KSK Power from knowledge

KSK Mahanadi Power Company Limited
CIN No. : U40300TG2009PLC06462

Works
Near Naiyara Village,
Akaltara Tehsil,
Janjgir - Champa District,
Chhattisgarh
Tel (Site) : 07817-284001

Registered Office
8-2-293/82/A/431A
Road No.22, Jubilee Hills
Hyderabad - 500033
Tel : +91-40-23559922-25
Tel : +91-40-23558701
Fax: +91-40-23559930

Ref. No: CECB,BILAS/PDKN/2500108/ 1117 **Date: 09.09.2019**

To
The Regional Officer,
Chhattisgarh Environment Conservation Board,
Vyapar Vihar, Near Pt. Deendayal Upadhyaya Park,
Bilaspur, Chhattisgarh.

Sub: - Submission of Environmental Statement in Form-V for last Financial Year 2018-19-Reg.

Ref: -i) Consent for Operation No. – 763/TS/CECB/2015 Dt. 22.05.2015
ii) Renewal Consent for Operation No.1602/TS/CECB/2018 (Air) and 1600/TS/CECB/2018 (Water) Dtd.14.05.2018 Dtd. 14.05.2018
iii) Environmental Clearance No. (Amendment & Extended of Validity)-13012/44/2008-IA.II (T) Dt.19.04.2018 & J-13012/44/2008-IA.II (T), Dt.19.10.2009
iv) Rule-14 of Environmental (Protection) Rule, 1986

Sir,

In inviting references to the above on the mentioned subject, please find herewith the enclosed '**Environmental Statement in Form-V**' for last Financial Year **2018-19** with duly filled-up under Rule-14 of the Environmental (Protection) Rules, 1986 for operational Units-**3, 4 & 2 (3 x 600MW)** of M/s KSK Mahanadi Power Company Limited.

Submitted for your kind Perusal and records please.

Thanking You,
Yours faithfully,

For **KSK Mahanadi Power company Limited**

(Authorized Signatory)

Copy to: i) The Regional Officer, CECB, Bilaspur, Chhattisgarh.
ii) The Addl. PCCF(C), MoEF &CC, Regional Office (WCZ), Nagpur, Maharashtra

Encl: Environmental Statement in **Form-V- FY 2018-19**.

ENVIRONMENTAL STATEMENT REPORT

OF

KSK Mahanadi Power Company Limited,
Village- Nariyara, Tehsil- Akaltara
District- Janjgir-Champa
Chhattisgarh.

Unit#1, 2 & 3 (3x600MW)

For
The Financial Year Ending 31st March 2019

Submitted to

Chhattisgarh Environment Conservation Board,
Chhattisgarh

FORM - V
(See Rule 14)

Environmental Statement Report for the financial year ending the 31st March, 2019.

PART-A

(i) Name and address of the Owner/Occupier of the Industry, Operation or process.	:	Mr. S. Kishore, Director M/s KSK Mahanadi Power Company Limited Village- Nariyara, Tehsil-Akaltara, District- Janjgir-Champa, Chhattisgarh
(ii) Industry Category	:	Red A Category
(iii) Production capacity	:	3x600 MW
(iv) Year of Establishment Commercial Operation Date	:	16th Feb 2010 14th Aug 2013 (for **Unit No. #3**) 26th Aug 2014 (for **Unit No. #4**) 28th Feb 2018 (for **Unit No. #2**)
(v) Date of the last environmental Audit Report submitted	:	1st September, 2018

PART-B

Water and Raw Material Consumption

i) **Water Consumption**:

Raw Water	During the previous financial year 2017-18	During the Financial Year 2018-19
For production of DM plant water (m3)	0	0
For cooling water & miscellaneous (m3)	1,24,81,471	14970453
Potable water (m3)	2,30,579	258123
Total	1,27,12,050	15228576

Name of the product:	**Water consumption per unit of product**	
Specific water consumption (KL/MWH)	During the previous FY 2017-18	During the FY 2018-19
	2.17	1.93
		Details enclosed as **Annexure-I**
Gross electricity generated (MU)	**Electricity generation**	
	During the previous Financial Year 2017-18	During the Financial Year 2018-19
	5645	7872
		Details enclosed as **Annexure-II**

ii) **Raw Material consumption**:

SL. No	Name of raw materials.	Name of products	Consumption of raw material per unit of output (kg/Kwh)	
			During the previous FY 2017-18	During the FY 2018-19
1	Coal	**Electricity**	0.63	0.64
2	LDO/ HFO (Only during start up)		0.8	0.51

PART-C

Pollution Generated
(Parameters as specified in the Consent issued)

Pollution discharged to Environment/ unit of output

(i) Pollutant	Quantity of Pollution Generated	Percentage of variation from Prescribed Standards

a) Waste Water

Condenser Cooling Water

Parameters	Limit	Range of conc.	% age of variation
pH	6.5- 8.5	7.6	within limits
Temp	<5 Deg C	28.1	within limits
FA Chlorine	0.5 mg/L	<0.2	within limits

Boiler Blow Down

Parameters	Limit	Range of conc.	% age of variation
Suspended solid	100mg/L	31.5	within limits
Oil & Grease	20 mg/L	<1.0	within limits
Copper	1 mg/L	<0.01	within limits
Iron	1 mg/L	0.21	within limits

Cooling Tower Blow Down

Parameters	Limit	Range of conc.	% age of variation
FA Chlorine	0.5 mg/L	<0.2	within limits
Zinc	1.0 mg/L	0.42	within limits
Chromium (T)	0.2 mg/L	<0.01	within limits
Phosphate	5.0 mg/L	0.71	within limits

b) Air

Stack emission characteristics **Unit#3**		Quantity Kg/hour	Average concentration (mg/Nm3)	% Variation
Parameters	Limit			
Particulate Matter (PM)	50mg/Nm3	187	37.9	-24.2 %
Stack emission characteristics **Unit#4**		Quantity Kg/hour	Average concentration (mg/Nm3)	% Variation
Parameters	Limit			
Particulate Matter (PM)	50mg/Nm3	171	34.9	-30.2 %
Unit-2		Quantity Kg/hour	Average concentration (mg/Nm3)	% Variation
Parameters	Limit			
Particulate Matter (PM)	30mg/Nm3	84	20.4	-32 %

PART-D

Hazardous Wastes

(As specified under Hazardous Wastes (Management, Handling and Transboundary Movement Rules, 2008)

Hazardous Wastes	Total Quantity During the previous financial year (2017-18)	During the financial year (2018-19)
From Process	**18 MT** Used Oil	**15.8 MT** Used Oil
From Pollution Control Facility	**Nil**	**Nil**

PART-E
Solid Wastes

Sl. No.		Total Quantity	
		During the previous Financial year (2017-18)MT	During the current Financial year (2018-19)(MT)
a)	From process Fly (Ash)	11,72,338	1604056
b)	From Pollution Control facility	Nil	Nil
c)	(1) Quantity recycled or re-utilized within the Unit.		
	(2) Sold	**--**	
	(3) Disposed	10,36,719	1375413

PART-F

Please specify the characteristics in terms of composition and quantum of Hazardous waste as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Hazardous waste:

The generated used/spent oil is hydrocarbon in nature. **15.8 MT** of Used/spent oil (under category No.-5.1) is disposed to authorized recycler of Hazardous Waste during this **FY 2018-19.**

Fly Ash and Bottom Ash:

At present, only Fly Ash & Bottom Ash as Solid Waste is being generated from current power plant operation activities. Fly ash is being collected & Stored at 3900m3 capacity Silo, thereafter pneumatically.

It is being transferred to Bulkers through the air tight telescopic chute use in Cement & Brick Manufacturing industry. Bottom Ash disposed to Ash Pond/dyke. 100% of the Ash Generated from plant operation is being utilized by dispatching to Cement Industry, Brick Manufactures & for Road Construction work. (Ash Dyke storage optimization) Details are enclosed as **Annexure- III.**

Data of Industrial Effluent	**Annexure- IV**
Monthly Source Emissions Unit # 3	**Annexure- V**
Monthly Source Emissions Unit # 4	**Annexure- V (A)**
Monthly Source Emissions Unit # 2	**Annexure- V (B)**
SUMMARY OF AMBIENT AIR QUALITY RESULTS (Inside Plant)	**Annexure- VI**
SUMMARY OF AMBIENT AIR QUALITY RESULTS (Outside Plant)	**Annexure- VI (A)**

PART-G

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

1. Low Sulphur Coal is used for power generation: Enabling to lower the SO2 – Emission.
2. For Coal transportation through Train- Merry go round track is being used. (i.e. minimize line source emission & Fuel Conservation).
3. For Coal transportation through Roads: Tarpaulin covered trucks/dumpers has been followed-up to minimize Secondary /Tertiary fugitive dust emission.
4. Optimal Usage of Combustion support or Auxiliary fuels i.e LDO/HFO (lower per MW Liquid fuel cost)
5. Optimization of Coal Inventory level.
6. Reuse & recycle of waste water (Boiler, CT Blow down & DM Plant for ash handling purpose (Reducing demand for fresh raw water).
7. 100% of the Fly Ash Generation from plant operation is being utilized by dispatching to Cement Industry, Brick Manufactures & for Road Construction work (Ash Dyke storage optimization)
8. Use of Low – NOx Burner in furnace (Energy Conservation)
9. All the major Drives are VFD (Energy Conservation)
10. Dust extraction systems are provided & operation to minimize coal dust losses through fugitive dust emission.
11. Extensive tree planation has been carried out. As on date, total **7,20,000nos.** of saplings have been planted within the Plant premises in an areas about **277** hectares i.e **33.3%** of total project area (**828.46** Hectares). Out of which **3,99,910nos**. of saplings has been survived and further plantation by causality replacement is under progress.

PART-H

Additional measures investment proposal for environmental protection including abetment of pollution prevention of pollution.

Environmental Cost details towards pollution control and monitoring for the year 2018-19 are as follows:

Environmental Expenses in last FY2018-19

Section	Capital expenditure (In Crores)	Recurring expenditure (In Crores)	Total
Air quality Management			
Electrical, mechanical spares	--	17.54	17.54
Manpower cost	--	0.50	0.50
Energy consumption cost (ESP+FF)	--	14.14	14.14
Water quality and waste water quality Management			
Chemicals	--	0.33	0.33
Manpower cost	--	0.12	0.12
Solid waste Management			
Ash Transportation cost	--	42.80	42.80

Hazardous waste Management			
Hazardous Waste Storage Shed	0.30	--	0.30
House Keeping			
Manpower, Tools /Tackles & Vehicles resources cost.		1.79	1.79
Greenbelt Development			
Equipment		0.02	0.02
Manpower cost		1.00	1.00
Environmental Monitoring		0.32	0.32
Online CAAQMS, Remote calibration, purchase of PH analyzer, Gas for calibration & Env. display board etc.	2.5	0.16	2.66
EMD Manpower cost	--	0.50	0.50
Total	**2.8**	**79.22**	**82.02**

PART-I
Miscellaneous

Any other particulars for improving environment protection and abatement of pollution.

1. High efficiency ESP + Hybrid Fabric Filter combination, with 99.7% efficiency has been installed for each Unit (600MW).
2. Zero water discharge system has been implemented. Effluents are being used in Ash Handling, Dust Suppression, DM water Production & Green belt development purposes.
3. Development of Greenbelt, ranging 50 to 100m width, by using Local Climate suitable Fast growing plant species.
4. Pulse Jet type bag –filters have been installed at all the Transfer-points meant for Coal transport from CHP area to boiler area.-
5. Water sprinkling arrangement facilitate at all the dust prone areas including Coal yard area.
6. 44 No's Rain Gun type of Water spray system has been installed at Coal yard area.
7. Installation of bag filters & Dry Fog System over the Coal conveyor Transfer Towers.
8. All the major internal roads are concretized and adequate capacity of water tankers has been deployed for water spraying to control fugitive dust emission.
9. Regular sweeping of roads are also in practiced.
10. Necklace drains provided in and around the Coal yard and other area to prevent leachate water.

ANNEXURE – I

WATER CONSUMPTION DETAILS IN FY2018-19						
Consumption of Raw Water (KL)				Reuse/Recycling of Waste Water (KL)		
Month	**Cooling Tower Operation**	**Boiler Water**	**Portable**	**ETP Clarifier plus RO+UF Circuit for DM WATER Production**	**Ash Handling**	**STP**
Apr-18	1386815	0	19251	61728	131602	12010
May-18	1561602	0	22496	93720	224472	14390
Jun-18	959777	0	18672	31589	222382	12400
Jul-18	1207919	0	18120	51466	191765	12389
Aug-18	1447275	0	16324	94768	306638	12430
Sep-18	1180316	0	17066	33663	219286	11540
Oct-18	1485709	0	22188	67639	180562	13490
Nov-18	1456415	0	35945	50127	146530	25210
Dec-18	1210809	0	28571	61743	109032	19550
Jan-19	897784	0	23973	39416	59717	16190
Feb-19	875802	0	18226	40374	67070	12745
Mar-19	1300230	0	17291	52271	184885	14880
Total	**14970453**		**258123**	**678504**	**2043941**	**177224**

ANNEXURE – II

POWER GENERATION AND COAL CONSUMPTION DETAILS FOR FY 2018-19

Month	Month wise Gross Power Generation Details (MU)			Month wise Coal Consumption Detail's (MT)		
	Unit # 3	Unit # 4	Unit # 2	Unit # 3	Unit # 4	Unit # 2
Apr-18	127	365	178	77713	221867	102670
May-18	400	36	378	244269	22873	227429
Jun-18	59.69	393	0	39409	267083	0
Jul-18	0	375	339	0	259766	231622
Aug-18	0	365	391	0	230742	237723
Sep-18	22	236	308	14559	165904	208622
Oct-18	29	436	338	16886	265259	200258
Nov-18	0	370	405	0	239147	251645
Dec-18	0	243	408	0	158078	252322
Jan-19	0	133	373	0	94078	235933
Feb-19	0	354	119	0	230858	73751
Mar-19	0	286	376	0	198858	243776
Total	**638**	**3592**	**3614**	**392836**	**2354513**	**2265751**

ANNEXURE – III

FLY ASH GENERATION & UTILISATION DETAILS FOR FY 2017-18												
Month	**Fly Ash Generation (MT)**			**Fly Ash Utilized-Dispatched to Cement Plant. (MT)**			**Fly Ash Utilized for other purpose (MT)**			**Percentage of Utilization (%)**		
Units	**Unit#3**	**Unit#4**	**Unit#2**	**Unit#3**	**Unit#4**	**Unit#2**	**Unit#3**	**Unit#4**	**Unit#2**	**Unit#3 (6^{th} Yr. operation)**	**Unit#4 (5^{th} Yr. operation)**	**Unit#2 (2^{nd} Yr. operation)**
Apr-18	26677	64962	35981	26677	63685	17857	0	1277	402	100%	100%	51%
May-18	82486	8128	76035	82486	3845	0	0	1666	0	100%	68%	0%
Jun-18	13845	85552	0	13845	79690	0	0	737	0	100%	94%	0%
Jul-18	0	81359	72544	0	81359	45604	0	0	2975	0%	100%	67%
Aug-18	0	72811	75972	0	72811	49920	0	0	15458	0%	100%	86%
Sep-18	4637	52840	66446	4637	49206	62535	0	3634	0	100%	100%	94%
Oct-18	5378	84485	63782	5378	82200	36317	0	2285	0	100%	100%	57%
Nov-18	0	76168	80149	0	76168	17948	0	0	3185	0%	100%	26%
Dec-18	0	50348	80365	0	50348	75597	0	0	2575	0%	100%	97%
Jan-19	0	29964	75145	0	29964	72402	0	0	2743	0%	100%	100%
Feb-19	0	73528	23490	0	71031	3550	0	2497	19940	0%	100%	100%
Mar-19	0	63336	77643	0	61556	65869	0	1780	11774	0%	100%	100%
Total	**133023**	**743481**	**727552**	**133023**	**721863**	**447599**	**0**	**13876**	**59052**	**100%**	**99%**	**70%**

ANNEXURE–IV

DATA OF INDUSTRIAL EFFLUENT (Guard Pond) from APRIL 2018 - MARCH 2019

Month	pH	TSS (mg/l)	Oil & Grease (mg/l)
Apr-18	7.8	37	<1.0
May-18	7.6	41	<1.0
Jun-18	7.8	48	<1.0
Jul-18	7.6	52	<1.0
Aug-18	7.9	47	<1.0
Sep-18	8	52	<1.0
Oct-18	7.8	46	<1.0
Nov-18	7.9	39	<1.0
Dec-18	7.6	47	<1.0
Jan-19	7.4	52	<1.0
Feb-19	7.8	65	<1.0
Mar-19	7.6	54	<1.0
Avg	**7.7**	**48.3**	**<1.0**

ANNEXURE–V

Monthly Source Emissions (Unit#3) from April-2018 to March-2019

Month	Particulate Matter (mg/Nm^3)	SO_2 (mg/Nm^3)	NOx (mg/Nm^3)
Apr-18	37.5	562	386
May-18	37.2	603	426
Jun-18	39.1	693	418
Jul-18	Shut down		
Aug-18	Shut down		
Sep-18	Shut down		
Oct-18	Shut down		
Nov-18	Shut down		
Dec-18	Shut down		
Jan-19	Shut down		
Feb-19	Shut down		
Mar-19	Shut down		
Avg.	**37.9**	**619.3**	**410**

ANNEXURE – V(A)

Monthly Source Emissions (Unit#4) from April-2018 to March-2019

Month	Particulate Matter (mg/Nm^3)	SO_2 (mg/Nm^3)	NOx (mg/Nm^3)
Apr-18	39.4	571	412
May-18	38.9	586	402
Jun-18	36.3	673	374
Jul-18	38.4	642	423
Aug-18	36.2	583	391
Sep-18	30.5	604	411
Oct-18	34.1	636	441
Nov-18	30.8	547	426
Dec-18	34.4	573.2	447.6
Jan-19	31.8	634.7	502.3
Feb-19	35.2	612	491
Mar-19	33.1	639	503
Avg.	**34.9**	**608.4**	**435.3**

Annexure- V (B)

Monthly Source Emissions (Unit#2) from April-2018 to March-2019

Month	Particulate Matter (mg/Nm^3)	SO_2 (mg/Nm^3)	NOx (mg/Nm^3)
Apr-18	--	--	--
May-18	--	--	--
Jun-18	--	--	--
Jul-18	23.5	596	392
Aug-18	22.4	473	284
Sep-18	18.3	562	383
Oct-18	17.4	582	401
Nov-18	18.2	538.2	446.9
Dec-18	18.7	602.8	484.7
Jan-19	17.5	592.5	468.9
Feb-19	17.5	576	431
Mar-19	17.9	593	472
Avg.	**20.4**	**568.4**	**418.2**

Annexure-VI

SUMMARY OF AMBIENT AIR QUALITY RESULTS FROM APRIL 2018 TO MARCH 2019

Inside Location:

1. BTG Area-

PM 2.5 ($\mu g/m^3$)				PM 10 ($\mu g/m^3$)				SO2 ($\mu g/m^3$)				NOx ($\mu g/m^3$)				CO ($\mu g/m^3$)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
39.5	24.4	32.0	34.7	73.9	53.6	63.7	67.3	19.4	12.2	15.4	16.7	23.4	14.5	18.4	20.4	323.0	195.0	257.4	299.0

Arsenic ($\mu g/m^3$)				Nickel ($\mu g/m^3$)				Lead ($\mu g/m^3$)				O3 ($\mu g/m^3$)				NH_3 ($\mu g/m^3$)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.001	<0.001	<0.001	<0.001	0.05	<0.001	0.03	0.05	0.007	0.001	0.003	0.005	14.6	6.8	10.2	13.2	<20	<20	<20	<20

C6H6 ($\mu g/m^3$)				Benzo (a) Pyrene ng/m3				Hg ($\mu g/m^3$)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<1.0	<0.00	<0.00	<0.00	<0.00

2. CHP Area-

PM 2.5 ($\mu g/m^3$)				PM 10 ($\mu g/m^3$)				SO2 ($\mu g/m^3$)				NOx ($\mu g/m^3$)				CO ($\mu g/m^3$)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
42.2	27.2	34.4	36.4	78.3	58.9	68.1	70.9	19.5	12.3	16.1	17.5	23.6	16.8	19.8	21.5	360	223	288.1	333.5

Arsenic ($\mu g/m^3$)				Nickel ($\mu g/m^3$)				Lead ($\mu g/m^3$)				O3 ($\mu g/m^3$)				NH_3 ($\mu g/m^3$)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.001	<0.001	<0.001	<0.001	0.006	0.001	0.003	0.005	0.006	0.001	0.003	0.005	15.2	6.5	10.7	14.2	<20	<20	<20	<20

C6H6 ($\mu g/m^3$)				Benzo (a) Pyrene ng/m3				Hg ($\mu g/m^3$)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<1.0	<0.00	<0.00	<0.00	<0.00

3. DM Plant -

PM 2.5 (µg/m³)				PM 10 (µg/m³)				SO2 (µg/m³)				NOx (µg/m³)				CO (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
37.5	23.9	30.6	32.2	68.5	51.3	60.2	62.7	18.1	11.1	14.4	15.6	21.1	13.9	17.3	18.5	305	173	240.5	286.3

Arsenic (µg/m³)				Nickel (µg/m³)				Lead (µg/m³)				O3 (µg/m³)				NH_3 (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.001	<0.001	<0.001	<0.001	0.005	<0.001	0.019	0.037	0.006	0.001	0.003	0.004	14.1	5.3	9.9	13.0	<20	<20	<20	<20

C6H6 (µg/m³)				Benzo (a) Pyrene ng/m3				Hg (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<1.0	<0.00	<0.00	<0.00	<0.00

4. Ash Silo Area

PM 2.5 (µg/m³)				PM 10 (µg/m³)				SO2 (µg/m³)				NOx (µg/m³)				CO (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
42.8	24.6	32.5	34.9	73.1	55.6	64.5	68.0	18.6	12.4	15.3	16.4	21.7	14.6	17.9	19.6	335	200	247	310

Arsenic (µg/m³)				Nickel (µg/m³)				Lead (µg/m³)				O3 (µg/m³)				NH_3 (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.001	<0.001	<0.001	<0.001	0.004	0.001	0.018	0.036	0.006	0.001	0.003	0.004	14.3	5.8	9.9	13.1	<20	<20	<20	<20

C6H6 (µg/m³)				Benzo (a) Pyrene ng/m3				Hg (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	<0.001

ANNETURE – VI (A)

SUMMARY FOR AMBIENT AIR QUALITY MONITORING RESULTS FROM APRIL 2017 TO MARCH 2018

Out Side of Plant Area:

1. Tarod village

PM 2.5 (µg/m³)				PM 10 (µg/m³)				SO2 (µg/m³)				NOx (µg/m³)				CO (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
30.3	18.2	24.2	26.1	61.5	44.5	53.6	56.6	14.9	10.3	12.3	13.4	17.5	12.0	14.7	16.0	291.0	160	217	267

Arsenic (µg/m³)				Nickel (µg/m³)				Lead (µg/m³)				O3 (µg/m³)				NH_3 (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	0.002	0.003	11.1	4.8	9.1	12.1	<20	<20	<20	<20

C6H6 (µg/m³)				Benzo (a) Pyrene ng/m3				Hg (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	<0.001

2. Jhalmala Village

PM 2.5 (µg/m³)				PM 10 (µg/m³)				SO2 (µg/m³)				NOx (µg/m³)				CO (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
28.1	18.5	23.4	25.1	57.1	43.2	51.0	53.3	17.7	10.1	12.2	13.4	17.1	12.2	14.4	15.7	278.0	160	218	258

Arsenic (µg/m³)				Nickel (µg/m³)				Lead (µg/m³)				O3 (µg/m³)				NH_3 (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	13.2	4.7	8.8	12.0	<20	<20	<20	<20

C6H6 (µg/m³)				Benzo (a) Pyrene ng/m3				Hg (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	<0.001

3. Amora village

PM 2.5 (µg/m³)				PM 10 (µg/m³)				SO2 (µg/m³)				NOx (µg/m³)				CO (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
28.6	18.9	23.5	25.1	60.4	46.3	54.1	56.3	16.1	9.8	12.5	13.7	18.3	12.4	14.8	16.0	290	156	221	268

Arsenic (µg/m³)				Nickel (µg/m³)				Lead (µg/m³)				O3 (µg/m³)				NH_3 (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	13.8	5.1	9.4	12.5	<20	<20	<20	<20

C6H6 (µg/m³)				Benzo (a) Pyrene ng/m3				Hg (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	<0.001

4. Sonsari village

PM 2.5 (µg/m³)				PM 10 (µg/m³)				SO2 (µg/m³)				NOx (µg/m³)				CO (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
28.6	19.2	23.6	25.5	62.7	47.1	55.8	58.5	14.5	9.9	12.3	13.4	17.1	12.6	14.6	15.7	283	158	220	262

Arsenic (µg/m³)				Nickel (µg/m³)				Lead (µg/m³)				O3 (µg/m³)				NH_3 (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	13.1	4.7	8.9	11.9	<20	<20	<20	<20

C6H6 (µg/m³)				Benzo (a) Pyrene ng/m3				Hg (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	<0.001

5. Nariyara village

PM 2.5 (µg/m³)				PM 10 (µg/m³)				SO2 (µg/m³)				NOx (µg/m³)				CO (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
28.7	18.5	23.6	25.3	58.4	43.5	52.2	54.6	14.2	9.9	11.7	12.9	16.7	12.0	14.1	15.3	282	157	213.8	259

Arsenic (µg/m³)				Nickel (µg/m³)				Lead (µg/m³)				O3 (µg/m³)				NH_3 (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	13.1	5.0	8.9	12.0	<20	<20	<20	<20

C6H6 (µg/m³)				Benzo (a) Pyrene ng/m3				Hg (µg/m³)			
Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	<0.001