

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH AT PUNE**

ORIGINAL APPLICATION NO. 152/2024

Suo Moto case: News item titled “Untreated effluents cause widespread fish mortality at Velsao bay rivulet” appearing in O Herald dated 26.05.2024

Suo moto original application by the Hon'ble Tribunal

Vs.

Goa State Pollution Control Board & Ors. ... Respondents

INDEX

(Affidavit of Respondent No. 5 along with Documents)

Sr. No	Document	Page no.
1.	Affidavit in reply of Respondent No. 5	283 – 310
2.	Annexure 1: News article dated 26 May 2024 published in O Herald	311
3.	Annexure 2: Order dated 5 July 2024 passed by the Hon'ble Principal Bench of the NGT	312 - 314
4.	Annexure 3: Order dated 5 September 2024 of this Hon'ble Tribunal	315 – 318

5.	Annexure 4: Inspection report prepared by Respondent No. 1 dated 26 May 2024	319 – 329
6.	Annexure 5: Letter from Respondent No. 5 to Respondent No. 1 dated 28 May 2024 replying to the inspection report dated 26 May 2024	330 - 331
7.	Annexure 6: Environment Assessment report prepared by Respondent No. 1 for Respondent No. 5 dated 1 June 2024	332 – 371
8.	Annexure 7: Letter from Respondent No. 1 to Respondent No. 5 dated 6 June 2024 regarding fish mortality and scheduling personal hearing on 11 June 2024	372
9.	Annexure 8: Site inspection report dated 8 June 2024	373 – 383
10.	Annexure 9: Minutes of Meeting of Personal hearing between Respondent No. 5 and Respondent No. 1 regarding fish mortality dated 11 June 2024	384 – 385
11.	Annexure 10: Letter from Respondent No. 1 to Respondent No. 5 renewing the consent to operate dated 14 June 2024	386 – 399
12.	Annexure 11: Letter from Respondent No. 5 to Respondent No. 1 dated 19 June 2024 replying to the MOM dated 11 June 2024 1. Annexure I - Water Balance	400 - 414

	<p>2. Annexure II - Conveyor transfer point</p> <p>3. Annexure III - Work order for shed</p> <p>4. Annexure IV - AAQM Location</p> <p>5. Annexure V - Storm water retention tank</p> <p>6. Annexure VI - Discharge pipeline</p>	
13.	Annexure 12: NEERI report along with covering letter dated 26 June 2024	415 – 463
14.	Annexure 13: Letter from Respondent No. 5 to Respondent No. 1 dated 28 June 2024 sharing the NEERI report on storm water waste management	464 – 465
15.	Annexure 14: Show cause notice issued by the Respondent No. 1 to Respondent No. 5 dated 4 July 2024	466 – 578
16.	Annexure 15: Letter by Respondent No. 5 to Respondent No. 1 dated 4 July 2024 showing acknowledgment of the receipt of the show cause notice	579
17.	Annexure 16: Letter by Respondent No. 1 to Respondent No. 5 dated 5 July 2024 for making payment of Rs. 10 Lakhs	580 – 581
18.	Annexure 17: Response by Respondent No. 5 dated 10 July 2024 to Show Cause Notice issued by the Respondent No. 1	582 – 586

19.	Annexure 18: Letter from Respondent No. 5 to Respondent No. 1 dated 10 July 2024 requesting non-forfeiture of Rs. 10 Lakhs	587
20.	Annexure 19: Inspection order dated 12 July 2024 passed by Respondent No. 1 directing its members to conduct inspection of Respondent No. 5 on 13 July 2024	588
21.	Annexure 20: Letter from Respondent No. 5 to Respondent No. 1 dated 12 July 2024 intimating the Respondent No. 1 about payment of Rs. 12,37,500 as Environmental Compensation Payment	589 - 591
22.	Annexure 21: Letter from Respondent No. 5 to Respondent No. 1 dated 12 July 2024 confirming remittance of Rs. 10 lakhs	592 - 594

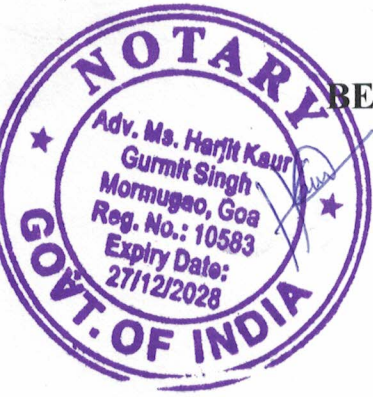
Date: 18 November 2024

Place: Pune



Adv. Rahul Kothari

Advocate for the Respondent No. 5



BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH AT PUNE

ORIGINAL APPLICATION NO. ¹⁵²~~730~~/2024

Suo Moto case: News item titled "Untreated effluents cause widespread fish mortality at Velsao bay rivulet" appearing in O Herald dated 26.05.2024

Suo moto original application by the Hon'ble Tribunal

Vs.

Goa State Pollution Control Board & Ors. ... Respondents

AFFIDAVIT

Humble Affidavit in Reply of the Respondent No. 5 (Paradeep Phosphates Ltd.), having its registered office at: 405, 5th Floor, Bayan Bhavan Pandit Jawaharlal Nehru Marg, Bhubaneswar - 751 001, Odisha, India, and Goa factory/ office at: Zuarinagar Goa 403726 is as under:

I, Nilesh Dessai, age: 53 years, the Chief Manufacturing Officer and Unit Head of Goa Plant of the Respondent No. 5, having my office at Jai Kisaan

Bhavan, Zuarinagar, Goa 403726, am aware of the facts of the matter, and hereby state on solemn affirmation as under:

Introduction:

1. I state that I am aware of the facts of the matter, and have been authorised by the Respondent No. 5 to depose in the matter and provide this reply. I am presently working as Chief Manufacturing Officer and Unit Head of the plant located at Goa of the Respondent No. 5 and am holding an official and responsible position with the Respondent No. 5. The facts stated herein are based on my personal knowledge and the records maintained by the Respondent No. 5. I am, therefore Competent to depose to the statements in the present Affidavit.
2. I am aware of the news article dated 26 May 2024 published in O Herald – which is the basis for the Hon’ble Tribunal to take up this matter in a *suo-moto* manner. The article alleges that untreated effluent is being discharged into the Arabian Sea from the Respondent No. 5’s site/ factory as claimed by the traditional fisherman and the villagers of Velsao, Goa. For ease of reference of the Tribunal, the said article, as downloaded from the internet is annexed herewith at **Annexure 1**.
3. I am aware that on the basis of this news report, the Principal Bench of the Hon’ble Tribunal took up this matter, and accordingly passed



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order dated 5 July 2024 which is annexed herewith at **Annexure 2**. By way of this order, the Principal Bench of the Hon'ble Tribunal was inter alia pleased to transfer the matter to the Western Zone Bench of this Hon'ble Tribunal, and also issued notice to the authorities – being Respondent Nos. 1-4 in the present matter. In terms of the order, the matter was listed before this Bench (i.e. Western Zone Bench) of the Hon'ble Tribunal on 5 September 2024.

4. The Respondent No. 5 was served with notice in the matter on 30 September 2024. A copy of the order dated 5 September 2024 of the Hon'ble Tribunal is annexed herewith at **Annexure 3**.
5. I say that this being a suo-moto matter taken up by the Hon'ble Tribunal, this Respondent is unable to provide a paragraph wise reply to the allegations and averments. Therefore, by way of this affidavit, this Respondent seeks to respond to the allegations contained in the news article, as well as place on record the steps/actions taken by this Respondent as well as the regulatory authorities since the publication of the news article. This Respondent reserves the right to file an additional reply/ affidavit, if so required, in response to the report, reply, application or affidavit that may be filed by any of the Respondent Nos. 1-4 in the present matter.

6. This Respondent humbly submits that The Respondent No. 1 – GSPCB has filed before this Hon'ble Tribunal its affidavit dated 21 October 2024. In paragraph 11 of the said affidavit, the Respondent



No. 1 has found that *“During the Course of said inspection the unit was observed to be satisfactorily complying with the conditions as stipulated in the Consent to Operate order dated 14/06/2024 issued by the Board to the Unit.”*

7. Further, the Respondent No. 1 also observed in paragraph 13 that *“I say that, the pollution as found in the inspection is stands abated. The unit has also paid the EC of Rs. 12,37,500/- as also furnished Bank Guarantee to the fine of Rs. 25,00000/- for indemnifying further violation of Consent conditions.”*
8. In view of the above statements of the Respondent No. 1, this Respondent humbly submits that nothing further remains, and the issue stands closed. Based on this itself, the Hon’ble Tribunal may kindly dispose of the matter.
9. However, in deference with the directions of the Hon’ble Tribunal contained in its order dated 24 October 2024, this Respondent is filing its detailed response for the record.
10. I further say that in my respectful submission, there is no credible evidence on record to substantiate the claims that this Respondent’s factory has caused any environmental harm, leading to fish mortality.



Chronology of facts and documents:

11. Before addressing the specific allegations in the news article, I am setting out below a chronology of facts and events since 26 May 2024 (i.e. date of publication of the news article):

11.1. On the same day that the newspaper article was published (i.e. 26 May 2024), the Goa State Pollution Control Board (GSPCB) – the Respondent No. 1 herein conducted a site inspection at the site/ factory of the Respondent No. 5. As part of this site inspection, the officials of the Respondent No. 1 collected samples drawn from the rivulet, beach as well as puddle of stagnant water in a storm water drain beneath the product transfer gantry tower.

The inspection report (received by the Respondent No. 5 on 27May 2024) states that dead fish were found at locations near the rivulet. The garland storm water drains along the boundary of the unit were inspected and no water was found in the same. Surface run-off stains were observed outside the boundary of the Respondent No. 5's unit. The report also categorically mentioned that there was no discharge found of untreated effluent by the unit.

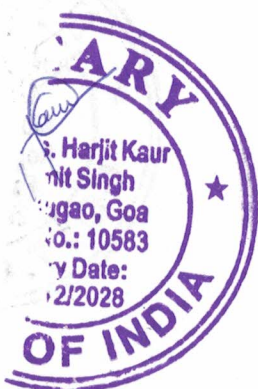
Annexed herewith at **Annexure 4** is a copy of the said inspection report of the Respondent No. 1.



- 11.2. By way of a letter dated 28 May 2024 addressed to the Respondent No. 1, the Respondent No. 5 provided their response to the inspection report on a point by point basis, as well as detailed the actions taken by the Respondent No. 5.

Annexed herewith at **Annexure 5** is a copy of the reply of the Respondent No. 5 to the inspection report.

The response by the Respondent No. 5 highlighted the design features of surface run-off management including the bunds at strategic locations in the garland drains of the storm water network, Culvert Pit Pumps recycling the run-off water into our holding ponds until full onset of monsoon; atypical pre-monsoon rains experienced before the event leading to contributory surface run-off into the creek/rivulet; existence of several other waste water streams joining the creek from other sources which needs to be investigated by the Respondent No. 1. The Respondent No. 5's unit also questioned the representativeness of the stagnant puddle of the water sample mentioned above in the response.. As for the visible stains of surface run-off outside the boundary of the Unit, the fact of natural weathering of laterite rocks which has experienced the storm water flow for over fifty years of operations of the company was highlighted. Further, the fact of the creek/rivulet being cut-off from the sea and stagnating



was mentioned. Immediate response was submitted to the Respondent No. 1.

- 11.3. Subsequently, on 1 June 2024, the Respondent No. 1 prepared an Environment Assessment Report with respect to the site visit of the Respondent No. 5. A copy of the report is annexed herewith at **Annexure 6**. This report suggested certain immediate, medium term and long term measures, which were acted upon by the Respondent No. 5, as necessary.
- 11.4. On 6 June 2024, the Respondent No. 1 issued a communication to the Respondent No. 5 scheduling a personal hearing on the matter on 11 June 2024 before the Member Secretary of the Respondent No. 1. A copy of the said communication dated 6 June 2024 is at **Annexure 7**.
- 11.5. On 8 June 2024, another case of fish mortality at the creek/rivulet mentioned in the media, in view of which, the Respondent No. 1 conducted another site inspection at the site of the Respondent No. 5. A copy of the site inspection report is annexed herewith at **Annexure 8**. The cause of the fish mortality in this case appears to be due to breaking of a bund created by Railways for double tracking purpose. The same was corroborated by the local villagers to representatives of the Respondent No. 5.



11.6. In terms of the communication dated 6 June 2024 – a personal hearing was held before the Member secretary of the Respondent No. 1 on 11 June 2024. This hearing was attended by representatives of the Respondent No. 5. The Respondent No. 1 gave the analysis of samples collected on 26 May 2024 as well as the analysis report of monthly monitoring of Dando Mollo Creek and Velsao Beach. The Respondent No. 1 Board during the personal hearing issued certain directions to the Respondent No. 5.

A copy of the Minutes of Meeting of the hearing is annexed herewith at **Annexure 9** which was received by the Respondent No. 5 on 13 June 2024.

11.7. On 14 June 2024, the Respondent No. 1 renewed the consent to operate of the Respondent No. 5 (which was applied for by the Respondent No. 5 on 28 October 2023). One of the conditions of the renewal was depositing a bank guarantee of Rs. 25 lakhs. A copy of the renewal is annexed herewith at **Annexure 10**.

11.8. On 19 June 2024, the Respondent No. 5 addressed a letter to the Respondent No. 1 providing their point wise responses, compliances and comments to directives in the Minutes of Meeting of the hearing before the Member Secretary of the Respondent No. 1.



Further, the Respondent No. 5, in its's response, pointed out the potential misinterpretation of the Creek water sample analysis (Monthly Monitoring of the Water Bodies by GSPCB) with respect to Potassium as well as TKN. Analysis of the samples drawn on 26 May 2024 indicates that all the parameters mentioned are within the specified limits for surface run off as well as for treated effluent. Furthermore, as one of the conclusions of the inspection report it is mentioned that 'there was no discharge found of untreated effluent by the unit'. As such, this shows that there was no violation by the Respondent No. 5 of the conditions of the consent to operate No.12/2018-PCB/58613/R000121 dated 18.09. 2019.

A copy of the letter (along with all annexures therewith) is annexed herewith at **Annexure 11 (collectively)**.

11.9. On 24 June 2024, the Respondent No. 5 submitted a bank guarantee of Rs. 25 lakhs to the Respondent No. 1 in compliance with the condition of the renewal of the consent to operate.

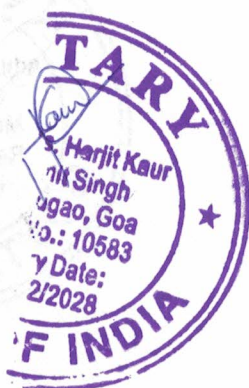
11.10. On February 17, 2023 – being much prior to the news article, the Respondent No. 5 had approached NEERI (National Environmental Engineering Research Institute) seeking its expertise to conduct a comprehensive study to know the existing status of the storm water management system and delineate appropriate recommendations for improvement in



the system for efficient management of storm water in compliance with the environmental norms. Basis this NEERI carried out detailed studies during April 2023 till May 2024. Ultimately, on 26 June 2024, NEERI issued its final report on the Comprehensive Study of Storm Water Management at the unit of the Respondent No. 5. A copy of the said report (along with the covering letter of even date) is at **Annexure 12**.

11.11. On 28 June 2024, the Respondent No. 5 issued a letter to the Respondent No. 1 sharing a copy of NEERI's report, being one of the required compliances as directed by the Respondent No. 1. A copy of the letter is at **Annexure 13**.

11.12. On 28 June 2024, the Respondent No. 1 issued a show cause notice to the Respondent No. 5, *inter alia* seeking to show cause as to why "an *Environmental Compensation of KS. 12.37,500/- (Rupees Twelve Lakhs Thirty Seven Thousand Five Hundred Only)* should not be paid by you to the Board under the *Polluter Pays Principal* for discharge of surface runoff water from the unit, which has resulted in remarkably higher values of Total kjeldahl Nitrogen (TKN) and Potassium in the samples collected at the Beach and the creek (adjacent to your unit), compared to samples collected during non-monsoon period." The show cause notice was received by the Respondent No. 5 on 4 July 2024. A copy of the show cause notice is at **Annexure 14**.



11.13. On 4 July 2024, the Respondent No. 5 issued a letter to the Respondent No. 1 acknowledging the receipt of the show cause notice and stating that they would respond to the same within the required time frame. A copy of the said letter is at **Annexure 15**.

11.14. On 5 July 2024, the Principal Bench of the Hon'ble Tribunal was pleased to take *suo-moto* cognisance of the matter. The order passed by the Principal Bench is already referred above.

11.15. On 5 July 2024, the Respondent No. 1 issued a letter to the Respondent No. 5. By way of this letter, the Respondent No. 1 informed this Respondent that after the inspection report dated 26 May 2024, the Respondent No. 1 decided to forfeit the bank guarantee amount and purportedly issued a letter to ICICI Bank – who had issued a Bank Guarantee on behalf of the Respondent No. 5. The Respondent No. 1 sought invocation of the bank guarantee. The Respondent No. 1 was informed that the bank guarantee had expired – and hence, wrote to Respondent No. 5 for making payment of Rs. 10 lakhs into the account of the Respondent No. 1 - in lieu of the bank guarantee. A copy of the letter dated 5 July 2024 is annexed herewith at **Annexure 16**.



11.16. On 10 July 2024, the Respondent No. 5 issued a detailed response to the show cause notice issued by the Respondent No. 1.

- (i) As for the alleged elevated level of Potassium, the Company clarified that the source of Potassium used in this Respondent's manufacturing process of complex fertilizers is Muriate of Potash (MOP) viz. KCl. In the event of a surface runoff from this Respondent's premises, the samples should also have indicated a rise in Chlorides, but the fact that Chloride levels have remained almost constant in the sample analysis of the previous months and the simultaneous significant increase in Sodium levels in the samples does not accurately reflect the situation, potentially misleading the interpretations. Further, the Ionic Balance of the Water Analysis is "off" by more than 50%, in the Board's monthly monitoring analysis of the creek. Additionally, the coordinates of the sampling locations are not known to this Respondent.
- (ii) Attention of the Respondent No. 1 was drawn to the fact that there were multiple efflux streams joining in the creek including agricultural runoff, sewage discharge, and natural decomposition of organic matter, which are common during the monsoon period. It was



also stated that the samples drawn from the stagnant puddle of water from the Storm Water Network would not be representative of the surface runoff and that the puddle had accumulated at a damaged portion of the trough of the storm water drain which has since been repaired.

- (iii) With respect to the event of fish mortality on 8 June 2024, it was submitted to the Respondent No. 1 that the same may be attributed to the fact that the Railway Authorities had broken a bund which was built for the purpose of Double Tracking. A similar incident occurred in Kerala on 20 May 2024, where the opening of the shutter of the Pathalam regulator-cum-bridge in the Periyar river following heavy rains resulted in large-scale fish mortality.
- (iv) The Respondent No. 1 was also appraised of the Immediate actions undertaken by the Respondent No. 5 including the construction of two storm water retention catchments with a combined capacity of 1300 m³ as outlined in the 'Comprehensive Study on Storm Water Management' carried out by NEERI. Excavation for the said retention pits is complete (settling ponds). Laying of the necessary DI pipes and provision of intermediate chambers is also complete. These ponds are situated at



the lowest elevations on the South-West and South-East ends of the factory premises. The inlet of these collection/settling tanks shall be equipped with silt traps, velocity breakers and appropriate filter media. The purpose of these two settling ponds will be to collect and divert the storm water/ surface run-off for the first 2 days of rainfall (as recommended by NEERI).

- (v) The Respondent No. 1 was requested to reconsider the assessment of the Environmental Compensation of Rs. 12,37,500/- as the incident may have been influenced by multiple external sources and cannot be solely attributable to the Respondent No. 5.

A copy of the response of the Respondent No. 5 to the show cause notice is at **Annexure 17**.

11.17. On the same day (10 July 2024), the Respondent No. 5 issued another letter to the Respondent no 1 – in response to the Respondent No. 1's letter for forfeiture of Rs. 10 lakhs. By way of this letter, the Respondent No. 5 requested the Respondent No. 1 to not forfeit the amount of Rs. 10 lakhs. The Respondent No. 5 also submitted that there was an ongoing show cause notice already issued – with a potential environmental compensation of Rs. 12.375 lakhs – and hence, the Respondent No. 5 requested that further liability not be



put upon the Respondent No. 5. A copy of the said letter is at **Annexure 18**.

11.18. On 12 July 2024, the Respondent No. 1 ordered an inspection to be carried out at the unit of the Respondent No. 5 on 13 July 2024. A copy of the said letter is at **Annexure 19**.

11.19. On 12 July 2024, the Respondent No. 5 issued a letter to the Respondent No. 1 by way of which the Respondent No. 5 made payment of Environmental Compensation of Rs. 12,37,500 in terms of the order of the Respondent No. 1. A copy of the said letter is at **Annexure 20**.

11.20. On 12 July 2024, the Respondent No. 5 issued another letter to the Respondent No. 1 confirming remittance of Rs. 10 lakhs as sought by the Respondent No. 1. A copy of the said letter is at **Annexure 21**.

Payment of environmental compensation completed:

12. In view of what is stated above, it is humbly submitted that the Respondent No. 5 has already been made liable for and has paid a total sum of Rs. 22,37,500 (i.e. Rs. 10,00,000 plus Rs. 12,37,500) to the Respondent No. 1. It is further submitted that since the news report, the Respondent No. 1 has conducted regular site inspections to verify the status of the compliances of the Respondent No. 5.

Steps and actions taken by the Respondent No. 5:



13. The Respondent No. 5 humbly submits that as on date, the Respondent No. 5 has taken all necessary steps to towards compliance with the directives and requirements of the Respondent No. 1 and the terms of the renewed consent to operate as issued by the Respondent No. 1. Those items that require continuous compliance/ monitoring – are also being complied with by the Respondent No. 5.
14. This Respondent has, from the date of this incident, undertaken significant initiatives to further enhance its environmental management practices. This includes the erection of temporary sheds over holding ponds, implementation of a comprehensive housekeeping plan, construction of stormwater retention catchments, and initiation of long-term engineering studies to further improve waste management systems. These measures reflect the Respondent No. 5's commitment to responsible environmental practices and compliance with regulatory requirements.
15. With respect to the report issued by NEERI, the Respondent No. 5 has taken the following steps and actions:

- (i) Construction has commenced on two catchment areas (settling ponds) to manage storm water from Zones vulnerable to contamination, as outlined in the report. These ponds are situated at the lowest elevations on the South-West and South-East ends of the factory premises. The purpose of these two



settling ponds will be to collect and divert the storm water/ surface run-off for the first 2 days of rainfall. Accordingly, the volume of the collection and settling tank with the **retention time of 2 days** works out to be about 1280 m³, say **1300 m³**. The inlet of these collection/settling tanks shall be equipped with silt traps, velocity breakers and appropriate filter media. Pit construction, pipe laying, connecting drain constructions are completed.

- (ii) The roofs and sheds in the zones vulnerable to contamination areas have been inspected and repaired. Open areas in the plants, which are prone to rainwater contamination, are covered with temporary sheds. For long-term protection, we have initiated plans to construct permanent engineered structures in these areas.
- (iii) An automated condensate recovery system, equipped with pumps and a dedicated level control, has been installed and is now operational in the NPK A plant.
- (iv) The trenches in the DG area have been thoroughly cleaned and cleared of all debris. A contract has been established to ensure the regular cleaning and upkeep of these drains.
- (v) We commissioned a comprehensive study of the Storm Water Drains (SWD) and Process Water Drains (PWD) by a qualified third party for the segregation of SWD's and PWD's



so as to avoid any possibility of cross contamination of the two streams. Presently study is under process. Following the study, if required and recommended to us, we will engineer and modify the process water drain network to convert the existing open drains into closed conduit systems.

- (vi) We have identified and repaired damaged sections of the storm water network. Further, we will undertake the engineering of the complete revamp of the storm water network, which will be implemented by end of March 2025.
- (vii) Focussed and sustained housekeeping, especially in zones vulnerable to contamination are already initiated through a new contract.
- (viii) To prevent potential contamination from the Auto Shop, this facility is included in the study for engineered covering structures.

Background and information about the Respondent No. 5:

16. I state that the Respondent No. 5 is a leading company in India's phosphatic fertilizer industry, with a total production capacity of 3 million metric tonnes (MT), including 2.6 million MT of phosphates and 0.4 million MT of urea. Its two manufacturing units in Paradeep, Odisha (1.8 million MT), and Zuarinagar, Goa (1.2 million MT), produce a wide range of fertilizers, including DAP and various NPK



grades (N-10, N-12, N-14, N-19, N-20, N-28), as well as urea. The Respondent No. 5 caters to over 9 million farmers through 70,000 retail points across 15 Indian states and supplies industrial products such as gypsum, HFSA, sulphuric acid, and ammonia.

17. For the Respondent No. 5, ESG (environmental, social and governance) is an embedded part of its growth journey. The Respondent No. 5 adheres to global standards, including the GRI, SASB, and UN-SDGs, and annually publishes both ESG and BRSR reports. It is actively working to reduce its carbon footprint across Scope 1, 2, and 3 emissions. In 2023, the Respondent No. 5 made its debut on the S&P Dow Jones Sustainability Index (DJSI) The Respondent No. 5 has scored 51 in the ESG rating.
18. Founded in 1981 as a joint venture between the Government of India (GoI) and the Republic of Nauru, the Respondent No. 5 became a public sector entity in 1993. In 2002, GoI divested nearly 80% of its stake to Zuari Maroc Phosphates Pvt. Ltd. (ZMPPL), a joint venture between Dr. K K Birla's Zuari Group and Morocco's OCP Group. Following its IPO in May 2022, the Respondent No. 5 transitioned into a private company, with GoI selling its residual 19.55% stake, and ZMPPL becoming the majority owner with 56.08 % stake.

The Respondent No. 5 has a strong historical compliance record with environmental regulations. Environment quality and pollution control are effectively managed through the implementation of adequate pollution control measures, monitoring systems and



treatment plants for effluent and air emissions. This Respondent's commitment to environmental stewardship is evidenced by its ISO 14001 certification and successful completion of various third-party audits. This Respondent has consistently adhered to the environmental norms and conditions required by the state authorities from time to time, consistently and dutifully.

20. This Respondent has established a modern and sophisticated monitoring and pollution control laboratory, supported by a dedicated team within the laboratory and environmental department who oversee air emissions and manage the effluent treatment facility. The Respondent operates under a comprehensive recycling processes thereby achieving Zero Liquid Discharge. This Respondent also monitors ambient air quality in and around the factory to assess the environmental impacts of effluents and have installed four monitoring stations in its vicinity. The Respondent No. 5 is having contract with MoEFCC authorized laboratory for environmental sampling and analysis such as ambient air sampling, stack emission sampling and water analysis. Sampling is done at a set frequency as per the CTO condition and submitted to the Respondent No. 1(GSPCB).

21. The Respondent No. 5 has installed continuous stack emission monitoring system (CEMS) for Reformer stack of Ammonia plant for monitoring NO_x, DG stack for monitoring Particulate Matter and Fumes stack of NPK-A Plant & NPK-B stack for monitoring of



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Ammonia parameter. The data from Reformer stack, DG stack, NPK-A Fume stack and NPK-B stack has been linked to the GSPCB and CPCB server.

22. It is further humbly submitted that Continuous Ambient Air Quality Monitoring Station (CAAQMS) is present that continuously monitors PM10, PM2.5, NH3, SO2 and NO2. The data from the CAAQMS has been linked to the GSPCB server.

Response to the news article:

23. With this background, I will now set out the response of the Respondent No. 1 specifically to the news article which is subject matter of these proceedings.
24. The news article primarily claims that there has been discharge of untreated industrial effluents from the site of the Respondent No. 5, which, the article alleges, is the root cause of the issue leading to fish mortality at Velsao bay. The article thereafter goes on to discuss about the potential impact of the fish mortality on economic loss and loss of livelihood of villages being from OBC and ST communities.
25. I state that as described in the earlier paragraphs, the Respondent No. 5 has a working effluent treatment plant. The Respondent No. 5 continues to maintain the Zero Liquid Discharge status. The final effluent discharge pipeline is being continuously monitored by means of provisions of a camera and a flow meter. The Monitoring



is done on a “Real Time” basis as these are hooked up to the CPCB and GSPCB server/system.

26. The Respondent No. 5 does not discharge any effluents into the sea or into the rivulet referred to in the newspaper article. Further, it is humbly submitted that media reports, while valuable for raising awareness, do not replace the need for comprehensive scientific analysis and evidence-based conclusions.
27. The Respondent No. 1 has conducted regular site visits. The Respondent No. 5 has taken the required steps, measures and actions as per guidelines and requirements of the Respondent No. 1. The Respondent No. 5 has even borne and paid environmental compensation as directed by the Respondent No. 1. It is humbly submitted there is no data or scientific study to substantiate the claims that the untreated effluents from our facility are the sole cause of fish mortality at Velsao Bay Rivulet.
28. It is further pertinent to note that fish mortality incidents observed are not confined to the vicinity of the facility of the Respondent No. 5. Numerous reports of similar occurrences have emerged across various locations, indicating a broader environmental issue that warrants investigation beyond the operations of the Respondent No. 5. It is humbly submitted that mere proximity of the incident to the site of the Respondent No. 5 does not inherently establish a link between the Respondent No. 5 and the incidences – and hence, even



liability ought not to be assigned for this upon the Respondent No. 5.

29. It is humbly submitted that the allegations of untreated effluent discharge should also consider other potential sources of pollution affecting Velsao Bay and the rivulet. Environmental degradation often results from various factors, including agricultural runoff, sewage discharge from nearby settlements, and natural events. It is humbly submitted that the source of this pollution is not from the site of Respondent No. 5.
30. It is respectfully submitted that there is no established nexus between the fish mortality resulting from anything to do with the Respondent No. 5 – and hence, there ought not to be any liability upon the Respondent No. 5 in this regard. This Respondent reserves its right to respond to any specific allegations, averments and assertions that may be made in the reply/ affidavit of the Respondent No. 1 or any other Respondents in these proceedings.

Actions and steps taken by Respondent No. 1 and compliances by Respondent No. 5

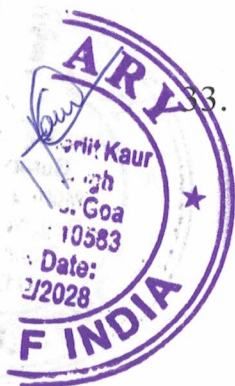
31. It is further submitted that the inspections were conducted by the Respondent No. 1 at the site and the Factory premises of this Respondent aiming to verify the issues related to Fish Mortality and the following were its findings:



- (i) In the Inspection report dated 26 May 2024, the Respondent No. 1 concluded that the surface run off was observed outside the boundary of the Unit; however, no discharge of untreated effluent was found from this Respondent's unit, indicating compliance with environmental standards.
- (ii) The Second Inspection carried out on 8 June 2024 revealed that in the Surface runoff water, milky white in appearance was observed in the garland storm water drains of the Unit and the same was flowing outside the Premises of the unit and further no discharge of untreated effluents was observed from the ETP of the unit.

32. Thereafter, during the personal hearing before the Member Secretary of the Respondent No. 1 held on 11 June 2024, the representatives of the Respondent No. 5 were informed that the perusal of reports of the samples collected during the two inspections indicated violation of the conditions mentioned in the consent to operate and observed a high probability of environmental pollution due to discharge from the premises of this Respondent's unit. This Respondent was further directed to comply with certain directives and to provide a compliance report within 7 days thereof, which was submitted by this Respondent on 19 June 2024.

33. Despite this, the Respondent No. 1 chose to issue a show cause notice to the Respondent No. 5 based on the elevated Parameters of the Total kjeldahl Nitrogen (TKN) and potassium found in the



samples collected from the river/creek, beach water and from stagnant puddle under the urea loading gantry compared to the samples collected during non-monsoon period. The reports of the Second analysis indicated similar results and further indicated that sample of the storm water drain within the unit also indicated high concentrations of Nitrogen and phosphorous.

34. This Respondent was required to show cause as to why an Environmental compensation of Rs. 12,37,500/- (Rupees twelve lakhs thirty seven thousand five hundred only) should not be paid under the polluters pay principal for discharge of surface run off water from the unit, which has resulted in higher values of Total kjeldhal nitrogen (TKN) and Potassium in the samples collected at the beach and the creek, compared to samples collected during non-monsoon period.
35. This Respondent provided clarifications regarding the elevated levels of TKN and potassium, emphasizing the need for a comprehensive analysis of all potential contributors to accurately assess the situation and further requested the Respondent No. 1 to reconsider the said environmental compensation being imposed by it.
36. The Respondent No. 1 subsequently issued directions under Section 31 (A) read with section 21 of the Air (prevention and Control of Pollution) Act,1981 and Section 33 (A) of the Water (prevention and Control of Pollution) Act,1974 concluding that:



“As per inspection carried out by the Board on 26/05/2024 and 8/06/2024, poor house keeping at urea loading gantry had resulted in traces nitrogen and phosphates in storm garland drains of your unit. Subsequently, in your response referred above, you have submitted that premonsoon showers could have potentially washed off dust, tyre and foot residue from your unit, further indicating poor housekeeping within the premises of the Unit.”

37. Based on this finding, the Respondent No. 1 concluded that the reply submitted by Respondent was unsatisfactory and directed the Respondent to pay the abovementioned compensation, which was paid by the Respondent under protest.

Concluding submissions:

38. It is respectfully submitted that that there is no substantial evidence on record to support the claims of environmental harm caused by this Respondent’s factory concerning fish mortality, and there is no nexus between the alleged cause and the alleged effect.

39. This Respondent respectfully submits that the allegations made against it are unfounded. The unit is committed to maintaining transparent and responsible operations and has always been open to discussions or collaborations that may enhance the Respondent No. 5’s environmental performance.



40. Being that as it may, the Respondent No. 5 has already been made liable, and has paid a total sum of Rs. 22,37,500, being Rs. 10,00,000 towards the Respondent No. 1 forfeiting the bank guarantee amount with respect to the earlier consent to operate, and Rs. 12,37,500 being paid to the Respondent No. 1 towards environmental compensation in view of the findings arrived at by the Respondent No. 1 pursuant to the show cause notice.
41. This Respondent remains committed to compliance of all applicable environmental norms and requirements.
42. In view of what is stated above, the Respondent No. 5 humbly prays that this matter may kindly be considered as closed, and the Original Application may kindly be disposed of.



Whatever is stated above is to the best of my knowledge, information and belief and based on documents available with the Respondent No. 5, and I believe the same to be true, and in witness whereof I have signed on this 11th day of November 2024 at ^{Vasco-da-Gama} ~~Zuarinagar~~, Goa.



Nilesh Dessai

Deponent

Mr. Nilesh Dessai

Chief Manufacturing Officer and Unit Head of Goa Plant,

Paradeep Phosphates Limited

Respondent No. 5

Rahul

Adv. Rahul Kothari

Advocate for the Respondent No. 5

Solemnly affirmed before me by

Nilesh Dessai

Who is identified to me by *PAN*

Card No: - A B S P D 0 5 2 3 C

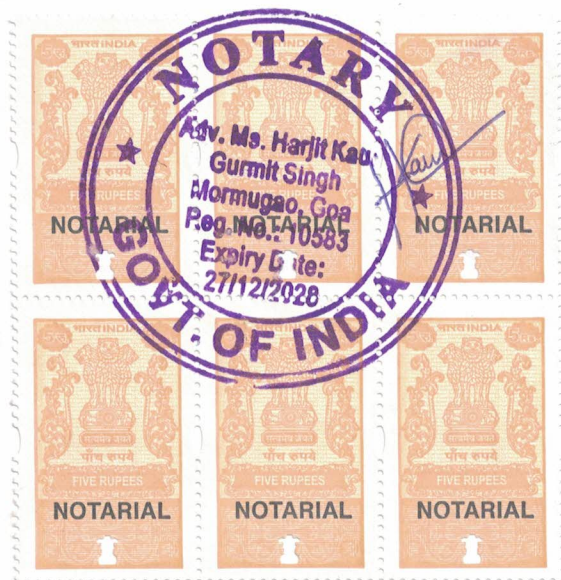
Who is personally know to me

this *11th* day of *November* 20 *24*

Reg. No. *4788* | 20 *24*

H Kaur

Adv. Ms. HARJIT KAUR GURMIT SINGH
NOTARY
(Govt. Of India)
Shop No. 26, Ground Floor
Karma Paes Avenue,
Vasco-da-Gama, Goa.



Untreated effluents cause widespread fish mortality at Velsao bay, rivulet

Fishing community blames Paradeep Phosphates Ltd for discharging untreated effluents into the Arabian Sea; calls on GSPCB to intervene and take stringent action against violators; company says its entire waste is connected to the effluent treatment plant

FREDDY FERNANDES
freddy@herald-goa.com

VELSAO: Expressing fear over the widespread fish mortality along the Pale-Velsao shore, traditional fishermen and residents of Velsao have accused Paradeep Phosphates Ltd (formerly Zuari Agro Chemicals Ltd) of discharging untreated industrial effluents into the Arabian Sea.

Claiming that this pollution is allegedly the root cause behind the fish mortality, the traditional Goan fishing community, which is solely dependent on fishing, has requested the Goa State Pollution Control Board (GSPCB) to intervene and take stringent action against the violators.

Over the past two days, the bay as well as the brackish water rivulet known as Poiem at Dando, Velsao, have witnessed a significant number of dead fish.

The impact of this ecological disaster extends beyond just economic loss. Fresh fish, a local delicacy and a vital source of sustenance, is now in short supply, affecting not only the livelihoods of the fishing community, but also the large village population, particularly those from the



HERALD PIC

Dead fish was found washed ashore at Velsao bay on Saturday

THE FISHERMEN'S DEMANDS

▶▶ The GSPCB should swiftly intervene by visiting the affected areas, collecting water and fish samples and make their findings public

▶▶ The GSPCB should enforce stringent measures on the alleged violator to prevent future contamination of the Arabian Sea and ensure that such violations are not repeated

OBC & ST communities.

The community elders lament that such environmental transgressions have become all too common in recent years.

Goenche Ramponkaranchi Ekvott (GRE) and Goencho Ekvott (GE), along with allied groups, have called for urgent action from the authorities.

Agnelo Rodrigues, President of Goenchea Ramponkaranchi Ekvott (GRE), stated, "Every year they release the effluents. The waste is accumulated near their wall inside the plant. When it rains, the effluent drains through the pipes into the rivulet and the sea. They have laid pipes for the effluents

to seep into the sea, which has been taking place for many years and this has resulted in fish mortality. We have filed many complaints. GSPCB officials to seep into the sea, which has been taking place for many years and this has resulted in fish mortality. We have filed many complaints. GSPCB officials

Recalling the pollution caused by the erstwhile Zuari Agro Chemical Limited, Rodrigues said, "The factory was brought in by the Maharashtrawadi Gomantak Party. We had started the movement under Matanhay Saldanha in the

1973. They had built a huge tank and were releasing the effluent into that tank. That started leaking and the groundwater and all wells were polluted. After that they had promised to supply clean water to the entire village by laying a pipeline. Gradually, part by part, over a period of time, they removed the pipeline. It now exists only at a few places."

Fisherman Agnelo Fernandes said, "Lots of fish have died. Every year Zuari (the factory) causes a loss to us. We make a living based on fishing. We don't even get fish to eat. They have been harassing us for so many years, but no one is taking action. We request the authorities to take immediate action in this matter."

Joaquim Fernandes, who ekes out a living on fishing, said, "By releasing effluents, Zuari (the factory) has destroyed the fish. Now we do not get to catch any fish. We request the Chief Minister to take action. When the sea is rough, we fish in the rivulet at Dando. Now, we don't get any fish in the rivulet since it is dead due to discharge of effluents."

Cont on Pg 13 >>

Item No. 03

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

Original Application No. 730/2024

News item titled "Untreated effluents cause widespread fish mortality at Velsao bay rivulet" appearing in O Herald dated 26.05.2024

Date of hearing: 05.07.2024

**CORAM: HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON
HON'BLE MR. JUSTICE ARUN KUMAR TYAGI, JUDICIAL MEMBER
HON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER**

ORDER

1. This Original Application is registered *suo-motu* on the basis of the news item titled "Untreated effluents cause widespread fish mortality at Velsao bay, rivulet" appearing in O Herald dated 26.05.2024.

2. The matter relates to widespread fish mortality at Velsao Bay and the brackish rivulet in Goa, with the fishing community claiming the reason for discharge of untreated effluents into the Arabian Sea. As per the article, the alleged cause of the fish mortality is the discharge of untreated industrial effluents from Paradeep Phosphates Ltd. into the Arabian Sea and a nearby rivulet resulting in widespread fish mortality.

3. The news item highlights that the impact of this ecological disaster extends beyond just economic loss. Fresh fish, a local delicacy and a vital source of sustenance, is now in short supply, affecting not only the livelihoods of the fishing community, but also the large village population, who rely on fishing. The article further alleges that every year effluents are released into the water. The waste is accumulated near the factory wall inside the plant. When it rains, the effluent drains through the pipes into the rivulet and the sea. Pipes have been laid for the effluents to seep

into the sea, which has been taking place for many years and this has resulted in fish mortality.

4. As per the news item, fishermen have suffered losses in crores of rupees. The Poiem (rivulet), which was brimming with fish, now has dead fish. There are neither fish nor crabs in this river. It has led to the contamination of the river, turning it into a dead water body devoid of any living organisms like fish and crabs. There is also a potential health risk for migrants who may consume the dead fish, unaware of the implications of the pollution.

5. The above news item indicates violation of the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Environment Protection Act, 1986, and the Solid Waste Management Rules, 2016

6. The news item raises substantial issue relating to compliance of the environmental norms and implementation of the provisions of scheduled enactment.

7. Power of the Tribunal to take up the matter *suo-motu* has been recognized by the Hon'ble Supreme Court in the matter of "*Municipal Corporation of Greater Mumbai vs. Ankita Sinha & Ors.*" reported in 2021 SCC Online SC 897.

8. Hence, we implead the following as respondents in this matter:

- i. Goa State Pollution Control Board, Through its Member Secretary
Near Pilerne Industrial Estate, Opposite Saligao Seminary,
Saligao – Bardez, Goa – 403511
- ii. Central Pollution Control Board, Through its Member Secretary
Parivesh Bhawan, East Arjun Nagar, Delhi-110032
- iii. Ministry of Environment, Forest and Climate Change, Regional
Office

Kendriya Sadan, 4th Floor, F Wings, 17th Main Road,
Koramangala II Block, Bangalore – 560034

iv. District Magistrate, South Goa

Collectorate of South Goa District, Matanhy Saldanha
Administrative Complex, Near KTC Bus Stand, Margao, South
Goa District, Goa – 403601

9. Let notice be issued to the above Respondents for filing their response before the Western Zonal Bench of the Tribunal.

10. Since the matter relates to the Western Zonal Bench, Pune, therefore, OA is transferred to the Western Zonal Bench for appropriate further action. Let the original record of this OA be transferred to the Western Zonal Bench, Pune.

11. List before Western Zonal Bench at Pune on 05.09.2024.

Prakash Shrivastava, CP

Arun Kumar Tyagi, JM

Dr. A. Senthil Vel, EM

July 05, 2024
O.A. No. 730/2024
HB

Item No.2

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH, PUNE**

THROUGH PHYSICAL HEARING (WITH HYBRID OPTION)

**Original Application No.152/2024(WZ)
Earlier Original Application No.730/2024(PB)**

**NEWS ITEM TITLED “UNTREATED EFFLUENTS CAUSE
WIDESPREAD FISH MORTALITY AT VELSÃO BAY RIVULET”
APPEARING IN O HERALD DATED 26.05.2024.**

Date of hearing: 05.09.2024

**CORAM: HON’BLE MR. JUSTICE DINESH KUMAR SINGH, JUDICIAL MEMBER
HON’BLE DR. VIJAY KULKARNI, EXPERT MEMBER**

Respondents : Mr. Manish Salkar, Advocate for R-1/GSPCB
Mr. Aniruddha Kulkarni, Advocate for R-2/CPCB

ORDER

1. This Original Application is being considered by us for the first time today after having been received by transfer from the Principal Bench of this Tribunal.
2. The issue involved in this matter relates to widespread fish mortality at Velsao Bay and the brackish rivulet in Goa, wherein it is alleged that untreated effluent is being discharged into the Arabian Sea from the Paradeep Phosphates Ltd.
3. In compliance with the above-mentioned order, an inspection was conducted by the respondent No.1-GSPCB on 08.06.2024, wherein following observations and conclusions were made:-

Goa State Pollution Control board
Saligao

43. Additional observations:

The inspecting team of officials reached the Velsao Beach site and the following observations were made:

- i. Schools of dead fish were washed ashore and scattered all over the beach.
- ii. Several types of fish were found dead. (pictures of the same have been attached below).
- iii. At the time of sample collection at the creek the team observed a storm water drain from Paradeep Phosphate Ltd. Leading to the beach and upon closer inspection it was observed that the colour of the water flowing in the storm water drain was slightly milky. Further, sediments of this white substance were also observed on the wall of the Storm water drain. (Photographs have been attached below)
- iv. Accordingly, a sample was taken from the discharge point of this storm water drain, which is the creek of the River, i.e., Sample 1 – mouth of creek – (Coordinates: 15.370699, 73.872664), It may be noted that smell of Ammonia was observed at the time of sampling.
- v. Subsequently, samples were also taken from the following locations on the beach site, as follows:

Sample Number	Location	Co-ordinates
2	Downstream of rivulet	15.370155, 73.873505
3	Upstream of rivulet	15.370862, 73.871207
4	Beach water Sample	15.370475, 73.870776

- vi. The Team then proceeded to the premises of M/s Paradeep Phosphates Limited to inspect and identify any possible discharge from their premises.
- vii. The garland drains/storm water drains along the boundary of the Unit were inspected and there were traces of similar milky white water flowing in the storm water garland drains near the Urea loading gantry of the Unit. There were white sediments settled on the walls of the drains similar to that observed at the storm water drain near the creek. (Photographs attached below)

Goa State Pollution Control board
Saligao

- viii. Accordingly, a final sample was collected from this drain that leads to the outside the Unit premises, i.e., Sample 5 – Storm water drain of PPL – (Coordinates: 15.372613, 73.870969)
- ix. The team also inspected the ETP of the unit and There were no pipelines or any other possible means observed for discharge of Untreated Effluent.
- x. The unit representative informed that a Culvert catchment pit has been built by the Unit to gather the surface runoff water and the said pit has two water submersible pumps, to pump the water back to the holding pond within the plant premises.
- xi. Traces of sedimentation caused due to Surface runoff water from the unit can be clearly seen on google images. (refer image attached below)

Goa State Pollution Control board
Saligao

Conclusion:

- Consent status of the Unit: Consent to Operate and Authorization No. 12/2018-PCB/58613/R000121 dated 18/09/2019 was valid up to 31/12/2023 & The Unit has applied for renewal of CCA on OCMMS vide application Number 1948660 dated 28/10/2023
- Surface runoff water, milky white in appearance was observed in the garland storm water drains of the Unit and the same was flowing outside the Premises of the unit.
- No discharge of untreated effluents was observed from the ETP of the unit.
- Sample Reports awaited.

4. Thereafter, the learned counsel for respondent No.1- GSPCB has submitted that another inspection was conducted in the month of August 2024 for ensuring as to whether several directions, which were issued to the said company, had been complied with or not. EDC had also been imposed upon the said company. All these details have to be brought on record. It is also stated by him that continuous monitoring is being done by the answering respondent. Therefore, he prays for two weeks' time to be allowed to file a detailed reply in this matter. We allow the said time.

5. It is further submitted by the learned counsel for respondent No.1 that there were also several violations found and some penalty was also imposed upon the Paradeep Phosphates Ltd., which is not a party before us. Therefore, it would be appropriate for us to implead the said company as one of the respondents in the present Original Application. We direct the Registry to implead Paradeep Phosphates Ltd. as respondent No.5 in the present Original Application and issue notice to it, returnable within four weeks.

6. Newly implead respondent shall file its reply affidavit within four weeks.

7. Rest of the respondents have already been served as per the service report submitted by the Registry dated 31.07.2024.

8. From the side of respondent No.2- CPCB, learned counsel Mr. Aniruddha Kulkarni has appeared before us.

9. None has appeared from the side of respondent No.3- MoEF&CC and respondent No.4- District Magistrate, South Goa.

Put up this matter for further consideration on 24.10.2024

Dinesh Kumar Singh, JM

Dr. Vijay Kulkarni, EM

September 05, 2024

Original Application No.152/2024(WZ)

Earlier Original Application No.730/2024(PB)

P.Kr

INSPECTION REPORT

Sub: - Untreated effluents cause widespread fish mortality at velsao bay, rivulet

As directed, the undersigned official of the Board along with Smt. Milagrina Colaco(JLA) inspected Velsao Beach and M/s Paradeep Phosphates Limited located at Survey No. 110-252, Zuarinagar, Sancoale, Mormugao-Goa (hereafter referred to as “Unit”) on 26/05/2024, with regards to the above-mentioned subject.

1. **Name, address & contact no. of complainant:** Press conference given by Goenche Ramponkarancho Ekvott (GRE) and Goenchò Ekvott (GE) along with allied groups and newspaper article on page 1 of **O Herald**o dated **26/05/2024**
2. **Nature of Complaint:** -
 - a) **Noise pollution:** - No
 - b) **Waste Water disposal:** - Yes
 - c) **Air emission:** - No
 - d) **Solid waste disposal:** - No
 - e) **Any other:** -
3. **Whether any previous complaint received, if yes, details:** -
4. **Whether any show cause notice/directions/letter for corrective if yes, provide details:** -
5. **Name and address industry/unit against whom complaint is filed:**
M/s Paradeep Phosphates Limited located at Survey No. 110-252, Zuarinagar, Sancoale, Mormugao-Goa
6. **Product manufactured:** -

Sr. No.	Product	Capacity
A.	Main Products	
1.	Urea	495000 MTPA
2.	Complex Fertilizers produced in NPK-A Plant	500000 MTPA

3.	Complex Fertilizers produced in NPK-B Plant	500000 MTPA
B.	By- Products	
1.	Carbon dioxide	344000 MTPA
C.	Intermediate Products	
1.	Ammonia	346500 MTPA

Sr. No.	Description	Capacity
1	Power for Captive consumption from Diesel Generator	6 MW
2	Power for Captive consumption from Steam Turbine Generator	7.5MW

7. **Quantity of production:** - mentioned above

8. **Raw Material:** -

Sr. No.	Raw Material	Source
1	Natural Gas	GAIL
2	LSHS (P)	HPCL
3	Phosphoric Acid	Imported
4	Muriate of Potash	Imported
5	Ammonia for NPK	Imported
6	Sulphuric Acid	Local (within India)
7	Power	Captive + Grid

9. **Machine/equipment installed:** - Urea Plant, NPK-A & NPK-B plants

10. **Approximate production in last 2 months (based on receipts of purchase of raw materials orders and payments received):** -

11. **Manpower requirement:** -

12. **Status of operation of unit:** - In operation during the inspection

13. **Site description and schematic sketch of site:** -



14. Type of area: - Sancoale Industrial Area
15. Distance of nearest residence/school/hospital/any prominent structure: Next to GAIL(India) Limited
16. Distance of water body (Specify which if any): - The Unit's Railway loading point is located approximately 100 m away from rivulet and the Unit is located approximately 250m away from the rivulet
17. Noise Pollution Control measures adopted: -
18. Water consumption (meter reading of previous water supply bills): -
19. Waste water generation: -
20. Disposal method: - Effluent Treatment Plant
21. Capacity of septic tank/soak pit/sewage treatment plant/effluent treatment plant: - 550 KLD
22. Whether capacity sufficient (Yes/No): -
23. Electrical consumption: - Captive + Grid
24. Solid waste generated: -

- a) Type: -
 b) Quantity: -
 c) Disposal: -

25. Hazardous Waste: -

26. Permission from:

- a) Local body: - Yes
 b) **Goa State Pollution Control Board:** - Consent to Operate and Authorization No. 12/2018-PCB/58613/R000121 dated 18/09/2019 was valid up to 31/12/2023
 The Unit has applied for renewal of CCA on OCMMS vide application Number 1948660 dated 28/10/2023

27. Noise levels recorded: -

28. DG set capacity: - 8100 KVA

29. Boiler capacity: -

Sr.No.	Location of Boiler	Capacity	No. of Installations
1	Boiler (Utility)	70 MT/hr	3
2	Boiler (MP)	5 MT/hr	1

30. Oven capacity: -

31. Furnace capacity: -

32. Rotary kiln: -

33. Dust suppression methods: -

34. In case of Induction furnace: -

35. In case of sponge iron units: -

36. Is ambient monitoring carried out (Yes/No): - Yes

37. Are reports submitted as per consent conditions (Yes/No): - Yes

38. Is environmental statement submitted (Yes/No): - Yes

39. Is water cess submitted (Yes/No): -

40. Are all consent conditions complied with (Yes/No): - Partially complied

41. Is Bank Guarantee submitted (Yes/No): -

42. If yes, has the unit complied, give details: -

43. Additional observations:

- The Velsao beach was inspected with regards to the above-mentioned subject and the observations are made as follows: -
 - ❖ Dead fish was found at numerous locations near the rivulet.

- ❖ Water samples were taken at 3 locations (may refer Image 1 below) as mentioned below: -

Sample Number	Location	Co-ordinates
1	Beach water sample	15.370616, 73.869613
2	Upstream of rivulet	15.370879, 73.871593
3	Downstream of rivulet	15.370223, 73.873623

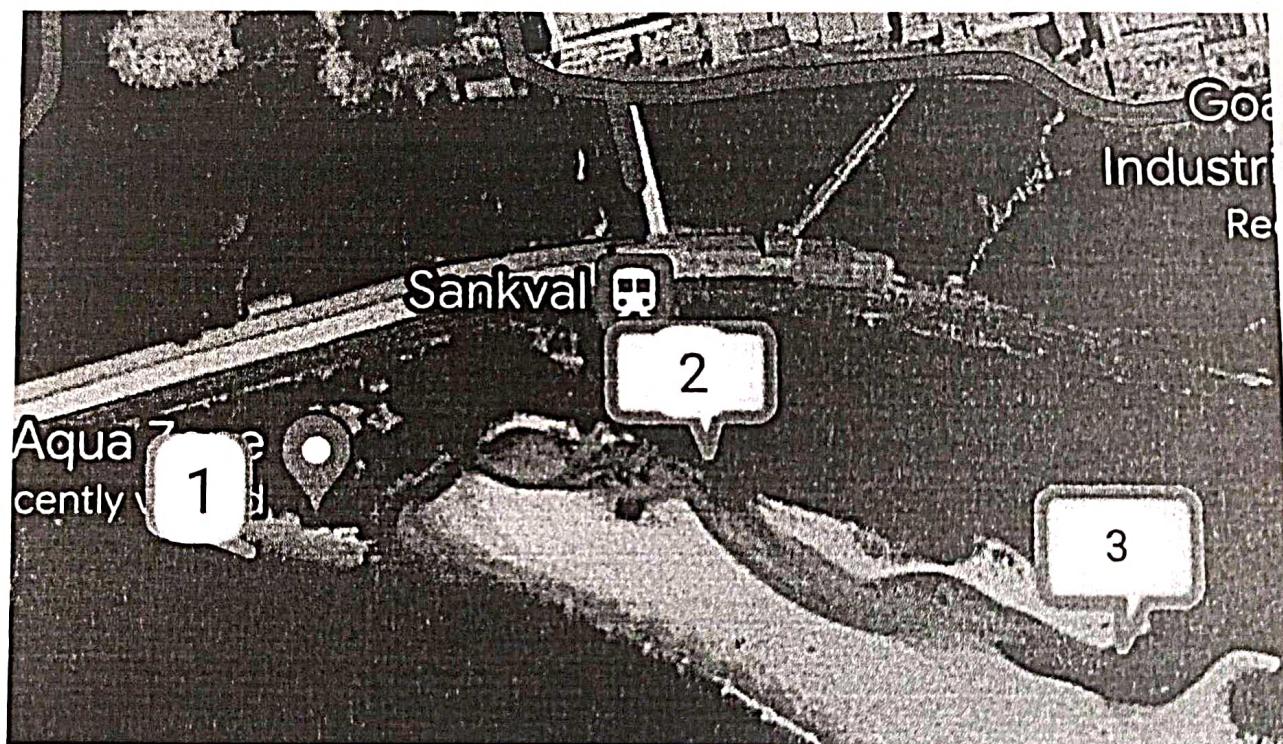


Image 1: Locations of water sample collection



Image 2: Onsite photograph of the Dead Fish found close to the rivulet



Image 3: Onsite photograph of the Dead Fish found close to the rivulet

- Premises of M/s Paradeep Phosphates Limited was inspected for possible discharge and the observations made are as follows: -

The garland drains/storm water drains along the boundary of the Unit were inspected and there was no water found in the drains.

There were no pipelines or any other possible means observed for discharge of Untreated Effluent.

Treated water sample from the ETP was collected for analysis.

Surface runoff stains was observed outside the boundary of the Unit (May refer images below). However, a Culvert catchment pit has been built by the Unit to gather the runoff water and the said pit has two water submissibile pumps to pump the water back to the holding pond within the plant premises.

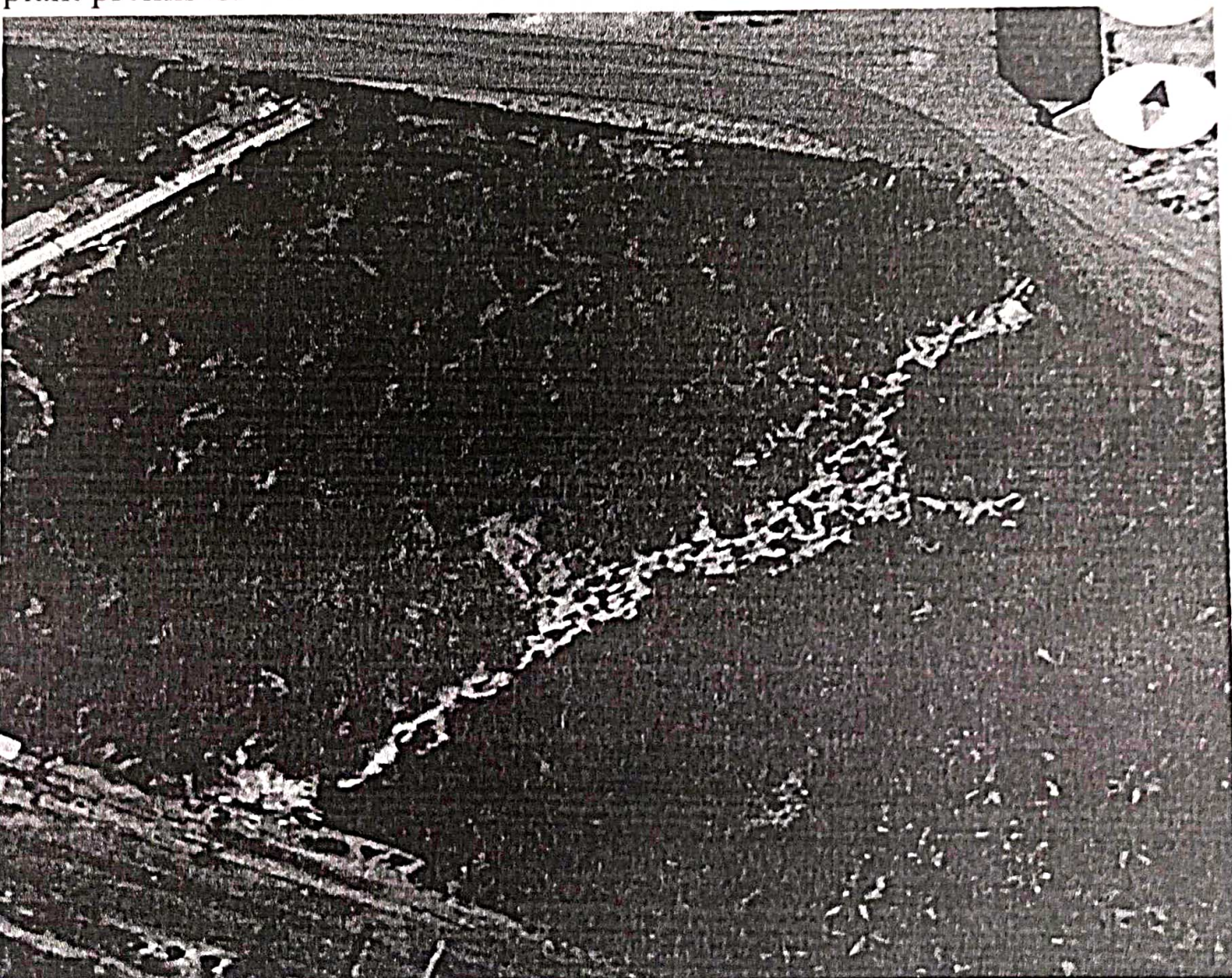


Image 4: Google Earth image of surface runoff traces



Image 5 : Onsite photograph of surface runoff traces

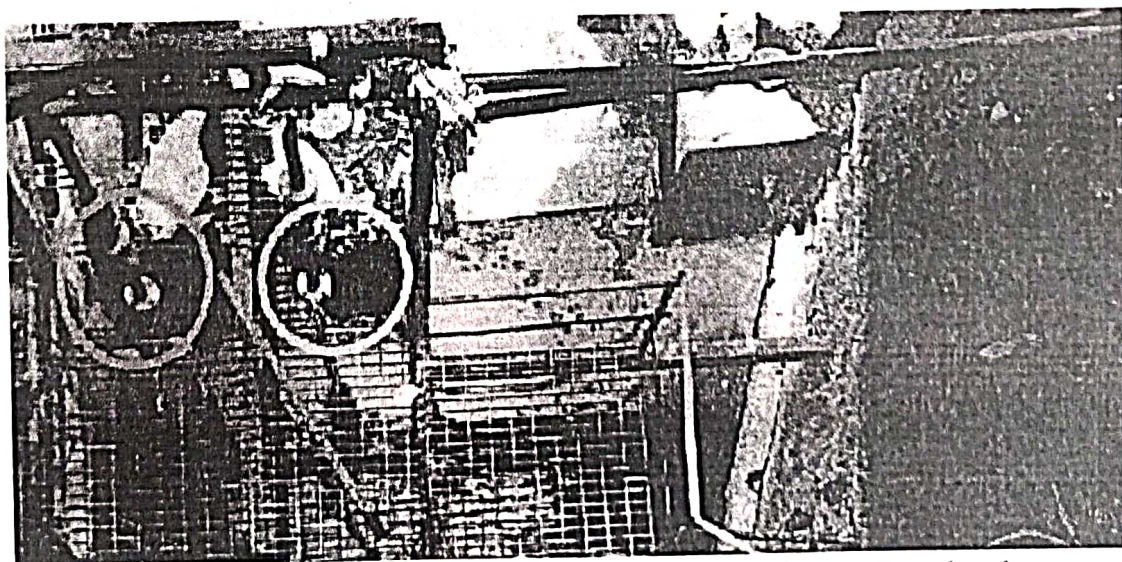


Image 6: Onsite photograph Culvert catchment pit built by the Unit to gather the runoff water and the highlighted two water submissible pumps

- ❖ Additionally, at each plant, dedicated bunds have been installed for the storm water drain. These bunds serve as the initial containment barriers, positioned to intercept any runoff water during rain showers. Furthermore,

each bund is equipped with an oil separator, where oil and other suspended materials from the collected water are manually removed. (Refer image below)

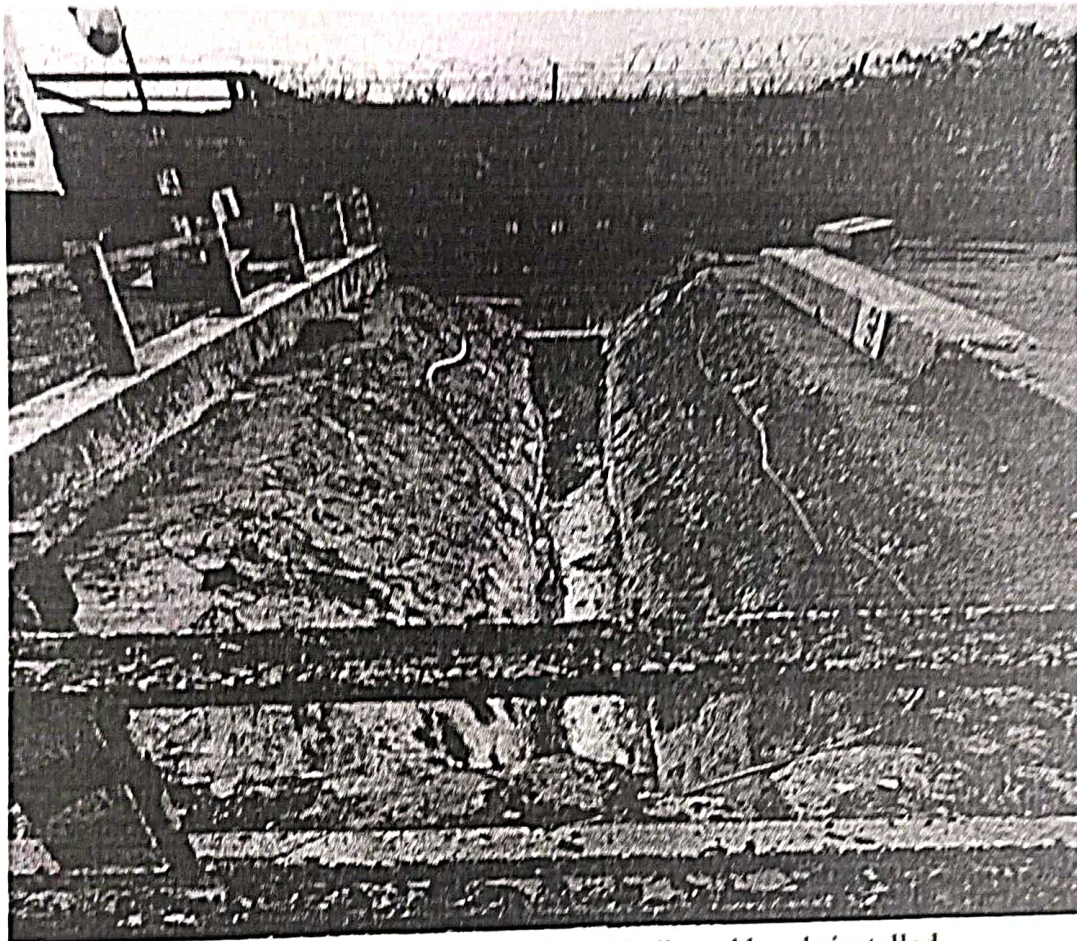


Image 7: Onsite photographs of dedicated bunds installed

- ❖ A small water puddle smelling of Ammonia was found accumulated under the Urea loading gantry (refer image below) near the storm water drain. However, the said puddle was stagnant and sample was collected for analysis.

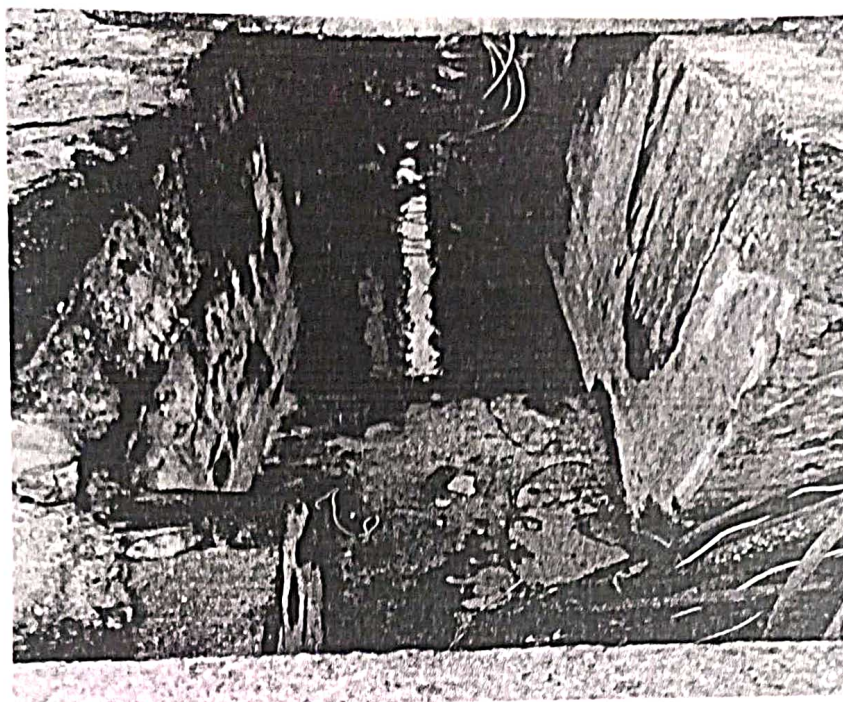


Image 8: Onsite photographs of the small water puddle smelling of Ammonia

Conclusion:

- Consent status of the Unit: Consent to Operate and Authorization No. 12/2018-PCB/58613/R000121 dated 18/09/2019 was valid up to 31/12/2023
The Unit has applied for renewal of CCA on OCMMS vide application Number 1948660 dated 28/10/2023
- Surface runoff stains was observed outside the boundary of the Unit.
- There was **No** discharge found of untreated effluent by the Unit.
- The Unit has engaged **M/s National Environmental Engineering Research Institute (NEERI)** to design a system for the effective management of the surface runoff water during monsoon. The documentary evidence has been placed in front of the Technical Advisory Committee (TAC) during the process of renewal of the Consent.
- Sample Reports awaited.

Name of the Inspecting Official:

1. Sherwin da Costa (Junior Environmental Engineer)

A handwritten signature in black ink that reads "Sherwin" with a horizontal line underneath it.

2. Milagrina Colaco (Junior Lab Assistant)

A handwritten signature in black ink that reads "Milagrina" with a horizontal line underneath it.



Acknowledgement copy

28th May 2024

The Member Secretary,
Goa State Pollution Control Board
Pilerne – Goa.

Dear Madam,

Subject: GSPCB Inspection Report dated 26.05.2024

A. S. Shrivastava
Goa State Pollution Control Board
Opp. Saligao Seminary
Saligao Goa 403 511

We are in receipt of an email communication dated 27.05.2024 seeking an Action Taken Report (ATR) with the Inspection Report of 26.05.2024 as an attachment. We sincerely thank the Board for providing us an opportunity to address its concerns. The following are our response on the observations indicated in the Inspection Report as well as our Immediate, Medium and Long term actions for Sustainable Operations of the Unit.

Design Features for Surface Runoff Management:

Our manufacturing units are equipped with dedicated bunds in the Storm Water Network at the plant battery limits, serving as initial containment barriers for runoff water during unseasonal rain showers. Additionally, garland drains of the Storm Water Network with bunds have been strategically positioned around the facility. Additionally, a facility of Culvert Pit equipped with Automatic Pumping provision to recover the surface run-off downhill, due to unseasonal rains to our Holding Ponds is installed. Infact, these pumps are commissioned immediately after the end the monsoon season until the full onset of monsoon of the subsequent year.

Unusual Pre-Monsoon Showers:

The intensity and timing of pre-monsoon showers experienced at the site this year were atypical, leading to the possible washing off of dust and tire and foot residue from roads. We acknowledge this could be a contributory factor to the surface runoff. However, we reiterate that Pre-monsoon clean-up activities are undertaken every year.

Representative Sampling and Surface Runoff:

Samples drawn from stagnant pool of water from the Storm Water Network would not be representative of the surface runoff, which would be anyways contained within our premises as per our infrastructure and drainage design.

Explanation of Visible Stains Along Hills:

Stains observed along the hills are a result of natural weathering processes, particularly water erosion of lateritic rocks, and not indicative of surface runoff residue from our operations (more than 50 years)

Condition monitoring of the creek(rivulet):

No doubt the creek/rivulet is topographically adjacent to the manufacturing unit. However, presence of other waste streams flowing into the creek needs to be investigated. Also, the company has been proactively monitoring the condition of the creek in terms of facilitating its connection to the sea to ensure sustenance of creek. Further, during this episode, the creek was found cut-off from the sea and the water body was found to be stagnating.

PARADEEP PHOSPHATES LIMITED

CIN No.: L24129OR1981PLC001020

Goa Unit : Jaikisaan Bhawan, Zuarinagar, Goa - 403 726

Tel: +0832 2592180, 2592181, 6752399

Registered Office: Bayan Bhawan, Pandit J.N. Marg, Bhubaneswar - 751 001

www.paradeepphosphates.com

Immediate Action Taken:

1. Accelerated and Augmented maintenance, cleaning of Storm Water Network.
2. Cleaning off all extraneous material on the roads.
3. Cleaning and maintenance of Oil traps in preparation of the upcoming monsoons.
4. Expediting removal of Scrap Material from the factory premises.
5. Expediting on the all other Pre-monsoon activities such as roofs, roof gutters, downspouts etc.
6. Commissioning of Steam Sludge Dryer Unit (this is as committed as one of specific conditions in the previous CTO)
7. Moving forthwith on execution of dedicated Filler Storage and Handling system. The Engineering Design is completed (this is as committed as one of specific conditions in the previous CTO)

Storm Water Management by M/s NEERI:

M/s NEERI have submitted their Draft Report on Storm Water Management on 21.05.2024. Besides, this aspect there were other items in the scope of work. As a priority item, M/s NEERI have worked on the Storm Water Management and delivered the report post their site-visits and study during the monsoon period of 2023. The objective includes review of existing storm water management system to improve prevent cross-contamination of storm water during monsoon period. More specifically, the scope includes the following:

Review of existing storm water management systems at PPL

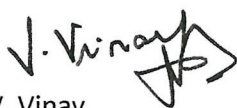
- a) Estimation of storm water generation at PPL
- b) Sampling and characterization of storm water to identify contaminants of concern
- c) Delineation of storm water pollution prevention plan

As a medium term action measure, we will move forthwith to conclude on the Final Report so as to commence implementation of the recommendation as per M/s NEERI's report. Notwithstanding, the final status of the report, as an **immediate measure**, we will commence provision of:

- a) In view of this, converting the Old Retention Tank beside the NPK-B Plant into a monsoon period storm water retaining tank from which the water could be routed through the ETP to the NPK plants for reutilization as Process Water.
- b) Two storm water retention tanks/reservoirs on either side of Labour Canteen to arrest and recycle the storm water runoff from the first monsoon showers.

We remain fully committed to environmental stewardship and regulatory compliance.

For and on behalf of Paradeep Phosphates Limited



V. Vinay,
Chief General Manager - Production

Environmental Assessment Report of M/s Paradeep Phosphates Limited

Survey no. 110-252, Zuarinagar, Sancoale, Mormugao – Goa



GOA STATE POLLUTION CONTROL BOARD

गोंय राज्य प्रदूषण नियंत्रण मंडळ

(An ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Certified Board)

Phone Nos : 0832- 2407700,
2407701, 2407703



Email Ids:
Chairman, GSPCB: chairman-gspcb.goa@nic.in
Member Secretary, GSPCB: ms-gspcb.goa@nic.in
Office: mail.gspcb@gov.in

June 2024

Contents

References: 4

The Environmental Assessment Team 4

M/s Paradeep Phosphates Team 4

Documents Received from M/s Paradeep Phosphates 5

Summary of site observations and Recommendations 6

Brief Description 8

Paradeep Phosphates Ltd. Location and Plot 14

Description of Environmental Assessment with site observations. 18

 Consent to Operate 18

Condition 1. 18

Condition 2. 18

Condition 3. 20

 CONDITIONS REQUIRED TO BE COMPLIED UNDER THE WATER ACT: 20

Condition 4. 25

 CONDITIONS REQUIRED TO BE COMPLIED UNDER THE AIR ACT: 25

Condition 5. 29

 CONDITIONS REQUIRED TO BE COMPLIED UNDER THE HAZARDOUS AND OTHER WASTES (MANAGEMENT AND TRANSBOUNDRY MOVEMENT) RULES 2016: 29

Condition 6. 31

 GENERAL CONDITIONS: 31

Condition 7. 34

 SPECIFIC CONDITIONS 34

Pictures

Picture 1: Environmental Assessment Teams of GSPCB and Paradeep Phosphates Ltd. 5

Picture 2: EOHS Policy 9

Picture 3: Valid PESO Permissions for Class B, Class C, Ammonia 10

Picture 4: Valid Factory Licence 12

Picture 5: Electricity Bill 13

Picture 6: BMW Authorisation 13

Picture 7: Paradeep Phosphates Ltd. Location 14

Picture 8: Paradeep Phosphates Ltd. Plot 14

Picture 9: Plant 14

Picture 10: Site Inspection 15

Picture 11: CAAQMS at site 16

Picture 12: CAAQMS Results display at 4 location outside site premises..... 16

Picture 13: Remediated Hazardous Waste dumpsite on site premises 17

Picture 14: Process effluent collection for recycle 20

Picture 15: Guard Pond 21

Picture 16: Cooling Tower Effluent Treatment..... 22

Picture 17: STP Clarifier 23

Picture 18: Storm water drain adjacent to NPK Bagging area..... 23

Picture 19: Urea Prilling Tower emissions 26

Picture 20: Stack Sampling Report 27

Picture 21: Noise Monitoring Report..... 27

Picture 22: Ambient Air Report..... 28

Picture 23: Manifest Form 10 30

Picture 24: Form 4 Returns 31

Picture 25: PLI Policy 33

Picture 26: E-Waste Returns..... 34

Figures

Figure 2: Environment Organogram 9

Figure 2: Ammonia Plant Process 18

Figure 3: NPK A PFD 19

Figure 4: NPK B PFD 19

Figure 5: Effluent Recycle diagram 21

Tables

Table 1: List of Raw Materials 19

Table 2: Emission Quality 26

Table 3: Filled in Questionnaire 36

References:

- A. GSPCB Letter No. 8/11/09-PCB/Vol.VIII/Admn/4278 dated 28/05/2024
- B. RENEWAL OF CONSENT TO OPERATE AND AUTHORISATION No.12/2018-PCB/58613/R000121 Dated 18/09/2019 granted to M/s. ZUARI AGRO CHEMICALS LIMITED (Fertiliser Division) (Large Scale Industry in Red Category on Survey no. 110-252, Zuarinagar, Sancoale, Mormugao – Goa for the manufacture Urea and NPK with Carbon Dioxide as Byproduct and Ammonia as Intermediate plus 6MW Power generation from Diesel Generator and 7.5MW from Steam Turbine Generator for captive consumption and is valid upto 31/12/2023.
- C. Site Visit of Environmental Assessment Team to M/s Paradeep Phosphates Ltd. on 01/06/2024.
- D. Pictures of facility and Installation at the site. (provided by M/s PPL)
- E. Google images of site location and the site.

The Environmental Assessment Team comprised of:

Dr. Saurabh Patankar, **Environmental Assessor**

Mr. Sajay Amonkar, Senior Consultant, **Environmental Assessor**

Mr. Hemant Rane, Waste Management Consultant, Mumbai, **Environmental Assessor**

Mrs. Jenica Sequeira, Scientist D, GSPCB,

Mr. Pravin Faldessai, AEE, GSPCB,

Mr. Vijay Kansekar, JEE, GSPCB,

Mr. Sherwin da Costa, JEE, GSPCB,

Mr. Rajat Sawant, JRF, GSPCB,

Mr. Vipul Sawant, JRF, GSPCB

Mrs. Milagrina Colaco, FA, GSPCB.

























M/s Paradeep Phosphates Team

Mr. Rajeev Nambiar, President & COO,

Mr. Nilesh Dessai, Chief Manufacturing Officer and Unit Head,

Mr. V. Vinay, Mr. Shrikanth Tendulkar, Mr. Indrajit, Mr. Elias Vaz and the Adventz Team

Documents Received from M/s Paradeep Phosphates

-  Annexure 1 - Factory Map
-  Annexure 2- CTO
-  Annexure 3 - Factory Licence 2023-25
-  Annexure 4 -PESO Ammonia storage
-  Annexure 5 - PESO Class C Licence
-  Annexure 6 - PSO Gas cylinders.
-  Annexure 7 - Boiler Licence
-  Annexure 8 - List of raw materials
-  Annexure 9 - Plant process description and PFD
-  Annexure 10 - Emission parameter
-  Annexure 11 - Boiler stack report
-  Annexure 12 - DG report Apr 2023
-  Annexure 13 - AAQM report March 24
-  Annexure 14 - Noise report Apr 24
-  Annexure 15 - ETP Process flow
-  Annexure 16 - Form 10 Manifest for HW
-  Annexure 17 - Form 4. 22-23
-  Annexure 18 - Electricity bills April 24
-  Annexure 19 - pollution control measures
-  Annexure 20 - Environment Organogram
-  Annexure 21 - PLI Policy
-  Annexure 22 - E waste returns
-  Annexure 23 - Biomedical waste Authorization
-  Environment Audit Questionnaire For Industry.

Picture 1: Environmental Assessment Teams of GSPCB and Paradeep Phosphates Ltd.



Summary of site observations and Recommendations

Environmental Assessment of Paradeep Phosphates Ltd. was carried out on 1st June 2024 by GSPCB Empaneled Assessors along with GSPCB officials.

The President and COO of Paradeep Phosphates Ltd. Mr. Rajeev Nambiar was personally present during entire time of assessment along with his technical team.

- * The CTO granted to M/s Zuari Agro Chemicals Limited (Fertiliser Division) had expired on 31/12/2023 and renewal of CTO was applied and was presented in 32nd TAC on 04/03/2024.
- * It was observed from the site data that the production quantities prescribed have not been exceeded.
- * Water consumption is ~10,000kLd and water supply is from WRD. There are no Borewells on site and water is not purchased through tankers.
- * **Water Balance has been in place but needs some corrections as explained at site.**
- * Process effluent generated is recycled back in manufacturing plants. Process Cooling tower effluent generation is ~550kLd which first settled in settling ponds and then treated further in ETP having Primary, Secondary and Tertiary treatment followed by Ultra Filtration and Reverse Osmosis process. The treated effluent is recycled back to Cooling Tower makeup.
- * Domestic effluent generated is treated in a 300kLd capacity STP and the treated disinfected effluent is used for gardening.
- * **ETP before RO must be upgraded scientifically, especially the HRSCC to achieve better treated effluent quality and higher performance of UF, RO.**
- * **It is to be noted that the effluent being mostly inorganic, the Secondary treatment has a minimum role in reducing COD and BOD therefore it is necessary to strengthen Primary Treatment by precipitating dissolved salts for efficient downstream treatment.**
- * **The Guard pond for storage of effluent under upset condition must always be maintained empty when there is no off spec effluent to be stored.**
- * **Settled Solids in Holding Tanks should be desludged at regular intervals to avoid anaerobic condition.**
- * Site has a Dam for rain water harvesting and the harvested water is used in process.
- * **It was observed that the Housekeeping on the premises is a major issue and needs improvement especially at NPK and Urea Bagging area. It is to be noted that Potassium is more toxic to fish than Calcium, Magnesium or Sodium and therefore utmost care should be taken to avoid surface runoff from NPK bagging area.**
- * **It was observed that such surface runoffs in past have left impression in Storm Water drains running right down to Sea. It is necessary to identify and characterise the deposits on rocks near the railway yards.**
- * Site has switched from Furnace Oil to LSFO for DG Sets and to Natural Gas for Combustion Chamber and reformer as well as for NPK furnaces resulting in low particulate and gaseous emissions.

- * **In spite of installation of Vibro Priller for control of particulate emissions, there were visible particulate emissions from Urea Plant Prilling Tower which needs further improvement.**
- * All stacks have been provided with CEMS which is connected to CPCB and GSPCB.
- * **Continuous Particulate emission on line monitoring on Stack has not been established and it was suggested to interact with Deccan Fine Chemicals India Pvt. Ltd., Corlim where such system is operational for their incinerator stack.**
- * Ambient monitoring is carried out monthly at 4 locations and reports are submitted to the Board regularly. **Since the monitoring locations were not decided as prescribed by CPCB, it was suggested to relocate the locations as explained at site. Instead of 4 locations, actually only 3 locations are required to be monitored.**
- * **Site has installed CAAQMS and the data is transmitted to GSPCB and the data is also displayed at 4 prominent location outside site premises.**
- * Hazardous waste generated is disposed of as prescribed in CTO by maintaining Manifest system. **Site needs to maintain the Hazardous Waste generation records in Form 3. Some wastes from Non-Hazardous waste category will have to be included in Hazardous Waste Category as explained at site.**
- * Site has provided Paddle Dryer with Scrubber for drying Sludges. **There is a need to load the sludge in the Dryer, with no more than 6% dry solids to ensure uninterrupted operation and better efficiency. Sludge will have to be stored in a tank with an agitator to maintain uniform consistency of solids before feeding to dryer.**
- * **The sludge holding pond should be discarded but not demolished and after making it water tight can be used to store off-spec effluent under upset condition.**
- * **CTO condition 6. xi, xii, xiii are applicable to the site and must be followed.**
- * **Site has carried out study through NEERI to provide settling pond and filter bed. Further action is pending.**
- * **Storm water drain during non-monsoon season must be maintained dry.**
- * **The effluent bypass pipeline was observed to be provided with a valve, which was closed and locked, however as per CPCB Guideline a Flow meter with camera should be provided on treated effluent recycle line. (Holding Pond effluent transfer pipeline to Plant).**

1 st Revised Guidelines for Real-time Effluent Quality Monitoring System	10.07.2018
Notes: -	
1. Industries claiming Zero discharge and not discharging effluent outside the premises shall to install Camera and flow meter at the discharge point from the channel / drain provided for carrying the effluent within the industry.	

Dr. Saurabh Patankar

Mr. Sanjay Amonkar

Mr. Hemant Rane

Environmental Assessors



Brief Description

Paradeep Phosphates Limited (PPL) is a prominent manufacturer and supplier of phosphatic fertilizers. The company is known for its commitment to quality and research & development, aiming to provide integrated agri-solutions to meet all farm needs. PPL has been recognized for its sustainability efforts, corporate excellence, and leadership in the chemicals and fertilizer sector in India¹.

The company was incorporated in 1981 and is a joint venture between the Adventz group company, Zuari Agro Chemicals Ltd., and Maroc Phosphore S.A., a wholly owned subsidiary of OCP, Morocco². OCP, founded in 1920 and largely operating in Morocco and the Western Sahara region, is one of the leading global producers of phosphate rock, holding approximately 70% of the global phosphate rock reserves¹.

PPL has also been conferred with several prestigious awards, including the Kalinga Safety Excellence Award (PLATINUM) in the Chemical & Fertiliser Category, the Bureau of Energy Efficiency-Energy Conservation Award, and accolades for the Best Performing Phosphoric Acid Plant and Best Environment Management in NPK Plant

Paradeep Phosphates Limited (PPL) is one of India's leading private sector players in phosphatic fertilizers. PPL currently has a total capacity of 3 million MT, of which 2.60 million MT is Phosphates and the balance 0.40 million MT is Urea. PPL can produce a wide mix of phosphatic fertilizers, across six fungible production trains, ranging from DAP, N-10, N-12, N-14, N-19, N-20, N28 and others. The company is also a major supplier of various industrial products like Gypsum, Zypmite, HFSA (Hydrofluorosilicic Acid), Sulphuric Acid, and Ammonia.

The company's two large manufacturing units are at Paradeep, Odisha (1.8 million MT) and at Zuarinagar, Goa (1.2 million MT).

PPL sources its raw materials globally through long-term contracts and sells the finished fertilizers under the established brand names of "Jai Kisaan" and "Navratna" to over 8 million farmers across 16 states in India.

PPL was incorporated in 1981 as a joint venture between the Government of India (GoI) and the Republic of Nauru (RN) to set up a phosphatic fertilizers manufacturing unit at Paradeep, Odisha. Later in 1993, with the divestment of RN's stake, PPL became a public sector enterprise (PSU). Subsequently, in 2002, GoI decided to divest close to 80% of its stake in favour of Zuari Maroc Phosphates Pvt. Ltd. (ZMPPL), a joint venture between Zuari Agro Chemicals Limited (ZACL) and the OCP Group S.A. While ZACL is a pre-eminent fertilizer player in India; the OCP Group, based in Morocco, is one of the world's largest phosphatic companies, controlling over 70% of the world's known phosphate reserves, with a revenue of over USD 10 billion in FY 22.

In May 2022, PPL successfully completed its INR 1500 crore initial public offering (IPO), during which GoI divested its entire remaining 19.55% stake. The company also used part of the proceeds to complete the acquisition of the 1.2 million MT fertilizer plant in Goa in June 2022. Post IPO, ZMPPL holds 56.10% in PPL.

PPL has an EOHS Policy for the site.

Picture 2: EOHS Policy

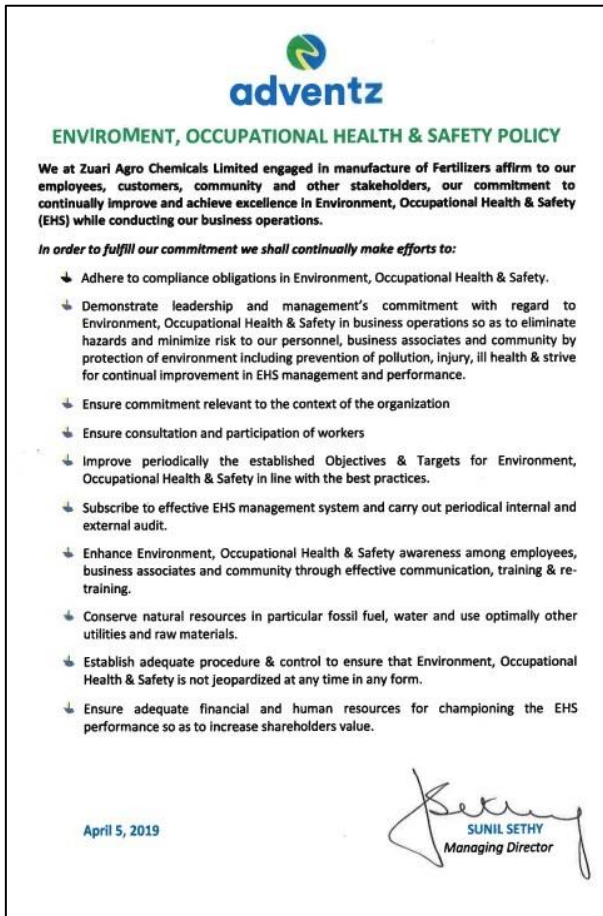
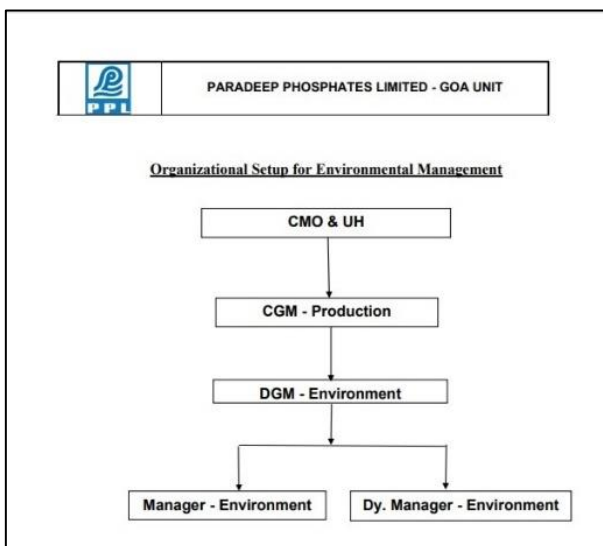



Figure 1: Environment Organogram



Following are the permissions obtained from various authorities.

Environmental Assessment Report of Paradeep Phosphates Ltd.

Page 1 of 1



भारत सरकार/Government of India
 खाजिन और उद्योग विभाग/Ministry of Commerce & Industry
 पेट्रोलियम और विस्फोटक सुरक्षा संगठन (पीएसओ) (Petroleum & Explosives Safety Organisation (PESO))
 ए 1 और ए 2 विंग, 5th फ्लोर, सी.डी.ओ. कॉम्प्लेक्स, नवमि मुंबई, महाराष्ट्र, 400014
 ए 1 & A2 wing, 5th Floor, C.D.O. Complex, CBD Belapur, Navi Mumbai (M.S.),
 मुंबई - 400614
 ईमेल/E-mail: pesomumbai@explosives.gov.in
 फोन / फैक्स नंबर/Phone/Fax No: 022 - 27575946, 275773891
 टिप्पणी/Notes: 2709/0222

संख्या/No: SHO/GA/03/85/51548

To,
 ✓ M/s. MS. ZURAI INDUSTRIES LTD.,
 JAI KSAAN BHAWAN,
 ZUARNAGAR,
 Mormugao,
 Taluka: Mormugao,
 District: SOUTH GOA,
 State: Goa
 PIN: 403726

विषय/Subject: Plot No. 1571 and 1531 Sarcote, Mormugao, ZUARNAGAR, Mormugao, Taluka: Mormugao, District: SOUTH GOA, State Goa, PIN: 403726. AMMONIA, गैस के भंडारण के लिए सुरक्षा के लिए श्रेष्ठ एवं सतर्कता का एक (एनएसएफ) श्रेष्ठ, 2016 के अन्तर्गत सुरक्षा श्रेष्ठ SHO/GA/03/85 (51548) अर्जापत्र दिनांक एवं प्रमाण के बारे में Storage of AMMONIA gas in pressure vessels at Plot No. 1571 and 1531 Sarcote, Mormugao, ZUARNAGAR, Mormugao, Taluka: Mormugao, District: SOUTH GOA, State: Goa, PIN: 403726. Licence No.: SHO/GA/03/85 grant in form LS-1A of SMPV(U) Rules, 2016-Endorsement of Licence Regarding


संदर्भ/Reference: 8).

कृपया Chief Controller of Explosives Nagpur के कार्यालय में SHO/GA/03/85 (51548) दिनांक 14/06/1988 का प्रतीक और अर्जापत्र/आवेदन) संदर्भ के अर्जापत्र के प्रमाण पत्रों के लिए नए दिनांक दिनांक 07/12/2021 का प्रतीक बनाएं। Please refer to the Chief Controller of Explosives Nagpur's Memo No. SHO/GA/03/85 (51548) dated 14/06/1988 and inspection of the above premises by an officer of this Department on 07/12/2021

इस श्रेष्ठ अर्जापत्र के साथ एक प्रमाण पत्र आता है। प्रमाण पत्र की प्रतीक बनाएं और इसे। The subject licence is forwarded herewith duly endorsed. The record of the licence may please be acknowledged.

इस प्रमाण पत्र के लिए सतर्कता का एक श्रेष्ठ, 2016 के श्रेष्ठ 55 के अन्तर्गत अर्जापत्र के एक अर्जापत्र हेतु अर्जापत्र, इस सतर्कता को एक अर्जापत्र को श्रेष्ठ अर्जापत्र के रूप में दिनांक 30 सितम्बर 2023 को या इससे पूर्व आता है।। Please note that your application for further renewal shall reach this office on or before 30th September, 2023 along with all the documents required under Rule 55 of the SMPV(U) Rules, 2016 to avoid late fee.

आपका विश्वसनीयता,



(लुवराज शंकर शंकर)
 (LUVRAJ SHANTKAR SHANGE)
 निरीक्षक निरीक्षक
 Controller of Explosives
 एक अर्जापत्र अर्जापत्र निरीक्षक
 For Jt. Chief Controller of Explosives
 महाराष्ट्र मुंबई (Mumbai)

(For more information regarding status, fees and other details please visit our website <http://peso.gov.in>)

Note:-This is system generated document does not require physical signature.

Environmental Assessment Report of Paradeep Phosphates Ltd.

Picture 4: Valid Factory Licence

FORM 4
(See rule 7)

LICENCE TO WORK A FACTORY

Nature of industry : Registration No.: 153
 Manufacture of urea and other organic fertilizers Licence No.: GOA/156
 NIC Code No.: 20121

Licence is hereby granted to **Shri N SURESH KRISHNAN, Director**, for the premises known as **PARADEEP PHOSPHATES LIMITED (GOA PLANT)**, situated at Survey No.163, Survey No. 157 and 163, Jai Kissan Bhawan, Zuarinagar, Sancoale, Mormugao, South Goa, 403710. plans of which are approved vide **No. LC/FA-4/(PLN)/73/860 dated 16.02.1973 & VI/FAC-2(ZACL/8367)/2018-IFB/2866 dated 08.11.2018**, for use as a factory within the limits stated hereinafter, subject to the provisions of the Factories Act, 1948, and the Rules made thereunder, for the following manufacturing processes/products :-

Fertilizers

(P Pravimal Abhishek ,IAS)
CHIEF INSPECTOR OF FACTORIES AND BOILERS

THIS 3rd DAY OF MAY, 2023

DETAILS OF LICENCE								
	Calendar Year	Maximum Number of workers on any one day	Maximum Installed power in HP	Fee Paid Rs.	Excess Rs.	Additional fee paid for late payment	Date of payment	Signature of issuing authority
Renewed under rule 9	2023 to 2025	2500	Above 10000	873000.00	0.00	291000.00	22-May-2023 23-May-2023	PRAVIMAL ABHISHEK POLUMATLA <small>Digitally signed by PRAVIMAL ABHISHEK POLUMATLA Date: 2023.07.27 18:41:00 +05'30'</small>

Inspectorate of Factories and Boilers
Government of Goa
Attnho, Panaji, Goa - 403001

Ph.No. 0832-2227670/2404852 Fax No. 0832-2404853
 Website: www.ifbgoa.goa.gov.in Email: ifb.goa@nic.in/nci-ifb.goa@nic.in

Ref.No. VIFAC2(GOA/156)2023-IFB/FAB2301638 Dated:- 27 Jul 2023

To,
The Occupier,
PARADEEP PHOSPHATES LIMITED (GOA PLANT),
Survey No.163, Survey No. 157 and 163, Jai Kissan Bhawan, Zuarinagar, Sancoale, Mormugao, South Goa, 403710.

SUB:- Factory licence under The Factories Act, 1948 and the rules thereunder.

Sr,
Your Factory licence has been renewed to operate upto 2025. Kindly acknowledge the receipt of the same. You will strictly comply with all the relevant provisions, as required under The Factories Act,1948 and the rules thereunder.

Please see that this licence is well framed and well maintained in your Factory. You are also advised to quote invariably your **Factory licence number** in all your future correspondence with this office.

Yours faithfully,
PRAVIMAL ABHISHEK POLUMATLA
Digitally signed by PRAVIMAL ABHISHEK POLUMATLA Date: 2023.07.27 18:41:00 +05'30'
(P PRAVIMAL ABHISHEK IAS)
CHIEF INSPECTOR OF FACTORIES AND BOILERS

End:- Factory Licence.
Note:This is a system generated covering letter and no separate signature is required.

Form F
(See Rules 50, 51 and 54)

Licence to store compressed gas in cylinders

Licence No : GWC/GA/06/58 (G13305) Fee Rs : 1000/- per year

Licence is hereby granted to **M/S. ZUARI AGRO CHEMICALS LTD., JAIKISSAN BHAVAN, ZUARINAGAR GOS-403728, District : SOUTH GOA, State : Goa** valid only for the possession of cylinders filled with compressed gas in the licensed premises described below and shown in the plan No. GWC/GA/06/58 dated 9 November, 1993 subject to the provisions of the Explosives Act, 1884 (4 of 1884) and the Rules made thereunder and to the further conditions of this licence.

The licence shall remain in force up to 30th day of September, 2019.

The 9 November, 1993. *[Signature]*
Jt Chief Controller of Explosives
West Circle, Mumbai

DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

The licensed premises, the layout boundaries and other particulars of which are shown in the attached approved plan No. GWC/GA/06/58 dated 9 November, 1993 are situated at ZUARI NAGAR and consists of a storage shed for possession of the gas contained in cylinders as described hereunder:

Type of Gas	Quantity
a) Toxic	
b) Non-Toxic and Non-Flammable	OXYGEN 225 Nos.
c) Non-Toxic and Flammable	
d) Dissolved Acetylene Gas	DA 30 Nos.
e) Non-Toxic & Flammable liquefiable gas other than LPG	
f) Liquefied Petroleum Gas	

and is situated at Plot No. Name of Street : Village/Town : ZUARI NAGAR Police Station : SANCOALE District : SOUTH GOA.

SPACE FOR ENDORSEMENT OF RENEWALS

	Date of Renewal	Date of Expiry	Signature and stamp of the licensing authority
This licence shall be renewable without any commission in fee for ten years in the absence of contravention of the provision of the Explosives Act, 1884 or Gas Cylinders Rules, 2004, framed thereunder or of the conditions of the licence.	8/8/2009	30/9/2019	Sd/- for Jt Chief Controller of Explosives, Mumbai
	26/4/2005	30/9/2009	for Jt Chief Controller of Explosives, Mumbai
	21/2/2005	30/9/2005	for Jt Chief Controller of Explosives, Mumbai

This licence is liable to be cancelled if the licensed premises are not found conforming to the description and conditions attached hereto and contravention of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable with imprisonment for the term which may extend to two years or with fine which may extend to three thousand rupees or with both.

[Signature] 27 July 2023
PRAVIMAL ABHISHEK POLUMATLA
CHIEF INSPECTOR OF FACTORIES AND BOILERS

Picture 5: Electricity Bill

ELECTRICITY DEPARTMENT - GOVERNMENT OF GOA
HT Bill for Month-April-2024 Ref:EE/Div 11 : Vasco/TECH/

Name: PARADEEP PHOSPHATES LTD GOA UNIT
 Legacy No: /HTC/13
 Billing Address: JANGSAN BHAVAN ZUARI NAGAR GOA 403726
 Supply Address: JANGSAN BHAVAN ZUARI NAGAR GOA 403726
 Mobile / Tel No: 9995
 e-mail id: sunil.naik@adventz.com

Sanctioned Load(KW/KVA): 6250.00KVA
 Contract Demand-CD (KVA): 6250.00
 85% of Contract Demand: 5312.5
 Billing Demand: 5940
 Avg Power Factor (Lag): 0.89
 Line Mtr Charges: 36200000.00
 Security Deposit (SD)-CD/REG: Div 11 : Vasco
 Sub Division: Div 11 : Vasco
 Phy. Meter Reading Date: 01/04/2024
 Curr. Meter Reading Date: 01/05/2024

CA No: 60008758645
 Emergenciation Date: 19/01/1979
 MRC No: HT/111
 Meter Status: OK
 Connection Status: Active
 Tariff Category: HT1
 Voltage Level (KV): 33.00
 Bill Date: 02/05/2024
 Bill Basis: Actual
 Bill Number: 10054318400
 Last Bill Reading Date: 01/04/2024

Equipment Details	Unit	TOD Period	Meter Reading		Reading Difference	MF	Total Consumption(KWh)	
			Current	Previous			Current Month	Corresponding Month of Last Year
Meter No: 12541838	KWH	Cumulative	13654.85	13439.28	215.57	12000	2584440.00	
Meter Type: HTCT Meter	KVAH	Cumulative	14631.71	14286.44	345.27		2890400.00	
Meter Make: HT Meter 115 V.,-5 A (DED)	KVA	Cumulative	0.4950				5840.00	
MRT Reading Date: 05/05/2016	KWH	Peak	0778.45	2721.56	48.59		962300.00	
Installation Date: 05/05/2016	KWH	Normal	6233.94	6143.04	90.90		1090800.00	
Transformer No: 0	KWH	Off Peak	4642.26	4564.68	77.58		9390900.00	
CT PT No: 0	KVAH	Peak	3955.37	3903.09	52.28		627360.00	
PT Ratio: 3300 / 110	KVAH	Normal	5634.44	5633.38	101.06		1212720.00	
CT Ratio: 2000 / 5.0	KVAH	Off Peak	4841.90	4833.97	87.93		1058160.00	

Your Bill Summary :

Previous Arrears/Advance (A)	Amount under Litigation / Disputed/Deferred (B)	DPC Tariff Bill Date(C)	Present Total Bill(D)	Rounding amount(E)	Amount Payable on or before due date 16-MAY-2024 (A + C + D + E)
0.00			20147135.40	0.40-	20147135.00

Amount payable - **RUPEES TWO CRORE ONE LAKH FORTY SEVEN THOUSAND ONE HUNDRED THIRTY FIVE**
 Payment after due date attracts penal charges @ 1.5% per month on debit bank compounded every month.
 Non-Payment of bill by the due date will render the connection liable for disconnection of power supply as per JERC clause 9.1
 Amount of prompt payment Rebate is Rs. 65,265.19 which will be reflected in the next bill subject to realization of payment in our account before 1 week before the due date.
 Now you can pay bills through RTGS/NEFT/IMPS. For details please check our website at <https://www.goalelectricity.gov.in>

Particulars	Quantity	Rate	Amount
Demand / Fixed Charges	5840	275.0000	1633500.00
Energy Charges	1055160	4.4550	4700737.80
	1212720	4.9500	6002964.00
	627360	5.9400	3726516.40
Penal Charges (DC)			
Penal Charges (EC)			
FFPCA	2584440	0.8000	2067552.00

Present Bill Charges

Particulars	Amount
Demand Charges	1633500.00
Energy charges	14430226.20
FFPCA	2067552.00
Penal Charges (DC)	0.00
Penal Charges (EC)	0.00
Sundry Charges	0.00
Adv / Pre Release	0.00
Meter Rent	1809108.00
Electricity Duty @ Rs. 0.70/KWh	0.00
Power Factor Penalty / Incentive @	0.00
Investment due	0.00
Wheeling Charges	0.00
Public Lighting Duty @ Rs. 0.08 per KWH	206755.20
Total Current Demand	20147135.40

Consumption History

Billing Period	Consumption
02/04/24 to 01/05/24	2584440
02/03/24 to 01/04/24	1966840
02/02/24 to 01/03/24	1341360
02/01/24 to 01/02/24	1646400
02/12/23 to 01/01/24	1076280
02/11/23 to 01/12/23	1417320

Bank Guarantee Details

Sl. No.	B. G. No.	Amount	Validity Date
1	00240100032283	36200000.00	31/03/2026

Last Payment of 17321516.00 Received on 15-APR-2024

Please note that amount in Arrears column is to be paid as per previous bill due date falling which DPC shall be levied.

Payment Slip: **GOA ELECTRICITY DEPARTMENT**
 Name: PARADEEP PHOSPHATES LTD GOA UNIT
 Legacy No: /HTC/13
 Division: Div 11 : Vasco
 Sub Division:
 CA No: 60008758645
 Bill Number: 10054318400

Now you can pay bills through RTGS/NEFT/IMPS. For details please check our website at <https://www.goalelectricity.gov.in>
 Telephone Number: Pay your electricity bill online at www.goalelectricity.gov.in

Bill Amount Payable Rs. 20147135.00 Due Date : 16-MAY-2024
 Copy to Accounts

Picture 6: BMW Authorisation

GOA STATE POLLUTION CONTROL BOARD
गोंय राज्य प्रदूषण नियंत्रण मंडळ
 (An ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 Certified Board)

Phone Nos : 0832-2407700,
 2407701, 2407702
 Tel/Fax No: 0832-2407700

Chairman, GSPCB, chairman-gspcb@gm@nic.in
 Member Secretary, GSPCB, ms-gspcb.goa@nic.in
 Environment Engineer, GSPCB, ee-gspcb.goa@nic.in
 Scientist, GSPCB, scientist-gspcb.goa@nic.in
 Off: goapcb@gspcb.in

FORM III
 (See rule 10)
AUTHORIZATION

(Authorization for operating a facility for generation, collection, reception, treatment, storage, transport and disposal of bio-medical wastes)

Ref: 1) Application of M/s Zuari Agro Chemical Ltd No. Nil dated: 28/01/2019.
 2) M/s Zuari Agro Chemical Ltd Authorization No.13/58416-PCB/Tech/15312 Dated: 10/01/2017 Valid Upto 10/01/2019.

1. File number of Authorization No.19/2018-PCB/63075/BMW000116 dated: 26/02/2020

2. Shri N G Dessai (Chief General Manager), Mobile No. 9421153013 an occupier of the facility M/s Zuari Agro Chemical Ltd located at Jai Kisan Bhavan Zuarnagar Vasco is hereby granted an Authorization for:

Activity	Please tick
Generation, segregation	✓
Collection	N/A
Storage	✓
packaging	N/A
Reception	N/A
Transportation	N/A
Treatment or processing or conversion	✓
Recycling	N/A
Disposal or destruction	✓
Re-use	N/A
offering for sale, transfer	N/A
Any other form of handling	N/A

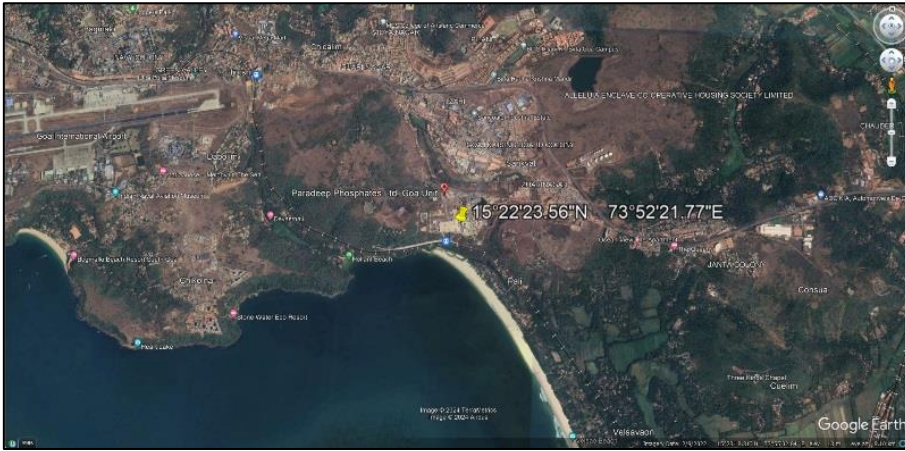
3. Shri N G Dessai, is hereby authorized for handling of biomedical waste as per the capacity given below;

Near Plerne Industrial Estate, Opp. Saligao Seminary, Saligao-Bardex Goa-403511

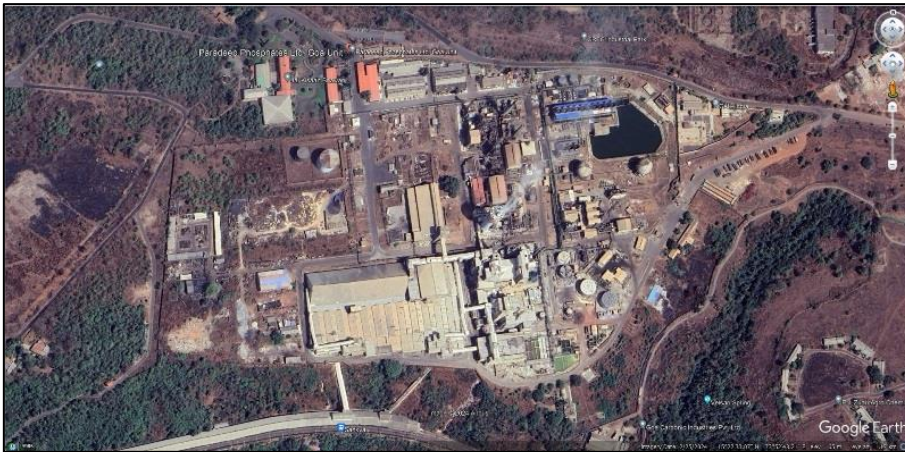
Page 1 of 6

Paradeep Phosphates Ltd. Location and Plot

Picture 7: Paradeep Phosphates Ltd. Location



Picture 8: Paradeep Phosphates Ltd. Plot



Picture 9: Plant



Picture 10: Site Inspection

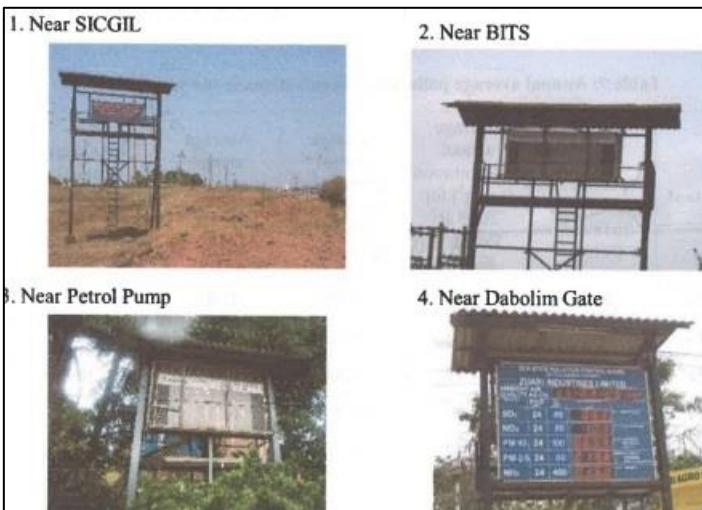




Picture 11: CAAQMS at site



Picture 12: CAAQMS Results display at 4 location outside site premises



Picture 13: Remediated Hazardous Waste dumpsite on site premises



Description of Environmental Assessment with site observations.

Consent to Operate

Renewal of Consent to Operate No.12/2018-PCB/58613/R000121 Dated 18/09/2019 granted to M/s. ZUARI AGRO CHEMICALS LIMITED (Fertiliser Division) (Large Scale Industry in Red Category on Survey no. 110-252, Zuarinagar, Sancoale, Mormugao – Goa subject to the following terms and conditions:

Condition 1.

This Renewal of Consent to operate and Authorization is issued in supersession of the earlier Consent Orders issued vide Order No. 5/107/88-PCB/CI-989 dt. 27/01/2016 and the Consent to Operate is valid up to 31/12/2023.

Condition 2.

This Renewal of Consent to operate and Authorization is valid for the manufacture of:

Sr. No	Product	Capacity
A.	Main Products	
1.	Urea	495000 MTPA
2.	Complex fertilizers produced in NPK-A Plant	500000 MTPA
3.	Complex fertilizers produced in NPK-B Plant	500000 MTPA
B.	By-Products	
1.	Carbon dioxide	34400 MTPA
C.	Intermediate Products	
1.	Ammonia	346500 MTPA

Sr. No	Description	Capacity
1.	Power for Captive consumption from Diesel Generator	6 MW
2.	Power for Captive consumption from Steam Turbine Generator	7.5MW

→ **Complied**

Figure 2: Ammonia Plant Process

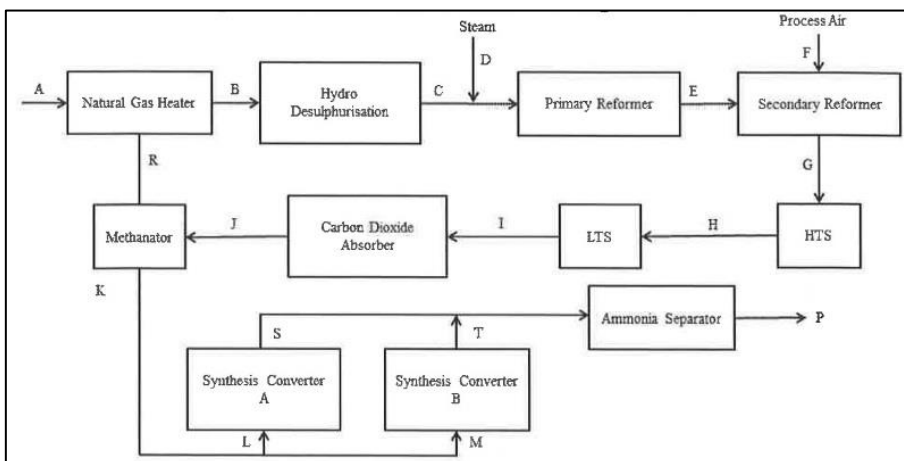


Figure 3: NPK A PFD

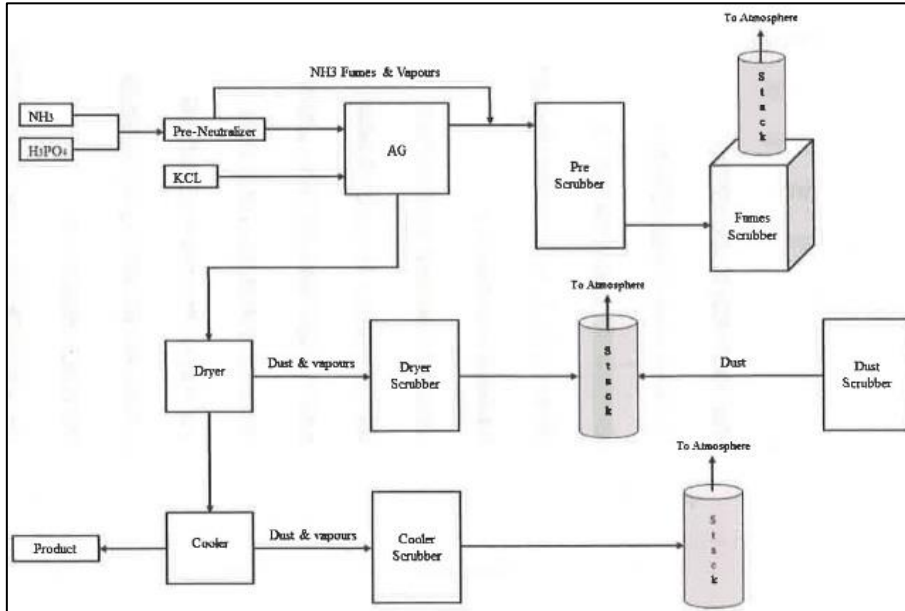


Figure 4: NPK B PFD

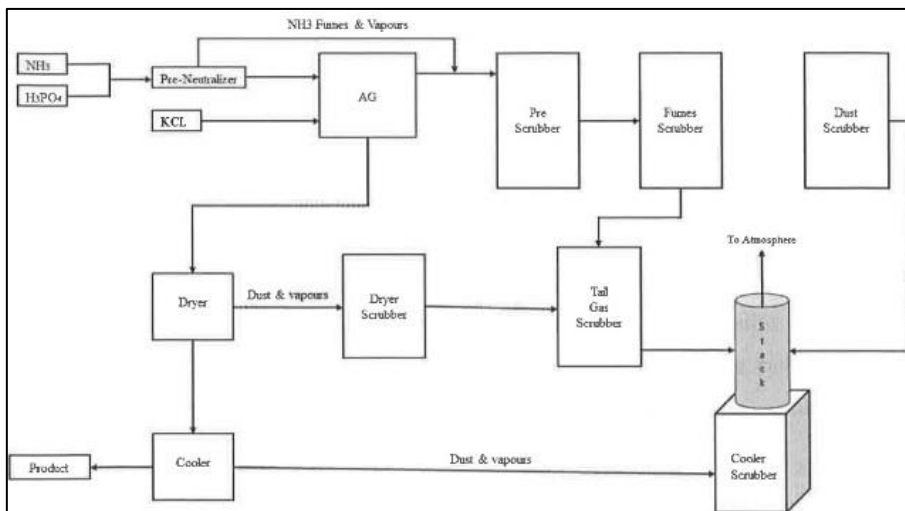


Table 1: List of Raw Materials

Paradeep Phosphates Limited - Goa Unit			
List of Raw Material Details procured used Productise :-			
Name	Source	Quantity	Unit
Ammonia	Imported	48770	Metric Tonnes/Month
Filler	Outside State	8000	Metric Tonnes/Month
Mono Ammonium Phosphate	Outside State	20000	Metric Tonnes/Month
Neem Oil	Outside State	29	Metric Tonnes/Month
Phosphoric Acid as P2O5	Imported	45830	Metric Tonnes/Month
Sulphuric Acid	Outside State	22300	Metric Tonnes/Month
Urea	Imported	10120	Metric Tonnes/Month
Muriate of Potash	Imported	43000	Metric Tonnes/Month
Feed Natural Gas	Imported	16800	Metric Tonnes/Month
Ammonium Sulphate	Imported / Outside State	2500	Metric Tonnes/Month
Sulphur	Outside State	900	Metric Tonnes/Month

Condition 3.

CONDITIONS REQUIRED TO BE COMPLIED UNDER THE WATER ACT:

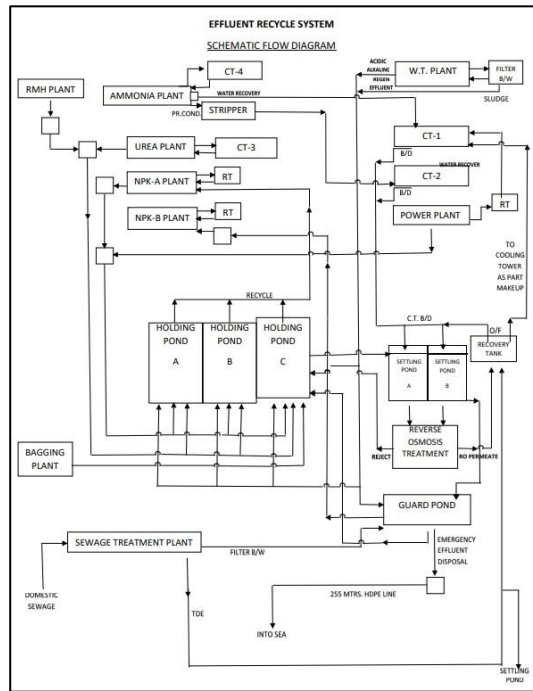
- **GSPCB needs to prescribe total water consumption for the site.**
- **Total water consumption at site is 10,000kLd and water is received from WRD.**
- **Site has prepared a water balance but is required to be updated.**
 - (i) The daily quantity of industrial effluent from the factory shall not exceed 550 KLD
 - **Complied**
 - (ii) The daily quantity of domestic effluent from the factory shall not exceed 300 KLD
 - **Complied**
 - (iii) Industrial Effluent Treatment and Disposal:
 - a. The total quantity of water used in the production process shall be re-circulated and no industrial effluent shall be discharged outside in any of the upset conditions.
 - **Complied**

Picture 14: Process effluent collection for recycle



- b. In upset conditions, the industrial effluent shall be stored in an impervious holding pond of sufficient capacity and shall be reused in the plant, and discharge of the treated effluents into sea is not permitted.
 - **Complied**
 - **There is however, a need to ensure periodic cleaning of bottom sediments to maintain the liquid volume in Holding Tanks.**
 - **The Guard Pond must always be empty to receive effluent in upset condition.**

Figure 5: Effluent Recycle diagram



Picture 15: Guard Pond

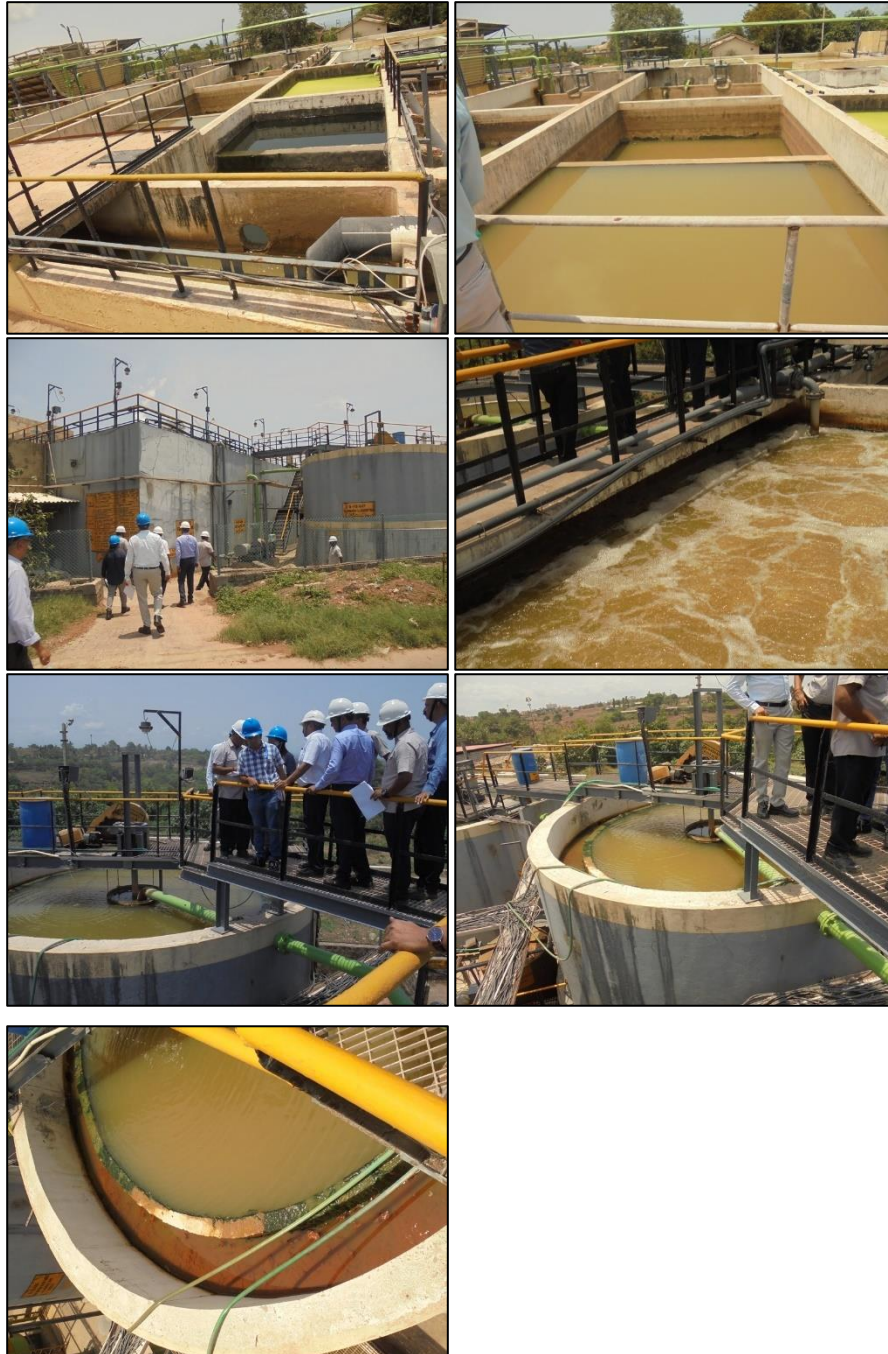


- c. Following standards will have to be complied for using of treated effluent for gardening or other reuses. Also overflow from the monsoon water settling tank has to meet the following standards.

pH	Between	6.5 & 8.0
Suspended Solids	Not to exceed	100 mg/l
BOD, 3 days, 27° C	Not to exceed	30 mg/l
COD	Not to exceed	250 mg/l
Ammonical Nitrogen	Not to exceed	75 mg/l
Free Ammonical Nitrogen	Not to exceed	4 mg/l
Total Kjeldahl Nitrogen	Not to exceed	100 mg/l
Nitrate Nitrogen	Not to exceed	10 mg/l
Cyanide as CN	Not to exceed	0.2 mg/l
Vanadium as V	Not to exceed	0.2 mg/l
Arsenic as As	Not to exceed	0.2 mg/l
Phosphate as P	Not to exceed	5 mg/l
Oil & Grease	Not to exceed	10 mg/l
Fluoride as F	Not to exceed	10 mg/l
Hexavalent Chromium as Cr	Not to exceed	0.1 mg/l
Total Chromium as Cr	Not to exceed	2 mg/l

- It was observed that there was No active biomass in the aeration tank of ETP (RO plant) and the tertiary treatment is also unscientific. ETP (RO Plant) must be corrected scientifically at the earliest so as to achieve discharge standards.

Picture 16: Cooling Tower Effluent Treatment



- (iv) The unit shall at his own cost get the effluent samples collected both before and after treatment and analysed, in case of upset conditions the parameters indicated above from a laboratory recognized by Ministry of Environment, Forest and Climate Change under the Environment Protection Act, 1986 and rules there under and results shall be submitted regularly to this Board, by 15th of the succeeding month.

→ **Complied**

(v) Domestic Effluent treatment and Disposal:-

The domestic waste water shall be re-circulated after treatment and chlorine dosing as make-up water in cooling tower no. 1.

→ **Complied**

→ **STP was observed to be in operating condition and aeration tank had biomass. The treated effluent after chlorination and filtration is recycled for gardening. Minor corrections are required in tertiary treatment which need to be implemented at the earliest.**

Picture 17: STP Clarifier



(vi) A good house-keeping shall be maintained within the factory premises. All pipes, valves and drains shall be maintained in leak-proof condition. Floor washings shall be maintained to the effluent collection system only and shall not be allowed to find way in open areas.

→ **Not Complied**

→ **Housekeeping must be improved on priority at different locations especially at Urea and NPK Bagging Area.**

Picture 18: Storm water drain adjacent to NPK Bagging area



(vii) Non-Hazardous Solid Waste:

All the Solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board.

The total quantity shall be segregated and treated as follows:

Environmental Assessment Report of Paradeep Phosphates Ltd.

Sr. no.	Type of segregated solid waste	Quantity (MT/Year)	Disposal
1	Waste resin material from DM plant	2-4	Used along with backfilling material for structure/building foundation, road construction etc
2	Waste sand from WTP filters	10-20	
3.	Waste activated carbon from WTP filters	6-10	
4.	Sludge from STP	10-20	Manure/re-use in process
5.	Glass wool insulation	10MT	To be given to Coprocessing in for energy recovery
6.	PUF insulation	1MT	
7.	Metal scrap	700MT	To be given for recycling
8.	Rubber scrap	25MT	
9.	Packaging material	60MT	
10.	Plastic scrap	75MT	
11.	Construction debris	50MT	To be disposed as per the C&D waste management rule.

- **Complied however, the site needs to submit to GSPCB the quantities generated and sold in the prescribed format and online.**
- **Sr nos. 1, 2, 3, 5 and 6 will have to be prescribed under Hazardous Wastes.**
- **Manure from STP sludge will have to be analysed for parameters as prescribed under Solid Waste Management Rules, 2016.**

To ensure safe application of compost, the following specifications for compost quality prescribed under Schedule II shall be met.

Parameters	Organic Compost (FCO 2009)	Phosphate Rich Organic Manure (FCO 2013)
(1)	(2)	(3)
Arsenic (mg/Kg)	10.00	10.00
Cadmium (mg/Kg)	5.00	5.00
Chromium (mg/Kg)	50.00	50.00
Copper (mg/Kg)	300.00	300.00
Lead (mg/Kg)	100.00	100.00
Mercury (mg/Kg)	0.15	0.15
Nickel (mg/Kg)	50.00	50.00
Zinc (mg/Kg)	1000.00	1000.00
C/N ratio	<20	Less than 20:1
pH	6.5-7.5	(1.5 solution) maximum 6.7
Moisture, percent by weight, maximum	15.0-25.0	25.0
Bulk density (g/cm ³)	<1.0	Less than 1.6
Total Organic Carbon, per cent by weight, minimum	12.0	7.9
Total Nitrogen (as N), per cent by weight, minimum	0.8	0.4
Total Phosphate (as P ₂ O ₅) percent by weight, minimum	0.4	10.4
Total Potassium (as K ₂ O), percent by weight, minimum	0.4	-
Colour	Dark brown to black	-
Odour	Absence of foul Odor	-
Particle size	Minimum 90% material should pass through 4.0 mm IS sieve	Minimum 90% material should pass through 4.0 mm IS sieve
Conductivity (as dsm-1), not more than	4.0	8.2

(viii) The unit should maintain the rain water harvesting and ground water re-charge measures in consultation and approval of the Water Resource Department, Govt. of Goa and Directorate of Industries, Trade and Commerce, Govt. of Goa.

(ix) The unit should have zero discharge policy. i.e., the treated waste water has to be re-used in process/green belt development /or any other use as deemed fit by the unit with due permission from the Board.

→ **To be Complied**

Condition 4.

CONDITIONS REQUIRED TO BE COMPLIED UNDER THE AIR ACT:

- (i) The unit shall maintain and operate air pollution control system of adequate capacity for the following equipment

Sr. No	Name of Equipments / Installation	No of Installation	Capacity	SO ₂ Kg/Hr	Particulate Matter mg/Nm ³
1.	Boiler (utility boiler)	3	70 MT/hr	-----	-----
2.	Boiler (MP)	1	5 MT/hr	-----	-----
3.	Combustion chamber	1	115 MT/hr	-----	-----
4.	D.G. set	01	8100 KVA	105.6	150

- (ii) The applicant shall observe the following standards for D. G. Sets ≥ 1000 KVA

Sr. No.	Parameters	Limits
1.	NOx (as NO ₂)	1100 ppmv (as 15%O ₂) Dry basis in ppmv
2.	NMHC(as C)	150 mg/Nm ³ (at 15% O ₂)
3.	Particulate Matter	150 mg/Nm ³ (at 15 % O ₂)
4.	CO	150 mg/Nm ³ (at 15 % O ₂)
5.	Sulphur Content in Fuel	Less than 2%

- (iii) The applicant shall maintain and operate air Pollution control systems and let out the emission through following stacks & Outlets, so as to restrict the emission discharged on any day shall not exceed the figures as mentioned below:

Sr.No.	Stack No.	Description of Stack	Quantity of Emission NM ³ /hr	Stack Height in meters
1	S-BF101 CA	Power station Boiler (Common stack)	1,66,000	50
2.	S-BF201	i)6 MW CCP + MP Boiler (Common stack) ii) MP Boiler	35,800 5,000	30
3.	A-CA 101	Ammonia Plant Reformer + C Chamber	2,40,000	36.5
4.	U-IA 301	Urea Plant Prilling Tower	6,00,000	53
5.	U-FD 304	Urea Plant Dust Separator	71,600	61
6.	N-CB 901	NPK-A Plant Fumes Stack	66,000	48.5
7.	N-CB 301	NPK – A Plant Dryer Stack	1,94,000	33
8.	N-CB 403	NPK – A Plant De-dusting (Cooler) Stack	72,000	33
9.	O5-5 D 101	NPK – B Plant Stack	2,32,000	43.5
10.	E-GT-201	Emergency Generator Set	6,000	14

→ **Complied**

- (iv) The unit shall observe the following standards:-

Sr. No	Type of fuel	Quantity /hr
1.	Natural gas for 70 MT/hr Boiler	8500 Kg/hr
2.	Natural Gas (for 5 T Boiler)	310 kg/hr
3.	Natural gas for combustion Chamber and reformer	10,000 kg hr
4.	Furnace Oil (for D.G. set)	1320 kg/hr
5.	H.S.D. for initial start up	0.4 T/day
6.	Natural Gas for NPK-A furnace	300Kg/Hr.
7.	Natural Gas for NPK-B furnace	300Kg/hr
8.	HSD for Emergency Generator Set	270Kg/hr

→ **Complied**

- (v) The emissions shall not contain constituents in excess of the prescribed limits as laid down here under:-

Environmental Assessment Report of Paradeep Phosphates Ltd.

Sr. No	Name of Equipments/Installation	Parameters	Limits
1.	U-IA 301	Particulate Matter	150 mg/Nm ³
2.	U-FD 304	Particulate Matter	150 mg/Nm ³
3.	N-CB 901	Ammonia	10 kg/hr
4.	N-CB 301	Particulate Matter	150 mg/Nm ³
5.	N-CB 403	Particulate Matter	150 mg/Nm ³
6.	O5-5 D 101	Particulate Matter & Ammonia	150 mg/Nm ³ & 10 kg/hr

→ **Complied**

Table 2: Emission Quality

PARADEEP PHOSPHATES LTD, ZUARINAGAR, GOA									
Stack Emission Monitoring Data FOR fy 2023-24									
Stack Description		April	July	Oct	Jan	Feb	Average	Min	Max
Urea Prilling Tower	SPM, mg/Nm ³	84.71	79.38	86.48	89.45		85.01	79.38	89.45
Urea Dust Separator	SPM, mg/Nm ³	53.67	51.56	56.09	58.49		54.95	51.56	58.49
NPK-A Fumes Stack	NH ₃ , mg/Nm ³	5.28	3.63	2.87	3.12		3.73	2.87	5.28
	NH ₃ , kg/hr	0.26	0.2	0.17	0.18		0.20	0.17	0.26
NPK-A Dryer Stack	SPM, mg/Nm ³	59.83	55.44	57.83	52.55		56.41	52.55	59.83
NPK-A Dedusting Stack	SPM, mg/Nm ³	61.25	63.53	59.49	57.83		60.53	57.83	63.53
	NH ₃ , mg/Nm ³	8.25	10.23	9.58		10.51	9.64	8.25	10.51
NPK-B Stack	NH ₃ , kg/hr	1.72	1.97	1.95		2.19	1.96	1.72	2.19
	SPM, mg/Nm ³	55.74	56.08	58.44		55.01	56.32	55.01	58.44
	SO ₂ , mg/Nm ³	54.32					54.32	54.32	54.32
DG Set Stack	SO ₂ , kg/hr	1.87					1.87	1.87	1.87
	SPM, mg/Nm ³	44.4					44.40	44.4	44.4
	NO _x , ppmv	77.52					77.52	77.52	77.52
	NMHC, mg/Nm ³	8.17					8.17	8.17	8.17
	CO, mg/Nm ³	12.41					12.41	12.41	12.41

Picture 19: Urea Prilling Tower emissions



(vi) The Stack Port Hole and Platform is to be designed as per CPCB guidelines Method 1 Part 1 of Stack Monitoring – Material & methodology for isokinetic sampling

→ **Complied**

(vii) The unit should comply with all the standards for D.G. Sets prescribed at Sr. no. 94, 95 and 96 of Schedule I of the Environment (Protection) Rules, 1986.

(viii) The unit should carry out emission monitoring from the stacks of D.G. set annually and from other Stacks once in three months from a laboratory recognized by Ministry of Environment and Forest under the Environment Protection Act, 1986 and the result shall be submitted to this Board.

→ **Complied**

Environmental Assessment Report of Paradeep Phosphates Ltd.

Picture 20: Stack Sampling Report

Aditya Environmental Services Pvt. Ltd.
ISO 9001 : 2015 & ISO 45001 : 2018 certified Testing Laboratory
Recognized by MoEFCC as "Environmental Laboratory" valid up to 24.04.2024
Laboratory: P-1, MIDC Commercial Plots, Mohopada, Rosoyani, Dist. Raigad, 410222
E-mail: pglab@aespl.co.in | Tel: 9112844844
GSTIN: 27AADCA4730B128 | CIN: U74999MH2001PTC132091 | UDYAM: MH-19-0029787

Date: 03/02/2024 Report No. AESPL/G/ST-24/01/03

Client Paradeep Phosphates Ltd. - Goa Unit
Address Jai Kisan Bhawan, Zuarinagar Goa - 403 726

01	Sample Attached to	BOILER (S-BF 101CA) (Boiler A&C Inlet)
02	Date & Time of Monitoring	19/01/2024 at 18.40 Hrs.
03	Date of completion of Analysis	03/02/2024
04	Parameter	STACK EMISSION MONITORING
a.	Nature	28
b.	Ambient Temperature °C	50
c.	Stack Height, meter	2.38
d.	Stack diameter, meter	128
e.	Stack Temperature, °C	13.38
f.	Stack flue Gas Velocity, m/s	214249.8
g.	Stack gas flow rate at Stack condition, m ³ /Hr.	148743.2
h.	Stack Gas Flow rate, Nm ³ /Hr.	86.63
i.	Boiler Load, %	140
j.	Boiler Capacity A&C, MT/hr	7150.61
k.	Fuel consumption for Boiler A&C Kg/Hr	Natural Gas
l.	Type of fuel used	

TEST SPECIFICATION AS PER GOA STATE POLLUTION CONTROL BOARD (G.S.P.C.B)

Sr. No	Parameter	Unit	Result	Limit	Method of Test
01	Particulate matter	mg/Nm ³	38.21	NM	IS: 11255(Part2)-1985
02	Sulphur dioxide (SO ₂)	mg/Nm ³	17.14	NM	IS: 11255(Part2)-1985
03	Oxides of Nitrogen (NO _x)	mg/Nm ³	175.44	NM	IS: 11255(Part2)-2005
		ppmv	93.25	NM	

Note 1. Limit prescribed as per Consent No. 12/2018-PCB/S8613/R000121/1316371 dated 03.06.2022
2. NM refers to not mentioned in consent.
3. The above stack analysis results related only to the conditions prevailing at the time of Sampling.

INSTRUMENT CALIBRATION DETAILS

Sr. No.	Name of Instrument	Make & model	Calibration Date	Calibration Due Date
01	Stack Kit INS/ST/01	Thermo	04/07/2023	03/07/2024
02	Balance	Sartorius	01/01/2024	31/12/2024
03	UV-Vis Spectrophotometer	Systemics-104	01/01/2024	31/01/2024

Reshma S. Patil
(Authorized Signatory - Pollution & Environment)

ADITYA ENVIRONMENTAL SERVICES PVT. LTD.
Testing Laboratory is certified by ISO 9001:2015 & ISO 45001:2018
Recognized by MoEFCC as "Environmental Laboratory" valid up to 24.04.2024
Laboratory: P-1, MIDC Mohopada, P.D. Rosoyani, Dist. Raigad Pin 410222
Tel: 9112844844, CIN: U74999MH2001PTC132091

Date: 05/05/2023 Report No. AESPL/G/ST-23/04/10

Client Paradeep Phosphates Ltd. - Goa Unit
Address Jai Kisan Bhawan, Zuarinagar Goa - 403 726

01	Sample Attached to	DG-8100 KVA
02	Date & Time of Monitoring	26/04/2023 at 10.40 Hrs.
03	Date of completion of Analysis	05/05/2023
04	Parameter	DC STACK EMISSION MONITORING
a.	Nature	32
b.	Ambient Temperature °C	30.0
c.	Stack Height, meter	1.45
d.	Stack diameter, meter	215
e.	Stack Temperature, °C	10.13
f.	Stack flue Gas Velocity, m/s	60224.1
g.	Stack gas flow rate at Stack condition, m ³ /Hr.	34357.1
h.	Stack Gas Flow rate, Nm ³ /Hr.	4.4
i.	DG Load, MW	6.0
j.	DG Capacity MW	935
k.	Fuel Consumption Kg/hr	15HS
l.	Type of fuel used	

STACK GAS ANALYSIS REPORT

Sr. No	Parameter	Unit	Result	Limit	Method of Test
01.	Particulate Matter(PM) (at 15% O ₂)	mg/Nm ³	44.40	150	IS: 11255(Part1)-1985
02	Sulphur dioxide (SO ₂) (at 15% O ₂)	mg/Nm ³	54.32	NM	IS: 11255(Part2)-1985
		Kg/Hr.	1.87	105.6	
03	Oxides of Nitrogen NO _x (at 15% O ₂)	mg/Nm ³	145.85	NM	IS: 11255(Part2)-2005
		ppmv	77.52	1100	
04	NonMethane Hydrocarbon, as C (at 15% O ₂)	mg/Nm ³	8.17	150	EPA METHOD 25
05	Carbon Monoxide (CO) (at 15% O ₂)	mg/Nm ³	12.41	150	EPA METHOD 10

Note 1. Test Specification as per Consent No. 12/2018-PCB/S8613/R000121 dated 18.09.2019
2. NM refers to "Not Mentioned" in consent.
3. The above stack analysis results related only to the conditions prevailing at the time of sampling.

INSTRUMENT CALIBRATION DETAIL

Sr. No	Name of Instrument	Make & model	Calibration Date	Calibration Due Date
01	Stack Kit INS/ST/01	Thermo	04/07/2022	03/07/2023
02	Balance	Sartorius	01/01/2023	31/12/2023
03	UV-Vis Spectrophotometer	Systemics-104	01/04/2023	30/04/2023

Reshma S. Patil
(Authorized Signatory - Pollution & Environment)

(ix) The unit shall take adequate measures for control of noise levels from its own sources within the premises in respect of noise. The limits are as follows

Category of Area/ Zone	Limits in dB (A) Leq	
	Day time	Night time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40

Day time is reckoned between 6 a.m. to 10 p.m. and night time is reckoned between 10p.m. to 6 a.m.

→ Complied

Picture 21: Noise Monitoring Report

	PARADEEP PHOSPHATES LIMITED GOA UNIT	ENV-F-04 Rev No: 01 Date: 24.06.2022		
PARADEEP PHOSPHATES LIMITED, GOA UNIT AMBIENT NOISE LEVEL MONITORING				
Date of Monitoring: 20.04.2024				
S. No.	Locations	Noise Level (dB) Day time	Noise Level (dB) Night time	
1	Near Main Gate	60.0	52.0	
2	Near Gate No.1	54.0	50.0	
3	Near DAP gate	58.0	51.0	
4	Near Post Office	50.0	42.0	
5	Near Goa Carbonic factory	48.0	43.0	
6	Near D-colony view point	47.0	42.0	
7	Behind Administration Building	45.0	40.0	
8	Near Railway siding road junction in B-colony	47.0	38.0	
9	Near Railway siding (Vasco end)	48.0	43.0	
Instrument calibration detail				
S. No.	Name of Instrument	Make & Model	Calibration Date	Calibration Due Date
1	Digital Sound Level Meter	Envirotech SLM 100	01.12.2023	30.11.2024
Signature		Checked by	Approved by	
Designation		Dy. Manager - Environment	Manager - Environment	

Environmental Assessment Report of Paradeep Phosphates Ltd.

(x) Adequate mitigation measures shall be taken to control emissions from the unit process so as to achieve the following Ambient Air Quality standards:


Sr. no.	Pollutant	Time weighted	Concentration in Ambient Air	
			Industrial, residential, rural & other area	Ecologically sensitive area (notified by Central Government)
1	Sulphur Dioxide (SO ₂), µg/ m ³	Annual*	50	20
		24 hours **	80	80
2	Nitrogen Dioxide (NO ₂), µg/ m ³	Annual*	40	30
		24 hours **	80	80
3	Particulate Matter (size less than 10µm) or PM ₁₀ µg/ m ³	Annual*	60	60
		24 hours **	100	100
4	Particulate Matter (size less than 2.50µm) or PM _{2.5} µg/ m ³	Annual*	40	40
		24 hours **	60	60
5	Ammonia (NH ₃) µg/ m ³	Annual*	100	100
		24 hours **	400	400

→ **Complied**

(xi) The Unit shall carry out Ambient Air Quality Monitoring once every month from a laboratory recognized by MOEF under the Environment Protection Act., 1986 and the report should be submitted to the Board by the 15th of the subsequent months.

→ **Complied**

Picture 22: Ambient Air Report



Aditya Environmental Services Pvt. Ltd.
 ISO 9001 : 2015 & ISO 45001 : 2018 certified Testing Laboratory
 Recognized by MoEFCC as "Environmental Laboratory" valid up to 24.04.2024
 Laboratory: P-1, MIDC Commercial Plots, Mohopada, Rasayani, Dist. Raigad, 410222
 E-mail: pglab@aespl.co.in | Tel: 9112044844
 GSTIN: 27AADCA4730B1Z8 | CIN: U74999MH2001PTC132091 | UDYAM: MH-19-0029787


Ambient Air Quality Test Report

Report No.: AESPL/G/A-24/03/01-04. Issue Date :05.03.2024

Name of the customer		: Paradeep Phosphates Ltd.- Goa Unit						
Address		: Jal Kisaan Bhawan, Zuarinagar Goa - 403 726						
AAQM Date of Sampling		: 01/03/2024 to 02/03/2024						
Date of sample analysis		: 02/03/2024 to 05/03/2024						
LD No	Location	Geometric direction of Location from the source	Time and Date	Parameters				
				PM 10 (µg/m ³)	PM 2.5 (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	NH ₃ (µg/m ³)
01	D-Colony	South - East	From 09.15 Hrs. on 01/03/2024 to 09.15 Hrs. on 02/03/2024	52.5	25.0	10.7	15.4	18.2
02	Near Primary School	East	From 09.30 Hrs. on 01/03/2024 to 09.30 Hrs. on 02/03/2024	60.4	31.3	12.8	17.2	37.5
03	Near Jal Kisaan Club	North	From 09.45 Hrs. on 01/03/2024 to 09.45 Hrs. on 02/03/2024	61.4	36.7	13.3	18.0	45.5
04	C-Colony	North west	From 10.00 Hrs. on 01/03/2024 to 10.00 Hrs. on 02/03/2024	48.1	32.5	10.9	15.1	19.9
Limit Prescribed in NAAQS Schedule VII				100	60	80	80	400
Method of Measurement				IS:5182 Part 23, 2017	IS:5182 Part 24, 2019	IS:5182 Part-2, 2017	IS:5182 Part-6, 2017	IS:5182 Part-25, 2018

Note:

- Limit Prescribed as per NAAQM standard wide MoEF Gazette Notification No B-29016/20/90/PCI-1 & Consent No. 12/2018-PCB/58613/R000121/1316371 Dated 03/06/2022.
- The above results relate only to the conditions prevailing at the time of sampling.
- The test report shall not be reproduced except in full, without written approval of laboratory.



Reshma S. Patil
(Authorized Signatory - Pollution & Environment)

We Are Listening & Want to Improve - Complaint Register is Available with us!
 Reg. Office: 110, Hiren Light Industrial Estate, Magul Lane, Mahim, Mumbai - 400016 Tel: 022 4217500 E-mail: contact@aespl.co.in

Condition 5.

CONDITIONS REQUIRED TO BE COMPLIED UNDER THE HAZARDOUS AND OTHER WASTES (MANAGEMENT AND TRANSBOUNDRY MOVEMENT) RULES 2016:

(i) The unit is hereby granted authorization to operate a facility for collection, storage and disposal of hazardous wastes as specified below:

Sr. No.	Category	Type of waste	Quantity	Mode of disposal
1.	5.1	Used /Spent Oil	35 MT/annum	Should recycle hazardous waste through GSPCB authorized recycler operating in state of Goa.
2.	3.1	Furnace Oil tank cleaning residue & washing water & sludge	250 MT/annum	Should recycle hazardous waste through GSPCB authorized recycler operating in state of Goa./ To be sent to M/s Mumbai Waste Management Ltd. at Taloja for incineration
3.	18.1	Spent catalyst (Catalyst containing metals like Ni, Fe, Cr, Cu,Zn)	117 MT/annum	To recycler registered with CPCB and having valid authorization of SPCB
4.	35.3	Chemical sludge form waste water treatment	45 MT/annum	To be recycled within the premises OR disposal in a secured landfill site having valid authorization from SPCB
5.	5.2	Wastes or Residues containing Oil	5 MT/annum	Should recycle hazardous waste through GSPCB authorized recycler operating in state of Goa./ To be sent to M/s Mumbai Waste Management Ltd. at Taloja for incineration
6.	33.1	Empty barrels/container/liner contaminated with hazardous chemicals	3000 nos/annum	Empty barrel/drums to be washed and the effluents to be treated in ETP.The empty drums after washing to be given to recyclers.
7.	33.2	Contaminated cotton rags or other cleaning material	5MT/annum	To be sent to M/s Mumbai Waste Management Ltd. at Taloja for incineration or co-processing in cement kiln.
8.	3.3	Sludge and filter contaminated with oil	2MT/annum	To be sent to M/s Mumbai Waste Management Ltd. at Taloja for incineration or co-processing in cement kiln.

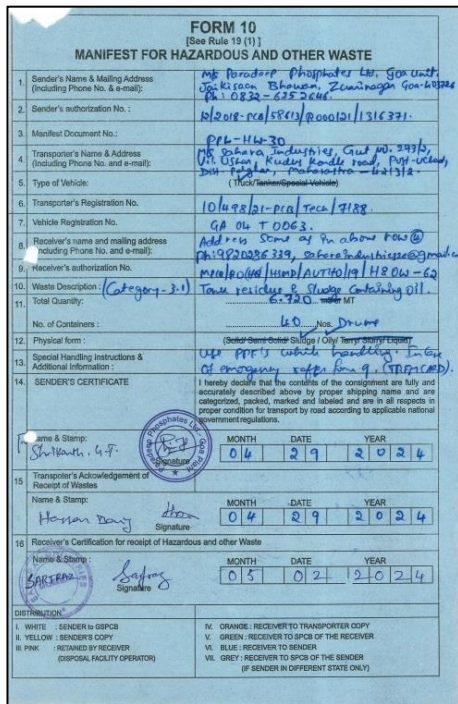
→ **Complied**

- (ii) The authorizer shall comply with the provisions of the Environment (Protection) Act, 1986 and the rule made thereunder.
- (iii) The person authorized shall not rent, lend, sell or transfer or otherwise transport the hazardous waste without obtaining prior permission of the Goa State pollution Control Board.
- (iv) Any unauthorized change in personnel, equipment or working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorization.
- (v) It is a duty of the authorized person to take permission of the Goa State Pollution Control Board to close down the facility.
- (vi) The inner bottom surfaces of the tank shall be impervious enough to prevent leakage or seepage of these wastes into the sub surface soil or ground water.
- (vii) The occupier shall maintain a manifest system as per Rule 19 for disposal of hazardous wastes to ensure that these wastes are delivered to the designated facility preventing

pilferage and clandestine disposal due to unforeseen events that may occur during transit.

→ **Complied**

Picture 23: Manifest Form 10



FORM 10
[See Rule 10 (1)]
MANIFEST FOR HAZARDOUS AND OTHER WASTE

1. Sender's Name & Mailing Address (including Phone No. & e-mail): **Mr. Paradeep Phosphates Ltd. Goa Unit, Jackson Bhawan, Zeminagar Goa-403202, Ph: 0832-6252686**

2. Sender's authorization No.: **18/2018-PA/58113/RO00121/1316331**

3. Manifest Document No.: **PA-114-30**

4. Transporter's Name & Address (including Phone No. and e-mail): **M/S. Sabara Industries, Guld No. 247/5, V.M. Ussan, Kudry Road, Post-Velud, Dist-Falgao, Panaji-Goa-401312 (Vehicle Registration No.)**

5. Type of Vehicle:

6. Transporter's Registration No.: **10/192/21-PA/TCC/17188**

7. Vehicle Registration No.: **GA 06 T 0063**

8. Receiver's name and mailing address (including Phone No. and e-mail): **Address Same as in above Form**

9. Receiver's authorization No.: **18/2018-PA/58113/RO00121/1316331**

10. Waste Description (Category-3.1): **Tannery residue & Sludge Containing Oil**

11. Total Quantity: **6.720 MT**

No. of Containers: **60 Nos. Drum**

12. Physical form: **(Solid, Liquid, Gas, Slurry / Other Term: Slurry, Explosive)**

13. Special Handling Instructions & Additional Information: **Use PPE's while handling in Govt. of emergency refer to 9. (SPF-CAB)**

14. **SENDER'S CERTIFICATE**
I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorized, packed, marked and labeled and are in all respects in proper condition for transport by road according to applicable national government regulations.

Name & Stamp: **Srinivas, 47** MONTH: **04** DATE: **29** YEAR: **2024**

15. Transporter's Acknowledgement or Receipt of Wastes
Name & Stamp: **Hemanth** MONTH: **04** DATE: **29** YEAR: **2024**

16. Receiver's Certification for receipt of Hazardous and other Waste
Name & Stamp: **SARIN** MONTH: **05** DATE: **02** YEAR: **2024**

DISTRIBUTION:
I. WHITE : SENDER to GSPCB
II. YELLOW : SENDER'S COPY
III. PINK : RECEIVED BY RECEIVER (DISPOSAL FACILITY OPERATOR)
IV. ORANGE : RECEIVER TO TRANSPORTER COPY
V. GREEN : RECEIVER TO SPCB OF THE RECEIVER
VI. BLUE : RECEIVER TO SENDER
VII. GREY : RECEIVER TO SPCB OF THE SENDER (IF SENDER IN DIFFERENT STATE ONLY)

(viii) The manifest shall be endorsed by the dispatcher, transporter and receiver of hazardous wastes. The endorsed copy shall be furnished to the Goa State Pollution Control Board.

(ix) Under no circumstances the hazardous waste shall be disposed to unauthorized facilities.

(x) The occupier shall maintain the records for collection, storage and disposal of hazardous waste in Form 3 of as per Hazardous and other Waste (Management & Transboundary Movement) Rules 2016.

→ **To be Complied**

(xi) The occupier shall furnish monthly returns for collection, storage and disposal of hazardous waste through online consent management and monitoring system.

(xii) The unit shall put up an online board (minimum size 6x4 Feet) at prominent location near the main gate providing details as follows in English and Konkani languages:-

- * Hazardous Waste category number.
- * Hazardous Waste quantity number.
- * Treatment facility for each category.
- * Mode of disposal for each category.
- * Hazardous Waste Authorization number, date and validity period.
- * Water Consent number, date and validity period.
- * Air Consent number, date and validity period.
- * Quantity and Nature of Hazardous Chemicals being used.

Environmental Assessment Report of Paradeep Phosphates Ltd.

→ **Complied**

(xiii) The occupier shall ensure that the Hazardous Wastes are not allowed to be stored for more than 180 days.

(xiv) The unit shall submit annual returns in prescribed format to the Board for financial year by 30th June of every year for the previous financial year.

→ **Complied**

Picture 24: Form 4 Returns

FORM 4
[See rules 6(5), 13(8), 16(6) and 20 (2)]

FORM FOR FILING ANNUAL RETURNS
[To be submitted to State Pollution Control Board by 30th day of June of every year for the preceding period April to March]

(Annual Return for the Period: 01/04/2022 to 31/03/2023)

1. Name and address of facility:
Paradeep Phosphates Limited (Fertilizer Division)
Jai Kisaan Bhawan, Zuarinagar, Goa 403726

2. Authorization No. and Date of issue:
Consent to Operate under Air and water act & Hazardous waste authorization No.
12/2018-PCB/58613/R000121/1316371 dated 03/06/2022.

3. Name of the authorized person and full address with telephone, fax number and e-mail:
Mr. N. G. Dessai, Chief Manufacturing Officer & Unit Head
Paradeep Phosphates Limited (Fertilizer Division)
Jai Kisaan Bhawan, Zuarinagar, Goa-403726
Tel. No.: 0832-2592430
Fax No.: 0832-25554626
E-mail: ng.desai@advientz.com

4. Production during the year (product wise), wherever applicable

Production
(a) Urea : 425003.00 MT
(b) Complex Fertilizers produced in NPK-A plant : 182292.36 MT
(c) Complex Fertilizers produced in NPK-B plant : 210273.76 MT

Intermediate Production
(a) Ammonia : 271468.00 MT

By-Products
(a) Carbon Dioxide : Nil

Power for captive consumption : 57060970 KWH

Part A. To be filled by hazardous waste generators

1. Total quantity of waste generated category wise	
a. Tank residue & sludge containing oil (Category 3.1)	17,940 MT
b. Spent oil (Category 5.1)	23,560 MT
c. Spent catalyst (Category 18.1)	0.000 MT
d. Chemical sludge from ETP (Category 35.3)	42,000 MT
e. Waste or residues containing Oil (Category 5.2)	1,340 MT
f. Sludge and filter contaminated with oil (Category 3.3)	1,040 MT
g. Empty barrels contaminated with hazardous chemicals (Category 33.1)	1,230 MT (146 Nos.)
h. Contaminated cotton rags or other cleaning material (Category 33.2)	0.590 MT

Page 1 of 3

2. Quantity dispatched
(i) to disposal facility (Incineration) : **2,970 MT**

S. No.	Waste description	Quantity	Name & Address of Incineration Facility
1	Waste or residues containing Oil (Category 5.2)	1,340 MT	M/s Ponda Envocare Limited, Plot No. 5, Pissurlem Industrial Estate Phase 1, North Goa, Goa 403530.
2	Sludge and filter contaminated with oil (Category 3.3)	1,040 MT	M/s Ponda Envocare Limited, Plot No. 5, Pissurlem Industrial Estate Phase 1, North Goa, Goa 403530.
3	Contaminated cotton rags or other cleaning material (Category 33.2)	0.590 MT	M/s Ponda Envocare Limited, Plot No. 5, Pissurlem Industrial Estate Phase 1, North Goa, Goa 403530.
TOTAL		2,970 MT	

(ii) to recycler or co-processors or pre-processor : **42,730 MT**

S. No.	Waste description	Quantity	Recycler name & address
1.	Tank residue & sludge containing oil (Category 3.1)	17,940 MT	M/s. Sahara Industries Gut No. 293/2, Village: Usar, Kudus Kondle Road, Post: Uchhad, Tal:wada, Dist.: Palghar
2.	Spent Oil (Category 5.1)	23,560 MT	M/s. Sahara Industries Gut No. 293/2, Village: Usar, Kudus Kondle Road, Post: Uchhad, Tal:wada, Dist.: Palghar
3.	Empty barrels contaminated with hazardous chemicals (Category 33.1)	1,230 MT (146 Nos)	M/s. Shariff and Sons, B-25-26/09, Kandaim Industrial Estate, Kandaim, Ponda, Goa
TOTAL		42,730 MT	

(iii) others : Nil

3. Quantity utilized in-house, if any : 42 MT of Chemical Sludge from ETP (Category 35.3) (Recycled in NPK plants as filler)

4. Quantity in storage at the end of the year : Nil

Page 2 of 3

(xv) An Authentic MSDS (Material Safety Data Sheet) is to be provided for the products manufactured, byproducts & waste generated, duly signed & stamped by an authorized representative of the unit.

Condition 6.

GENERAL CONDITIONS:

- (i) The unit shall not change or alter the quantity, quality of discharge, temperature or the mode of the effluent/ emission or hazardous wastes or control equipment provided for without previous permission of the Board.
- (ii) The unit shall provide facility for collection of samples of effluent, air emissions and hazardous wastes to the Board staff.
- (iii) An application in prescribed form along with the prescribed fees for renewal of Consent shall be submitted at least 60 days before the expiry of validity of this Consent. An application for renewal of Consent submitted after expiry of the validity shall accompany with penalty of 50% of the Consent fees in addition to the prescribed consent fees.

→ **Complied**

- (iv) The Board shall be forthwith informed of any accident or unforeseen event involving discharge of any poisonous, noxious or polluting matter into a stream or well or on land or into the atmosphere, as result of such discharge water/ air is being polluted.
- (v) This Consent to Operate is granted without any prejudice to any of the permission(s) required under any law, by laws and regulations in force. The Consent to Operate is confined to matters arising out of the Air Act and Water Act only.
- (vi) The Board reserves the right to amend or add any conditions in this consent and the same shall be binding on the applicant.
- (vii) The unit shall submit to this office, the Environmental Statement Report in Form V for the Financial Year ending April to March by 30th September of the succeeding year as per the provisions of the rule 14 of the Environment (Protection) (Second Amendment) Rules, 1992.

→ **Complied**

- (viii) Reliable flow meter shall be installed to maintain record of water consumption/waste water generation per day. The records so maintained shall be made available to the Board officials whenever required.

→ **Complied**

- (ix) The unit shall bear the cost of analysis / monitoring in case of complaints received by the Board/ reinspections due to non compliances observed by the Board & monitoring carried by the Board.
- (x) The unit shall submit the details of the Public Liability Insurance Policy under the PLI Act 1991, to the Board office as applicable.

→ **Complied**

Picture 25: PLI Policy

The Document is Digitally Signed
 Signer: MEERU...
 Date: 02/04/2024 11:41:51
 Location: Bhubaneswar, Odisha, India
 Reason: Signing Policy

दि ओरिएण्टल इन्सुरेंस कंपनी लिमिटेड
The Oriental Insurance Company Limited
(भारत में सेवा के लिए 20/09/1991)
THE ORIENTAL INSURANCE COMPANY LIMITED
LIABILITY INSURANCE ACT, 1991 POLICY SCHEDULE

Policy No. : 34530048/2025/28 Prev. Policy No. : 34530048/2024/64
 Cover Note No. : 3400004058 Cover Note Date : 31-MAR-24
 Insured's Code : AB000008726 Issue Office code : 345300
 Insured's Name : M/S PARADEEP PHOSPHATES LIMITED (GSTIN: 21AAABCP3276D1ZW)
 Address : BAYAN BHAWAN, 4, NEHRU ROAD Address : 1st FLOOR, OCHC COMPLEX, NEAR RAM MANDIR, UNIT-III, JANPATH
 BHUBANESWAR, ODISHA 751001 BHUBANESWAR, ODISHA 751001
 Tel./Fax/Email : / 997297568 / Tel./Fax/Email : 0674 2362554 / 345300@orientalinsurance.co.in

Agent/Broker Details
 Dev.Off.Code :
 Agent/Broker : LCO000000992 M/S. J.K INSURANCE BROKERS LIMITED
 Address : LINK HOUSE, 4TH FLOOR, SAHADUR SHAH JAFAR MARG, NEW DELHI-110002, DELHI, DELHI, 110002
 Tel/Fax/Email : 0120-4965100/9958898949#

Period of Insurance : FROM 00:00 ON 01/04/2024 TO MIDNIGHT OF 31/03/2025
 Collection No. & Dt. : BG GST INVOICE NO 2123231 UIN 0
 Gross Premium : 12,999 GST 2340 Stamp Duty : 5 Total: 28,338
 Co-insurance Details : NIL

Nature of Business : MANUFACTURING
 Category of Industry : RED Policy Purchaser Category : Manufacture

Indemnity Limit : Rs. 60,00,000.00 Any One Accident
 Aggregate during the Policy Period (Not exceeding three times)
 Rs. 1,80,00,000.00 of any one accident of Indemnity Limit.

Retrospective Date : 01/04/2024

Contribution to the Environmental Relief Fund : 12,999.00 (included in the Total Premium)

TERRITORY/JURISDICTION : INDIA / INDIA

The insurance under this policy is subject to conditions, clauses, warranties, exclusions which are available on Company's website www.orientalinsurance.org.in or on demand from the policy issuing office.
 Specific Conditions if any :

Place : BHUBNESWAR Date : 02/04/2024 Page 1 of 3



(xi) The unit shall submit returns for disposal of batteries under the Batteries (Management & Handling) Rules 2011, if applicable.

→ **To be Complied**

(xii) The unit shall submit returns for disposal of e - waste under the E- Waste (Management) Amended Rules 2018, if applicable.

→ **Complied**

Picture 26: E-Waste Returns

FORM-3
[See rules 4(5), 5(5), 8(6), 9(4), 10(8), 11(9), 13(1) (xi), 13(2)(v), 13(3)(vii) and 13(4)(v)]

FORM FOR FILING ANNUAL RETURNS
[To be submitted by producer or manufacturer or refurbisher or dismantler or recycler by 30th day of June following the financial year to which that return relates].

Quantity in Metric Tonnes (MT) and numbers				
1	Name and address of the producer or manufacturer or refurbisher or dismantler or recycler	Paradeep Phosphates Ltd., (Fertilizer Division), Jai Kisaan Bhawan, Zuarinagar, Goa – 403726		
2	Name of the authorized person and complete address with telephone and fax numbers and e-mail address	N. G. Dessai Chief Manufacturing officer & Unit Head Paradeep Phosphates Ltd., (Fertilizer Division), Jai Kisaan Bhawan, Zuarinagar, Goa-403726 Tel. No.: 0832-2592430 Fax No.: 0832 25554626 e-mail: ng.desai@adventz.com		
3	Total quantity of e-waste collected or channelized to recyclers or dismantlers for processing during the year for each category of electrical and electronic equipment listed in the Schedule I (Attach list) by PRODUCERS	Total: 6.451 MT of E-waste (with respect to 3(A) bulk consumer)		
3(A)*	Details of the above BULK CONSUMERS: Quantity of e-waste	TYPE	QUANTITY (MT)	Nos
		ITEW1	1.619	79
		ITEW2	0.504	209
		ITEW6	0.445	163
		ITEW12	0.022	23
		ITEW16	0.054	45
		ITEW9	0.989	46
		CEEW5	2.747	1548
		CEEW1	0.071	13
		Total:	6.451 MT	Total: 2126 Nos.
3(B)*	REFURBISHERS: Quantity of e-waste:			
3(C)*	DISMANTLERS: i. Quantity of e-waste processed (Code wise); ii. Details of materials or components recovered and sold; iii. Quantity of e-waste sent to recycler; iv. Residual quantity of e-waste sent to Treatment, Storage and Disposal Facility.			

Page 1 of 2

(xiii) The unit shall submit returns for disposal of plastic waste under the Plastic Waste (Management) Amended Rules 2018, if applicable.

→ **To be Complied**

(xiv) Unit has to submit monthly monitoring reports on the Online consent management of monitoring system of the board. Also a hard copy of the same to be submitted to board office.

→ **Complied**

Condition 7.

SPECIFIC CONDITIONS

(i) Unit has to provide catchment area with settling pond and filter bed arrangement within the premises and the monsoon runoff water (majorly from ETP, raw material storage, bagging plant process plant, RO plant and auto workshop, FO storage tank area) has to be diverted into the same before allowing the same to flow outside the premise. The final overflow from the settling pond should meet the standards specified for the treated water from ETP as above 3(iii)c. Necessary Water sampling arrangement has to be provided for collecting the water sample of the overflow flowing outside the premise.

(ii) Covered shed has to be provided for the workshop (auto shop) area and the earthmoving machineries has to be parked within the closed shed. Monsoon runoff water from the workshop area has to be channelized into the settling tank.

→ **To be Complied**

(iii) Housekeeping of the plant area has to be improved and leakages of steam traps, pipeline valves etc. has to rectified immediately. Solid non-hazardous waste generated from the plant has to be properly segregated and stored. Spillages from the road has to be cleaned regularly.

→ **Being Complied**

(iv) Unit has to submit details layout of the storm water drain and layout of the pipeline used to discharge treated effluent into the sea in case of upset conditions and demarcate the flow path of the discharge pipe line.

(v) Fixed closed shed has to be provided for storage of phosphoric acid sludge and filler material instead of temporary shed.

→ **Complied**

(vi) The storm water drain from the internal premise has to be maintained completely dry and no process water/leakages be allowed in the storm water drain.

→ **To be Complied**

(vii) ETP treated water used for gardening has to analysed once in every month from a laboratory recognized by Ministry of Environment forest and climate change and the results have to be submitted to Board

→ **Complied**

(viii) Covered shed needed to be provided to holding pond of the ETP, ETP sludge storage area/beds.

→ **To be Complied**

(ix) As per the Hazardous and other Wastes (Management and Transboundary Movement) Rules 2018, Form 3 has to be maintained.

→ **To be Complied**

(x) In any upset conditions the industrial effluents after treatment has to be stored in impervious holding pond and should be reused in plant rather discharging the same into the sea. Unit has to submit action plan within 30 days for the management of handling of the treated effluents in case of upset conditions.

(xi) Unit has to submit details status reports of the pipe line used for discharge of treated effluents in case of upset conditions within 30days and disconnect the said pipeline and submit compliance report of the same.

→ **To be Complied**

(xii) Unit is directed to submit bank guarantee of rupees 10 lakhs within 15 days of the receipt of the conditions for the compliance of the above consent conditions.

The capital Investment of the unit is Rs. 49929.57Lakhs

Table 3: Filled in Questionnaire

A. INDUSTRY	
(Reference CPCB/PROBES/50/1993-94 & GSPCB CTO)	
PART I	
Name of the industry	: Paradeep Phosphates Limited - Goa Unit
Location/Address (Enclose a map showing surrounding / land uses upto 500 m)	: Jaikisaan Bhawan, Zuarinagar, Goa - 403726 Factory Map enclosed as Annexure - 1
Contact Details Name & Designation	: Mr. Nilesh G Desai Chief Manufacturing Officer & Unit Head
Email	: E-mail: ng.desai@adventz.com
Phone	: Tel. No.: 0832-2592430
Date/Year of commencement of production	: 1973
Type of industry	: Large/Medium/Small
Category of Industry	: Red/Orange/Green
Total number of Employees	: 1388
Male	: 577
Female	: 17
No. of Contract Labourers	: 794
Regulatory Permissions	
Consent to Establish/Consent to Operate No. and Validity (Provide copy)	: CTO No. 12/2018-PCB/58613/R000121/1316371 dated 03/06/2022 Validity : 31.12.2023 Applied for renewal with application number 1948660 dated 28.10.2023. CTO copy enclosed as Annexure -2
Factory Licence No. and Validity (Provide copy)	: Factory Licence No. GOA/156 Validity: Upto 2025 Factory copy enclosed as Annexure -3
PESO permission No. and Validity (Provide copy)	: PESO permission for Ammonia No. S/HO/GA/03/85(S1548) Validity: 30.09.2023 Applied for renewal in August 2023 PESO copy enclosed as Annexure -4 PESO Permission for class C : P/HQ/GA/15/7 (P1638) dated 02.01.2024 Validity: 31.12.2026 PESO copy enclosed as Annexure -5
Gas Storage and handling Permissions (Provide copy)	: PESO permission No. G/WC/GA/06/58 (G13305) dated 20.02.2020 Validity: 30.09.2029 PESO copy enclosed as Annexure - 6
Boiler Inspectorate Permissions etc. (Provide copy)	: Certificate for use of a boiler enclosed as Annexure - 7
Manufacturing Activity	
Products manufactured and quantity	: Ammonia = 2,25,542 MT; Neem coated Urea = 3,46,997 MT; NP Grade = 2,84,058 MT; NPK Grade= 2,48,069.5 MT * Production for FY 2023-24
Installed Capacity / (t/a)	: Ammonia = 346500 MT/a; Urea = 495000 MT/a; NPK-A Plant = 500000 MT/a ; NPK-B Plant =500000 MT/a
Raw materials/auxiliary material procured used Productise (Provide List and quantity)	: Raw materials list enclosed as Annexure - 8
Details of manufacturing (Provide Description of production and Schematic Flow Diagram)	: Process description and schematic flow diagram enclosed as Annexure - 9
Emissions and Sources	
No. of Boilers	: 4
Boiler capacity in TPH	: Power Station Boiler - 210 TPH (3 boilers of 70 TPH each) MP boiler - 5 TPH
Boiler Stack Height in m	: 50 m Above Ground Level
Boiler Fuel / FO/LDO/Coal/Briquette/PNG in kg/h	: Natural Gas
No. of DG Sets	: 2
DG Set capacity in kVA or kW	: DG - 6 MW Emergency Generator Set - 1 MW
DG Set Stack Height in m	: DG - 30 m Above Ground Level Emergency Generator Set - 14 m Above Ground Level
DG Set Fuel Type and consumption in L/h	: DG Fuel: - LSHS Fuel Consumption: Initial start-up :- 0.4 T/day LSHS : - 1320 kg/hr.

Environmental Assessment Report of Paradeep Phosphates Ltd.

Furnace- Induction / Arch / Cupola- capacity in TPH	: Combustion Chamber - 115 TPH NPK-A Furnace NPK-B Furnace
Furnace - Fuel Type and consumption in kg/h; kWh for Induction/Arch Furnace	: Combustion Chamber - Natural gas - 10000 kg/hr. NPK-A Furnace - Natural gas - 300 kg/hr. NPK-B Furnace - Natural gas - 300 kg/hr.
Process Stack emissions parameters	: Stack Emission Parameter enclosed as Annexure - 10
Emission Monitoring Frequency and Results (Provide copy of Report/s)	
Boiler emissions	: Emission monitoring frequency - Quarterly. Stack Emission report of January -2024 enclosed as Annexure -11
DG Set Emissions	: Emission monitoring frequency - Yearly. Stack Emission report of April 2023 enclosed as Annexure -12
Furnace emissions	-
Process Emissions	
Ambient Air Monitoring and Results (Provide copy)	: Monitoring Frequency - Weekly two samples at four strategic locations. Ambient air sampling report of March 2024 enclosed as Annexure - 13
Noise Level Monitoring and Results (Provide copy)	: Monitoring Frequency - Quarterly. Noise sampling report of April 2024 enclosed as annexure - 14
PART II	
Water requirement, kL/d	
Industrial for manufacturing	: 3470
Boiler	: Included in industrial for cooling
Cooling Tower	: 5630
Domestic	: 470
Gardening	: -
Others	: -
Total	: 9570
Provide Water Balance	
Wastewater generated, kL/d	
Industrial	: -
Boiler Blowdown	: -
Cooling Tower Bleed	: 450
DM Water Regeneration	: 150
Softener Backwash	: -
Domestic	: 300
Others	: -
Total	: 900
Effluent treatment system provided (Provide Description and Schematic Flow Diagram)	: YES /NO Effluent Recycle Plant Provided. Process Description and Schematic Flow Diagram enclosed as Annexure - 15
Industrial Treated effluent disposal (Provide details of Recycle, Reuse, Disposal)	: Recycle / Reuse / Disposal
Domestic Effluent Treatment (Provide Capacity of STP / SEPTIC TANK)	: STP / SEPTIC TANK / SOAK PIT STP capacity - 500 KLD
Domestic Treated effluent disposal	: SOAK PIT / GARDENING / SEWER Partially treated domestic water used to cooling tower make up.
Storm water drainage system	: Provided / Not Provided
Describe the method of storm water collection and final disposal.	: At each plant, dedicated bunds have been installed at the plant battery limits. These bunds serve as the initial containment barriers, positioned to intercept any runoff water during rain showers. Furthermore, each bund is equipped with an oil separator, where oil and other suspended materials from the collected water are manually removed. Augmenting the first line of defence, bunds have been strategically placed at the lowest points along the storm drains, predominantly positioned towards the south of the plants. These bunds serve as an additional layer of protection, minimizing the risk of water overflow and ensuring that any runoff is effectively contained within the plant premises. Even in the event of heavy rainfall exceeding the capacity of the bunds on storm drains, a robust contingency plan is in place. Water collected beyond the bunds is collected in the culvert pit situated further down the plant, near the railway platform. For recovery, two recovery pumps have been installed within the culvert pit. These pumps are equipped with level switches, automatically activating upon detecting an increase in water level within the culvert pit. Upon activation, the recovery pumps recover the collected water back to the holding ponds within the plant premises. Subsequently, the water undergoes processing and treatment to be consumed in the process.
Solid waste	

Environmental Assessment Report of Paradeep Phosphates Ltd.

Wet Waste Details (food waste / horticulture and garden waste)	
Does the establishment have any canteen facility	: YES / NO
Total quantity of wet waste generated per day, kg/d	: 200 kgs. Approx.
Whether establishment has any wet waste disposal facility at site.	: YES / NO
If yes Provide Details	
Is wet waste handed over to collection agency/ contractor? If Yes, Provide Name of Contractor / Contact Number / Frequency of Collection and charges paid	: "YES, Imperial Sales & Distribution India - Canteen Contractor Collected on daily basis and handed over to waste disposal plant. Fees paid Rs.22000/- per month"
Frequency of collection	: daily/ weekly/ monthly
If not collected, how is the waste dispose	
Dry Waste	
Non-Hazardous Solid waste Type	: Glass / Metal / Paper / Cardboard / Corrugated Products / Thermocol / Tetra Packs / PET Bottles / Mixed Plastics / Coconuts / Leather / Non Recycle Dry Waste / Ceramics / Construction Waste Including Wood/Furniture And Other Bulky Waste / Non Hazardous Ash / Dust Waste / Plaster Of Paris (Pop) / Textile Waste / Any Other
Mode of Collection	: In house truck provided for collection.
Method of Disposal	: Scrap recycler/Scrap vendor
Total dry waste generated in facility per day, kg/d	: 10 - 15 kg/day approx.
Whether any collection agency is engaged by establishment for collection of dry waste?	: YES / NO
If Yes, Provide Name of Contractor / Contact Number / Frequency of Collection and charges paid	: Dry waste is collected by in house team and stored at dedicated area for further disposal.
Frequency of collection	: daily/ weekly/ monthly
If not collected, how is the waste disposed	
Whether dedicated site is available for storage / management of waste within premises?	: YES / NO
Whether records are maintained of waste generations / waste disposal and cost/fees of waste management	: YES / NO Records are maintained in SAP.
Whether the establishment generates any E-waste (electrical and electronic)?	: YES / NO
Quantity E-Waste, kg/month and mode of disposal	: 10 -12 kg/day approx. E-waste disposal for FY 2023-24 - 4640 MT E-waste disposed through GSPCB authorized recycler.
Whether establishment generates any Bio Medical waste?	: YES / NO
Quantity Bio Medical Waste, kg/month and mode of disposal	: 0.038 kg/day. Mode of disposal - common bio-medical waste treatment facility. Biotic Waste Solutions.
Hazardous waste	
Category / Categories and Quantities	: Tank residue & sludge containing oil (Category 3.1) - 17.940 MT Spent oil (Category 5.1) - 23.560 MT Spent catalyst (Category 18.1) - 0.000 MT Chemical sludge from ETP (Category 35.3) - 42.000 MT Waste or residues containing Oil (Category 5.2) - 1.340 MT Sludge and filter contaminated with oil (Category 3.3) - 1.040 MT Empty barrels contaminated with hazardous chemicals (Category 33.1) - 1.230 MT(146 Nos) Contaminated cotton rags or other cleaning material (Category 33.2) - 0.590 MT
On-site Storage of Hazardous Waste	: YES / NO
Method of On-site Treatment	: Not Applicable
Method of Disposal	: Through GSPCB authorized recycler. Through GSPCB authorized TSDF.
Form 10 Manifest Records submission to GSPCB (Provide copy)	: YES / NO Form 10 Manifest of recent HW transit is enclosed as Annexure - 16
Records maintained in Form 3	: YES / NO
Monthly Returns OCCMS Details	: YES / NO
Form 4 Annual Returns submission (Provide copy)	: YES / NO Form 4 for FY 2022-23 enclosed as Annexure - 17
Online Display Board installed	: YES / NO Digital display board provided.
PART III	
Details of power consumption	
Power Consumption for the site, kWh (Provide copies of Electrical Bills)	: Power consumption for April 2024 - 2584440 KWH April Month Electricity bill enclosed as Annexure - 18
Power Consumption for Pollution Control Installation, kWh (Provide Records)	: Power Consumption for ETP - 147300 KWH (Energy meter reading)

Environmental Assessment Report of Paradeep Phosphates Ltd.

Details of Fugitive emissions (Provide Details of Probable Sources; Contaminants; Concentrations and Control Measures)	: Fugitive emission - Ammonia Probable sources - Ammonia, Urea and NPK operations. Contaminants - Ammonia vapours Concentrations - 2 -3 PPM Control measures - Fugitive emissions are well within the prescribed limit. However process equipment's having intrinsic control systems such as, wet scrubbers and process stacks.
PART IV	:
Details of in-plant pollution control measures (Provide brief writeup on measures taken)	: In-plant pollution control measures enclosed as Annexure - 19
Details of waste minimisation / Techniques used / Recycle / Reuse. (Provide brief writeup)	: PPL waste management system is well defined to manage operational waste. Our approach to waste management is guided by the 4R principle of 'Reduce, Reuse, Recycle and Recover for management of waste in a compliant and ecologically responsible manner. Across our operations, efforts are made to maximize the reuse of waste. Waste that cannot be reused is disposed of in line with regulatory requirements and statutory guidelines. Simultaneously the Company is constantly working to reduce the generation of hazardous and non-hazardous waste in its manufacturing site.
Compliance with SPCB prescribed Standards	: YES / NO
Details of monitoring facility	: Available / Not available
Organisational Setup for Environmental Management (Provide Organogram)	: Organogram for Environmental Management enclosed as Annexure -20
Details of PLI Policy (Provide copy)	: Policy No. 345300/48/2025/28. PLI copy enclosed as Annexure - 21
Returns of Disposal of Batteries (Provide copy)	: Batteries disposal on buy-back policy through supplier.
Returns of Disposal of E-Waste (Provide copy)	: E-Waste returns copy enclosed as Annexure -22
Returns for Disposal of Plastic Waste (Provide copy)	: Plastic waste EPR available.
Compliance to EPR Policy for Plastic Waste Registration with CPCB	: Complied
Details of BMW Authorisation and disposal of BMW (Provide copy)	: BMW authorization copy enclosed as Annexure - 23
NOC from CGWA / WRD (Provide copy)	: Not Applicable
Cost of Pollution Control / Capital Investment and Operating Cost	: Capital Investment - Rs. 40.5 Lakhs Operating Cost - Rs. 33.24 lakhs
Corporate Social Responsibility (CSR) Activity and Expenses details	: Promotion of Healthcare and WASH (Water, Sanitation and Hygiene) - Rs. 31.59 Lakhs Promotion of Quality of Education and Educational Facilities in Villages - Rs. 38.20 Lakhs Skill Development and Livelihood promotion - Rs. 13.00 Lakhs Healthcare and WASH (Focussed on Post Covid-19 Efforts) - 2.70 Lakhs Total amount of Rs. 85.49 Lakhs for the FY 2023-24
Environmental Social Responsibility (ESR) Activity and Expenses details	: Promote Environment and Biodiversity (Clean Energy etc.) - Rs. 2.25 Lakhs (for the FY 2022-23)
Details of complaints against Industry	: Untreated effluents cause widespread fish mortality at velsao bay, rivulet-Press conference given by Goenche Ramponkarancho Ekvott (GRE) and Goencho Ekvott (GE) along with allied groups and newspaper article on page 1 of O Herald dated 26/05/2024.
Details of Green Belt (Green Belt Area and Plantation details)	: Green cover: 117 Acres Plantation Details - Ashoka, The Banyan Tree, Cocunut palm, Copper Pod, Devil's Tree, Goda Neem, Gul Mohur, Indian Cork Tree, Indian Mast Tree, Jack Fruit, Kanchan, Kuda, Mango, Pangara, Parijatak, Queen's Flower, Rain Tree, Royal Palm, Scarlet Corida, Sesbania Grandiflora, Silk Cotton tree, Tabebuia Rose, Tamerind Tree.
Problems face by Industry in Controlling Pollution	: -
PART V	:
Sustainable Development Goals (SDG 5) to achieve gender equality	
Proportion of women employed	: 2.86%
Proportion of women in managerial position	: 2.90%
Any initiatives taken for women empowerment? (Provide brief writeup)	: Broad Initiatives : Board Representation, Fair Representation and Recruitment: PPL Board has 12.5% women representation and the organization as a whole has 5% and 3% women representation in junior and mid management roles. STEM based representation of women stood at 1.4% during FY 23. In our

Environmental Assessment Report of Paradeep Phosphates Ltd.

	<p>hiring and recruitment we focus on the right talent for the right role, irrespective of gender.</p> <p>DEI : At PPL, we try to seek diversity in our workforce at all levels and we consistently strive to become an organization that can accommodate people beyond their gender, disabilities, religion, nationalities, etc.</p> <p>Leveraging the potential of our diverse workforce ensures that we remain competitively advantageous, secure economic growth and carry out our duties as a responsible corporate citizen. We aim to provide an environment wherein our people can inspire each other to achieve their potential, characterized by transparency, ethics, and accountability.</p> <p>Women Centric Policies: We have further institutionalized this commitment through our Board Diversity Policy which ensures robust and diverse representation within our leadership. Other statutory policies like POSH, ABAC, CoC encouraging a free work environment for women are strictly implemented.</p> <p>Employee Engagement : The celebrations and activities at the Ladies club at Paradeep site and at Goa site help foster engagement in our women employees. We also celebrate all festivals in PPL to provide for a work environment that celebrates diversity, promotes unity, and gives a chance to the workforce (irrespective of gender) to come together.</p>
<p>Name of the contact person with designation and telephone No</p>	<p>Mr. Nilesh G Dessai Chief Manufacturing Officer & Unit Head E-mail: ng.desai@adventz.com Tel. No.: 0832-2592430</p>
<p>Signature</p>	<p>:</p>
<p>Name</p>	<p>: Nilesh G Dessai</p>
<p>Designation</p>	<p>: Chief Manufacturing Officer & Unit Head</p>
<p>Date</p>	<p>: 30.05.2024</p>
<p>Place</p>	<p>: Zuarinagar, Goa</p>

GOA STATE POLLUTION CONTROL BOARD

गोंय राज्य प्रदूषण नियंत्रण मंडळ

(An ISO 9001-2015, ISO 14001:2015, ISO 45001:2018 Certified Board)

Phone Nos : 0832- 2407700,
2407701, 2407703



Email Ids:

Chairman, GSPCB: chairman-gspcb.goa@nic.in

Member Secretary, GSPCB: ms-gspcb.goa@nic.in

Office: mail.gspcb@gov.in

No. 2024/GSPCB/Letter/23631 (Tech) 5057

Date: 6/06/2024

To,

M/s. Paradeep Phosphates,
Svy No. 110-252, Zuarinagar,
Sancoale, Mormugao-Goa.

Sub: Untreated effluents cause widespread fish mortality at Velsao bay, rivulet-press conference given by Goenche Ramponkarancho Ekvott (GRE) and Goencho Ekvott (GE) along with allied groups and newspaper article on page 1 of O Herald dated 26/05/2024.

Sir,

With reference to the above cited subject, you are required to remain present before the Mmember Secretary, GSPCB on 11/06/2024 at 3.00pm at the office of the Goa State Pollution Control Board, Saligao, Bardez-Goa in order to submit the say on the matter.

Yours faithfully,

(Dr. Shamila Monteiro)
Member Secretary

Goa State Pollution Control Board

Copy to:

- 1) Shri Nandan Prabhudessai (AEE), GSPCB
- 2) Shri Keshav Fadke, (AEE), GSPCB
- 3) Mr. Rohan Nagvekar, AEE, GSPCB.
- 4) Mr. Sherwin Da Costa, JEE, GSPCB.
- 5) Mr. Siddhant Desai, JEE, GSPCB
- 6) Legal Section
- 7) Office File.
- 8) Guard file

INSPECTION REPORT

Sub: - Widespread fish mortality at Velsao Beach, in Mormugao

As directed, the undersigned official of the Board JEE – Siddhant Desai, along with Smt. Milagrina Colaco(JLA) & Shri. Sanmesh Borkar (SA) inspected Velsao Beach and M/s Paradeep Phosphates Limited located at Survey No. 110-252, Zuarinagar, Sancoale, Mormugao-Goa (hereafter referred to as “Unit”) on 08/06/2024, with regards to the above-mentioned subject.

- 1. Name, address & contact no. of complainant:** Telephonic Complaint received regarding large scale Fish Mortality at Velsea Beach
- 2. Nature of Complaint: -**
 - a) **Noise pollution:** - No
 - b) **Waste Water disposal:** - Yes
 - c) **Air emission:** - No
 - d) **Solid waste disposal:** - No
 - e) **Any other:** -
- 3. Whether any previous complaint received, if yes, details: -** Press conference given by Goenche Ramponkarancho Ekvott (GRE) and Goencho Ekvott (GE) along with allied groups and newspaper article on page 1 of **O Herald** dated **26/05/2024**
- 4. Whether any show cause notice/directions/letter for corrective if yes, provide details: -**
- 5. Name and address industry/unit against whom complaint is filed:**
M/s Paradeep Phosphates Limited located at Survey No. 110-252, Zuarinagar, Sancoale, Mormugao-Goa
- 6. Product manufactured: -**

Sr. No.	Product	Capacity
A.	Main Products	
1.	Urea	495000 MTPA

2.	Complex Fertilizers produced in NPK-A Plant	500000 MTPA
3.	Complex Fertilizers produced in NPK-B Plant	500000 MTPA
B.	By- Products	
1.	Carbon dioxide	344000 MTPA
C.	Intermediate Products	
1.	Ammonia	346500 MTPA

Sr. No.	Description	Capacity
1	Power for Captive consumption from Diesel Generator	6 MW
2	Power for Captive consumption from Steam Turbine Generator	7.5MW

7. Quantity of production: - mentioned above

8. Raw Material: -

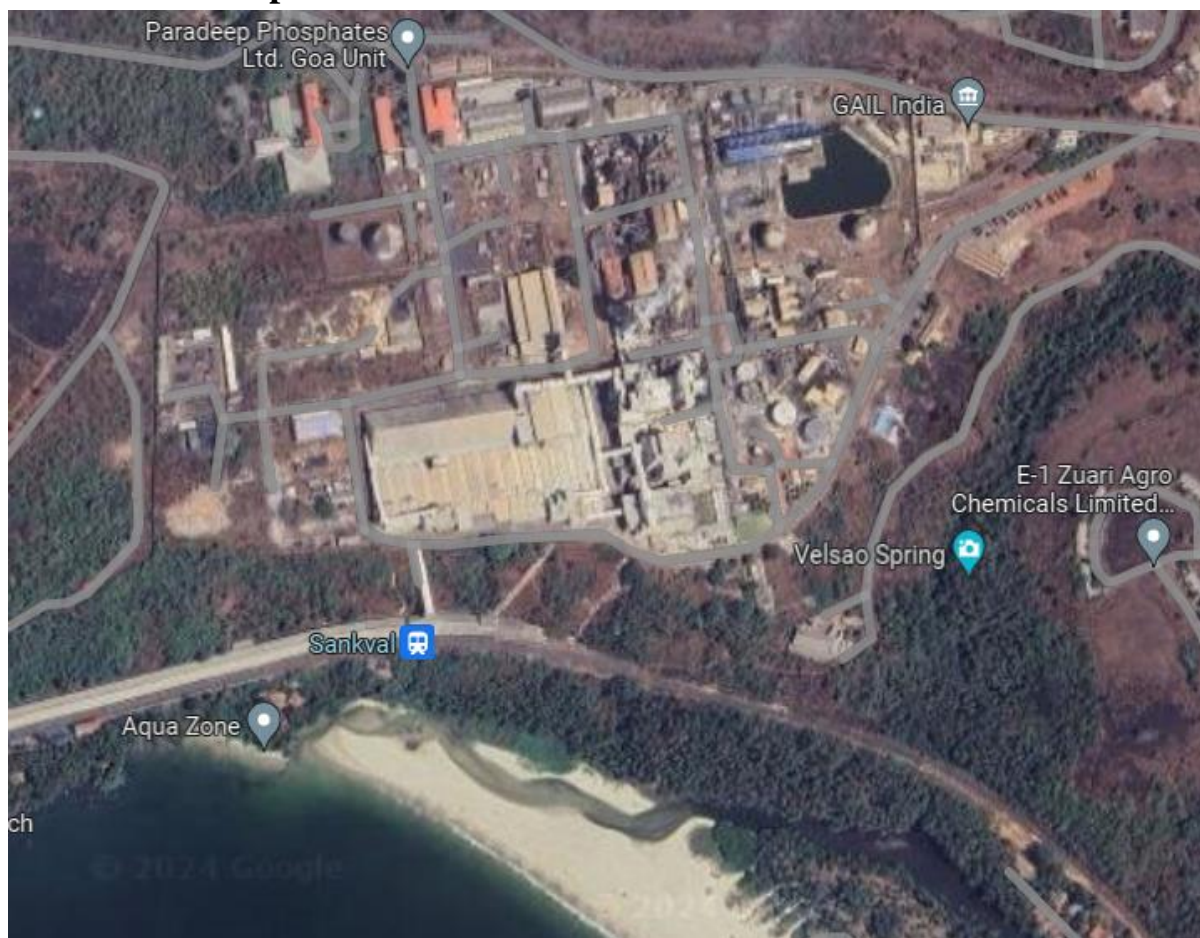
Sr. No.	Raw Material	Source
1	Natural Gas	GAIL
2	LSHS (P)	HPCL
3	Phosphoric Acid	Imported
4	Muriate of Potash	Imported
5	Ammonia for NPK	Imported
6	Sulphuric Acid	Local (within India)
7	Power	Captive + Grid

9. Machine/equipment installed: - Urea Plant, NPK-A & NPK-B plants

10. Approximate production in last 2 months (based on receipts of purchase of raw materials orders and payments received): -

11. Manpower requirement: -

12. Status of operation of unit: - In operation during the inspection

13.Site description and schematic sketch of site: -

14.Type of area: - The unit lies within Sancoale Industrial Area, schools of fish were found dead on the beach towards the south of the Unit called Velsao Beach

15.Distance of nearest residence/school/hospital/any prominent structure: Next to GAIL(India) Limited

16.Distance of water body (Specify which if any): - The Unit's Railway loading point is located approximately 100 m away from rivulet and the Unit is located approximately 250m away from the rivulet

17.Noise Pollution Control measures adopted: -

18.Water consumption (meter reading of previous water supply bills): -

19.Waste water generation: -

20.Disposal method: - Effluent Treatment Plant

21.Capacity of septic tank/soak pit/sewage treatment plant/effluent treatment plant: - 550 KLD

22.Whether capacity sufficient (Yes/No): -

23. Electrical consumption: - Captive + Grid

24. Solid waste generated: -

a) Type: -

b) Quantity: -

c) Disposal: -

25. Hazardous Waste: -

26. Permission from:

a) Local body: - Yes

b) **Goa State Pollution Control Board:** - Consent to Operate and Authorization No. 12/2018-PCB/58613/R000121 dated 18/09/2019 was valid up to 31/12/2023

The Unit has applied for renewal of CCA on OCMMS vide application Number 1948660 dated 28/10/2023

27. Noise levels recorded: -

28. DG set capacity: - 8100 KVA

29. Boiler capacity: -

Sr.No.	Location of Boiler	Capacity	No. of Installations
1	Boiler (Utility)	70 MT/hr	3
2	Boiler (MP)	5 MT/hr	1

30. Oven capacity: -

31. Furnace capacity: -

32. Rotary kiln: -

33. Dust suppression methods: -

34. In case of Induction furnace: -

35. In case of sponge iron units: -

36. Is ambient monitoring carried out (Yes/No): - Yes

37. Are reports submitted as per consent conditions (Yes/No): - Yes

38. Is environmental statement submitted (Yes/No): - Yes

39. Is water cess submitted (Yes/No): -

40. Are all consent conditions complied with (Yes/No): - Partially complied

41. Is Bank Guarantee submitted (Yes/No): -

42. If yes, has the unit complied, give details: -

43. Additional observations:

The inspecting team of officials reached the Velsao Beach site and the following observations were made:

- i. Schools of dead fish were washed ashore and scattered all over the beach.
- ii. Several types of fish were found dead. (pictures of the same have been attached below).
- iii. At the time of sample collection at the creek the team observed a storm water drain from Paradeep Phosphate Ltd. Leading to the beach and upon closer inspection it was observed that the colour of the water flowing in the storm water drain was slightly milky. Further, sediments of this white substance were also observed on the wall of the Storm water drain. (Photographs have been attached below)
- iv. Accordingly, a sample was taken from the discharge point of this storm water drain, which is the creek of the River, i.e., Sample 1 – mouth of creek – (Coordinates: 15.370699, 73.872664), It may be noted that smell of Ammonia was observed at the time of sampling.
- v. Subsequently, samples were also taken from the following locations on the beach site, as follows:

Sample Number	Location	Co-ordinates
2	Downstream of rivulet	15.370155, 73.873505
3	Upstream of rivulet	15.370862, 73.871207
4	Beach water Sample	15.370475, 73.870776

- vi. The Team then proceeded to the premises of M/s Paradeep Phosphates Limited to inspect and identify any possible discharge from their premises.
- vii. The garland drains/storm water drains along the boundary of the Unit were inspected and there were traces of similar milky white water flowing in the storm water garland drains near the Urea loading gantry of the Unit. There were white sediments settled on the walls of the drains similar to that observed at the storm water drain near the creek. (Photographs attached below)

- viii. Accordingly, a final sample was collected from this drain that leads to the outside the Unit premises, i.e., Sample 5 – Storm water drain of PPL – (Coordinates: 15.372613, 73.870969)
- ix. The team also inspected the ETP of the unit and There were no pipelines or any other possible means observed for discharge of Untreated Effluent.
- x. The unit representative informed that a Culvert catchment pit has been built by the Unit to gather the surface runoff water and the said pit has two water submersible pumps, to pump the water back to the holding pond within the plant premises.
- xi. Traces of sedimentation caused due to Surface runoff water from the unit can be clearly seen on google images. (refer image attached below)

Photographs:



Fig 1



Fig 2



Fig 3



Fig 4



Fig 5



Fig 6



Fig 7



Fig 8

Figures 1, 2, 3, 4, 5, 6, 7 & 8: show various dead fish washed ashore on the Velsao Beach



Fig 9

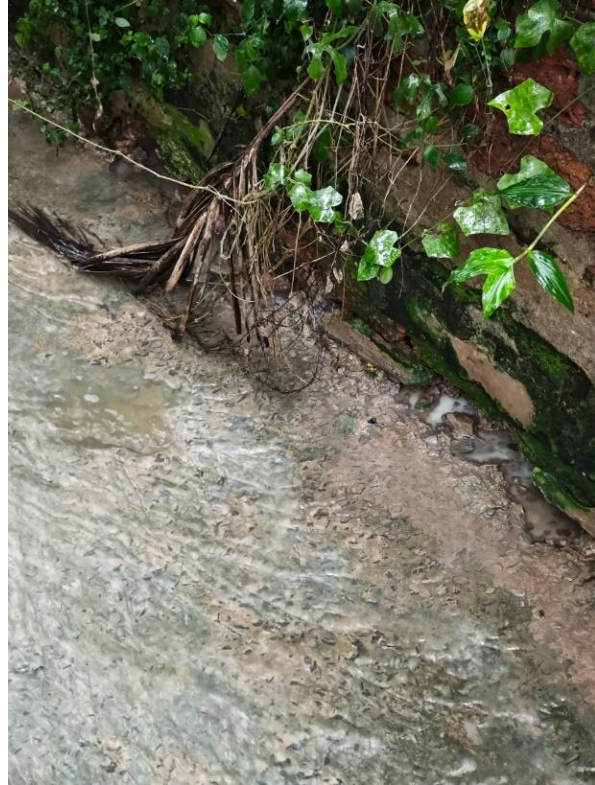


Fig 10



Fig 11



Fig 12

Fig: 9, 10, 11 & 12 shows storm water drain from Paradeep Phosphate Ltd. Leading to the beach having a milky white appearance & sediments of this white substance were also observed on the wall of the Storm water drain



Fig 13



Fig 14

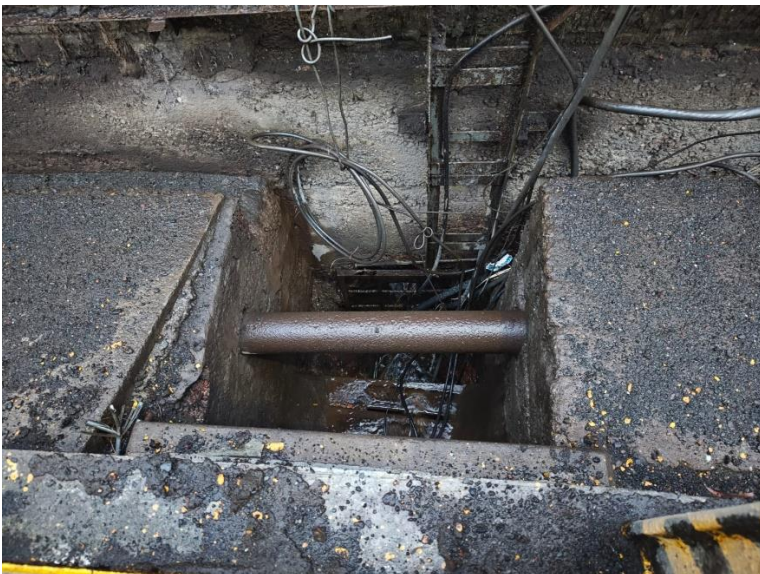


Fig 15

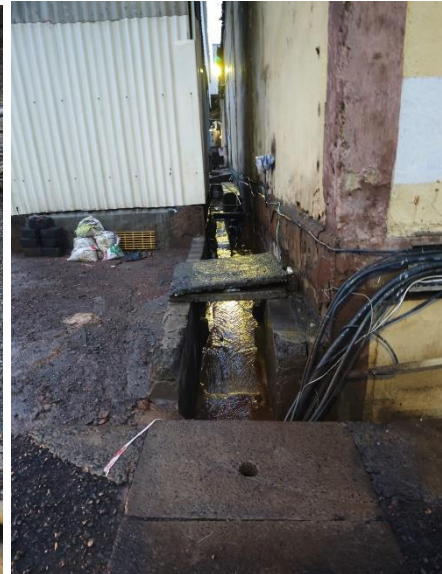


Fig 16

Fig 13, 14, 15 & 16: show the storm water garland drains within the unit premises near the Urea Loading gantry, having the same milky white appearing run off water.



Fig 17: shows Google Earth image of surface runoff traces flowing from the unit





Fig 18: shows Google image of locations from where the team collected Samples for testing.

Conclusion:

- Consent status of the Unit: Consent to Operate and Authorization No. 12/2018-PCB/58613/R000121 dated 18/09/2019 was valid up to 31/12/2023 & The Unit has applied for renewal of CCA on OCMMS vide application Number 1948660 dated 28/10/2023
- Surface runoff water, milky white in appearance was observed in the garland storm water drains of the Unit and the same was flowing outside the Premises of the unit.
- No discharge of untreated effluents was observed from the ETP of the unit.
- Sample Reports awaited.

Name of the Inspecting Official:

Name of the Official	Siddhant Desai	Sanmesh Borkar	Milagrina Colaco
Designation of the Official	JEE	SA	JLA
Signature of the Official			

Personal Hearing held on 11/06/2024 at 3.00 pm Onwards Before the Member Secretary, GSPCB, w.r.t. Untreated effluents causing widespread fish mortality at Velsao bay. Rivulet press conference by Goencho Ramponkarancho Ekvott (GRE) and Goencho Ekvott (GE) along with allied groups and newspapers article on page 1 of O Herald dated 26/05/2024

In reference to the Notice Bearing No. 2024/GSPCB/Letter/ 23631/Tech/5057 dated 06/06/2024 the following have remained present for the hearing;

- 1) Mr. Nilesh G. Dessai, Chief Manufacturing Officer & Unit Head
- 2) Mr. V. Vinay, Chief General Manager- Production
- 3) Mr. Om Agre, Joint General Manager
- 4) Mr. Shrikanth G. Tendulkar, Manager Environment

The following Reports of GSPCB are submitted to the representatives of the unit.

- 1) Analysis Report of samples beach water , creek and water puddle near loading gantry and ETP conducted on 26/05/2024.
- 2) Preliminary Assessment report conducted on 01/06/2024
- 3) Report of inspection conducted by Board Officials on 26/05/2024

On perusal of the analysis reports and interpretation above, it is observed that the values of total kjeldahl nitrogen (TKN) and potassium are remarkably higher in the samples of the beach water & creek water compared to samples collected during non monsoon period. Nitrogen and Potassium are constituents of the products of M/s. PPL manufactured.

The sample of puddle water also indicated high concentration of nitrogen, potassium and phosphate indicating spillages mixing with storm water runoff.

Perusal of reports of the Analysis and inspection / Assessment indicates violations of Condition in the Consent to Operate order dated 18/09/2019.

High probability of environmental pollution due to the discharge from the premises of the unit and inadequacy of pollution control measures.

The unit representatives submitted that there has been monsoon runoff from the near loading gantry that has entered into the velsao creek.


The unit representatives further sort for time to submit detailed clarification on measures taken by the company to rectify the situation.

At first instance the unit representatives are directed to immediately comply with the following.

1. The unit is required to submit revised water balance chart.
2. ETP before RO must be upgraded scientifically, especially the HRSCC to achieve better treated effluent quality and higher performance of UF, RO.
3. The guard pond for storage of effluent under upset condition must always be maintained empty when there is no off specification effluent to be stored.

4. Settled solids in holding tanks should be desludged at regular intervals to avoid anaerobic condition.
5. Housekeeping on the premises is a major issue and needs improvements especially at NPK and Urea Bagging area. Utmost care should be taken to avoid surface runoff from NPK bagging area. The spillages should be contained at source to avoid further contamination of the surface / storm water runoff.
6. The unit shall identify and characterise the deposits on rocks near the railway yards.
7. The unit shall establish Continuous particulate emission on line monitoring on Stack as specification the consent.
8. The unit shall relocate Ambient Monitoring locations and shall be carried out at 3 locations, one on downwind direction to the predominate and direction and other two locations at 120° to the downwind location
9. The unit shall load the sludge in the Dryer, with not more than 6% dry solids to ensure uninterrupted operation and better efficiency. Sludge will have to be stored in a tank with an agitator to maintain uniform consistency of solids before feeding to dryer and without transfer of sludge to sludge drying beds..
10. The sludge holding pond should be discarded but not broken down and after making it water -- can be used to store effluent under upset condition. The predicted storm water to be pumped to the factory premises and the capacity of the containment storage for the water to be informed to this Board.
11. Site has carried out study through NEERI to provide settling pond and filter bed. The unit is required to submit copy of the same to the Board alongwith action taken report within 15 days.
12. Storm water drain during non- monsoon season must be maintained dry.
13. The effluent bypass pipeline was observed to be provided with a valve, which was closed and locked, however as per CPCB Guideline a Flow meter with camera should be provided on treated effluent recycle line. (Holding Pond effluent transfer pipeline to Plant), and connected to the Board.
14. The unit is required submit the drawings indicating the discharge pipeline and dismantle the old pipeline. Unit shall ensure that no effluent are released outside the factory premises.

The unit representatives directed to submit an immediate Compliance Report within 7 days.


(Dr. Shamila Monteiro)
Member Secretary
For Goa State Pollution Control Board.

GOA STATE POLLUTION CONTROL BOARD

गोंय राज्य प्रदूषण नियंत्रण मंडळ

(An ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Certified Board)

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2407701, 2407703



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Chairman, GSPCB: chairman-gspcb.goa@nic.in
Member Secretary, GSPCB: ms-gspcb.goa@nic.in
Office: mail.gspcb@gov.in

No. 12/2023-PCB/1948660/R00013712

Date: 14/06/2024

Renewal of Consent to Operate under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 (i) of the Hazardous and other Wastes (Management, and Transboundary Movement) Rules 2016 as amended thereafter

[To be referred as Water Act, Air Act and HW (M&T) Rules respectively]

RENEWAL OF CONSENT TO OPERATE AND AUTHORIZATION is hereby granted to

M/s. PARADEEP PHOSPHATES LIMITED
(Fertilizer Division)
(Represented by: Mr. Nilesh Govind Dessai)
(Large Scale Industry)
(Red Category)

Survey No. 157/1A & 163/1,
Zuarinagar, Sancoale, Mormugao – Goa.

Located in the area declared under the provisions of the Water Act, Air Act and Authorization under the Provisions of HW (M&T) Rules, subject to the provisions of the Act and the Rules and the Orders that may be made further and subject to the following terms and conditions:

1. This Renewal of Consent to operate and Authorization is issued in supersession of the earlier Consent Orders issued vide Order No.12/2018-PCB/58613/R000121 dated 18/09/2019, Corrigendum No. 12/2018-PCB/58613/R000121/Tech/10824 dated 20/09/2021 & Amend No. 12/2018 PCB/58613/R000121/1316371 dated 03/06/2022 is valid up to **31/12/2028.**

2. Renewal of Consent to operate and Authorization is valid for the manufacture of:

Sr. No	Product	Capacity
A.	Main Products	
1.	Urea	495000 MTPA
2.	Complex fertilizers produced in NPK-A Plant	500000 MTPA
3.	Complex fertilizers produced in NPK-B Plant	500000 MTPA
B.	By-Products	
1.	Carbon dioxide	34400 MPTA
C.	Intermediate Products	
1.	Ammonia	346500 MPTA
D.	Power Plant	
1.	Power for Captive Consumption from Diesel Generator	6 MW
2.	Power for Captive Consumption from Steam Turbine Generator	7.5 MW

3. **CONDITIONS REQUIRED TO BE COMPLIED UNDER THE WATER ACT:**

- (i) The daily quantity of industrial effluent from the factory shall not exceed **550 KLD.**
- (ii) The daily quantity of domestic effluent from the factory shall not exceed **300 KLD.**

(iii) **Industrial Effluent Treatment and Disposal:**

- a. The total quantity of water used in the production process shall be re-circulated and no industrial effluent shall be **discharged outside in any of the up set conditions.**
- b. In upset conditions, the industrial effluent shall be stored in a impervious holding pond of sufficient capacity and shall be reused in the plant, and discharge of the **treated effluents into sea is not permitted.**
- c. Following standards will have to be complied for using of treated effluent for gardening or other reuses. Also overflow from the monsoon water settling tank has to meet the following standards.

pH	Between	6.5 & 8.0
Suspended Solids	Not to exceed	100 mg/l
BOD,3days,27°C	Not to exceed	30 mg/l
COD	Not to exceed	250 mg/l
Ammonical Nitrogen	Not to exceed	75 mg/l
Free Ammonical Nitrogen	Not to exceed	4 mg/l
Total Kjeldahl Nitrogen	Not to exceed	100 mg/l
Nitrate Nitrogen	Not to exceed	10 mg/l
Cyanide as CN	Not to exceed	0.2 mg/l
Vanadium as V	Not to exceed	0.2 mg/l

Arsenic as As	Not to exceed	0.2 mg/l
Phosphate as P	Not to exceed	5 mg/l
Oil & Grease	Not to exceed	10 mg/l
Fluoride as F	Not to exceed	10 mg/l
Hexavalent Chromium as Cr	Not to exceed	0.1 mg/l
Total Chromium as Cr	Not to exceed	2 mg/l

- d. As per the decision taken in 157th Board meeting, the unit shall comply with the revised standards for the following parameters within the period of six months from the date of issue of this consent.

Parameters	Discharge on land for irrigation, Inland surface water	
pH	Between	5.5 & 9.0
Total Suspended Solids	Not to exceed	Not more than 20
BOD, 3 days, 27o C	Not to exceed	10 mg/l
COD	Not to exceed	50 mg/l
N-total	Not to exceed	10mg/l
Fecal Coliform	Less than	100MPN/100ml
Oil & Grease	Not to exceed	10mg/l

(iv) **Domestic Effluent treatment and Disposal:-**

The domestic waste water shall be re-circulated after treatment and chlorine dosing as make-up water in cooling tower no. 1.

- (v) The unit shall at his own cost get the effluent samples collected both before and after treatment and analyzed, every month the parameters indicated above from a laboratory recognized by Ministry of Environment and Forest under the Environment Protection Act, 1986 and rules thereunder and results shall be submitted regularly to this Board, by 15th of the succeeding month.

- (vi) A good house-keeping shall be maintained within the factory premises. All pipes, valves and drains shall be maintained in leak-proof condition. Floor washings shall be channelized to the effluent collection system only and shall not be allowed to find way in open areas.

(vii) **Non-Hazardous Solid Waste:**

All the Solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board. The total quantity shall be segregated and treated as follows:

Sr.No	Type of segregated solid waste	Quantity (MT/Year)	Disposal
1	Waste sand from WTP filters	20 MT	Used along with back filling material for structure/building foundation, road construction etc.
2	Waste activated carbon from WTP filters	15 MT	
3	Sludge from STP	4 MT	Manure/re-use in process
4	Glass wool insulation	10 MT	To be given to Co-processing in for energy recovery or Incineration
5	PUF insulation	1 MT	
6	Metal scrap	700 MT	

7	Rubber scrap	25 MT	To be given for recycling
8	Packaging Material	60 MT	
9	Plastic scrap	75 MT	
10	Construction debris	50 MT	To be disposed as per the C&D waste management rule.

- (viii) **The unit should have zero discharge policy i.e. the treated waste water may be re-used in process/greenbelt development/or any other use as deemed fit by the unit with due permission from the Board.**

4. **CONDITIONS REQUIRED TO BE COMPLIED UNDER THE AIR ACT:**

- (i) The unit shall maintain and operate air pollution control system of adequate capacity for the following equipments;

Sr. No.	Name of Equipments/ Installation	No. of Installation	Capacity	SO ₂ Kg/Hr	Particulate Matter mg/Nm ³
1.	Boiler (utility boiler)	3	70 MT/hr	-----	-----
2.	Boiler (MP)	1	5 MT/hr	-----	-----
3.	Combustion chamber	1	115 MT/hr	----	-----
4.	D. G. Set	01	8100 KVA	105.6	150

- (ii) The unit shall observe the following standards for D.G. Sets ≥ 1000 KVA

Sr. No.	Parameters	Limits
1.	NO _x (as NO ₂)	1100ppm (as 15% O ₂) Dry basis in ppm
2.	NMHC (as C)	150mg/Nm ³ (at 15% O ₂)
3.	Particulate Matter	150mg/Nm ³ (at 15% O ₂)
4.	CO	150mg/Nm ³ (at 15% O ₂)
5.	Sulphur Content in Fuel	Less than 2%

- (iii) The applicant shall maintain and operate air Pollution control systems and let out the emission through following stacks & Outlets, so as to restrict the emission discharged on any day shall not exceed the figures as mentioned below:

Sr. No.	Stack No.	Description of Stack	Quantity of Emission NM ³ /hr	Stack Height in meters
1	S-BF101CA	Power station Boiler (Common stack)	1,66,000	50
2.	S-BF201	i) 6 MWCCP + MP Boiler (Common stack) ii) MP Boiler	35,800 5,000	30
3.	A-CA101	Ammonia Plant Reformer + C Chamber (Combustion Chamber)	2,40,000	36.5
4.	U-IA301	Urea Plant Prilling Tower	6,00,000	53
5.	U-FD304	Urea Plant Dust Separator	71,600	61

6.	N-CB901	NPK-A Plant Fumes Stack	66,000	48.5
7.	N-CB301	NPK-A Plant Dryer Stack	1,94,000	33
8.	N-CB403	NPK-A Plant De-dusting (Cooler) Stack	72,000	33
9.	O5-5D101	NPK-B Plant Stack	2,32,000	43.5
10.	E-GT-201	Emergency Generator Set	6,000	14

(iv) The unit shall observe the following standards:-

Sr. No	Type of fuel	Quantity /hr
1.	Natural gas for 70MT/hr Boiler	8500 Kg/hr
2.	Natural Gas (for 5Tboiler)	310 kg/hr
3.	Natural gas for combustion Chamber and reformer	10,000 kg/hr
4.	L.S.H.S. (for D. G. Set)	1400 ltrs/hr
5.	H.S.D. for initial startup	20 ltrs/hr
6.	Natural Gas for NPK-A furnace	300 Kg/Hr.
7.	Natural Gas for NPK-B furnace	300 Kg/hr
8.	HSD for Emergency Generator Set	330 ltrs/hr

(v) The emissions shall not contain constituents in excess of the prescribed limits as laid down here under:-

Sr. No	Name of Equipments/ Installation	Parameters	Limits
1.	U-IA301	Particulate Matter	150 mg/Nm ³
2.	U-FD304	Particulate Matter	150 mg/Nm ³
3.	N-CB901	Ammonia	10 kg/hr
4.	N-CB301	Particulate Matter	150 mg/Nm ³
5.	N-CB403	Particulate Matter	150 mg/Nm ³
6.	O5-5D101	Particulate Matter & Ammonia	150 mg/Nm ³ & 10 kg/hr

(vi) **The Stack Port Hole and Plat form is to be designed as per CPCB guidelines Method 1 Part 1 of Stack Monitoring – Material & methodology for isokinetic sampling.**

(vii) The unit should comply with all the standards for D. G. Sets prescribed at Sr. no. 94, 95 and 6 of Schedule I of the Environment (Protection) Rules, 1986.

(viii) The unit should carry out emission monitoring from the stacks of D.G. set annually and from other Stacks once in three months from a laboratory recognized by Ministry of Environment and Forest under the Environment Protection Act, 1986 and the result shall be submitted to this Board.

- (ix) The unit shall take adequate measures for control of noise levels from its own sources within the premises in respect of noise. The limits are as follows:

Category of Area/ Zone	Limits in dB (A) Leq	
	Day time	Night time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40

Day time is reckoned between 6 a.m. to 10 p.m. and night time is reckoned between 10 p.m. to 6a.m.

- (x) Adequate mitigation measures shall be taken to control emissions from the unit process so as to achieve the following Ambient Air Quality standards:

Sr. No.	Pollutant	Time weighted	Concentration in Ambient Air	
			Industrial, residential, rural & other area	Ecologically sensitive area (notified by Central Government)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual* 24hours**	50	20
			80	80
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual* 24hours**	40	30
			80	80
3	Particulate Matter (sizelessthan10µm) or PM ₁₀ µg/m ³	Annual* 24hours**	60	60
			100	100
4	Particulate Matter (sizelessthan2.50µm) or PM _{2.5} µg/m ³	Annual* 24hours**	40	40
			60	60
5	Ammonia (NH ₃) µg/m ³	Annual* 24hours**	100	100
			400	400

*Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

**24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

- (xi) **The Unit shall carry out Ambient Air Quality Monitoring once every month from a laboratory recognized by MOEF under the Environment Protection Act., 1986 and the report should be submitted to the Board by the 15th of the subsequent months.**

5. **CONDITIONS REQUIRED TO BE COMPLIED UNDER THE HAZARDOUS AND OTHER WASTES (MANAGEMENT AND TRANSBOUNDARY MOVEMENT) RULES 2016 AS AMENDED THEREAFTER:**

- (i) The unit is hereby granted authorization to operate a facility for collection, storage and disposal of hazardous wastes as specified below:

Sr. No.	Category	Type of waste	Quantity	Mode of disposal
1	5.1	Used/Spent Oil	50 MT/Annum	Should recycle hazardous waste through GSPCB authorized recycler

2	3.1	Furnace Oil tank cleaning residue & washing water & sludge	100 MT/annum	Should recycle hazardous waste through GSPCB authorized recycler operating in state of Goa OR To be sent for Coprocessing in cement Kiln as per CPCB guidelines for coprocessing OR To be sent to CHWTSDF at Pissurlem IDC operated by M/s Ponda Envocare Ltd for incineration
3	18.3	Spent catalyst (Catalyst containing metals like Ni, Fe, Cr, Cu, Zn)	120 MT/annum	To be sent to authorized utilizers registered with SPCB under Rule 9 of HZW rule OR To be sent for Alternate Fuel and Raw Material Facility (AFRF) for preprocessing and followed by co-processing to any cement industries/ To be sent for Co processing in cement Kiln as per CPCB guidelines for co processing OR To be sent to CHWTSDF at Pissurlem IDC operated by M/s Ponda Envocare Ltd for incineration.
4	35.3	Chemical sludge Form waste water treatment	60 MT/annum	To be sent for Alternate Fuel and Raw Material Facility (AFRF) for preprocessing and followed by co-processing to any cement industries/ To be sent for Coprocessing in cement Kiln as per CPCB guidelines for coprocessing OR To be sent to CHWTSDF at Pissurlem IDC operated by M/s Ponda Envocare Ltd for incineration OR Chemical-Physical Treatment followed by disposal in a secured landfill of CHWTSDF at Pissurlem IDC operated by M/s Ponda Envocare Ltd.
5	5.2	Wastes or Residues containing Oil	5MT/annum	Waste oil: To recycler registered with SPCB and having valid authorization of SPCB. Residue containing with oil : To be sent for Coprocessing in cement Kiln as per CPCB guidelines for coprocessing OR To be sent to CHWTSDF operated M/s. Ponda Envocare Ltd. At Pissurlem IDC for incineration.
6	33.1	Empty barrels/ container/ liner contaminated with hazardous chemicals	12MT/Annum	Empty barrel/drum/liners to be washed and the effluent to be treat in ETP after following CPCB guidelines /SOP for decontamination of contaminated container/drums. The empty drums after

				washing as per guidelines to be given to recyclers OR To be sent to authorized utilizers registered with SPCB under Rule 9 OR To be sent for Alternate Fuel and Raw Material Facility (AFRF) for preprocessing and followed by co-processing to any cement industries/ To be sent for Coprocessing in cement Kiln as per CPCB guidelines for coprocessing OR To be sent to CHWTSDF at Pissurlem IDC operated by M/s Ponda Envocare Ltd for incineration
7	33.2	Contaminated cotton rags or other cleaning material	5MT/annum	To be sent for Alternate Fuel and Raw Material Facility (AFRF) for preprocessing and followed by co-processing to any cement industries/ To be sent for Coprocessing in cement Kiln as per CPCB guidelines for coprocessing OR To be sent to CHWTSDF at Pissurlem IDC operated by M/s Ponda Envocare Ltd for incineration.
8	3.3	Sludge and filter contaminated with oil	2MT/annum	To be sent for Coprocessing in cement Kiln as per CPCB guidelines for coprocessing OR To be sent to CHWTSDF at Pissurlem IDC operated by M/s Ponda Envocare Ltd for incineration.
9	35.2	Waste resin material from DM plant	6MT/Annum	To be sent for Coprocessing in cement Kiln as per CPCB guidelines for coprocessing OR To be sent to CHWTSDF at Pissurlem IDC operated by M/s Ponda Envocare Ltd for incineration.

- (i) ***The authorization shall comply with the provisions of the Environment (Protection) Act, 1986 and the rule made there under.***
- (ii) The person authorized shall not rent, lend, sell or transfer or otherwise transport the hazardous waste without obtaining prior permission of the Goa State pollution Control Board.
- (iii) Any unauthorized change in personnel, equipment or working conditions as mentioned in the hotel unit by the person authorized shall constitute a breach of his authorization.
- (iv) It is a duty of the authorized person to take permission of the Goa State Pollution Control Board to close down the facility.
- (v) The inner bottom surfaces of the tank shall be impervious enough to prevent leakage or seepage of these wastes into the sub surface soil or ground water.

- (vi) The occupier shall maintain a manifest system as per Rule 19 for disposal of hazardous wastes to ensure that these wastes are delivered to the designated facility preventing pilferage and clandestine disposal due to unforeseen events that may occur during transit.
- (vii) The manifest shall be endorsed by the dispatcher, transporter and receiver of hazardous wastes. The endorsed copy shall be furnished to the Goa State Pollution Control Board.
- (viii) Under any circumstances the hazardous waste shall not be disposed to unauthorized facilities.
- (ix) The occupier shall maintain the records for collection, storage and disposal of hazardous waste in Form 3 of as per Hazardous And Other Waste (Management & Transboundary Movement) Rules 2016 as amended thereafter.
- (x) The occupier shall furnish monthly returns for collection, storage and disposal of hazardous waste through online OCCMS systems.
- (xi) The unit shall put up an online board (minimum size 6x4 Feet) at prominent location near the main gate providing details as follows in English and Konkani languages:-
- Hazardous Waste category number.
 - Hazardous Waste quantity number.
 - Treatment facility for each category.
 - Mode of disposal for each category.
 - Hazardous Waste Authorization number, date and validity period.
 - Water Consent number, date and validity period.
 - Air Consent number, date and validity period.
 - Quantity and Nature of Hazardous Chemicals being used.
- (xii) The occupier shall ensure that the Hazardous Wastes are not allowed to be stored for more than 90 days.
- (xiii) The unit shall submit online annual returns in prescribed format on or before 30th June of every year.
- (xiv) An Authentic MSDS (Material Safety Data Sheet) is to be provided for the products manufactured, byproducts & waste generated, duly signed & stamped by an authorized representative of the unit.**

6. GENERAL CONDITIONS:

- (i) The unit shall not change or alter the quantity, quality of discharge, temperature or the mode of the effluent/ emission or hazardous wastes or control equipments provided for without previous permission of the Board.
- (ii) The unit shall provide facility for collection of samples of effluent, air emissions and hazardous wastes to the Board staff.
- (iii) An application in prescribed form along with the prescribed fees for renewal of Consent shall be submitted at least 60 days before the expiry of validity of this Consent. An application for renewal of Consent submitted after expiry of the validity shall accompany with penalty of 50% of the Consent fees in addition to the prescribed consent fees.

- (iv) The Board shall be forthwith informed of any accident or unforeseen event involving discharge of any poisonous, noxious or polluting matter into a stream or well or on land or into the atmosphere, as result of such discharge water/ air is being polluted.
- (v) This Consent to operate is granted without any prejudice to any of the permission(s) required under any law, by laws and regulations in force and this Consent to Operate is confined to matters arising out of the Air Act and Water Act only.
- (vi) The Board reserves the right to amend or add any conditions in this consent and the same shall be binding on the applicant.
- (vii) The unit shall submit to this office, the Environmental Statement Report in Form V for the Financial Year ending April to March by 30th September of the succeeding year as per the provisions of the rule 14 of the Environment (Protection) (Second Amendment) Rules, 1992.
- (viii) Reliable flow meter shall be installed to maintain record of water consumption/waste water generation per day. The records so maintained shall be made available to the Board officials whenever required.
- (ix) The industry shall bear the cost of analysis / monitoring in case of complaints received by the Board/ reinspections due to non-compliances observed by the Board & monitoring carried by the Board.
- (x) The unit shall submit the details of the Public Liability Insurance Policy under the PLI Act 1991, to the Board office as applicable.
- (xi) The unit shall submit returns for disposal of batteries under the Battery Waste Management) Rules 2022, if applicable.
- (xii) The unit shall submit returns for disposal of e - waste under the E- Waste (Management) Rules 2022, if applicable.
- (xiii) The unit shall submit returns for disposal of plastic waste under the Plastic Waste (Management) Rules 2016 as amended thereafter, if applicable.
- (xiv) **The unit shall comply to the Guidelines and DUST Mitigation measures in handling Construction material and C & D waste issued by central Pollution Control Board and are placed on Board website goaspcb.gov.in.**
- (xv) Unit has to submit monthly monitoring reports on the Online consent management of monitoring system of the board. Also a hard copy of the same to be submitted to board office.
- (xvi) **The unit has to obtain no objection certificate from the Central Ground water Authority, or the concerned state authority for any ground water abstraction, if applicable.**

7. SPECIFIC CONDITIONS:

- (i) The unit is required to submit revised water balance chart.**
- (ii) ETP before RO must be upgraded scientifically, especially the HRSCC to achieve better treated effluent quality and higher performance of UF, RO.**
- (iii) The guard pond for storage of effluent under upset condition must always be maintained empty when there is no off specification effluent to be stored.**
- (iv) Settled solids in holding tanks should be desludged at regular intervals to avoid anaerobic condition.**
- (v) Housekeeping on the premises is a major issue and needs improvements especially at NPK and Urea Bagging area. Utmost care should be taken to avoid surface runoff from NPK bagging area. The spillages should be contained at source to avoid further contamination of the surface / storm water runoff.**
- (vi) The unit shall identify and characterize the deposits on rocks near the railway yards.**
- (vii) The unit shall establish Continuous particulate emission online monitoring on Stack as specified in the consent.**
- (viii) The unit shall relocate Ambient Monitoring locations and shall be carried out at 3 locations, one on downwind direction to the predominate wind direction and other two locations at 120⁰ to the downwind location**
- (ix) The unit shall load the sludge in the Dryer, with not more than 6% dry solids to ensure uninterrupted operation and better efficiency. Sludge will have to be stored in a tank with an agitator to maintain uniform consistency of solids before feeding to dryer and without transfer of sludge to sludge drying beds.**
- (x) The sludge holding pond should be discarded but not broken down and after making it water can be used to store effluent under upset condition. The predicted storm water to be pumped to the factory premises and the capacity of the containment storage for the water to be informed to this Board.**
- (xi) Site has carried out study through NEERI to provide settling pond and filter bed. The unit is required to submit copy of the same to the Board along with action taken report within 15 days.**

- (xii) Storm water drain during non- monsoon season must be maintained dry.
- (xiii) The effluent bypass pipeline was observed to be provided with a valve, which was closed and locked, however as per CPCB Guideline a Flow meter with camera should be provided on treated effluent recycle line. (Holding Pond effluent transfer pipeline to Plant), and connected to the Board.
- (xiv) The unit is required submit the drawings indicating the discharge pipeline and dismantle the old pipeline. Unit shall ensure that no effluents are released outside the factory premises.
- (xv) Unit has to provide catchment area with settling pond and filter bed arrangement within the premises and the monsoon runoff water (majorly from ETP, raw material storage, bagging plant process plant, RO plant and auto workshop, FO storage tank area) has to be diverted into the same before allowing the same to flow outside the premise. The final overflow from the settling pond should meet the standards specified for the treated water from ETP as above 3(iii) (c). Necessary Water sampling arrangement has to be provided for collecting the water sample of the overflow flowing outside the premise.
- (xvi) Covered shed has to be provided for the workshop (autosshop) area and the earth moving machineries has to be parked within the closed shed. Monsoon run off water from the workshop area has to be channelized into the settling tank.
- (xvii) Housekeeping of the plant area has to be improved and leakages of steam traps, pipe line valves etc. has to rectified immediately. Solid non hazardous waste generated from the plant has to be properly segregated and stored. Spillages from the road have to be cleaned regularly.
- (xviii) Unit has to submit details layout of the storm water drain and layout of the existing pipe line from the unit to the sea.
- (xix) Fixed closed shed has to be provided for storage of phosphoric acid sludge and filler material instead of temporary shed.
- (xx) The storm water drain from the internal premise has to be maintained completely dry and no process water/leakages be allowed in the storm water drain.
- (xxi) ETP treated water used for gardening has to analysed once in every month from a laboratory recognized by Ministry of Environment forest and climate change and the results have to be submitted to Board.
- (xxii) Covered shed need to be provided to holding pond of the ETP, ETP sludge storage area/beds.

- (xxiii) As per the Hazardous and other Wastes (Management and Transboundary Movement) Rules 2018, Form3 has to be maintained.
- (xxiv) In any upset conditions the industrial effluents after treatment has to be stored in impervious holding pond and should be reused in plant. Unit has to submit action plan within 30 days for the management of handling of the treated effluents in case of upset conditions.
- (xxv) Unit should submit the status report if the treated effluent is recycled back in the plant for reuse, a flow-meter has to be installed on the recycle line with a camera to capture the recycle effluent flow instead of installing showing the closed valve of the treated water discharge line.
- (xxvi) Unit should suitably justify the concept of Zero Liquid Discharge (ZLD).
- (xxvii) Unit should get the status of assessment through NEERI in respect of certain consent compliance (e.g. clause 7 (i)) vis-à-vis reasonability to seek exception w.r.t. clause 7(ii).
- (xxviii) Unit should monitor lysimeter installed at two sites for the containment of Arsenic and Chromium bearing Hazardous Waste as per the NEERI recommendation and Submit monitoring report to the Board.
- (xxix) The unit shall submit bank guarantee of rupees 25.0 lakhs within 15 days of the receipt of the consent for the compliance of the above consent conditions.

To
M/s. PARADEEP PHOSPHATES LIMITED
 (Fertiliser Division)
 (Represented by: Mr. Nilesh Govind Dessai)
 Survey No. 157/1A & 163/1,
 Zuarinagar, Sancoale, Mormugao – Goa.

Copy for favour of information to –

1. Accounts Section.
2. Concerned File.
3. Guard File

Received Consent fee of: **The Capital Investment of the unit is Rs. 1,51,340 lakhs**

Receipt no.	Amount	Date
2837	Rs. 79,18,248/- (Consent Renewal fees)	21/12/2023

Dr. Shamila Monteiro
 (Member Secretary)
 Goa State Pollution Control Board

Goa State Pollution Control Board

QEHS-CIE-F(06-03)

CUSTOMER FEEDBACK

Dear Citizen / Customer,

We appreciate you for sparing a few minutes for giving us your valuable feedback on our services

Name : Contact

Address:.....

Email: Date.....

Name of the service availed:

Are you aware that service standards are included in the Citizen's Charter as available on Board's website : www.goaspcb.gov.in?Yes No

If yes, is the Citizen Charter simple and easy to understand?

Yes No

Description of service delivery parameters (Consents/Authorisation/RTI's/Complaints etc.)	Excellent	Good	Fair	Average	Poor	Reason for grading
Time taken to deliver service in comparison to service standards mentioned in Citizen's Charter						
Quality of service (accuracy, completeness)						
Knowledge of dealing hand / staff regarding services/schemes						
Courtesy of staff						
Board's response in view of your query/requirement is to your satisfaction						
Date of your visit to the office and your overall experience						

Suggestions for improvement, if any

.....

Signature & date

To,
The Member Secretary,
Goa State Pollution Control Board,
Near Pilerne Industrial Estate,
Opposite Saligao Seminary, Saligao, Bardez, Goa. 403511

Please note that your feedback is considered essential for overall improvement and development of Board functions in service of environment.

o/c
Acknowledgement copy

PPL/ENV/2024-25/005

19.06.2024

To,
Member Secretary,
Goa State Pollution Control Board,
Nr. Pilerne Industrial Estate,
Opp. Saligao Seminary,
Saligao-Bardez
Goa 403511.

Bardeaz
19/06/24
Goa State Pollution Control Board
Opp. Saligao Seminary
Saligao Goa 403 511

Dear Madam,

Subject: Compliance report on the Minutes of personal hearing held on 11.06.2024.**Ref:** GSPCB's Notice bearing No. 2024/GSPCB/Letter/23631/Tech/5057 dated 06.06.2024.

We are in receipt of the minutes of personal hearing held on 11.06.2024 and the same has been received at our end on Thursday, 13.06.2024.

In this context, the company has initiated appropriate Immediate, Medium and Long-term actions for sustainable operations of the Unit of which we would like to appraise the board in the ensuing paragraphs.

The intensity and timing of pre-monsoon showers experienced at the site this year were atypical, leading to the possible washing off of dust, tire and foot residue from roads. We acknowledge this could be a contributory factor to the surface runoff. However, we reiterate that Pre-monsoon clean-up activities are undertaken every year.

Notwithstanding the fact that the creek/rivulet is topographically adjacent to the manufacturing unit, the presence of other waste streams flowing into the creek also needs to be taken into consideration. The surface runoff from our premises during the initial rains might partially explain the elevated levels of TKN and Potassium found in the creek analysis report but, it is to be noted that the source of Potassium used in the manufacture of complex fertilizers is Muriate of Potash (MOP) viz. KCl. In the event of a surface runoff from the premises, the samples should also have indicated a rise in Chlorides, but the fact that Chloride levels have remained same in the sample analysis of the previous months and the simultaneous significant increase in Sodium levels in the samples does not accurately reflect the situation, potentially misleading the interpretations.

Samples drawn from the stagnant puddle of water from the Storm Water Network would not be representative of the surface runoff. The puddle had accumulated at a damaged portion of the trough of the storm water drain which has been immediately repaired. Furthermore, the structure of the belt cross over point adjacent to the location has been completely covered to avoid any contamination of storm water (may please refer to image #1 and #2 in **Annexure II**)

Analysis of the samples drawn on 26.05.2024 indicates that, all the parameters mentioned are within the specified limits for surface run off as well as for treated effluent. Furthermore, as one of the conclusions of the inspection report it is mentioned that 'there was no discharge found of untreated effluent by the unit'. The above points clearly indicate that there was no violation of the conditions of the CTO No.12/2018-PCB/58613/R000121 dated 18. 09. 2019.

PARADEEP PHOSPHATES LIMITED

CIN No.: L24129OR1981PLC001020

Goa Unit : Jaikisaan Bhawan, Zuarinagar, Goa - 403 726

Tel: +0832 2592180, 2592181, 6752399

Registered Office: Bayan Bhawan, Pandit J.N. Marg, Bhubaneswar - 751 001

www.paradeepphosphates.com

As directed by the Board, please find below the company's response/ compliance in a point wise manner:

1. The unit is required to submit revised water balance chart: -

Water balance enclosed as Annexure-I.

2. ETP before RO must be upgraded scientifically, especially the HRSCC to achieve better treated effluent quality and higher performance of UF, RO: -

We submit that a comprehensive study aimed at revamping the ETP system has been initiated. This study is scheduled for completion by end of July 2024. The ETP will be upgraded in accordance with the recommendations arising from the study report. We target to complete the recommendations within 6 months from the receipt of the report.

3. The guard pond for storage of effluent under upset condition must always be maintained empty when there is no off-specification effluent to be stored: -

To ensure the guard pond is always ready for emergency storage of off-specification effluent, the company is committed to maintaining it empty during normal operations. As an immediate measure, we will empty out half of the guard pond to ensure its availability in case of an upset condition. Full implementation, including necessary process modifications, will be completed within Six months.

4. Settled solids in holding tanks should be de-sludged at regular intervals to avoid anaerobic condition: -

Suggestion regarding the regular desludging of settled solids in holding tanks to prevent anaerobic conditions is well received and agreed upon. During the environmental assessment held on 01.06.2024, it was identified that this anaerobic condition pertains to the settling pond in the ETP. We have since developed and implemented a concrete plan to de-sludge the tank regularly.

5. Housekeeping on the premises is major issue and needs improvements especially at NPK and Urea bagging area. Utmost care should be taken to avoid surface runoff from NPK bagging area. The spillages should be contained at source to avoid further contamination of the surface/storm water runoff.

The company has initiated an area housekeeping plan specifically for the NPK and Urea bagging areas to promptly address spillages. Spillage-prone areas such as the conveyor belt transfer points have been identified and completely covered. Additionally, a dyke has been provided underneath the transfer points to arrest any spillage which will be cleaned as necessary to prevent storm water contamination. Representative images #1 and #2 attached as Annexure II show the covered conveyor belt transfer point.

Furthermore, as an immediate action, we are in the process of constructing temporary sheds over the Holding ponds, Guard Pond and the settling tanks of the ETP. WO for the jobs attached as Annexure III. We commit to provide permanent structured sheds over the above ponds within Six months.

6. The unit shall identify and characterize the deposits on the rocks near the railway yards: -

Sample of the deposits on the rocks at the railway siding have been collected and the contents are being analysed. We shall submit the analysis report to the Board at the earliest.

7. The unit shall establish continuous particulate emission on line monitoring on stack as specified in the consent: -

We are currently conducting manual sampling of all stacks as per the conditions in the CTO No.12/2018-PCB/58613/R000121 dated 18. 09. 2019.

We wish to bring to your attention that we have earlier conducted trials of online continuous particulate emission monitoring at the Urea prilling tower and NPK stacks. These trials, however were unsuccessful owing to the nature of the service conditions and the resultant fouling of the sensors. We could not pursue this further due to unavailability of proven technology/equipment for such applications. However, we will explore the feasibility of installing such monitoring systems and look into suppliers with proven technology. This feasibility study will be finalized within three months.

8. The unit shall relocate ambient monitoring locations and shall be carried out at 3 locations, one on downwind direction to the predominate wind direction and other two locations at 120° to the downwind location: -

The company's Ambient Air Quality Monitoring Stations, three in number, were installed within the factory premises prior to 1998.

However, as per directions of the Hon'ble High Court of Goa in Writ Petition No. 450/88, GSPCB approached CPCB for Selection of Ambient Air Quality Monitoring Stations around (erstwhile) Zuari Agro Chemicals Limited (Goa). Dr B. Sengupta, then Additional Director, CPCB submitted a report to the Member Secretary, GSPCB dated 02.06.1998. Based on this report under the directives of the Hon'ble High Court of Goa, the existing 4 nos. Ambient Air Quality Monitoring Stations have been installed. The relevant extract of the report is attached as **Annexure-IV**.

9. The unit shall load the sludge in the dryer, with not more than 6% dry solids to ensure uninterrupted operation and better efficiency. Sludge will have to be stored in a tank with an agitator to maintain uniform consistency of solids before feeding to dryer and without transfer of sludge to sludge drying beds: -

As per our understanding this would be a measure to improvise on the efficiency of the sludge dryer operations rather than compliance. We will explore methods that contribute to uninterrupted operation and improved efficiency; such as loading sludge with no more than 6% dry solids and utilizing a tank with an agitator to maintain solids consistency before feeding it into the dryer, thereby eliminating the need for sludge drying beds.

10. The sludge holding ponds should be discarded but not broken down and after making it water can be used to store effluent under upset condition. The predicted storm water to be pumped to the factory premises and the capacity of the containment storage for the water to be informed to the board: -

Our understanding on this point is in two parts:

Firstly, sludge holding ponds which can be repurposed into water holding ponds, specifically for storing effluent during upset conditions. This approach aligns with environmental sustainability goals while ensuring effective management of wastewater resources.

Secondly regarding the storm water management, as per clause no. 7(i) of the CTO No.12/2018-PCB/58613/R000121 dated 18. 09. 2019 as well as following the advice of experts in the Audit committee, we are set to construct 2 nos. storm water retention catchments with a combined capacity of 1,000 m³ (2 hrs of the firefighting pump capacity). Work progress images #3, #4, #5 and #6 of the retention tanks are attached as **Annexure V**.

11. Site has carried out study through NEERI to provide settling pond and filter bed. The unit is required to submit copy of the same to board along with action taken report within 15 days: -
We shall apprise the Board with a copy of the study report, along with the action taken report, within the stipulated 15-day period.

12. Storm water drain during non- monsoon season must be maintained dry: -
Noted and agreed.

13. The effluent bypass pipeline was observed to be provided with a valve, which was closed and locked, however as per CPCB guideline a flow meter with camera should be provided on treated effluent recycle line. (Holding pond effluent transfer pipeline to plant), and connected to the board: -

In compliance with the 1st Revised CPCB Guidelines for Online Continuous Effluent Monitoring Systems dated 10.07.2018, we will provide the flow meters with camera and connect them to the Board's server within two months' time.

14. The unit is required to submit the drawings indicating the discharge pipeline and dismantle the old pipeline. Unit shall ensure that no effluent are released outside the factory premises: -

Enclosed: Layout of the emergency discharge pipeline as **Annexure V**.

While it is no longer in connection to the plant, the old pipeline will undergo a thorough inspection post-monsoon to identify potential area for blinding/disconnection to assure the local community of no connection of the line with the plant.

Thanking you,

Yours faithfully,

For Paradeep Phosphates Limited, Goa Unit

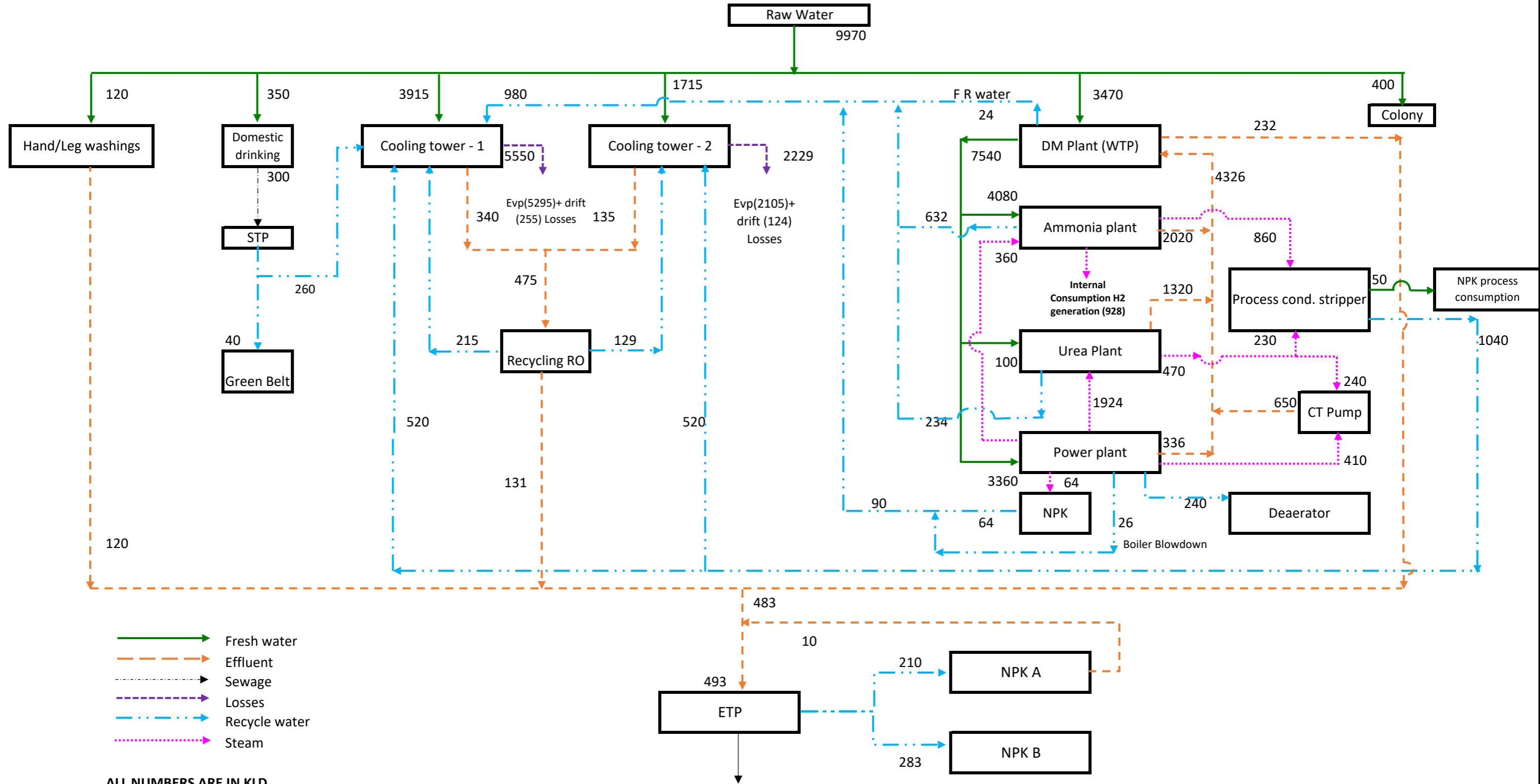


N. G. Dessai

Chief Manufacturing Officer & Unit Head- Goa Plant

Encl.: as above

ANNEXURE-I



- Fresh water
- - - Effluent
- . . . Sewage
- - - Losses
- - - Recycle water
- - - Steam

ALL NUMBERS ARE IN KLD

No effluent disposal to achieve zero liquid

Project : Paradeep Phosphates Ltd. Goa Unit			
Checked:	Overall Water Balance		
Approved:			
Date:	Date:	09/06/2024	
Prepared:	Rev:	01	

ANNEXURE – II

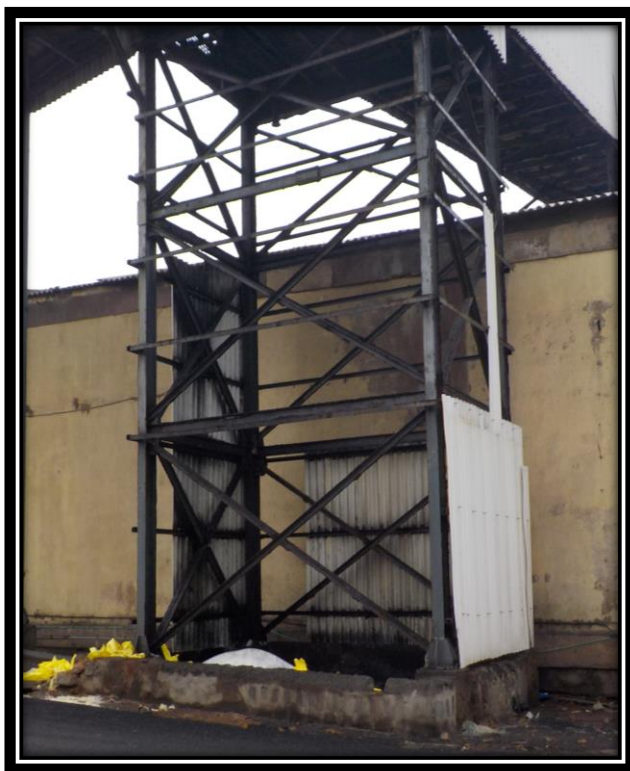


Image 1: Conveyor transfer point – before



Image 2: Conveyor transfer point – after



Paradeep Phosphates Ltd - Goa Unit

ANNEXURE-III



WORK ORDER

Paradeep Phosphates Ltd - Goa Unit Jaikisaan Bhawan, Zuarinagar Goa 403726 Tel No :832-2592180 Fax : 832-2555462 GSTIN : 30AABCP3276D1ZX PAN : AABCP3276D CIN :L24129OR1981PLC001020 website :www.paradeepphosphates.com TAN:BLRP28560A Regd. Office: Bayan Bhavan PT Jawaharlal Nehru Marg, Bhubaneshwar 751001	Order No. : 4600033599		Date : 17.06.2024		
	Buyer : Benedicto Andrade				
	Enq.No.:		Date:		EA No:
	Qtn. Ref:		Dated:		
	Indentor:				
	Indent Ref : 1300004048			Contractor : 302138	

To, SADGURU ENTERPRISES AT & P.O : AWASHI, TALUKA: KH RATNAGIRI 415709 Maharashtra India Phone No. :9000000000 Extn. : Fax : E-mail :sunilbmore69@rediffmail.com GSTIN :27ACFPM0424R1ZB	Please Delivery To, PPL Goa Central Stores PPL- Goa unit Jai Kisaan Bhawan, Zuarinagar South Goa - 403726 Vasco Goa INDIA	GSTIN : 30AABCP3276D1ZX
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Sl. No.	Job Description	Quantity/ Unit	Rate/ Qty.	P&F	Discount	CGST	SGST/ UTGST	IGST	Total Amount (INR)
1	Temporary bamboo sheds in plants								
1.1	Temporary bamboo shed- for roofs SAC - () Tax : IGST 18% - Input Cr	3550.000 M2	485.00	0.00	0.00	0.00	0.00	309,915.00	2,031,665.00
1.2	Temporary bamboo shed- for sides SAC - () Tax : IGST 18% - Input Cr	500.000 M2	275.00	0.00	0.00	0.00	0.00	24,750.00	162,250.00
	P & F Charges			0.00		0.00	0.00	0.00	0.00

Amount in words: Rs TWENTY ONE LAKH NINETY THREE THOUSAND NINE HUNDRED FIFTEEN ONLY **2,193,915.00**

Payment Terms :
On Running Bills, Payable Immediately

Delivery :
June#24

Remarks:
TERMS & CONDITIONS

1) Temporary Bamboo sheds in plants (in lieu of environmental assessment works)
2) Please acknowledge receipt of this Purchase Order, your order acceptance will constitute full acceptance of price, quantity, delivery date and payment term as stated on this Purchase/Work Order
3) It is the sole responsibility of the Contractor to comply with the provision and fulfil the statutory obligations under various statute from time to time. These include the following and any other statute enactments of Govt. of Goa and Govt. of India and rules made their under issued from time to time.

- # Goa Contract Labour (Regulation And Abolition) Rules, 1972 alongwith its further amendments & Conditions of Service
- # Employee#s Compensation Act
- # Minimum Wages Act and rules framed there under by the Office of the Commissioner, Labour & Employment, Goa.
- # Employee#s Provident Fund & Miscellaneous Provision Act
- # The Payment of Bonus Act
- # Employees' State Insurance (ESI) Act
- # The Workmen#s Compensation Act
- # Payment of Gratuity Act
- # Police Verification certificates
- # GST Registration
- # Industrial Dispute Act & other statute under various labour law applicable from time to time

I have read all terms & conditions and this contract is hereby accepted.	For Paradeep Phosphates Ltd - Goa Unit
---	---



Paradeep Phosphates Ltd - Goa Unit

WORK ORDER



Order No. : 4600033599

Date : 17.06.2024

It is the responsibility of the Contractor to obtain the required License from the Labour department and to ensure its validity during the entire tenure of this Contract

Contractor shall not engage children, aged, disables or handicapped contract workmen

Contractor shall abide and enforce on his workmen POSH Act- Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) 2013

Contract workers engaged to work inside the factory to have industrial experience of one year

Contractor shall employ such employees/labourers as he may think fit, and the employees/labourers so employed shall be the workers of the Contractor for all purpose whatsoever and shall not be deemed to be in the employment of PPL for any purpose whatsoever.

The Contractor shall have a valid labor license as per the Contract Labour Act, 1970.

The Contractor shall be responsible for the professional and technical competence of his employees/labourers and will select for work under this Work Order, reliable individuals who will perform effectively in the implementation of the Work Order, respect local customs and conform to a high standard of moral and ethical conduct.

The Contractor shall obtain a valid gate pass issued by PPL, for himself as well as his workmen/ employees, for entering PPL premises.

The Contractor shall be solely responsible for all statutory payments including but not limited to Employees State Insurance, Provident Fund, Gratuity, Bonus, etc. payable towards the contribution of his workmen/ employees. The Contractor shall submit documentary evidence of such payments (receipts, challans, etc.) on monthly basis to the PPL's HR department.

The Contractor shall abide by all rules, laws and regulations that may be in force from time to time regarding the employment or conditions of service of the employees. If under any circumstances whatsoever, PPL is held liable or responsible in any manner whatsoever for the default or omission on the part of the Contractor in abiding by aforesaid rules, laws and regulations or held liable or responsible to the employees of the Contractor in respect of any matter, PPL shall be reimbursed by the Contractor for the same as also any other expenses or costs incurred by PPL on any proceedings or litigations as a result of any claim, demand or act on the part of Contractor. PPL reserves its right to deduct the above stated claims/ expenses etc. from the dues of the Contractor whether under the Work Order or any other contract or otherwise recover the same from Contractor.

The Contractor is liable to take all precautions in respect of his machinery, men and materials as per safety code. In case of any injury or casualty of Contractor's labourers/employees during working hours or outside, the Contractor shall be solely responsible and to pay all the compensation/ex-gratia/aid from his pocket. PPL will not be responsible for such compensations at all, nor shall pay/reimburse any cost to the Contractor or his labourers/employees. The Contractor shall be liable to PPL for any act of commission or omission on his part or on the part of his labourers/employees thereby causing any loss, damage or inconvenience to PPL.

PPL shall not provide insurance coverage of any kind for the Contractor or Contractor's employees or contract personnel. Contractor shall obtain the required insurance coverage and maintain it till completion of the Work Order. The Contractor shall at its own expense carry and maintain insurance as per employees State Insurance Act, 1948(up to date) when applicable for its employees and shall indemnify and hold harmless PPL from all liabilities whatsoever on this account. Further as per Annexure I, clause G

In the event of any damage to property or employees of PPL caused by the Contractor or his agents, servants, employees or representatives etc., expenses incurred by PPL for rectifying such damages and also loss of production (down-time) will be recovered from the Contractor. Such amount will be as determined by PPL and shall be final and binding on the Contractor.

The Contractor shall also be liable for all losses, damages, injuries, etc. whatsoever which may be suffered by any third party or parties due to any accident or other acts of commission on their part or on part of the Contractors agents, servants, employees or representatives. PPL shall not be liable for any such loss or damage.

4) Contractor must strictly follow all PPL Environment, Occupational Health & Safety (EHS) Rules and Regulations, if not complied penalty shall be enforced on case to case basis. In case of grave violation to EHS requirements, PPL reserves the right to ban/blacklist the contractor for future associations, without prejudice to the right to take legal action as may be considered deemed fit.

5) All Work/Safety Permits to be obtained from concerned authorities before starting the work.

6) With respect to Hot Work, using cylinders without an flash back arrestor is not acceptable (Flashback arrestor as per ISO 5175). Hydro test details shall be available on cylinders (as per PESO Rules). Pressure gauges shall be operational mode & available (as per Gas cylinder rules). Colour codes of cylinders maintaining as per IS 4379. If requirements are not met, penalty shall be applicable.

7) Contractor to ensure that temporary electrical equipment's, devices, cables & lighting should be installed in accordance with standard electrical practices and must have approval from PPL supervisor/safety officer

8) Workmen working at unsafe elevations shall follow the Working at Height procedures set forth by PPL. Contractor to ensure that before deploying Worker at height their health condition to be accessed. Person having high blood pressure or alignment hindering their work at height shall not be deployed

9) This Work Order is non-exclusive and may be awarded in part to anybody else at PPL discretion

10) In the case of hostilities, lockdown, riot or civil commotion by persons other than Contractors employee and in case of earthquake, flood, fire or other natural physical disasters, Force Majeure shall be enforced. For avoidance of doubt, the mere shortage of labour, materials or utilities shall not constitute Force Majeure unless caused by circumstance that are in themselves Force Majeure. The Contractor shall be required to execute and proceed with the Works throughout such periods which shall not constitute Force Majeure

I have read all terms & conditions and this contract is hereby accepted.

For Paradeep Phosphates Ltd - Goa Unit



Paradeep Phosphates Ltd - Goa Unit

WORK ORDER



Order No. : 4600033599

Date : 17.06.2024

- 11) Any fines, interest, penalties or other costs incurred by the Contractor with respect to any non-compliance by the Contractor with the requirements as per this Contract and applicable Laws shall be sole responsibility and for the sole account of the Contractor who shall Indemnify PPL from and against any and all damage imposed on the Contractor arising therefrom.
- 12) If at any time during the performance of the work, the contractor is of the opinion that there is a change in the design, execution or operation of the work then the Contractor shall submit for PPL approval a written proposal for such change. The written proposal shall state the reasons with the Contractor's opinion.
- 13) A hefty penalty shall be levied on the Contractor if manpower found chewing Tobacco & Gutka with plant premises
- 14) The contractor would be liable to reimburse or make good of any loss/ claim by PPL towards tax credit rejected / disallowed by any tax authorities due to non-deposit of taxes or non updation of the data in GSTIN Network or non-filling of returns or noncompliance of tax laws
- 15) Other Terms and Conditions as stated in the attached General Terms & Conditions for Work Order # Annexure I & II shall be abided by the Contractor.

I have read all terms & conditions and this contract is hereby accepted.

For Paradeep Phosphates Ltd - Goa Unit

No: 6/5/98-PCB/Vol.II/

Date: 16/6/98

To,
The General Manager-Manufacturing
C/o Zuari Industries Ltd.
Jaikisaan Bhawan,
Zuarinagar-Goa.

Sub: Copy of the report regarding the Ambient air
quality monitoring station.

Sir,

Subsequent to the inspection carried out by Dr. B. Sengup
Addl. Director of Central Pollution Control Board along with
the officials of this Board regarding the selection of Ambient
air quality monitoring stations in and around your industrial
unit, this Board has received the report selecting the sites
for monitoring the ambient air quality. A copy of the report
is hereby enclosed for your reference.

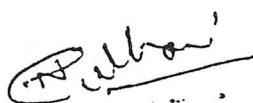
Yours faithfully,


(H.R. Kulkarni)
Member Secretary

Encl: As above.

ad/-

ISSUED



16/6/98

16/6/98

Report on Selection of Ambient Air Quality
Monitoring Stations Around Zuari Agro
Chemicals Ltd (ZACL) as per Directions of
Hon'ble High Court of Gao in Writ Petition
No. 450/88

By

Dr. B. Sengupta
Addl. Director, CPCB

Submitted to

Member Secretary
Goa State Pollution Control Board
House No. 243, Patto, Panaji
Goa : 403 001

June 2, 1998

Central Pollution Control Board
Parivesh Bhavan, East Arjun Nagar
Delhi : 110 032

Following criteria have been adopted to select the A.A.Q.M.S. :

- Maximum Impact Zone considering meteorological and other factors
- Air Quality Modelling results
- Population density at maximum air quality impact zone
- Security/safety of the monitoring station

It has been observed from the air quality modelling exercises, that maximum ground level concentration of pollutants are predicted in south east direction and it is occurring at a distance between 1 to 2 km. It is, therefore, proposed that maximum number of stations should be in south east and east direction of the plant and it should be located in between 1 to 2 km. Further, to see the impact in other areas, air quality monitoring stations should also be located in north and north west of the plant. Considering the above criteria, and the maximum air pollution impact zone the following air quality monitoring stations are recommended to be set up by Goa Pollution Control Board for measurement of NH₃, SO₂ and other pollutants.

Recommended Locations of Air Quality Monitoring Stations (AQMS)

S.No.	Name of the Location	Approx. Distance from the Plant (ZACL)
1	Jai Kishen Club	1.5 Km North (N) of the plant
2	Zuari Nagar (New Govt. Primary School)	1.3 Km East (E) of the plant
3	Zuari Nagar-D-Colony	1.0 Km South East (SE) of the Plant
4	Zuari Nagar-C-Colony	1.3 Km North North East (NNE) of the Plant

The locations are also shown in a map which is attached at Annexure-IV.

8.0 Monitoring Frequency, Sampling Height and Sampling and Analysis Method

In the above four proposed air quality monitoring stations, 24 hour sample should be collected twice a week. Sampling method should be followed as given in Annexure-V.

ANNEXURE – V

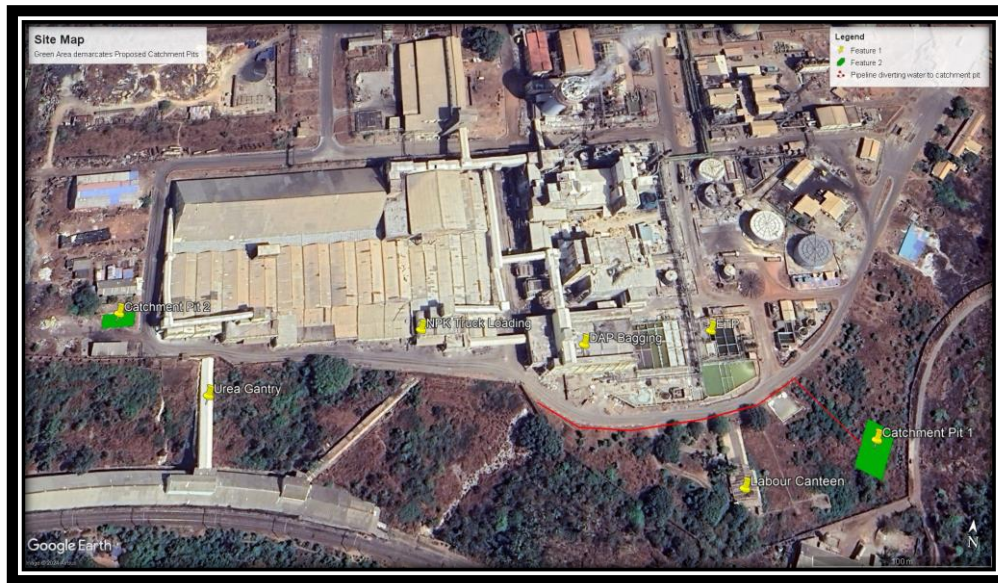


Image 3: Areas demarcated for Catchment Pit 1 & 2



Image 4: Laying of DI pipeline

ANNEXURE – V

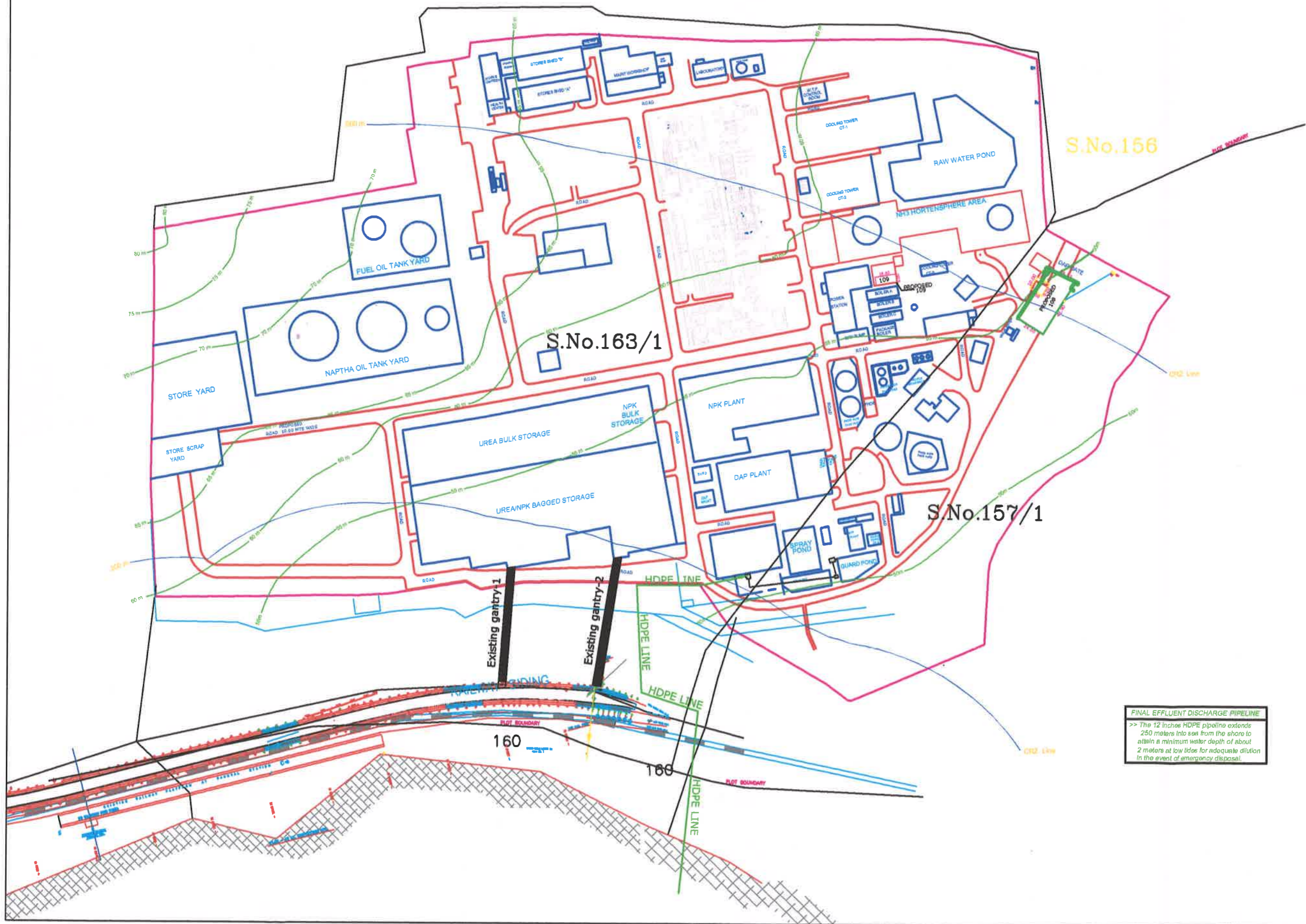


Image 5: Construction of Catchment Pit 1



Image 6: Construction of Catchment Pit 2

ANNEXURE-VI



FINAL EFFLUENT DISCHARGE PIPELINE
 >> The 12 inches HDPE pipeline extends 250 meters into sea from the shore to attain a minimum water depth of about 2 meters at low tide for adequate dilution in the event of emergency disposal.

DRAWN BY:	SCALE:	DATE:
ABHJIT	1:1000	13.07.19



सी.एस.आई.आर - राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान
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415



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No. NEERI/PP-SWM/2024/01

Date: June 26, 2024

To,

Mr. Nilesh Desai
Chief Manufacturing Officer and Unit Head
Paradee Phosphates Ltd.
Jai Kisan Bhavan, Zuari Nagar
Goa -403726.

Sub: **Submission of Final Report for Storm Water Management Study**

Dear Sir,

Please find enclosed herewith final report titled "**Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit**" carried out by CSIR-NEERI during April 2023 to May 2024. Please note that the recommendation made in the report are subjected to minor changes due to the site specific issues/constraints at the time of implementation. CSIR-NEERI shall be happy to assist, PPL during implementation of these recommendations.

Best regards.

Sincerely yours

(M.P. Patil)

Comprehensive Study on Storm Water
Management at M/s Paradeep Phosphates Ltd.,
Goa Unit

Sponsor



M/s Paradeep Phosphates Limited, Goa Unit
(Erstwhile- M/s. Zuari Agro Chemicals Limited)
Zuari Nagar, South Goa, India

Submitted by



**CSIR-National Environmental Engineering Research
Institute**
Nehru Marg, Nagpur, Maharashtra, India

June 2024



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

Table of Contents

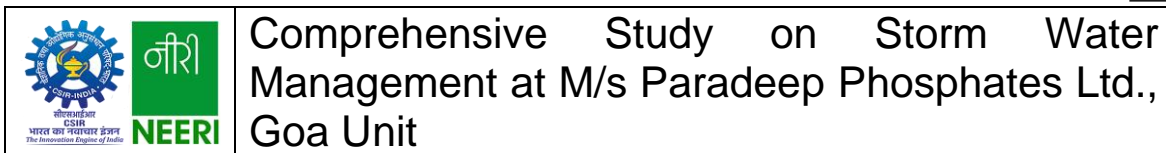
1. Introduction.....	2
1.1 Preamble.....	2
1.2 Origin of the Study.....	2
1.3 Objectives and Scope of Work.....	3
2. Site Reconnaissance and Field Investigations.....	4
2.1 Field Study.....	4
3. Sampling and Analysis of Storm Water.....	10
4. Quantification of Storm water.....	26
5. Observations and Recommendations.....	30
6. Conclusion & Major Recommendations.....	42

List of Tables

Table 1: Details of Cooling Towers.....	7
Table 2: Zone Partition of SWDs and its units.....	10
Table 3: Details of Storm Water Samples Collected in Zone-I	16
Table 4: Physicochemical Characteristics of Storm water samples of Zone-I	16
Table 5: Details of Storm Water Samples Collected in Zone-II	18
Table 6: Physicochemical Characteristics of Storm water samples of Zone-II	18
Table 7: Details of Storm Water Samples Collected in Zone-III	19
Table 8: Physicochemical Characteristics of Storm water samples of Zone-III	19
Table 9: Details of Storm Water Samples Collected in Zone-IV	20
Table 10: Physicochemical Characteristics of Storm water samples of Zone-IV	21
Table 11: Details of Storm Water Samples Collected in Zone-V	22
Table 12: Physicochemical Characteristics of Storm water samples of Zone-V	23
Table 13: Details of Storm Water Samples Collected in Zone-VI	24
Table 14: Physicochemical Characteristics of Storm water samples of Zone-VI.....	24
Table 15: South Goa Annual Rainfall Data for 20 Years Period	26
Table 16: PPL Facility Zone-wise Land Area	27

List of Figures

Figure 1: Aerial View of PPL with Zone Wise Partition for SWD Sampling.....	12
Figure 2: Aerial View of PPL with Zone Wise Partition for SWD Sampling with Creek..	13
Figure 3: SWD Map with Zone wise Partition and Sampling Points	14
Figure 4: Aerial View of Zone Wise Demarcation with Estimated Land Area in PPL Manufacturing Facility	29



1. Introduction

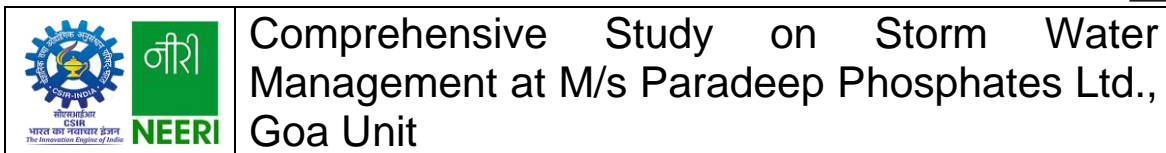
1.1 Preamble

M/s. Zuari Agro Chemicals Ltd (ZACL), founded in the year 1967, is a fertilizer unit located in the southern part of Goa. The unit commissioned its manufacturing operations in the year 1974 and is presently operating with a capacity of 1.2 MMTPA. The unit was taken over by M/s Paradeep Phosphates Ltd (PPL) during June, 2022. The various fertilizer products manufactured in the unit are being sold by the brand name- Jai Kisaan, which has a strong presence in the western and southern states of the country namely Maharashtra, Karnataka, Madhya Pradesh, Chhattisgarh and Telangana. The plant is unique with its co-located ammonia-urea and phosphatic manufacturing facilities. The primary raw materials manufactured at PPL are Re-gasified Liquefied Natural Gas (RLNG), Phosphoric Acid, Potash, Ammonia and Urea. In addition, the facility also produces various grades of NPK.

The manufacturing facility is based on the slurry granulation technology and pipe reactor technology for production of various grades of fertilizers. The manufacturing facility is supported by utilities such as captive power plant, bagging plant, railway siding, raw materials and finished goods storage yards.

1.2 Origin of the Study

The entire PPL facility covers a significant area including the main factory premises and generates a significant volume of storm water during the monsoon season. The existing storm water collection network and management facility are quite old. Off late there has been a concern that the surface run-off from the factory premises, especially during the initial monsoon may get contaminated due to various factory operations, and thus may pose a risk for the receiving environment. Therefore, the management of M/s PPL approached CSIR-NEERI seeking its expertise to conduct a comprehensive study to know the existing



status of the storm water management system and delineate appropriate recommendations for improvement in the system for efficient management of storm water in compliance with the environmental norms.

Accordingly, CSIR-NEERI submitted a project proposal for the said study and the work was awarded to CSIR-NEERI in April, 2023. Subsequently, CSIR-NEERI carried out detailed studies during April 2023 till May 2024 with the following Objectives and Scope of work.

1.3 Objectives and Scope of Work

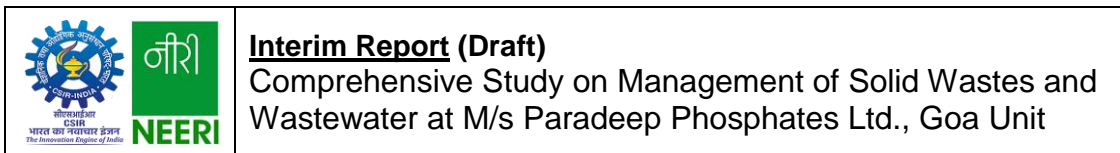
The objective of the study was to comprehensively review the existing storm water management system.

The study deliverables include thorough physicochemical characterization of Storm Water Streams, identifying areas of cross-contamination (if any) and to suggest improvement/prevention plans.

Accordingly, the study was conducted with the following scope of work:

- i. Site reconnaissance of the PPL complex to understand the operations of various manufacturing and offsite units
- ii. Review of the existing storm water management systems at PPL
- iii. Estimation of storm water generation at PPL
- iv. Sampling and physicochemical characterization of storm water to identify contaminants of concern
- v. Recommendation of measures for effective management of storm water
- vi. Preparation and submission of report incorporating above-mentioned aspects

This report presents the details of the major findings and observation made based on extensive field activities, collection of primary as well as secondary data including sampling and analysis of storm water during initial monsoon, review of the existing storm water management system, several rounds of discussions, validation of data etc., and recommendations of preventive and corrective measures for effective storm water management in the PPL facility.



2. Site Reconnaissance and Field Investigations

2.1 Field Study

The CSIR-NEERI team visited PPL facility in Goa in April 2023 and the kick-off meeting progressed with discussions followed by a brief site reconnaissance survey. The meeting concluded with the plans for detailed site visits, data collection and sampling by CSIR-NEERI.

Subsequently, CSIR-NEERI team made several visits to PPL facility during May, June and October 2023, and conducted field investigations for collection of primary and secondary data. Storm water samples from the initial monsoon were collected from the selected locations over the entire manufacturing facility in June 2023.

An inspection of the facility was also carried out during October 2023 to validate the findings of the storm water analytical results with the existing site conditions and storm water network.

Additional site reconnaissance survey was also carried out in March 2024 for discussion with plant personnel for improvement of storm water management practices.

The various recommendations based on the extensive field investigations, and analysis of primary and secondary data are presented in this report.

Overview of Plant Facilities:

I. Ammonia Unit

The CSIR-NEERI team initiated the visit with ammonia synthesis unit. Natural gas is used as the primary raw material for synthesis of ammonia. Natural gas consisting of 90% methane is supplied by Gas Authority India Ltd (GAIL), which is de-sulphurized by removal of Hydrogen sulphide. The de-sulphurized natural



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

gas is then mixed with process steam and passed through a primary reformer in which 50-60% of hydrogen separation is achieved. The partially reformed gas is then mixed with process air and passed through a secondary reformer and a bed of Nickel (Ni)-based catalyst. The source of process air is from atmosphere, which is supplied by a compressor and its flow is controlled by the required proportion for synthesis of ammonia. The gas passed out from the Ni catalytic bed is then passed through a high temperature shift converter (HTSC), in which carbon monoxide (CO) content is reduced to 3% by conversion to carbon dioxide (CO₂). The gas is cooled and then passed through a low temperature shift converter (LTSC) in which the CO content is further reduced to 0.25% by further conversion to CO₂. The gas is further cooled down and is passed through a CO₂ absorber, in which the carbon dioxide is removed by absorption in a potassium bi-carbonate based solution. This is regenerated and the CO₂ recovered as a byproduct is sent to the adjacent urea plant for utilization in the process. The synthesis gases containing nitrogen and hydrogen in the volume ratio of 1:3 with certain inert gases are passed through a dehydrator before sending through a synthesis loop of a re-circulator and converter. The converter gas (12% concentration of ammonia) is cooled down to -25°C to produce liquid ammonia. The product ammonia is heated to 5°C and is either stored temporarily in the ammonia storage tank or sent to urea plant for urea production as per requirement. The initial capacity of the ammonia synthesis unit was 660 tons per day (TPD) which was later augmented to a manufacturing capacity of 890 TPD. Ammonia synthesized in this unit is majorly consumed in the urea plant and the imported ammonia is used in urea plant for Nitrogen, Phosphorus and Potassium (NPK) mixed fertilizer production. The urea produced is further neem-coated to restrict its usage other than for its intended purpose to use as a fertilizer.



II. Urea Plant


Adjacent to the Ammonia Synthesis unit is the urea plant which receives its feed stock both from its in-house synthesized liquid ammonia as well as imported liquid ammonia. The carbon dioxide supplied from Ammonia synthesis unit and the pre-heated ammonia (synthesized and/or imported) are compressed separately at different pressures and are fed into the bottom of the urea synthesis reactor. The production of urea occurs in two steps wherein first ammonia reacts with carbon dioxide to form ammonium carbamate which consecutively undergoes de-hydrolysis to produce urea and water. The mixture is passed through decomposition to enrich the concentration of urea and then passed through a crystallizer to reduce its moisture content. The urea crystals are then passed through fluidized dryer for drying and finally passed through a Priller tower to convert urea in form of Prills. The manufactured prills are conveyed and bagged in the bagging unit. The bagged products are either stored in storage unit for commercial dispatch or sent to the NPK mix plant, based on the market/order requirement.

III. Utilities

A walkthrough to major offshore units of utilities such as Water treatment plant (WTP), Captive power plant (CPP), Effluent Recycling Plant (ERP), Reverse Osmosis (RO) Unit, Water Reservoir, Fire Hydrant system and Cooling Towers was carried out.

A. Water Treatment Plant

The raw water utilized for all plant operations is received with a pre-treatment from Water Treatment Plant of the facility. The WTP receives raw water supply from the Water Resource Department (WRD), Goa at a rate of 10,000 m³/day. The raw water consists of minor impurities and hence undergoes pre-treatment for both industrial and potable purpose and is demineralized for boiler feeds.

	Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit
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The pre-treatment is carried out by removing the suspended particles in an Ultra High Rate Contact Solid Contact Clarifier (UHRSCC) and the overflow is primarily used as service water in various facility units as well as in cooling towers. The pre-treated water after disinfection with chlorine is used for potable purposes within the plant.

The pre-treated water is further treated in an Ion-exchange system consisting of pressure sand filter, activated carbon filters followed by strong acid cation exchanger unit. The de-mineralized water is used in certain processes to avoid scaling and or corrosion in various process units and boilers. This water is primarily used as boiler feed waters for steam production.

B. Cooling Towers

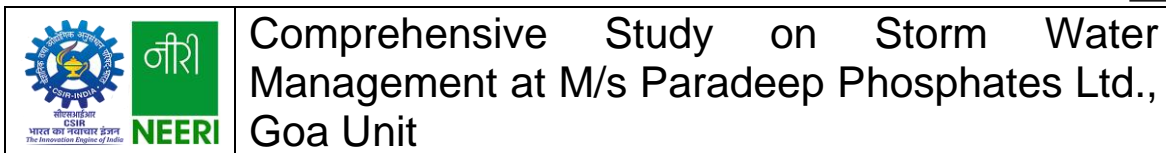
The facility consists of five cooling towers which acts as heat exchanger to reduce condenser water temperature. The cooled down water is pumped back to the respective manufacturing units for heat exchange in the process and the cycle is circulated with periodical blow down and make up to compensate the evaporative losses. The facility consists of total 5 cooling towers with details as in Table1.

Table 1: Details of Cooling Towers

Cooling Tower	Associated Units	Type of Cooling Tower
CT-1	Ammonia, Power Plant, NPK-A and NPK-B	Cross Flow
CT-2	Urea Plant	Cross Flow
CT-3	Urea Plant and Barometric Condenser	-
CT-4	CO ₂ direct cooler	Cross Flow
CT-5	DG Set	Counter Flow

C. Effluent Recycling Plant

The facility operates an ERP to recycle and reuse the facility's various streams of process water. The ERP is of 550 KLD capacity which consists of two settling ponds, three units of effluent holding tanks, one guard pond followed by acid and alkali storage tanks and dosing system for neutralization



process. The effluent recycling plant is designed to handle pH correction of effluents from various processes and is recycled back in to the plant and re-used as process streams.

D. Sewage Treatment Plant

A STP is operated to treat all the sewage water generated within the facility premises and is reused by discharging the treated water into the guard pond. The STP consists of an Activated Sludge Process (ASP) tank followed by a clarifier and filter units for treatment of the domestic sewage.

E. Reverse Osmosis Plant

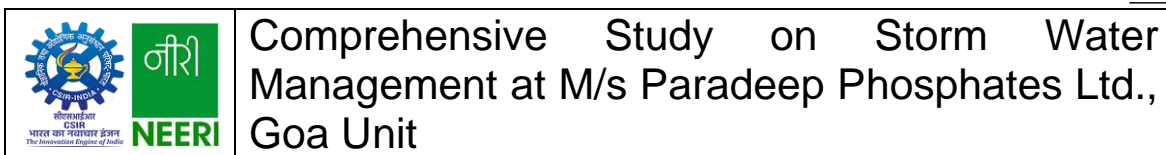
The RO unit consists of pre-treatment system followed by Ultra Filtration System and RO membrane system. The system is to handle an input rate of 25 m³/h generated from cooling tower blow down. The RO permeate is used as make up water for cooling towers and the reject is sent to ERP for recycling.

IV. NPK-A & B

Both in NPK-A & B units urea, potash from in-house neighboring units, and filler material are uniformly mixed in a granulator. Ammonium phosphate is introduced in slurry form through spray nozzles. Liquid ammonia is also introduced. Finally the product granules are allowed to flow through a series of dryer, screens and a cooler. .

V. Finished Material Storage Facility

The finished material storage plant stores finished products such as urea and various grades of NPK before its packaging in bags of standard size.



VI. Product Handling and Bagging Plant

The finished urea and mixed fertilizers produced in the manufacturing units are then transferred to bagging plant for packing. The bagging unit consists of individual hoppers, packers and belt conveyor system for conveyance to the railway sidings for loading of finished goods into wagon (85%) and also truck loading area (15%).

VII. Hazardous Waste Storage Yard

The hazardous waste storage yard temporarily stores various waste oil generated from various plant processes prior to its handing over to authorized recyclers.

VIII. Storm Water Collection Point (Culvert Pit) near Railway Siding

The railway siding facility is in operation for loading of finished products into railway wagons.

A storm water collection point (culvert pit), located near the railway siding facility, is provided for collection and recycling of storm water during unseasonal rains and before the onset of the monsoons. This collection pit is equipped with submersible pumps and automatic level controller to pump back the collected storm water to the holding tank of the ERP for its recycle and reuse in process.



3. Sampling and Analysis of Storm Water

3.1 Sampling Plan:

The PPL facility was divided in to six zones ((I to VI) to identify the vulnerable zones for storm water contamination during monsoon period. The zone wise demarcation and the list of units falling under each zone are listed in **Table 2**. The aerial view of PPL facility with zone partition is highlighted in **Figures 1 – 3**.

Table 2: Zone Partition of SWDs and its units

S. No	Zone	Units
1.	I	Workshop
2.		KCI Storage Unit
3.		<i>Erstwhile</i> Naphtha Tank Yard
4.		Fuel Oil Tank Yard
5.		<i>Erstwhile</i> Argon Recovery Plant
6.	II	Laboratory
7.		Ammonia Compressor House
8.		Ammonia Plant Switch Room
9.		AC Plant
10.		Urea Plant
11.		Prilling Tower
12.	III	Water Treatment Plant (WTP) Area
13.		Cooling Tower CT-1
14.		Cooling Tower CT-2
15.		NH ₃ Horton-Sphere Area
16.		Raw Water Pond
17.		Power Station
18.		Boiler Area
19.		D.G Area
20.		Water Storage Tank
21.		IV
22.	NPK Bulk Storage	



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

S. No	Zone	Units
23.		Product Handling and Bagging Area
24.	V	NPK A Plant
25.		NPK B Plant
26.		NPK-B Bulk and Bagging
27.		Holding Pond
28.		Guard Pond
29.	VI	Phosphorus Acid Tank Yard-I
30.		Phosphorus Acid Tank Yard-II
31.		Service Tank Farm
32.		LSHS Tank Farm
33.		DAP Gate House
34.		Weigh Bridge
35.		RO Plant

Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit



Figure 1: Aerial View of PPL with Zone Wise Partition for SWD Sampling

Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit



Figure 2: Aerial View of PPL with Zone Wise Partition for SWD Sampling with Creek

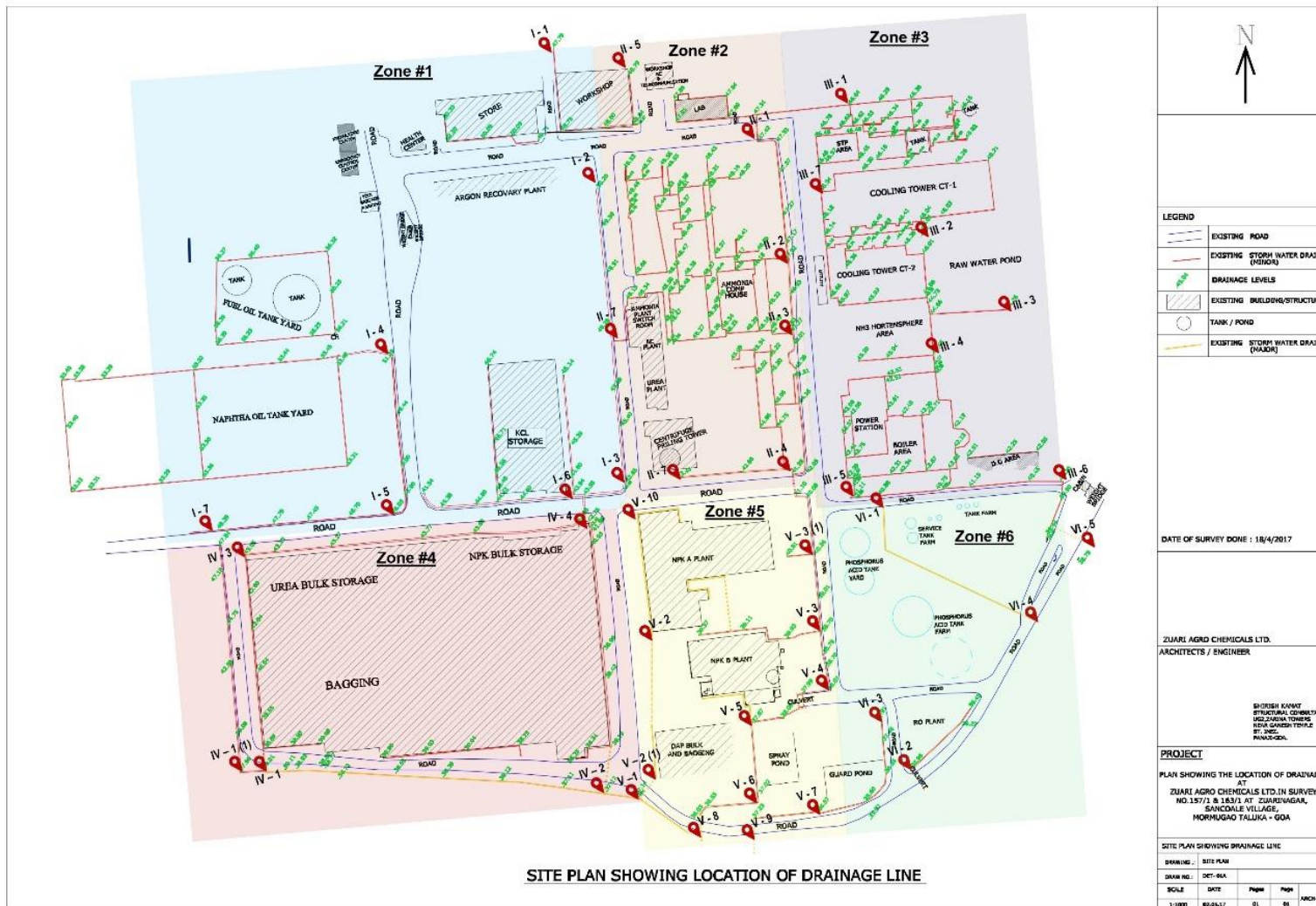


Figure 3: SWD Map with Zone wise Partition and Sampling Points




The study area was demarcated into six zones (I to VI) and storm water sampling points were marked in the upstream and downstream for sampling. Accordingly, collection of storm water samples was carried out from the first showers of monsoon spell in June, 2023. The list of storm water samples collected from each zone and the physicochemical characteristics of the samples in terms of major parameters are presented zone wise (**Table 3 – 14**).

The grab samples were collected in a 15L polyethylene bucket. All samples were placed directly into acid-rinsed polyethylene bottle without any filtration. Measurements of pH and dissolved solids were made onsite. All other analyses were performed in laboratories at CSIR-NEERI, Nagpur. Sample preservation was performed immediately after sample collection. The samples were preserved, processed and analyzed for major ions, trace elements and nutrients according to Standard Methods for the Examination of Water and Wastewater, 23rd. ed., American Public Health Association, American Water Works Association, & Water Environment Federation, Washington, DC, 2012 (APHA 2017). Heavy metals were quantified using inductively coupled plasma optical emission spectrometry (ICP-OES).

3.2 Physicochemical Characterization of Storm water

The analytical results for various physicochemical parameters in storm water samples are presented hereunder. This comprehensive analysis of the collected samples provided an overview of the variations in physicochemical parameters in different zones, and facilitated identification of vulnerable zones for possible storm water contamination.

 नैरी NEERI <small>भारत का नवोदय इंजन</small> <small>The Innovations Engine of India</small>	Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit
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➤ **Zone-I**

Table 3: Details of Storm Water Samples Collected in Zone-I

Sl. No.	Date of Sampling	Sample ID	Sample Description	Drainage Levels (m)
1.	29-06-2023	I - 1	Upstream of Workshop	47.79
2.	29-06-2023	I - 2	Near to Argon Recovery Plant	50.20
3.	29-06-2023	I - 3	Near KCl Storage	43.85
4.	29-06-2023	I - 5	Point-1 Down Stream of Naphtha Tank Yard	46.03
5.	29-06-2023	I - 6	Downstream of KCl storage	43.94
6	29-06-2023	I - 7	Point-2 Down Stream of Naphtha Tank Yard	48.39

Table 4: Physicochemical Characteristics of Storm water samples of Zone-I

Sl. No.	Parameters	I-1	I-2	I-3	I-5	I-6	I-7	Standards for Surface Runoff as per CTO
1	pH	7.1	6.2	6.1	6.1	7.9	6.3	6.5 – 8.0
2	TDS	63	55	74	2500	2680	1350	-
3	TSS	34	30	14	8	44	83	100
4	BOD	7	BDL	9	8	22	8	30
5	COD	54	31	69	54	131	77	250
6	Oil & Grease	BDL	BDL	BDL	BDL	BDL	BDL	10
7	Ammonia-N	9	BDL	BDL	49	70	63	75
8	TKN	38	42	31	78	96	92	100
9	Chloride	10	8	15	203	743	285	-
10	Sulphate	17	14	21	721	538	229	-
11	Fluoride	BDL	BDL	BDL	0.2	0.2	0.2	10
12	Phosphate-P	5	4	6	4	8	6	5
13	Heavy Metals							
	Arsenic	BDL	BDL	BDL	BDL	BDL	BDL	0.2
	Aluminium	BDL	0.10	0.04	0.09	0.01	0.71	-
	Copper	0.01	BDL	0.09	BDL	0.01	0.03	-
	Zinc	0.14	0.15	0.54	0.09	0.06	0.32	-
	Nickel	BDL	BDL	0.02	BDL	0.01	0.03	-
	Cobalt	0.01	BDL	BDL	BDL	BDL	0.01	-
	Iron	0.38	0.13	0.07	0.06	0.49	0.08	-
	Manganese	0.01	0.01	0.07	0.06	0.04	0.17	-
	Total Chromium	BDL	BDL	BDL	BDL	0.01	BDL	2
	Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	-
Boron	0.02	0.04	0.09	0.05	0.05	0.06	-	
Lead	BDL	BDL	BDL	BDL	BDL	BDL	-	

All parameters are expressed in mg/L except pH; BDL–Below Detection Level

Following observations are made from the analytical results:

- i. Phosphate concentrations in I-3, I-6 and I-7 streams had marginally exceeded the prescribed 'surface runoff' limit as per the CTO.



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

- ii. Heavy metal concentrations were within the prescribed 'surface runoff' limits as per the CTO.
- iii. Overall, this zone was characterized with low organic load, as the COD and BOD were well within the stipulated standards for the 'surface runoff' as per CTO. All other parameters including TKN and Ammoniacal nitrogen were also within the said limit.
- iv. It is noted that the physicochemical criteria specified by GSPCB for storm water/surface runoff overflow from the settling pond are same as that stipulated for treated effluent (for gardening and other reuses).

Although, such rigorous standards are appreciated, it should be noted that industrial process effluent and storm water differ significantly in terms of both volume and occurrence frequency throughout the year. Process effluents are generated consistently year-round, with relatively stable physicochemical characteristics unless there are significant process changes or upsets. In contrast, storm water is seasonal and its contamination in industrial settings varies widely depending on the nature of the industry and site conditions. The initial storm events often yield runoff with higher concentrations of certain contaminants, whereas subsequent events typically have lower concentrations. Thus, over time, industrial effluent generally contributes a higher pollution load compared to the seasonal contamination load from storm water.

The generation of storm water during specific times of the year, with inconsistent volumes and significant variations in physicochemical characteristics within that period, poses technical challenges for delineating and implementing effective treatment technologies to meet such stringent standards at any given time.

Considering these factors, along with the specific nature of the industry, it is advisable to stipulate the physicochemical standards for storm water/surface runoff from the settling pond suitably. For instance, in the case of a fertilizer manufacturing facility with ammonia-urea and phosphatic



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

manufacturing units, it may be appropriate to establish higher maximum limits for certain nutrient parameters and suspended solids, over a one-day period, while setting lower values for the maximum average limit over thirty consecutive days. In view of these observations, M/s PPL is advised to approach GSPCB for revising the existing storm water overflow standards.

➤ Zone-II


Table 5: Details of Storm Water Samples Collected in Zone-II

Sl. No.	Date of Sampling	Sample ID	Sample Description	Drainage Levels (m)
1	29-06-2023	II - 1	Downstream of Laboratory	47.42
2	29-06-2023	II - 2	Near to upstream of Ammonia Compressor House	47.82
3	29-06-2023	II - 3	Near to Downstream of Ammonia Compressor House	47.27
4	30-06-2023	II - 4	Downstream of Prilling Tower	41.28
5	29-06-2023	II - 7	Near to Ammonia plant switch room	45.88 to 48.28

Table 6: Physicochemical Characteristics of Storm water samples of Zone-II

Sl. No.	Parameters	II-1	II-2	II-3	II-4	II-7	Standards for Surface Runoff as per CTO
1	pH	6.2	7.9	8.1	8.9	8.8	6.5 – 8.0
2	TDS	45	1320	1270	5890	93	-
3	TSS	10	84	94	32	28	100
4	BOD	10	25	29	22	11	30
5	COD	92	138	185	131	78	250
6	Oil & Grease	BDL	BDL	BDL	BDL	BDL	10
7	Ammonia-N	1	37	19	137	BDL	75
8	TKN	13	112	109	123	39	100
9	Chloride	5	143	138	2094	13	-
10	Sulphate	19	317	297	624	27	-
11	Fluoride	BDL	0.1	0.1	0.2	BDL	10
12	Phosphate-P	2	13	15	18	6	5
13	Heavy Metals						
	Arsenic	BDL	BDL	BDL	BDL	BDL	0.2
	Aluminium	0.09	0.41	0.38	0.08	0.13	-
	Copper	BDL	0.01	0.01	0.01	0.01	-
	Zinc	0.07	0.48	0.08	0.06	0.04	-
	Nickel	BDL	BDL	BDL	BDL	BDL	-
	Cobalt	BDL	BDL	BDL	BDL	BDL	-
	Iron	0.05	0.77	0.55	0.12	0.04	-
	Manganese	BDL	0.05	0.04	BDL	BDL	-
	Total Chromium	0.01	BDL	BDL	BDL	BDL	2
	Cadmium	BDL	BDL	BDL	BDL	BDL	-
	Boron	0.05	0.05	0.05	0.06	0.05	-
Lead	BDL	BDL	BDL	BDL	BDL	-	

All parameters are expressed in mg/L except pH; BDL–Below Detection Level

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Following observations are made from the analytical results:

- i. The samples II-4 and II-7 indicated higher pH values
- ii. The samples II-2, II-3, II-4 and II-6 indicated relatively higher phosphate-P concentrations
- iii. In sample II-4, the analyzed parameters showed higher concentrations of Ammoniacal nitrogen and TKN
- iv. Heavy metal concentrations were within the prescribed 'surface runoff' limits for all samples as per the CTO.
- v. However, all samples in this zone were characterized with low organic load in terms of COD and BOD, which were well within the stipulated standards for the 'surface runoff' as per CTO.


➤ Zone-III

Table 7: Details of Storm Water Samples Collected in Zone-III

Sl. No.	Date of Sampling	Sample ID	Sample Description	Drainage Levels (m)
1	30-06-2023	III - 4	Near to NH3 Hortonsphere Area	44.45
2		III - 5	Downstream of Boiler Area	41.11
3	29-06-2023	III - 6	Near to Downstream of D.G Area	40.2
4	30-06-2023	III - 7	Near to Cooling Tower CT-1	46.34

Table 8: Physicochemical Characteristics of Storm water samples of Zone-III

Sl. No.	Parameters	III-4	III-5	III-6	III-7	Standards for Surface Runoff as per CTO
1	pH	6.9	7.0	5.1	5.2	6.5 – 8.0
2	TDS	449	583	345	114	-
3	TSS	22	8	20	95	100
4	BOD	BDL	27	BDL	BDL	30
5	COD	8	154	BDL	31	250
6	Oil & Grease	BDL	BDL	BDL	BDL	10
7	Ammonia-N	13	35	16	3	75
8	TKN	84	96	57	41	100
9	Chloride	60	38	30	15	-
10	Sulphate	87	138	95	37	-
11	Fluoride	0.2	0.1	BDL	BDL	10
12	Phosphate-P	14	11	9	12	5
13	Heavy Metals					
	Arsenic	BDL	BDL	BDL	BDL	0.2
	Aluminium	0.13	0.01	0.05	0.11	-

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Sl. No.	Parameters	III-4	III-5	III-6	III-7	Standards for Surface Runoff as per CTO
	Copper	0.01	0.01	0.01	BDL	-
	Zinc	BDL	0.10	0.09	0.15	-
	Nickel	BDL	BDL	BDL	BDL	-
	Cobalt	BDL	BDL	BDL	BDL	-
	Iron	0.04	0.17	0.04	0.05	-
	Manganese	BDL	0.01	0.04	0.02	-
	Total Chromium	0.01	BDL	0.01	0.01	2
	Cadmium	BDL	BDL	BDL	BDL	-
	Boron	0.06	0.06	0.06	0.06	-
	Lead	BDL	BDL	BDL	BDL	-

All parameters are expressed in mg/L except pH; BDL–Below Detection Level

Following observations are made from the analytical results:

- i. The samples III-6 and III-7 indicated lower pH values
- ii. All samples in this zone indicated marginally higher phosphate-P concentrations
- iii. Heavy metal concentrations were within the prescribed 'surface runoff' limits for all samples as per the CTO.
- iv. All samples in this zone were characterized with low organic load in terms of COD, BOD and also other parameters were well within the stipulated standards for the 'surface runoff' as per CTO.

➤ Zone- IV

Table 9: Details of Storm Water Samples Collected in Zone-IV

Sl. No.	Date of Sampling	Sample ID	Sample Description	Drainage Levels (m)
1	30-06-2023	IV - 1	Downstream of Product Handling and Bagging Area	38.01
2	30-06-2023	IV - 1 (1)		
3	30-06-2023	IV - 2	Outfall of Major Storm Water drain Downstream of NPK Bulk Storage	37.17
4	30-06-2023	IV - 3	Upstream of Urea Bulk Storage	43.05
5	30-06-2023	IV - 4	Upstream of NPK Bulk Storage	42.76


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Table 10: Physicochemical Characteristics of Storm water samples of Zone-IV

Sl. No.	Parameters	IV-1	IV-1(1)	IV-2	IV-3	IV-4	Standards for Surface Runoff as per CTO
1	pH	8.1	8.9	6.9	6.8	7.1	6.5 – 8.0
2	TDS	925	3382	3210	1250	3640	-
3	TSS	216	340	58	36	526	100
4	BOD	19	31	38	12	37	30
5	COD	107	223	238	78	234	250
6	Oil & Grease	BDL	BDL	BDL	BDL	BDL	10
7	Ammonia-N	29	146	113	102	98	75
8	TKN	80	180	136	124	165	100
9	Chloride	218	1387	1437	493	1757	-
10	Sulphate	147	681	647	63	157	-
11	Fluoride	0.2	0.2	0.4	0.1	0.3	10
12	Phosphate-P	24	31	23	13	18	5
13	Heavy Metals						
	Arsenic	BDL	BDL	BDL	BDL	BDL	0.2
	Aluminium	0.56	0.81	0.07	0.60	BDL	-
	Copper	0.01	0.01	0.01	0.05	0.05	-
	Zinc	0.14	0.14	0.04	0.09	0.09	-
	Nickel	BDL	BDL	0.01	0.02	0.02	-
	Cobalt	BDL	BDL	BDL	BDL	BDL	-
	Iron	0.90	1.36	0.05	0.15	0.11	-
	Manganese	0.01	0.07	0.03	0.06	0.05	-
	Total Chromium	BDL	BDL	0.01	BDL	BDL	2
	Cadmium	BDL	BDL	BDL	0.01	0.01	-
	Boron	0.06	0.05	0.05	0.02	0.03	-
Lead	BDL	BDL	BDL	BDL	BDL	-	

All parameters are expressed in mg/L except pH; BDL–Below Detection Level

Following observations are made from the analytical results:

- i. All samples from this zone were found to have near neutral pH in the range of 7 - 8
 - ii. All samples in this zone indicated higher Phosphate concentrations
 - iii. Heavy metal concentrations were within the prescribed 'surface runoff' limits for all samples as per the CTO.
- All samples in this zone were characterized with COD and BOD concentrations more or less within the stipulated standards for the 'surface runoff' as per CTO. However, Ammoniacal nitrogen and TKN concentrations for samples in this zone were on the higher side.

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➤ **Zone-V**

Table 11: Details of Storm Water Samples Collected in Zone-V

Sl. No.	Date of Sampling	Sample ID	Sample Description	Drainage Levels (m)
1	30-06-2023	V - 1	Downstream of DAP Bulk and Bagging	37.14
2	30-06-2023	V - 2	Downstream of NPK A Plant in major storm water Drain	-
3	30-06-2023	V - 2 (1)		
4	29-06-2023	V - 3	Near to upstream of NPK B Plant	38.7
5	29-06-2023	V - 3 (1)		
6	29-06-2023	V - 4	Near Downstream of NPK B Plant	38.07
7	29-06-2023	V - 5	Upstream of Holding Pond	37.87
8	29-06-2023	V - 6	Downstream of Holding Pond	37.02
9	30-06-2023	V - 7	Downstream of Guard Pond	36.57
10	30-06-2023	V - 8	Outfall of Minor Storm Water drain Downstream of DAP Bulk and Bagging	36.03
11	30-06-2023	V - 9	Outfall of Minor storm water drain Downstream of Holding Pond	37.23
12	30-06-2023	V - 10	Major Storm Water Drain Upstream of NPK A Plant	-

Following observations are made from the analytical results:

- i. All samples from this zone were found to have near neutral pH in the range of 7 – 8, except sample- V 3 (I) which had marginally higher pH
- ii. All samples in this zone indicated higher Phosphate concentrations
- iii. Heavy metal concentrations were within the prescribed 'surface runoff' limits for all samples as per the CTO.
- iv. All samples in this zone were characterized with COD, BOD concentrations more or less within the stipulated standards for the 'surface runoff' as per CTO, except sample V-I which had higher concentrations. However, Ammoniacal nitrogen and TKN concentrations for samples in this zone were on the higher side.




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Table 12: Physicochemical Characteristics of Storm water samples of Zone-V

Sl. No	Parameters	V-1	V-2	V-2(1)	V-3	V-3(1)	V-4	V-5	V-6	V-7	V-8	V-9	V-10	Standards for Surface Runoff as per CTO
1	pH	7.1	6.9	8.0	7.2	8.5	7.2	6.8	7.1	5.0	6.8	6.9	7.2	6.5 – 8.0
2	TDS	2420	2780	2080	1170	636	1510	1470	1490	483	1780	182	1590	-
3	TSS	46	194	228	732	200	500	428	294	180	162	114	190	100
4	BOD	200	20	94	4	17	12	9	BDL	18	5	BDL	BDL	30
5	COD	415	151	137	29	108	79	72	7	108	43	72	7	250
6	Oil & Grease	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10
7	Ammonia-N	183	187	178	253	252	193	201	168	35	327	BDL	31	75
8	TKN	240	245	175	590	536	126	129	101	107	488	45	124	100
9	Chloride	154	105	89	138	33	90	115	130	23	100	48	62	-
10	Sulphate	192	138	143	89	146	127	133	84	57	98	36	52	-
11	Fluoride	0.3	0.4	0.4	0.1	0.1	0.2	0.3	0.2	0.2	0.3	BDL	BDL	10
12	Phosphate-P	37	190	118	128	56	139	115	118	43	169	13	17	5
13	Heavy Metals													
	Arsenic	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.2
	Aluminium	0.07	0.05	BDL	0.10	3.93	0.56	0.13	1.07	1.84	0.95	0.50	0.07	-
	Copper	0.01	0.01	0.01	0.01	0.01	0.01	BDL	0.01	0.01	0.01	0.01	0.01	-
	Zinc	0.07	0.04	0.08	0.06	0.06	0.10	0.01	0.12	0.13	0.12	0.16	0.05	-
	Nickel	0.01	0.01	0.01	BDL	BDL	BDL	BDL	0.01	0.01	0.01	BDL	0.01	-
	Cobalt	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	-
	Iron	0.09	0.06	0.19	0.49	0.77	0.74	0.04	1.03	1.17	0.77	0.98	0.07	-
	Manganese	0.04	0.04	0.09	0.01	0.05	0.01	BDL	0.02	0.02	0.02	BDL	0.08	-
	Total Chromium	BDL	BDL	BDL	BDL	0.01	BDL	0.01	0.01	0.01	BDL	BDL	BDL	2
	Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	-
	Boron	0.05	0.06	0.05	0.05	0.03	0.06	0.06	0.06	0.03	0.06	0.06	0.05	-
	Lead	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	-

All parameters are expressed in mg/L except pH; BDL–Below Detection Level

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➤ **Zone- VI**

Table 13: Details of Storm Water Samples Collected in Zone-VI

Sl. No.	Date of Sampling	Sample ID (PPL)	Description	Drainage Levels ()
1	29-06-2023	VI - 1	Upstream of Phosphorous Acid tank yard	
2	29-06-2023	VI - 2	Minor outfall near culvert Downstream of RO Plant	35.96
3	30-06-2023	VI - 3	Between Upstream of Guard Pond and RO Plant	37.91
4	29-06-2023	VI - 4	Outfall of Major Storm Water Drain Near to Phosphorus Acid Tank Farm	
5	29-06-2023	VI - 5	Outfall Of major Storm Water Drain near Downstream of Weight bridge	

Table 14: Physicochemical Characteristics of Storm water samples of Zone-VI

Sl. No.	Parameters	VI-1	VI-2	VI-3	VI-4	VI-5	Standards for Surface Runoff as per CTO
1	pH	5.9	6.0	6.1	5.8	5.7	6.5 – 8.0
2	TDS	627	187	160	506	410	-
3	TSS	74	96	98	34	46	100
4	BOD	15	BDL	BDL	BDL	BDL	30
5	COD	50	101	43	29	22	250
6	Oil & Grease	BDL	BDL	BDL	BDL	BDL	10
7	Ammonia-N	26	21	15	36	9	75
8	TKN	98	83	76	97	52	100
9	Chloride	65	13	22	290	35	-
10	Sulphate	173	43	54	47	58	-
11	Fluoride	0.2	BDL	BDL	0.1	0.1	10
12	Phosphate-P	15	8	10	12	16	5
13	Heavy Metals						
	Arsenic	BDL	BDL	BDL	BDL	BDL	0.2
	Aluminium	0.43	0.14	1.00	1.15	0.07	-
	Copper	0.01	0.01	0.01	0.03	0.01	-
	Zinc	0.14	0.12	0.09	0.13	0.08	-
	Nickel	0.02	BDL	BDL	BDL	BDL	-
	Cobalt	0.01	BDL	BDL	BDL	BDL	-
	Iron	0.04	0.04	1.35	1.76	0.10	-
	Manganese	0.44	0.04	0.01	0.01	0.04	-
	Total Chromium	0.01	0.01	BDL	BDL	0.01	2
	Cadmium	BDL	BDL	BDL	BDL	BDL	-
	Boron	0.05	0.06	0.06	0.06	0.06	-
Lead	BDL	BDL	BDL	BDL	BDL	-	

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Following observations are made from the analytical results:

- v. All samples from this zone were found to have low pH in the range of 5.7 to 6.1
- vi. All samples in this zone indicated higher Phosphate concentrations
- vii. Heavy metal concentrations were within the prescribed 'surface runoff' limits for all samples as per the CTO.
- viii. All samples in this zone were characterized with COD, BOD concentrations and other parameters well within the stipulated standards for the 'surface runoff' as per CTO.

3.4 Identification of vulnerable storm water zones

Based on the physicochemical analysis of the storm water samples, the entire study area can be delineated in three different categories in terms of vulnerability of contamination:

- **No Contamination Zones:** Zones- III & VI can be considered "No Contamination" Zones. Storm water generated in these zones can be directly diverted outside the premises without any treatment.
- **Low Contamination Zones:** Zones- I & II can be considered "Low Contamination" Zones. These Zones can be converted to "No contamination zones" with improved Raw Material Handling transportation, improved housekeeping practices as well as avoiding incidental spills. Once these are implemented, and physicochemical analysis confirms that the storm water quality complies with the prescribed standards as per CTO, storm water generated in these zones can also be directly diverted outside the premises without any treatment.
- **Zones Vulnerable to Contamination:** Zones- IV & V can be considered as "Zones Vulnerable to Contamination" as per existing conditions. These Zones can also be upgraded to Low/No Contamination zones by substantially improving the housekeeping practices and taking appropriate actions on the observations mentioned in this report and implementation of the recommendations herein.

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4. Quantification of Storm water

4.1 Estimation of Storm water generation

The PPL manufacturing facility (Zones I to VI), situated in South Goa, is spread over an area of 72 acres approximately. The total quantity of storm water generated from this area during monsoon season is estimated from the annual rainfall data. The annual rainfall data (**Source: <https://indiawris.gov.in/wris/#/rainfall>**) since last two decades has been considered to determine the average annual rainfall value. The annual average rainfall, period of rainfalls, number of rainfalls days, and daily average rainfall for the year 2004 to 2024 is provided in **Table 15**. Based on the interpretations of 20 years' data, the average rainfall rate is 3736 mm/annum and 29 mm/day.

Table 15: South Goa Annual Rainfall Data for 20 Years Period

S. No	Year	Average Annual Rainfall in mm	Day Wise Average Rainfall in mm (June-September)		Number of Rainfall Days
			Actual Rainfall in mm	Normal Rainfall in mm	
1	2004-2005	4380.3	28.2	22.7	155
2	2005-2006	5177.1	39.6	22.7	130.73
3	2006-2007	5112.3	39.5	22.7	129.42
4	2007-2008	4679.2	39.0	22.7	119.97
5	2008-2009	4406.7	34.6	22.7	127.36
6	2009-2010	3979.5	32.1	22.7	123.97
7	2010-2011	3923.7	24.9	22.7	157.57
8	2011-2012	3772	33.5	22.7	112.59
9	2012-2013	3560.4	25.4	22.7	140.17
10	2013-2014	3758.5	29.6	22.7	126.97
11	2014-2015	3077.9	26.7	22.7	115.27

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S. No	Year	Average Annual Rainfall in mm	Day Wise Average Rainfall in mm (June-September)		Number of Rainfall Days
			Actual Rainfall in mm	Normal Rainfall in mm	
12	2015-2016	2539.8	18.3	22.7	138.78
13	2016-2017	2521.3	20.4	22.7	123.59
14	2017-2018	2750.5	18.2	22.7	151.126
15	2018-2019	3766.9	22.9	22.7	164.49
16	2019-2020	4279.4	31.8	22.7	134.57
17	2020-2021	3918.5	35.3	22.7	111
18	2021-2022	3646.6	25.8	23.0	141.34
19	2022-2023	3610.5	27.0	23.0	133.72
20	2023-2024	1852.8	28.4	22.7	65.23
Annual Average (20 Years)		3736	29	22.7	130

Source: <https://indiawris.gov.in/wris/#/rainfall>

- Considering the vulnerability of storm water contamination, **Zones-IV and Zone-V** are under risks covering an area of about 55,527 m². The zone wise land area of PPL facility is projected in the **Table 16** and aerial view map of PPL manufacturing facility with zone wise demarcation is shown in **Figure 4**. The total area of PPL manufacturing (actual) facility is 72 acres approximately.

Table 16: PPL Facility Zone-wise Land Area

Zone	Area	
I	109607 m ²	27 acres
II	29360 m ²	7.25 acres
III	49144 m ²	12.1 acres
IV	32000 m ²	7.92 acres
V	23527 m ²	5.81 acres
VI	19224 m ²	4.75 acres



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

The roof-top rain water is expected to be free of contamination and hence diverting it directly outside the facility will significantly minimize the hydraulic load of the storm water to a larger extent. Therefore, in order to minimize the storm water generation in Zone- IV and V, it is recommended to collect and divert the roof-top rain water directly outside the premises through closed conduits. Based on the available factory plot plan, the area under roof in these zones works out to be 33,448 m². Thus, the effective area leading to generation of storm water will be 22,078 m². Considering an average rainfall of 29 mm/day, the storm water generation with the aforementioned arrangements in Zones- IV and V were estimated to be approximately 640 KLD.

The initial storm events often yield runoff with higher concentrations of certain contaminants, whereas subsequent events typically will have lower concentrations. Therefore, it is recommended to collect and divert the storm water/ surface run-off for the first 2 days of rainfall to the collection/settling tanks. Accordingly, the volume of the collection and settling tank with the retention time of 2 days works out to be about 1280 m³.

Based on the topography and the existing network of storm water drains, it is recommended to provide collection/settling tanks at two downstream locations of these zones within the PPL facility with a combined capacity of 1300 m³ approximately. The inlet of the collection/settling tanks may be equipped with silt traps, velocity breakers and appropriate filter media.

The storm water collected in the collection and settling tank should be analyzed for relevant physicochemical parameters to decide the mode of treatment/reuse/recycle or discharge.

The storm water/surface run-off generated after the first two days of shower, is expected to have low/no contamination levels and hence may be discharged directly outside the premises after routing it through velocity breaker, silt traps and filter media.

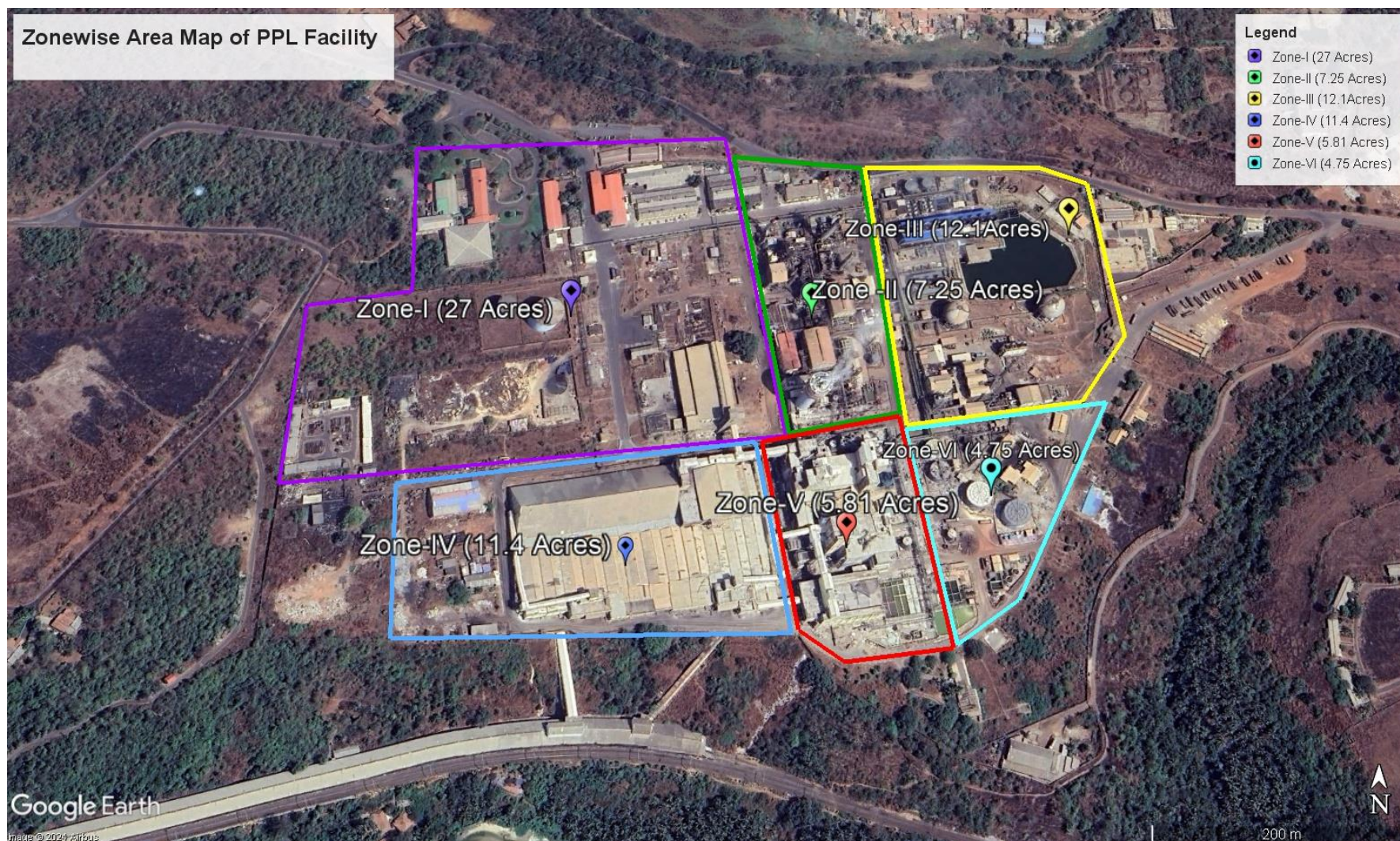



Figure 4: Aerial View of Zone Wise Demarcation with Estimated Land Area in PPL Manufacturing Facility

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5. Observations and Recommendations

The following observations are made during the ground surveillance and field investigations:

➤ General observations:

- The process water drains and storm water drains run parallel to each other. The drains are in open condition and any major lapse in periodical maintenance of the drains may result in contamination of storm water.
- Provision of specific colors and markings/sign boards should be made for proper identification and maintenance of the storm water drains and process water drains. This will also help mitigate the cross contamination in the storm water drains.

➤ Zones- I & II:

- At the Old KCl Storage yard, storm water drains are located very close to the unit. During monsoon season they may result in contamination of storm water entering the drains. In this particular area, storm water drains need to be re-designed for eliminating any possibilities of cross contamination.
- The outlet of the Chiller Condensate Recovery tank (opposite to Old KCl storage yard) was observed to enter the storm water drain. Ideally, the condensate water should be recycled by diverting to Effluent Recycling Plant. Seepage from process area into Storm Water Drains were observed in certain locations in Zone-II. This is mostly due to the cracks and breakages in the storm water drains. A comprehensive maintenance of process and storm water drains should be undertaken to carry out grouting of the damaged bottom and side walls of the drains to arrest or prevent any seepages. The representative images of damaged drains observed during site visit are shown below:



Representative Images of Damaged Storm Water Drains

➤ **Zones- IV & V:**

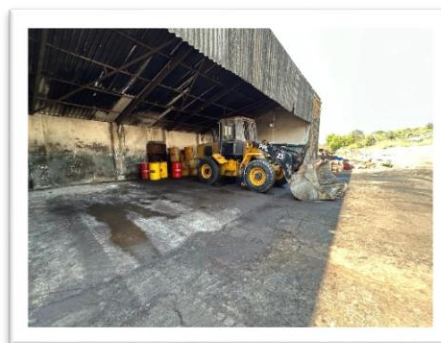
- In Zone-IV, near bagging plant, spillage of finished product was observed directly below and around the corners of the elevated conveyance belt system. Though the spilled material is periodically collected, this could still potentially lead to storm water contamination during monsoon season. Initiatives should be undertaken to minimize spillages and to cover the corner steel column structures with appropriate material to contain the spillage in the same area. Following this, periodical collection of spillages may be carried out. In addition, feasibility of hopper collection system to directly collect the spillages to large bags may also be explored. Representative images of the spillage areas near bagging plant are shown in the figures below:





Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

- At the Terex yard in Zone-IV, where the heavy machinery maintenance is carried out, oil stains can be observed on floors, nearby roads and also in nearby storm water drains. To avoid oil contamination of storm water during monsoon season, the roof of the Terex yard shall be extended to control rain water entering the shed. In addition, storm water/garland drains can be provided along the front boundary of the Terex yard to prevent the storm water run-off from the scrap yard (upstream) entering the Terex yard during monsoon season. Representative image of the Terex yard is shown in the figure below:



- In the NPK-A plant, there is an open sump designated for storing and retaining process water. Due to its open nature, there is a risk that during monsoon, rainwater could enter the sump, potentially causing an overflow of the process water. This overflow could lead to contamination of the storm water in the vicinity. Therefore, it is crucial to install a cover on this sump to prevent rainwater from entering and ensure the integrity of both the process water and the surrounding storm water. The representative images captured during the visit is highlighted in the figures below:



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit





Representative Images of Process Water Overflow with Silt deposits

- Intermittent sumps/pits should be provided in the process water drains of Zone-V for periodical pumping back of process water for its recycling. This will also help avoiding overflow of drains.
- Further, in order to avoid this overflow and silt deposits, a process water retention tank with appropriate desilting facility may be provided. This will enhance the sludge/silt retention capacity. For this purpose, the existing 'Old Recovery Tank' located between NPK-A & B may be utilized. The feasibility of converting the said tank as a Process Water Holding Tank may be explored. The images of the old recovery tank are shown in the figures below:



Images of Old Recovery Tank identified

  NEERI	<h2 style="text-align: center;">Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit</h2>
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- In the junction of the Conveyance System near to the DAP loading/unloading area, spillage of finished products (NPK) was observed. Representative images of the DAP spillages are shown in the Figures below:



Representative Images of spillage below conveyance system

- The improvements in housekeeping of NPK-A and B plant shall also largely reduce cross contamination of storm water during monsoon.
- It was observed that various process units in the NPK-A and B plant do not have roof/shed. Construction of sheds shall mitigate intrusion of rain water during monsoon and eventually contain the storm water contamination.
- The present design and storm water network of the facility is old and requires upgradation for its efficient operation. The storm water management network therefore needs to be revamped for effective management of storm water.
- The revamping of the process water drains should be undertaken for converting the drains into closed conduit piped systems in the critical pollution occurrence zones (IV and V). This shall significantly eliminate the contamination of storm water/ surface run-off. SOPs shall be developed and plant personnel shall be provided with training to avoid actions resulting in spillages of process water/ wash water. On occurrences of incidents under unavoidable conditions, an immediate follow-up cleaning of the spillage should to be carried out.
- In Zone-V, at NPK plant, spillage and leakage of wash water/ process water with oil and grease into the adjacent road area from the de-dusting cooler was

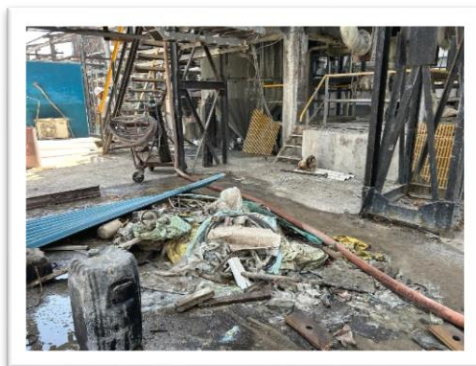


Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

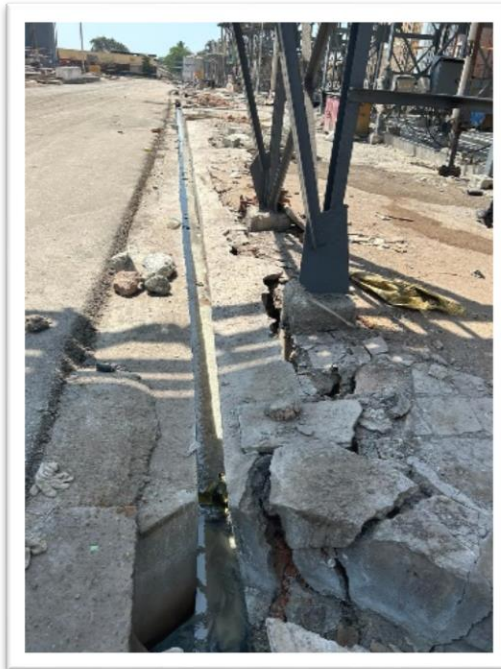
observed. Standard operating procedures (SOPs) to avoid spillages of process water/ wash water eventually entering roads and SWDs should be developed and implemented. If similar incident occurs under unavoidable conditions, an immediate clean-up procedure should be undertaken to prevent further contamination of storm water/ surface run-off especially during monsoon season. Representative image of the spillage near NPK plant is shown in the figure below:



- In Zone-V, random temporary storage of waste or material in undesignated places of NPK/DAP Plant was observed. This practice may result in cross contamination of storm water especially during monsoon season. Development/revision of 'General Housekeeping Practices' and its implementation shall minimize storm water contamination. Representative images of condition in NPK/DAP are shown in the figures below:



- At Zone-V, beside NPK-A plant, the storm water drain structure was observed in completely collapsed condition. A detailed survey of all storm water drains for structural damages, seepages across the plant should be undertaken, and all damages shall be attended/repared prior to every monsoon season. Representative image of damages in storm water drain of NPK/DAP is shown in the figure below:



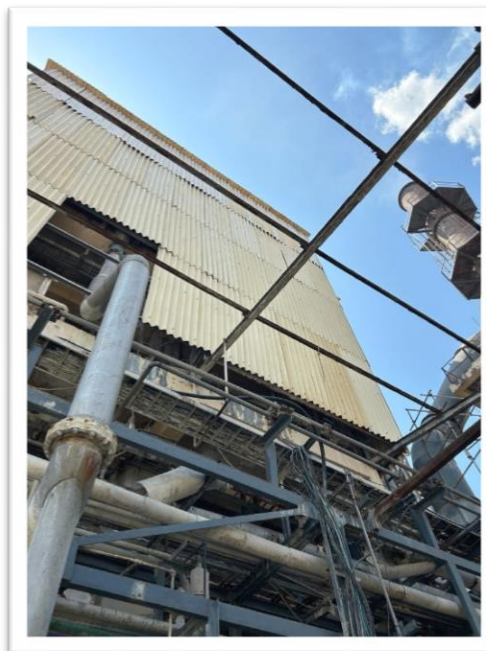
- In NPK plant of Zone-V, phosphate salt deposits under dryer and cooler due to malfunctioning of Belt & Scrapper unit was observed. The spillage seemingly remained unattended for longer period, resulting in generation of leachate and eventually may lead to contamination of storm water during monsoon season. The malfunctioning of equipment and machineries in the unit must be attended on priority. The spilled material must to be recovered into process immediately. Representative image of the spillage in the NPK unit is shown in the figure below:



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit



- In Zone-V at NPK-A & B plant, certain areas are open to sky and during monsoon season, rain water can come in direct contact to the unit resulting in cross contamination of storm water. A detailed survey should be undertaken to identify and provide roof cover to all such open areas to avoid rain water coming in contact with the auxiliary units of NPK plant. Representative image of the open area NPK plant is shown in the figure below:





Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

- In Zone-V, the filler storage area is open to sky which would invariably lead to storm water contamination during monsoon season. Further, this may also result in clogging of the storm water drains. Though, the installation of a filler handling system is already in pipeline for the NPK and DAP plant, the area shall be covered with proper shed to prevent rain water coming in contact with the proposed unit/ system. Representative image of the filler storage area is shown in the figure below:



- In Zone-V, sewage pipeline leakage was observed in NPK-B Plant, further entering into adjacent storm water drain. Leakages in pipelines shall be attended immediately on priority basis. Representative image of the pipe leakage point is shown in the below figure.





Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

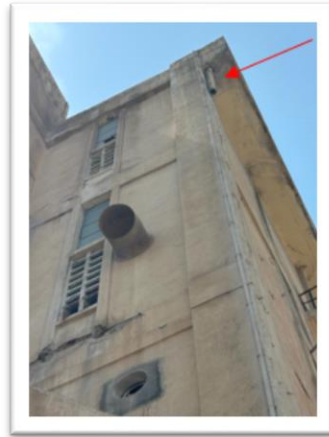
- In Zone – V, process effluent streams entering into the storm water drains due to seepages were observed in several locations. This is caused due to cracks and breakages in Storm Water Drains (SWDs) probably resulting from corrosion due to low pH process effluents. The existing SWD network is quite old, and therefore, reconstruction or revamping of the entire network is recommended. Use of epoxy lining material will resist the pH of the effluent resulting in increased durability and life-time of the drains. However, as a short term measure a detailed survey of the stormwater drain and process water drains should be carried out and all the cracks and breakages shall be grouted/ fixed to minimize the chance of seepages. Representative images of the ruined storm water drains are shown in the figures below:



- In Zone- V, the roof top rain water collection and conveyance pipeline systems were observed to be fragmented and disconnected. This may result in rain water entering the plant premises. Regular inspection and periodical maintenance of roof top rain water collection and conveyance system shall be carried out for its revamping. Representative image of the fragmented rainwater conveyance pipeline is shown in the figure below:



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit



- In NPK/DAP Maintenance Workshop (Zone-V) oil spillage was noticed in front yard and around the premises. This shall eventually lead to contamination of storm water during monsoon season. Restricting the equipment and machineries maintenance activities strictly in designated areas shall minimize oil spillage in common areas, roads and SWDs. Floor washing should be carried out periodically, especially ahead of monsoon season which shall prevent or minimize storm water contamination in this area. A wash water collection pit with oil skimming system should be installed to remove the oil & grease prior to pumping the effluent to ERP. The representative image of the said area with oil spillages is shown in the figure below:

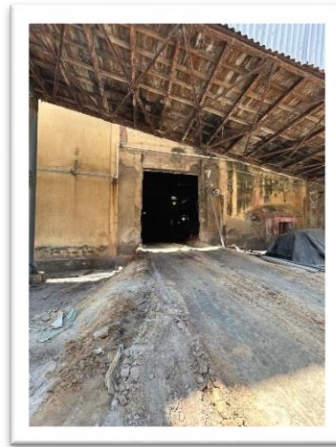


- In Zone-V, near the filler material storage yard, spillage of filler material was observed in and around the storage yard. This filler material, consisting of




Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

bentonite and binder, if carried over by storm water during monsoon, will cause clogging of drains leading to overflow and cross contamination. Good housekeeping practices must be adopted for storage and transport of filler material. The proposal to transport the filler material through conveyor system may be expedited. The representative image of spillages near filler material storage yard is shown in the figure below:



- In Zone- IV and V, the slag/sand blasting operations at multiple locations result in spillage of spent slag/sand. This may contaminate the storm water during monsoon. Hence, the blasting operations should be carried out only in a designated area. Spent slag should be collected efficiently post completion of work. The representative image of the spent slag spilled is shown in the figure below:



 <p>CSIR भारत का नवोद्योग इंजन The Innovation Engine of India</p> <p>जी० NEERI</p>	<p>Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit</p>
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6. Conclusion & Major Recommendations

- A total of 35 storm water samples across the facility was collected during the first spell of monsoon (June, 2023) and analyzed for thorough physicochemical characterization that helped identify the vulnerable zones for storm water/surface run-off contamination.
- Based on the physicochemical analysis of the storm water samples, the entire study area can be delineated in three different categories in terms of contamination levels:
 - **No Contamination Zones:** Zones- III & VI can be considered “No Contamination” Zones. Storm water generated in these zones can be directly diverted outside the premises without any treatment.
 - **Low Contamination Zones:** Zones- I & II can be considered “Low Contamination” Zones. These Zones can be converted to “No contamination zones” with improved and strict Raw Material Handling and transportation, improved housekeeping practices and avoiding incidental spills. Once these are implemented, and physicochemical analysis confirms that the storm water quality complies with the prescribed standards as per CTO, storm water generated in these zones can also be directly diverted outside the premises without any treatment.
 - **Zones Vulnerable to Contamination:** Zones- IV & V can be considered as “Zones Vulnerable to Contamination” as per existing conditions. These Zones can also be upgraded to Low/No Contamination zones by substantially improving the housekeeping practices and taking appropriate actions on the observations mentioned in this report and implementation of the recommendations herein.



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

- The roof-top rain water is expected to be free of contamination and hence diverting it directly outside the facility will significantly minimize the hydraulic load of the storm water to a larger extent. Therefore, In order to minimize the storm water generation in Zone- IV and V, it is recommended to collect and divert the roof-top rain water directly outside the premises through closed conduits.
- Based on the available factory plot plan, the area under roof in these zones works out to be 33,448 m². Thus, the effective area leading to generation of storm water will be 22,078 m². Considering an average rainfall of 29 mm/day, the storm water generation with the aforementioned arrangements in Zones- IV and V were estimated to be approximately 640 KLD.
- The initial storm events often yield runoff with higher concentrations of certain contaminants, whereas subsequent events typically have lower concentrations. Therefore, it is recommended to collect and divert the storm water/ surface run-off for the first 2 days of rainfall to the collection/settling tanks. Accordingly, the volume of the collection and settling tank with the retention time of 2 days works out to be about 1280 m³.
- Based on the topography and the existing network of storm water drains, it is recommended to provide collection/settling tanks at two downstream locations of these zones within the PPL facility with a combined capacity of 1300 m³ approximately. The inlet of the collection/settling tanks may be equipped with silt traps, velocity breakers and appropriate filter media.
- The storm water collected in the collection and settling tank should be analyzed for relevant physicochemical parameters to decide the mode of treatment/reuse/recycle or discharge.
- The storm water/surface run-off generated after the first two days of shower, is expected to have low/no contamination levels and hence may be



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit


discharged directly outside the premises after routing it through velocity breaker, silt traps and filter media. During monsoon season, rain water intrusion into production area of NPK Plants due to leakages in roofs/sheds are most likely to occur. Hence, all leakages in roofs and sheds of the NPK units are to be attended in priority.

- The storm water drains (opposite to DAP truck loading point) receives condensate water of NPK. This condensate should be recycled/reused in the plant itself or may be routed to the Effluent Recycling Plant through process water drain.
- In D.G Area, the storm water drains are contaminated and choked with oil and rags. These drains should be cleared periodically and especially ahead of monsoon season. The Storm Water Drains should ideally be kept dry and all effluents/floor washings are to be received and conveyed to ERP through process effluent drains only.
- Clear differentiation between Storm Water Drains (SWDs) and Process Water Drains (PWDs) to be established to keep SWDs completely dry and free of process water
- Modification/ augmentation in process water drain network by studying the feasibility to convert the open drains into closed conduit systems should be explored.
- Inspection on the structural stability of storm water drains across the facility should be undertaken to identify the damaged areas and carry out revamping by grouting and laying of epoxy lining on priority. This shall fix seepages in and around NPK-A and B Plants and other areas.
- Re-concreting/ Epoxy Lining of Process Plant Areas with focus on NPK-A and B Plants (To minimize infiltration of seepage into sub-surface/SWD etc.,)



Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit

- Concrete dykes of appropriate height may be provided around the process areas to prevent carryover of process water/ spillages/ floor wash water/ leachate etc., entering the storm water/surface run-off drains.
- In auto workshop, a collection tank with suitable retention capacity shall be provided near to its entrance gate to collect and pump the wash water to ERP for recycling.
- Improvement in good housekeeping practices and timely maintenance in NPK/DAP plants shall significantly minimize the storm water contamination in Zone- IV and V.
- It is noted that the physicochemical criteria specified by GSPCB for storm water/surface runoff overflow from the settling pond are same as that stipulated for treated effluent (for gardening and other reuses).
 - Although such rigorous standards are appreciated, it should be noted that industrial process effluent and storm water differ significantly in terms of both volume and occurrence frequency throughout the year. Process effluents are generated consistently year-round, with relatively stable physicochemical characteristics unless there are significant process changes or upsets. In contrast, storm water is seasonal and its contamination in industrial settings varies widely depending on the nature of the industry and site conditions. The initial storm events often yield runoff with higher concentrations of certain contaminants, whereas subsequent events typically have lower concentrations. Thus, over time, industrial effluent generally contributes a higher pollution load compared to the seasonal contamination load from storm water.
 - The generation of storm water during specific times of the year, with inconsistent volumes and significant variations in physicochemical characteristics within that period, poses technical challenges for delineating and implementing effective treatment technologies to meet such stringent standards at any given time.

 <p>नैरी NEERI</p>	<h2>Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd., Goa Unit</h2>
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- Considering these factors, along with the specific nature of the industry, it is advisable to stipulate the physicochemical standards for storm water/surface runoff from the settling pond suitably. For instance, in the case of a fertilizer manufacturing facility with ammonia-urea and phosphatic manufacturing units, it may be appropriate to establish higher maximum limits for certain nutrient parameters and suspended solids, over a one-day period, while setting lower values for the maximum average limit over thirty consecutive days.
- In view of these observations, M/s PPL is advised to approach GSPCB for revising the existing storm water overflow standards.

The above recommendations shall be undertaken in phase wise manner for long term efficient storm water management. However, ***improvement in good housekeeping practices alone will minimize the storm water/ surface water contamination to a larger extent.***

Acknowledgement copy



PPL/ENV/2024-25/006

28.06.2024

To,
Member Secretary,
Goa State Pollution Control Board,
Nr. Pilerne Industrial Estate,
Opp. Saligao Seminary,
Saligao-Bardez
Goa 403511.

28/06/2024
Goa State Pollution Control Board
Opp. Saligao Seminary
Saligao Goa 403 511

Dear Madam,

Sub: Compliance to point #11 of the Minutes of personal hearing held on 11.06.2024 – Submission of “**Comprehensive Study on Storm Water Management**” at M/s Paradeep Phosphates Ltd., Goa Unit by M/s NEERI.

Reference:

- 1) Minutes of the personal hearing held on 11.06.2024.
- 2) Our letter PPL/ENV/2024-25/005 dated 19.06.2024 to the GSPCB.

With reference to the aforementioned subject and our letter dated June 19, 2024, we hereby submit M/s NEERI's study report on storm water management at M/s Paradeep Phosphates Ltd., Goa Unit. As desired, we present, in the following, our action taken report in response to the observations and recommendations in section #6 of the report:

- The roofs and sheds in the zone V and VI areas have been inspected and repaired. We continue to monitor for any new leaks and address them promptly. Open areas in the plants, which are prone to rainwater contamination, are covered with temporary sheds. For long-term protection, we have initiated plans to construct permanent engineered structures in these areas.
- An automated condensate recovery system, equipped with pumps and a dedicated level control, has been installed and is now operational in the NPK A plant.
- The trenches in the DG area have been thoroughly cleaned and cleared of all debris. A contract has been established to ensure the regular cleaning and upkeep of these drains.
- We plan to commission a comprehensive study of the Storm Water Drains (SWD) and Process Water Drains (PWD) by a qualified third party for the segregation of SWD's and PWD's so as to avoid any possibility of cross contamination of the two streams.

GA

PARADEEP PHOSPHATES LIMITED

CIN No.: L24129OR1981PLC001020

Goa Unit : Jaikisaan Bhawan, Zuarinagar, Goa - 403 726

Tel: +0832 2592180, 2592181, 6752399

Registered Office: Bayan Bhawan, Pandit J.N. Marg, Bhubaneswar - 751 001

www.paradeepphosphates.com

- Following the study, we will engineer and modify the process water drain network to convert the existing open drains into closed conduit systems.
- We have identified and repaired damaged sections of the storm water network. Further, we will undertake the engineering of the complete revamp of the storm water network, which will be implemented by end of March 2025.
- Construction has commenced on two catchment areas (settling ponds) to manage storm water from Zones IV and V, as outlined in the report. These ponds are situated at the lowest elevations on the South-West and South-East ends of the factory premises. The purpose of these two settling ponds will be to collect and divert the storm water/ surface run-off for the first 2 days of rainfall. Accordingly, the volume of the collection and settling tank with the **retention time of 2 days** works out to be about 1280 m³, say **1300 m³**. The inlet of these collection/settling tanks shall be equipped with silt traps, velocity breakers and appropriate filter media. Excavation and pipe-laying work are nearing completion.
- Focussed and sustained housekeeping, especially in zones IV and V are already initiated through a new contract.
- To prevent potential contamination from the Auto Shop, this facility is included in the study for engineered covering structures.

Thanking you.

Yours sincerely

For **Paradeep Phosphates Ltd. Goa Unit.**



Nilesh G. Dessai
CMO & Unit Head-Goa Plant

Encl: Comprehensive Study on Storm Water Management at M/s Paradeep Phosphates Ltd.,
Goa Unit – Report received from M/s NEERI.

GOA STATE POLLUTION CONTROL BOARD

गोंय राज्य प्रदूषण नियंत्रण मंडळ

(An ISO 9001-2015, ISO 14001:2015, ISO 45001:2018 Certified Board)

Phone Nos : 0832- 2407700,
2407701, 2407703



Email Ids:

Chairman, GSPCB: chairman-gspcb.goa@nic.in

Member Secretary, GSPCB: ms-gspcb.goa@nic.in

Office: mail.gspcb@gov.in

Date 28/06/2024

No. 1/25-PCB/Tech/ 7145

SHOW CAUSE NOTICE

WHEREAS, the officials of the Goa State Pollution Control Board have conducted an inspection of your unit namely, M/s.Paradeep Phosphates, located at Survey No. 110-252, Zuarinaagar, Sancoale Mormugao-Goa on 26/05/2024, for verifying the issues in the complaint.

WHEREAS, during the course of the said inspection, it was observed that, *dead fish was found in numerous locations in the rivulet/creek adjacent to your unit and surface runoff stains were observed outside the boundary of your unit. Further, Officials of the Board had collected water samples from Upstream of the rivulet/creek, Downstream of the rivulet/creek, Beach water and from a stagnant puddle under the Urea Loading Gantry near the Storm water drain. These samples have been analysed at the Board's Laboratory.*

(A copy of inspection report dated 26/05/2024 is enclosed hereto)

WHEREAS, upon perusal of the reports of the aforesaid samples, and interpretation therein the Board has observed that, *the values of Total kjeldahl Nitrogen (TKN) and potassium are remarkably higher in the samples of beach water and creek water compared to samples collected during non-monsoonperiod. Nitrogen and Potassium are constituents of the product of your unit. The sample of puddle water also indicated high concentrations of nitrogen, potassium & phosphate, indicating spillages mixing with storm water runoff.*

(A copy of analysis report of samples collected on 26/05/2024is enclosed hereto).

[Handwritten Signature]
28/06/2024
7145

WHEREAS, thereafter, the Board on receipt of another telephonic complaint regarding fish mortality at Velsao Beach, Mormugao, through its officials have conducted another inspection of your unit on 08/06/2024.

WHEREAS, during the course of said inspection it was observed that, a number of dead fishes were seen washed ashore and scattered all over the Beach in Velsao adjacent to your unit. At the time of sample collection at the creek the team observed a storm water drain from your unit leading to the beach and upon closer inspection it was observed that the colour of the water flowing in the storm water drain was slightly milky. Further, sediments of this white substance were also observed on the wall of the Storm water drain. The garland drains/storm water drains along the boundary of your Unit were inspected and there were traces of similar milky white water flowing in the storm water garland drains near the Urea loading gantry of your unit. There were white sediments settled on the walls of the drains similar to that observed at the storm water drain near the creek. Traces of sedimentation caused due to Surface runoff water from your unit can be clearly seen on google images. Further, officials of the Board have collected samples from the following locations; Downstream of rivulet/creek, upstream of rivulet/creek, beach water and from storm water garland drain near the Urea loading gantry.

(A copy of inspection report dated 08/06/2024 is enclosed hereto).

WHEREAS, upon perusal of the reports of the aforesaid samples collected on 08/06/2024, and interpretation therein the Board has observed that, *the values of Total kjeldahl Nitrogen (TKN) are remarkably higher in the samples of beach water and creek water compared to samples collected during non-monsoon period. Nitrogen is one of the constituents of the product of your unit. The sample of storm water drain within your unit premises also indicated high concentrations of nitrogen & phosphate, indicating spillages mixing with storm water runoff.*

(A copy of analysis report of samples collected on 08/06/2024 is enclosed hereto).

WHEREAS, thereafter a personal hearing of the representatives of your unit was held on 11/06/2024, during which the aforesaid reports were brought to your notice and you weredirected to submit a compliance report with respect to the above directions within a period of 7 days. The Board has thereafter received a compliance report dated 19/06/2024 from you in this regard.

(A copy of minutes of the Personal hearing held on 11/06/2024 is enclosed hereto)

WHEREAS, the observations and results of the reports of inspection and analysis respectively as aforestated indicate that surface runoff from the stored finished product, near the Urea loading Gantry at your unit has been discharged into the rivulet/creek and the beach water located adjacent to your unit, which has resulted in remarkably higher values of Total kjeldahl Nitrogen (TKN) & Potassium in the water of the rivulet/creek and the Beach area adjacent to your unit.

WHEREAS, in this regard, the Board has assessed that your unit will be required to pay the Board an Environmental Compensation amounting to Rs. 12,37,500/- (Rupees Twelve Lakhs Thirty Seven Thousand Five Hundred Only) on account of the aforesaid runoff from your unit into the rivulet/creek and beach water that has resulted in remarkably higher values of Total kjeldahl Nitrogen (TKN) & Potassium therein.

(A copy of the chart of calculation is enclosed hereto)

WHEREAS, the Board at its 158th meeting held on 16/04/2024 has decided to delegate its power to issue Directions under Section 33(A) read with section 25/26 of the Water (Prevention and Control of Pollution) Act, 1974, to the Member Secretary of the Board.

NOW THEREFORE in light of the above and in exercise of the powers vested with this Board and as delegated to the undersigned under section 33 (A) of the Water (Prevention

and Control of Pollution) Act, 1974, the management of your unit namely, **M/s.Paradeep Phosphates, located at Survey No. 110-252, Zuarinaagar, Sancoale Mormugao-Goa**, is hereby directed to **SHOW CAUSE** as to why an **Environmental Compensation** of Rs. 12,37,500/- (Rupees Twelve Lakhs Thirty Seven Thousand Five Hundred Only) should not be paid by you to the Board under the Polluter Pays Principal for discharge of surface run off water from the unit, which has resulted in remarkably higher values of Total kjeldahl Nitrogen (TKN) and Potassium in the samples collected at the Beach and the creek (adjacent to your unit), compared to samples collected during non-monsoon period.

TAKE NOTE, that your failure to satisfactorily comply with the aforesaid directions within the stipulated time period of 7 days will compel the Board to initiate stringent legal action against you under the provisions of the Water (Prevention and Control of Pollution) Act, 1981, without any further notice.

Issued this **28** day of june, 2024.


Member Secretary
For Goa State Pollution Control Board

To,
M/s.Paradeep Phosphates,
Survey No. 110-252, Zuarinaagar,
Sancoale, Mormugao-Goa.

INSPECTION REPORT

Sub: - Untreated effluents cause widespread fish mortality at velsao bay, rivulet

As directed, the undersigned official of the Board along with Smt. Milagrina Colaco(JLA) inspected Velsao Beach and M/s Paradeep Phosphates Limited located at Survey No. 110-252, Zuarinagar, Sancoale, Mormugao-Goa (hereafter referred to as "Unit") on 26/05/2024, with regards to the above-mentioned subject.

1. **Name, address & contact no. of complainant:** Press conference given by Goenche Ramponkarancho Ekvott (GRE) and Goencho Ekvott (GE) along with allied groups and newspaper article on page 1 of **O Heraldo** dated 26/05/2024
2. **Nature of Complaint:** -
 - a) **Noise pollution:** - No
 - b) **Waste Water disposal:** - Yes
 - c) **Air emission:** - No
 - d) **Solid waste disposal:** - No
 - e) **Any other:** -
3. **Whether any previous complaint received, if yes, details:** -
4. **Whether any show cause notice/directions/letter for corrective if yes, provide details:** -
5. **Name and address industry/unit against whom complaint is filed:**
M/s Paradeep Phosphates Limited located at Survey No. 110-252, Zuarinagar, Sancoale, Mormugao-Goa
6. **Product manufactured:** -

Sr. No.	Product	Capacity
A.	Main Products	
1.	Urea	495000 MTPA
2.	Complex Fertilizers produced in NPK-A Plant	500000 MTPA

3.	Complex Fertilizers produced in NPK-B Plant	500000 MTPA 471
B.	By- Products	
1.	Carbon dioxide	344000 MTPA
C.	Intermediate Products	
1.	Ammonia	346500 MTPA

Sr. No.	Description	Capacity
1	Power for Captive consumption from Diesel Generator	6 MW
2	Power for Captive consumption from Steam Turbine Generator	7.5MW

7. **Quantity of production:** - mentioned above

8. **Raw Material:** -

Sr. No.	Raw Material	Source
1	Natural Gas	GAIL
2	LSHS (P)	HPCL
3	Phosphoric Acid	Imported
4	Muriate of Potash	Imported
5	Ammonia for NPK	Imported
6	Sulphuric Acid	Local (within India)
7	Power	Captive + Grid

9. **Machine/equipment installed:** - Urea Plant, NPK-A & NPK-B plants

10. **Approximate production in last 2 months (based on receipts of purchase of raw materials orders and payments received):** -

11. **Manpower requirement:** -

12. **Status of operation of unit:** - In operation during the inspection

13. **Site description and schematic sketch of site:** -

GOA STATE POLLUTION CONTROL BOARD

गोंय राज्य प्रदूषण नियंत्रण मंडळ

(An ISO 9001-2015, ISO 14001:2015, ISO 45001:2018 Certified Board)

Phone Nos : 0832- 2407700,
2407701, 2407703



Email Ids:
Chairman, GSPCB: chairman-gspcb.goa@nic.in
Member Secretary, GSPCB: ms-gspcb.goa@nic.in
Office: mail.gspcb@gov.in
Date: 28/06/2024

No. 1/25-PCB/Tech/ 7145

SHOW CAUSE NOTICE

WHEREAS, the officials of the Goa State Pollution Control Board have conducted an inspection of your unit namely, M/s.Paradeep Phosphates, located at Survey No. 110-252, Zuarinaagar, Sancoale Mormugao-Goa on 26/05/2024, for verifying the issues in the complaint.

WHEREAS, during the course of the said inspection, it was observed that, *dead fish was found in numerous locations in the rivulet/creek adjacent to your unit and surface runoff stains were observed outside the boundary of your unit. Further, Officials of the Board had collected water samples from Upstream of the rivulet/creek, Downstream of the rivulet/creek, Beach water and from a stagnant puddle under the Urea Loading Gantry near the Storm water drain. These samples have been analysed at the Board's Laboratory.*

(A copy of inspection report dated 26/05/2024 is enclosed hereto)

WHEREAS, upon perusal of the reports of the aforesaid samples, and interpretation therein the Board has observed that, *the values of Total kjeldahl Nitrogen (TKN) and potassium are remarkably higher in the samples of beach water and creek water compared to samples collected during non-monsoonperiod. Nitrogen and Potassium are constituents of the product of your unit. The sample of puddle water also indicated high concentrations of nitrogen, potassium & phosphate, indicating spillages mixing with storm water runoff.*

(A copy of analysis report of samples collected on 26/05/2024is enclosed hereto).

WHEREAS, thereafter, the Board on receipt of another telephonic complaint regarding fish mortality at Velsao Beach, Mormugao, through its officials have conducted another inspection of your unit on 08/06/2024.

WHEREAS, during the course of said inspection it was observed that, a number of dead fishes were seen washed ashore and scattered all over the Beach in Velsao adjacent to your unit. At the time of sample collection at the creek the team observed a storm water drain from your unit leading to the beach and upon closer inspection it was observed that the colour of the water flowing in the storm water drain was slightly milky. Further, sediments of this white substance were also observed on the wall of the Storm water drain. The garland drains/storm water drains along the boundary of your Unit were inspected and there were traces of similar milky white water flowing in the storm water garland drains near the Urea loading gantry of your unit. There were white sediments settled on the walls of the drains similar to that observed at the storm water drain near the creek. Traces of sedimentation caused due to Surface runoff water from your unit can be clearly seen on google images. Further, officials of the Board have collected samples from the following locations; Downstream of rivulet/creek, upstream of rivulet/creek, beach water and from storm water garland drain near the Urea loading gantry.

(A copy of inspection report dated 08/06/2024 is enclosed hereto).

WHEREAS, upon perusal of the reports of the aforesaid samples collected on 08/06/2024, and interpretation therein the Board has observed that, *the values of Total kjeldahl Nitrogen (TKN) are remarkably higher in the samples of beach water and creek water compared to samples collected during non-monsoon period. Nitrogen is one of the constituents of the product of your unit. The sample of storm water drain within your unit premises also indicated high concentrations of nitrogen & phosphate, indicating spillages mixing with storm water runoff.*

(A copy of analysis report of samples collected on 08/06/2024 is enclosed hereto).

WHEREAS, thereafter a personal hearing of the representatives of your unit was held on 11/06/2024, during which the aforesaid reports were brought to your notice and you weredirected to submit a compliance report with respect to the above directions within a period of 7 days. The Board has thereafter received a compliance report dated 19/06/2024 from you in this regard.

(A copy of minutes of the Personal hearing held on 11/06/2024 is enclosed hereto)

WHEREAS, the observations and results of the reports of inspection and analysis respectively as aforestated indicate that surface runoff from the stored finished product, near the Urea loading Gantry at your unit has been discharged into the rivulet/creek and the beach water located adjacent to your unit, which has resulted in remarkably higher values of Total kjeldahl Nitrogen (TKN) & Potassium in the water of the rivulet/creek and the Beach area adjacent to your unit.

WHEREAS, in this regard, the Board has assessed that your unit will be required to pay the Board an Environmental Compensation amounting to Rs. 12,37,500/- (Rupees Twelve Lakhs Thirty Seven Thousand Five Hundred Only) on account of the aforesaid runoff from your unit into the rivulet/creek and beach water that has resulted in remarkably higher values of Total kjeldahl Nitrogen (TKN) & Potassium therein.

(A copy of the chart of calculation is enclosed hereto)

WHEREAS, the Board at its 158th meeting held on 16/04/2024 has decided to delegate its power to issue Directions under Section 33(A) read with section 25/26 of the Water (Prevention and Control of Pollution) Act, 1974, to the Member Secretary of the Board.

NOW THEREFORE in light of the above and in exercise of the powers vested with this Board and as delegated to the undersigned under section 33 (A) of the Water (Prevention

and Control of Pollution) Act, 1974, the management of your unit namely, **M/s.Paradeep Phosphates, located at Survey No. 110-252, Zuarinaagar, Sancoale Mormugao-Goa**, is hereby directed to **SHOW CAUSE** as to why an **Environmental Compensation** of Rs. 12,37,500/- (Rupees Twelve Lakhs Thirty Seven Thousand Five Hundred Only) should not be paid by you to the Board under the Polluter Pays Principal for discharge of surface run off water from the unit, which has resulted in remarkably higher values of Total kjeldahl Nitrogen (TKN) and Potassium in the samples collected at the Beach and the creek (adjacent to your unit), compared to samples collected during non-monsoon period.

TAKE NOTE, that your failure to satisfactorily comply with the aforesaid directions within the stipulated time period of 7 days will compel the Board to initiate stringent legal action against you under the provisions of the Water (Prevention and Control of Pollution) Act, 1981, without any further notice.

Issued this 28 day of june, 2024.


Member Secretary
For Goa State Pollution Control Board

To,
M/s.Paradeep Phosphates,
Survey No. 110-252, Zuarinaagar,
Sancoale, Mormugao-Goa.



14. Type of area: - Sancoale Industrial Area
15. Distance of nearest residence/school/hospital/any prominent structure: Next to GAIL(India) Limited
16. Distance of water body (Specify which if any): - The Unit's Railway loading point is located approximately 100 m away from rivulet and the Unit is located approximately 250m away from the rivulet
17. Noise Pollution Control measures adopted: -
18. Water consumption (meter reading of previous water supply bills): -
19. Waste water generation: -
20. Disposal method: - Effluent Treatment Plant
21. Capacity of septic tank/soak pit/sewage treatment plant/effluent treatment plant: - 550 KLD
22. Whether capacity sufficient (Yes/No): -
23. Electrical consumption: - Captive + Grid
24. Solid waste generated: -

a) Type: -

b) Quantity: -

c) Disposal: -

25. Hazardous Waste: -

26. Permission from:

a) Local body: - Yes

b) **Goa State Pollution Control Board:** - Consent to Operate and Authorization No. 12/2018-PCB/58613/R000121 dated 18/09/2019 was valid up to 31/12/2023

The Unit has applied for renewal of CCA on OCMMS vide application Number 1948660 dated 28/10/2023

27. Noise levels recorded: -

28. DG set capacity: - 8100 KVA

29. Boiler capacity: -

Sr.No.	Location of Boiler	Capacity	No. of Installations
1	Boiler (Utility)	70 MT/hr	3
2	Boiler (MP)	5 MT/hr	1

30. Oven capacity: -

31. Furnace capacity: -

32. Rotary kiln: -

33. Dust suppression methods: -

34. In case of Induction furnace: -

35. In case of sponge iron units: -

36. Is ambient monitoring carried out (Yes/No): - Yes

37. Are reports submitted as per consent conditions (Yes/No): - Yes

38. Is environmental statement submitted (Yes/No): - Yes

39. Is water cess submitted (Yes/No): -

40. Are all consent conditions complied with (Yes/No): - Partially complied

41. Is Bank Guarantee submitted (Yes/No): -

42. If yes, has the unit complied, give details: -

43. Additional observations:

➤ The Velsao beach was inspected with regards to the above-mentioned subject and the observations are made as follows: -

❖ Dead fish was found at numerous locations near the rivulet.

❖ Water samples were taken at 3 locations (may refer Image 1 **478** below) as mentioned below: -

Sample Number	Location	Co-ordinates
1	Beach water sample	15.370616, 73.869613
2	Upstream of rivulet	15.370879, 73.871593
3	Downstream of rivulet	15.370223, 73.873623



Image 1: Locations of water sample collection

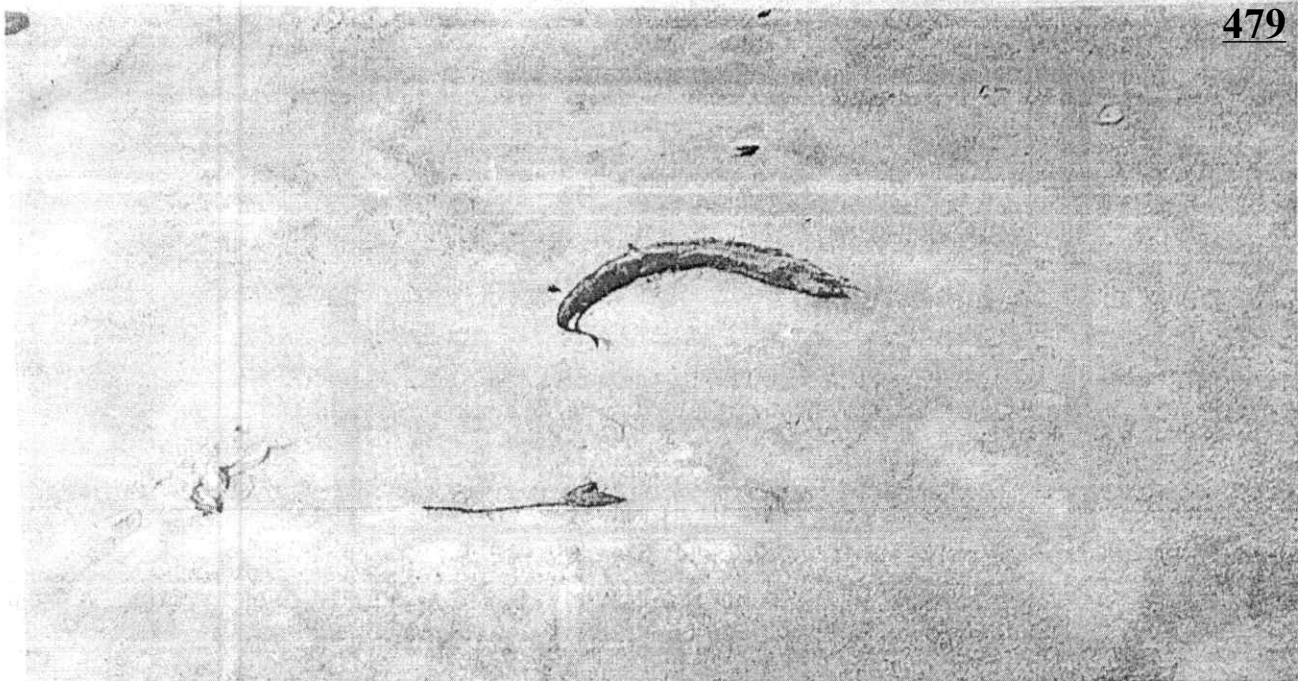


Image 2: Onsite photograph of the Dead Fish found close to the rivulet



Image 3: Onsite photograph of the Dead Fish found close to the rivulet

➤ Premises of M/s Paradeep Phosphates Limited was inspected for possible discharge and the observations made are as follows: -

- ❖ The garland drains/storm water drains along the boundary of the Unit were inspected and there was no water found in the drains.
- ❖ There were no pipelines or any other possible means observed for discharge of Untreated Effluent.
- ❖ Treated water sample from the ETP was collected for analysis.
- ❖ Surface runoff stains was observed outside the boundary of the Unit (May refer images below). However, a Culvert catchment pit has been built by the Unit to gather the runoff water and the said pit has two water submissibile pumps to pump the water back to the holding pond within the plant premises.



Image 4: Google Earth image of surface runoff traces



Image 5 : Onsite photograph of surface runoff traces



Image 6: Onsite photograph Culvert catchment pit built by the Unit to gather the runoff water and the highlighted two water submersible pumps

- ❖ Additionally, at each plant, dedicated bunds have been installed for the storm water drain. These bunds serve as the initial containment barriers, positioned to intercept any runoff water during rain showers. Furthermore,

each bund is equipped with an oil separator, where oil and other suspended materials from the collected water are manually removed. (Refer image below)

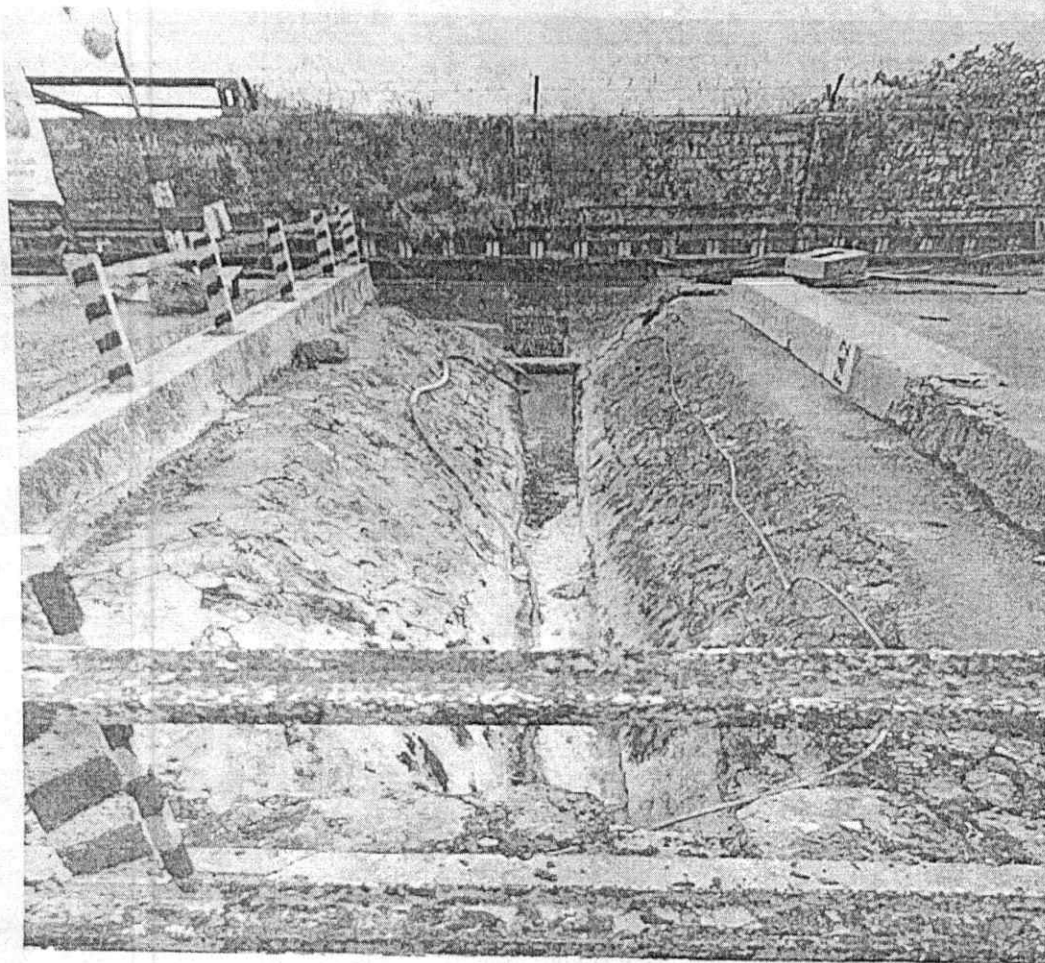


Image 7: Onsite photographs of dedicated bunds installed

- ❖ A small water puddle smelling of Ammonia was found accumulated under the Urea loading gantry (refer image below) near the storm water drain. However, the said puddle was stagnant and sample was collected for analysis.

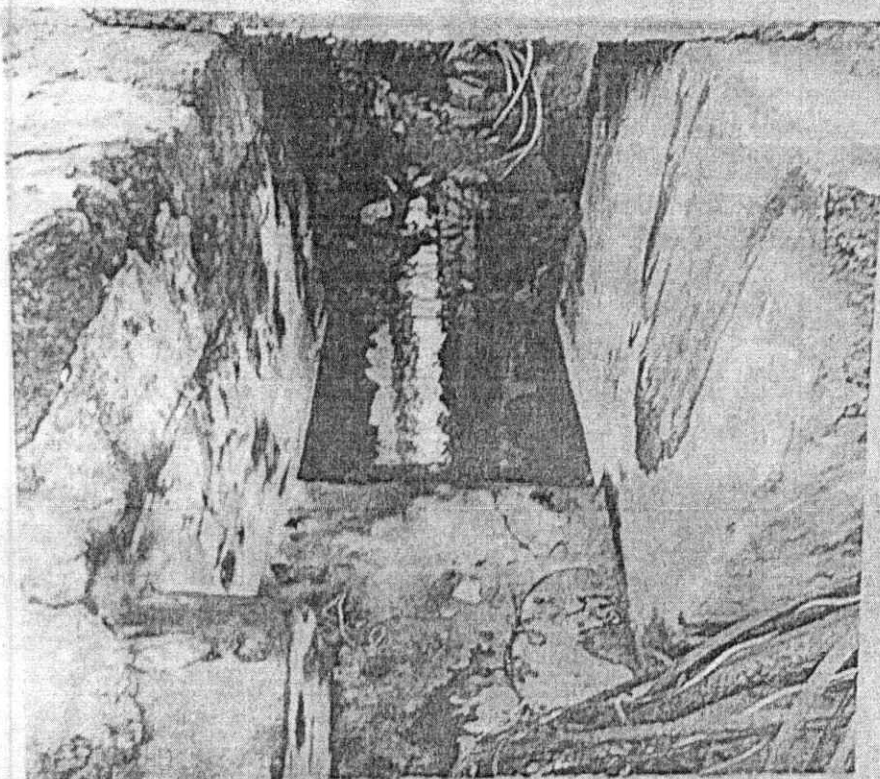


Image 8: Onsite photographs of the small water puddle smelling of Ammonia

Conclusion:

- Consent status of the Unit: Consent to Operate and Authorization No. 12/2018-PCB/58613/R000121 dated 18/09/2019 was valid up to 31/12/2023

The Unit has applied for renewal of CCA on OCMMS vide application Number 1948660 dated 28/10/2023

- Surface runoff stains was observed outside the boundary of the Unit.
- There was **No** discharge found of untreated effluent by the Unit.
- The Unit has engaged **M/s National Environmental Engineering Research Institute (NEERI)** to design a system for the effective management of the surface runoff water during monsoon. The documentary evidence has been placed in front of the Technical Advisory Committee (TAC) during the process of renewal of the Consent.
- Sample Reports awaited.

1. Sherwin da Costa (Junior Environmental Engineer)

A handwritten signature in black ink that reads "Sherwin" in a cursive style, with a long horizontal line extending from the end of the signature.

2. Milagrina Colaco (Junior Lab Assistant)

A handwritten signature in black ink that reads "Milagrina" in a cursive style, with a long horizontal line extending from the end of the signature.



GOA STATE POLLUTION CONTROL BOARD

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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38384

Report Issue Date: 31/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
 Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
 Nature of Sample : Final Treated ETP water sample (complaint)
 Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
 Quantity of Sample Received : 2L
 Code No. of the Sample : GSPCB/24/22021 A
 Date & Time of Sample Collection : 26.05.2024 & 03:30 pm
 Date of Sample Receipt : 27.05.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 27.05.2024
 Date of Completion of Analysis : 31.05.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Clear
 Odour of Sample : Odourfree
 Weather Condition : Cloudy
 Visible Effluent Discharge : No
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	6.69	6.5-8.0
Biochemical Oxygen Demand (BOD), 3 Days at 27°C	IS 3025(Part 44)	mg/l	36.6	30.0
Chemical Oxygen Demand (COD)	5220 B, APHA 23 rd Edition	mg/l	70.0	250.0
Total Suspended Solids dried at 103-105°C	2540 D, APHA 23 rd Edition	mg/l	7.0	100.0
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	14.15	75.0
Phosphate as P	4500 P E, APHA 23 rd Edition	mg/l	25.78	5.0
Nitrate Nitrogen as NO ₃ -N	4500-NO ₃ E, APHA 23 rd Edition	mg/l	10.98	10.0
Oil & Grease	5520 B, APHA 23 rd Edition	mg/l	<10.0	10.0

Contd.

Note :

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- Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Goa Jurisdiction only.
- Permissible Limits: as per Schedule I & VI of EPA Rules, 1986 as amended by Second and Third amendment 1993 for Effluents and as per IS 10500 : 2012 (RA 2018) - Indian Standards for Drinking water Specification (Second Revision) and as per minutes of the 118th, 126th, 145th & 157th meetings of the Board for discharge of treated sewage.
- The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

GSPCB/F/07

Rev.No. 13

Issue Date : 04.04.2024



GOA STATE POLLUTION CONTROL BOARD

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TC-11139

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Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38384

Report Issue Date: 31/05/2024

Remark: Biochemical Oxygen Demand , Phosphate, Nitrate Nitrogen Parameters are exceeding the permissible limits

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Sophia Dias

Junior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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GSPCB/F/07

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e-mail: goapcb@gspcb.in,

website: www.goaspcb.gov.in**TEST REPORT****Test Report No.: GSPCB/TR/24/38385****Report Issue Date: 31/05/2024**

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Final Treated ETP water sample (complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 2L
Code No. of the Sample : GSPCB/24/22021 A
Date & Time of Sample Collection : 26.05.2024 & 03:30 pm
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 31.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Odourfree
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr)Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	BDL	0.1
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23 rd Edition	mg/l	16.8	100.0
Flouride	4500-F D, APHA 23 rd Edition	mg/l	0.30	10.0

Contd..**Note :**

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7. The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

GSPCB/F/07

Rev.No. 13

Issue Date : 04.04.2024



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TEST REPORT

Test Report No.: GSPCB/TR/24/38385

Report Issue Date: 31/05/2024

Remark : All parameters are within the permissible limits
BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Sophia Dias
Junior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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7. The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

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TEST REPORT

Test Report No.: GSPCB/TR/24/38299

Report Issue Date: 29/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Final Treated ETP water sample (complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 1L
Code No. of the Sample : GSPCB/24/22021 B
Date & Time of Sample Collection : 26.05.2024 & 03:30 pm
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 29.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Odourfree
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.005	2.0
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.022	0.2

Contd..

Note :

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- Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Goa Jurisdiction only.
- Permissible Limits: as per Schedule I & VI of EPA Rules, 1986 as ammended by Second and Third ammendment 1993 for Effluents and as per IS 10500 : 2012 (RA 2018) – Indian Standards for Drinking water Specification (Second Revision) and as per minutes of the 118th, 126th, 145th & 157th meetings of the Board for discharge of treated sewage.
- The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

GSPCB/F/07

Rev.No. 13

Issue Date : 04.04.2024



GOA STATE POLLUTION CONTROL BOARD

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TEST REPORT

Test Report No.: GSPCB/TR/24/38299

Report Issue Date: 29/05/2024

Remark : All parameters are within the permissible limits

Analyst

Sanmesh Borkar
Scientific Assistant

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Authorised Signatory

Sanjay Kankonkar
Scientist B

Note :

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GSPCB/F/07

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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38382

Report Issue Date: 31/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
 Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
 Nature of Sample : water puddle smelling of Ammonia under year loading gantry (complaint)
 Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
 Quantity of Sample Received : 2L+300ml+300ml
 Code No. of the Sample : GSPCB/24/22020 A
 Date & Time of Sample Collection : 26.05.2024 & 02:30 pm
 Date of Sample Receipt : 27.05.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 27.05.2024
 Date of Completion of Analysis : 31.05.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Brown
 Odour of Sample : Ammonia
 Weather Condition : Cloudy
 Visible Effluent Discharge : yes
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	9.07	-
Conductivity	2510-B, APHA 23 rd Edition	µS/cm	18760.0	-
Dissolved Oxygen	4500-O C, APHA 23 rd Edition	mg/l	BDL	-
Biochemical Oxygen Demand (BOD), 3 Days at 27 °C	IS 3025 (Part 44)	mg/l	153.9	-
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	426.3	-

Contd.

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- The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

GSPCB/F/07

Rev.No. 13

Issue Date : 04.04.2024



GOA STATE POLLUTION CONTROL BOARD

Near Pilerne Industrial Estate, Opp Saligao Seminary,
Saligao, Bardez, Goa - 403 511.

Tel : +91 (0832) 2407700, 2407701, 2407702,
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e-mail: goapcb@gspcb.in,
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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38382

Report Issue Date: 31/05/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Nitrate as NO ₃	4500 NO ₃ E, APHA 23 rd Edition	mg/l	403.7	-
Nitrite as NO ₂	4500 NO ₂ B, APHA 23 rd Edition	mg/l	30.78	-
Phosphate as P	4500-P-E, APHA 23 rd Edition	mg/l	154.07	-
Oil & Grease	5520 B, APHA 23 rd Edition	mg/l	11.8	-

Remark: BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Sophia Dias
Junior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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GSPCB/F/07

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GOA STATE POLLUTION CONTROL BOARD

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2407703, Fax: (0832) 2407700

e-mail: goapcb@gspcb.in,

website: www.goaspcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/38383

Report Issue Date: 31/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : water puddle smelling of Ammonia under year loading gantry (complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 2L+300ml+300ml
Code No. of the Sample : GSPCB/24/22020 A
Date & Time of Sample Collection : 26.05.2024 & 02:30 pm
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 31.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Brown
Odour of Sample : Ammonia
Weather Condition : Cloudy
Visible Effluent Discharge : yes
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr)Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	0.29	-
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23 rd Edition	mg/l	543.6	-

Contd..

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GSPCB/F/07

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TEST REPORT

Test Report No.: GSPCB/TR/24/38383

Report Issue Date: 31/05/2024

Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Sophia Djas

Junior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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TEST REPORT

Test Report No.: GSPCB/TR/24/38298

Report Issue Date: 29/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : water puddle smelling of Ammonia under year loading gantry (complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 1L
Code No. of the Sample : GSPCB/24/22020B
Date & Time of Sample Collection : 26.05.2024 & 02:30 pm
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 29.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Brown
Odour of Sample : Ammonia
Weather Condition : Cloudy
Visible Effluent Discharge : yes
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Lead as Pb	3125 B, APHA 23rd Edition	mg/l	0.002	-
Cadmium as Cd	3125 B, APHA 23rd Edition	mg/l	0.023	-
Copper as Cu	3125 B, APHA 23rd Edition	mg/l	1.86	-
Nickel as Ni	3125 B, APHA 23rd Edition	mg/l	0.52	-

Contd..

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TEST REPORT

Test Report No.: GSPCB/TR/24/38298

Report Issue Date: 29/05/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.11	-
Cobalt as Co	3125 B, APHA 23rd Edition	mg/l	0.16	-
Zinc as Zn	3125 B, APHA 23rd Edition	mg/l	9.81	-
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.23	-
Mercury as Hg	3125 B, APHA 23rd Edition	mg/l	BDL	-

Remark : BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Sanmesh Borkar
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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Rev.No. 13

Issue Date : 04.04.2024

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2407703, Fax: (0832) 2407700

e-mail: goapcb@gspcb.in,

website: www.goaspcb.gov.in**TEST REPORT****Test Report No.: GSPCB/TR/24/38462****Report Issue Date: 04/06/2024**

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : water puddle smelling of Ammonia under year loading gantry (complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 250ml
Code No. of the Sample : GSPCB/24/22020 C
Date & Time of Sample Collection : 26.05.2024 & 02:30 pm
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 04.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Brown
Odour of Sample : Ammonia
Weather Condition : Cloudy
Visible Effluent Discharge : yes
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Total Coliform	9221 B, APHA 23 rd Edition	MPN/100ml	230	-
Fecal Coliform	9221 E, APHA 23 rd Edition	MPN/100ml	.78	-
E. Coli	9221 G, APHA 23 rd Edition	-	Present	-

Contd..**Note :**

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GSPCB/F/07

Rev.No. 13

Issue Date : 04.04.2024



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website: www.goaspcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/38462

Report Issue Date: 04/06/2024

Remark :

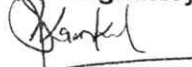
*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst


Reema Redkar

Junior Laboratory Assistant

Authorised Signatory


Sanjay Kankonkar
Scientist B

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Issue Date : 04.04.2024



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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

Issued Date: 12.11.2022

NABL Certificate No. TC-11139

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38376

Report Issue Date: 30/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
 Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
 Nature of Sample : Downstream of Dando mollo creek water sample, Velsao
 (Complaint)
 Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
 Quantity of Sample Received : 1L+300ml+300ml
 Code No. of the Sample : GSPCB/24/22019 A
 Date & Time of Sample Collection : 26.05.2024 & 12:45 pm
 Date of Sample Receipt : 27.05.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 27.05.2024
 Date of Completion of Analysis : 30.05.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Light Green
 Odour of Sample : Odourfree
 Weather Condition : Cloudy
 Visible Effluent Discharge : No
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	7.3	6.0-9.0
Conductivity	2510-B, APHA 23 rd Edition	µS/cm	24550.0	-
Dissolved Oxygen	4500-O C, APHA 23 rd Edition	mg/l	5.8	≥4.0
Biochemical Oxygen Demand (BOD), 3 Days at 27 °C	IS 3025 (Part 44)	mg/l	BDL	≤3.0
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	0.48	-

Note :

Contd.

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GSPCB/F/07

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TEST REPORT

Test Report No.: GSPCB/TR/24/38376

Report Issue Date: 30/05/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Nitrate as NO ₃	4500 NO ₃ E, APHA 23 rd Edition	mg/l	10.47	-
Nitrite as NO ₂	4500 NO ₂ B, APHA 23 rd Edition	mg/l	0.38	-
Phosphate as P	4500-P-E, APHA 23 rd Edition	mg/l	0.61	-

Remark: All parameters are within the permissible limits
BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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Issue Date : 04.04.2024



GOA STATE POLLUTION CONTROL BOARD

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TEST REPORT

Test Report No.: GSPCB/TR/24/38377

Report Issue Date: 30/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Downstream of Dando mollo creek water sample, Velsao
(Complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 1L+300ml+300ml
Code No. of the Sample : GSPCB/24/22019 A
Date & Time of Sample Collection : 26.05.2024 & 12:45 am
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 30.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Light Green
Odour of Sample : Odourfree
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr)Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	BDL	-
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23 rd Edition	mg/l	8.40	-

Contd..

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GSPCB/F/07

Rev.No. 13

Issue Date : 04.04.2024

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TEST REPORT

Test Report No.: GSPCB/TR/24/38377

Report Issue Date: 30/05/2024

Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira

Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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TEST REPORT

Test Report No.: GSPCB/TR/24/38297

Report Issue Date: 29/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Downstream of Dando mollo creek water sample, Velsao (Complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 1L
Code No. of the Sample : GSPCB/24/22019 B
Date & Time of Sample Collection : 26.05.2024 & 12:45 am
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 29.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Light Green
Odour of Sample : Odourfree
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Lead as Pb	3125 B, APHA 23rd Edition	mg/l	BDL	-
Cadmium as Cd	3125 B, APHA 23rd Edition	mg/l	BDL	-
Copper as Cu	3125 B, APHA 23rd Edition	mg/l	0.007	-
Nickel as Ni	3125 B, APHA 23rd Edition	mg/l	0.001	-

Contd..

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- The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

GSPCB/F/07

Rev.No. 13

Issue Date : 04.04.2024



GOA STATE POLLUTION CONTROL BOARD

Near Pilerne Industrial Estate, Opp Saligao Seminary,
Saligao, Bardez, Goa - 403 511.

Tel : +91 (0832) 2407700, 2407701, 2407702,
2407703, Fax: (0832) 2407700

e-mail: goapcb@gspcb.in,
website: www.goaspcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/38297

Report Issue Date: 29/05/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.009	-
Cobalt as Co	3125 B, APHA 23rd Edition	mg/l	BDL	-
Zinc as Zn	3125 B, APHA 23rd Edition	mg/l	0.04	-
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.001	-
Mercury as Hg	3125 B, APHA 23rd Edition	mg/l	BDL	-

Remark : BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Sanmesh Borkar
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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GSPCB/F/07

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Issue Date : 04.04.2024



GOA STATE POLLUTION CONTROL BOARD

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website: www.goapcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/38461

Report Issue Date: 04/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Downstream of Dando mollo creek water sample, Velsao
(Complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 250ml
Code No. of the Sample : GSPCB/24/22019 C
Date & Time of Sample Collection : 26.05.2024 & 12:45 pm
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 04.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Light Green
Odour of Sample : Odourfree
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Total Coliform	9221 B, APHA 23 rd Edition	MPN/100ml	1300	≤5000
Fecal Coliform	9221 E, APHA 23 rd Edition	MPN/100ml	790	-
E. Coli	9221 G, APHA 23 rd Edition	-	Present	-

Contd..

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7. The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

GSPCB/F/07

Rev.No. 13

Issue Date : 04.04.2024



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website: www.goaspcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/38461

Report Issue Date: 04/06/2024

Remark : Total Coliform parameter is within the permissible limits

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD

Analyst

Reema Redkar
Junior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38374

Report Issue Date: 30/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
 Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
 Nature of Sample : Upstream of Dando mollo creek water sample, Velsao (Complaint)
 Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
 Quantity of Sample Received : 1L+300ml+300ml
 Code No. of the Sample : GSPCB/24/22018 A
 Date & Time of Sample Collection : 26.05.2024 & 10:45 am
 Date of Sample Receipt : 27.05.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 27.05.2024
 Date of Completion of Analysis : 30.05.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Green
 Odour of Sample : Ammonia Smell
 Weather Condition : Cloudy
 Visible Effluent Discharge : No
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	7.8	6.0-9.0
Conductivity	2510-B, APHA 23 rd Edition	μS/cm	49900.0	-
Dissolved Oxygen	4500-O C, APHA 23 rd Edition	mg/l	6.0	≥4.0
Biochemical Oxygen Demand (BOD), 3 Days at 27 °C	IS 3025 (Part 44)	mg/l	2.2	≤3.0
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	3.27	-

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TEST REPORT

Test Report No.: GSPCB/TR/24/38374

Report Issue Date: 30/05/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Nitrate as NO ₃	4500 NO ₃ E, APHA 23 rd Edition	mg/l	8.57	-
Nitrite as NO ₂	4500 NO ₂ B, APHA 23 rd Edition	mg/l	0.81	-
Phosphate as P	4500-P-E, APHA 23 rd Edition	mg/l	1.16	-

Remark: All parameters are within the permissible limits
BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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GSPCB/F/07
Rev.No. 13
Issue Date : 04.04.2024



GOA STATE POLLUTION CONTROL BOARD

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website: www.goaspcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/38375

Report Issue Date: 30/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Upstream of Dando mollo creek water sample, Velsao
(Complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 1L+300ml+300ml
Code No. of the Sample : GSPCB/24/22018 A
Date & Time of Sample Collection : 26.05.2024 & 10:45 am
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 30.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Green
Odour of Sample : Ammonia Smell
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr)Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	BDL	-
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23rd Edition	mg/l	16.81	-

Contd..

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TEST REPORT

Test Report No.: GSPCB/TR/24/38375

Report Issue Date: 30/05/2024

Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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TEST REPORT

Test Report No.: GSPCB/TR/24/38296

Report Issue Date: 29/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Upstream of Dando mollo creek water sample, Velsao
(Complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 1L
Code No. of the Sample : GSPCB/24/22018 B
Date & Time of Sample Collection : 26.05.2024 & 10:45 am
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 29.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Green
Odour of Sample : Ammonia Smell
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Lead as Pb	3125 B, APHA 23rd Edition	mg/l	BDL	-
Cadmium as Cd	3125 B, APHA 23rd Edition	mg/l	BDL	-
Copper as Cu	3125 B, APHA 23rd Edition	mg/l	0.002	-
Nickel as Ni	3125 B, APHA 23rd Edition	mg/l	0.001	-

Contd..

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TEST REPORT

Test Report No.: GSPCB/TR/24/38296

Report Issue Date: 29/05/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.004	-
Cobalt as Co	3125 B, APHA 23rd Edition	mg/l	BDL	-
Zinc as Zn	3125 B, APHA 23rd Edition	mg/l	0.01	-
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.002	-
Mercury as Hg	3125 B, APHA 23rd Edition	mg/l	BDL	-

Remark : BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Sanmesh Borkar
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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GOA STATE POLLUTION CONTROL BOARD

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TEST REPORT

Test Report No.: GSPCB/TR/24/38460

Report Issue Date: 04/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Upstream of Dando mollo creek water sample, Velsao
(Complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 250ml
Code No. of the Sample : GSPCB/24/22018 C
Date & Time of Sample Collection : 26.05.2024 & 10:45 am
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 04.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Green
Odour of Sample : Ammonia Smell
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Total Coliform	9221 B, APHA 23 rd Edition	MPN/100ml	170	≤5000
Fecal Coliform	9221 E, APHA 23 rd Edition	MPN/100ml	78	-
E.Coli	9221 G, APHA 23 rd Edition	-	Present	-

Contd..

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TEST REPORT

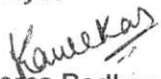
Test Report No.: GSPCB/TR/24/38460

Report Issue Date: 04/06/2024

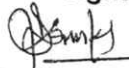
Remark : Total Coliform parameter is within the permissible limits

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst


Reema Redkar
Junior Laboratory Assistant

Authorised Signatory


Sanjay Kankonkar
Scientist B

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NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38372

Report Issue Date: 30/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
 Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
 Nature of Sample : Velsao beach water sample (Complaint)
 Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
 Quantity of Sample Received : 1L+300ml+300ml
 Code No. of the Sample : GSPCB/24/22017 A
 Date & Time of Sample Collection : 26.05.2024 & 09:45 am
 Date of Sample Receipt : 27.05.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 27.05.2024
 Date of Completion of Analysis : 30.05.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Clear
 Odour of Sample : Odourfree
 Weather Condition : Cloudy
 Visible Effluent Discharge : No
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	7.5	6.5-8.5
Conductivity	2510-B, APHA 23 rd Edition	μS/cm	53320.0	-
Dissolved Oxygen	4500-O C, APHA 23 rd Edition	mg/l	6.8	≥4.0
Biochemical Oxygen Demand (BOD), 3 Days at 27 °C	IS 3025 (Part 44)	mg/l	BDL	≤3.0
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	0.59	-

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- The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

GSPCB/F/07

Rev.No. 13

Issue Date : 04.04.2024

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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38372

Report Issue Date: 30/05/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Nitrate as NO ₃	4500 NO ₃ E, APHA 23 rd Edition	mg/l	4.32	-
Nitrite as NO ₂	4500 NO ₂ B, APHA 23 rd Edition	mg/l	1.84	-
Phosphate as P	4500-P-E, APHA 23 rd Edition	mg/l	0.36	-

Remark: All parameters are within the permissible limits
BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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TEST REPORT

Test Report No.: GSPCB/TR/24/38373

Report Issue Date: 30/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Velsao beach water sample (Complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 1L+300ml+300ml
Code No. of the Sample : GSPCB/24/22017 A
Date & Time of Sample Collection : 26.05.2024 & 09:45 am
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 30.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Odourfree
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr)Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	BDL	-
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23 rd Edition	mg/l	22.42	-

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TEST REPORT

Test Report No.: GSPCB/TR/24/38373

Report Issue Date: 30/05/2024

Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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TEST REPORT

Test Report No.: GSPCB/TR/24/38295

Report Issue Date: 29/05/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Velsao beach water sample (Complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 1L
Code No. of the Sample : GSPCB/24/22017 B
Date & Time of Sample Collection : 26.05.2024 & 09:45 am
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 29.05.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Odourfree
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Lead as Pb	3125 B, APHA 23rd Edition	mg/l	BDL	-
Cadmium as Cd	3125 B, APHA 23rd Edition	mg/l	BDL	-
Copper as Cu	3125 B, APHA 23rd Edition	mg/l	0.004	-
Nickel as Ni	3125 B, APHA 23rd Edition	mg/l	0.002	-

Contd..

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TEST REPORT

Test Report No.: GSPCB/TR/24/38295

Report Issue Date: 29/05/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.004	-
Cobalt as Co	3125 B, APHA 23rd Edition	mg/l	0.001	-
Zinc as Zn	3125 B, APHA 23rd Edition	mg/l	0.03	-
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.001	-
Mercury as Hg	3125 B, APHA 23rd Edition	mg/l	BDL	-

Remark : BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Sanmesh Borkar
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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Issue Date : 04.04.2024



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TEST REPORT

Test Report No.: GSPCB/TR/24/38459

Report Issue Date: 04/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd
Address : Survey No. 110,252, Zuarinagar Sancoale Mormugao Goa
Nature of Sample : Velsao beach water sample (Complaint)
Sample collected by : Sherwin Da Costa (JEE), Milagrina Colaco (JLA)
Quantity of Sample Received : 250 ml
Code No. of the Sample : GSPCB/24/22017 C
Date & Time of Sample Collection : 26.05.2024 & 09:45 am
Date of Sample Receipt : 27.05.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 27.05.2024
Date of Completion of Analysis : 04.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Odourfree
Weather Condition : Cloudy
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Total Coliform	9221 B, APHA 23 rd Edition	MPN/100ml	170	-
Fecal Coliform	9221 E, APHA 23 rd Edition	MPN/100ml	140	≤100
E. Coli	9221 G, APHA 23 rd Edition	-	Present	-

Contd..

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Issue Date : 04.04.2024



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TEST REPORT


Test Report No.: GSPCB/TR/24/38459

Report Issue Date: 04/06/2024

Remark : Fecal Coliform parameter is exceeding the permissible limits


*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst


Reema Redkar

Junior Laboratory Assistant

Authorised Signatory


Sanjay Kankonkar
Scientist B

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Rev.No. 13

Issue Date : 04.04.2024

INSPECTION REPORT**Sub: - Widespread fish mortality at Velsao Beach, in Mormugao**

As directed, the undersigned official of the Board JEE – Siddhant Desai, along with Smt. Milagrina Colaco(JLA) & Shri. Sanmesh Borkar (SA) inspected Velsao Beach and M/s Paradeep Phosphates Limited located at Survey No. 110-252, Zuarinagar, Sancoale, Mormugao-Goa (hereafter referred to as “Unit”) on 08/06/2024, with regards to the above-mentioned subject.

1. **Name, address & contact no. of complainant:** Telephonic Complaint received regarding large scale Fish Mortality at Velsea Beach
2. **Nature of Complaint: -**
 - a) **Noise pollution: -** No
 - b) **Waste Water disposal: -** Yes
 - c) **Air emission: -** No
 - d) **Solid waste disposal: -** No
 - e) **Any other: -**
3. **Whether any previous complaint received, if yes, details: -** Press conference given by Goenche Ramponkarancho Ekvott (GRE) and Goencho Ekvott (GE) along with allied groups and newspaper article on page 1 of **O Herald** dated **26/05/2024**
4. **Whether any show cause notice/directions/letter for corrective if yes, provide details: -**
5. **Name and address industry/unit against whom complaint is filed:**
M/s Paradeep Phosphates Limited located at Survey No. 110-252, Zuarinagar, Sancoale, Mormugao-Goa
6. **Product manufactured: -**

Sr. No.	Product	Capacity
A.	Main Products	
1.	Urea	495000 MTPA

Goa State Pollution Control board
Saligao

2.	Complex Fertilizers produced in NPK-A Plant	500000 MTPA
3.	Complex Fertilizers produced in NPK-B Plant	500000 MTPA
B.	By- Products	
1.	Carbon dioxide	344000 MTPA
C.	Intermediate Products	
1.	Ammonia	346500 MTPA

Sr. No.	Description	Capacity
1	Power for Captive consumption from Diesel Generator	6 MW
2	Power for Captive consumption from Steam Turbine Generator	7.5MW

7. **Quantity of production:** - mentioned above

8. **Raw Material:** -

Sr. No.	Raw Material	Source
1	Natural Gas	GAIL
2	LSHS (P)	HPCL
3	Phosphoric Acid	Imported
4	Muriate of Potash	Imported
5	Ammonia for NPK	Imported
6	Sulphuric Acid	Local (within India)
7	Power	Captive + Grid

9. **Machine/equipment installed:** - Urea Plant, NPK-A & NPK-B plants

10. **Approximate production in last 2 months (based on receipts of purchase of raw materials orders and payments received):** -

11. **Manpower requirement:** -

12. **Status of operation of unit:** - In operation during the inspection

13.Site description and schematic sketch of site: -



14.Type of area: - The unit lies within Sancoale Industrial Area, schools of fish were found dead on the beach towards the south of the Unit called Velsao Beach

15.Distance of nearest residence/school/hospital/any prominent structure: Next to GAIL(India) Limited

16.Distance of water body (Specify which if any): - The Unit's Railway loading point is located approximately 100 m away from rivulet and the Unit is located approximately 250m away from the rivulet

17.Noise Pollution Control measures adopted: -

18.Water consumption (meter reading of previous water supply bills): -

19.Waste water generation: -

20.Disposal method: - Effluent Treatment Plant

21.Capacity of septic tank/soak pit/sewage treatment plant/effluent treatment plant: - 550 KLD

22.Whether capacity sufficient (Yes/No): -

23. **Electrical consumption:** - Captive + Grid

24. **Solid waste generated:** -

a) **Type:** -

b) **Quantity:** -

c) **Disposal:** -

25. **Hazardous Waste:** -

26. **Permission from:**

a) **Local body:** - Yes

b) **Goa State Pollution Control Board:** - Consent to Operate and Authorization No. 12/2018-PCB/58613/R000121 dated 18/09/2019 was valid up to 31/12/2023

The Unit has applied for renewal of CCA on OCMMS vide application Number 1948660 dated 28/10/2023

27. **Noise levels recorded:** -

28. **DG set capacity:** - 8100 KVA

29. **Boiler capacity:** -

Sr.No.	Location of Boiler	Capacity	No. of Installations
1	Boiler (Utility)	70 MT/hr	3
2	Boiler (MP)	5 MT/hr	1

30. **Oven capacity:** -

31. **Furnace capacity:** -

32. **Rotary kiln:** -

33. **Dust suppression methods:** -

34. **In case of Induction furnace:** -

35. **In case of sponge iron units:** -

36. **Is ambient monitoring carried out (Yes/No):** - Yes

37. **Are reports submitted as per consent conditions (Yes/No):** - Yes

38. **Is environmental statement submitted (Yes/No):** - Yes

39. **Is water cess submitted (Yes/No):** -

40. **Are all consent conditions complied with (Yes/No):** - Partially complied

41. **Is Bank Guarantee submitted (Yes/No):** -

42. **If yes, has the unit complied, give details:** -

43. Additional observations:

The inspecting team of officials reached the Velsao Beach site and the following observations were made:

- i. Schools of dead fish were washed ashore and scattered all over the beach.
- ii. Several types of fish were found dead. (pictures of the same have been attached below).
- iii. At the time of sample collection at the creek the team observed a storm water drain from Paradeep Phosphate Ltd. Leading to the beach and upon closer inspection it was observed that the colour of the water flowing in the storm water drain was slightly milky. Further, sediments of this white substance were also observed on the wall of the Storm water drain. (Photographs have been attached below)
- iv. Accordingly, a sample was taken from the discharge point of this storm water drain, which is the creek of the River, i.e., Sample 1 – mouth of creek – (Coordinates: 15.370699, 73.872664), It may be noted that smell of Ammonia was observed at the time of sampling.
- v. Subsequently, samples were also taken from the following locations on the beach site, as follows:

Sample Number	Location	Co-ordinates
2	Downstream of rivulet	15.370155, 73.873505
3	Upstream of rivulet	15.370862, 73.871207
4	Beach water Sample	15.370475, 73.870776

- vi. The Team then proceeded to the premises of M/s Paradeep Phosphates Limited to inspect and identify any possible discharge from their premises.
- vii. The garland drains/storm water drains along the boundary of the Unit were inspected and there were traces of similar milky white water flowing in the storm water garland drains near the Urea loading gantry of the Unit. There were white sediments settled on the walls of the drains similar to that observed at the storm water drain near the creek. (Photographs attached below)

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Saligao

- viii. Accordingly, a final sample was collected from this drain that leads to the outside the Unit premises, i.e., Sample 5 – Storm water drain of PPL – (Coordinates: 15.372613, 73.870969)
- ix. The team also inspected the ETP of the unit and There were no pipelines or any other possible means observed for discharge of Untreated Effluent.
- x. The unit representative informed that a Culvert catchment pit has been built by the Unit to gather the surface runoff water and the said pit has two water submersible pumps, to pump the water back to the holding pond within the plant premises.
- xi. Traces of sedimentation caused due to Surface runoff water from the unit can be clearly seen on google images. (refer image attached below)

Photographs:



Fig 1

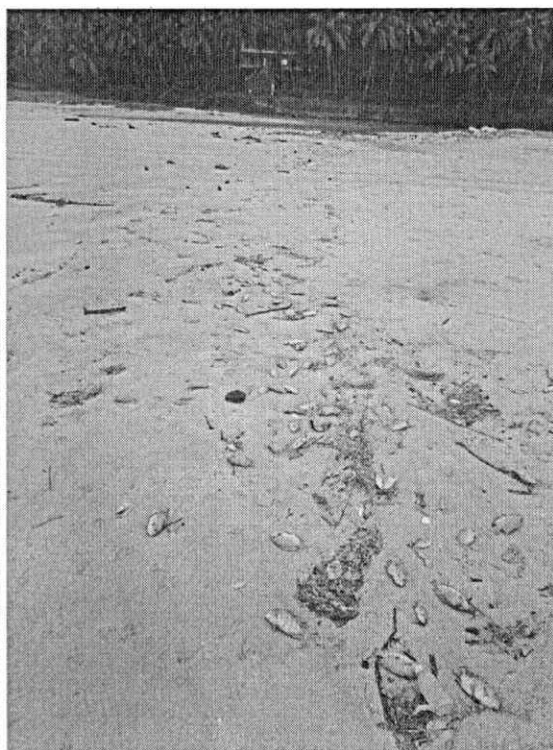


Fig 2

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Fig 3

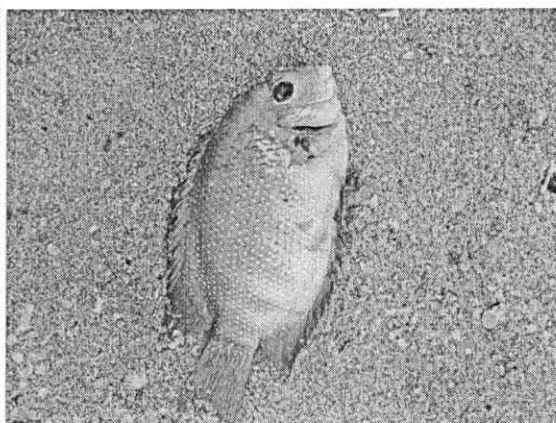


Fig 4

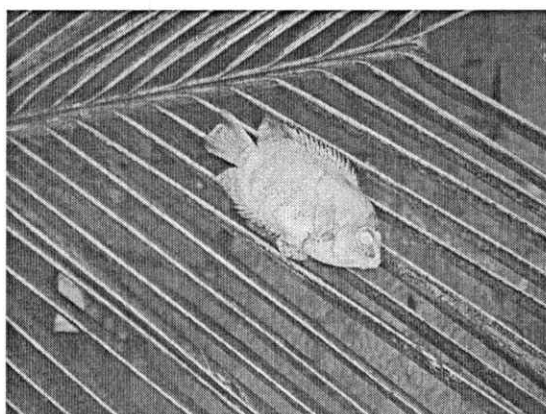


Fig 5



Fig 6

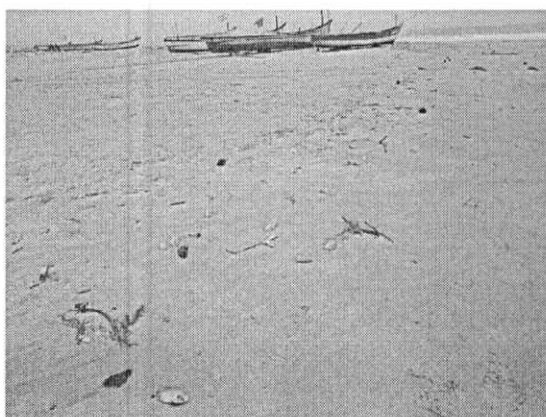


Fig 7



Fig 8

Figures 1, 2, 3, 4, 5, 6, 7 & 8: show various dead fish washed ashore on the Velsao Beach

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Saligao



Fig 9



Fig 10



Fig 11



Fig 12

Fig: 9, 10, 11 & 12 shows storm water drain from Paradeep Phosphate Ltd. Leading to the beach having a milky white appearance & sediments of this white substance were also observed on the wall of the Storm water drain

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Saligao

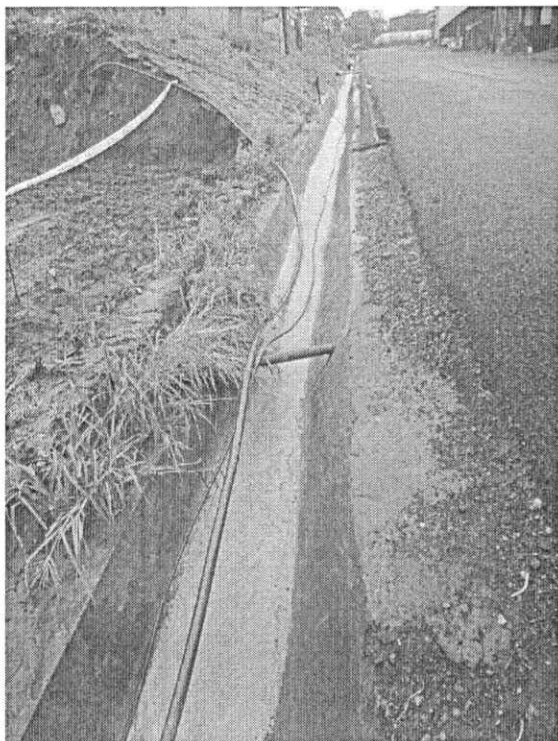


Fig 13



Fig 14

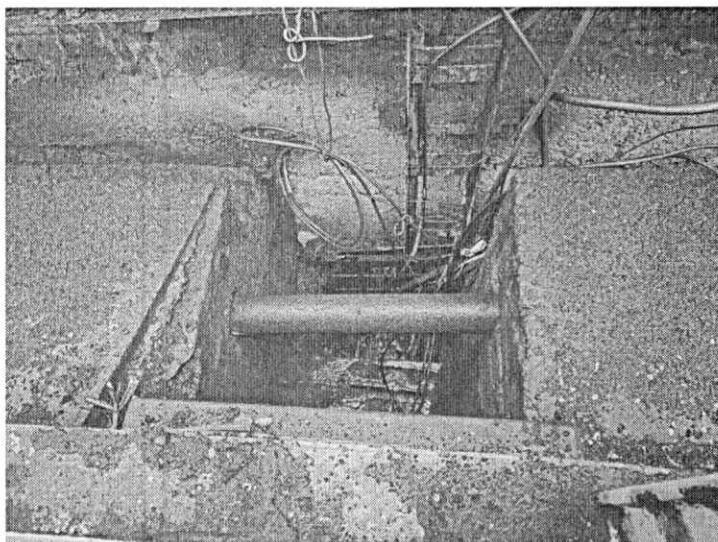


Fig 15

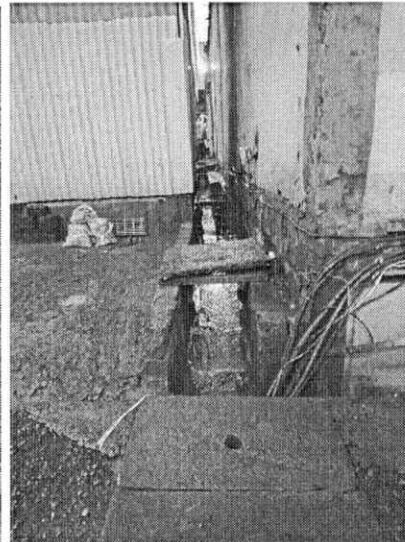


Fig 16

Fig 13, 14, 15 & 16: show the storm water garland drains within the unit premises near the Urea Loading gantry, having the same milky white appearing run off water.

Goa State Pollution Control board
Saligao



Fig 17: shows Google Earth image of surface runoff traces flowing from the unit



Fig 18: shows Google image of locations from where the team collected Samples for testing.

Goa State Pollution Control board
Saligao

Conclusion:

- Consent status of the Unit: Consent to Operate and Authorization No. 12/2018-PCB/58613/R000121 dated 18/09/2019 was valid up to 31/12/2023 & The Unit has applied for renewal of CCA on OCMMS vide application Number 1948660 dated 28/10/2023
- Surface runoff water, milky white in appearance was observed in the garland storm water drains of the Unit and the same was flowing outside the Premises of the unit.
- No discharge of untreated effluents was observed from the ETP of the unit.
- Sample Reports awaited.

Name of the Inspecting Official:

Name of the Official	Siddhant Desai	Sanmesh Borkar	Milagrina Colaco
Designation of the Official	JEE	SA	JLA
Signature of the Official			


GOA STATE POLLUTION CONTROL BOARD

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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38999

Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Nallah water sample near the mouth of the
creek(Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA),
Milagrina Colaco (JLA)
Quantity of Sample Received : 2L+300ml+300ml
Code No. of the Sample : GSPCB/24/22125 A
Date & Time of Sample Collection : 08.06.2024 & 04:30 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 10.06.2024
Date of Completion of Analysis : 24.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Milky White
Odour of Sample : Chemical
Weather Condition : Raining
Visible Effluent Discharge : Yes
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	7.64	-
Conductivity	2510-B, APHA 23 rd Edition	mS/cm	8.225	-
Dissolved Oxygen	4500-O C, APHA 23 rd Edition	mg/l	9.8	-
Biochemical Oxygen Demand (BOD), 3 Days at 27 °C	IS 3025 (Part 44)	mg/l	5.4	-

Contd..

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GSPCB/F/07

Rev.No. 13

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Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/38999

Report Issue Date: 25/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	5.28	-
Nitrite as NO ₂	4500 NO ₂ B, APHA 23 rd Edition	mg/l	10.38	-
Nitrate as NO ₃	4500 NO ₃ E, APHA 23 rd Edition	mg/l	11.3	-
Phosphate as P	4500-P-E, APHA 23 rd Edition	mg/l	15.8	-
Oil & Grease	5520 B, APHA 23 rd Edition	mg/l	<10.0	-

Remark :

 *** End of Report ***
 for GOA STATE POLLUTION CONTROL BOARD,

Analyst

 Jocelyn Coelho

Senior Laboratory Assistant

Authorised Signatory

 Sanjay Kankonkar
 Scientist B

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 website: www.goapcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/39000

Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
 Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
 Goa
 Nature of Sample : Nallah water sample near the mouth of the
 creek (Complaint)
 Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA),
 Milagrina Colaco (JLA)
 Quantity of Sample Received : 2L+300ml+300ml
 Code No. of the Sample : GSPCB/24/22125 A
 Date & Time of Sample Collection : 08.06.2024 & 04:30 pm
 Date of Sample Receipt : 08.06.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 08.06.2024
 Date of Completion of Analysis : 24.06.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Milky White
 Odour of Sample : Chemical
 Weather Condition : Raining
 Visible Effluent Discharge : Yes
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr) Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	0.1	-
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23 rd Edition	mg/l	226.96	-

Contd..

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TEST REPORT

Test Report No.: GSPCB/TR/24/39000

Report Issue Date: 25/06/2024

Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Coelho

Jocelyn Coelho
Senior Laboratory Assistant

Authorised Signatory

Kankonkar

Sanjay Kankonkar
Scientist B

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website: www.goaspcb.gov.in

TEST REPORT
Test Report No.: GSPCB/TR/24/39009
Report Issue Date: 26/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Nallah water sample near the mouth of the
creek(Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 1L
Code No. of the Sample : GSPCB/24/22125 B
Date & Time of Sample Collection : 08.06.2024 & 04:30 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 08.06.2024
Date of Completion of Analysis : 19.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Milky White
Odour of Sample : Chemical
Weather Condition : Raining
Visible Effluent Discharge : Yes
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Lead as Pb	3125 B, APHA 23rd Edition	mg/l	1.27	-
Cadmium as Cd	3125 B, APHA 23rd Edition	mg/l	BDL	-
Copper as Cu	3125 B, APHA 23rd Edition	mg/l	0.032	-
Nickel as Ni	3125 B, APHA 23rd Edition	mg/l	0.068	-

Contd..
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website: www.goaspcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/39009

Report Issue Date: 26/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.01	-
Cobalt as Co	3125 B, APHA 23rd Edition	mg/l	0.022	-
Zinc as Zn	3125 B, APHA 23rd Edition	mg/l	0.050	-
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.015	-
Mercury as Hg	3125 B, APHA 23rd Edition	mg/l	0.015	-

Remark : BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira
Avina Pereira
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Sanjay Kankonkar
Scientist B

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GSPCB/F/07
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website:www.goaspcb.gov.in

TEST REPORT
Test Report No.:GSPCB/TR/24/38815
Report Issue Date: 18/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale , Mormugao
Goa
Nature of Sample : Nallah water sample near the mouth of the
creek(Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 250ml
Code No. of the Sample : GSPCB/24/22125 C
Date & Time of Sample Collection : 08.06.2024 & 04:30 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 08.06.2024
Date of Completion of Analysis : 18.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Milky White
Odour of Sample : Chemical
Weather Condition : Raining
Visible Effluent Discharge : Yes
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Total Coliform	9221 B, APHA 23 rd Edition	MPN/100ml	350 x 10 ²	-
Fecal Coliform	9221 E, APHA 23 rd Edition	MPN/100ml	130 x 10 ²	-
E.coli	9221 G, APHA 23 rd Edition	-	Present	-

Contd..
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TEST REPORT
Test Report No.: GSPCB/TR/24/38815
Report Issue Date: 18/06/2024
Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Venicia Fernandes
Venicia Fernandes
Junior Research Fellow

Authorised Signatory

Jenica Sequeira
Jenica Sequeira
Scientist D

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TEST REPORT

Test Report No.: GSPCB/TR/24/39001

Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
 Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
 Goa
 Nature of Sample : Downstream water sample of the creek Velsao (Complaint)
 Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
 Colaco (JLA)
 Quantity of Sample Received : 2L+300ml+300ml
 Code No. of the Sample : GSPCB/24/22126 A
 Date & Time of Sample Collection : 08.06.2024 & 04:50 pm
 Date of Sample Receipt : 08.06.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 10.06.2024
 Date of Completion of Analysis : 24.06.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Clear
 Odour of Sample : Rotten fish
 Weather Condition : Raining
 Visible Effluent Discharge : Yes
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	7.48	6.0-9.0
Conductivity	2510-B, APHA 23 rd Edition	mS/cm	23.46	-
Dissolved Oxygen	4500-O C, APHA 23 rd Edition	mg/l	6.4	≥4.0
Biochemical Oxygen Demand (BOD), 3 Days at 27 °C	IS 3025 (Part 44)	mg/l	2.3	≤3.0

Contd..

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TEST REPORT

Test Report No.: GSPCB/TR/24/39001

Report Issue Date: 25/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	5.02	-
Nitrite as NO ₂	4500 NO ₂ B, APHA 23 rd Edition	mg/l	5.02	-
Nitrate as NO ₃	4500 NO ₃ E, APHA 23 rd Edition	mg/l	19.1	-
Phosphate as P	4500-P-E, APHA 23 rd Edition	mg/l	21.68	-
Oil & Grease	5520 B, APHA 23 rd Edition	mg/l	<10.0	-

Remark : All parameters are within the permissible limits

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD.

Analyst

Jocelyn Coelho

Jocelyn Coelho
Senior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar

Sanjay Kankonkar
Scientist B

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TEST REPORT
Test Report No.: GSPCB/TR/24/39002
Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale , Mormugao
Goa
Nature of Sample : Downstream water sample of the creek Velsao (Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 2L+300ml+300ml
Code No. of the Sample : GSPCB/24/22126 A
Date & Time of Sample Collection : 08.06.2024 & 04:50 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 10.06.2024
Date of Completion of Analysis : 24.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Rotten fish
Weather Condition : Raining
Visible Effluent Discharge : Yes
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr) Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	0.2	-
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23 rd Edition	mg/l	78.46	-

Contd..
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- The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

GSPCB/F/07
Rev.No. 13
Issue Date : 04.04.2024


GOA STATE POLLUTION CONTROL BOARD

Near Pilerne Industrial Estate, Opp Saligao Seminary,
Saligao, Bardez, Goa - 403 511.

Tel : +91 (0832) 2407700, 2407701, 2407702,
2407703, Fax: (0832) 2407700

e-mail: goapcb@gspcb.in,
website: www.goaspcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/39002

Report Issue Date: 25/06/2024

Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Jocelyn Coelho
Jocelyn Coelho
Senior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar
Sanjay Kankonkar
Scientist B

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website: www.goaspcb.gov.in

TEST REPORT
Test Report No.: GSPCB/TR/24/39010
Report Issue Date: 26/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Downstream water sample of the creek Velsao (Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 1L
Code No. of the Sample : GSPCB/24/22126 B
Date & Time of Sample Collection : 08.06.2024 & 04:50 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 08.06.2024
Date of Completion of Analysis : 19.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Rotten fish
Weather Condition : Raining
Visible Effluent Discharge : Yes
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Lead as Pb	3125 B, APHA 23rd Edition	mg/l	3.23	-
Cadmium as Cd	3125 B, APHA 23rd Edition	mg/l	BDL	-
Copper as Cu	3125 B, APHA 23rd Edition	mg/l	0.084	-
Nickel as Ni	3125 B, APHA 23rd Edition	mg/l	0.026	-

Contd..
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TEST REPORT
Test Report No.:GSPCB/TR/24/39010
Report Issue Date: 26/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.005	-
Cobalt as Co	3125 B, APHA 23rd Edition	mg/l	0.005	-
Zinc as Zn	3125 B, APHA 23rd Edition	mg/l	0.038	-
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.009	-
Mercury as Hg	3125 B, APHA 23rd Edition	mg/l	0.011	-

Remark : BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira
Avina Pereira
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Sanjay Kankonkar
Scientist B

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website:www.goaspcb.gov.in

TEST REPORT
Test Report No.:GSPCB/TR/24/38816
Report Issue Date: 18/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale , Mormugao
Goa
Nature of Sample : Downstream water sample of the creek Velsao(Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 250ml
Code No. of the Sample : GSPCB/24/22126 C
Date & Time of Sample Collection : 08.06.2024 & 04:50 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 08.06.2024
Date of Completion of Analysis : 18.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Rotten fish
Weather Condition : Raining
Visible Effluent Discharge : Yes
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Total Coliform	9221 B, APHA 23 rd Edition	MPN/100ml	240 x 10 ²	≤5000
Fecal Coliform	9221 E, APHA 23 rd Edition	MPN/100ml	130 x 10 ²	-
E.coli	9221 G, APHA 23 rd Edition	-	Present	-

Contd..
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TEST REPORT
Test Report No.: GSPCB/TR/24/38816
Report Issue Date: 18/06/2024

Remark : Total Coliform parameter is exceeding the permissible limits

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD.

Analyst

Venicia Fernandes
Junior Research Fellow

Authorised Signatory

Jenica Sequeira
Scientist D

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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/39003

Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
 Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
 Goa
 Nature of Sample : Upstream water sample of the creek velsao (Complaint)
 Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
 Colaco (JLA)
 Quantity of Sample Received : 2L+300ml+300ml
 Code No. of the Sample : GSPCB/24/22127 A
 Date & Time of Sample Collection : 08.06.2024 & 05:35 pm
 Date of Sample Receipt : 08.06.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 10.06.2024
 Date of Completion of Analysis : 24.06.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Clear
 Odour of Sample : Rotten fish
 Weather Condition : Raining
 Visible Effluent Discharge : No
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	7.89	6.0-9.0
Conductivity	2510-B, APHA 23 rd Edition	mS/cm	50.07	-
Dissolved Oxygen	4500-O C, APHA 23 rd Edition	mg/l	6.5	≥4.0
Biochemical Oxygen Demand (BOD), 3 Days at 27 °C	IS 3025 (Part 44)	mg/l	BDL	≤3.0

Contd..

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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/39003

Report Issue Date: 25/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	3.26	-
Nitrite as NO ₂	4500 NO ₂ B, APHA 23 rd Edition	mg/l	8.64	-
Nitrate as NO ₃	4500 NO ₃ E, APHA 23 rd Edition	mg/l	14.1	-
Phosphate as P	4500-P-E, APHA 23 rd Edition	mg/l	2.8	-
Oil & Grease	5520 B, APHA 23 rd Edition	mg/l	<10.0	-

Remark : All parameters are within the permissible limits
BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Jocelyn Coelho
Senior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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TEST REPORT
Test Report No.: GSPCB/TR/24/39004
Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Upstream water sample of the creek Velsao (Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 2L+300ml+300ml
Code No. of the Sample : GSPCB/24/22127 A
Date & Time of Sample Collection : 08.06.2024 & 05:35 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 10.06.2024
Date of Completion of Analysis : 24.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Rotten fish
Weather Condition : Raining
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr) Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	0.3	-
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23 rd Edition	mg/l	19.61	-

Contd..
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TEST REPORT

Test Report No.: GSPCB/TR/24/39004

Report Issue Date: 25/06/2024

Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Joely

Jocelyn Coelho
Senior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar

Sanjay Kankonkar
Scientist B

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TEST REPORT
Test Report No.: GSPCB/TR/24/39011
Report Issue Date: 26/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
 Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
 Goa
 Nature of Sample : Upstream water sample of the creek velsao (Complaint)
 Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
 Colaco (JLA)
 Quantity of Sample Received : 1L
 Code No. of the Sample : GSPCB/24/22127 B
 Date & Time of Sample Collection : 08.06.2024 & 05:35 pm
 Date of Sample Receipt : 08.06.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 08.06.2024
 Date of Completion of Analysis : 19.06.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Clear
 Odour of Sample : Rotten fish
 Weather Condition : Raining
 Visible Effluent Discharge : No
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Lead as Pb	3125 B, APHA 23rd Edition	mg/l	1.82	-
Cadmium as Cd	3125 B, APHA 23rd Edition	mg/l	BDL	-
Copper as Cu	3125 B, APHA 23rd Edition	mg/l	BDL	-
Nickel as Ni	3125 B, APHA 23rd Edition	mg/l	0.005	-

Contd..
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TEST REPORT

Test Report No.: GSPCB/TR/24/39011

Report Issue Date: 26/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.001	-
Cobalt as Co	3125 B, APHA 23rd Edition	mg/l	0.002	-
Zinc as Zn	3125 B, APHA 23rd Edition	mg/l	0.065	-
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.006	-
Mercury as Hg	3125 B, APHA 23rd Edition	mg/l	0.003	-

Remark : BDL-Below Detection Limit

*** End of Report ***
 for GOA STATE POLLUTION CONTROL BOARD,

Analyst

 Avina Pereira
 Scientific Assistant

Authorised Signatory

 Sanjay Kankonkar
 Scientist B

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TEST REPORT
Test Report No.:GSPCB/TR/24/38817
Report Issue Date: 18/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale , Mormugao
Goa
Nature of Sample : Upstream water sample of the creek Velsao(Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 250ml
Code No. of the Sample : GSPCB/24/22127 C
Date & Time of Sample Collection : 08.06.2024 & 05:35 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 08.06.2024
Date of Completion of Analysis : 18.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Rotten fish
Weather Condition : Raining
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Total Coliform	9221 B, APHA 23 rd Edition	MPN/100ml	4900	≤5000
Fecal Coliform	9221 E, APHA 23 rd Edition	MPN/100ml	2300	-
E.coli	9221 G, APHA 23 rd Edition	-	Present	-

Contd..
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- The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

GSPCB/F/07
Rev.No. 13
Issue Date : 04.04.2024


GOA STATE POLLUTION CONTROL BOARD

Near Pilerne Industrial Estate, Opp Saligao Seminary,
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2407703, Fax: (0832) 2407700
e-mail: goapcb@gspcb.in,
website: www.goaspcb.gov.in

TEST REPORT
Test Report No.: GSPCB/TR/24/38817
Report Issue Date: 18/06/2024

Remark : Total Coliform parameter is within the permissible limits

*** End of Report ***

for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Venicia Fernandes

**Venicia Fernandes
Junior Research Fellow**

Authorised Signatory

Jenica Sequeira

**Jenica Sequeira
Scientist D**

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**GSPCB/F/07
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TC-11139

Accreditation Standards: ISO/IEC 17025:2017

NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/39005

Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Velsao Beach water sample (Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 2L+300ml+300ml
Code No. of the Sample : GSPCB/24/22128 A
Date & Time of Sample Collection : 08.06.2024 & 06:30 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 10.06.2024
Date of Completion of Analysis : 24.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Odourfree
Weather Condition : Raining
Visible Effluent Discharge : No
Any other Specific activity observed : Fishing

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	8.26	6.5-8.5
Conductivity	2510-B, APHA 23 rd Edition	mS/cm	59.16	-
Dissolved Oxygen	4500-O C, APHA 23 rd Edition	mg/l	7.0	≥4.0
Biochemical Oxygen Demand (BOD), 3 Days at 27 °C	IS 3025 (Part 44)	mg/l	BDL	≤3.0

Contd..

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NABL Certificate No. TC-11139

Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/39005

Report Issue Date: 25/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	0.59	-
Nitrite as NO ₂	4500 NO ₂ B, APHA 23 rd Edition	mg/l	6.41	-
Nitrate as NO ₃	4500 NO ₃ E, APHA 23 rd Edition	mg/l	4.8	-
Phosphate as P	4500-P-E, APHA 23 rd Edition	mg/l	1.9	-
Oil & Grease	5520 B, APHA 23 rd Edition	mg/l	<10.0	-

Remark : All parameters are within the permissible limits
BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD.

Analyst

Jocelyn Coelho

Jocelyn Coelho
Senior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar

Sanjay Kankonkar
Scientist B

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TEST REPORT

Test Report No.: GSPCB/TR/24/39006

Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Velsao Beach water sample (Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 2L+300ml+300ml
Code No. of the Sample : GSPCB/24/22128 A
Date & Time of Sample Collection : 08.06.2024 & 06:30 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 10.06.2024
Date of Completion of Analysis : 24.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Odourfree
Weather Condition : Raining
Visible Effluent Discharge : No
Any other Specific activity observed : Fishing

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr)Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	0.8	-
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23 rd Edition	mg/l	16.81	-

Contd..

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TEST REPORT

Test Report No.: GSPCB/TR/24/39006

Report Issue Date: 25/06/2024

Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Coelho

Jocelyn Coelho
Senior Laboratory Assistant

Authorised Signatory

Kankonkar

Sanjay Kankonkar
Scientist B

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TEST REPORT
Test Report No.:GSPCB/TR/24/39012
Report Issue Date: 26/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale , Mormugao
Goa
Nature of Sample : Velsao Beach water sample (Complaint)
Sample collected by : Siddhant Dèssai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 1L
Code No. of the Sample : GSPCB/24/22128 B
Date & Time of Sample Collection : 08.06.2024 & 06:30 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 08.06.2024
Date of Completion of Analysis : 19.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Odourfree
Weather Condition : Raining
Visible Effluent Discharge : No
Any other Specific activity observed : Fishing

Parameters	Test Methods	Units	Test Results	Permissible Limits
Lead as Pb	3125 B, APHA 23rd Edition	mg/l	1.18	-
Cadmium as Cd	3125 B, APHA 23rd Edition	mg/l	BDL	-
Copper as Cu	3125 B, APHA 23rd Edition	mg/l	BDL	-
Nickel as Ni	3125 B, APHA 23rd Edition	mg/l	0.006	-

Contd..
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TEST REPORT
Test Report No.: GSPCB/TR/24/39012
Report Issue Date: 26/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.003	-
Cobalt as Co	3125 B, APHA 23rd Edition	mg/l	0.001	-
Zinc as Zn	3125 B, APHA 23rd Edition	mg/l	0.047	-
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.005	-
Mercury as Hg	3125 B, APHA 23rd Edition	mg/l	BDL	-

Remark : BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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TEST REPORT

Test Report No.: GSPCB/TR/24/38818

Report Issue Date: 18/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Velsao Beach water sample (Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 250ml
Code No. of the Sample : GSPCB/24/22128 C
Date & Time of Sample Collection : 08.06.2024 & 06:30 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 08.06.2024
Date of Completion of Analysis : 18.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Clear
Odour of Sample : Odourfree
Weather Condition : Raining
Visible Effluent Discharge : No
Any other Specific activity observed : Fishing

Parameters	Test Methods	Units	Test Results	Permissible Limits
Total Coliform	9221 B, APHA 23 rd Edition	MPN/100ml	240	-
Fecal Coliform	9221 E, APHA 23 rd Edition	MPN/100ml	130	≤100
E.coli	9221 G, APHA 23 rd Edition	-	Present	-

Contd..

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TEST REPORT
Test Report No.: GSPCB/TR/24/38818
Report Issue Date: 18/06/2024

Remark : Fecal Coliform parameter is exceeding the permissible limits

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Venicia Fernandes
Junior Research Fellow

Authorised Signatory

Jenica Sequeira
Scientist D

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TC-11139

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Issued Date: 12.11.2022

Valid Until: 11.11.2024

TEST REPORT

Test Report No.: GSPCB/TR/24/39007

Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
 Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
 Goa
 Nature of Sample : Storm water drain water sample of Zuari Agro Chemicals
 (Complaint)
 Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
 Colaco (JLA)
 Quantity of Sample Received : 2L+300ml+300ml
 Code No. of the Sample : GSPCB/24/22129 A
 Date & Time of Sample Collection : 08.06.2024 & 07:15 pm
 Date of Sample Receipt : 08.06.2024
 Seal / Tag details : Sealed
 Date of Start of Analysis : 10.06.2024
 Date of Completion of Analysis : 24.06.2024
 Method of Sample Collection : IS 17614 (Part I)
 Colour of Sample : Light brown
 Odour of Sample : Odourfree
 Weather Condition : Raining
 Visible Effluent Discharge : No
 Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
pH	4500-H ⁺ B, APHA 23 rd Edition	-	8.83	-
Conductivity	2510-B, APHA 23 rd Edition	µS/cm	1278.0	-
Dissolved Oxygen	4500-O C, APHA 23 rd Edition	mg/l	10.2	-
Biochemical Oxygen Demand (BOD), 3 Days at 27 °C	IS 3025 (Part 44)	mg/l	7.2	-

Contd..

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TEST REPORT

Test Report No.: GSPCB/TR/24/39007

Report Issue Date: 25/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Ammonical Nitrogen	4500-NH ₃ F, APHA 23 rd Edition	mg/l	5.34	-
Nitrite as NO ₂	4500 NO ₂ B, APHA 23 rd Edition	mg/l	10.96	-
Nitrate as NO ₃	4500 NO ₃ E, APHA 23 rd Edition	mg/l	11.2	-
Phosphate as P	4500-P-E, APHA 23 rd Edition	mg/l	9.51	-
Oil & Grease	5520 B, APHA 23 rd Edition	mg/l	<10.0	-

Remark : BDL-Below Detection Limit

 *** End of Report ***
 for GOA STATE POLLUTION CONTROL BOARD,

Analyst

 Jocelyn Coelho
 Senior Laboratory Assistant

Authorised Signatory

 Sanjay Kankonkar
 Scientist B

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6. Permissible Limits: as per Schedule I & VI of EPA Rules, 1985 as ammended by Second and Third ammendment 1993 for Effluents and as per IS 10500 : 2012 (RA 2018) – Indian Standards for Drinking water Specification (Second Revision) and as per minutes of the 118th, 126th, 145th & 157th meetings of the Board for discharge of treated sewage.
7. The method, location of Sampling including any diagram, sketch, photograph, if any may be enclosed.

 GSPCB/F/07
 Rev.No. 13
 Issue Date : 04.04.2024


GOA STATE POLLUTION CONTROL BOARD

Near Pilerne Industrial Estate, Opp Saligao Seminary,
Saligao, Bardez, Goa - 403 511.
Tel : +91 (0832) 2407700, 2407701, 2407702,
2407703, Fax: (0832) 2407700
e-mail: goapcb@gspcb.in,
website: www.goapcb.gov.in

TEST REPORT
Test Report No.: GSPCB/TR/24/39008
Report Issue Date: 25/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Storm water drain water sample of Zuari Agro Chemicals
(Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 2L+300ml+300ml
Code No. of the Sample : GSPCB/24/22129 A
Date & Time of Sample Collection : 08.06.2024 & 07:15 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 10.06.2024
Date of Completion of Analysis : 24.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Light brown
Odour of Sample : Odourfree
Weather Condition : Raining
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium (Cr)Hexavalent	3500 Cr B, APHA 23 rd Edition	mg/l	0.39	-
Total Kjeldhal Nitrogen	4500-Norg B, APHA 23 rd Edition	mg/l	417.50	-

Contd..
Note :

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Rev.No. 13
Issue Date : 04.04.2024


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2407703, Fax: (0832) 2407700

e-mail: goapcb@gspcb.in,
website: www.goapcb.gov.in

TEST REPORT
Test Report No.: GSPCB/TR/24/39008
Report Issue Date: 25/06/2024
Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Jocelyn Coelho
Senior Laboratory Assistant

Authorised Signatory

Sanjay Kankonkar
Scientist B

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GSPCB/F/07
Rev.No. 13
Issue Date : 04.04.2024


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2407703, Fax: (0832) 2407700

e-mail: goapcb@gspcb.in,
website: www.goapcb.gov.in

TEST REPORT
Test Report No.: GSPCB/TR/24/39013
Report Issue Date: 26/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Storm water drain water sample of Zuari Agro Chemicals
(Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 1L
Code No. of the Sample : GSPCB/24/22129 B
Date & Time of Sample Collection : 08.06.2024 & 07:15 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 08.06.2024
Date of Completion of Analysis : 19.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Light brown
Odour of Sample : Odourfree
Weather Condition : Raining
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Lead as Pb	3125 B, APHA 23rd Edition	mg/l	1.29	-
Cadmium as Cd	3125 B, APHA 23rd Edition	mg/l	BDL	-
Copper as Cu	3125 B, APHA 23rd Edition	mg/l	0.084	-
Nickel as Ni	3125 B, APHA 23rd Edition	mg/l	0.022	-

Contd..
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e-mail: goapcb@gspcb.in,
website: www.goaspcb.gov.in

TEST REPORT
Test Report No.: GSPCB/TR/24/39013
Report Issue Date: 26/06/2024

Parameters	Test Methods	Units	Test Results	Permissible Limits
Chromium as Cr	3125 B, APHA 23rd Edition	mg/l	0.006	-
Cobalt as Co	3125 B, APHA 23rd Edition	mg/l	0.008	-
Zinc as Zn	3125 B, APHA 23rd Edition	mg/l	0.076	-
Arsenic as As	3125 B, APHA 23rd Edition	mg/l	0.005	-
Mercury as Hg	3125 B, APHA 23rd Edition	mg/l	0.009	-

Remark : BDL-Below Detection Limit

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Avina Pereira
Avina Pereira
Scientific Assistant

Authorised Signatory

Sanjay Kankonkar
Sanjay Kankonkar
Scientist B

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GSPCB/F/07
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e-mail: goapcb@gspcb.in,
website: www.goapcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/38819

Report Issue Date: 18/06/2024

Name of the Customer : M/s Zuari Agro Chemicals Ltd (Paradeep Phosphate)
Address : Survey No. 110, 252, Zuarinagar Sancoale, Mormugao
Goa
Nature of Sample : Storm water drain water sample of Zuari Agro Chemicals
(Complaint)
Sample collected by : Siddhant Dessai (JEE), Sanmesh Borkar (SA), Milagrina
Colaco (JLA)
Quantity of Sample Received : 250ml
Code No. of the Sample : GSPCB/24/22129 C
Date & Time of Sample Collection : 08.06.2024 & 07:15 pm
Date of Sample Receipt : 08.06.2024
Seal / Tag details : Sealed
Date of Start of Analysis : 08.06.2024
Date of Completion of Analysis : 18.06.2024
Method of Sample Collection : IS 17614 (Part I)
Colour of Sample : Light brown
Odour of Sample : Odourfree
Weather Condition : Raining
Visible Effluent Discharge : No
Any other Specific activity observed : No

Parameters	Test Methods	Units	Test Results	Permissible Limits
Total Coliform	9221 B, APHA 23 rd Edition	MPN/100ml	130	-
Fecal Coliform	9221 E, APHA 23 rd Edition	MPN/100ml	78	-
E.coli	9221 G, APHA 23 rd Edition	-	Present	-

Contd..

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GSPCB/F/07

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website: www.goaspcb.gov.in

TEST REPORT

Test Report No.: GSPCB/TR/24/38819

Report Issue Date: 18/06/2024

Remark :

*** End of Report ***
for GOA STATE POLLUTION CONTROL BOARD,

Analyst

Venicia Fernandes
Junior Research Fellow

Authorised Signatory

Jenica Sequeira
Scientist D

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GSPCB/F/07
Rev.No. 13
Issue Date : 04.04.2024

Personal Hearing held on 11/06/2024 at 3.00 pm Onwards Before the Member Secretary, GSPCB, w.r.t. Untreated effluents causing widespread fish mortality at Velsao bay. Rivulet press conference by Goencho Ramponkarancho Ekvott (GRE) and Goencho Ekvott (GE) along with allied groups and newspapers article on page 1 of O Herald dated 26/05/2024

In reference to the Notice Bearing No. 2024/GSPCB/Letter/ 23631/Tech/5057 dated 06/06/2024 the following have remained present for the hearing:

- 1) Mr. Nilesh G. Dessai, Chief Manufacturing Officer & Unit Head
- 2) Mr. V. Vinay, Chief General Manager- Production
- 3) Mr. Om Agre, Joint General Manager
- 4) Mr. Shrikanth G. Tendulkar, Manager Environment

The following Reports of GSPCB are submitted to the representatives of the unit.

- 1) Analysis Report of samples beach water , creek and water puddle near loading gantry and ETP conducted on 26/05/2024.
- 2) Preliminary Assessment report conducted on 01/06/2024
- 3) Report of inspection conducted by Board Officials on 26/05/2024

On perusal of the analysis reports and interpretation above, it is observed that the values of total kjeldahl nitrogen (TKN) and potassium are remarkably higher in the samples of the beach water & creek water compared to samples collected during non monsoon period. Nitrogen and Potassium are constituents of the products of M/s. PPL manufactured.

The sample of puddle water also indicated high concentration of nitrogen, potassium and phosphate indicating spillages mixing with storm water runoff.

Perusal of reports of the Analysis and inspection / Assessment indicates violations of Condition in the Consent to Operate order dated 18/09/2019.

High probability of environmental pollution due to the discharge from the premises of the unit and inadequacy of pollution control measures.

The unit representatives submitted that there has been monsoon runoff from the near loading gantry that has entered into the velsao creek.


The unit representatives further sort for time to submit detailed clarification on measures taken by the company to rectify the situation.

At first instance the unit representatives are directed to immediately comply with the following.

1. The unit is required to submit revised water balance chart.
2. ETP before RO must be upgraded scientifically, especially the HRSCC to achieve better treated effluent quality and higher performance of UF, RO.
3. The guard pond for storage of effluent under upset condition must always be maintained empty when there is no off specification effluent to be stored.

4. Settled solids in holding tanks should be desludged at regular intervals to avoid anaerobic condition.
5. Housekeeping on the premises is a major issue and needs improvements especially at NPK and Urea Bagging area. Utmost care should be taken to avoid surface runoff from NPK bagging area. The spillages should be contained at source to avoid further contamination of the surface / storm water runoff.
6. The unit shall identify and characterise the deposits on rocks near the railway yards.
7. The unit shall establish Continuous particulate emission on line monitoring on Stack as specification the consent.
8. The unit shall relocate Ambient Monitoring locations and shall be carried out at 3 locations, one on downwind direction to the predominate and direction and other two locations at 120⁰ to the downwind location
9. The unit shall load the sludge in the Dryer, with not more than 6% dry solids to ensure uninterrupted operation and better efficiency. Sludge will have to be stored in a tank with an agitator to maintain uniform consistency of solids before feeding to dryer and without transfer of sludge to sludge drying beds..
10. The sludge holding pond should be discarded but not broken down and after making it water -- can be used to store effluent under upset condition. The predicted storm water to be pumped to the factory premises and the capacity of the containment storage for the water to be informed to this Board.
11. Site has carried out study through NEERI to provide settling pond and filter bed. The unit is required to submit copy of the same to the Board alongwith action taken report within 15 days.
12. Storm water drain during non- monsoon season must be maintained dry.
13. The effluent bypass pipeline was observed to be provided with a valve, which was closed and locked, however as per CPCB Guideline a Flow meter with camera should be provided on treated effluent recycle line. (Holding Pond effluent transfer pipeline to Plant), and connected to the Board.
14. The unit is required submit the drawings indicating the discharge pipeline and dismantle the old pipeline. Unit shall ensure that no effluent are released outside the factory premises.

The unit representatives directed to submit an immediate Compliance Report within 7 days.


(Dr. Shamila Monteiro)
Member Secretary
For Goa State Pollution Control Board.

PPP Calculation Sheet

The Environmental Compensation shall be based on the following formula:

$$EC = PI \times N \times R \times S \times LF$$

Where, EC is Environmental Compensation in ₹

PI = Pollution Index of industrial sector

N = Number of days of violation took place

R = A factor in Rupees (₹) for EC

S = Factor for scale of operation

LF = Location factor

The formula incorporates the anticipated severity of environmental pollution in terms of Pollution Index, duration of violation in terms of number of days, scale of operation in terms of micro & small/medium/large industry and location in terms of proximity to the large habitations.

Note:

- a. The industrial sectors have been categorized into Red, Orange and Green, based on their Pollution Index in the range of 60 to 100, 41 to 59 and 21 to 40, respectively. It was suggested that the average pollution index of 80, 50 and 30 may be taken for calculating the Environmental Compensation for Red, Orange and Green categories of industries, respectively.
- b. N, number of days for which violation took place is the period between the day of violation observed/due date of direction's compliance and the day of compliance verified by CPCB/SPCB/PCC.
- c. R is a factor in Rupees, which may be a minimum of 100 and maximum of 500. It is suggested to consider R as 250, as the Environmental Compensation in cases of violation.
- d. S could be based on small/medium/large industry categorization, which may be 0.5 for micro or small, 1.0 for medium and 1.5 for large units.
- e. LF, could be based on population of the city/town and location of the industrial unit. For the industrial unit located within municipal boundary or up

to 10 km distance from the municipal boundary of the city/town, following factors (LF) may be used:

Table No. 1.1: Location Factor Values

S. No.	Population* (million)	Location Factor# (LF)
1	1 to <5	1.25
2	5 to <10	1.5
3	10 and above	2.0

*Population of the city/town as per the latest Census of India

#LF will be 1.0 in case unit is located >10km from municipal boundary

LF is presumed as 1 for city/town having population less than one million.

In case of Paradeep Phosphates Pvt. Ltd.:

The Environmental Compensation shall be based on the following formula:

Based on Press conference given by Goenche Ramponkarancho Ekvott (GRE) and Goencho Ekvott (GE) along with allied groups regarding large scale fish mortality at Velsao Beach on 25/05/2024 till the date of proposed Environmental Compensation as 27/06/2024, therefore, N = 33

$$EC = PI \times N \times R \times S \times LF$$

$$EC = 80 \times 33 \times 250 \times 1.5 \times 1.25$$

$$EC = 12,37,500/-$$

OR

$$\text{Minimum EC} = 5000 \times \text{Number of Days}$$

$$= 5000 \times 33$$

$$= 1,65,000/-$$

- * As per Amendment in Air Act in Gazette dated 11/08/2023, Failure to comply with provisions of section 22 or directions issued under section 31 A- whoever contrivances or does not comply with the provisions of section 22 or directions issued under section 31A, shall, in respect of each such contravention, be liable to penalty which shall

not be less than ten thousand rupees, but which may extend to fifteen lakh rupees.

- * Penalties for contravention of certain provisions of this act – If any person contravenes any of the provisions of this act or direction issued thereafter, for which no penalty has been provided for in this Act, shall be liable to penalty which shall not be less than ten thousand rupees, but which may extend to fifteen lakh rupees, and where such contravention continues, he shall be liable to additional penalty which may extend to ten thousand rupees for everyday during which such contravention continues.



Siddhant Desai

JEE-GSPCB



No. PPL/ENV/2024-25/007

July 04, 2024

To,
Member Secretary,
Goa State Pollution Control Board,
Nr. Pilerne Industrial Estate,
Opp. Saligao Seminary,
Saligao-Bardez
Goa 403511

Dear Madam,

Subject: Receipt of the Show Cause Notice & response to the same

Reference: GSPCB letter No. 1/25-PCB/Tech/7145 dated 28.06.2024

We acknowledge the receipt of your Show Cause Notice No. 1/25-PCB/Tech/45 dated 28.06.2024, received through mail and hard copy on 04.07.2024, regarding the inspection conducted at our unit M/s. Paradeep Phosphates Limited, Goa Unit.

We are committed to respond to the said notice and comply with the conditions, within 7 days from the receipt of the same i.e. by 11.07.2024.

Thanking you in anticipation,

Yours sincerely,
For **Paradeep Phosphates Limited, Goa Unit**

N. G. Dessai
Chief Manufacturing Officer & Unit Head- Goa Plant

PARADEEP PHOSPHATES LIMITED

CIN No.: L24129OR1981PLC001020

Goa Unit : Jaikisaan Bhawan, Zuarinagar, Goa - 403 726

Tel: +0832 2592180, 2592181, 6752399

Registered Office: Bayan Bhawan, Pandit J.N. Marg, Bhubaneswar - 751 001

www.paradeepphosphates.com

GOA STATE POLLUTION CONTROL BOARD

गोंय राज्य प्रदूषण नियंत्रण मंडळ

(An ISO 9001-2015, ISO 14001:2015, ISO 45001:2018 Certified Board)

Phone Nos : 0832- 2407700,
2407701, 2407703



Email Ids:
Chairman, GSPCB: chairman-gspcb.goa@nic.in
Member Secretary, GSPCB: ms-gspcb.goa@nic.in
Office: mail.gspcb@gov.in

No: 2025/GSPCB/Letter/6922 | Tech/7799

Dated: 5/07/2024

To,
M/s Paradeep Phosphates Limited
Survey No. 110-252,
Zuarinagar, Sancoale,
Mormugao, Goa.

Sub: Submission of Bank Guarantee

- Ref: 1) Board's Letter bearing no.: 2024/GSPCB/Letter/23631/Tech/5091 dated 06/06/2024
2) Letter from ICICI Bank Limited bearing no.: ICICI/0061/DBG/2024-25/0001327976 dated 24/06/2024.
3) Consent to Operate bearing no.: 12/2018-PCB/58613/R000121 dated 18/09/2019

Sir,

As you may be aware, your unit M/s Paradeep Phosphates Limited was directed to submit a Bank Guarantee for an amount of Rs. 10,00,000/- (Rupees Ten Lakhs Only) in compliance towards condition as stipulated in Consent to Operate referred at (3) above. The Specific Condition is as follows:

7 (xii). Unit is directed to submit bank guarantee of rupees 10 lakhs within 15 days of the receipt of the conditions for the compliance of the above consent conditions.

Accordingly, your unit, had submitted a Bank Guarantee bearing no. 0061NDLG00022024 dated 29/08/2023 for an amount of Rs. 10,00,000/- (Rupees Ten Lakhs Only) issued by ICICI Bank Limited – Panaji Branch.

As per the inspection of your unit dated 26/05/2024, the Board issued a letter to the Bank to forfeit the aforementioned Bank Guarantee in favour of the Board. However, the Board is in receipt of a reply from the Bank, referred at (2), stating that the Bank Guarantee has expired.

As such, you are directed, to Pay an amount of Rs. 10,00,000/- (Rupees Ten Lakhs Only) directly to this Board at the earliest. Kindly find the Bank details of the Board as follows:

Name of the Party; Goa State Pollution Control Board

Bank Account No.01641010003480,

Bank Name : Punjab National Bank

Branch: Patto Branch, Panaji.

IFSC Code; PUNB0016410

MICR Code; 403024011

Yours Faithfully


Dr. Shamila Monteiro
Member Secretary
Goa State Pollution Control Board

Copy to:

- 1) Office File.
- 2) Guard file

Acknowledgement copy



No. PPL/ENV/2024-25/008

10.07.2024

To,
 Member Secretary,
 Goa State Pollution Control Board,
 Nr. Pilerne Industrial Estate,
 Opp. Saligao Seminary, Saligao-Bardez
 Goa 403511

[Handwritten Signature]
 Goa State Pollution Control Board
 Opp. Saligao Seminary
 Saligao Goa 403 511

Dear Madam,

Sub: Response to Show cause notice No. 1/25-PCB/Tech/7145 dated 28.06.2024

- Ref:**
1. Inspection report by GSPCB official dated 26.05.2024.
 2. Inspection report by GSPCB official dated 08.06.2024.
 3. Minutes of the personal hearing held on 11.06.2024 at GSPCB.
 4. Compliance report on the Minutes of personal hearing vide letter No. PPL/ENV/2024-25/005 even dated 19.06.2024.
 5. Our letter No. PPL/ENV/2024-25/007 even dated 04.07.2024

We acknowledge receipt of the abovementioned Show Cause notice dated 28.06.2024, received on 04.07.2024. We would like to provide a detailed response as below:

Inspection of the site dated 26.05.2024, samples collected during the said inspection, analysis of the samples and the report thereof:

The intensity and timing of pre-monsoon showers experienced at the site this year were atypical, potentially leading to washing off of dust, tire and foot residue from roads. We acknowledge that this could be a contributory factor to the surface runoff. However, we reiterate that Pre-monsoon clean-up activities are undertaken every year.

Despite the creek/rivulet's proximity to our manufacturing unit, the presence of other waste streams flowing into the creek also needs to be taken into consideration. The surface runoff from our premises during the initial rains may partially explain the elevated levels of TKN and Potassium found in the creek analysis report. However, the source of Potassium used in our manufacturing process of complex fertilizers is Muriate of Potash (MOP) viz. KCl. In the event of a surface runoff from our premises, the samples should also have indicated a rise in Chlorides, but the fact that Chloride levels have remained consistent in the sample analysis of the previous months and the simultaneous significant increase in Sodium levels in the samples does not accurately reflect the situation, potentially misleading the interpretations. Further, the Ionic Balance of the Water Analysis is "off" by more than 50%, in the Board's monthly monitoring analysis of the creek. Additionally, the coordinates of the sampling locations are not known to us.

PARADEEP PHOSPHATES LIMITED

CIN No.: L24129OR1981PLC001020

Goa Unit : Jaikisaan Bhawan, Zuarinagar, Goa - 403 726

Tel: +0832 2592180, 2592181, 6752399

Registered Office: Bayan Bhawan, Pandit J.N. Marg, Bhubaneswar - 751 001
 www.paradeepphosphates.com

We would like to highlight that the elevated values of Total Kjeldahl Nitrogen (TKN) and Potassium in the creek and beach water samples could be attributed to multiple factors, including agricultural runoff, sewage discharge, and natural decomposition of organic matter, which are common during the monsoon period. Our unit's contribution to these elevated values should be critically examined considering these potential external sources.

Samples drawn from the stagnant puddle of water from the Storm Water Network would not be representative of the surface runoff. The puddle had accumulated at a damaged portion of the trough of the storm water drain which has since been repaired.

Analysis of the samples drawn on 26.05.2024 indicates that, all the parameters mentioned are within the specified limits for surface run off and treated effluent as per the CTO. Furthermore, as one of the conclusions of the inspection report it is mentioned that '*there was no discharge found of untreated effluent by the unit*'.

Inspection of the site dated 08.06.2024, samples collected during the said inspection, analysis of the samples and the report thereof:

The event of fish mortality on 08.06.2024 can be attributed to the fact that the Railway Authorities had broken a bund which was built for the purpose of Double Tracking. This was corroborated by local fisher folk/villagers of Dando and Belem. A similar incident occurred in Kerala on 20.05.2024, where the opening of the shutter of the Pathalam regulator-cum-bridge in the Periyar river following heavy rains resulted in large-scale fish mortality.

We would like to reiterate that the elevated values of Total Kjeldahl Nitrogen (TKN) in the creek and beach water samples could be attributed to multiple factors, including agricultural runoff, sewage discharge, and natural decomposition of organic matter, which are common during the monsoon period. Our unit's contribution to these elevated values should be critically examined considering these potential external sources.

Personal hearing held on 11.06.2024, minutes of the meeting for the personal hearing and our compliance report dated 19.06.2024:

Consequent to the receipt of the MOM of the personal hearing, we had submitted a compliance report dated 19.06.2024, detailing various Immediate, Medium and Long-term actions for sustainable operations as initiated by the Unit. As part of the directives therein, we expeditiously submitted M/s NEERI's report on the Comprehensive Study on Storm Water Management" at M/s Paradeep Phosphates Ltd., Goa Unit, on 28.06.2024.

Furthermore, we wish to update the Board on the current status of the aforementioned immediate and medium-term initiatives as under:

1. As a top priority, we have completed the erection of temporary sheds over the Holding ponds, Guard Pond and the settling tanks of the ETP. We are committed to provide permanent structured sheds over the above ponds within Six months. Work in progress documents were shared to your good office in previous communication via letter No. PPL/ENV/2024-25/005 dated 19.06.2024.

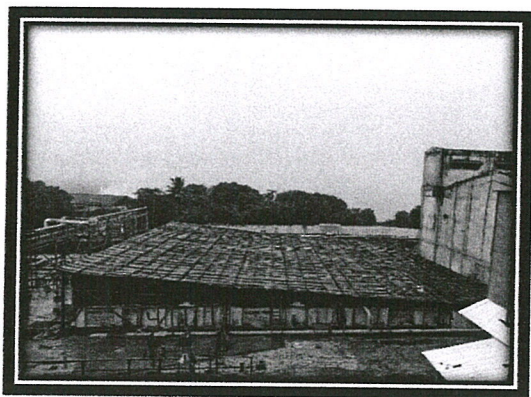


Image 1: ETP holding pond cover



Image 2: ETP Tanks cover

2. To ensure the guard pond is always ready for emergency storage of off-specification effluent, the company is committed to maintaining it empty during normal operations. As an immediate measure, we already have emptied out half of the guard pond to ensure its availability in case of an upset condition. Full implementation, including necessary process modifications, will be completed within Six months. This measure ensures that we have adequate capacity to manage any unexpected emergencies.
3. The company has implemented an area housekeeping plan for the NPK and Urea bagging areas to address spillages promptly. Spillage-prone areas such as the conveyor belt transfer points have been completely covered. Additionally, a dyke has been provided underneath the transfer points to arrest any spillage which will be cleaned as necessary to prevent storm water contamination. This plan includes regular inspections and immediate clean-up protocols.

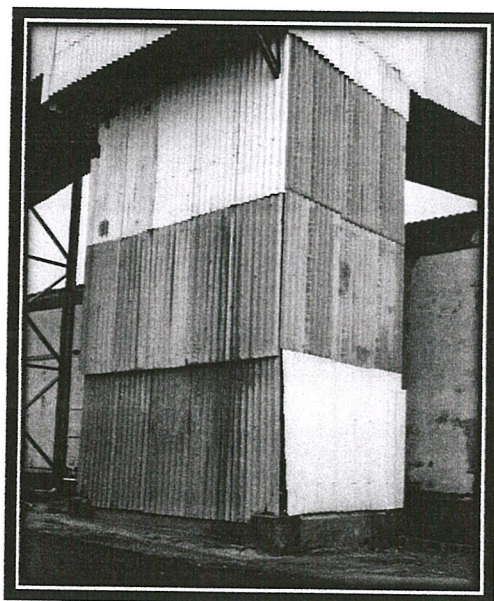


Image 3: Conveyor transfer point

4. We have constructed 2 nos. storm water retention catchments with a combined capacity of 1300 m³ as outlined in the 'Comprehensive Study on Storm Water Management' carried out by M/s NEERI. Excavation for the said retention pits is complete (settling ponds). Laying of the necessary DI pipes and provision of intermediate chambers is also complete. These ponds are situated at the lowest elevations on the South-West and South-East ends of the factory premises. The inlet of these collection/settling tanks shall be equipped with silt traps, velocity breakers and appropriate filter media. The purpose of these two settling ponds will be to collect and divert the storm water/ surface run-off for the first 2 days of rainfall.

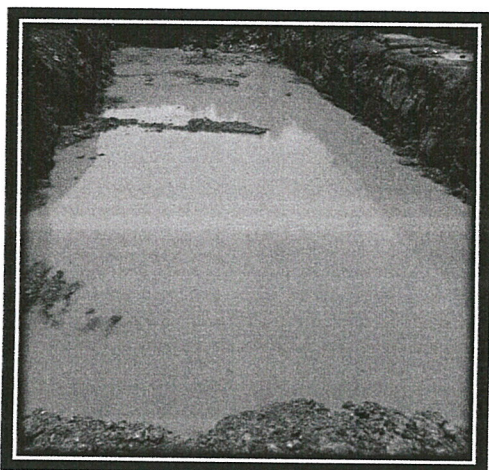


Image 4: Storm water Catchment pit 1



Image 5: Storm water catchment pit 2

5. Additionally, initiation towards implementation of long-term mitigation measures through commissioning of various engineering studies has also commenced, of which, we shall appraise the Board periodically. These studies include assessments of potential improvements to our waste management systems and further enhancements to our environmental measures.

As elucidated above, the higher values of TKN and Potassium in the Beach and rivulet/creek water (as compared to samples collected during the non-monsoon periods) may not be attributed to the surface runoff from our premises. Notwithstanding this, the company has taken several efforts and measures towards ensuring compliance with the consent conditions.

Our Company has a strong historical compliance record with environmental regulations and has been recognised for our commitment to environmental stewardship, demonstrating our consistent commitment to responsible practices. We have undergone various third-party audits and have received ISO 14001 certification which underscores our dedication to maintaining high environmental standards.

We have actively taken immediate, medium and long-term actions to address the concerns raised in the Show Cause Notice. These actions include the erection of permanent sheds, implementation of a comprehensive housekeeping plan, construction of storm water retention catchments, and initiation of long-term mitigation measures through engineering studies. These efforts demonstrate our proactive approach to environmental management and our commitment to continuous improvement.

As part of our proactive CSR initiatives, we contribute approximately 100 cubic metres of potable water per day to the neighbouring Dando and Belem villages of Velsao Panchayat. Additionally, our company has owned the responsibility of maintaining a footbridge in the area and recently invested Rs. 9 lakhs in its renovation. These efforts reflect our commitment to supporting the local community and enhancing the infrastructure that benefits the residents.



Image 6: Renovation of a foot bridge.

We respectfully request the Board to reconsider the assessment of the Environmental Compensation of Rs. 12,37,500/- as the incident may be influenced by multiple external sources and cannot be solely attributable to the Company. We believe that the evidence and actions presented clearly demonstrate our commitment to mitigating environmental impact and ensuring compliance with regulatory requirements. We also request the Board not to initiate any legal action in the said matter. We are fully committed to working collaboratively to address any concerns and uphold the highest standards of environmental responsibility.

We remain dedicated to maintaining transparent and responsible operations, and are open to any further discussions or collaborations that may help enhance our environmental performance.

Thanking you in anticipation, we look forward to continuing our partnership with the Board to achieve our shared environmental goals.

Yours faithfully,

For **Paradeep Phosphates Limited, Goa Unit**

N. G. Dessai
Chief Manufacturing Officer & Unit Head- Goa Plant

Acknowledgement copy



No. PPL/ENV/2024-25/009

10.07.2024

To,
Member Secretary,
Goa State Pollution Control Board,
Nr. Pilerne Industrial Estate,
Opp. Saligao Seminary,
Saligao-Bardez, Goa 403511

[Signature]
Goa State Pollution Control Board
Opp. Saligao Seminary
Saligao Goa 403 511

Sub: Response to Letter bearing No. 2025/GSPCB/Letter/ 6922/Tech/7799 dated 05.07.2024 regarding submission of Bank Guarantee.

Dear Madam,

We acknowledge the receipt of your above-mentioned letter dated 5.07.2024 regarding the direct payment of the Bank Guarantee amounting to Rs. 10, 00,000/- (Rupees Ten Lakhs Only).

We would like to bring to your kind attention the following:

1. The Bank Guarantee bearing No. 0061NDLG00022024 dated 29.08.2023 for an amount of Rs. 10,00,000/- (Rupees Ten Lakhs Only) issued by ICICI Bank Limited - Panaji Branch (valid till 29.02.2024) was submitted as Compliance to specific condition # 7 (xii) of the CTO No. 12/2018-PCB/58613/R000121 dated 18.09.2019. The CTO validity expired on 31.12.2023. On renewal of the CTO (Renewal application:1948660 dtd.28.10.2023 and as received on 14.06.2024), as per the conditions, we have already provided a fresh Bank Guarantee bearing No.0061NDLG00015425 dated 21.06.2024 for an amount of Rs. 25,00,000/- (Rupees twenty-five lakhs only) in compliance to the specific condition # 7 (xxix).
2. Regarding the inspection of our unit dated 26/05/2024, we have already received a Show Cause notice from the Board, letter No. 1/25-PCB/Tech/7145, dated 28.06.2024 wherein as per Board's assessment indicated to levy an environmental compensation amounting to Rs. 12,37,500/- (Rupees Twelve Lakhs Thirty-Seven Thousand Five Hundred Only) under the Polluter Pays Principle. We are in the process of addressing this notice and complying with the Board's directives.

We have always acted in good faith to address environmental concerns and adhere with regulatory compliance. The submission of the fresh Bank Guarantee under the CTO No. 12/2023-PCB/1948660/R00013712 dated 14.06.2024 conditions is a testament to our commitment to compliance.

In light of the above, we sincerely request you to kindly review/ reconsider so as not to impose any further liabilities on our unit.

Thank you for your understanding and cooperation.

Yours faithfully,
For Paradeep Phosphates Limited, Goa Unit

[Signature]
N. G. Dessai
Chief Manufacturing Officer & Unit Head- Goa Plant

PARADEEP PHOSPHATES LIMITED

CIN No.: L24129OR1981PLC001020

Goa Unit : Jaikisaan Bhawan, Zuarinagar, Goa - 403 726

Tel: +0832 2592180, 2592181, 6752399

Registered Office: Bayan Bhawan, Pandit J.N. Marg, Bhubaneswar - 751 001

www.paradeepphosphates.com

GOA STATE POLLUTION CONTROL BOARD

गोंय राज्य प्रदूषण नियंत्रण मंडळ

(An ISO 9001-2015, ISO 14001:2015, ISO 45001:2018 Certified Board)

Phone Nos : 0832- 2407700,
2407701, 2407703



Email Ids:

Chairman, GSPCB: chairman-gspcb.goa@nic.in
Member Secretary, GSPCB: ms-gspcb.goa@nic.in
Office: mail.gspcb@gov.in

No. 1/94/23-PCB/ *Tech/8587*

Date: 12/07/2024

INSPECTION ORDER

Sub: Inspection to verify compliance w.r.t M/s. Paradeep Phosphotes Limited, Zuarinagar, Sancoale, Mormugao-Goa.

Ref: 1. Show Cause Notice bearing no. 1/25-PCB/Tech/7145 dated 28/06/2024.
2. Letter recived from M/s. Paradeep Phosphotes Limited bearing No. PPL/ENV/2024-25/008 dated 10/07/2024

With reference to the subject cited above, you are hereby directed to carry out the inspection of the following unit on **13/07/2024**.

- 1 Mr. Siddhant Desai, JEE, GSPCB
- 2 Mrs. Milagrina Colaco, Junior Lab Assistant, GSPCB
- 3 Mr. Seby Fernandes, Field Assistant, GSPCB.

(Rohan Nagvekar)
Asst. Environmental Engineer
Goa State Pollution Control Board

Copy to:

1. M/s. Paradeep Phosphotes Limited, Zuarinagar, Sancoale, Mormugao-Goa.
2. Mr. Siddhant Desai, JEE, GSPCB
3. Mrs. Milagrina Colaco, Junior Lab Assistant, GSPCB
4. Mr. Seby Fernandes, Field Assistant, GSPCB.
5. Admn. Section, GSPCB.
6. Guard Copy

Acknowledgement copy



No. PPL/ENV/2024-25/011

12.07.2024

To,

Member Secretary,
Goa State Pollution Control Board,
Nr. Pilerne Industrial Estate,
Opp. Saligao Seminary, Saligao-Bardez
Goa 403511

Goa State Pollution Control Board
Opp. Saligao Seminary
Saligao Goa 403 511

Dear Madam,

Sub: Payment under protest towards Environmental Compensation.

Ref: Your Letter no. 1/25/23-PCB/TEC/8565 & dated 12.07.2024.
8566

We acknowledge receipt of the above referred letter dated 12.07.2024.

In compliance with the directive issued by the Board, the Company hereby remits the Environmental Compensation amounting to Rs. 12,37,500/- (Rupees Twelve Lakhs Thirty Seven Thousand Five Hundred Only).

Please find attached herewith Demand Draft No. 500304 dated 12.07.2024 issued by ICICI Bank, Panjim for Rs. 12,37,500/- (Rupees Twelve Lakhs Thirty Seven Thousand Five Hundred Only) in favour of "Member Secretary, Goa State Pollution Control Board".

We wish to formally state that the Company has provided a valid justification clarifying our position that the incident in question has been influenced by multiple external sources. Therefore, while we are complying with the Board's directive, this payment is being made strictly under protest and without prejudice to our rights and contentions.

The Company remains committed to adhering to all environmental regulations and ensuring sustainable Practices.

Thanking you,

Yours faithfully,

For **Paradeep Phosphates Limited, Goa Unit**

N. G. Dessai
Chief Manufacturing Officer & Unit Head- Goa Plant

Encl.: Demand Draft No. 500304 dated 12.07.2024 for Rs. 12,37,500/-

PARADEEP PHOSPHATES LIMITED

CIN No.: L24129OR1981PLC001020

Goa Unit : Jaikisaan Bhawan, Zuarinagar, Goa - 403 726

Tel: +0832 2592180, 2592181, 6752399

Registered Office: Bayan Bhawan, Pandit J.N. Marg, Bhubaneswar - 751 001

www.paradeepphosphates.com

A/C PAYEE ONLY
ICICI Bank

Drawee Branch
 (15) PANAJI DD No. 500304

VALID FOR THREE MONTHS ONLY
 DATE 11 07 20 24
 D D M M Y Y Y Y

ON DEMAND PAY OL BOARD MEMBER SECRETARY, GOA STATE POLLUTION CONTR **OR ORDER**
 RUPEES

TWELVE LAKH THIRTY SEVEN THOUSAND FIVE HUNDRED ONLY
 ₹ *****12,37,500.00

Purchaser Name: PARADEEP PHOSPHATES LIMITED
 OC/1/7 Not Above 12,37,500.00

0226DDCENPAY VASCO
 Issuing Branch

FOR VALUE RECEIVED
 [Signature]
 Authorised Signatory
 Please sign above

0226DDCENPAY VASCO
 Issuing Branch
 [Signature]
 Authorised Signatory

⑈ 500304⑈ 00029000⑈ 000226⑈ 16

Goa State Pollution Control Board

Saligao

E-Mail : mail.gspcb@gov.in

591

Receipt Voucher

No. : 1329

Dated : 12-Jul-24

Particulars	Amount
Account : Fines & Penalty	12,37,500.00
Through : Cheque/DD Receipts	
On Account of : Being Payment received from M/s Paradeep Phosphates Limited towards payment under protest towards Environmental Compensation (PPP)	
Amount (in words) : INR Twelve Lakh Thirty Seven Thousand Five Hundred Only	
	₹ 12,37,500.00

Authorised Signatory



Acknowledgement copy



No. PPL/ENV/2024-25/012

12.07.2024

To,
Member Secretary,
Goa State Pollution Control Board,
Nr. Pilerne Industrial Estate,
Opp. Saligao Seminary, Saligao-Bardez
Goa 403511

12/07/2024
 Goa State Pollution Control Board
 Opp. Saligao Seminary
 Saligao Goa 403 511

Dear Madam,

Sub: Payment of Bank Guarantee amounting to Rs. 10,00,000/- (Rupees Ten Lakhs only).

**Ref: 1. GSPCB letter No. 2025/GSPCB/Letter/6922/Tech/7799 dated 05.07.2024
 2. Our Reply dated 10.07.2024.**

We acknowledge the receipt of your above-mentioned letter dated 5.07.2024 regarding the direct payment of the Bank Guarantee amounting to Rs. 10,00,000 /- (Rupees Ten Lakhs Only) and subsequently we have submitted our response regarding submission of Bank Guarantee vide our letter No. PPL/ENV/2024-25/009 dated 10.07.2024.

In Compliance with the directive issued by the Board, the Company hereby remits the Bank Guarantee amounting to Rs.10,00,000/- (Rupees Ten Lakhs only).

Please find attached herewith Demand Draft No. 500305, dated 12.07.2024 issued by ICICI Bank, for Rs.10,00,000/- (Rupees Ten Lakhs Only) in favour of "Member Secretary, Goa State Pollution Control Board".

Thanking you,

Yours faithfully,

For **Paradeep Phosphates Limited, Goa Unit**

(Signature)
 N. G. Dessai

Chief Manufacturing Officer & Unit Head- Goa Plant

Encl.: Demand Draft No. 500305 dated 12.07.2024 for Rs.10,00,000/-

PARADEEP PHOSPHATES LIMITED

CIN No.: L24129OR1981PLC001020

Goa Unit : Jaikisaan Bhawan, Zuarinagar, Goa - 403 726

Tel: +0832 2592180, 2592181, 6752399

Registered Office: Bayan Bhawan, Pandit J.N. Marg, Bhubaneswar - 751 001

www.paradeepphosphates.com

A/C PAYEE ONLY

ICICI Bank Drawee Branch (15) PANAJI

VALID FOR THREE MONTHS ONLY

DATE 20 7 20 24
D D M M Y Y Y Y

DD No. 500305

ON DEMAND PAY MEMBER SECRETARY, GOA STATE POLLUTION CONTR OR ORDER
OL BOARD*****

TEN LAKH Only

RUPEES

₹ *****10.00.000.00

FOR VALUE RECEIVED

Purchaser Name: PARADEEP PHOSPHATES LIMITED
00/1/7 Not Above 10,00,000.00

0226DDCENPAY
VASCO
Issuing Branch

[Signature]
Authorised Signatory

[Signature]
Authorised Signatory
Please sign above

90067652

UTILITY FORMS PVT. LTD. Ph. 041-4575755, Mumbai-2000972, Chennai-0542727, Kolkata-22518905

UTILITY FORMS PVT. LTD. Ph. 041-4575755, Mumbai-2000972, Chennai-0542727, Kolkata-22518905

⑈ 500305⑈ 000229000⑈ 000226⑈ 16

Receipt Voucher

No. : 1328

Dated : 12-Jul-24

Particulars	Amount
Account : Other Receipts	10,00,000.00
Through : Cheque/DD Receipts	
On Account of : Being Payment received from M/s Paradeep Phosphates Limited towards Payment of Bank Gaurantee Amount Letter No. 2025/GSPCB /LETTER/6922/TECH/7799	
Amount (in words) : INR Ten Lakh Only	
	₹ 10,00,000.00

Authorised Signatory

