Transparent
3	Colour	Hazen	2	2	3	<1.0
4	Smell	----	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
5	Transparency	Cm	12	25	70	92
6	Ecological Survey	-----	Present Insect/ Fish	Present Insect/ Fish	Present Insect/ Fish	Present Insect/ Fish
7	pH at 25 deg C	----	7.3	7.2	7.2	7.3
8	Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0
9	Suspended solids	mg/L	240	175	12	<5.0
10	DO (% of saturation)	-----	7.5/97.0	7.4/95.0	6.6/85.0	6.7/83.0
11	COD	mg/L	15.36	15.3	22.94	11.47
12	BOD	mg/L	2	2	2.8	1.8
13	Electrical Conductivity	µmhos/ cm	14470	12240	892	1580
14	TDS	mg/L	8520	7188	538	920
15	Nitrite-Nitrogen	mg/L	<0.005	<0.005	<0.005	<0.005
16	Nitrate-Nitrogen	mg/L	4.52	3.78	3.25	2.14
17	Total Nitrogen (NO2+NO3)	mg/L	4.52	3.78	3.25	2.14
18	Free Ammonia	mg/L	<0.05	<0.05	<0.05	<0.05
19	Total Residual Chlorine	mg/L	<0.05	<0.05	<0.05	<0.05
20	Cyanide	mg/L	<0.01	<0.01	<0.01	<0.01
21	Fluoride	mg/L	<0.05	<0.05	<0.05	<0.05
22	Chloride	mg/L	3943	3325	161.51	294.52
23	Sulphate	mg/L	471	410	41.28	43.85
24	Sulphides	mg/L	<0.05	<0.05	<0.05	<0.05
25	Total hardness	mg/L	1760	1480	154	262

Sl. No.	Parameter	Unit	Haldi River Near IOCL Hospital, Haldia (Location Code- SW-1)	Hooghly River at Patikhali, Haldia (Location Code- SW-2)	Pond behind Sakuntala Housing Complex, Haldia (Location Code- SW-3)	Pond at Chiranjibpur Behind Haldia P.S. near CTP Colony, Haldia (Location Code- SW-4)
26	Dissolved Phosphate (as P)	mg/L	<0.05	<0.05	<0.05	<0.05
27	Total Phosphorous (as P)	mg/L	<0.05	<0.05	<0.05	<0.05
28	TKN	mg/L	<0.5	<0.5	<0.5	<0.5
29	Total Ammonia (NH4+NH3)	mg/L	<0.05	<0.05	<0.05	<0.05
30	Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
31	Surface Active Agents	mg/L	<0.10	<0.10	<0.10	<0.10
32	Hexavalent Chromium (Cr^{+6})	mg/L	<0.02	<0.02	<0.02	<0.02
33	Bioassay (Zebra fish)	%	------	-------	------	100% Survival of fish after 96hours exposure in 1005 Sample.
34	SAR	---	3.42	3.94	5.72	2.39
35	Zinc (Zn)	mg/L	<0.001	<0.001	<0.001	<0.001
36	Nickel (Ni)	mg/L	0.003	0.003	<0.001	<0.001
37	Copper (Cu)	mg/L	0.029	0.149	0.050	0.053
38	Chromium (Cr)	mg/L	<0.001	<0.001	<0.001	<0.001
39	Arsenic (As)	mg/L	0.001	<0.001	0.005	0.007
40	Lead (Pb)	mg/L	<0.001	<0.001	<0.001	<0.001
41	Cadmium (Cd)	mg/L	<0.001	<0.001	<0.001	<0.001
42	Mercury (Hg)	mg/L	<0.001	<0.001	<0.001	<0.001
43	Managanese (Mn)	mg/L	<0.001	<0.001	<0.001	<0.001
44	Iron (Fe)	mg/L	0.108	0.037	0.003	0.254
45	Vanadium (V)	mg/L	0.016	0.016	0.003	0.015
46	Selenium (Se)	mg/L	0.001	0.005	0.003	0.002
47	BORON (B)	mg/L	0.750	0.690	0.136	0.153
48	Total Coliform	MPN/100ml	21	17	17	14
49	Faecal Coliform	MPN/100ml	9	9	5	6
50	Organo-Chlorine	µg/L	<0.01	<0.01	<0.01	<0.01
51	PAH	µg/L	<0.01	<0.01	<0.01	<0.01
52	PCB	µg/L	<0.01	<0.01	<0.01	<0.01
53	PCT	µg/L	<0.01	<0.01	<0.01	<0.01

Predominant sources contributing to various pollutants are Oil Refinery, Petro-chemical units, Pesticide manufacturing unit, Lead-acid battery manufacturing unit, Vegetable Oil processing units, Fertilizer manufacturing unit and Sugar Refining unit.

All the Red category and Grossly Polluting Industries have established Effluent Treatment Plants (ETPs). The treated effluent is discharged to the GBC (which leads to River Hooghly) as well as directly to the River Hooghly in a couple of cases.

The State Board monitors the level of pollutants in the River Hooghly and the GBC regularly. Besides this the individual units are monitored with respect to their effluent discharge by maintaining a proper schedule. All the water polluting industries have established Effluent Treatment Plants (ETPs) of their own.

3.6 Air Environment

Table 3.3 - Present Status of Ambient Air Quality of Haldia (Monitored by Third Party during February 2019)

Sl. No.	Location	Concentration of pollutants												
		Results	PM10 (µg/m³)	PM2.5 (µg/m³)	SO2 (µg/m³)	NO2 (µg/m³)	Ammonia (µg/m³)	Lead (µg/m³)	Nickel (ng/m³)	Arsenic (ng/m³)	Benz(α)P (ng/m³)	CO (mg/m³)	Ozone (µg/m³)	Benzene (µg/m³)
1.	Super Market (Haldia, PCB), AAQM-1	No. of Reading	9	3	18	18	18	9	9	9	9	72	72	3
		Max. Value	249	57	23.6	48.3	43.5	<0.1	<10.0	<2.0	<0.5	1.16	<10.0	2.05
		Min Value	46	27	13.2	27.5	23.3	<0.1	<10.0	<2.0	<0.5	0.58	<10.0	<2.0
		Arithmetic Value	129	45	18.2	37.5	34.7	<0.1	<10.0	<2.0	<0.5	0.85	<10.0	<2.0
2.	Priyambada Housing Complex (WBPCB Lab) AAQM-2	No. of Reading	9	3	18	18	18	9	9	9	9	72	72	3
		Max. Value	122	43	23.5	46.5	50.6	<0.1	<10.0	<2.0	<0.5	1.23	<10.0	2.18
		Min Value	66	28	13.2	24.5	28.1	<0.1	<10.0	<2.0	<0.5	0.52	<10.0	<2.0
		Arithmetic Value	99	36	16.6	35.2	38.3	<0.1	<10.0	<2.0	<0.5	0.83	<10.0	<2.0

Sl. No.	Location	Concentration of pollutants												
		Results	PM10 (µg/m³)	PM2.5 (µg/m³)	SO2 (µg/m³)	NO2 (µg/m³)	Ammonia (µg/m³)	Lead (µg/m³)	Nickel (ng/m³)	Arsenic (ng/m³)	Benz(a)P (ng/m³)	CO (mg/m³)	Ozone (µg/m³)	Benzene (µg/m³)
3.	WBIIDC Ruchi Soya Industries Ltd. AAQM-3	No. of Reading	9	3	18	18	18	9	9	9	9	72	72	3
		Max. Value	265	88	25.6	49.4	50.1	<0.1	<10.0	<2.0	<0.5	1.14	<10.0	<2.0
		Min Value	75	40	14.5	32.8	34.7	<0.1	<10.0	<2.0	<0.5	0.54	<10.0	<2.0
		Arithmetic Value	164	57	19.7	40.9	42.2	<0.1	<10.0	<2.0	<0.5	0.82	<10.0	<2.0
4.	IOCL Hospital AAQM-4	No. of Reading	9	3	18	18	18	9	9	9	9	72	72	3
		Max. Value	97	24	21.6	43.2	43.3	<0.1	<10.0	<2.0	<0.5	1.24	<10.0	<2.0
		Min Value	53	17	13.4	28.5	27.5	<0.1	<10.0	<2.0	<0.5	0.58	<10.0	<2.0
		Arithmetic Value	79	20	16.6	35.6	36.3	<0.1	<10.0	<2.0	<0.5	0.85	<10.0	<2.0

Predominant sources are industrial pollution arising out of different industries like refineries, fertilisers, pesticides, petro-chemical, industrial batteries, sponge iron industries, non-recovery type coke ovens vegetable oil processing etc.

3.7 Land Environment (Soil and Ground Water)

Table 3.4 Present Status of Ground Water Quality of Haldia (Monitored by Third Party during February 2019)

Sl. No.	Parameter	Unit	Hand Pump near Anusuya Housing, Haldia (Location Code-GW-1)	Hand Pump near Vidyasagar More (IOCL Main Gate), Haldia (Location Code-GW-2)	Hand Pump at Durgachak D Block, Haldia (Location Code-GW-3)	Hand Pump water at Prtiyambada Complex, Haldia (Location Code-GW-4)
1	Sanitary Survey	----	Drainage system found & no Toilet nearby	Drainage system found & no Toilet nearby	Drainage system found & no Toilet nearby	Drainage system found & no Toilet nearby
2	General appearance	----	Transparent	Transparent	Transparent	Transparent
3	Colour	Hazen	<1.0	<1.0	<1.0	<1.0
4	Smell	----	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
5	Transparency	Cm	92	95	88	88
6	pH at 26deg C	----	7.3	7.4	7.3	7.4

Sl. No.	Parameter	Unit	Hand Pump near Anusuya Housing, Haldia (Location Code-GW-1)	Hand Pump near Vidyasagar More (IOCL Main Gate), Haldia (Location Code-GW-2)	Hand Pump at Durgachak D Block, Haldia (Location Code-GW-3)	Hand Pump water at Prtiyambada Complex, Haldia (Location Code-GW-4)
7	Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0
8	Suspended solids	mg/L	<5.0	<5.0	<5.0	<5.0
9	COD	mg/L	12.43	12.43	7.65	10.52
10	BOD	mg/L	1.8	1.5	<1.0	1.8
11	Electrical Conductivity	µmhos/cm	1464	960	2080	1510
12	TDS	mg/L	860	566	1190	884
13	Nitrite-Nitrogen	mg/L	<0.005	<0.005	<0.005	<0.005
14	Nitrate-Nitrogen	mg/L	<0.5	<0.5	<0.5	<0.5
15	Total Nitrogen (NO2+NO3)	mg/L	<0.5	<0.5	<0.5	<0.5
16	Free ammonia	mg/L	<0.05	<0.05	<0.05	<0.05
17	Total Residual Chlorine	mg/L	<0.05	<0.05	<0.05	<0.05
18	Cyanide	mg/L	<0.01	<0.01	<0.01	<0.01
19	Fluoride	mg/L	<0.05	<0.05	<0.05	<0.05
20	Chloride	mg/L	266.02	204.26	403.78	285.02
21	Sulphate	mg/L	57.2	40.72	65.21	50.65
22	Sulphides	mg/L	<0.05	<0.05	<0.05	<0.05
23	Total hardness	mg/L	226	196	340	204
24	Dissolved Phosphate (as P)	mg/L	<0.05	<0.05	<0.05	<0.05
25	Total Phosphorous (as P)	mg/L	<0.05	<0.05	<0.05	<0.05
26	TKN	mg/L	<0.5	<0.5	<0.5	<0.5
27	Total Ammonia (NH4+NH3)	mg/L	<0.05	<0.05	<0.05	<0.05
28	Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
29	Surface Active Agents	mg/L	<0.10	<0.10	<0.10	<0.10
30	Hexavalent Chromium (Cr^{+6})	mg/L	<0.02	<0.02	<0.02	<0.02
31	Bioassay (Zebra fish)	%	------	-------	------	100% Survival of fish after 96hours exposure in 1005 Sample.
32	SAR	----	8.05	10.60	6.83	9.01
33	Zinc (Zn)	mg/L	0.085	0.001	<0.001	0.059
34	Nickel (Ni)	mg/L	<0.001	<0.001	<0.001	<0.001
35	Copper (Cu)	mg/L	<0.001	<0.001	<0.001	<0.001
36	Chromium (Cr)	mg/L	<0.001	<0.001	<0.001	<0.001
37	Arsenic (As)	mg/L	<0.001	0.001	<0.001	<0.001
38	Lead (Pb)	mg/L	<0.001	<0.001	<0.001	<0.001
39	Cadmium (Cd)	mg/L	<0.001	<0.001	<0.001	<0.001
40	Mercury (Hg)	mg/L	<0.001	<0.001	<0.001	<0.001
41	Managanese (Mn)	mg/L	<0.001	<0.001	0.005	0.010

Sl. No.	Parameter	Unit	Hand Pump near Anusuya Housing, Haldia (Location Code-GW-1)	Hand Pump near Vidyasagar More (IOCL Main Gate), Haldia (Location Code-GW-2)	Hand Pump at Durgachak D Block, Haldia (Location Code-GW-3)	Hand Pump water at Prtiyambada Complex, Haldia (Location Code-GW-4)
42	Iron (Fe)	mg/L	0.001	0.023	0.089	0.008
43	Vanadium (V)	mg/L	0.003	0.001	0.003	0.003
44	Selenium (Se)	mg/L	<0.001	<0.001	<0.001	<0.001
45	Boron (B)	mg/L	0.192	0.163	0.231	0.236
46	Total Coliform	MPN/100ml	<2	<2	<2	<2
47	Faecal Coliorm	MPN/100ml	<2	<2	<2	<2
48	Organo-Chlorine	µg/L	<0.01	<0.01	<0.01	<0.01
49	PAH	µg/L	<0.01	<0.01	<0.01	<0.01
50	PCB	µg/L	<0.01	<0.01	<0.01	<0.01
51	PCT	µg/L	<0.01	<0.01	<0.01	<0.01

3.8 Action plan for Haldia PIA

3.8.1 Name of the Industry: Haldia Dock Complex, Kolkata Port Trust

The HDC has already implemented the following good practices for betterment of environmental quality of the area:

- Inside dock area, 5 nos. tankers with effective water spraying system are in operation for 24 hours for dust suppression.
- All roads inside dock area are paved road made by bituminous, concreted or paver block.
- Domestic effluent is generated from offices and residential complex and same is treated in stabilization / oxidation pond before disposal.
- On-site emergency training programme along with other port operations issues are being conducted on monthly basis especially at work places within dock areas / operations areas by the in-house faculty.
- There is separate storm water drainage line. No waste water is allowed to be mixed with storm water line. All drains inside dock area and in township area are being cleaned on regular basis to avoid water logging.

Short Term Action Points (including continuous activities)

Sl No.	*Action points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental issues to be addressed*
1	Installation of additional facilities for improvement of dust suppression inside dock area.	60 Lakhs	March 2020	Reduction of dust emission, improvement of air quality
2	Additional Green belt development at the dock zone, office areas and residential zones as well as along roadsides wherever vacant spaces are available within the port.	28 Lakhs	March 2020	Improvement of overall air quality and biodiversity
3.	Drain cleaning and maintenance on regular intervals / requirement basis	1.3 Lakhs	March 2020	Improve drainage system and prevent water logging
4.	Railway flyover: HDC provided land as required	HDC's contribution Rs 30 Crore, Total project cost Rs 127 Crore being executed by NHAI	December 2019	Ease movement of traffic from HDC. Will reduce vehicular pollution in the area.

Medium Term Action Points (1 year – 3 years)

Sl No	*Action points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental issues to be addressed*
1	Identification of more areas for plantation within port jurisdiction	25 Lakhs / annum	March 2022	Improvement of overall air quality and biodivpavedersity
2	Construction of retaining wall beside drain at specified locations are in progress.	2.30 Crore	December 2021	Improve drainage system
3	Improvement of Road: Inside dock area, Haldia township to Durgachawk	30 Crore	December 2021	Improvement of overall air

Sl No	*Action points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental issues to be addressed*
	(within Haldia Municipality) Construction of Truck terminals and parking area: 6,000 sq meter	2 Crore	December 2021	quality Improvement of Air Quality

Long Term Action Points

Sl No	*Action points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental issues to be addressed*
1	Upgradation of existing sewerage system at Haldia township and installation of a new STP of capacity of 4.0 MLD.	18 Core.	December 2023	Treatment of sewage from township and improvement of water quality

3.8.2 Name of the Industry: MCPI Private Limited (Formerly MCC PTA India *Corp. Private Limited*, Materials Chemicals and Performance Intermediaries Private Limited)

The industry has already implemented the following good practices for betterment of environmental quality of the area in addition to compliance with effluent and emission norms:

- Recycling of effluent (RO reject) from water treatment plant and use in cooling tower makeup.
- In 2018, unit has installed sludge dryer in new plant (HP) to reduce solid waste generation.
- Constructed paved road and truck parking area with paved bricks.
- Installed on-line stack emission monitoring systems, continuous ambient air quality monitoring and effluent monitoring systems
- Re-use of Solid Hazardous Waste in cement industry as Co-Processing material.
- Green Belt area rain water is collected in natural lagoon of 3.5 Lakh m^3 capacity and part of this water is used for plant operations and firefighting system.
- Training/ Awareness program for on-site emergency are conducted regularly

Short Term Action Points (including continuous activities)

Sl. No	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1.	RO reject water is used for cleaning of paved road and parking area for suppression of dust.	11 Lakhs	Continuous activity/ March 2020	Reduce Particulate Matter (PM) within the plant area.
2.	Complying the EC/NOC conditions by monitoring the Air, Water, Noise, LDAR Monitoring & Stack emission monitoring, Work Environment monitoring etc.	36 Lakhs	Continuous activity/ March 2020	Regulation of emission/ effluent generation. LDAR monitoring help to reduce the VOC emissions within the plant area.
3.	For existing plant, following will be adopted: • Existing diesel operated Forklifts will be replaced with Battery Operated Forklifts. • Utilizing low sulphur content FO	45 Lakhs	March 2020	Reduce the CO, CO_2, dust, emissions during operation of Forklifts. Reduction in SO_2 emission
4.	Modification of scrubber, installation of new bag filter and replacement of eliminators in desulphurisation unit will be implemented in the existing plant	10 lakhs	March 2020	Reduce the VOC emissions and Dust. Reduction in SO_2 emission
5.	Tree plantation will be developed within the plant, surrounding the plant and housing complex.	5 Lakhs	March 2020	Reduction of air pollution.

Medium Term Action Points (1 year -3 years)

Sl. No	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1.	Developed green belt of 33% of the plant premises and is maintaining the green belt. Every year new local tree plantation carried out as per DFO directions. Removal of old dead plants and plantation of new plants & maintenance carried out	20 Lakhs per year 20 X 3=60 lakhs	March 2022	Improve the Air Quality surrounding the plant and help to protect the Biodiversity.
2.	Maintenance of drainage network at outside of MCPI boundary canal and inside canal; periodic cleaning is done.	15X3 = 45 Lakhs	March 2022	Avoid floods during heavy rains as well as water contamination.

3.8.3. Name of the Industry: IVL Dhunseri Petrochem Industries Private Limited

The industry has already implemented the following good practices for betterment of environmental quality of the area in addition to compliance with effluent and emission norms:

- All roads inside factory premises are concreted and are thoroughly cleaned regularly
- Initiatives taken towards energy efficiency improvements, recycling, sustainable use of resources and environmental protection activities likes installation of LED lamp, installation of energy efficiency motor & compressor, green transportation like battery operated forklift
- EC/NOC conditions are complied with on a continuous basis
- Installation of and operation of on-line monitoring system
- The unit is practicing rain water harvesting
- The drainage network of entire plant is being maintained on a regular basis
- Training/Awareness Program for on-site emergency is being given to employees time to time.

Short Term Action Points (including continuous activities)

Sl. No.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be address*
1.	Provision for dust suppression facility outside factory gate to control dust emission due to vehicle movement.	1.5 Lacs	December 2019	Reduction of PM emission
2.	The unit will install ESP with stack attached with TFH-2 which is under progress. Two more stripping column added to reduce effluent load in ETPs.	3.25 Crore	December 2019	Reduction in Particulate Matter emission and achieving better performance for ETP
3.	The unit has installed a Greenfield Waste Water Recycling Plant to reuse 85-90% of treated water. Unit plans to reuse 10-15% of reject water from the recycle plant for maintaining dust free environment and road washing etc.	-	Continuous	Reduce water consumption significantly. Reduction in pollution load to the environment due to less quantity of water discharge.
4.	Unit planned to set up two additional AAQM station in strategic location in the plant in addition to one online AAQM station.	Rs. 3 Lacs	December 2019	Regular monitoring of ambient air quality.

Medium Term Action Points (1 year -3 years)

Sl. No.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be address*
1	New plantations are done in every year. The unit is planning for development of additional greeneries including total maintenance of green belts like grass cutting, maintenance of existing plants and new plantation	14.48016 Lakhs	Continuous activity	Control of dust in the adjoining area.
2	To control emission level, the unit plans to install ESP attached with TFH-1	Rs. 3.75 Crore	December 2021	Reduction in Particulate Matter emission

3.8.4. Name of the Industry: Emami Agrotech Limited, Haldia

The industry has already implemented the following good practices for betterment of environmental quality of the area in addition to compliance with effluent and emission norms:

- All internal roads are paved (RCC)
- Treated water is utilised for gardening, ash quenching
- Installation and operation on-line monitoring system to ensure compliance with environmental norms
- Training and awareness programme are carried out regularly as a preparedness during emergency
- All drains inside the plant are made of RCC, proper maintenance of drainage network is carried out

Short Term Action Points (including continuous activities)

Sl. No.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1.	Provision for dust suppression system- design is in progress	15 lakhs	February 2020	Reduce PM in ambient air

Sl. No.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
2.	Development of additional greeneries	0.5 Lakhs	November 2019	Dust mitigation
3.	Reduction of specific water consumption	70 Lakhs	February 2020	Water Conservation and Reduction in water pollution of recipient water body.

Medium Term Action Points (1 year -3 years)

Sl. No.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1.	planned to develop and increase the greenbelt	15 Lakhs	January 2022	Improve the Air Quality surrounding the plant

3.8.5. Name of the Industry: Exide Industries Limited

The industry has already implemented the following good practices for betterment of environmental quality of the area in addition to compliance with effluent and emission norms:

- All roads inside factory premises are paved and are thoroughly cleaned regularly
- Most advanced and clean technology used in process in collaboration with globally best available expertise for lead acid battery manufacturing which leads to minimum waste generation
- All process equipment has inbuilt APC system attached to bag filter / wet scrubbers
- Installed On-line monitoring system at both out discharge points viz: Lagoon discharge and Traction discharge outlets, systems are operational
- Reuse of water practised in various plant areas viz. Reuse of RO waste water in ETP plant operation & floor wash; Reuse of Treated water from Lagoon and Traction ETP for road washing
- As per corporate policy every employee has to undergo training on SHE and are made aware about on-site emergency plan as part of induction training.

- Drainage system inside factory is present in ring main network. All drains are RCC and the entire network is under constant surveillance for both maintenance and analysis purpose

Short Term Action Points (including continuous activities)

Sl No	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1.	• Introduction of 16 nos Industrial type root vacuum cleaners in Automotive & Industrial segments. • Installed 11 nos of water spray monitors capable of forming water cloud mist	1.25 Lakhs per unit	Continuous activity, upto March 2020	Less SPM, RPM
2.	• Donate saplings every year as part of CSR project to Haldia Development Authority • In existing plant saplings have been planted around the boundary wall and surrounding RCC road.	2.5 Lakhs (Approx)	March 2020	Control of ambient dust

Medium Term Action Points (1 year -3 years)

Sl No	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1.	Plantation of saplings around the boundary wall and surrounding RCC road. More plantation will be taken up in the next 3 years.	5 Lakhs	March 2023	Control of ambient dust

3.8.6. Name of the Industry: Adani Wilmar Limited Unit I

The industry has already implemented the following good practices for betterment of environmental quality of the area in addition to compliance with effluent and emission norms:

- All vacant land is covered by paver block inside the factory.
- NOC/ Consent to Operate conditions are complied with on a continuous basis
- Treated water is being reused for various purposes like gardening / maintaining green belt, sprinkling in dust prone area & road cleaning etc.

- Installation and operation of on-line monitoring system for emission and effluent
- Training/Awareness Program is imparted to employees from time to time for on-site emergency
- The drainage network of entire plant is being maintained on a regular basis
- The unit has already installed one AAQM station

Short Term Action Points (including continuous activities)

Sl. No.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1.	1400 Meter Square paved area will be developed outside the Factory	100 Lakh	March 2020	Reduction in dust emission due to vehicular movement
2.	Periodic Maintenance of the pollution control system	10 Lakh	March 2020	Reduction in air emission and effluent discharge from the unit.

Medium Term Action Points (1 Year – 3 Years)

Sl. No.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1	Around 1400 plants [*Chhatim, Jhau Gaach*] have already been planted in the factory premises and outside the factory and additional greenery will be developed	1.5 Lakh	March 2022	Control of dust in the adjoining area.

3.8.7. Name of the Industry: Haldia Petrochemicals Ltd.

The industry has already implemented the following good practices for betterment of environmental quality of the area in addition to compliance with effluent and emission norms:

- EC/NOC conditions are complied with on a continuous basis
- Solar Water Heater of capacity 1000 LPD has been installed at the roof top
- Treated waste water is being used for watering of trees inside greenbelt periodically in dry season.

- Installation of and operation of on-line monitoring system
- Training/Awareness Program is imparted to employees from time to time for on-site emergency.
- The drainage network of entire plant is being maintained on a regular basis
- The unit has already installed one AAQM station as per EC condition

Short Term Action Points (including continuous activities)

Sl. No.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1.	New Py Gas Desulphurization unit is installed for removal of sulfur content of py gas to produce cleaner Euro VI grade motor spirit. A major part of the Py-gas volume is blended with other product streams of naphtha cracking to produce Euro-IV Motor Spirit (MS). By the second stage Py Gas Hydrogenation unit the sulfur content will be reduced to 10 ppm in order to produce Euro VI grade motor sprit.	85 Crores	Implemented in March 2019	Reduction in overall SO_x emission
2.	3000 nos. of sapling were planted on 2018-19 and plantation of 5000 nos. of sapling has been planned for 2019-20 inside the plant.	2.64 lakhs	March 2020	Control of dust in the adjoining area.
3.	Rainwater harvesting in the East Pond-A/B with inter-connectivity of the surface drains from non-plant area	Rs. 22.5 Lakhs	March 2020	Rain water will be utilized to reduce freshwater consumption.

3.8.8 Name of the Industry: Haldia Refinery, Indian Oil Corporation Limited

The industry has already implemented the following good practices for betterment of environmental quality of the area in addition to compliance with effluent and emission norms:

- Adopted dust suppression systems as a continuous process in construction and dust prone areas for betterment of air quality
- Roads inside refinery are paved, repair of roads done periodically.
- Expenditure of Rs. 1656.6 Lakh (approx.) during 2018-19 has been incurred for compliance of EC/NOC conditions for efficient operation of pollution control system and compliance with environmental norms
- Installed Online analyzers in year 2016/2017 for monitoring of effluents and stack emission
- Training and awareness programme for preparedness during emergency carried out periodically

Short Term Action Points (including continuous activities)

Sl. no.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1.	I. Low Sulphur Internal fuel oil used in heaters. II. Sulphur free fuel gas after Amine wash used in heaters.	--	Already implemented during 2018-19	Improvement of air quality with respect to SO_x emission
2.	I. All new heaters will be equipped with low NOx burners. II. Old heaters burners are being replaced with low NOx burners.	1.6 Crore	March 2020	Improvement of air quality
3.	Tertiary treatment plant with RO installed by the unit. Utilisation of treated water (450 KLD) will be done	An amount of Rs 202 lakhs incurred during 2018-19.	2018-2019	Water conservation and reduction of pollution in recipient water body.
4.	Tree plantation will be done in all nearby region of Haldia refinery like previous years during World environment Day and 'Bano Mohotsav'. Tree plantation is	An amount of Rs 0.6 lakhs incurred during 2018-19	Continuous activity	Reduction of dust emission.

Sl. no.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
	being done in nearby region, schools, municipality /HDA area with due permission.			
5.	Sludge oil recovery & recycling done before disposal	An amount of Rs 443 lakhs incurred in sludge oil recycling during 2018-19	Continuous activity	Waste Minimization
6.	Additional AAQM station (2 nos) shall be started in project area.	3 Crore	March 2020.	To monitor ambient air quality
7.	Rain water harvesting done at two locations in 2018-19	42 Lakh	Continuous activity	Water Conservation
8.	Schemes under implementation stage in 2019-20 to reduce specific water consumption further	145 Lakh	March 2020	Reduction in water pollution of recipient water body
9.	Haldia refinery is on final stage of installing LPG pumping facilities to Durgapur LPG bottling plant.	Pipeline already constructed.	March 2020	This will eliminate LPG bullet movement from Haldia Refinery resulting in improvement of air quality.

Medium Term Action Points (1 year – 3 years)

Sl. no.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
1	I. Maintenance of drainage network within refinery is being done before start of monsoon. II. Periodic cleaning done as per requirement.	--	On-going process carried out on yearly basis	Improved drainage network resulting in reduction of water pollution

Sl. no.	*Action Points (including source & mitigation measures)*	*Estimated Cost (Rs)*	*Target Date*	*Environmental Issues to be addressed*
2.	Natural gas shall be used as fuel in heaters in Haldia refinery to reduce stack emission	Design and budget are under preparation	March 2022	Air Pollution

3.8.9 Name of the Industry: Haldia Energy Limited

The industry has already implemented the following good practices for betterment of environmental quality of the area in addition to compliance with effluent and emission norms:

- Areas prone to fugitive emission (Coal handling, ash handling areas, transfer points etc.) are equipped with dust extraction and dust suppression system.
- EC/NOC/ Consent to Operate conditions are complied with on a continuous basis
- All the internal roads have been made pucca (bitumen) and good housekeeping practices are being followed to keep the roads clean.
- Installed ESP with 99.9 % efficiency designed to maintain the PM level below 50 mg/Nm^3 along with ammonia dosing system
- Installed dry fly ash collection system
- Installed automatic organic waste composter machine for composting kitchen and garden wastes to form organic manures.
- The administrative building has been conferred as a Platinum rated Green Building by the IGBC
- 30 KWp rooftop solar panel installed.
- Approximate water savings of 9 m^3/day achieved by the usage of water efficient toilet fixtures and reuse of the treated water from the sewage treatment plant.
- Waste water is being utilized for road cleaning, gardening, coal pile sprinkling, ash conditioning etc.
- Online emission monitoring system, online effluent monitoring station and Continuous ambient air quality monitoring station (CAAQMS) have already been installed
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- Training/Awareness Program is imparted to employees from time to time for on-site emergency
- The drainage network of entire plant is being maintained on a regular basis
- The unit has already installed one AAQM station