



Paradeep Phosphates Limited



Environmental Statement

2016-17

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 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 6.72 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 complying beyond the condition of 33% of MoEF.

ENVIRONMENTAL STATEMENT

FORM –V

Environmental Statement report for financial year ending the, 31st March 2017 (On the basis of April 16- March 17 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. : 29 September 2016

PART –B

I. Water and Raw Material consumption

Process : Total 10562 m³/day is utilized for Industrial process.

DAP : 756 m³/day
SAP : 2518 m³/day
PAP : 4350 m³/day
CPP : 2938 m³/day water is utilized in the process.

Cooling: 4298 m³/day water is utilized for cooling purposes including;

OFFSITES : 34 m³/day
SAP : 1917 m³/day
CPP : 2347 m³/day

Domestic: 5079 m³/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	0.14 m ³ /T	0.20 m ³ /T
II	SAP	0.34 m ³ /T	1.34 m ³ /T
III	PAP	4.87 m ³ /T	5.04 m ³ /T
IV	Electricity	6.54 m ³ /kwh of Electricity generation	10.66 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 ₂ O ₅	0.46652	0.46400
2	NH ₃	0.22442	0.22424
3	Sulphuric acid	0.01602	0.01600
4	Filler	0.05092	0.05476
		Consumption of raw material per unit of output (T/ton of Phosphoric acid)	
5	Rock phosphate	3.5661	3.26808
		Consumption of raw material per unit of output (T/ton of Sulphuric acid)	
6	Sulphur	0.32979	3.2644

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)			
pH	STP 2153	Please refer annexure I	Please refer annexure-I
Suspended solid	ETP 1828		
TDS	DM Plant 629		
BOD			
COD			
O&G			
Fluoride			
Phosphate			

During 2016-17, 662 m3/day of waste water is being recycled in to the plant for process, cooling and greenery development purposes from ETP & DM plant.

* 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	0.4777
DAP -B	0.5175
DAP –C	0.5294
DAP – D	0.5184
Zypmite-1	0.0037
Zypmite-2	0.0101
Zypmite-3	0.0127
SAP	NA
PAP	0.06411
CPP	Boiler was not in operation

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 2008)

Hazardous Wastes	Total Quantity (MT) Generated	
	During the previous Financial year.	During the present Financial year.
a) From process		
Sulphur Muck (MT)	2693	3594.5
Spent Catalyst (m3)	61	50.4
Acidic Residue (m3)	2045.803	4495
Used oil (KL)	12.68	6.82
Spent Resin (KL)	7.2	0
Reactor Scales (m3)	36	05
b) From pollution control facilities:		
ETP Sludge ,Central effluent Storage tank sludge & drain sludge (MT)	2491.5	3096.6

PART –E

Solid Waste Generated

Total Quantity (T)		
	During the previous financial year	During the present financial year.
<i>a) From Process</i>		
Phospho-Gypsum	14,52,300	14,25,050
<i>b) From pollution control facility</i>		

Dust Material recycled through Air Pollution Control Devices (MT)

APCE installed at	During the previous Financial year.	During the present financial year.
DAP-A	1308.57	1322.54
DAP-B	1355.13	1410.7
DAP-C	1315.61	1466.72
DAP-D	1279.65	1400.15
PAP	1329.9	1330.77
SAP	N.A	NA
CPP	Boiler was not in operation	Boiler was not in operation

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. On requirement basis Sulphur muck, ETP Sludge and other solid waste are being utilized in DAP manufacturing as filler. The sludge from the STP is also utilized as manure for plantation purposes. Phospho Gypsum is being scientifically stored in an identified place and finally sold to Cement industries and for agriculture purpose and now PPL is producing Zypmite by utilization of Phospho gypsum itself.

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	CPP	Stack 105 mtr
05	General	ETP, STP and Plantation

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 2016-17 is as follows:

	<u>Rs (Lakhs)</u>
Environmental equipment	753.2
Maintenance of ETP/ Pollution Control Equipment/ Manpower cost/ Greenbelt Development	532.0
GP-II	8725.0
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Total cost in lakh	10010.2

For the year 2017-18, the proposed budget for the overall environmental management related activities is Rs. 4570 lakhs.

PART - I

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.PPL has successfully exported about 15500 MT of Phosphogypsum to Bangladesh for use in agriculture.

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.

DISCHARGE EFFLUENT QUALITY**(From April 16 to March 17)****A. EFFLUENT TREATMENT PLANT (ETP)**

SI No	Parameters	Prescribed limit by OSPCB (mg/l)	Minimum (mg/l)	Maximum (mg/l)	Yearly Average (mg/l)
1	pH	6.5 ~ 8.5	7.0	8.5	7.61
2	Phosphate as P	5	0.2	3.83	0.94
3	Fluoride as F	2	0.5	1.9	0.94
4	Suspended Solids	100	2.2	43	14.7
5	Total Dissolved Solids	2100	249	1050	516
6	Biochemical Oxygen Demand(BOD) 3 days at 27°C	30	1.5	7.1	2.97
7	Chemical Oxygen Demand (COD)	250	8.8	35	17.04
8	Oil & Grease	10	ND	ND	ND

B. SEWAGE TREATMENT PLANT (STP)

SI No	Parameters	Prescribed limit by OSPCB (mg/l)	Minimum (mg/l)	Maximum (mg/l)	Yearly Average (mg/l)
1	pH	6.5 ~ 8.5	6.5	7.8	7.09
2	Suspended Solids	100	6.8	58	22.5
3	Total Dissolved Solids	2100	71	1084.6	562.7
4	Biochemical Oxygen Demand(BOD) 3 days at 27°C	30	3.0	21	7.8
5	Chemical Oxygen Demand (COD)	250	12	48.5	26.3
6	Oil & Grease	10	ND	ND	ND

C. DM PLANT EFFLUENT

SI No	Parameters	Prescribed limit by OSPCB (mg/l)	Minimum (mg/l)	Maximum (mg/l)	Yearly Average (mg/l)
1	pH	6.5 ~ 8.5	7.0	8.4	7.62
2	Suspended Solids	100	2.0	13.0	4.87

ND: Not Detectable

All results are based on yearly average values.

AIR QUALITY STATUS

(From April 16 TO March 17)

(A) STACK EMISSION DATA

Sl No	Stack location	PM	SO ₂	Acid Mist	Total Fluoride
Prescribed Limit		100 mg /Nm³	1.5/1.0 Kg/T of H₂SO₄	50 mg /Nm³	25 mg /Nm³
1	DAP – A	80.3	NA	NA	1.5
2	DAP – B	83.9			1.5
3	DAP – C	82.3			1.6
4	DAP – D	84.8			1.8
5	Zypmite- 1	56			NA
6	Zypmite -2	57.2			
7	Zypmite-3	51.5			
8	SAP – A	NA	0.9	25.9	NA
9	SAP – B		0.9	25..5	
10	SAP – C		0.3	16	
11	CPP	Boiler not in operation	NA		
12	PAP	40.4		7.3	

NA: Not Applicable

(B) AMBIENT AIR QUALITY DATA

Sl No	Location	PM 2.5	PM 10	SO ₂	NO _x	NH ₃
	Prescribed limit	60 (ug/m³)	100 (ug/m³)	80 (ug/m³)	80 (ug/m³)	400 (ug/m³)
1	Near Fire & Safety Building	29.4	51.1	14.9	3.0	10.9
2	PPL Guest House	24.9	48.1	38.4	6.5	53.1
3	Near MOP silo	24.3	44.3	14.1	15.8	30.8
4	Near Rock Silo	29.5	52.5	21.3	12.9	14.2
5	Near WTP	33.7	47.9	19.7	11.8	18.9
6	High way gate	41.8	57.2	17	12.3	21.6
7	Hotel Sea Pearl	34.8	50	12.9	11.6	19.8
8	Paradeep Police station	41	56.1	13.6	12.8	21.6

Inventory of solid and Hazardous wastes generated at PPL
2016-17

Sl No	Wastes Stream	Source	Annual Quantity Generated	Frequency of Generation	Mode of Disposal
1	Sulphur Muck (MT)	SAP	3594.5	Daily	Used as filler in DAP plant
2	Spent Catalyst (M ³)	SAP	50.4	Annual	Safely stored under shed in lime silo & disposed to CPCB authorized vendor.
3	Drain & ETP Sludge (MT)	ETP	3096.6	Daily	Used as filler in DAP /PAP plant
4	Phospho Gypsum (MT)	PAP	1425050	Daily	Gypsum pond/ Cement plants/ sulfur supplement for farmers
5	Used Oil (Kl)	Plants / Workshop	6.82	Occasional	Sold to authorize recyclers.
6	Spent Resin (Kl)	DM water plant	0	Occasional	Disposed off in Engineering Landfill
7	Acid residue obtained during cleaning of storage tanks (m3)	PAP	4495	Annual	Recycled in PAP in reactor/ filter
8	Reactor Scales (m3)	PAP	5	Annual /Biennial	. Engineering landfill
9	Discarded Containers (nos)	Stores / SAP	290	Occasional	Disposal to authorized dealers
10	Oily sludge (kg)	Fuel Oil handling areas	0	Occasional	Reused as filler in DAP plant
11	Oily Cotton (Kg)	Engineering Workshops	34	Occasional	Reused as partial supplement for fuel in DAP furnace.
12	Cooling Tower sludge (m3)	Cooling tower of PAP	0	Occasional	Reused as filler in DAP plant.
13	Phosphogypsum	PAP	1425050	Daily	Gypsum Pond /Sale to Cement plant/ Agro industry