Paradeep Phosphates Limited

Environment Statement

2017-18

ENVIRONMENT MANAGEMENT DEPARTMENT
M/s PARADEEP PHOSPHATES LIMITED
PPL TOWNSHIP
PARADEEP-754145
JAGATSINGHPUR (ODISHA)

Environment Management at Paradeep Phosphates Limited

Paradeep Phosphates Limited (PPL) incorporated in 1981 was initially a joint venture between the Government of India and the Republic of Nauru and subsequently changed into a wholly owned Government of India Enterprise. After disinvestment by the Government of India in February, 2002, the management of the company is with the fertilizer majors Zuari-Chambal Group and OCP Morocco. PPL is a prime player in the Phosphatic Fertilizers which have applications in a wide range of crops.

Paradeep Phosphates Limited is located at Paradeep in Jagatsingpur District of Odisha, to manufacture 2400 TPD Di-ammonium Phosphate (DAP) consisting of four streams each of 600 TPD capacity under Phase-1 programme. The commercial production started in the year 1986.The fertilizer complex is using imported Sulphur and rock phosphate to produce Sulphuric acid and Phosphoric acids. The captive production of Phosphoric acid can not cater to four streams of DAP plant. Part of phosphoric acid requirement is met through imports. The requirement of ammonia is met through import. Phase-II plant comprising of a 750TPD Phosphoric acid Plant (PAP), 2X 1000 TPD Sulphuric acid plant (SAP) and 2 X 16MW Captive power plants (CPP) were commissioned in 1992. After debottlenecking and retrofitting of the existing plants in the year 2010 and commissioning of SAP –C &TG-3 , PPL is now able to produce 5000 TPD of complex Phosphatic fertilizer ,4400 TPD of Sulphuric acid and 1400 TPD of Phosphoric acid and 2X16 MW plus 1X23 MW power to meet the need of valued customers. PPL has taken steps towards the *Co-Generation of the waste heat recovery for their Captive Power Generation by utilizing the waste steam generated from the Sulphuric acid Plant. Sulphuric acid plant-C is designed with new HRS technology to utilize the heat for production of steam.*

PPL received the ISO 9001, ISO 14001, OHSAS 18001, ISO 50001, Protect& Sustain &5S certifications with Integrated Management System(IMS) for its good management systems ; thus implying that along with technical advancement , the company also values maintaining and working towards a clean and safe environment. ***Paradeep Phosphates Limited has established a full-fledged Environment Management Laboratory accredited by National Accreditation Board for Testing and calibration Laboratories (NABL), QCI, Govt.of India.***

Paradeep Phosphates Limited is functioning since inception with its policy ***"To strive for an Environment of beyond compliance in plants and to raise Environmental awareness in the neighboring community"***. PPL is also adopted environmentally sound technologies and management practices for "optimum utilization and conservation of natural resources."

PPL has installed most efficient Pollution Control Equipments (PCE's) to control the pollution at source and also controlling the solid and liquid wastes by adopting the recycle methods and shown its endeavor towards philosophy of " Sustainable Development ". A dedicated separate Environment Management Department is doing its performance monitoring on regular basis.

PPL is deeply committed to the development and welfare of the larger community in its area of operations. The company continues its efforts for rural upliftment with a host of programmes and interventions. A dedicated team is working for the development of the surrounding villages .PPL is arranging medical camps, agricultural training, and women empower training, children development etc.

PPL has its own Sewage Treatment Plant (STP) with a treatment capacity of 150m3/Hr based on activated sludge process. Similarly one Effluent Treatment Plant (ETP) is installed having 200m3/Hr treatment capacity. The treated water is being reused in ball mill process & utilized in gardening. PPL is giving the stress for recycling all the solid waste (by products) generated from the process in the process as filler. Large quantity of Phospho-Gypsum is being sold to the farmers for their soil treatment and to cement industries also. A Gypmite plant of capacity 240TPD is already setup to use huge quantity of Phospho-gypsum for the production of micronutrient fertilizer Gypmite. Apart from this PPL has installed Ammonia flare stack and Fluorine Recovery Unit.

PPL has planted more than 6.74 Lakhs trees in and around the plant premises, colony & road sides of Gypsum pond area. About 39% of total area is covered with thick plantation.

ENVIRONMENTAL STATEMENT

FORM –V

Environmental Statement report for financial year ending the, 31st March 2018 (On the basis of April 2017- March 2018 data)

PART – A

i) Name and address of the owner/ Occupier of the industry, operation Or process .

Sunil Sethy
Paradeep Phosphates Ltd.
PPL Township,
Paradeep – 754145
Dist. Jagatsingpur (Odisha)

ii) Industry Category: Primary (STC code) Red

iii) Production Capacity

Sr. No.	Products	Quantity
1.	Phosphatic Fertilizers (4 x 1250 TPD)	5000 TPD
2.	Sulphuric Acid (2 x 1200) TPD)+ 2000 TPD	4400 TPD
3.	Phosphoric Acid	1400 TPD
4.	Electric Energy (2 x 16 MW)+ 23 MW	55 MW
5.	Zypmite	240 TPD

iv) Year of Establishment : 1981

v) Date of last Environmental Statement return submitted. : 25 September 2017

PART –B

I. Water and Raw Material consumption

Process : Total 9180 m3/day is utilized for Industrial process.

DAP : 290 m^3/day

SAP : 1564 m^3/day

PAP : 4619 m^3/day

CPP : 2706 m^3/day water is utilized in the process.

Cooling: 3518 m^3/day water is utilized for cooling purposes including;

OFFSITES : 33 m3/day

SAP : 758 m^3/day

CPP : 2727 m^3/day

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Domestic: 6531 m^3/day

Water consumption

Name of product		Water consumption per unit of products	
		During the previous Financial year.	During the present Financial year.
I.	DAP/NPK	0.20 m^3/T	0.08 m^3/T
II	SAP	1.34 m^3/T	0.70 m^3/T
III	PAP	5.04 m^3/T	5.24 m^3/T
IV	Electricity	10.66 m^3/kwh of Electricity generation	9.36 m^3/kwh of Electricity generation.

II. Raw Material Consumption

Sl. No.	Name of Raw Material	Consumption of raw material per unit of output (T/ton of DAP)	
		During the previous Financial year	During the present Financial year.
1	Phosphoric acid as P_2O_5	0.46400	0.46573
2	NH_3	0.22424	0.22592
3	Sulphuric acid	0.01600	0.01247
4	Filler	0.05476	0.049144
		Consumption of raw material per unit of output (T/ton of Phosphoric acid)	
5	Rock phosphate	3.26808	3.42800
		Consumption of raw material per unit of output (T/ton of Sulphuric acid)	
6	Sulphur	0.32644	0.32984

PART –C
Pollution Generation
(Parameters as specified in the consent issued)

Pollutants	Quantity of pollution generated	Concentration of * Pollutants in discharge	OSPCB prescribed standards
***A) Water (m3/day*)**	**STP- 1611 ETP-1307**		
pH		Please refer annexure I	Please refer annexure-I
Suspended solid			
TDS			
BOD			
COD			
O&G			
Fluoride			
Phosphate			

* These figures are average figures based on the regular monitoring being done at the STP and ETP

b) Air

Stack attached to	**Dust emission/day (T)**
DAP - A	0.4707
DAP -B	0.4675
DAP –C	0.5206
DAP – D	0.5134
Zypmite-1	0.0061
Zypmite-2	0.0168
Zypmite-3	0.0221
SAP	NA
PAP	0.0856

Note: Please refer Annexure-II for details of each stacks & ambient air Quality monitoring.

PART –D

Hazardous Wastes

(As specified under Hazardous Wastes Management and Handling Rules, 1989 & amendment on 2016)

Hazardous Wastes	Total Quantity (MT) Generated	
	During the previous Financial year.	During the present Financial year.
a) From process		
Sulphur Muck (MT)	3594.5	3624
Spent Catalyst (m3)	50.4	43
Acidic Residue (m3)	4495	6552
Used oil (KL)	6.82	14.42
Spent Resin (KL)	0	0
Reactor Scales (m3)	05	0
b) From pollution control facilities:		
ETP Sludge ,Central effluent Storage tank sludge & drain sludge (MT)	3096.6	1926.7

PART –E

Solid Waste Generated

Total Quantity (T)		
	During the previous financial year	During the present financial year.
a) From Process		
Phospho-Gypsum	14,25,050	14,55,750
b) From pollution control facility		

Dust Material recycled through Air Pollution Control Devices (MT)

APCE installed at	**During the previous Financial year.**	**During the present financial year.**
DAP-A	1322.54	1384.2
DAP-B	1410.7	1419
DAP-C	1466.72	1522.9
DAP-D	1400.15	1519.9
PAP	1330.77	1411.8
SAP	N.A	NA

Note: Based on Air Pollution Control Equipment designed flow and actual running hours. All the dust collected in APCE is automatically recycled into the process.

PART –F

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

Please refer annexure -III

PART -G

Impact of the pollution control measures on conservation of natural resources and consequently on the cost of production.

PPL has adopted all modern process technologies to control the pollutants at source itself. All the plants are having the most sophisticated Pollution Control devices for air and water as under;

Sl No.	Process/ Plant	Control Measures
01	SAP	DCDA Process, Imported V2O5 Catalyst, Candle Filter, Alkali scrubbers, Mist eliminator/demister pad, Stack (120 mtr), continuous SO2 analyzer in stack
02	PAP	Wet Grinding of Rock, 3 stages Fumes scrubbers, Hydroflusosilicic acid recycling, FRU , Stack (50mtr), continuous HF and PM analyzers
03	DAP	Cyclone, Venturi Scrubbers, Mist Eliminator, Stacks (50mtr) ,continuous HF analyzer
04	Effluent/Sewage treatment	ETP & STP

PART –H

Additional investment proposal for environment protection and abatement of pollution:

The expenditure made for the purpose of environmental management in the plant premises for the period 2017-18 is as follows:

		Rs (Lakhs)
Environmental monitoring equipment	:	28.28
Maintenance of ETP/ Pollution Control	:	447.49
Equipment/ Manpower cost/ Greenbelt Development	:	
Total cost in lakh		475.77

Any other particulars in respect of environment protection and abatement of pollution.

We continually strive to integrate sustainability into our operations through effective resources management, fostering a safe, inclusive and productive work place, materials stewardship, responsible energy use, water use optimization, positive waste management and conservation of bio-diversity.

We have taken certain measures to reduce or mitigate fugitive emissions from our operations. One such measure is the installation of efficient Sulphuric acid mist eliminators in our Sulphur acid plant. We have also provided fume scrubbers in our phosphoric acid plant to reduce fluoride emissions. Additionally, we conduct regular operation and maintenance activities for our ducts and vents to detect possible leakages in order to control fugitive Sox emissions.

In order to prevent venting of ammonia or any process gas in emergency situations, we have installed a flaring system in our stacks. This system burns off all excess process gases completely, minimizing all hazards arising due to venting. One of the most significant steps we have taken to monitor air quality real time to install ambient air quality monitoring stations in the periphery of our plant. The real time data from the stations is being transmitted to OSPCB and CPCB server.

We have established our own Environmental Management Department with an adequate laboratory for regular monitoring of various environmental parameters and to ensure compliance of all statutory obligations from time to time. Through this department and key personnel in other departments, we regularly monitor various environmental performance parameters. The department provides regular feedback to the management for continual improvement in environmental performance.

Gypsum is one of the most significant wastes produced at our operations. Daily, our operations produce over 7000 MT of gypsum. Over the years, we have stored our gypsum waste at site and invested our efforts into researching possible opportunities for value creation through use of gypsum. About 500 meters of road is made by utilizing neutralized phospho gypsum for trial use with the collaboration of CRRI. Zypmite is a Phospho-gypsum fertilizer made from gypsum generated by our plant and basic slag waste generated by the nearby steel industry.

Apart from optimizing materials used by our operations, managing waste generated from our facilities is another focus area of our material stewardship activities. We take consistent measures to ensure that the waste going out of our premises or stored at our facilities has minimal, or no impact on the environment. In this regard, we try to maximize the reuse of waste inside our operational boundaries. We utilize sulphur muck generated from our Sulphuric Acid plant in the Phosphatic fertilizer manufacturing process as filler. All drain sludge and ETP sludge is utilized in our Phosphatic Fertilizer Plant as filler.

Annexure-I

DISCHARGE EFFLUENT QUALITY

(From April 17 to March 18)

A. EFFLUENT TREATMENT PLANT (ETP)

Sl No	Parameters	Prescribed limit by OSPCB (mg/l)	Minimum (mg/l)	Maximum (mg/l)	Yearly Average (mg/l)
1	pH	6.5 ~ 8.5	6.6	8.4	7.42
2	Phosphate as P	5	0.61	2.8	1.73
3	Fluoride as F	2	0.85	1.89	1.23
4	Suspended Solids	100	13.2	34	25.12
5	Total Dissolved Solids	2100	407.2	699.3	565.23
6	Biochemical Oxygen Demand(BOD) 3 days at 27^oC	30	2.23	7.36	4.54
7	Chemical Oxygen Demand (COD)	250	13.6	48	29.27
8	Oil & Grease	10	ND	ND	ND

B. SEWAGE TREATMENT PLANT (STP)

Sl No	Parameters	Prescribed limit by OSPCB (mg/l)	Minimum (mg/l)	Maximum (mg/l)	Yearly Average (mg/l)
1	pH	6.5 ~ 9.0	6.5	7.9	6.91
2	Suspended Solids	20	11.8	22.2	15.5
3	Biochemical Oxygen Demand(BOD) 3 days at 27^oC	10	4.2	8.56	6.69
4	Chemical Oxygen Demand (COD)	50	17.5	45	33.67
5	Ammoniacal Nitrogen	5	0.7	1.82	1.21
6	Total Nitrogen	10	1.6	3.96	2.82
7	Fecal Coliform	< 100 MPN	57	63	60.22

ND: Not Detectable

All results are based on yearly average values.

Annexure –II

AIR QUALITY STATUS

(From April 17 TO March 18)

(A) STACK EMISSION DATA

Sl No	Stack location	PM	SO_2	Acid Mist	Total Fluoride
Prescribed Limit		**100 mg /Nm^3**	**1.5/1.0 Kg/T of H_2So_4**	**50 mg /Nm^3**	**25 mg /Nm^3**
1	DAP – A	75.61	NA		1.43
2	DAP – B	75.36			1.95
3	DAP – C	78.34			1.96
4	DAP – D	77.38			1.54
5	Zypmite- 1	52.46			NA
6	Zypmite -2	54.11			
7	Zypmite-3	50.68			
8	SAP – A	NA	0.845	30.41	NA
9	SAP – B		0.895	23.5	
10	SAP – C		0.421	18.63	
11	PAP	46.11			4.33

NA: Not Applicable

(B) AMBIENT AIR QUALITY DATA

Sl No	Location	PM 2.5	PM 10	SO_2	NOx	NH_3
Prescribed limit		**60 (ug/m^3)**	**100 (ug/m^3)**	**80 (ug/m^3)**	**80 (ug/m^3)**	**400 (ug/m^3)**
1	Near Fire & Safety Building	40.07	66.02	26.45	12.85	28.73
2	PPL Guest House	20.64	43.43	26.5	12.98	10.7
3	Near MOP silo	24.89	45.03	23.85	15.51	27.8
4	Near Rock Silo	25.13	62.64	20.7	18.22	26.25

Annexure-III

Inventory of solid and Hazardous wastes generated at PPL 2017-18

Sl No	Wastes Stream	Source	Annual Quantity Generated	Frequency of Generation	Mode of Disposal
1	Sulphur Muck (MT)	SAP	3624	Daily	Used as filler in DAP plant
2	Spent Catalyst (M^3)	SAP	43	Annual	Safely stored under shed in lime silo & disposed to CPCB authorized vendor.
3	Drain & ETP Sludge (MT)	ETP	1926.7	Daily	Used as filler in DAP /PAP plant
4	Phospho Gypsum (MT)	PAP	1455750	Daily	Gypsum pond/ Cement plants/ sulfur supplement for farmers
5	Used Oil (Kl)	Plants / Workshop	14.42	Occasional	Sold to authorize recyclers.
6	Spent Resin (Kl)	DM water plant	Nil	Occasional	Disposed off in Engineering Landfill
7	Acid residue obtained during cleaning of storage tanks (m3)	PAP	6552	Annual	Recycled in PAP in reactor/ filter
8	Reactor Scales (m3)	PAP	Nil	Annual /Biennial	. Engineering landfill
9	Discarded Containers (nos)	Stores / SAP	96	Occasional	Disposal to authorized dealers
10	Oily sludge (kg)	Fuel Oil handling areas	150	Occasional	Reused as filler in DAP plant
11	Oily Cotton (Kg)	Engineering Workshops	125	Occasional	Reused as partial supplement for fuel in DAP furnace.
12	Cooling Tower sludge (m3)	Cooling tower of PAP	Nil	Occasional	Reused as filler in DAP plant.