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NAGARJUNA GROUP
Nagarjuna Fertilizers
and Chemicals Limited

NFCL/ENV/MOEFCC/HR/02/2016

18th October 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 April 2016 – September 2016.

Thanking you

Yours faithfully
for Nagarjuna Fertilizers and Chemicals Limited

G. Anand

G V S Anand
Senior General Manager (Operations)

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

→ DGM (Lab & Env)

1.0 Treated Liquid Effluent Data

The data for the period, April 2016 – September 2016, is enclosed at Annexure – III (1 nos. of pages)

2.0 Ambient Air Quality

The data for the period, April 2016 – September 2016, is enclosed at Annexure – IV (5 nos. of pages)

3.0 Groundwater Quality data

The data for the period, April 2016 – September 2016, is enclosed at Annexure – V (6 nos. of pages)

4.0 Fugitive Emission data

The data for the period, April 2016 – September 2016, is enclosed at Annexure – VI (6 nos. of pages)

5.0 Stack Emission data

The data for the period, April 2016 – September 2016, is enclosed at Annexure – VII (6 nos. of pages)

6.0 Information on Ammonia Sensor in Ammonia Storage Tank area

Ammonia sensors installed in Ammonia Storage Tank area 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	ü	ü	---	---	---	---
CDR Reclamation Waste	---	---	ü	---	---	---
Activated Carbon	ü	ü	ü	---	---	ü
Waste Oils	ü	ü	ü	ü	ü	ü
PTP Sludge	---	---	---	---	---	ü

7.1 <u>Spent Catalyst</u>: 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, 89.955 MT of Spent Catalysts was disposed to CPCB authorized vendor.

7.2 <u>CDR Reclamation Waste</u>: 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, 3.4 MT of CDR Reclamation waste was disposed to APPCB authorized vendor.

7.3 <u>Spent Activated Carbon</u>: 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.

7.4 <u>Waste Oils</u>: In the complex, Oil is used mainly for lubrication purposes. During this period, 7.034 MT of used oil was disposed to CPCB authorized vendor.

7.5 <u>PTP Sludge</u>: 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.

Ammonia Plant – I

Catalyst for	Catalyst Name	Supplier
a) Desulphurisation		
(i) Hydrogenation	TK – 261	Halder Topsoe A/S
(ii) ZnO Absorbers	KATALCO$_{JM}$32-4 + PURASPEC $_{JM}$2020	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

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	$KATALCO_{JM}32\text{-}4$	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-2 / LK-821-2	Halder Topsoe A/S
d) Methanation	PK-5	Projects Development India Ltd.
e) Ammonia Synthesis		
(i) Normal	KM1	Halder Topsoe A/S
(ii) Pre-Reduced	KM1R	Halder Topsoe A/S

Treated Liquid Effluent Analysis:

Parameters	**Unit**	**Standards Prescribed by APPCB**	**April - 16**	**May - 16**	**June - 16**	**July - 16**	**Aug - 16**	**Sep - 16**
pH		6.5 – 8.0	7.4	7.4	7.4	7.2	7.3	7.5
Suspended Solids	mg/l	100	39	41	40	41	39	40
Dissolved Solids	mg/l	2100	1363	1227	1276	1510	1734	1525
Ammonical Nitrogen as N	mg/l	50	16.1	20.6	14.9	13.8	13.1	17.7
Nitrates as N	mg/l	10	6.2	6.2	6.2	6.3	6.2	6.1
BOD	mg/l	30	13.0	12.0	12.0	13.0	11.0	13.0
COD	mg/l	250	43.0	38.0	38.0	38.0	39.0	40.0
Oil & Grease	mg/l	10	3.1	3.1	3.1	3.2	3.2	3.2
Phosphates as P	mg/l	5	0.6	0.7	0.7	0.7	0.6	0.7
Chlorides as Cl	mg/l	1000	386	378	335	399	463	376
TKN as N	mg/l	100	7.4	7.4	7.4	7.2	7.3	7.5

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 ^oC**		**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
April' 2016	7.5	0.2	0.9	9.5	27.1	NIL	4.1	EAST	25.0	41.0	36	96	1011.9
May' 2016	8.1	0.2	1.7	4.3	32.7	210.1	5.2	EAST	25.0	44.5	29	100	1007.4
June' 2016	11.2	0.2	8.5	8.2	25.4	174.9	5.2	EAST	25.0	42.0	42	100	1005.0
July' 2016	12.2	0.3	3.6	11.6	26.7	214.9	5.5	EAST	24.5	37.5	48	100	1005.3
Aug' 2016	10.8	0.2	4.2	7.0	25.2	54.4	6.2	EAST	24.0	37.5	48	100	1005.3
Sep' 2016	9.5	0.3	8.0	10.9	28.1	189.0	3.8	SOUTH EAST	24.5	36.0	51	100	1006.8

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	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
April' 2016	8.2	0.3	8.0	8.1	52.7
May' 2016	8.3	0.3	8.2	8.3	51.0
June' 2016	8.2	0.2	9.7	8.9	45.1
July' 2016	8.0	0.3	8.9	8.0	52.8
Aug' 2016	8.1	0.2	9.0	8.8	49.5
Sep' 2016	8.3	0.2	7.7	10.3	48.0

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	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
April' 2016	8.4	0.2	7.5	8.3	39.3
May' 2016	7.9	0.2	8.0	8.5	38.5
June' 2016	7.1	0.2	7.6	8.0	39.9
July' 2016	7.2	0.2	7.4	7.5	40.6
Aug' 2016	7.5	0.2	8.0	7.9	45.4
Sep' 2016	7.6	0.3	7.6	9.4	43.3

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	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
April' 2016	9.3	0.2	9.0	9.0	58.0
May' 2016	8.1	0.3	8.7	9.1	56.6
June' 2016	8.7	0.2	8.9	9.5	45.3
July' 2016	7.9	0.2	8.1	8.6	50.3
Aug' 2016	8.5	0.2	8.9	8.9	48.7
Sep' 2016	9.2	0.3	8.1	9.7	46.0

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	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
April' 2016	8.7	0.2	9.5	8.9	51.0
May' 2016	8.4	0.2	9.0	9.5	52.0
June' 2016	9.1	0.2	8.4	9.3	47.7
July' 2016	8.9	0.2	9.1	8.9	53.6
Aug' 2016	8.4	0.2	9.6	8.9	46.0
Sep' 2016	8.4	0.2	7.8	10.0	50.5

All the above values are monthly averages

Groundwater Quality Monitoring Analysis for the month of April 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	2.55	ND / 376	426	35.8	0.6	1.0	596	332
Cement Godown (Pallam Raju Nagar)	7.8	4.33	ND / 408	781	102.5	1.2	1.4	936	500
Nav Bharat Public School	7.1	1.34	ND / 364	142	82.0	1.3	1.0	448	258
Kondelupeta	7.4	3.10	ND / 420	639	16.9	1.1	1.3	604	272
Boat Club	*Sample could not be analyzed as the lake had dried off.*								
West of NFCL	7.7	1.77	ND / 364	355	10.8	0.3	1.2	264	160
Green Belt Well	7.7	3.03	ND / 292	710	7.2	0.7	1.0	672	380
Ground water near ETP*	7.5	2.02	ND / 268	437	2.6	2.0	0.8	148	44
Ground water near Amm. Storage*	7.7	1.51	ND / 288	102	10.2	1.5	1.2	204	86
Ground water near Gate House*	7.6	1.46	ND / 234	188	4.2	2.0	1.0	192	98

* Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of May 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)	7.6	2.56	ND/392	456	34.2	0.9	1.1	612	386
Cement Godown (Pallam Raju Nagar)	7.8	3.68	ND/420	745	96.4	1.2	1.0	894	492
Nav Bharat Public School	7.2	1.37	ND/386	154	88.0	1.8	1.2	384	280
Kondelupeta	7.5	3.24	ND/462	586	18.4	1.2	1.0	562	258
Boat Club	8.7	3.68	12/508	648	19.3	1.6	0.9	546	242
West of NFCL	7.8	1.89	ND/372	342	6.4	0.7	1.2	296	146
Green Belt Well	7.9	3.12	ND/298	684	7.8	0.9	1.0	552	324
Ground water near ETP*	7.6	1.64	ND/282	416	2.0	1.4	0.8	112	36
Ground water near Amm. Storage*	7.6	1.86	ND/290	112	12.4	1.9	0.9	184	64
Ground water near Gate House*	7.8	1.98	ND/212	208	3.6	2.1	1.1	216	92

* Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of June 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	2.66	ND/386	464	28	1.1	0.6	650	392
Cement Godown (Pallam Raju Nagar)	7.3	4.16	ND/424	829	84	1.4	0.5	1050	516
Nav Bharat Public School	7.1	1.57	ND/356	149	141	2.6	1.0	454	290
Kondelupeta	7.5	3.05	ND/424	580	20.2	0.9	1.2	618	262
Boat Club	8.1	3.45	ND/492	642	12.4	2.4	1.4	512	186
West of NFCL	7.7	1.92	ND/386	332	5.2	1.2	0.8	310	160
Green Belt Well	7.6	3.35	ND/282	676	1.6	0.8	0.6	692	342
Ground water near ETP*	7.7	1.72	ND/264	408	2.4	2.4	0.9	130	42
Ground water near Amm. Storage*	7.6	1.90	ND/276	220	11.8	6.7	0.7	182	72
Ground water near Gate House*	7.8	1.84	ND/218	198	4.0	3.1	1.0	224	96

* Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of July 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)	7.3	2.42	ND/372	432	32	1.8	0.8	612	270
Cement Godown (Pallam Raju Nagar)	7.4	3.93	ND/476	798	91	1.2	0.6	1124	532
Nav Bharat Public School	7.3	2.08	ND/312	160	130	3.1	0.9	518	310
Kondelupeta	7.4	2.91	ND/418	516	17.2	1.4	1.0	594	244
Boat Club	7.8	3.14	ND/426	524	5.8	2.8	1.1	616	176
West of NFCL	7.6	1.80	ND/372	292	6.1	1.9	0.8	290	168
Green Belt Well	7.4	2.87	ND/314	638	3.4	1.0	0.7	616	296
Ground water near ETP*	7.6	1.85	ND/260	416	5.3	4.3	0.8	134	40
Ground water near Amm. Storage*	7.5	1.92	ND/272	182	12.7	5.9	0.6	198	78
Ground water near Gate House*	7.6	1.96	ND/210	210	6.0	3.8	0.9	236	94

* Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of August 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)	7.6	2.79	ND/320	442	28.0	1.0	1.1	628	282
Cement Godown (Pallam Raju Nagar)	7.3	4.12	ND/446	804	84.5	1.6	0.8	1146	548
Nav Bharat Public School	7.2	1.96	ND/332	152	112	2.4	1.2	484	286
Kondelupeta	7.6	3.24	ND/424	540	18.4	0.8	1.4	610	264
Boat Club	7.8	2.82	ND/480	564	10.6	2.1	1.0	572	168
West of NFCL	7.7	1.96	ND/362	302	6.3	1.4	0.8	304	172
Green Belt Well	7.5	2.70	ND/256	626	2.7	0.8	0.6	586	284
Ground water near ETP*	7.7	1.96	ND/240	422	3.8	3.6	0.9	152	46
Ground water near Amm. Storage*	7.6	1.84	ND/258	186	10.4	4.1	0.8	186	72
Ground water near Gate House*	7.6	1.92	ND/226	204	5.2	3.2	1.0	218	84

* Piezometric Wells

Groundwater Quality Monitoring Analysis for the month of September 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/312	462	22.0	1.2	1.0	686	294
Cement Godown (Pallam Raju Nag	7.3	4.16	ND/428	816	73.4	2.1	1.2	1248	562
Nav Bharat Public School	7.1	1.92	ND/316	180	98.1	1.8	0.8	412	260
Kondelupeta	7.5	3.08	ND/412	532	14.8	1.2	1.2	596	258
Boat Club	7.4	2.46	ND/464	548	12.3	1.6	1.0	512	162
West of NFCL	7.8	1.82	ND/396	300	8.9	2.0	0.7	290	168
Green Belt Well	7.7	2.63	ND/280	604	3.4	1.4	0.8	558	272
Ground water near ETP*	7.8	2.10	ND/262	434	4.6	4.2	1.0	186	68
Ground water near Amm. Storag	7.6	1.90	ND/244	198	12.9	6.0	0.9	194	76
Ground water near Gate House*	7.7	1.82	ND/230	226	7.2	2.6	0.7	216	82

* Piezometric Wells

Work Environment Monitoring Data for the month of April 2016:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	07-04-16	Fire & Safety Control Room	0.1	<1
2	07-04-16	OHC	0.1	<1
3	07-04-16	Control Room (Ammonia & Urea 1)	0.1	<1
4	07-04-16	Ammonia 1 (02 Area)	0.1	<1
5	07-04-16	Ammonia 1 (03 Area) Field Cabin	0.1	<1
6	07-04-16	Ammonia 1 (04 Area) Acoustic Room	0.1	<1
7	07-04-16	Ammonia 1 (05 Area) Field Cabin	0.1	<1
8	07-04-16	Field Cabin Amm 1 (Mech. Maint.)	0.1	<1
9	07-04-16	Field Cabin (Urea 1)	0.1	<1
10	08-04-16	Field Cabin Urea 1 (Mech. Maint.)	0.2	<1
11	08-04-16	Control Room (GT-C)	0.1	<1
12	08-04-16	Control Room (Ammonia & Urea 2)	0.1	<1
13	08-04-16	Ammonia 2 (02 Area)	0.3	<1
14	08-04-16	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	08-04-16	Ammonia 2 (04 Area) Acoustic Room	0.1	<1
16	08-04-16	Ammonia 2 (05 Area) Field Cabin	0.2	<1
17	08-04-16	Field Cabin Amm 2 (Mech. Maint.)	0.4	<1
18	08-04-16	Cooling Towers 2 Field Cabin	0.1	<1
19	09-04-16	Field Cabin (Urea 2)	0.1	<1
20	09-04-16	Field Cabin Urea 2 (Mech. Maint.)	0.1	<1
21	09-04-16	Loading Area (Bagging plant)	1.0	<1
22	09-04-16	Boilers Field Cabin	0.1	<1
23	09-04-16	Control Room (Boilers)	0.1	<1
24	09-04-16	Control Room (Ammonia Storage)	0.1	<1
25	09-04-16	Control Room (Cooling Towers 1)	0.1	<1
26	09-04-16	Security Gate	0.1	<1
27	09-04-16	Distribution Office at Security Gate	0.1	<1

Work Environment Monitoring Data for the month of May 2016:

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

Work Environment Monitoring Data for the month of June 2016:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	08-06-16	Fire & Safety Control Room	0.1	<1
2	08-06-16	OHC	0.1	<1
3	08-06-16	Control Room (Ammonia & Urea 1)	0.1	<1
4	08-06-16	Ammonia 1 (02 Area)	0.1	<1
5	08-06-16	Ammonia 1 (03 Area) Field Cabin	0.1	<1
6	08-06-16	Ammonia 1 (04 Area) Acoustic Room	0.1	<1
7	08-06-16	Ammonia 1 (05 Area) Field Cabin	0.2	<1
8	08-06-16	Field Cabin Amm 1 (Mech. Maint.)	0.1	<1
9	08-06-16	Field Cabin (Urea 1)	0.1	<1
10	08-06-16	Field Cabin Urea 1 (Mech. Maint.)	0.2	<1
11	09-06-16	Control Room (GT-C)	0.1	<1
12	09-06-16	Control Room (Ammonia & Urea 2)	0.1	<1
13	09-06-16	Ammonia 2 (02 Area)	0.2	<1
14	09-06-16	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	09-06-16	Ammonia 2 (04 Area) Acoustic Room	0.2	<1
16	09-06-16	Ammonia 2 (05 Area) Field Cabin	0.3	<1
17	09-06-16	Field Cabin Amm 2 (Mech. Maint.)	0.2	<1
18	09-06-16	Cooling Towers 2 Field Cabin	0.1	<1
19	10-06-16	Field Cabin (Urea 2)	0.1	<1
20	10-06-16	Field Cabin Urea 2 (Mech. Maint.)	0.1	<1
21	10-06-16	Loading Area (Bagging plant)	0.8	<1
22	10-06-16	Boilers Field Cabin	0.1	<1
23	10-06-16	Control Room (Boilers)	0.2	<1
24	10-06-16	Control Room (Ammonia Storage)	0.1	<1
25	10-06-16	Control Room (Cooling Towers 1)	0.1	<1
26	10-06-16	Security Gate	0.1	<1
27	10-06-16	Distrubution Office at Security Gate	0.1	<1

Work Environment Monitoring Data for the month of July 2016:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	06-07-16	Fire & Safety Control Room	0.1	<1
2	06-07-16	OHC	0.1	<1
3	06-07-16	Control Room (Ammonia & Urea 1)	0.1	<1
4	06-07-16	Ammonia 1 (02 Area)	0.2	<1
5	06-07-16	Ammonia 1 (03 Area) Field Cabin	0.1	<1
6	06-07-16	Ammonia 1 (04 Area) Acoustic Room	0.1	<1
7	06-07-16	Ammonia 1 (05 Area) Field Cabin	0.3	<1
8	06-07-16	Field Cabin Amm 1 (Mech. Maint.)	0.1	<1
9	06-07-16	Field Cabin (Urea 1)	0.2	<1
10	06-07-16	Field Cabin Urea 1 (Mech. Maint.)	0.2	<1
11	07-07-16	Control Room (GT-C)	0.1	<1
12	07-07-16	Control Room (Ammonia & Urea 2)	0.1	<1
13	07-07-16	Ammonia 2 (02 Area)	0.3	<1
14	07-07-16	Ammonia 2 (03 Area) Field Cabin	0.2	<1
15	07-07-16	Ammonia 2 (04 Area) Acoustic Room	0.2	<1
16	07-07-16	Ammonia 2 (05 Area) Field Cabin	0.3	<1
17	07-07-16	Field Cabin Amm 2 (Mech. Maint.)	0.2	<1
18	07-07-16	Cooling Towers 2 Field Cabin	0.1	<1
19	08-07-16	Field Cabin (Urea 2)	0.1	<1
20	08-07-16	Field Cabin Urea 2 (Mech. Maint.)	0.1	<1
21	08-07-16	Loading Area (Bagging plant)	0.9	<1
22	08-07-16	Boilers Field Cabin	0.1	<1
23	08-07-16	Control Room (Boilers)	0.2	<1
24	08-07-16	Control Room (Ammonia Storage)	0.1	<1
25	08-07-16	Control Room (Cooling Towers 1)	0.1	<1
26	08-07-16	Security Gate	0.1	<1
27	08-07-16	Distrubution Office at Security Gate	0.1	<1

Work Environment Monitoring Data for the month of August 2016:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	16-08-16	Fire & Safety Control Room	0.1	<1
2	16-08-16	OHC	0.1	<1
3	16-08-16	Control Room (Ammonia & Urea 1)	0.1	<1
4	16-08-16	Ammonia 1 (02 Area)	0.2	<1
5	16-08-16	Ammonia 1 (03 Area) Field Cabin	0.1	<1
6	16-08-16	Ammonia 1 (04 Area) Acoustic Room	0.1	<1
7	16-08-16	Ammonia 1 (05 Area) Field Cabin	0.1	<1
8	16-08-16	Field Cabin Amm 1 (Mech. Maint.)	0.1	<1
9	16-08-16	Field Cabin (Urea 1)	0.1	<1
10	16-08-16	Field Cabin Urea 1 (Mech. Maint.)	0.1	<1
11	17-08-16	Control Room (GT-C)	0.1	<1
12	17-08-16	Control Room (Ammonia & Urea 2)	0.1	<1
13	17-08-16	Ammonia 2 (02 Area)	0.4	<1
14	17-08-16	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	17-08-16	Ammonia 2 (04 Area) Acoustic Room	0.1	<1
16	17-08-16	Ammonia 2 (05 Area) Field Cabin	0.2	<1
17	17-08-16	Field Cabin Amm 2 (Mech. Maint.)	0.2	<1
18	17-08-16	Cooling Towers 2 Field Cabin	0.1	<1
19	18-08-16	Field Cabin (Urea 2)	0.2	<1
20	18-08-16	Field Cabin Urea 2 (Mech. Maint.)	0.1	<1
21	18-08-16	Loading Area (Bagging plant)	0.6	<1
22	18-08-16	Boilers Field Cabin	0.1	<1
23	18-08-16	Control Room (Boilers)	0.1	<1
24	18-08-16	Control Room (Ammonia Storage)	0.1	<1
25	18-08-16	Control Room (Cooling Towers 1)	0.1	<1
26	18-08-16	Security Gate	0.1	<1
27	18-08-16	Distrubution Office at Security Gate	0.1	<1

Work Environment Monitoring Data for the month of September 2016:

Sl. No.	Date	Location	Ammonia (NH_3) ppm	Carbon Monoxide (CO) ppm
1	13-09-16	Fire & Safety Control Room	0.1	<1
2	13-09-16	OHC	0.1	<1
3	13-09-16	Control Room (Ammonia & Urea 1)	0.1	<1
4	13-09-16	Ammonia 1 (02 Area)	0.3	<1
5	13-09-16	Ammonia 1 (03 Area) Field Cabin	0.1	<1
6	13-09-16	Ammonia 1 (04 Area) Acoustic Room	0.1	<1
7	13-09-16	Ammonia 1 (05 Area) Field Cabin	0.1	<1
8	13-09-16	Field Cabin Amm 1 (Mech. Maint.)	0.1	<1
9	13-09-16	Field Cabin (Urea 1)	0.2	<1
10	13-09-16	Field Cabin Urea 1 (Mech. Maint.)	0.1	<1
11	14-09-16	Control Room (GT-C)	0.1	<1
12	14-09-16	Control Room (Ammonia & Urea 2)	0.1	<1
13	14-09-16	Ammonia 2 (02 Area)	0.3	<1
14	14-09-16	Ammonia 2 (03 Area) Field Cabin	0.1	<1
15	14-09-16	Ammonia 2 (04 Area) Acoustic Room	0.2	<1
16	14-09-16	Ammonia 2 (05 Area) Field Cabin	0.2	<1
17	14-09-16	Field Cabin Amm 2 (Mech. Maint.)	0.2	<1
18	14-09-16	Cooling Towers 2 Field Cabin	0.1	<1
19	15-09-16	Field Cabin (Urea 2)	0.2	<1
20	15-09-16	Field Cabin Urea 2 (Mech. Maint.)	0.1	<1
21	15-09-16	Loading Area (Bagging plant)	0.6	<1
22	15-09-16	Boilers Field Cabin	0.1	<1
23	15-09-16	Control Room (Boilers)	0.2	<1
24	15-09-16	Control Room (Ammonia Storage)	0.1	<1
25	15-09-16	Control Room (Cooling Towers 1)	0.1	<1
26	15-09-16	Security Gate	0.1	<1
27	15-09-16	Distrubution Office at Security Gate	0.1	<1

Stack Monitoring Data for the month of April 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)
06.04.16	14.5	Under S/D	11.5	9.5	10.5	5.1
13.04.16	16.2	Under S/D	12.6	13.5	9.1	2.5
20.04.16	10.9	12.2	9.8	10.4	Under S/D	17.9
27.04.16	8.5	11.6	6.7	12.0	14.7	22.0

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

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	05.04.16	22.1	0.220	II (Chimney No. 15)	05.04.16	18.4	0.183
	12.04.16	17.5	0.145		12.04.16	26.7	0.285
	19.04.16	24.1	0.179		19.04.16	Under S/D	
	26.04.16	21.4	0.172		26.04.16	Under S/D	

Stack Monitoring Data for the month of May 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)
04.05.16	11.2	5.9	11.5	12.9	8.2	15.0
11.05.16	8.5	4.8	12.6	16.4	11.5	13.4
18.05.16	9.7	8.5	9.8	10.5	5.7	17.7
25.05.16	10.6	11.2	7.6	11.0	6.9	14.7

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

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	03.05.16	23.6	0.255	II (Chimney No. 15)	03.05.16	21.8	0.235
	10.05.16	21.9	0.211		10.05.16	19.7	0.189
	17.05.16	18.4	0.178		17.05.16	23.4	0.224
	24.05.16	19.6	0.142		24.05.16	25.7	0.187
	31.05.16	20.5	0.179		31.05.16	21.8	0.155

Stack Monitoring Data for the month of June 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)
01.06.16	13.6	7.4	10.2	11.7	9.8	14.8
08.06.16	10.4	9.2	9.7	13.5	10.4	17.0
15.06.16	12.8	8.3	11.0	10.8	8.6	15.1
22.06.16	9.9	10.1	8.9	12.4	10.7	23.0
29.06.16	11.3	9.8	10.4	11.6	11.9	30.9

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

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	07.06.16	17.9	0.127	II (Chimney No. 15)	07.06.16	16.5	0.117
	14.06.16	20.5	0.146		14.06.16	18.6	0.133
	21.06.16	16.9	0.120		21.06.16	20.1	0.143
	28.06.16	18.2	0.129		28.06.16	17.8	0.126

Stack Monitoring Data for the month of July 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)
06.07.16	12.8	8.2	8.7	12.1	10.3	30.9
13.07.16	11.6	10.5	10.4	14.3	9.8	9.4
20.07.16	10.3	9.7	11.6	12.7	11.2	1.5
27.07.16	12.1	9.4	9.8	11.9	10.7	18.7

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

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	05.07.16	15.6	0.111	II (Chimney No. 15)	05.07.16	20.1	0.143
	12.07.16	19.5	0.139		12.07.16	24.3	0.172
	19.07.16	20.8	0.148		19.07.16	19.7	0.140
	26.07.16	21.9	0.155		26.07.16	23.9	0.170

Stack Monitoring Data for the month of August 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)
03.08.16	14.1	9.3	11.5	10.8	11.2	8.2
10.08.16	12.5	8.7	10.2	12.6	9.8	19.5
17.08.16	13.3	10.9	8.9	11.1	10.5	20.8
24.08.16	11.9	9.5	9.7	10.9	12.3	41.1
31.08.16	10.4	11.2	10.3	12.0	10.7	10.4

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

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	02.08.16	16.3	0.116	II (Chimney No. 15)	02.08.16	17.5	0.125
	09.08.16	18.1	0.129		09.08.16	19.2	0.138
	16.08.16	17.9	0.128		16.08.16	18.6	0.133
	23.08.16	22.5	0.160		23.08.16	24.1	0.172
	30.08.16	23.6	0.168		30.08.16	22.7	0.162

Stack Monitoring Data for the month of September 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)
07.09.16	13.3	10.1	9.8	11.9	10.6	4.7
14.09.16	12.7	9.3	11.1	13.5	11.4	14.3
21.09.16	11.5	10.5	10.2	12.4	10.9	18.6
28.09.16	12.9	10.0	10.6	10.7	11.2	15.1

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

Plant	Date	Dust		Plant	Date	Dust	
		mg/Nm^3	Kg/MT			mg/Nm^3	Kg/MT
I (Chimney No. 6)	06.09.16	17.0	0.120	II (Chimney No. 15)	06.09.16	20.5	0.147
	13.09.16	20.9	0.148		13.09.16	21.6	0.154
	20.09.16	16.5	0.117		20.09.16	17.7	0.126
	27.09.16	18.7	0.133		27.09.16	23.4	0.166