NFCL/ENV/MOEFCC/HR/01/2016

20th April 2016

To,
The Joint Director,
Ministry of Environment, Forests and Climate Change,
1st and 2nd Floor, HEPC Building,
No.34, Cathedral Garden Road,
Nungambakkam,
Chennai – 600034

Subject : Compliance of condition prescribed by MoEF&CC, RO, Chennai – Submission of Half Yearly Report – Reg.

Reference : Your Letter vide No. EP/12.1/2012-13/49/AP/1000, dated 11.08.2015

Dear Sir,

With reference to the above letter, monitoring data pertaining to analysis of Treated liquid effluent, Groundwater, Ambient air, Fugitive emissions, Stack emissions, Meteorological parameters, Solid waste generation & handling in the complex is being forwarded for the period October 2015 – March 2016.

Thanking you

Yours faithfully
for Nagarjuna Fertilizers and Chemicals Limited

G V S Anand

G V S Anand
Senior General Manager (Operations)

Cc: Environmental Engineer,
Regional Office,
A. P. Pollution Control Board, Kakinada

Cc: DGM (Lab & Env.) / Manager (Env.) - File

1.0 Treated Liquid Effluent Data

The data for the period, October'15 to March'16, is enclosed at Annexure – III

2.0 Ambient Air Quality

The data for the period, October'15 to March'16, is enclosed at Annexure – IV

3.0 Groundwater Quality data

The data for the period, October'15 to March'16, is enclosed at Annexure – V

4.0 Fugitive Emission data

The data for the period, October'15 to March'16, is enclosed at Annexure – VI

5.0 Stack Emission data

The data for the period, October'15 to March'16, is enclosed at Annexure – VII

6.0 Information on Ammonia Sensor in Ammonia Storage Tank area

Ammonia sensors were installed in Ammonia Storage Tank area and are working normally.

7.0 Solid waste generation & their handling in the complex

Plant → / Waste ↓	Ammonia		CDR Plant	Urea		Off-sites
	I	II		I	II	
Spent Catalyst	✓	✓	---	---	---	---
CDR Reclamation Waste	---	---	✓	---	---	---
Activated Carbon	✓	✓	✓	---	---	✓
Waste Oils	✓	✓	✓	✓	✓	✓
PTP Sludge	---	---	---	---	---	✓

7.1 **Spent Catalyst:** The list of catalysts being used in the plant is given in the Annexure I and II. Plant I and II were commissioned in 1992 and 1998 respectively. Once the catalyst is exhausted, it is removed from the processes and is oxidized completely. This

reduces the risk of fire hazard. After removal, the catalyst is packed in the drums containing impervious lining and clearly labeled as "Spent Catalyst - Hazardous". The spent catalyst drums are stored in covered, protected and earmarked area. During this period, generation of Spent Catalysts was NIL.

7.2 **CDR Reclamation Waste**: In the Carbon Di Oxide Recovery plant KS1 solution is being used as absorbing media. SO_2 and NO_x in the flue gas react with the KS1 solution and forms Heat Stable Salts (HSS). When the HSS content in the solution reaches to the maximum limit, HSS can be removed by Caustic reclamation. During this period, 9.76 MT of CDR Reclamation waste was disposed to APPCB authorized vendor.

7.3 **Spent Activated Carbon**: Activated carbon is used in Ammonia plant I & II, CDR Plant and in DM plant. Activated carbon is used to purify K_2CO_3 solution and KS1 solution in Ammonia plant and CDR Plant respectively. In DM plant, it is used to adsorb Chlorine and Organic matter from water. Activated carbon removed from the above processes is packed in containers with proper lining. The containers are labeled prominently and stored in a well-marked, covered and protected area. During this period, generation of Spent Activated Carbon was NIL.

7.4 **Waste Oils**: In the complex, Oil is used mainly for lubrication purposes. In the process plants, lubricating oils are centrifuged and reused in the process, hence quantity of waste oils generated is less when compared to the quantities in use. The waste oils generated from the process plants are reused in the Bagging plant for the lubrication of stitching thread. The used oil is also applied as protective film to the steel material stored in steel yard. During this period, 21.595 MT of used oil was disposed to CPCB authorized vendor.

7.5 **PTP Sludge**: Raw water received from the Samalakot Summer reservoir contains clay and other impurities. These are filtered in the pretreatment plant. The sludge generated from the pretreatment section is alluvial in nature and is fertile. The fertility of the generated sludge is taken as an advantage for filling low lying areas in the green belt.

Annexure – I

Ammonia Plant – I

Catalyst for	Catalyst Name	Supplier
a) Desulphurisation		
(i) Hydrogenation	TK – 261	Halder Topsoe A/S
(ii) ZnO Absorbers	KATALCOJM32-4 + PURASPEC JM2020	Johnson Matthey
	C7-6	Sudchemie
b) Reforming		
(i) Primary	R-67R-7H / R-67-7H	Halder Topsoe A/S
(ii) Secondary	RKS-2 / RKS-2-7H	Halder Topsoe A/S
a) Shift Conversion		
(i) H.T.	CDC-93C	Projects Development India Ltd.
(ii) L. T.	LSK-2 / LK-821-2 / LK-823	Halder Topsoe A/S
d) Methanation	PK-5	Halder Topsoe A/S
e) Ammonia Synthesis		
(i) Normal	KM1	Halder Topsoe A/S
(ii) Pre-Reduced	KM1R	Halder Topsoe A/S

Annexure – II

Ammonia Plant – II

Catalyst for	Catalyst Name	Supplier
a) Desulphurisation		
(i) Primary	TK-550	Halder Topsoe A/S
(ii) Secondary		
(a) Hydrogenation	TK – 261, HT A/S	Halder Topsoe A/S
(b) ZnO Absorbers	$KATALCO_{JM}32-4$	Johnson Matthey
	HTZ-3 / C7DD	Halder Topsoe A/S / Sudchemie
b) Reforming		
(i) Primary	R-67R-7H / R-67-7H	Halder Topsoe A/S
(ii) Secondary	C14-2 LDP/ JM54-8Q	Sudchemie / Johnson Matthey
c) Shift Conversion		
(i) H.T.	CDC-93C	Projects Development India Ltd.
(ii) L.T.	LSK / LK-821 / LK-821-2	Halder Topsoe A/S
d) Methanation	CDM-15	Projects Development India Ltd.
e) Ammonia Synthesis		
(i) Normal	KM1	Halder Topsoe A/S
(ii) Pre-Reduced	KM1R	Halder Topsoe A/S

Annexure - III

Treated Liquid Effluent Analysis:

Parameters	Unit	Standards Prescribed by APPCB	Oct - 15	Nov - 15	Dec - 15	Jan - 16	Feb - 16	Mar - 16
pH		6.5 – 8.0	7.2	7.3	7.5	7.2	7.3	7.5
Suspended Solids	mg/l	100	37	33	36	35	38	40
Dissolved Solids	mg/l	2100	1166	1224	1355	1322	1257	1370
Ammonical Nitrogen as N	mg/l	50	9.6	10.9	10.8	9.5	10.0	9.8
Nitrates as N	mg/l	10	6.1	6.4	6.5	6.5	6.4	6.2
BOD	mg/l	30	9.0	8.0	9.0	9	9	9
COD	mg/l	250	37.0	38.0	36.0	34	36	41
Oil & Grease	mg/l	10	3.6	3.4	3.5	3.4	3.4	3.0
Phosphates as P	mg/l	5	0.7	0.8	0.7	0.7	0.7	0.7
Chlorides as Cl	mg/l	1000	425	415	446	435	401	395
TKN as N	mg/l	100	19	22	22	19	20	19

All the above values are monthly averages

Ambient Air Quality Monitoring Data of Station-I

Parameter	SO_2	CO	NO_x	NH_3	Dust	Rainfall	Wind Speed	Predominant Wind Direction (towards)	Temperature °C		Relative Humidity %		Barometric Pressure
Unit	$\mu g/m^3$	mg/m^3	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	mm	Km/hr		Min	Max	Min	Max	Mill bar
Oct' 2015	8.4	0.2	4.5	4.2	54.6	176.8	2.2	WEST	22.5	38.0	45	100	1014.5
Nov' 2015	8.2	0.2	4.7	4.1	36.0	78.1	4.9	WEST	19.5	32.5	59	100	1016.2
Dec' 2015	9.0	0.2	5.6	11.4	45.8	12.6	2.4	EAST	16.0	32.0	57	100	1018.9
Jan' 2016	8.1	0.2	5.4	7.8	43.5	NIL	3.8	EAST	18.0	32.0	50	100	1018.6
Feb' 2016	7.9	0.1	1.0	3.0	40.4	NIL	3.1	EAST	18.0	34.0	41	96	1018.2
Mar' 2016	8.0	0.1	2.2	2.7	30.2	NIL	3.5	EAST	20.5	37.5	43	96	1015.6

All the above values are monthly averages except Rainfall, Temperature and Relative Humidity.

Ambient Air Quality Monitoring Data of Station-II

Parameter	**SO_2**	**CO**	**NO_x**	**NH_3**	**Dust**
Unit	$\mu g/m^3$	mg/m^3	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
Oct' 2015	8.9	0.2	8.1	8.2	53.7
Nov' 2015	7.9	0.2	9.3	10.1	56.7
Dec' 2015	9.3	0.3	8.6	9.7	46.9
Jan' 2016	8.7	0.2	9.2	10.7	48.6
Feb' 2016	6.8	0.2	9.7	10.1	50.3
Mar' 2016	8.1	0.2	8.1	8.6	49.6

All the above values are monthly averages

Ambient Air Quality Monitoring Data of Station-III

Parameter	**SO_2**	**CO**	**NO_x**	**NH_3**	**Dust**
Unit	$\mu g/m^3$	mg/m^3	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
Oct' 2015	7.2	0.2	7.9	7.8	36.3
Nov' 2015	7.0	0.1	6.9	7.2	49.4
Dec' 2015	8.5	0.2	7.9	8.0	43.0
Jan' 2016	7.5	0.1	7.9	8.4	37.2
Feb' 2016	5.3	0.1	6.3	7.9	39.3
Mar' 2016	7.1	0.2	7.3	7.8	43.7

All the above values are monthly averages

Ambient Air Quality Monitoring Data of Station-IV

Parameter	**SO_2**	**CO**	**NO_x**	**NH_3**	**Dust**
Unit	$\mu g/m^3$	mg/m^3	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
Oct' 2015	7.7	0.2	7.7	8.0	45.6
Nov' 2015	9.0	0.2	8.0	8.9	65.0
Dec' 2015	9.2	0.2	9.6	9.4	46.4
Jan' 2016	8.8	0.2	9.8	10.5	44.8
Feb' 2016	8.1	0.2	8.6	9.1	50.6
Mar' 2016	7.5	0.2	8.7	9.1	49.3

All the above values are monthly averages

Ambient Air Quality Monitoring Data of Station-V

Parameter	**SO_2**	**CO**	**NO_x**	**NH_3**	**Dust**
Unit	$\mu g/m^3$	mg/m^3	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
Oct' 2015	9.0	0.3	8.5	9.9	51.3
Nov' 2015	8.3	0.2	10.1	8.1	55.3
Dec' 2015	9.8	0.2	9.8	9.5	56.8
Jan' 2016	9.1	0.2	9.2	10.2	54.8
Feb' 2016	7.5	0.2	8.3	8.8	46.4
Mar' 2016	8.6	0.2	9.3	10.0	46.9

All the above values are monthly averages

Groundwater Quality Monitoring Analysis for the month of October 2015:

Area	pH	Conductivity millimhos/cm	P/M Alkalinity as $CaCO_3$ ppm	Chlorides as Cl ppm	Nitrates as NO_3 ppm	Ammonia as NH_3 ppm	Fluorides as F ppm	Total Hardness as $CaCO_3$ ppm	Calcium Hardness as $CaCO_3$ ppm
New Kakinada (Pallam Raju Nagar)	7.4	2.92	ND / 426	597	24.8	0.3	0.6	686	326
Cement Godown (Pallam Raju Nagar)	7.3	3.51	ND / 477	820	52.0	0.6	0.8	862	292
Nav Bharat Public School	7.1	1.17	ND / 332	195	86.0	0.7	0.9	324	242
Kondelupeta	7.4	3.12	ND / 488	710	12.8	0.6	0.8	586	230
Boat Club	8.2	2.65	ND / 292	426	8.3	0.4	1.0	572	176
West of NFCL	7.8	2.00	ND / 336	355	6.2	0.6	1.1	486	194
Green Belt Well	7.7	2.52	ND / 304	598	9.8	1.6	0.9	522	186
Ground water near ETP*	7.5	1.98	ND / 286	387	2.4	1.0	1.2	108	22
Ground water near Amm. Storage*	7.5	0.94	ND / 268	88	9.6	0.7	1.0	123	36
Ground water near Gate House*	7.9	1.24	ND / 235	186	3.2	1.6	0.7	220	92

*Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of November 2015:

Area	pH	Conductivity millimhos/cm	P/M Alkalinity as $CaCO_3$ ppm	Chlorides as Cl ppm	Nitrates as NO_3 ppm	Ammonia as NH_3 ppm	Fluorides as F ppm	Total Hardness as $CaCO_3$ ppm	Calcium Hardness as $CaCO_3$ ppm
New Kakinada (Pallam Raju Nagar)	7.4	3.10	ND / 468	627	37.0	1.5	0.7	710	312
Cement Godown (Pallam Raju Nagar)	7.5	3.72	ND / 432	852	64.0	0.9	0.9	856	286
Nav Bharat Public School	7.2	1.22	ND / 340	166	45.0	2.1	0.8	342	256
Kondelupeta	7.4	3.07	ND / 496	592	12.0	1.0	1.1	580	232
Boat Club	8.2	3.13	ND / 382	510	11.0	0.7	1.2	604	192
West of NFCL	7.9	1.79	ND / 292	384	9.7	1.0	1.0	454	202
Green Belt Well	7.7	2.59	ND / 324	627	6.8	3.7	0.6	536	192
Ground water near ETP*	7.6	2.11	ND / 296	412	3.5	1.8	0.9	126	28
Ground water near Amm. Storage*	7.4	1.23	ND / 244	94	10.3	1.2	1.0	144	42
Ground water near Gate House*	7.8	1.09	ND / 220	172	4.6	2.0	0.8	196	86

*Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of December 2015:

Area	pH	Conductivity millimhos/cm	P/M Alkalinity as $CaCO_3$ ppm	Chlorides as Cl ppm	Nitrates as NO_3 ppm	Ammonia as NH_3 ppm	Fluorides as F ppm	Total Hardness as $CaCO_3$ ppm	Calcium Hardness as $CaCO_3$ ppm
New Kakinada (Pallam Raju Nagar)	7.3	3.29	ND / 446	642	40.0	0.9	0.6	686	320
Cement Godown (Pallam Raju Nagar)	7.2	3.49	ND / 416	826	82.0	0.6	0.8	840	272
Nav Bharat Public School	7.1	1.10	ND / 326	142	27.0	2.9	0.6	320	182
Kondelupeta	7.5	3.33	ND / 502	576	9.0	1.2	0.7	596	244
Boat Club	7.7	2.94	ND / 420	524	16.0	0.5	1.0	620	204
West of NFCL	7.6	2.10	ND / 310	334	12.7	0.4	0.8	458	216
Green Belt Well	7.6	2.96	ND / 342	690	8.0	3.1	0.9	572	230
Ground water near ETP*	7.4	1.94	ND / 246	436	2.8	1.2	1.0	112	20
Ground water near Amm. Storage*	7.5	1.17	ND / 270	92	11.2	1.0	0.8	160	38
Ground water near Gate House*	7.7	1.25	ND / 210	216	3.5	1.6	0.9	240	102

* Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of January 2016:

Area	pH	Conductivity millimhos/cm	P/M Alkalinity as $CaCO_3$ ppm	Chlorides as Cl ppm	Nitrates as NO_3 ppm	Ammonia as NH_3 ppm	Fluorides as F ppm	Total Hardness as $CaCO_3$ ppm	Calcium Hardness as $CaCO_3$ ppm
New Kakinada (Pallam Raju Nagar)	7.5	3.15	ND / 416	620	31.2	1.0	0.8	664	310
Cement Godown (Pallam Raju Nagar)	7.5	4.40	ND / 424	812	82.5	1.4	1.0	880	260
Nav Bharat Public School	7.3	0.87	ND / 318	186	23.0	3.2	0.7	340	180
Kondelupeta	8.3	3.59	12 / 516	596	10.1	1.6	0.8	526	210
Boat Club	7.7	3.13	ND / 412	516	14.5	1.1	1.2	580	190
West of NFCL	7.8	2.21	ND / 320	355	10.3	0.5	0.9	410	224
Green Belt Well	7.8	2.86	ND / 358	592	7.6	2.4	0.8	530	210
Ground water near ETP*	7.3	1.82	ND / 250	416	2.6	1.5	0.9	126	32
Ground water near Amm. Storage*	7.6	1.20	ND / 264	96	10.4	1.3	1.0	180	44
Ground water near Gate House*	7.5	1.46	ND / 240	204	2.9	1.7	1.3	290	116

* Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of February 2016:

Area	pH	Conductivity millimhos/cm	P/M Alkalinity as $CaCO_3$ ppm	Chlorides as Cl ppm	Nitrates as NO_3 ppm	Ammonia as NH_3 ppm	Fluorides as F ppm	Total Hardness as $CaCO_3$ ppm	Calcium Hardness as $CaCO_3$ ppm
New Kakinada (Pallam Raju Nagar)	7.4	2.98	ND / 408	598	43.1	1.0	1.2	637	304
Cement Godown (Pallam Raju Nagar)	7.6	4.46	ND / 428	820	19.8	1.2	1.1	960	292
Nav Bharat Public School	7.4	0.98	ND / 326	210	20.0	2.7	0.9	347	188
Kondelupeta	8.2	3.21	ND / 480	588	14.7	1.4	1.3	571	232
Boat Club	7.6	3.02	ND / 416	502	11.5	1.0	1.1	540	172
West of NFCL	7.7	2.14	ND / 312	346	7.6	0.6	1.0	430	220
Green Belt Well	7.8	2.82	ND / 352	580	6.1	2.1	0.9	590	218
Ground water near ETP*	7.4	1.93	ND / 258	424	3.9	1.8	1.1	138	38
Ground water near Amm. Storage*	7.5	1.28	ND / 260	92	8.4	1.4	1.2	210	80
Ground water near Gate House*	7.4	1.39	ND / 232	198	3.2	1.5	0.9	250	110

*Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of March 2016:

Area	pH	Conductivity millimhos/cm	P/M Alkalinity as $CaCO_3$ ppm	Chlorides as Cl ppm	Nitrates as NO_3 ppm	Ammonia as NH_3 ppm	Fluorides as F ppm	Total Hardness as $CaCO_3$ ppm	Calcium Hardness as $CaCO_3$ ppm
New Kakinada (Pallam Raju Nagar	7.7	2.65	ND / 374	468	36.4	1.2	1.4	611	292
Cement Godown (Pallam Raju Nagar	7.4	4.27	ND / 412	831	48.2	3.5	1.2	1084	314
Nav Bharat Public School	7.7	0.52	ND / 348	173	24.0	1.0	1.1	206	102
Kondelupeta	7.8	2.02	ND / 310	312	12.6	1.2	1.0	276	103
Boat Club	9.1	4.21	24 / 482	831	16.1	1.8	1.2	532	265
West of NFCL	7.7	3.14	ND / 384	572	9.5	3.1	1.3	552	237
Green Belt Well	7.9	2.87	ND / 368	693	10.0	2.2	1.0	595	371
Ground water near ETP*	7.4	1.89	ND / 246	412	3.2	1.6	1.2	132	32
Ground water near Amm. Storage*	7.5	1.31	ND / 274	98	9.8	1.0	1.3	184	74
Ground water near Gate House*	7.5	1.34	ND / 260	208	3.0	1.8	1.1	216	118

* Piezometric Wells

Work Environment Monitoring Data for the month of October 2015:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	21-10-15	Fire & Safety Control Room	0.1	<1
2	21-10-15	OHC	0.1	<1
3	21-10-15	Control Room (Ammonia & Urea 1)	0.1	<1
4	21-10-15	Ammonia 1 (02 Area)	0.1	<1
5	21-10-15	Ammonia 1 (03 Area) Field Cabin	0.1	<1
6	21-10-15	Ammonia 1 (04 Area) Acoustic Room	0.2	<1
7	21-10-15	Ammonia 1 (05 Area) Field Cabin	0.2	<1
8	21-10-15	Field Cabin Amm 1 (Mech. Maint.)	0.1	<1
9	21-10-15	Field Cabin (Urea 1)	0.1	<1
10	21-10-15	Field Cabin Urea 1 (Mech. Maint.)	0.2	<1
11	20-10-15	Control Room (GT-C)	0.1	<1
12	20-10-15	Control Room (Ammonia & Urea 2)	0.1	<1
13	20-10-15	Ammonia 2 (02 Area)	0.1	<1
14	20-10-15	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	20-10-15	Ammonia 2 (04 Area) Acoustic Room	0.4	<1
16	20-10-15	Ammonia 2 (05 Area) Field Cabin	0.3	<1
17	20-10-15	Field Cabin Amm 2 (Mech. Maint.)	0.1	<1
18	20-10-15	Cooling Towers 2 Field Cabin	0.2	<1
19	19-10-15	Field Cabin (Urea 2)	0.2	<1
20	19-10-15	Field Cabin Urea 2 (Mech. Maint.)	0.2	<1
21	19-10-15	Loading Area (Bagging plant)	0.9	<1
22	19-10-15	Boilers Field Cabin	0.1	<1
23	19-10-15	Control Room (Boilers)	0.1	<1
24	19-10-15	Control Room (Ammonia Storage)	0.1	<1
25	19-10-15	Control Room (Cooling Towers 1)	0.1	<1
26	19-10-15	Security Gate	0.1	<1
27	19-10-15	Distribution Office at Security Gate	0.1	<1

Work Environment Monitoring Data for the month of November 2015:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	16-11-15	Fire & Safety Control Room	0.1	<1
2	16-11-15	OHC	0.1	<1
3	16-11-15	Control Room (Ammonia & Urea 1)	0.1	<1
4	16-11-15	Ammonia 1 (02 Area)	0.1	<1
5	16-11-15	Ammonia 1 (03 Area) Field Cabin	0.1	<1
6	16-11-15	Ammonia 1 (04 Area) Acoustic Room	0.2	<1
7	16-11-15	Ammonia 1 (05 Area) Field Cabin	0.1	<1
8	16-11-15	Field Cabin Amm 1 (Mech. Maint.)	0.1	<1
9	16-11-15	Field Cabin (Urea 1)	0.1	<1
10	16-11-15	Field Cabin Urea 1 (Mech. Maint.)	0.2	<1
11	18-11-15	Control Room (GT-C)	0.1	<1
12	18-11-15	Control Room (Ammonia & Urea 2)	0.1	<1
13	18-11-15	Ammonia 2 (02 Area)	0.1	<1
14	18-11-15	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	18-11-15	Ammonia 2 (04 Area) Acoustic Room	0.4	<1
16	18-11-15	Ammonia 2 (05 Area) Field Cabin	0.1	<1
17	18-11-15	Field Cabin Amm 2 (Mech. Maint.)	0.1	<1
18	18-11-15	Cooling Towers 2 Field Cabin	0.2	<1
19	17-11-15	Field Cabin (Urea 2)	0.1	<1
20	17-11-15	Field Cabin Urea 2 (Mech. Maint.)	0.1	<1
21	17-11-15	Loading Area (Bagging plant)	0.8	<1
22	17-11-15	Boilers Field Cabin	0.1	<1
23	17-11-15	Control Room (Boilers)	0.1	<1
24	17-11-15	Control Room (Ammonia Storage)	0.1	<1
25	17-11-15	Control Room (Cooling Towers 1)	0.1	<1
26	17-11-15	Security Gate	0.1	<1
27	17-11-15	Distribution Office at Security Gate	0.1	<1

Work Environment Monitoring Data for the month of December 2015:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	19-12-15	Fire & Safety Control Room	0.1	<1
2	19-12-15	OHC	0.1	<1
3	19-12-15	Control Room (Ammonia & Urea 1)	0.1	<1
4	19-12-15	Ammonia 1 (02 Area)	0.1	<1
5	19-12-15	Ammonia 1 (03 Area) Field Cabin	0.2	<1
6	19-12-15	Ammonia 1 (04 Area) Acoustic Room	0.2	<1
7	19-12-15	Ammonia 1 (05 Area) Field Cabin	0.3	<1
8	19-12-15	Field Cabin Amm 1 (Mech. Maint.)	0.2	<1
9	19-12-15	Field Cabin (Urea 1)	0.1	<1
10	19-12-15	Field Cabin Urea 1 (Mech. Maint.)	0.2	<1
11	21-12-15	Control Room (GT-C)	0.2	<1
12	21-12-15	Control Room (Ammonia & Urea 2)	0.1	<1
13	21-12-15	Ammonia 2 (02 Area)	0.1	<1
14	21-12-15	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	21-12-15	Ammonia 2 (04 Area) Acoustic Room	0.6	<1
16	21-12-15	Ammonia 2 (05 Area) Field Cabin	0.4	<1
17	21-12-15	Field Cabin Amm 2 (Mech. Maint.)	0.2	<1
18	21-12-15	Cooling Towers 2 Field Cabin	0.2	<1
19	21-12-15	Field Cabin (Urea 2)	0.1	<1
20	21-12-15	Field Cabin Urea 2 (Mech. Maint.)	0.1	<1
21	20-12-15	Loading Area (Bagging plant)	1.0	<1
22	20-12-15	Boilers Field Cabin	0.1	<1
23	20-12-15	Control Room (Boilers)	0.1	<1
24	20-12-15	Control Room (Ammonia Storage)	0.1	<1
25	20-12-15	Control Room (Cooling Towers 1)	0.1	<1
26	20-12-15	Security Gate	0.1	<1
27	20-12-15	Distribution Office at Security Gate	0.1	<1

Work Environment Monitoring Data for the month of January 2016:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	20-01-16	Fire & Safety Control Room	0.1	<1
2	20-01-16	OHC	0.1	<1
3	20-01-16	Control Room (Ammonia & Urea 1)	0.2	<1
4	20-01-16	Ammonia 1 (02 Area)	0.1	<1
5	20-01-16	Ammonia 1 (03 Area) Field Cabin	0.1	<1
6	20-01-16	Ammonia 1 (04 Area) Acoustic Room	0.4	<1
7	20-01-16	Ammonia 1 (05 Area) Field Cabin	0.3	<1
8	20-01-16	Field Cabin Amm 1 (Mech. Maint.)	0.2	<1
9	20-01-16	Field Cabin (Urea 1)	0.5	<1
10	20-01-16	Field Cabin Urea 1 (Mech. Maint.)	0.1	<1
11	18-01-16	Control Room (GT-C)	0.1	<1
12	18-01-16	Control Room (Ammonia & Urea 2)	0.2	<1
13	18-01-16	Ammonia 2 (02 Area)	0.1	<1
14	18-01-16	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	18-01-16	Ammonia 2 (04 Area) Acoustic Room	0.3	<1
16	18-01-16	Ammonia 2 (05 Area) Field Cabin	0.7	<1
17	18-01-16	Field Cabin Amm 2 (Mech. Maint.)	0.2	<1
18	18-01-16	Cooling Towers 2 Field Cabin	0.2	<1
19	18-01-16	Field Cabin (Urea 2)	0.2	<1
20	18-01-16	Field Cabin Urea 2 (Mech. Maint.)	0.2	<1
21	19-01-16	Loading Area (Bagging plant)	0.7	<1
22	19-01-16	Boilers Field Cabin	0.1	<1
23	19-01-16	Control Room (Boilers)	0.1	<1
24	19-01-16	Control Room (Ammonia Storage)	0.1	<1
25	19-01-16	Control Room (Cooling Towers 1)	0.1	<1
26	19-01-16	Security Gate	0.1	<1
27	19-01-16	Distribution Office at Security Gate	0.1	<1

Work Environment Monitoring Data for the month of February 2016:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	15-02-16	Fire & Safety Control Room	0.1	<1
2	15-02-16	OHC	0.1	<1
3	15-02-16	Control Room (Ammonia & Urea 1)	0.1	<1
4	15-02-16	Ammonia 1 (02 Area)	0.1	<1
5	15-02-16	Ammonia 1 (03 Area) Field Cabin	0.3	<1
6	15-02-16	Ammonia 1 (04 Area) Acoustic Room	0.2	<1
7	15-02-16	Ammonia 1 (05 Area) Field Cabin	0.1	<1
8	15-02-16	Field Cabin Amm 1 (Mech. Maint.)	0.1	<1
9	15-02-16	Field Cabin (Urea 1)	0.2	<1
10	15-02-16	Field Cabin Urea 1 (Mech. Maint.)	0.3	<1
11	16-02-16	Control Room (GT-C)	0.2	<1
12	16-02-16	Control Room (Ammonia & Urea 2)	0.2	<1
13	16-02-16	Ammonia 2 (02 Area)	0.1	<1
14	16-02-16	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	16-02-16	Ammonia 2 (04 Area) Acoustic Room	0.3	<1
16	16-02-16	Ammonia 2 (05 Area) Field Cabin	0.5	<1
17	16-02-16	Field Cabin Amm 2 (Mech. Maint.)	0.2	<1
18	16-02-16	Cooling Towers 2 Field Cabin	0.1	<1
19	16-02-16	Field Cabin (Urea 2)	0.1	<1
20	16-02-16	Field Cabin Urea 2 (Mech. Maint.)	0.2	<1
21	17-02-16	Loading Area (Bagging plant)	0.9	<1
22	17-02-16	Boilers Field Cabin	0.1	<1
23	17-02-16	Control Room (Boilers)	0.1	<1
24	17-02-16	Control Room (Ammonia Storage)	0.2	<1
25	17-02-16	Control Room (Cooling Towers 1)	0.1	<1
26	17-02-16	Security Gate	0.1	<1
27	17-02-16	Distribution Office at Security Gate	0.1	<1

Work Environment Monitoring Data for the month of March 2016:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	15-03-16	Fire & Safety Control Room	0.1	<1
2	15-03-16	OHC	0.1	<1
3	15-03-16	Control Room (Ammonia & Urea 1)	0.1	<1
4	15-03-16	Ammonia 1 (02 Area)	0.1	<1
5	15-03-16	Ammonia 1 (03 Area) Field Cabin	0.2	<1
6	15-03-16	Ammonia 1 (04 Area) Acoustic Room	0.5	<1
7	15-03-16	Ammonia 1 (05 Area) Field Cabin	0.2	<1
8	15-03-16	Field Cabin Amm 1 (Mech. Maint.)	0.1	<1
9	15-03-16	Field Cabin (Urea 1)	0.2	<1
10	15-03-16	Field Cabin Urea 1 (Mech. Maint.)	0.1	<1
11	16-03-16	Control Room (GT-C)	0.1	<1
12	16-03-16	Control Room (Ammonia & Urea 2)	0.2	<1
13	16-03-16	Ammonia 2 (02 Area)	0.1	<1
14	16-03-16	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	16-03-16	Ammonia 2 (04 Area) Acoustic Room	0.5	<1
16	16-03-16	Ammonia 2 (05 Area) Field Cabin	0.3	<1
17	16-03-16	Field Cabin Amm 2 (Mech. Maint.)	0.3	<1
18	16-03-16	Cooling Towers 2 Field Cabin	0.1	<1
19	14-03-16	Field Cabin (Urea 2)	0.2	<1
20	14-03-16	Field Cabin Urea 2 (Mech. Maint.)	0.1	<1
21	14-03-16	Loading Area (Bagging plant)	1.0	<1
22	14-03-16	Boilers Field Cabin	0.1	<1
23	14-03-16	Control Room (Boilers)	0.1	<1
24	14-03-16	Control Room (Ammonia Storage)	0.1	<1
25	14-03-16	Control Room (Cooling Towers 1)	0.2	<1
26	14-03-16	Security Gate	0.1	<1
27	14-03-16	Distribution Office at Security Gate	0.1	<1

Stack Monitoring Data for the month of October 2015 (Process Stacks):

Date	PLANT- I				PLANT- II	CFG PLANT
	Reformer stack F-(201+202) (Against Chimney No. 20)	**HRSG A (Chimney No. 4)**	**HRSG B (Chimney No. 5)**	**Boiler Stack (Chimney No. 3)**	**HRSG C (Chimney No. 14)**	**Stack attached to De-dusting and Scrubbing Section (Chimney No. 21)**
	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)
07.10.15	11.0	9.0	12.0	9.0	10.0	50.7
14.10.15	Under Shut Down	Under Shut Down	9.0	6.0	7.0	46.9
21.10.15	15.0	11.0	11.0	10.0	6.0	42.5
28.10.15	13.0	Under Shut Down	10.0	8.0	9.0	44.0

Stack Monitoring Data for the month of October 2015 (Prill Towers):

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	06.10.15	21.5	0.160	II (Chimney No. 15)	06.10.15	22.8	0.168
	13.10.15	Under S/D	Under S/D		13.10.15	25.1	0.194
	20.10.15	19.9	0.167		20.10.15	26.2	0.214
	27.10.15	22.6	0.217		27.10.15	18.4	0.175

Stack Monitoring Data for the month of November 2015 (Process Stacks):

Date	PLANT- I				PLANT- II	CFG PLANT
	Reformer stack F-(201+202) (Against Chimney No. 20)	**HRSG A (Chimney No. 4)**	**HRSG B (Chimney No. 5)**	**Boiler Stack (Chimney No. 3)**	**HRSG C (Chimney No. 14)**	**Stack attached to De-dusting and Scrubbing Section (Chimney No. 21)**
	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)
04.11.15	12.0	9.0	10.0	8.0	12.0	16.9
11.11.15	13.0	Under Shut Down	12.0	10.0	9.0	21.6
18.11.15	11.5	Under Shut Down	9.0	7.0	8.0	27.3
25.11.15	10.0	Under Shut Down	11.0	9.0	10.0	25.4

Stack Monitoring Data for the month of November 2015 (Prill Towers):

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	03.11.15	26.4	0.21	II (Chimney No. 15)	03.11.15	21.3	0.17
	10.11.15	24.2	0.23		10.11.15	19.5	0.19
	17.11.15	21.7	0.23		17.11.15	20.9	0.15
	24.11.15	20.5	0.22		24.11.15	17.7	0.13

Stack Monitoring Data for the month of December 2015 (Process Stacks):

Date	PLANT- I				PLANT- II	CFG PLANT
	Reformer stack F-(201+202) (Against Chimney No. 20)	**HRSG A (Chimney No. 4)**	**HRSG B (Chimney No. 5)**	**Boiler Stack (Chimney No. 3)**	**HRSG C (Chimney No. 14)**	**Stack attached to De-dusting and Scrubbing Section (Chimney No. 21)**
	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)
02.12.15	10.0	10.0	12.0	10.0	9.0	26.2
09.12.15	9.0	11.0	7.0	12.0	10.0	31.5
16.12.15	8.0	Under Shut Down	10.0	15.0	5.0	19.7
23.12.15	12.0	8.0	13.0	8.0	12.0	28.5
30.12.15	13.0	7.0	9.0	7.0	13.0	12.0

Stack Monitoring Data for the month of December 2015 (Prill Towers):

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	01.12.15	21.9	0.178	II (Chimney No. 15)	01.12.15	23.5	0.190
	08.12.15	25.3	0.180		08.12.15	20.9	0.149
	15.12.15	18.5	0.130		15.12.15	19.0	0.137
	22.12.15	19.0	0.137		22.12.15	25.8	0.196
	29.12.15	22.4	0.167		29.12.15	27.0	0.201

Stack Monitoring Data for the month of January 2016 (Process Stacks):

Date	PLANT- I				PLANT- II	CFG PLANT
	Reformer stack F-(201+202) (Against Chimney No. 20)	**HRSG A (Chimney No. 4)**	**HRSG B (Chimney No. 5)**	**Boiler Stack (Chimney No. 3)**	**HRSG C (Chimney No. 14)**	**Stack attached to De-dusting and Scrubbing Section (Chimney No. 21)**
	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)
06.01.16	15.0	9.0	18.0	12.0	13.0	15.5
13.01.16	10.0	15.0	12.0	9.0	11.0	12.0
20.01.16	11.0	7.0	10.0	13.0	13.0	16.0
27.01.16	16.0	11.0	9.0	15.0	16.0	12.0

Stack Monitoring Data for the month of January 2016 (Prill Towers):

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	05.01.16	19.5	0.144	II (Chimney No. 15)	05.01.16	17.8	0.132
	12.01.16	16.3	0.121		12.01.16	21.0	0.156
	19.01.16	20.4	0.146		19.01.16	23.5	0.168
	26.01.16	23.5	0.167		26.01.16	26.7	0.190

Stack Monitoring Data for the month of February 2016 (Process Stacks):

Date	PLANT- I				PLANT- II	CFG PLANT
	Reformer stack F-(201+202) (Against Chimney No. 20)	**HRSG A (Chimney No. 4)**	**HRSG B (Chimney No. 5)**	**Boiler Stack (Chimney No. 3)**	**HRSG C (Chimney No. 14)**	**Stack attached to De-dusting and Scrubbing Section (Chimney No. 21)**
	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)
03.02.16	9.0	8.0	16.0	9.0	12.0	12.5
10.02.16	15.0	11.0	13.0	16.0	17.0	11.8
17.02.16	8.0	10.0	9.0	14.0	11.0	11.0
24.02.16	7.0	14.0	12.0	11.0	Under Shut Down	Under Shut Down

Stack Monitoring Data for the month of February 2016 (Prill Towers):

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	02.02.16	17.0	0.125	II (Chimney No. 15)	02.02.16	13.0	0.096
	09.02.16	21.6	0.155		09.02.16	23.5	0.169
	16.02.16	19.8	0.152		16.02.16	22.2	0.171
	23.02.16	25.0	0.195		23.02.16	16.4	0.128

Stack Monitoring Data for the month of March 2016 (Process Stacks):

Date	PLANT- I				PLANT- II	CFG PLANT
	Reformer stack F-(201+202) (Against Chimney No. 20)	**HRSG A (Chimney No. 4)**	**HRSG B (Chimney No. 5)**	**Boiler Stack (Chimney No. 3)**	**HRSG C (Chimney No. 14)**	**Stack attached to De-dusting and Scrubbing Section (Chimney No. 21)**
	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)	SPM (mg/Nm^3)
02.03.16	12.1	12.6	9.0	10.1	13.0	1.2
09.03.16	11.3	13.5	8.2	15.9	15.1	5.3
16.03.16	15.0	Under Shut Down	12.3	13.8	9.6	7.0
23.03.16	10.6	Under Shut Down	13.5	9.5	12.2	8.0
30.03.16	9.8	Under Shut Down	14.6	14.3	14.8	12.1

Stack Monitoring Data for the month of March 2016 (Prill Towers):

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	01.03.16	19.5	0.152	II (Chimney No. 15)	01.03.16	20.1	0.157
	08.03.16	18.3	0.134		08.03.16	24.7	0.182
	15.03.16	23.6	0.248		15.03.16	25.3	0.266
	22.03.16	26.4	0.234		22.03.16	20.4	0.181
	29.03.16	25.8	0.245		29.03.16	26.9	0.257