IOC/BGR/ENV/MSQ/MoEF/2016-17/01 **Date:28.12.2016**

The Chief Conservator of Forests
Regional Office, North East Region
Ministry of Environment & Forests **&** Climate Change
Law-U-SIB, Lumbatngen, Near M.T.C. Workshop,
Shillong – 793021

Subject: Half yearly Report for the period of 1st April, 2016 to 30th September, 2016 for MS Quality Improvement Project.

Dear Sir,

With reference to above, we are enclosing the Six Monthly Report for the period of **1st April, 2016 to 30th September, 2016** for your kind perusal. The reports are being sent as per EIA Rules, 2006 on the "Environmental Clearances" issued by MoEF to Bongaigaon Refinery, (BGR) for **"MS Quality Improvement Project".**

Thanking you,

Yours faithfully,

(V.K. Kedia)
Chief Manager (HSE)

Copy to:

1. Member Secretary, Pollution Control Board, Assam
   Bamunimaidam, Guwahati - 781 021
2. Zonal Officer, Central Pollution Control Board
   Eastern Zonal Office, 'TUM-SIR', Lower Motinagar,
   Near Fire Brigade H.Q., Shillong – 793014

Compliance Status w.r.t. Env. Clearance of MS Quality Improvement Project

Six Monthly Status Report for the period (1st April, 2016 to 30th September, 2016)

Environmental Clearance for "MS Quality Improvement Project (Light Naphtha Isomerisation using existing Xylene Isomerisation unit)" at Dhaligaon, Chirang, Assam by M/s Bongaigaon Refinery & Petrochemicals Ltd. vide MoEF letter No. J.11011/1171/2007-IA-II (I) dated 5/02/2008.

Project was commissioned in September, 2011

Sl. No	Conditions	Status
1.	General conditions and Compliance status of MS Quality improvement Project.	Annexure- A
2.	Six monthly Stack Monitoring/ Air Quality Data	Furnished in Appendix-A1
3.	Six monthly effluent discharged Quality	Furnished in Appendix-A2
4.	Tree Plantation Data	Furnished in Appendix-A3
5.	Additional Information	Furnished in Appendix-A4
6.	Fugitive Emission Data	Furnished in Appendix-A5
7.	Report on Phytodiversity in IOCL Bongaigaon Refinery Campus	Furnished in Appendix-A6
8.	Annual return of hazardous waste	Furnished in Appendix-A7(a)
9.	Authorization from PCBA under Hazardous Wast (Management , Handling and Transboundary Movement Rules 2008)	Furnished in Appendix-A7(b)
10.	Details of Waste water treatment and disposal system	Furnished in Appendix-A8
11.	Quarterly Noise Survey Report.	Furnished in Appendix-A9
12.	Status of Rainwater Harvesting	Furnished in Appendix-A10
13.	Screen Shot of IOCL Website upload of report	Furnished in Appendix-A11
14.	Organ gram of HSE Department	Furnished in Appendix-A12
15.	Gazette Notification of BGR Quality Control laboratory (QC Lab) approval under	Furnished in Appendix-A13
16.	Employees Occupational Heath Check up Status	Furnished in Appendix-A14
17.	Flare system.	Furnished in Appendix-A15

S. No.	Specific Conditions	Compliance Status
i	The company shall comply with new standards/norms that are being proposed by the CPCB for petrochemical plants and refineries.	Basic Design Engineering Package / Process Package have been prepared in line with the revised standards / norms for Oil Refinery and being implemented in the project.
ii	The company shall comply with all the stipulations of environmental clearance issued vide File No. – 11011/375/2006-IA.II (I) dated 22nd March, 2007.	BGR had advertised "Public Notice" in three local news papers that are widely circulated in the region namely "The Assam Tribune" English daily, "Asomiya Pratidin" an Assamese daily & "Sanseyari Bodosa" a Bodo daily on 26th February, 2008
iii	The process emissions (SO2, NOx, HC, VOCs and Benzene) from various units shall conform to the standards prescribed by the Assam State Pollution Control Board from time to time. At no time, the emission levels shall go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.	Detailed Engineering for the project was carried out considering the revised standards / norms for Oil Refinery and conditions /guidelines issued by SPCB. Environment control facilities are being installed to achieve the stipulated standards.
iv	The improvement project shall be through the retrofitting of existing xylenes fractionation, Isomerisation and parex units and within the existing land.	The improvement project is only through the retrofitting of existing Xylene Fractionation, Isomerisation and Parex units and within the existing land.
v	Quarterly monitoring of fugitive emissions shall be carried out as per the guidelines of CPCB by fugitive emission detectors (GMI Leak Surveyor) and reports shall be submitted to the Ministry's regional office at Shillong.	Quarterly monitoring of fugitive emissions are carried out. The quarterly reports for the period of **1st April 2016 to 30th September,2016 are attached as Appendix –A5**
vi	For control of fugitive emission all unsaturated hydro carbon will be routed to the flare system and the flare system shall be designed for smoke less burning.	Taken care during implementation of the project.
vii	The company shall strictly follow all the recommendation mentioned in the charter on corporate responsibility for environmental protection (CREP).	The company followed all the recommendation mentioned in the charter on Corporate Responsibility for Environmental Protection (CREP) prior to coming of the Revised Standards applicable to refinery for Environment Protection.
viii	Occupational health surveillance of worker shall be done on a regular basis and records maintained as per the Factory Act.	Already in compliance. The quarterly reports for the period of **1st April 2016 to 30th September,2016 are attached as Appendix –A14**

Sr. No.	Specific Conditions	Compliance Status
ix	Greenbelt shall be developed to mitigate the effect of fugitive emission all around the plant in a minimum 30% plant area in consultation with DFO as per CPCB guidelines.	Greenbelt is already existed. Around 55% of plant area is having green cover. Tree Census has been carried out through DFO Chirang District in 2013 where 84545 nos of grown up trees were enumerated. **Report attached as Appendix –A6** The company is planting around 2000 nos of

		tree every year as a part of its corporate MOU. The target for 2016-17 is 5000 nos. of tree.
x	The Company shall make the suitable arrangement for disposal of catalyst waste and alumina balls. The report of waste disposal shall be submitted to Ministry's Regional Office at Shillong.	Complied Please refer Appendix-A7(a)
xi	The Company shall take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. At place of ground flaring, the overhead flaring stack with knockout drums shall be installed to minimize gaseous emissions during flaring.	Complied
xii	To prevent fire and explosion at Oil and Gas facility, potential ignition sources should be kept to a minimum and adequate separation distance between potential ignition sources and flammable material shall be in place.	All necessary precautions are in place as per OISD Guidelines

B. General Conditions

S. No.	General Conditions	Compliance status
i	The project authorities must strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government and any other statuary body.	Taken care during implementation of the project.
ii	No further expansion or modification in the project shall be carried without prior approval of the Ministry of Environment and Forests. In case of deviations or alternations in the project proposal from those submitted to the Ministry for clearance, a fresh reference shall be made to the Ministry.	Noted
iii	At no time, the emissions should go beyond the prescribed standards. In the event of failure of any pollution control system, the respective well site should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved. Provision of adequate height of stack attached to DG sets & flare is to be done.	Taken care during implementation of the project. **Emission data for the period of 1st April 2016 to 30th September,2016 are attached as Appendix –A1.** **No additional DG set was installed for the project.**
iv	Wastewater shall be properly collected and treated so as to conform to the standards prescribed under EP Act & Rules and mentioned in the Consents provided by the relevant SPCB.	Waste water disposal system designed to conform to this norm. Detail of Waste water treatment and disposal system is attached as Appendix-A8. Treated Effluent and discharge water quality from refinery is attached as Appendix-A2

S. No.	General Conditions	Compliance status
v	The overall noise levels in and around the premises shall be limited within the prescribed standards (75 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Taken care during implementation of the project. Quarterly Noise Survey is being carried out regularly. Quarterly Reports for the period of **1st April 2016 to 30th September,2016 are attached as Appendix –A9.**
vi	The project authorities must strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project, if required. Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented.	Complied Authorization under Hazardous Waste (Management , Handling and Transboundary Movement Rules 2008) obtained from PCBA and valid upto 28th February 2019. **Copy attached as Appendix –A7(b)**
vii	Disposal of hazardous wastes shall be as per the Hazardous Wastes (Management and Handling) Rules, 2003. Authorization from the State Pollution Control Board must be obtained for collections / treatment/storage/ disposal of hazardous wastes.	Complied. Authorization from PCBA for Hazardous Waste (Management , Handling and Transboundary Movement Rules 2008) is attached as Appendix –A7(b)
viii	The project authorities will provide adequate funds as non-recurring and recurring expenditure to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	Sufficient fund is being made available at the time of implementation and operational phase of the project.
ix	The company shall develop rain water harvesting structures to harvest the runoff water for recharge of ground water.	16 nos of Rooftop Rainwater Harvesting Projects has been implemented covering roof area of around 17440 SQM having potential volume of rainwater harvesting around 46727M^3. The harvested rainwater for ground water recharge is through recharge pits and recharge trench on the basis of technical details and guidelines from Central Ground Water Board; North Eastern Region, Guwahati. Details attached as Appendix –A10
x	The stipulated conditions will be monitored by the concerned Regional Office of this Ministry /Central Pollution Control Board/State Pollution Control Board. A six monthly compliance report and the monitored data should be submitted to them regularly. It will also be displayed on the Website of the Company.	Complied

Sr. No.	General Conditions	Compliance status
xi	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment & Forests at http://www.envfor.nic.in. This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry.	BGR had advertised "Public Notice" in three local news papers that are widely circulated in the region namely "The Assam Tribune" English daily, "Asomiya Pratidin" an Assamese daily & "Sanseyari Bodosa" a Bodo daily on 26th February, 2008. The information is already submitted to statutory agencies.
xii	A separate environment management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.	BGR is having a separate environmental management cell of HSE department and full fledged laboratory to carry-out environment management and monitoring functions. **Organ gram of HSE Department is attached as Appendix-A12.** **BGR** Quality Control laboratory (QC Lab) is NABL accredited and CPCB approved under Section 12& 13 of Environment (Protection) Act 1986 and notified in the Govt. of India Gazette no. 272 dated July 4, 2016 vide notification number Legal 42(3)/ 87 dated 7th March 2016. **(Copy attached as Appendix-A13)**
xiii	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project	Last capitalization date was 08/01/2015:

APPENDIX –A1

STACK MONITORING DATA

(1st April 2016 to 30th September 2016)

A. SO_2 Emission (mg/Nm^3):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 1700 For F.G. = 50	6	231	954
CDU-II		10	247	487
DCU-I		4	200	857
DCU-II		3	203	498
CPP		14	300	686
Reformer		2	15	107
HO-1		3	19	57
Isomerisation		1	14	35
DHDT		8	90	449
HGU		1	17	309
SRU		2	200	449
GTG		34	38	47

B. NO_X Emission (mg/Nm^3):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 450 For F.G. = 350	7	183	448
CDU-II		7	157	449
DCU-I		10	56	127
DCU-II		20	121	326
CPP		18	47	123
Reformer		11	54	73
HO-1		3	70	144
Isomerisation		8	46	68
DHDT		1	18	164
HGU		1	47	188
SRU		No Analyser		
GTG		13	35	313

C. PM Emission (mg/Nm^3)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 100 For F.G. = 10	39.0	39.7	40.0
CDU-II		20.0	22.3	26.0
DCU-I		15.0	17.0	18.0
DCU-II		25.0	27.3	29.0
CPP		20.0	21.5	23.0
Reformer		4.0	7.0	9.0
HO-1/2		BDL	BDL	BDL
Isomerisation		10.0	10.7	12.0
DHDT		22.0	23.3	24.0
HGU		5.0	5.0	5.0
SRU		13.0	13.7	14.0

STACK MONITORING DATA

(1st April 2016 to 30th September 2016)

D. CO Emission (mg/Nm^3)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 200 For F.G. = 150	22.0	23.7	25.0
CDU-II		24.0	25.7	29.0
DCU-I		26.0	27.7	29.0
DCU-II		20.0	24.3	28.0
CPP		12.3	19.1	23.0
Reformer		6.0	7.3	10.0
HO-1/2		4.0	5.3	7.0
ISOMERISATION		3.0	5.3	7.0
DHDT		5.0	7.0	9.0
HGU		8.9	11.6	13.0
SRU		9.0	11.0	14.0

E. Ni + V Emission (mg/Nm^3):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 5	BDL	BDL	BDL
CDU-II		BDL	BDL	BDL
DCU-I		BDL	BDL	BDL
DCU-II		BDL	BDL	BDL
CPP		BDL	BDL	BDL
Reformer		BDL	BDL	BDL
HO-1/2		BDL	BDL	BDL
ISOMERISATION		BDL	BDL	BDL
DHDT		BDL	BDL	BDL
HGU		BDL	BDL	BDL
SRU		BDL	BDL	BDL

AMBIENT AIR QUALITY AROUND BGR COMPLEX
(Average of monthly sample Schedule – VII)
(1st April 2016 to 30th September 2016)

	Station	Continuous Monitoring Station	Near Tube Well No.14	Near LPG Bottling plant	Rural Health Centre	Bartala Rail Gate	Near TW No.7 in Township
1	SO_2 (Std. 50/80 µg/m^3)						
	Min	3.3	BDL	BDL	BDL	BDL	BDL
	Average	12.2	BDL	BDL	BDL	BDL	BDL
	Max	73.6	BDL	BDL	BDL	BDL	BDL
	No. of observation	Continuous	47	47	47	47	47
2	NO_2 (Std. 40/80 µg/m^3)						
	Min	4.1	16.0	16.0	16.0	17.0	16.0
	Average	22.2	18.2	18.1	18.1	19.0	18.4
	Max	73.3	20.0	20.0	20.0	29.0	20.0
	No. of observation	Continuous	47	47	47	47	47
3	PM-10 (Std. 60/100 µg/m^3)						
	Min	6.6	40.0	40.0	42.0	48.0	44.0
	Average	33.9	51.2	49.0	48.9	54.2	50.8
	Max	96.9	72.0	70.0	68.0	74.0	72.0
	No. of observation	Continuous	47	47	47	47	47
4	PM-2.5 (Std. 40/60 µg/m^3)						
	Min	0.1	20.0	20.0	24.0	26.0	24.0
	Average	3.7	27.0	27.4	27.7	31.3	30.3
	Max	32.5	42.0	42.0	42.0	48.0	46.0
	No. of observation	Continuous	47	47	47	47	47
5	Ammonia (Std. 100/400 µg/m^3)						
	Min	2.5	BDL	BDL	BDL	BDL	BDL
	Average	4.5	BDL	BDL	BDL	BDL	BDL
	Max	25.3	BDL	BDL	BDL	BDL	BDL
	No. of observation	Continuous	47	47	47	47	47
6	Pb (Std. 0.5/1.0 µg/m^3)						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		47	47	47	47	47

7	**Arsenic (As) (Std. 6 ng/m3)**						
	Min		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Average		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Max		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	No. of observation		**47**	**47**	**47**	**47**	**47**
8	**Ni (Std. 20 ng/m3)**						
	Min		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Average		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Max		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	No. of observation		**47**	**47**	**47**	**47**	**47**
9	**CO (Std. 2/4 mg/m3**						
	Min	**0.01**	**0.28 (Tube well 3 T/S)**			**0.27 (Tube well 7)**	
	Average	**0.34**	**0.31 (Tube well 3 T/S)**			**0.30 (Tube well 7)**	
	Max	**2.02**	**0.40 (Tube well 3 T/S)**			**0.41 (Tube well 7)**	
	No. of observation	**Continuous**	**126**			**126**	
10	**Ozone (Std.100/180 µg/m^3 for 8 hrs/1 hr)**						
	Min	**5.2**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Average	**8.6**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Max	**16.5**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	No. of observation	**Continuous**	**47**	**47**	**47**	**47**	**47**
11	**Benzene (Std. 5 µg/m^3)**						
	Min	**0.01**	**BDL**	**0.5**	**BDL**	**0.7**	**BDL**
	Average	**0.01**	**BDL**	**0.5**	**BDL**	**1.3**	**BDL**
	Max	**0.02**	**BDL**	**0.6**	**BDL**	**2.5**	**BDL**
	No. of observation	**Continuous**	**47**	**47**	**47**	**47**	**47**
12	**Benzo (a) Pyrene (Std. 1 ng/m^3)**						
	Min		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Average		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Max		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	No. of observation		**47**	**47**	**47**	**47**	**47**

Average of Six Stations												
Parameter	**SO_2**	**NO_2**	**PM-10**	**PM-2.5**	**NH_3**	**Pb**	**As**	**Ni**	**Benzo (a) Pyrene**	**CO**	**C_6H_6**	**O_3**
Unit	**$\mu g/m^3$**						**ng/m^3**			**mg/m^3**	**$\mu g/m^3$**	
NAAQ Std. 2009	**50/ 80**	**40/ 80**	**60/ 100**	**40/ 60**	**100/ 400**	**0.5/ 1.0**	**Max 6**	**Max 20**	**Max 1**	**2/4**	**Max 5**	**100/ 180**
Min	**3.3**	**4.1**	**6.6**	**0.06**	**2.5**	**BDL**	**BDL**	**BDL**	**BDL**	**0.01**	**0.01**	**5.2**
Average	**12.2**	**19.0**	**48.0**	**24.6**	**4.5**	**BDL**	**BDL**	**BDL**	**BDL**	**0.3**	**0.6**	**8.6**
Max	**73.6**	**73.3**	**96.9**	**48.0**	**25.3**	**BDL**	**BDL**	**BDL**	**BDL**	**2.0**	**2.5**	**16.5**

Appendix-A2

Effluent Discharged (Figure in M^3/Hr)

(1st April, 2016 to 30th September, 2016)

A	Industrial Effluent M^3/Hr	173.81
B	Domestic Effluent from BGR Township M^3/Hr	52.91
C	Total Effluent Treated (A + B) M^3/Hr	226.72
D	Treated Effluent Reused M^3/Hr	220.9
E	Effluent Discharged M^3/Hr	5.9
F	M^3 of Effluent discharged for 1000 tons of Crude processed	20.84

1. Treated Effluent Quality

(1st April 2016 to 30th September 2016)

Sl. No	Parameter	MINAS,2008	Min	Avg.	Max
1	p^H value	6.0 - 8.5	6.5	7.2	8.5
2	Oil and Grease, mg/l	5.0	1.6	2.0	2.6
3	Bio-Chemical Oxygen Demand (3 Day at 27°C), mg/l	15.0	3.6	8.8	15.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	48.0	71.5	115.0
5	Suspended solids, mg/l	20.0	6.0	10.6	12.2
6	Phenolic compounds (as C6H5OH), mg/l	0.35	0.030	0.037	0.040
7	Sulphide (as S), mg/l	0.50	0.04	0.34	0.50
8	CN mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N, mg/l	15.0	0.78	0.82	0.90
10	TKN, mg/l	40.0	1.00	1.10	1.20
11	P, mg/l	3.0	0.60	0.80	1.00
12	Cr (Hexavalent), mg/l	0.10		BDL	
13	Cr (Total), mg/l	2.0		BDL	
14	Pb, mg/l	0.10		BDL	
15	Hg, mg/l	0.01		BDL	
16	Zn, mg/l	5.0		BDL	
17	Ni, mg/l	1.0		BDL	
18	Cu, mg/l	1.0		BDL	
19	V, mg/l	0.20		BDL	
20	Benzene, mg/l	0.10		BDL	
21	Benzo (a) pyrene, mg/l	0.20		BDL	

EFFLUENT QUALITY

2. Final Outlet (From the Complex) Effluent Quality

(1st April 2016 to 30th September 2016)

Sl. No.	Parameter	MINAS	Min	Avg.	Max
1	p^H value	6.0 - 8.5	6.5	7.3	8.5
2	Oil and Grease, mg/l	5.0	1.6	2.0	2.8
3	Bio-Chemical Oxygen Demand (3 Days at 27° C), mg/l	15.0	4.0	9.1	16.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	42.0	72.3	118.0
5	Suspended Solids, mg/l	20.0	8.0	10.6	13.2
6	Phenolic compounds (as C_6H_5OH), mg/l	0.35	0.020	0.039	0.40
7	Sulphide (as S), mg/l	0.50	0.080	0.345	0.48
8	CN, mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N , mg/l	15.0		0.85	
10	TKN, mg/l	40.0		1.12	
11	P, mg/l	3.0		0.78	
12	Cr (Hexavalent), mg/l	0.10		BDL	
13	Cr (Total), mg/l	2.0		BDL	
14	Pb, mg/l	0.10		BDL	
15	Hg, mg/l	0.01		BDL	
16	Zn, mg/l	5.0		BDL	
17	Ni, mg/l	1.0		BDL	
18	Cu, mg/l	1.0		BDL	
19	V, mg/l	0.20		BDL	
20	Benzene, mg/l	0.10		BDL	
21	Benzo (a) pyrene, mg/l	0.20		BDL	

Appendix - A3

Tree Plantation
(1st April, 2016 to 31st September, 2016)

The entire area inside BGR covers with Greenery through massive plantation activities. Through massive plantation work and by giving protection to natural forest growth in side BGR premises, the entire area has become green. The entire plant area where processing plant facilities do not exist has a green cover. This helps in reduction of noise and air pollution level in one hand while on the other hand provides protection to ecological features of the area. The refinery has an excellent quality environment around its complex. Natural greenery can be seen all around the complex and in all seasons of the year.

Tree Census was done by Divisional Forest Office, Chirang. As per census, 84545 numbers of plants which include trees including shrubs, ocular estimated 33000 numbers bamboos in 1150 no. bamboo culms and also trees planted by BGR during 2003 to 2012.

During, 1st April, 2016 to 31st September, 2016 BGR has planted 1061 no. of trees.

Appendix – A 4

Additional Information
(1st April, 2016 to 30th September, 2016)

Effluent reused during the period was around **97.41%** of the total effluent treated which includes plant effluent as well as BGR Township sewer.

Under the Leak Detection and Repair programme (LDAR), BGR is conducting quarterly Fugitive Emission Survey. During the period from **1st April, 2016 to 30th September, 2016**, **23102** potential leaky points checked and **166** Leaky points detected and rectified. By following LDAR programme in true spirit, the company could not only avoid potential loss of **38.35** MTA (approx.) of light Hydrocarbon to the atmosphere through fugitive sources but also able to keep healthy work environment in the plants.

To ensure work area quality and health of equipments, quarterly noise survey was conducted covering all the operating plants, control rooms and ambient surrounding the BGR. During **1st April, 2016 to 30th September, 2016,** Noise Survey for two quarters of 2015 -16 has been completed and no abnormality was reported.

As a measure of Hazardous Waste Management, M/s Balmer Lawrie & Co. Limited was awarded the contract of mechanized oily sludge processing. To establish confined space bioremediation study is being done in association with IOC R&D. The party already completed the processing of oily sludge from sludge lagoons. Bio- remediation process of the residual part of sludge was completed.

Further two more Rain Water Harvesting (Ground Water Recharging) schemes in BGR Township have been implemented during the period.

APPENDIX –A5

Quarterly Fugitive emission Data 1st April 2016 to 30th September,2016

Annexure -2

The quarterly Fugitive emission reports for the period of 1st April 2016 to 30th September,2016.

Fugitive Emission Survey for the 1st Quarter of 2016-17

Environment Department is conducting quarterly "Fugitive Emission Survey" of potential sources of various process units under Leak Detection & Repair Program (LDAR) and as per revised Effluent & Emission standards. The locations for the survey were selected in consultation with the departments. The survey covered the following units and areas:

(i) Process Units: CDU-1, CDU-2+FGRS, DCU-1, DCU-2, CRU+MSQ, DHDT, HGU.
(ii) Offsite Area: Tank age & TLG, Wagon Loading Gantry, LPG Plant.
(iii) CPP
(iv) Gas Turbine Generator (GTG).
(v) TSV of Products and Crude Pipe lines.

Leak definition: A leak is defined as the detection of VOC concentration more than the values (in PPM) specified below at the emission source using a hydrocarbon analyzer according to measurement Protocol (US EPA – 453/R-95-017, 1995 Protocol for equipment leak emission estimates may be referred):

Sl. No	Component	General Hydrocarbon (PPM)
		w.e.f. January 01, 2009
1	Pump/Compressor	5000
2	Valves/Flanges	3000
3	Other components	3000

In addition, any component observed to be leaking by sight, sound or smell regardless of concentration (liquid dripping, visible vapor leak) or presence of bubbles using soap solution should be considered as leak.

In this quarter, **11551** probable leak points are surveyed and **84** leaky points detected, which is having HC potential loss **25.057 MT/Year**

A summary of fugitive emission survey is tabulated below for perusal and necessary action at your end please:

1. Summary of Fugitive Emission Survey
2. Total points surveyed & Leak Points percentage
3. Potential Emission Data
4. Status of Leak Points: Component-wise
5. Units and Year-wise Total Points surveyed
6. Details of unit-wise Leaks remained to be rectified
7. Leaks and Leak remaining for Shutdown (Statistics)
8. Unit-wise leaks remained as shutdown jobs
9. Chronology of Measurement, ATR & Recheck
10. Details of Leaks with potential emission Kg/Yr
11. Potential Emission Data Liquid & Gas MT/Yr
12. Unit wise details of leak points repetitive in nature for the year 2016-17

APPENDIX-A6

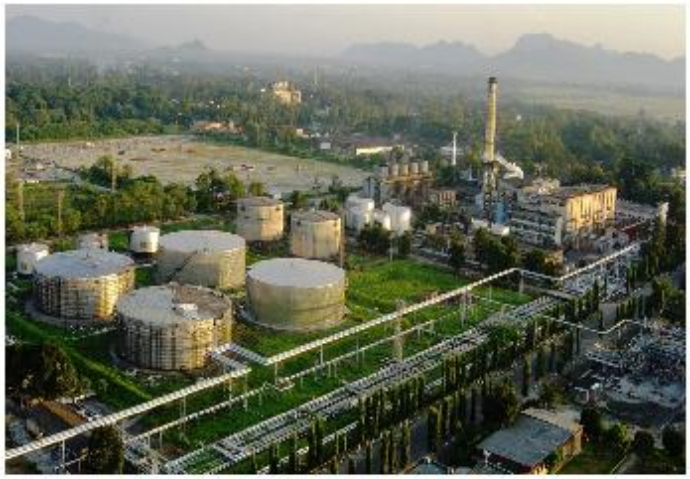
REPORT ON STUDY OF PHYTODIVERSITY IN IOCL BONGAIGAON REFINERY CAMPUS

STUDY CONDUCTED BY CHIRANG FOREST DIVISION, KAJALGAON

SUBMITTED BY

DIVISIONAL FOREST OFFICER

CHIRANG FOREST DIVISION



SUBMITTED TO

INDIAN OIL CORPORATION LIMITED

BONGAIGAON REFINERY , DHALIGAON, ASSAM

APPENDIX-A7(a)

j **FORM-4**

[See rules 5 (6) and 22 (2)]

FORM FOR FILLING ANNUAL RETURNS BY THE OCCUPIER OR OPERATOR OF FACILITY

[To be submitted by occupier / operator of disposal facility to State Pollution Control Board/ Pollution Control Committee by 30th June of every year for the preceding period April to March]

For the period from April, 2015 to March, 2016

1	Name and address of the generator/operator of facility:	Indian Oil Corporation Limited. Bongaigaon Refinery. Dhaligaon. Dist: - Chirang. Assam. PIN - 783385.		
2.	Name of the authorized person and full address with telephone and fax number:	Shri A. Saikia; Senior Manager (HSE). Indian Oil Corporation Limited. Bongaigaon Refinery, Dhaligaon, Dist: - Chirang. Assam. PIN - 783385 Telephone No. 03664-253352		
3.	Description of hazardous waste:	Type of hazardous waste	Physical form with description	Chemical form
		(a) 4.1 Oily Sludge	Sludge (O&G, Water and Solids)	% O&G= 20-25%
		(b) 4.2 Spent Catalyst	Solid	Contains:45.5% Ni, 6.88% MgO, 5.25% SiO_2
		(c) 4.3 Slop Oil	Liquid (Mainly Oil)	Oil = 5 - 95%
		(d) 5.1 Used/ Spent Oil	Liquid (Mainly Oil)	➢ 95% Mineral Oil
		(e) 33.3 Discarded containers / barrels / liners used for hazardous wastes / chemicals	Solid (Metallic and / or Plastic)	MS, PVC etc.
4.	Quantity of hazardous wastes (in MTA/KL):		**Type of hazardous waste**	**Quantity (in Tonnes/KL)**
			a) 4.1 Oily Sludge	Opening Stock (reassessed) = **1196** KL Generated = 2747 KL Processed = Nil KL Closing Stock = 3943 KL
			(b) 4.2 Spent Catalyst	Opening Stock = 18.868 M^3 (16.348 . Generated = 25.0 MT Disposed = 16.5 M^3 (=14.01 MT) Closing Stock = 27.368 MT

Page 1 of 4

Annexure –A7(b)

Authorization from PCBA for Hazardous Waste (Management , Handling and Transboundary Movement Rules 2008)

Consent under HW Rules 2008.pdf

APPENDIX-A8

Detail of Waste water treatment and disposal system.

EFFLUENT TREATMENT FACILITIES AT BONGAIGAON REFINERY

Bongaigaon Refinery has a separate Waste Water Treatment Plant (WWTP) for treating the wastewater generated from the Refinery and the Petrochemical sections separately. The treated water from the wastewater treatment plant is further taken to a Tertiary Treatment Plant (TTP). The tertiary treated water is reused for cooling water & Fire water make-up of the complex. Surplus effluent is discharged to Eco-park.

The Waste Water Treatment Plants and TTP have the following facilities:

(A) **Refinery Wastewater Treatment Plant:**

The refinery wastewater includes phenol, sulphide, oil and grease, etc. Oil may appear in waste water as free oil, emulsified oil and as a coating on suspended matter. The sanitary sewage coming from plant / Bongaigaon Refinery Township and canteen effluent, is also treated along with the effluent from the refinery WWTP.

The Refinery waste water treatment plant has the following facilities:

(a) Primary (Physical) Treatment System

i. **Surge Ponds.**
ii. **Tilted Plate Interceptors (TPI):** For separation of free floating oil from effluent.
iii. **Dissolved Air Floatation Units (DAF), two no.:** For removal of free & emulsified oil.
iv. **pH Adjustment Section :** To maintain pH within required level.
v. **Chemical (Polyelectrolyte & Alum) Dosing Section:** For coagulation and flocculation to reduce TSS.

(b) Secondary (Bio) Treatment Facilities:

(i) **Trickling filter:** For reduction of BOD load.
(ii) **Aeration Tanks (two no.):** For further reduction of BOD.
(iii) **Clarifiers (two no.):** For settling and separation of Bio- sludge.
(iv) **Guard Ponds (four no.):** Storing of treated effluent for final quality tests prior to sending to the tertiary treatment facilities.

Brief Description:

Oily waste streams from process units, laboratory, process / off-site pumping stations, loading areas, pipe trench drainage, etc. are collected in the main receiving sump and taken to the TPI. After free oil removal the in TPI effluent is collected in surge pond-1/2. After surge pond, the total flow is taken to Dissolve Air Floatation (DAF) section. Before effluent entering to the DAF, pH of the effluent is adjusted by sulphuric acid to about 7.5 to 8.0. The DAF separator removes most of the remaining oil from inlet effluent.

After primary treatment the effluent divided in **two streams**.

One stream goes to the trickling filter along with screened, de-gritted, domestic sewage (from the canteen / toilets etc.). The effluent from the trickling filter is taken to the transfer sump from where a part of it is re-circulated back to the trickling filter and the remaining part is sent to the Aeration tank -1. Nutrients mainly nitrogen and phosphorous in the form of urea and DAP are added to feed chamber of bio-filter as nutrient for the proper bio-oxidation of the organic matter.

ANNEXURE-A9

Quarterly Noise Survey Data

HSE (ENVIRONMENT) DEPARTMENT

ENV/Noise Survey/16-17/02 **Date: 08/10/2016**

Subject: Noise Survey for the 2nd Quarter of 2016-17

HSE (Environment) Department is conducting a quarterly noise survey in various locations and units (CPP, Refinery-1&2, WWTP, TTP, Pump Houses, CRU-MSQ, LPG, DHDT & HGU, CPP & GTG and Ambient Noise etc.). The locations for the survey were selected in consultation with concerned departments.

A set of complete/relevant report(s) of the survey carried out for the **2nd Quarter of 2016-17** is enclosed for your perusal and necessary action. It is observed that the threshold limit value of noise level in the areas where plant personnel are exposed continuously for 8 hours not exceeded 90 dB(A).

The limits for exposure to noise (as laid down in the Factories Act) are given below:

Sl. No.	Time (Hrs.)	Continuous noise dB (A)
1	8	90
2	4	95
3	2	100
4	1	105

Notes:
Exposure is prohibited in areas where noise level exceeds 115 dB (A).

It is recommended to provide display boards indicating high noise area (**i.e. the area having noise level of 90 dB and above**) and also to ensure use of proper PPE(Ear muff, Ear plug etc.) while working in high noise zone.

Regards

(V.K. Kedia)
C M (HSE)

ENV/Noise Survey/16-17/ 01 ***Date: 29/06/2016***

Noise Survey 1st Quarter: 2016-17					
Noise Survey 1st Qtr: 2016-17 (April 2016 to June 2016)					
Units	**>90 - 95**	**>95 - 100**	**>100 - 105**	**>105**	**Total**
CDU-1	4	4	0	0	8
DCU-1	6	2	0	0	8
CDU-2	2	2	0	0	4
DCU-2	3	3	0	0	6
LPG	2	0	0	0	2
Utility	1	0	0	0	1
PH # 1	2	0	0	0	2
WWTP & TTP	1	0	0	0	1
OM&S	2	0	0	0	2
CPP	7	1	0	0	8
CRU+MSQ	17	6	0	0	23
DHDT	12	2	0	0	14
HGU	8	3	0	0	11
GTG	5	0	2	1	8
Quality Control Laboratory	2	0	0	0	2
Total	74	23	2	1	100

Summary of High Noise Points:(High Noise is meant here as 90 dB(A) or more)

ANNEXURE-A10

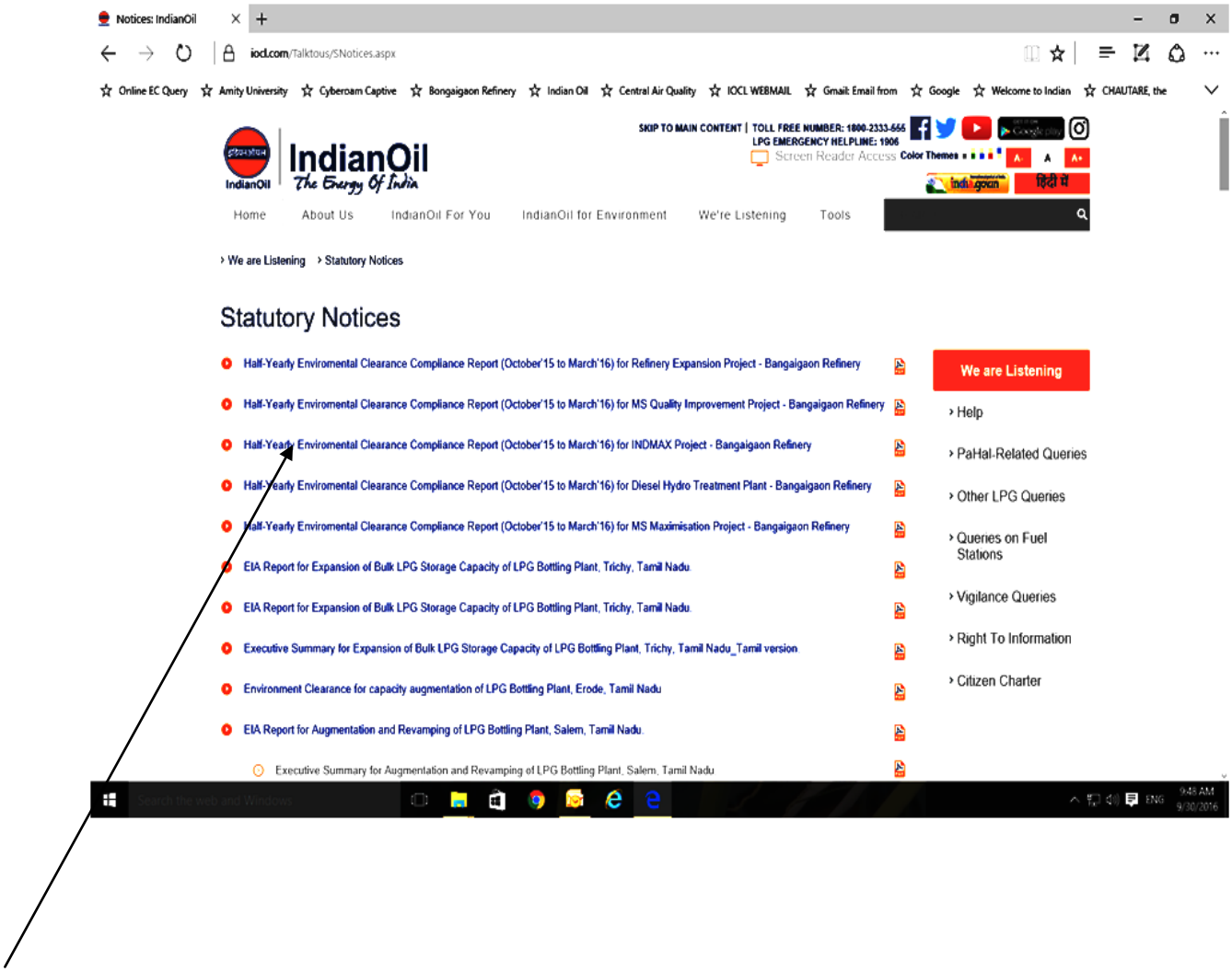
Rain Water Harvesting Data

Status of Rainwater Harvesting				
Sl. No	**Location**	**Rooftop Area In M^2**	**Volume of Rainwater harvesting potential (CUM)**	**Year of implementation**
	Implemented			
1	Rainwater Harvesting at Manjeera Guest House	677	1733	2008-09
2	Rainwater Harvesting at Deoshri Guest House	581	1487	2008-09
3	Mandir Complex	833	2132	2011-13
4	MANAS GUEST HOUSE	639	1636	2011-13
5	BRPL VIDYALAYA	1361	3484	2011-13
6	DPS BLOCK-I	704	1802	2011-13
7	DPS BLOCK-II	1810	4634	2011-13
8	Artificial Recharge thru' TW # 3 Roof Top water from Canteen, Cycle/Scooter Shades, CISF bldg. etc.	3134	8023	2011-13
9	Rainwater Harvesting from roof top area of Champa Club	1080	3100	2013-14
10	Rainwater Harvesting from roof top area of Refinery Club Cum Community Centre	2833	8132	2013-14
11	Rain Water Harvesting at CISF ADM Building	825	2368	2014-15
12	Rain Water Harvesting at BGREU Office	275	789	2014-15
13	CISF Barrack	1050	3013	2015-16
14	BGR Community Hall	650	1865	2015-16
15	Gallery of Football Stadium (BGR Township)			2016-17
16	Gallery of Volleyball Stadium (BGR Township)	988	2529	
	Total	17440	46727	

ANNEXURE-A11

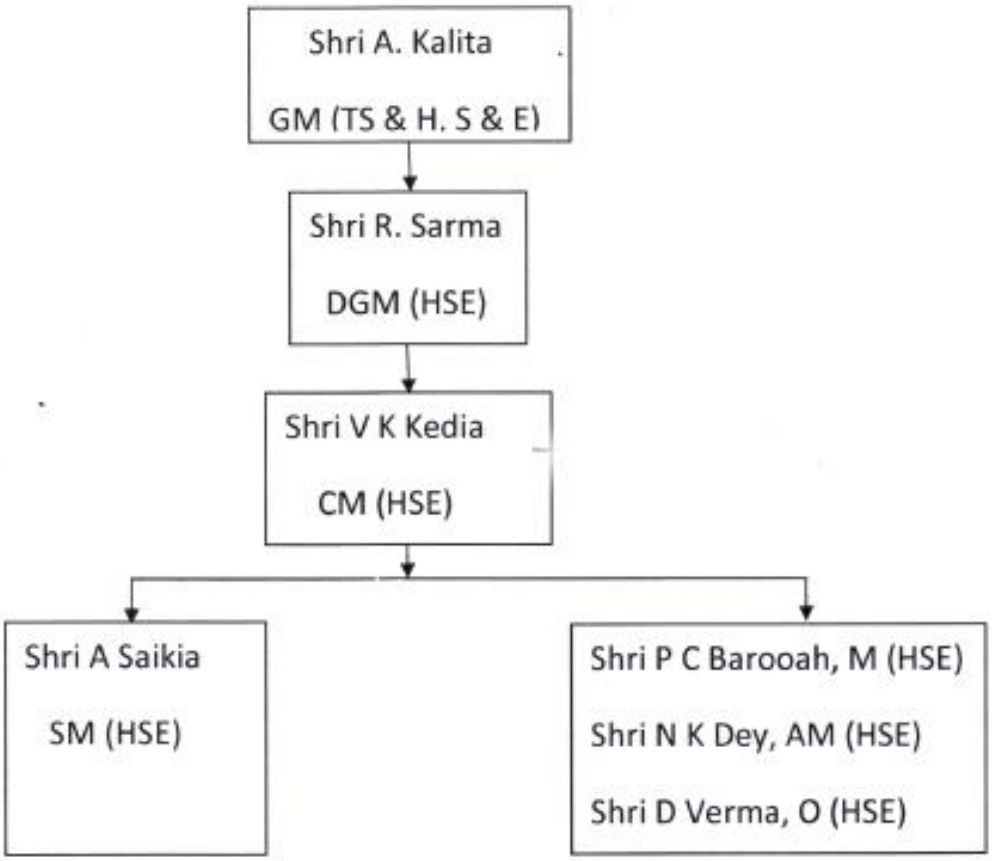
Screen Shot of IOCL Website upload of report

Link: https://iocl.com/Talktous/SNotices.aspx



APPENDIX-A12

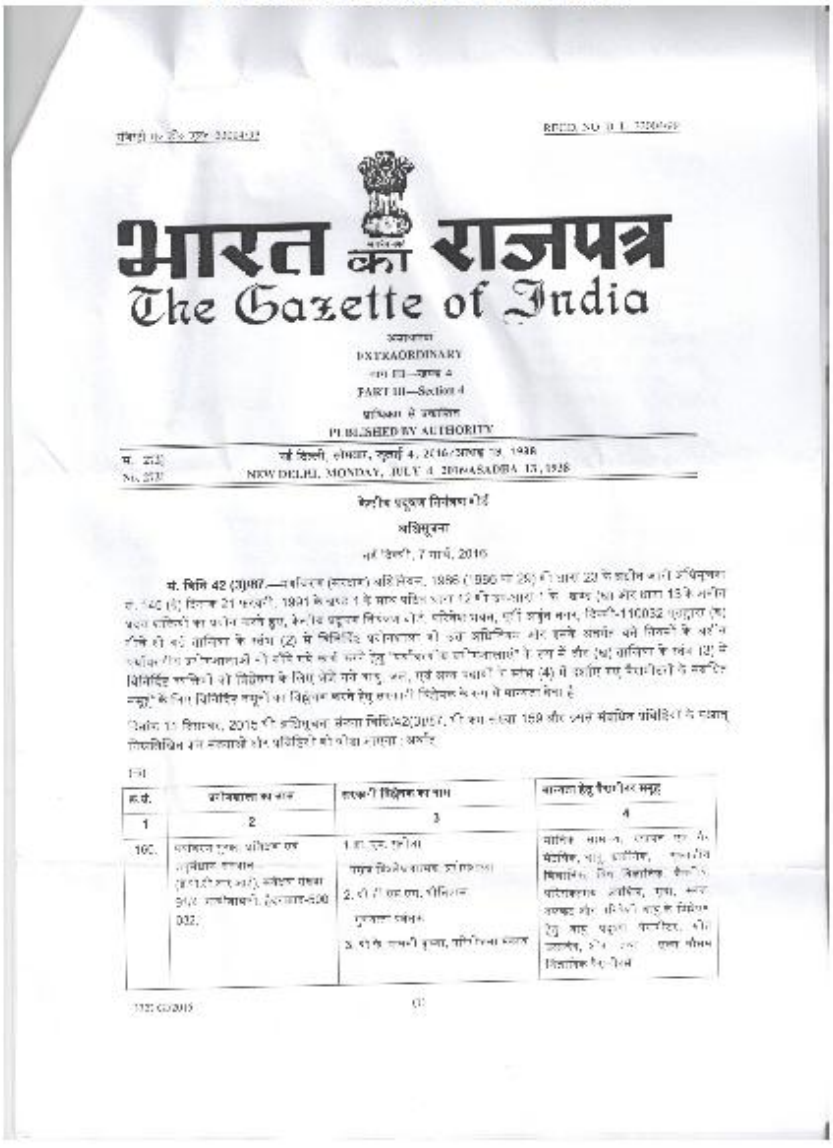
ORGANOGRAM FOR HSE DEPARTMENT 2016-17



ANNEXURE-A13

Gazette Notification of BGR Quality Control laboratory (QC Lab) approval under Environment (Protection) Act 1986.

Govt. of India Gazette no 272 dt: 4/7/2016



REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
भाग III—खण्ड 4
PART III—Section 4
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 2512] नई दिल्ली, सोमवार, जुलाई 4, 2016/आषाढ़ 13, 1938
No. 2512] NEW DELHI, MONDAY, JULY 4, 2016/ASADHA 13, 1938

केन्द्रीय प्रदूषण नियंत्रण बोर्ड

अधिसूचना

नई दिल्ली, 7 मार्च, 2016

सं. विनि 42 (3)/87.—पर्यावरण (संरक्षण) अधि नियम, 1986 (1986 का 29) की धारा 23 के साथ पठित धारा 12 की उप-धारा (1) के खण्ड (ब) और धारा 15 के अनुसरण में, केन्द्रीय प्रदूषण नियंत्रण बोर्ड, परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली-110032 (इसमें इसके पश्चात् बोर्ड कहा गया है) में विभिन्न प्रयोगशालाओं को उक्त अधिनियम और इसके अधीन बनी नियमों के अधीन [illegible] प्रयोगशालाओं को दिये गये कार्य हेतु 'मान्यकरण' की प्रयोगशालाएं' के रूप में और [illegible] तालिका के खंड (2) में विभिन्न परीक्षणों को निर्दिष्ट करने के लिए और इसी प्रकार [illegible] तालिका के खंड (3) में विभिन्न मानकों के संबंध में [illegible] के लिए विभिन्न नमूनों का विश्लेषण करने हेतु मान्यकरण नियमों के रूप में घोषणा करता है।

उक्त 12 सितम्बर, 2015 की अधिसूचना संख्या विनि/42(3)/87, दि. का.आ. 1659 और उसमें संशोधित अधिसूचनाओं में उपाबद्ध तालिकाओं में प्रयोगशालाओं को सूची से हटाया जाएगा : अर्थात्

1761

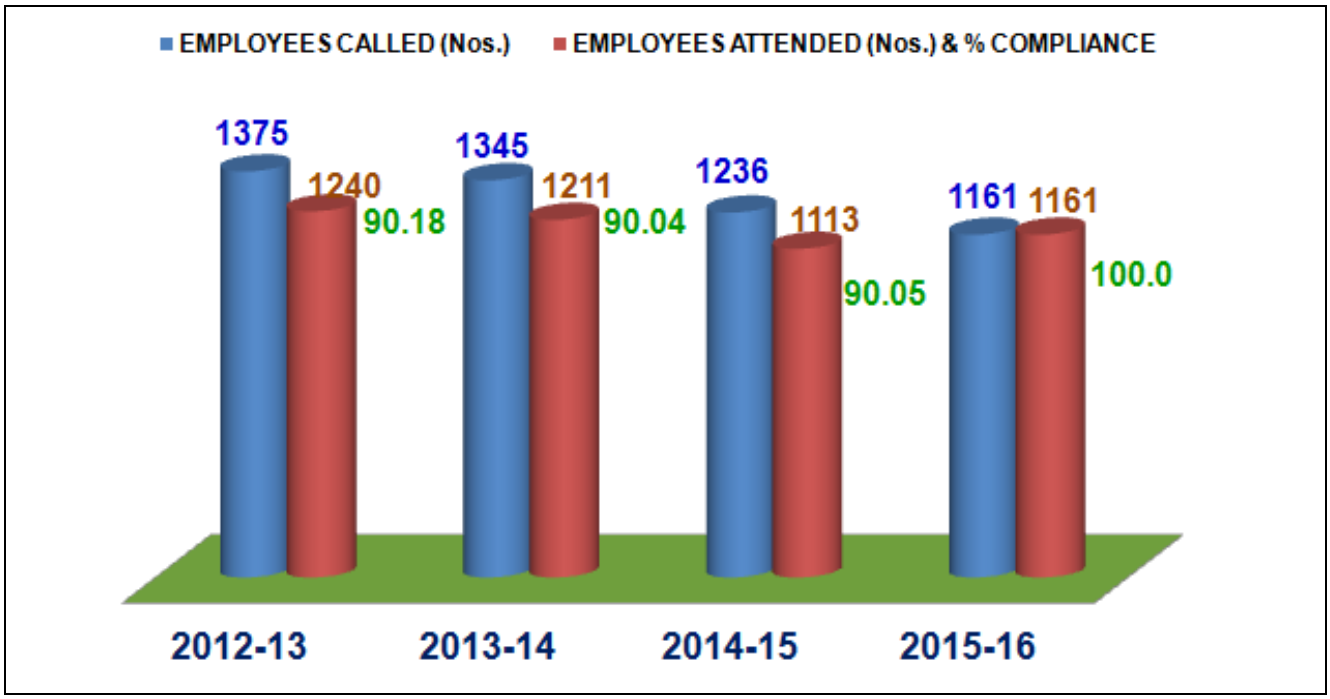
क्र.सं.	प्रयोगशाला का नाम	तत्संबंधी विश्लेषक का नाम	मान्यता हेतु कैटेगरी का समूह
1	2	3	4
160.	पर्यावरण एवं पर्यावरण [illegible] (बीजीआर ग्रुप ऑफ), कंपनी सचिव [illegible] नई दिल्ली-110 032.	1. डा. एस. एन.ओ. [illegible] 2. श्री ए. के. एस. पी.एच.ओ. [illegible] 3. श्री के. [illegible]	[illegible]

[illegible]

Page 25 of 27

Appendix-A14

Employees Occupational Heath Check up Status



Appendix-A15