

**THE HON'BLE NATIONAL GREEN TRIBUNAL  
WESTERN ZONE BENCH, PUNE  
ORIGINAL APPLICATION NO. 70 OF 2021**

**IN THE MATTER OF:**

BRACKISH WATER RESEARCH CENTRE

.... APPLICANT

VERSUS

GUJARAT STATE POLLUTION CONTROL  
BOARD & ORS.

.... RESPONDENT(S)

**INDEX (VOL-I)**

<u>Sr. No.</u>	<u>Particulars</u>	<u>Page Nos.</u>
1.	Reply on Affidavit on behalf of Respondent No. 8, Hindalco Industries Ltd. (Unit-Birla Copper).	1-23
2.	<b><u>ANNEXURE R8/1:</u></b> A copy of latest photographs showing the SLFs constructed by Respondent No. 8.	24
3.	<b><u>ANNEXURE R8/2:</u></b> A copy of the Notification dated 25.11.2010 published by the Delhi High Court.	25-29
4.	<b><u>ANNEXURE R8/3:</u></b> A copy of the Modified Directions dated 07.03.2016 regarding harmonization of the classification of industrial sectors under red / orange / green / white categories issued by Respondent No. 6 and the inspection procedure for red-category industries as available on the website of Respondent No. 1.	30-88
5.	<b><u>ANNEXURE R8/4:</u></b> A copy of list of leading companies in the PCPIR as available on the website of GIDC.	89-90
6.	<b><u>ANNEXURE R8/5:</u></b> A copy of the Consolidated Consent & Approval dated 30.05.2020 granted to the Respondent No. 8 by	91-103

	Respondent No. 1 for establishment and operation of the Birla Copper plant	
7.	<b><u>ANNEXURE R8/6:</u></b> A copy of the letter of appreciation dated 17.05.2021	104
8.	<b><u>ANNEXURE R8/7:</u></b> Copies of photographs evidencing establishment of the good measures at the Birla Copper unit of Respondent No. 8.	105-109
9.	<b><u>ANNEXURE R8/8:</u></b> Copies of news articles recording that the area witnessed exceptionally heavy rainfalls in 2019.	110-132
10.	<b><u>ANNEXURE R8/9:</u></b> A copy internal Communication dated 08.02.2010 of which was marked to the Respondent No. 8.	133-136
11.	<b><u>ANNEXURE R8/10:</u></b> A copy of the in-principle approval dated 21.2.2013 granted by the Respondent No.7 for diversion of 16 ha subject to deposit of penal compensatory afforestation over 50 ha.	137-138
12.	<b><u>ANNEXURE R8/11:</u></b> A copy of letter dated 22.4.2013 of the Forest and Environment Department, Government of Gujarat confirming deposit of penal compensatory afforestation.	139
13.	<b><u>ANNEXURE R8/12:</u></b> A copy of the present day photographs of the 16 ha. land which clearly show that the area has been completely cleaned up upto the boundary wall.	140-142
14.	<b><u>ANNEXURE R8/13:</u></b> Copies of letters exchanged with Respondents 3, 4 and 7.	143-144

15.	<b><u>ANNEXURE R8/14:</u></b> Copy Of the photographs of the mangroves near the Respondent's No.8's premises.	145-146
16.	<b><u>ANNEXURE R8/15:</u></b> Copy of the latest photographs from the coal yard.	147
17.	<b><u>ANNEXURE R8/16:</u></b> A copy of the Respondent No. 8's reply dated 11.07.2018.	148-216

Through:



(ASHISH PRASAD/MUKTA DUTTA/  
KAUSTUBH MISHRA/SPARSH PRASAD)  
ADVOCATE FOR RESPONDENT NO.8  
(ECONOMIC LAWS PRACTICE)  
801 A, KONNECTUS TOWER, BHAVBHUTI  
MARG, OPP. AJMERI GATE RAILWAY  
STATION, NEW DELHI-110002.  
Mobile No.9911445855  
E-MAIL: kaustubhmishra@elp-in.com

Place: New Delhi

Date: 17.11.2021

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

WESTERN ZONE BENCH, PUNE

ORIGINAL APPLICATION NO. 70 OF 2021

**IN THE MATTER OF:**

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GUJARAT STATE POLLUTION CONTROL  
BOARD & ORS.

.... RESPONDENT(S)

**REPLY ON AFFIDAVIT ON BEHALF OF RESPONDENT NO. 8, HINDALCO**

**INDUSTRIES LTD. (UNIT-BIRLA COPPER)**

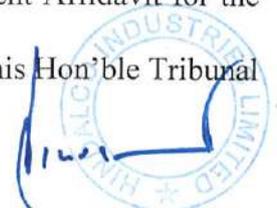
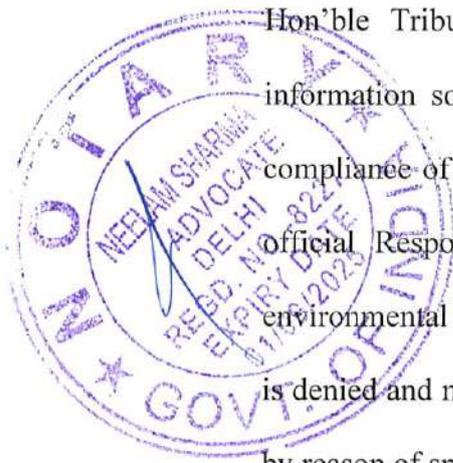
**MOST RESPECTFULLY SHOWETH:**

I, Dr. Vinod K. Verma S/o Dharampal Verma, aged about 50 years, working as Vice President, Corporate Affairs with M/s. Hindalco Industries Limited, having residence at Ekta 166 Sector 8 Block A, 4<sup>th</sup> Floor, Dwarka, New Delhi, 10075 presently at New Delhi, do hereby solemnly affirm and declare as under: -

1. That I am the Authorized Representative of Respondent No. 8. I am fully conversant with the facts and circumstances of the present case based on the records maintained by Respondent No. 8 in the usual course of business. I am competent to affirm this affidavit on behalf of the Respondent No. 8.
2. At the outset, it is stated that the present Application constitutes an abuse of process of this Hon'ble Tribunal as the Applicant has deliberately suppressed material facts and information so as to present a dismal picture of alleged continuous and willful non-compliance of environmental norms by the Respondent No. 8 and alleged failure of the official Respondents to fulfill their statutory obligation of ensuring compliance of environmental laws. It is submitted that each and every allegation raised in the Application is denied and nothing contained in the Application may be deemed to be admitted merely by reason of specific non-traverse.

**PRELIMINARY OBJECTIONS:**

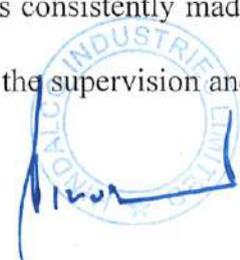
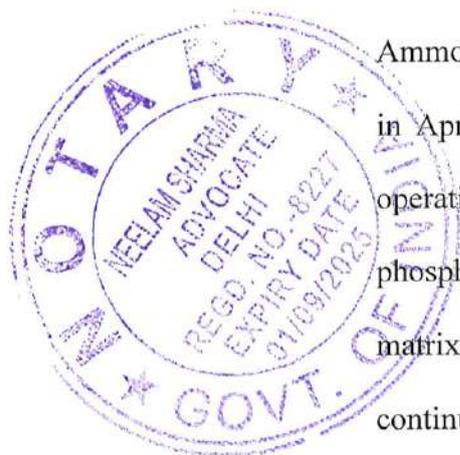
3. That due to paucity of time, the Respondent No. 8 is filing the present Affidavit for the limited purpose of demonstrating that the Applicant has approached this Hon'ble Tribunal



with unclean hands, and deliberately concealed material information which is necessary for this Hon'ble Tribunal to form an opinion as to whether the instant Original Application ought to be entertained. The Respondent No. 8 reserves the right to file a detailed Affidavit at a later stage.

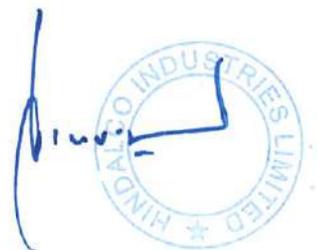
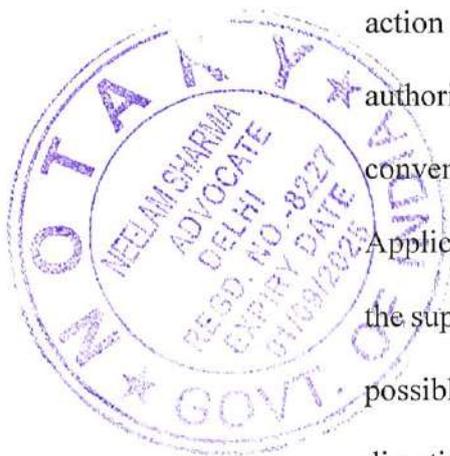
4. It is submitted that the following facts and information elaborated in the present affidavit, which have not been placed on record with the Original Application, are / ought to have been available to the Applicant with exercise of due diligence and conduct of proper inquiry and investigation before filing the Original Application:

- (i) Immediate remediation measures undertaken by the Respondent No. 8 post observations and corrective steps indicated by Respondent No. 1 from time to time. Especially, the *bona fide* efforts made by the Respondent No. 8 to constructively address the observations made in Inspection Reports issued by Respondent No. 1 and sustained efforts to facilitate closure of the issues raised therein by adoption of constructive and sustained remedial steps.
- (ii) The series of investments undertaken by the Respondent No. 8 to reduce its environmental footprint by upgrading infrastructure and adopting newer and cleaner technologies in operations.
- (iii) The voluntary shut down of the fertilizer unit at Birla Copper, comprising the Di-Ammonium Phosphate plant (DAP) and Phosphoric Acid plant (PAP), way back in April 2020, with the sole objective of ensuring environmentally sustainable operations by substantially reducing generation of high volume waste, particularly phosphogypsum. The Applicant has deliberately presented a misleading factual matrix on the misconceived basis that the fertilizer unit (DAP and PAP plants) continues to remain operational and generates phosphogypsum as on date, which is completely without basis. The detailed submissions as regards shut down of the fertilizer factory have been made in paragraph 24-28 of this affidavit.
- (iv) The Applicant has deliberately suppressed the fact that the presence of copper slag over forest land outside the boundary of the Respondent No.8's unit was a historical issue. The Respondent Nos. 1, 3 and 4 (i.e., GPCB and State Forest Department) have taken cognizance of this issue and Respondent No. 8 has consistently made *bona fide* efforts to constructively address the concerns under the supervision and

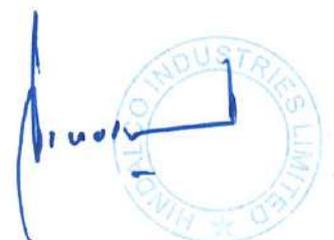
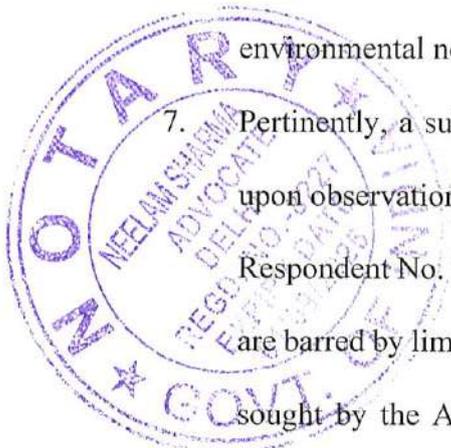


guidance of the regulatory authorities, particularly the Respondent Nos. 1, 3 and 4. The Respondent No. 8 has also deposited penal compensatory afforestation charges of approx. INR 94 lakhs as determined by the regulatory authorities in terms of applicable laws towards restitution. The significant remedial and restoration efforts undertaken by the Respondent No. 8 and the Respondent No. 3 and 4 have shown positive results, as evident from latest pictures of the relevant. The detailed submissions as regards allegations of dumping of copper slag in reserved forest area have been made in paragraph 35-43 of this affidavit. The Applicant has suppressed information of the efforts undertaken by the Respondent No. 8 to subsequently lift the copper slag from the diverted forest area in its possession and the continued efforts to work with the Respondent Nos. 3, 4 and 7 to restore the forest area falling outside the boundary wall of the Respondent No.8.

- (v) The Applicant has deliberately drawn a picture as if the Respondent No. 8 is wantonly disposing of untreated hazardous waste without following necessary safeguards prescribed under law. Such allegations have been made without basis and are without substance. Contrary to the allegations raised by the Applicant, the Secured Land Fills (“SLF”) constructed by the Respondent No. 8 have been designed by a reputed institute in line with guidelines published by the Respondent No. 6 and are operated and closed as per design. Latest photographs showing the SLFs constructed by Respondent No. 8 is annexed hereto as ANNEXURE R8/1.
- (vi) The Applicant has cherrypicked and highlighted certain observations from Inspection Reports issued by Respondent No. 1, without placing on record the action taken by the Respondent No. 8 under the supervision of regulatory authorities to address these observations through remedial steps. The Applicant has conveniently omitted to point out that most of the alleged violations stated in the Application have already been addressed by Respondent No. 8 and closed under the supervision of Respondent No. 1. The Respondent No. 8 continues to make best possible efforts to constructively address the remaining concerns in terms of the directions of the regulatory authorities.



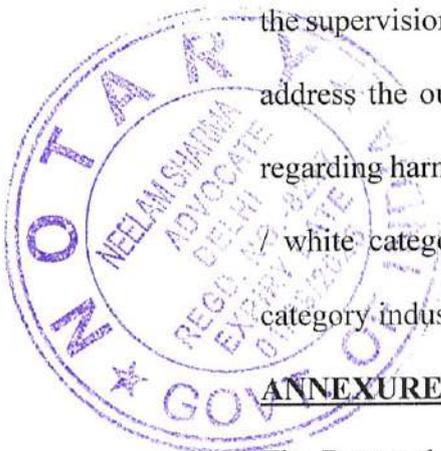
5. As stated in the Resolution dated 06.08.2021 filed as Annexure A/1 [page 110], the Applicant claims to have filed the instant Original Application “in public interest”, to purportedly espouse a cause “on behalf of the local people and fishermen”. It is respectfully submitted that the well-established disclosure obligations prescribed for entertaining public interest litigations of this nature are not satisfied in this case. While the Applicant has placed various Inspection Reports of Respondent No. 1 on record, the detailed responses furnished to each of the said Inspection Reports by Respondent No. 8 along with supporting documentation which evidence the sustained constructive remedial action taken by Respondent No. 8 under regulatory supervision, have conveniently not been filed along with the Application, even though the said responses form part of the official record and could be obtained if the Applicant had sought for the same. The Respondent No. 8 craves leave to refer to guidelines published by the Delhi High Court for filing of public interest petitions. A copy of the Notification dated 25.11.2010 published by the Delhi High Court is annexed hereto as ANNEXURE R8/2.
6. It is further submitted that the Applicant has sought to mislead this Hon’ble Tribunal by alleging on the one hand that the cause of action for filing the Application arose after 25.03.2021 [page 104], while on the other hand purporting to build a narrative of “continuing environmental violations” against Respondent No. 8 as well official Respondents by relying on a cause of action going as far back as at-least 2007 [para 19, page 49]. It is respectfully submitted that Respondent No. 8 has consistently made bona fide efforts to constructively address the historical issues pointed out from time to time by Respondent No. 1 during inspections and continues to remain committed to comply with environmental norms.
7. Pertinently, a substantial part of the cause of action agitated in the Application is based upon observations made in Inspection Reports dated 13.06.2018 and 24.01.2020 issued by Respondent No. 1. It is submitted that issues in relation to the aforesaid Inspection Reports are barred by limitation by virtue of Section 14(3) of the NGT Act. Similarly, the first relief sought by the Applicant, i.e., revocation of the Consolidated Consent & Authorization dated 30.05.2020 granted in favour of Respondent No. 8 by Respondent No. 1, is also barred by limitation by virtue of Section 14(3) of the NGT Act.



**PRELIMINARY SUBMISSIONS:**

8. It is submitted that the Respondent No. 7 in collaboration with the Respondent No. 6 has categorized industries into red, orange, green and white category based on the relative pollution potential of the industrial sectors and grouping based on use of raw materials, manufacturing process and pollutants likely to be generated. The copper industry is a permitted industry and has been categorized under red category. It is submitted that the purpose of categorization is not to isolate red category industries for closure but to prompt industrial sectors to adopt cleaner technologies ultimately resulting in generation of fewer pollutants. The categorization seeks to strike a balance between economic development and environmental concerns as per the principles of sustainable development, permitting red category industries to operate under a stricter regulatory framework in acknowledgement of the contribution of such industries to economic development, employment generation as well as revenue augmentation for the State. Routine inspections of red category industries by Respondent No. 1 (once every three months) are built into the regulatory framework in acknowledgement of the potential impact of these industries on the environment, with the objective being not to close such industries, but to make sustained efforts to monitor, regulate and continuously explore alternatives for minimizing the emissions from such industries. The alarmist tone of the Applicant by citing three Inspection Reports issued by Respondent No. 1 in this case completely ignores the fact that such inspections are supposed to be conducted routinely, and the Respondent No. 8 has closed most of the observations in these Inspection Reports through sustained efforts under the supervision of Respondent No. 1 and continues to make earnest efforts to constructively address the outstanding concerns. A copy of the Modified Directions dated 07.03.2016 regarding harmonization of the classification of industrial sectors under red / orange / green / white categories issued by Respondent No. 6 and the inspection procedure for red-category industries as available on the website of Respondent No. 1 is annexed herewith as **ANNEXURE R8/3.**

9. The Respondent No. 8 has consciously and voluntarily taken the burden of reducing its emissions seriously and has made substantial investment in undertaking a series of measures to install newer and cleaner technology to reduce its environment footprint as elaborated in paragraph 23 of this Affidavit. It is disheartening that despite such enormous



efforts, the present Application has been filed seeking drastic reliefs include closure, which if granted would have far reaching consequences not only for the Respondent No. 8 but for the economy itself including the workers and contractors (approx. 5000) dependent on the Respondent No. 8 for their livelihood.

10. Before discussing the significant efforts made by the Respondent No. 8 under the supervision and guidance of the Respondent No. 1 to reduce its environment footprint, it is necessary to place on record certain material facts relating to the Respondent No.8's contribution to the economy of the State.

**Contribution of the Respondent No.8 to the Economy:**

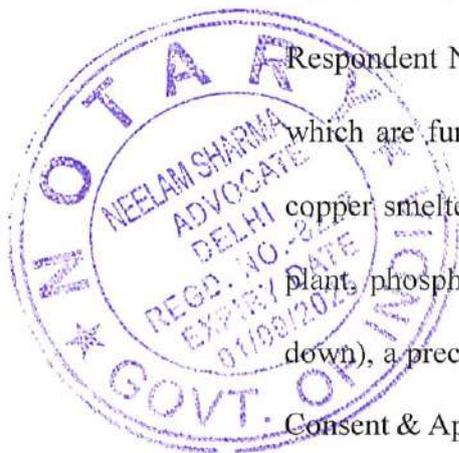
11. It is submitted that Respondent No. 8's copper division, Birla Copper, operates one of the largest single location custom copper smelters in the world. The Birla Copper unit is located in the Petroleum, Chemicals and Petrochemicals Investment Region ("PCPIR") managed by the Gujarat Industrial Development Corporation ("GIDC") established under the Gujarat Industrial Development Act of 1962, with the objective of accelerating industrialization in the State of Gujarat. The Respondent No. 8 is one amongst atleast 13 other leading industries operating in this region. A list of leading companies in the PCPIR as available on the website of GIDC is annexed hereto as **ANNEXURE R8/4.**

12. It is submitted that the Respondent No 8's copper plant is spread over 342 Ha land, of which 117 ha is covered by Green belt which also includes a residential township. The

Respondent No. 8's unit comprises integrated and interdependent plants in one complex which are further segregated into industry segments and technologies and includes two copper smelters, two refineries, two rod plants, a captive power plant, a captive oxygen plant, phosphoric acid plant, di-ammonium phosphate plant (which has now been shut down), a precious metal recovery plant, captive jetty and other utilities. The Consolidated Consent & Approval dated 30.05.2020 granted to the Respondent No. 8 by Respondent No.

1 for establishment and operation of the Birla Copper plant is annexed hereto as **ANNEXURE R8/5.**

13. The Respondent No. 8 is one of the major producers of copper in the country and meets 43% of the copper requirement in the country today. It is submitted that the copper is known as a metal of choice worldwide due to its inherent properties and use in various applications. Refined copper is also a widely traded high value commodity globally

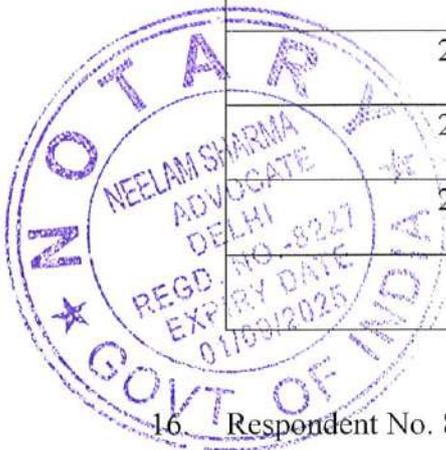


recognized as a strategic metal for the 21<sup>st</sup> century. The primary refined copper industry in India plays a critical role in ensuring adequate availability of this strategic metal domestically as well as worldwide. The copper industry contributes to the growth, innovation and development of sectors such as Power, Automotive, Electronics & Telecommunication, Railways, Construction, Electric vehicle, Renewables, Defence that are critical for the country.

14. The Respondent No. 8's Birla Copper unit employs 378 Management Grade Employees, 1110 Operational Grade and Local Management Staff from nearby villages including Lakhigram and Dahej and 3500 Contract Manpower. In addition, the Respondent No. 8's copper plant generates ancillary business opportunities for approximately 114 contractors and thousands of contract workers.
15. The Birla Copper unit of Respondent No. 8 also contributes significant revenues in the form of taxes and statutory dues to the State and Central Governments. The Respondent No. 8 has deposited approximately INR 12,706 Crores in taxes and statutory dues, including surcharges, entry tax, CGST, SGST, IGST, UGST/Cess, TDS, municipal taxes to the Central and State Governments in the last five years alone, as tabulated hereunder:

Year	Amount (INR Crores)
2016-17	1,909
2017-18	1,909
2018-19	3,025
2019-20	2,852
2020-21	3,011
<b>Total</b>	<b>12,706</b>

16. Respondent No. 8's commitment to the community is equally strong. This is evident from Respondent No. 8's actions and initiatives in supporting the government initiatives the ongoing war against Covid-19. Respondent No. 8 provided tons of Oxygen during the crisis in the State of Gujarat. The said action has been acknowledged and duly appreciated by the Additional Chief Secretary Dr. Rajiv Kumar Gupta (Environment & Forest Department, Managing Director Sardar Sarovar Narmada Nigam Ltd.). The letter of appreciation dated 17.05.2021 is annexed herewith and marked as ANNEXURE R8/6.

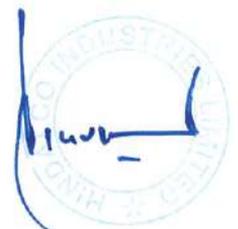
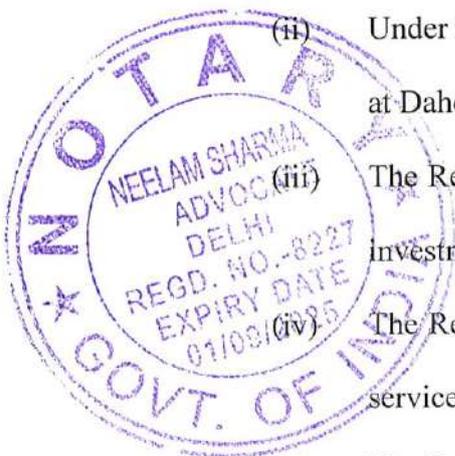


**Support rendered by the Respondent No. 8 to the State Government during Covid-19 pandemic:**

17. The Respondent No. 8 has wholeheartedly supported the State Government in battling Covid-19 pandemic. Specifically, it has participated in the following activities:
- (i) Undertaking sanitization drives in villages of Dahej and Lakhigam.
  - (ii) The Respondent No. 8 has supplied oxygen to hospitals during the pandemic.
  - (iii) The Respondent No. 8 has increased its labour workforce during COVID-19 pandemic to absorb unemployed labour.

**Activities undertaken by the Respondent No. 8 as part of its Corporate Social Responsibility:**

18. The Respondent No. 8 has always believed in community development and has regularly invested in Lakhigam & Dahej through various programmes including:
- (i) Under Infrastructure Initiatives the Respondent No. 8 has constructed 123 houses for below poverty line families at Dahej & Lakhigam villages, a community hall at Lakhigam, a computer training centre for the students of primary school at Dahej and a total investment of around INR 203 lakhs.
  - (ii) Under health infrastructure, the Respondent No. 8 has constructed 241 toilet blocks at Dahej & Lakhigam at an investment of approx. INR 31.75 lakhs.
  - (iii) The Respondent No. 8 has constructed drainage system at Lakhigam village at an investment of approx. INR 150 lakhs.
  - (iv) The Respondent No. 8 provides 24\*7 ambulance service and emergency medical services for the villagers.
  - (v) The Respondent No. 8 also provides drinking water facilities through pipeline for the villagers of Lakhigam.
  - (vi) The Respondent No. 8 has been organizing primary health checkup camps in every 15 days at Lakhigam and Dahej & multi-speciality health checkup camps every year. Eye screening & Cataract operation camps have been organized by Respondent No. 8 for the people of both villages every year.



- (vii) Under Education initiative, the Respondent No. 8 has provided education material support to the 3,000 students of Lakhigam & Dahej. To promote digital literacy in the area Respondent No. 8 has started the Tablab project targeting around 600 students at Government primary school of Lakhigam and Dahej.
- (viii) Under sustainable livelihood initiative, the Respondent No. 8 has provided skill trainings in sewing to 400 women and beauty parlour training to 100 women of Lakhigam & Dahej. Additionally around 06 Self Help Groups have been formed consisting of 72 women of Lakhigam and Dahej.
- (ix) Apart from these initiatives Respondent No. 8 supports these villages by providing food, plastic sheets during natural calamities like heavy rain, cyclone etc.

19. It is submitted that all these activities are well appreciated by the communities and Grampanchayat of both the villages. These initiatives have resulted in improving literacy rate, health and hygiene standards in the two villages.

20. Respondent No. 8 also runs the Aditya Birla Public School at Kesrol which provides quality education to children in the region. The School is considered one of the best English medium schools in the entire Bharuch district. Out of a total of 1486 students, 147 students are drawn from the nearby villages.

**Specific Measures undertaken by Respondent No.8 to reduce its environment**

**Footprint:**

19. It is submitted that the Respondent No. 8 in collaboration with the Respondent No. 1 has made enormous efforts to mitigate the effect of its historical emissions as well as to reduce current emissions. The information below specifically belies the dismal narrative sought to be portrayed by the Applicant.

21. The Respondent No. 8 has recently invested approximately INR 114 crores in a desalination project in collaboration with GIDC to reduce its dependency on the Narmada river water.

22. It is further noteworthy that due to the exothermic process of the copper smelting process it is not entirely dependent on electricity for heat generation. The Respondent No. 8 operates two thermal captive power plants having generation capacity of 135 MW to cater to its power requirements for its remaining operations. However, being conscious of the

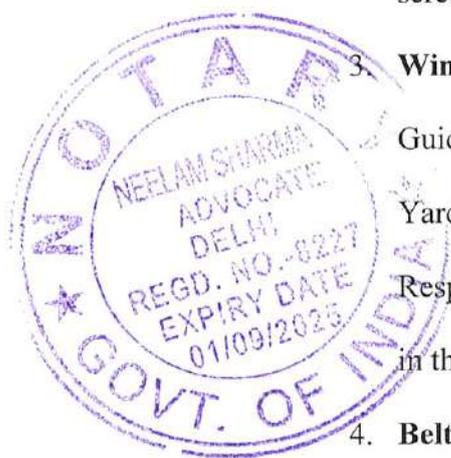


cost on the environment of thermal power generation, the Respondent No. 8 has been consciously exploring opportunities for reducing its dependency on its captive power plants. Today, the Respondent No. 8 itself generates only 60-65MW of electricity and meets the remaining requirement by procuring energy from renewable sources of power and by drawing from the Gujarat Electricity Board.

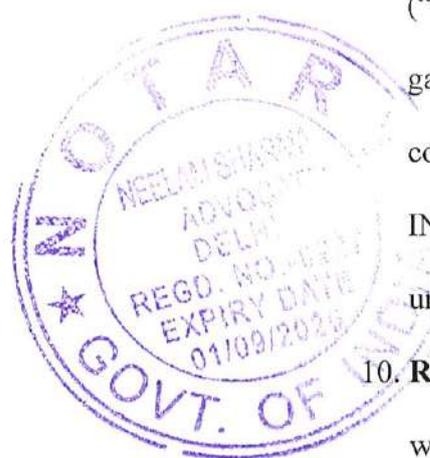
23. In addition, the Respondent No. 8 has adopted the 3R approach i.e., Reduce, Reuse and Recycle by investing in the following Environment Improvement Projects:

A. **Air Quality Improvement Projects:**

1. **Tail Gas Scrubber:** Respondent No. 8 has commissioned Tail Gas Scrubber at its Sulphuric Acid Plant – 3 (“SAP-3”) in the year 2019, with world class technology from Dupont, USA at a total investment of around INR 34 crores. This is a high efficiency caustic based three stage scrubber system with a reverse jet technology. This scrubber is instrumental in providing sustainable solution to maintain SO<sub>2</sub> level at or better than prescribed standards.
2. **Bag Filters Revamping in Captive Power Plant:** In the year 2020, Respondent No. 8 has installed four bag filters across the coal transfer towers with an investment to the tune of INR 7 crores to extract dust during coal transfer and auto transfer of the dust back into the coal feeding system. This will control the fugitive emissions due to coal handling and transportation from screening, crushing and up to coal feeding.
3. **Wind Fencing around Coal Storage Yard:** In line with the Coal Handling Guidelines, Respondent No. 8 has implemented Wind Fencing around the coal Yard. This wind fencing project includes garland drain and pits that will help Respondent No. 8 to prevent fugitive dust emission and Ambient Air Pollution in the surrounding Coal Yard.
4. **Belt conveyor systems replacement:** Respondent No. 8 is installing new conveyor systems with covered galleries to prevent spillages. About 30% of coal conveyor length has already been constructed.
5. **Upgradation of Conveyor Scrapper systems:** Respondent No. 8 has upgraded more than 20 scrapping systems of conveyors with latest technologies in order to prevent dust generation from the return belt.



6. **Close loop handling of solids:** With regard to the dust generation handling points, Respondent No. 8 has implemented dust collection trolleys with tractor to collect dust from chute directly instead of manual handling and transfer back into the process in close loop system.
7. **Dust Free Lime Dosing-** Respondent No. 8 has already installed a pneumatic system for lime handling instead of lime bags at the ETP Plant, thereby greatly mitigating fugitive emission and reduction of dusty spillages. This has eliminated the manual lime handling practice and helped in the control of fugitive emission and reduction of dust spillages.
8. **Major focus on Housekeeping:** In terms of good housekeeping, in addition to manual cleaning activities, Respondent No. 8 has implemented the pneumatic dust collection systems in plant operation areas. In road cleaning, Respondent No. 8 has implemented two jumbo sized Vacuum Road Sweeping Machines for continuous sweeping and dust collection.
9. **Technological Upgradation of Gas Scrubbers:** Respondent No. 8 is currently working on upgradation of off-gas scrubbers in Smelter- 1 and Precious Metal Recovery plants. The basic engineering study for treatment philosophy and downstream has been completed with support of M/s MECON. Further, Respondent No. 8 has engaged M/s Gas Cleaning Technologies, LLC (“GCT”) (a US based copper technology expert) for off-gas reduction at source, gas convey to primary handling system and bleed treatment process. GCT has conducted a site visit in August, 2021. The entire execution would cost around INR 150 crore (approx.) and the Respondent No. 1 intends to complete the same under strict timelines.
10. **Revamping of Smelter 1 Gas Collection system:** It is submitted that the water-cooled hood has been implemented in three converters of Smelter 1 for efficient collection and further neutralization of off-gas generated during the charging process.



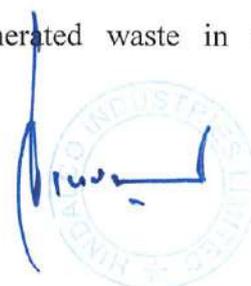
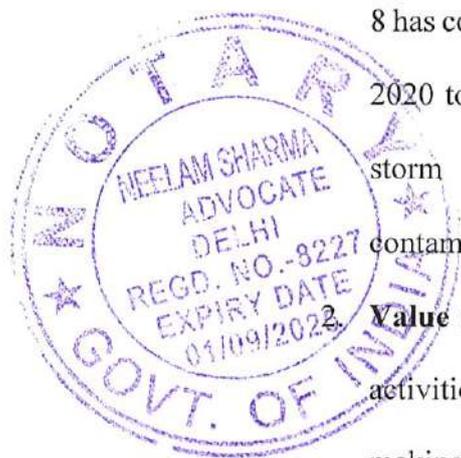
**B. Water Quality Improvement and Recycling Projects:**

1. **Secondary Water treatment:** The Respondent No. 8 has installed Brackish Water RO for recycling of treated effluent from ETP which is enabling recycling of about 1600 KL/Day water.
2. **Tertiary Water treatment:** Further, to recycle Brackish water RO reject in the process Respondent No. 8 has completed the construction and erection of a Tertiary Water Recycling Unit (TWRU) with an investment of about of INR 60 crores. The commissioning and the start-up of the TWRU is under progress.
3. **Advanced Technology for Sewage Treatment:** The Respondent No. 8 also implemented a submerged Ultrafiltration based membrane bio-reactor Sewage Treatment Plant for treatment and recycling of sewage.
4. **Revamping of Drains – process and storm:** The Respondent No. 8 has undertaken multiple projects for revamping of storm and process water drains inside and on the peripheral premises. More than 13km length of drains are revamped already and additional 5km is under progress which is likely to be completed by March 2022.

**C. Improvements in Solid Waste Management**

1. **Phosphogypsum yard upgradation and monsoon covering:** Respondent No. 8 has covered the entire gypsum yard (400X800m) with HDPE Liner in the year 2020 to avoid generation of leachate and to directly transfer the rainwater in storm drain. This has effectively arrested any possibility of potential contamination.

**Value recovery from wastes:** It is submitted that as a part of manufacturing activities various kinds of wastes are generated, Respondent No. 8 has been making consistent efforts to apply the waste management hierarchy to all the waste. It is meant to reduce the quantity of waste produced during operations, by following techniques to reuse and recycle generated waste in an environmentally friendly manner.



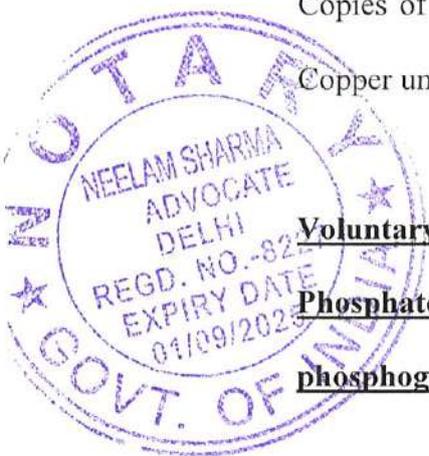
**D. Other Initiatives**

1. Apart from Copper Slag, Solid Wastes generated from the Smelters, Refinery and Precious Metal Recovery plants have valuable metals. The Respondent No. 8 has been recycling these through smelters to recover such metals internally through various stages of smelting process. The Respondent No. 8 has also got permission from Ministry of Environment, Forest, and Climate Change (MOEF&CC) for exporting Dore Slag, C- Slag, Dust & Lumpy and Liberator Cake materials to overseas authorized recyclers.
2. In addition to the above initiatives focused on environmental performance, Respondent No. 8 has recently undertaken major overhauling and revamps of two major production facilities.
  - a. Smelter 3 went under shutdown from 18<sup>th</sup> of March, 2021 for a period of roughly two months. During this period, Respondent No. 8 replaced and revamped the major equipment at an overall cost of around INR 200 crores supported by major vendors such as GE, Tata, Siemens, Dupont, Howden and L&T.
  - b. The Fertilizer plant consisting of Phosphoric Acid Plant and Di-ammonium Phosphate plant (DAP) has been shut from 27<sup>th</sup> April, 2020.

Copies of photographs evidencing establishment of the aforesaid measures at the Birla Copper unit of Respondent No. 8 are annexed hereto as ANNEXURE R8/7.

**Voluntary shut down of Phosphoric Acid Plant (“PAP”) and Di-ammonium Phosphate plant (“DAP”) by the Respondent No. 8 to stop generation of phosphogypsum waste and to reduce overall pollution load.**

24. The Applicant has misrepresented that the Fertiliser Plant is still in operation and Respondent No. 8 is continuously generating phosphogypsum waste.
25. The fertilizer plant comprising of the PAP and DAP plants was installed to utilize sulphuric acid which is a byproduct of the copper smelting process. Sulphuric acid is treated to create phosphoric acid at the PAP which is in turn reacted with ammonia at the DAP to produce Diammonium Phosphate which is a fertilizer. Phosphogypsum is produced as a byproduct

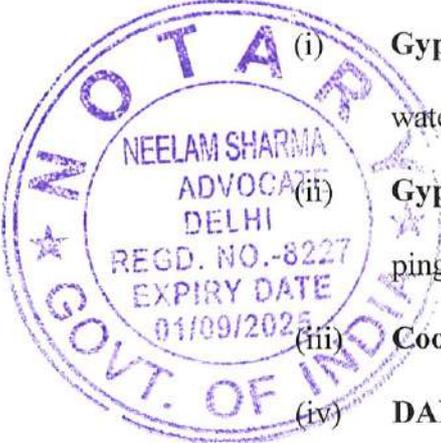


during production of Diammonium Phosphate. Phosphogypsum in concentration is a pollutant but when mixed with soil in small quantities, is widely regarded as “the poor man’s fertilizer”.

26. As per Schedule I of Hazardous and Other Waste Rules, 2016 (“**Hazardous Waste Rules**”) phosphogypsum and slags from pyrometallurgical operations are excluded from the category of hazardous wastes. The noting in this respect in the Hazardous waste Rules is reproduced below:

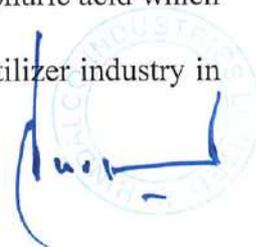
*“Note: The high volume low effect wastes such as fly ash, Phosphogypsum, red mud, jarosite, Slags from pyrometallurgical operations, mine tailings and ore beneficiation rejects are excluded from the category of hazardous wastes. Separate guidelines on the management of these wastes shall be issued by Central Pollution Control Board.”*

27. It is submitted that since the year 2018, the Respondent No. 8 had been receiving several negative observations from the Respondent No. 1 constituting environmental challenges in operations of its PAP and DAP including the following:

- 
- (i) **Gypsum yard**- observations related to gypsum leachate leading to acidic water in storm drains;
  - (ii) **Gypsum conveyor** – rainwater mixing with gypsum and acidic water dripping in gypsum conveyor;
  - (iii) **Cooling Tower** – acidic mist from cooling towers causing eye irritation;
  - (iv) **DAP** – spillages of DAP leading to storm water contamination;
  - (v) **Scrubber system** – inefficient scrubbing of gases leading to frequent breakdown.

28. Accordingly, with the objective of exploring ways of reducing pollution, the Respondent No. 8 commissioned M/s. ThyssenKrupp, M/s Prayon (Belgium), M/s Inco (Spain) to study the PAP and DAP plants and recommend equipment and process upgradation to ensure sustainable plant operations. Based on the study, the Respondent No. 8 took a conscious decision to shut down operations at its DAP and PAP on 27<sup>th</sup> April 2020 and is consequently no longer producing phosphogypsum waste.

29. The Respondent No. 8 currently generates about 1 lakh mt/month of sulphuric acid which is supplied to *inter-alia*, the chemical industry, cement industry and fertilizer industry in



the domestic as well as international markets. The Respondent No. 8 also supplies sulphuric acid to certain chemical industries where it is used as input/raw material.

**Scientific storage and disposal of previously accumulated phosphogypsum waste:**

30. Phosphogypsum is stored in a dedicated storage yard by Respondent No. 8 which was built as per prevalent guidelines.

31. Details of the phosphogypsum stack in the last three years which shows that Respondent No. 8 is proactively trying to reduce its pollution load on account of phosphogypsum is as under:

2018-2019: The stack height at the dedicated yard was upto 10 mtr from ground level and stock was approximately 28 lac MT.

2019-2020: The stack height reduced to approximately 8.5 mtr from ground level and stock was 25 Lac MT.

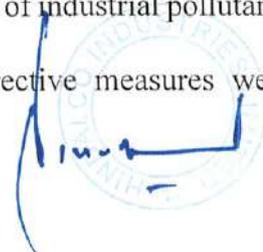
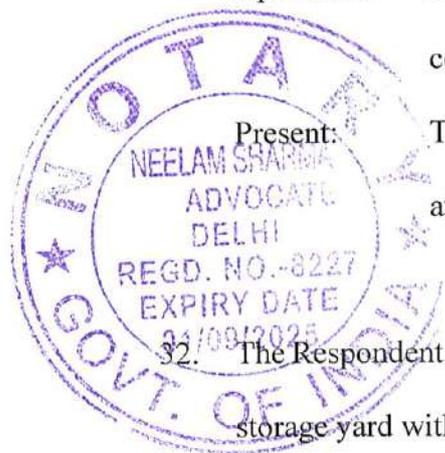
April 2020: Production at the fertilizer plant was stopped whilst the Respondent No. 8 continued to evacuate the accumulated phosphogypsum.

Present: The stack height has reduced upto apprx. 1.5 mtr with a stock of 15 Lac MT at present.

32. The Respondent No. 8 plans to implement a solution for clearing the entire phosphogypsum storage yard within the next 12 to 16 months. The Respondent No. 8 is currently exploring options for removal/ disposal of the phosphogypsum and thereafter backfilling the area with soil composite to reclaim the land; or in the alternative capping the phosphogypsum and making it suitable for plantation in situ in consultation with expert agencies such as The Energy and Resource Institute (“TERI”).

33. The Applicant’s allegation that the Respondent No. 8 is continuously dumping Phosphogypsum in forest area is belied by the fact that the Respondent No. 8 no longer produces Phosphogypsum and the accumulated waste is safely stored.

34. In the year 2019, Gujarat witnessed exceptionally heavy rainfall leading to flooding in the region. The Respondent No. 1 regularly inspected premises of various industries in the region during this period to monitor seepage, overflow, spillover etc of industrial pollutants and made observations wherever necessary to ensure that corrective measures were



immediately taken. The Respondent No. 8 also received such observations including a Closure Notice in 2019 on account of seepage of acidic water in the area adjoining its phosphogypsum yard. Pursuant to the Closure Notice, the Respondent No. 8 adopted immediate corrective measures which were monitored by the Respondent No. 1 every week for 3 months. The steps taken by the Respondent No. 8 during this period included:

- (i) Pumping out of the leachate back to the phosphogypsum yard;
- (ii) Scraping off of the top layer of the soil, addition of fresh soil added and turning the soil to restore the PH balance;
- (iii) Creating plantation over the affected area;
- (iv) Installing geomembrane lining at the yard to contain the Phosphogypsum.

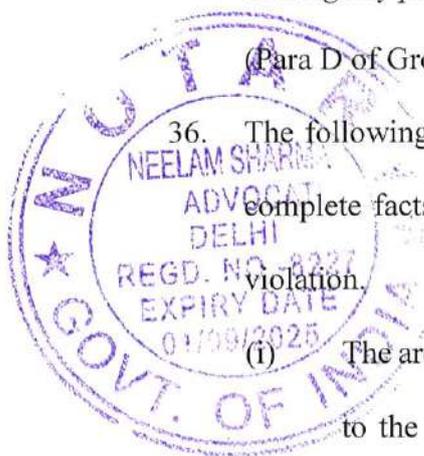
Copies of news articles recording that the area witnessed exceptionally heavy rainfalls in 2019 are annexed hereto as ANNEXURE R8/8.

**Allegations regarding dumping of hazardous waste in forest area are misleading.**

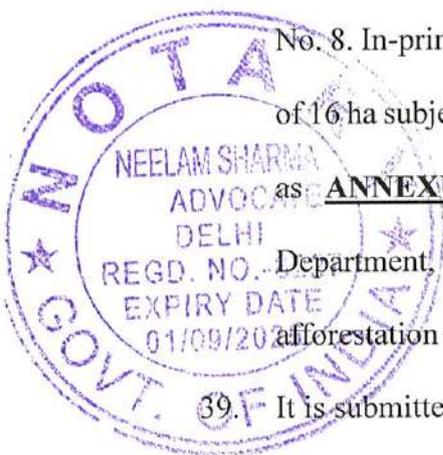
35. The Applicant has alleged that the Respondent No. 8 “*has over the years dumped hazardous solid waste and acidic/acidic wastewater into the compartment No. 596 of Dahej Reserve Forest*” and that the Respondent No. 8 “*has encroached upon the forest land and is using the forest land for dumping copper slag and Phospho-Gypsum without seeking any permission thereby violating provisions of the Forest Conservation Act, 1980*” (Para D of Grounds for Relief @ Pp. 78-79 of Original Application).

36. The following true and correct facts show that the Applicant has once again suppressed complete facts and placed them on record selectively to create a narrative of continued violation.

- (i) The area in question consists of two parts of forest land: 16 ha which stands diverted to the Respondent No. 8 as on date; and 9 ha beyond the boundary wall of the premises of the Respondent No. 8.
- (ii) The issue of dumping of copper slag in forest area is a historical non-compliance for which the Respondent No. 8 has already paid penalty way back in 2013 to the extent of INR. 95 lakhs for the entire area of 25 ha.



- (iii) There is NO current dumping of copper slag or Phospho-Gypsum or waste water or any other waste or by-product in the 16 ha which stands diverted to the Respondent No. 8 or in the 9 ha beyond the boundary wall.
- (iv) The Respondent No. 8 has already removed the copper slag dumped historically in the 16 ha land.
- (v) The Respondent No. 8 is working with the Respondents 3, 4 and 7 to clean up and reforest the area of 9 ha beyond the boundary wall for which it requires permission from the Forest Department.
37. In the year 2007 a complaint was lodged against the Respondent No. 8 for damaging 25 ha of forest land for which penalty of INR 17,84,000/- for afforesting double the measurement of damaged land i.e., 50 ha was recovered from the Respondent No. 8. Internal communication dated 8.2.2010 of the Forest Department, copy of which was marked to the Respondent No. 8 is annexed hereto as ANNEXURE R8/9.
38. Thereafter the Respondent No. 8's application under Section 2 of the Forest (Conservation) Act, 1980, for diversion of 16 ha out of the 25 ha of forest land was allowed subject to deposit of INR 94,20,000/- towards penal compensatory afforestation over 50 ha in the damaged/degraded land. Such compensation has also been duly paid by the Respondent No. 8. In-principle approval dated 21.2.2013 granted by the Respondent No.7 for diversion of 16 ha subject to deposit of penal compensatory afforestation over 50 ha is annexed hereto as ANNEXURE R8/10. Letter dated 22.4.2013 of the Forest and Environment Department, Government of Gujarat confirming deposit of penal compensatory afforestation is annexed hereto as ANNEXURE R8/11.
39. It is submitted that pursuant to diversion of the 16 ha of forest land, the Respondent No. 8 has completely lifted the dumped material from the said area and has restored it. Present day photographs of the 16 ha. land which clearly show that the area has been completely cleaned up upto the boundary wall, are attached as ANNEXURE R8/12. The Respondent No. 8 has also undertaken steps to plant a green cover alongside the boundary wall as required by the Respondent No. 1.
40. On 18.03.2021 the Respondent No. 1 conducted an inspection of the premises and made certain observations. The Respondent No. 8 has taken prompt action pursuant to such observation and the issue stands partially closed. As detailed in the latest response dated



11.11.2021 to the Forest Department, the following action are planned and pending and will be completed in collaboration with wherever their permission is required Respondents 1, 3,4 and 7:

- (i) Plantation alongside the boundary wall.
- (ii) Scraping off of the small amount (approx 300 tons) of copper slag lying beyond the boundary wall.
- (iii) Pumping out the accumulated water in the area so that afforestation may be undertaken.
- (iv) Planting of trees once the area is made suitable for plantation.

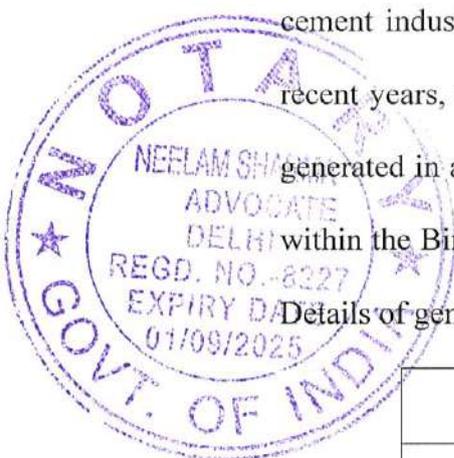
The letters exchanged with Respondents 3, 4 and 7 in this regard are attached as **ANNEXURE R8/13.**

**Storage and 100 % annual disposal of copper slag**

41. The Respondent No. 8 has constructed a dedicated storage yard for copper slag. As Copper Granulated Slag (Copper Slag) is generated from pyrometallurgical process of Primary Smelting in Copper Manufacturing, the same is a high-volume low effect solid waste and is non-hazardous in nature under the Hazardous Waste Rules.
42. It is submitted that copper slag, which is a byproduct of the copper smelting process, is an essential raw material for certain industries. In fact, copper slag is a substitute for sand in the construction industry. The total quantity of copper slag produced by the Respondent No. 8 per day measures approx. 3000 metric ton. The entire quantity of copper slag produced by the Respondent No. 8 in a year is disposed of by supply to *inter-alia*, the cement industry, road/highway construction industry and abrasive products industry. In recent years, the Respondent No. 8 has disposed of more than 100% of the copper slag generated in a year, by supply to other industries, and there is no disposal of copper slag within the Birla Copper unit or outside its premises as wrongly alleged by the Applicant.

Details of generation and dispatch of copper slag in the last two years is as follows:

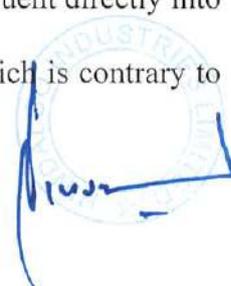
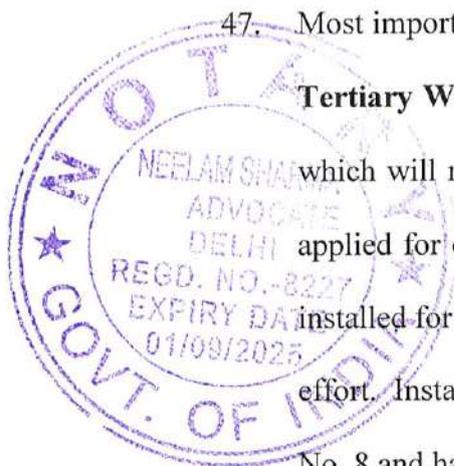
Financial Year	Generation (in metric tons)	Dispatch (in metric tons)
FY-21	488794	492216
FY20	663500	883305
FY19	723105	1302846



43. The Applicant's allegation that the Respondent No. 8 is continuously dumping copper slag in forest area is belied by the records which clearly show that the Respondent No 8 is currently disposing more quantity of copper slag than it produces.

**Scientific treatment of liquid effluent**

44. It is submitted that the liquid effluent from the Smelter I, Sulphuric Acid Plant, Refinery, etc. of the Respondent No. 8 is first treated in two Effluent Treatment Plants ("ETP"): ETP 1, which was installed in the year 1995 and ETP 2, which was installed in the year 2005. The treated effluent from the two ETPs collects temporarily in a lagoon. Until 2008, the treated effluent was discharged from the lagoon into deep sea through a dedicated discharge pipeline in accordance with CTO conditions.
45. The Respondent No. 8 has now installed an additional reverse osmosis plant which further treats the water from the lagoon before it is discharged into the deep sea as per prescribed conditions. The earlier discharge pipeline from the lagoon towards the sea has been disconnected and presently there is only one discharge pipeline from the reverse osmosis plant to the deep sea.
46. In the year 2018, pursuant to certain observations made by the Respondent No. 1 regarding seepage from the lagoon resulting in formation of a pond outside the boundary of the Respondent No. 8, the Respondent No. 8 re-lined the walls of the lagoon with concrete lining after systematically emptying it in two phases.
47. Most importantly, the Respondent No. 8 has completed the construction and erection of a **Tertiary Water Recycling Unit (TWRU)** with an investment of about of INR 60 crores which will recycle the reject from the reverse osmosis plant. The Respondent No. 8 has applied for consent to operate the plant which is awaited. The TWRU has already been installed for the purpose as stated and can be clearly visible to any one willing to make the effort. Installation of the TWRU is a step towards zero discharge ambition of Respondent No. 8 and has been completely suppressed by the Applicant.
48. The Applicant has deliberately painted a false picture of discharge of effluent directly into the deep sea by the Respondent No. 8 and seepage from the lagoon which is contrary to documented facts.



49. That further, the Applicant's allegations that the Respondent No. 8's activities have resulted in destruction of mangroves is patently false. The photographs of the mangroves near the Respondent's No.8's premises which are annexed at ANNEXURE R8/14 speak for themselves.

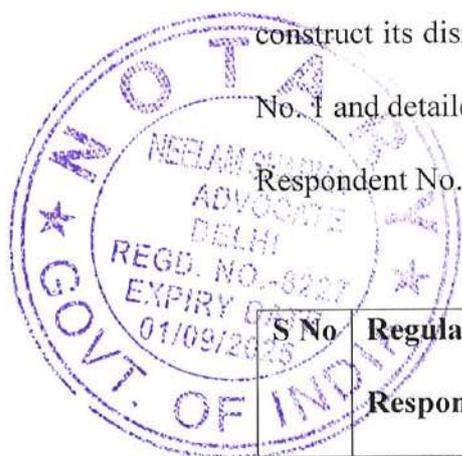
**Upgradation of yards to ensure non-contamination of water:**

50. The Respondent No. 8 has undertaken the following measures at the gypsum yard, and coal yard:

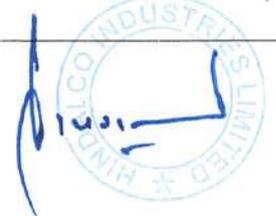
- i) Gypsum Yard: Entire gypsum yard and drains are properly graded and covered with HDPE liner below the surface as well as over; this ensures that there is no leaching in ground water as well as that the rain water is directly taken to storm water drains without impact on water quality.
- ii) Coal yard: Coal yard has multi layered protection system for dust and run off control. Coal storage is covered with tarpaulin, wind screen/barrier structure, water sprinklers & mist canon. The rain water is collected in settling pits before discharge into storm drain. Latest photographs from the coal yard are annexed hereto ANNEXURE R8/15.

51. It is submitted that the Applicant has placed on record various reports of inspections conducted by the Respondent No. 1 from time to time in accordance with its statutory duty but has conveniently suppressed the remedial measures undertaken by the Respondent No. 8 thereafter, under the guidance and supervision of the Respondent No. 1, in order to construct its dismal narrative. Details of various inspection reports issued by Respondent No. 1 and detailed responses furnishing documentary evidence of remedial action taken by Respondent No. 1 are tabulated hereunder:

S No	Regulatory Action taken by Respondent No. 1	Responses and remedial action taken by Respondent No. 8
1.	Inspection Report dated 13.06.2018 was issued by Respondent No. 1 with 11 observations	As detailed in the 1st Reply dated 11.07.2018 and 2 <sup>nd</sup> Reply dated 22.05.2019, all the observations flagged in the Inspection Report

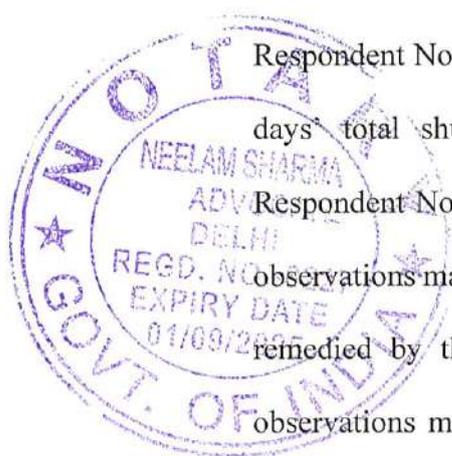


		dated 13.06.2018 stand closed as on 22.05.2019 and supporting documentation was furnished to the Respondent No. 1 regarding remedial measures undertaken. Copy of the Respondent No. 8's reply dated 11.07.2018 are annexed hereto <b><u>ANNEXURE R8/16.</u></b>
2.	Inspection Report dated 14.08.2018 issued by Respondent No. 1 with 1 observation	As stated in the Reply dated 25.08.2018, the observation was immediately addressed and closed and supporting documentation was furnished to the Respondent No. 1 regarding remedial measures undertaken. Copy of the Respondent No. 8's reply dated 25.08.2018 is annexed hereto <b><u>ANNEXURE R8/17.</u></b>
3.	Inspection Report dated 10.08.2019 issued by Respondent No. 1 with 3 observations	As detailed in the 1 <sup>st</sup> Reply dated 12.08.2019, 2 <sup>nd</sup> Reply dated 03.09.2019, all the three observations were addressed and closed and supporting documentation was furnished to the Respondent No. 1 regarding remedial measures undertaken. Copy the Respondent No. 8's reply dated 12.08.2019, 03.09.2019 are annexed hereto <b><u>ANNEXURE R8/18.</u></b>
4.	Two Show Cause Notices dated 24.01.2020 were issued by Respondent No. 1 based on inspections conducted on 19.09.2019 and 09.10.2019 and 06.02.2020	Detailed responses were furnished on 23.09.2019, 11.10.2019, 18.11.2019, 06.02.2020 and observations were addressed. Supporting documentation regarding action taken was furnished to Respondent No. 1. Copies of Show Cause Notice dated 24.01.2020 and replies dated 23.09.2019,



		11.10.2019, 18.11.2019 are annexed hereto as <u>ANNEXURE R8/19.</u>
5.	Notice of Direction dated 02.02.2020 was issued by Respondent No. 1 in relation to disposal of phosphogypsum	Detailed response was furnished on 06.02.2020 addressing the observations and supporting documentation was furnished to Respondent No. 1. Copy of Notice of Direction dated 02.02.2020 and response dated 06.02.2020 is annexed hereto as <u>ANNEXURE R8/20.</u>
6.	Inspection Reports dated 18-20.03.2021 were issued by Respondent No. 1 with 7 observations	Detailed responses were furnished on 31.03.2021, 24.05.2021, 05.08.2021, 17.09.2021. Copies of Inspection Reports dated 18-20.03.2021 and replies dated 31.03.2021, 24.05.2021, 05.08.2021 and 17.09.2021 are annexed hereto as <u>ANNEXURE R8/21.</u>

52. It is submitted that the Applicant's narrative ends after the inspections conducted by the Respondent No. 1 from 18.03.2021 to 21.03.2021 without placing on record the follow up actions undertaken thereafter. The Applicant has once again attempted to paint a picture of continuing violations without remedial actions which is wholly contrary to the truth. It is submitted that during this time when the Respondent No. 1 visited the premises of the Respondent No. 8 for its scheduled inspections, the Respondent No. 8 was undergoing 57 days' total shutdown for the purpose of conducting maintenance activities. The Respondent No. 8 undertakes such maintenance at an interval of 2 ½ years. Most of the observations made by the Respondent No.1 during these inspections were in any case to be remedied by the Respondent No. 8 during its scheduled maintenance activity. The observations made by the Respondent No. 1 and follow up and remedial actions taken pursuant thereto by the Respondent No. 8 are tabulated below for ease of reference.



53. It is submitted that on 8.11.2021 the Respondent No. 1 conducted further follow up inspections when queries relating to the issues of stack emissions, deposit of copper slag beyond the boundary of the Respondent No. 8, waterlogging in the reserved forest area, and details regarding generation and disposal of arsenic waste were raised. The Respondent No. 8 has duly responded to all the queries raised by the Respondent No. 8. Copy of the Respondent No. 1's observations dated 8.11.2021 and Response filed by the Respondent No. 8 on 11.11.2021 are annexed hereto as ANNEXURE R8/22.

54. In view of the submissions made hereinabove it is respectfully submitted that the present Appeal is devoid of merit and therefore deserves to be dismissed with exemplary cost.

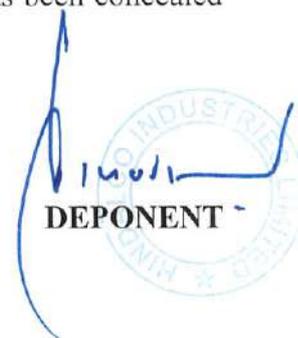
  
DEPONENT

Identify the Deponent who has signed/put T. in my presence

**VERIFICATION**

16 NOV 2021

It is verified on this \_\_\_\_\_ day of November, 2021 at Delhi that the contents of the aforesaid affidavit are true and correct to my knowledge based on records maintained by the answering Respondent, no part of it is false and nothing material has been concealed therefrom.

  
DEPONENT



**ATTESTED**  
NOTARY (Govt. of India)  
Neelam Sharma  
Advocate  
Ch No 165A, Gate No. No.11,  
Patil House Courts,  
New Delhi-110001  
(M: 9899408301)

16 NOV 2021

# ANNEXURE- R8/1

## SECURED LAND FILL



## HIGH COURT OF DELHI: NEW DELHI

## NOTIFICATION

No. 451/Rules/DHC

Dated: 25.11.2010

In exercise of the powers conferred by Section 7 of the Delhi High Court Act, 1996 (Act No.26 of 1966) and all other powers enabling it, and in accordance with the order dated 18.1.2010 of the Supreme Court in Civil Appeal No.1134-1135/2002 titled "State of Uttaranchal Vs. Shri Balwant Singh Chaufla", the Delhi High Court hereby makes the following Rules with respect to Practice & Procedure for the Exercise of Jurisdiction under Article 226/227 of the Constitution of India pertaining to Public Interest Litigation.

## Part I

## Preliminary

1. Short Title: These Rules may be called the 'Delhi High Court (Public Interest Litigation) Rules, 2010'.
2. Commencement: These Rules shall come into force from the date of their notification in the Delhi Gazette Extraordinary Part IV.
3. Definitions: In these rules, unless the context otherwise requires:
  - (a) "High Court" means High Court of Delhi.
  - (b) "Letter Petition" means an informal written communication, addressed to the High Court or Hon'ble the Chief Justice or any Hon'ble Judge of the High Court.
  - (c) "Public Interest Litigation" means a writ petition under Article 226 of the Constitution of India filed as a Public Interest Litigation or a Letter Petition which may be entertained as a Public Interest Litigation under these Rules.
  - (d) "Public Interest Litigation Cell" means a cell created by the Chief Justice for processing Letter Petitions to be placed before the Public Interest Litigation Committee.
  - (e) "Public Interest Litigation Committee" means the Committee consisting of at least two sitting Judges nominated by the Chief Justice.
  - (f) "State" means the State as defined under Article 12 of the Constitution of India.

## a

- (g) "Deputy Registrar" means an officer appointed by the Delhi High Court to the post of Deputy Registrar under the Delhi High Court Establishment (Appointment and Conditions of Service) Rules, 1972.

## Part U

## Letter Petitions

4. Public Interest Litigation Cell: The Hon'ble Chief Justice of the High Court shall by an order constitute a Public Interest Litigation Cell in the High Court which shall be headed by an officer not below the rank of Deputy Registrar.

5. Duty of the Public Interest Litigation Cell: Letter Petitions shall be processed by the Public Interest Litigation Cell for being placed before the Public Interest Litigation Committee.

6. Public Interest Litigation Bench: Without prejudice to the powers of the Chief Justice to mark any matter to any Bench for hearing, the Chief Justice shall constitute a Public Interest Litigation Bench which, subject to any directions to the contrary, shall hear all matters of Public Interest Litigation.

7. Guidelines for screening Letter Petitions: Letter Petitions raising or alluding to matters of Public Interest shall be entertained as Letter Petitions and unless directed by the Public Interest Litigation Committee, Letter Petitions under the following categories shall not be entertained as Public Interest Litigation:

- (i) Landlord-Tenant disputes;
- (ii) Service matters and those pertaining to pension (not being family pension) and gratuity;
- (iii) Personal disputes between individuals.
- (iv) Disputes relating to contractual or statutory liabilities.
- (v) Matrimonial disputes.

8. Processing, screening and listing of Letter Petitions as Public Interest Litigations before the Public Interest Litigation Committee: (a) All Letter Petitions received in the Public Interest Litigations Cell, shall first be processed in the Public Interest Litigation Cell. However, neither any anonymous Letter Petition nor any such Petition from which the identity of the Letter Petitioner cannot be established or ascertained shall be entertained.

(b) Public Interest Litigation Committee, shall take such action, it may consider necessary, on the letter Petitions presented before it.

(c) Once a Letter Petition is approved to be entertained as a Public Interest Litigation Petition, the same shall be placed before the Public Interest Litigation Bench unless otherwise directed by the Chief Justice.

(d) The Public Interest Litigation Cell shall prepare a gist of the Letter Petition in English and the points of public concern raised in the Letter Petition, the replies, if any, received from any department, Addresses of the Government Departments/officials, who may be considered as the necessary or appropriate parties for the decision of the petition and send it for listing.

### **Part ill.**

#### **Filing of Public Interest Litigations**

##### **9. Instructions for filing Public Interest Litigations:**

(i) A writ petition intended to be a Public Interest Litigation shall contain:-

(a) An inscription immediately below the number of the writ petition in the title, namely: 'In The Matter Of A Public Interest Litigation'.

(b) A specific averment in para 1 of the writ petition to the effect that the writ petitioner has no personal interest in the litigation and that the petition is not guided by self-gain or for gain of any other person/institution/body and that there is no motive other than of public interest in filing the writ petition.

(c) A specific averment in para 2 of the writ petition as to the source of knowledge of the facts alleged in the writ petition and the further inquiries/investigation made to determine the veracity of the same.

(d) A specific averment in para 3 of the writ petition specifying the class of persons for whose benefit the petition has been filed and as to how such persons are incapable of accessing the Courts themselves.

(e) A specific averment in para 4 of the writ petition of the persons/bodies/institutions likely to be affected by the orders sought in the writ petition and which/who shall be impleaded as respondents and a further averment that to the knowledge of the petitioner no other persons/bodies/institutions are likely to be affected by the orders sought in the writ petition.

(f) A specific averment in para 5 of the writ petition of the background of the petitioner with qualifications so far as it may be material to show the competence of the petitioner to espouse the cause. If the petitioner is an organization, the names and address of its office bearers and the nature of its activities shall also be stated. An averment shall also be made that the petitioner has the means to pay the costs, if any, imposed by the Court and on an undertaking to the Court in that respect.

(g) In para 6 of the writ petition, details of the representation(s) made to the authorities concerned for remedial actions and replies, if any, received thereto shall be set out precisely.

(h) If the petitioner has previously filed public interest litigation or preferred Letter Petitions, the details thereof would be set out in a tabular form giving the number of the writ petition, the status and outcome thereof.

(i) Pleadings in brief divided into paragraphs setting forth the cause which has given rise to the filing of the writ petition shall be pleaded followed by the grounds in support of the prayer, followed by the prayer clause in the last paragraph giving the precise prayer which the petitioner wants to be granted by the Court.

Proviso: Provided that if the petitioner is unable to provide information for any of the matters above there shall be a specific averment as to the reason why said information is not being provided.

- (ii) Every Public Interest Litigation shall be accompanied by an affidavit as per Proforma 'A' annexed to these Rules.

#### Part IV

10. Inherent Power of the Court not affected. Nothing in these Rules shall be deemed to limit or otherwise affect the inherent power of the Court to make such orders as may be necessary for the ends of justice or to prevent abuse of the process of the Court, including the power to impose exemplary costs and/or to debar a petitioner or an Advocate to file Public Interest Litigation if found to be indulging in frivolous or motivated litigation.

PROFORMA-A

## AFFIDAVIT

I \_\_\_\_\_ aged \_\_\_\_\_ years, s/o \_\_\_\_\_ r/o \_\_\_\_\_ do hereby solemnly affirm and declare as under:

1. That I am the petitioner above named OR I am \_\_\_\_\_ of the petitioner above named. The petitioner is a society / company having its registered office at \_\_\_\_\_ and I have vide resolution passed in the Meeting of the Board of Directors/ General Body/Executive Committee of the petitioner been authorised to institute and sign this petition.
2. I have filed the present petition as a Public Interest Litigation.
3. I have gone through the Delhi High Court (Public Interest Litigation) Rules, 2010 and do hereby affirm that the present Public Interest Litigation is in conformity thereof.
4. I/petitioner have/has no personal interest in the litigation and neither myself nor anybody in whom I am/petitioner is interested would in any manner benefit from the relief sought in the present litigation save as a member of the General Public. This petition is not guided by self-gain or gain of any person, institution, body and there is no motive other than of public interest in filing this petition.
5. I have done whatsoever inquiry/investigation which was in my power to do, to collect all data/material which was available and which was relevant for this court to entertain the present petition. I further confirm that I have not concealed in the present petition any data/material /information which may have enabled this court to form an opinion whether to entertain this petition or not and/or whether to grant any relief or not.

DEPONENT

IN VERIFICATION

\*\*\*\*\*

BY ORDER OF THE COURT  
Sd/-  
(V.P. VAISH)  
REGISTRAR GENERAL

## ANNEXURE-R8/3



केन्द्रीय प्रदूषण नियंत्रण बोर्ड  
CENTRAL POLLUTION CONTROL BOARD  
(पर्यावरण एवं वन मंत्रालय, भारत सरकार)  
(MINISTRY OF ENVIRONMENT & FORESTS, GOVT OF INDIA)

No.B-29012/ESS(CPA)/2015-16/

March 07, 2016

To

The Chairman  
All the State Pollution Control Boards / Pollution Control Committees  
( List Attached)

**SUB: MODIFIED DIRECTIONS UNDER SECTION 18(1)(b) OF THE WATER (PREVENTION & CONTROL OF POLLUTION) ACT, 1974 and THE AIR (PREVENTION & CONTROL OF POLLUTION) ACT, 1981 REGARDING HARMONIZATION OF CLASSIFICATION OF INDUSTRIAL SECTORS UNDER RED/ ORANGE/ GREEN/ WHITE CATEGORIES.**

WHEREAS, under section 16 (2)(b) of the Water (Prevention and Control of Pollution) Act, 1974 and under Section 16 (2)(c) of the Air (Prevention & Control of Pollution) Act, 1981, one of the functions of the Central Pollution Control Board (CPCB), constituted under the Water (Prevention and Control of Pollution) Act, 1974, is to coordinate activities of the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs); and

WHEREAS, under section 16 (2)(c) of the Water (Prevention and Control of Pollution) Act, 1974 and under Section 16 (2)(d) of the Air (Prevention & Control of Pollution) Act, 1981, one of the functions of the CPCB is to provide technical assistance and guidance to SPCBs and PCCs; and

WHEREAS, it was brought to the notice of CPCB, that different SPCBs /PCCs were following different criteria for classification of industrial sectors under Red/Orange/ Green category and that classification was being used by the SPCBs/PCCs for grant of consents to industries and for Inventorization / surveillance of industries.

WHEREAS, the issue regarding classification of industries was deliberated upon in the 56<sup>th</sup> Conference of Chairmen & Member Secretaries of CPCB & SPCBs/PCCs held on August 31, 2010 and a working group comprising of representatives from SPCBs & CPCB was constituted to prepare a consolidated list of industrial sectors falling under Red/Orange/Green category to bring uniformity in classification of industrial sectors across the country;

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032

'Parivesh Bhawan', East Arjun Nagar, Delhi - 110032

दूरभाष/Tel. : 43102030. फॅक्स/Fax : 22305793, 22307078, 22307079, 22301932, 22304948

ई-मेल/e-mail : cpcb@nic.in वेबसाइट/Website : www.cpcb.nic.in

WHEREAS, the report prepared by the Working Group was discussed in the 57<sup>th</sup> Conference of Chairmen & Member Secretaries of CPCB & SPCBs/PCCs held in Delhi on September 15, 2011, wherein some modifications were proposed;

WHEREAS, the final report of the working group was prepared, incorporating the suggestions/observations made in the 57<sup>th</sup> Conference of Chairmen and Member Secretaries of CPCB & SPCBs/PCCs and in exercise of the powers delegated to the Chairman, CPCB under Section 18(1)(b) of the Water Act, 1974, following directions were issued for compliance to all SPCBs/PCCs to maintain uniformity in categorization of industries as red, orange and green as per list finalized by CPCB, which identified 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green':

a). To maintain uniformity in categorization of industries under Red/ Orange/Green category, the SPCBs /PCCs shall adopt the list as finalized by CPCB based on the recommendations of that Working Group for grant of Consent, inventorization of industries under Red, Orange and Green categories and other related activities.

(b). The SPCBs/PCCs shall revise the list of Red, Orange and Green categories of industries operating in their jurisdiction based on the criteria specified in the final report of that Working Group and submit the same to CPCB within 90 days in hard copy as well as soft copy;

WHEREAS, later-on, it was observed that the process of categorization thus far was primarily based on the size of the industries and consumption of resources and pollution due to discharge of emissions and effluents and its likely impact on health was not considered as primary criteria;

WHEREAS, there have been proposals from the SPCBs / PCCs and industrial associations for categorization of the industrial sectors in a more pragmatic manner. The issue was discussed during the national level conference of the Environment Ministers of the States, held in New Delhi during April 06-07, 2015 and also during the Conference of the Chairmen and Member Secretaries of CPCB and SPCBs/PCCs held in New Delhi on April 08, 2015. Accordingly, a 'Working Group' comprising of the Members from Central Pollution Control Board and State Pollution Control Boards representing the States of Andhra Pradesh, Punjab, Tamilnadu, West Bengal, Madhya Pradesh and Maharashtra, was constituted to revisit the criteria of categorization of industries and suggest rationale based on pollution potential for categorization of industrial sectors and adopting it for implementation of pollution control plan;

WHEREAS, the Working Group has developed the criteria of categorization of industrial sectors based on the concept of Pollution Index which is a function of the emissions (air pollutants), effluents (water pollutants), hazardous wastes generated and consumption of resources. For this purpose the references are taken from the the Water (Prevention and Control

of Pollution ) Cess (Amendment) Act, 2003, Standards so far prescribed for various pollutants under Environment (Protection) Act , 1986 and Doon Valley Notification, 1989 issued by MoEFCC. The Pollution Index (PI) of any industrial sector is a number from 0 to 100 and the increasing value of PI denotes the increasing degree of pollution load from the industrial sector;

WHEREAS , based on the series of consultations with SPCBs, different Government / Non-government Institutions including industries and MoEFCC , the following criteria on 'Range of Pollution Index 'for the purpose of categorization of industrial sectors has been finalized:

- o Industrial Sectors having Pollution Index score of 60 and above - Red category
- o Industrial Sectors having Pollution Index score of 41 to 59 -Orange category
- o Industrial Sectors having Pollution Index score of 21 to 40 -Green category
- o Industrial Sectors having Pollution Index score incl. & upto 20 -White category

WHEREAS, based on the revised criteria, the 'Final Report on Revised Categorization of Industrial Sectors under Red/Orange/Green/White' has been evolved. The 'Categorization' is based on the relative pollution potential of the industrial sectors and grouping of the industrial sectors based on the use of raw materials, manufacturing process adopted and pollutants likely to be generated;

WHEREAS, based on relative Pollution Index, the number of industries in various categories are as under :

- i. The Red category of industrial sectors: 60
- ii. The Orange category of industrial sectors: 83
- iii. The Green category of industrial sectors: 63 and
- iv. The Newly introduced White category: 36

WHEREAS, there shall be no necessity of obtaining the Consent to Operate'' for White category of industries and an intimation to concerned SPCB / PCC shall suffice;

WHEREAS, the purpose of categorization is to ensure that the industry is established in a manner consistent with the environmental objectives and to prompt industrial sectors to adopt cleaner technologies, ultimately resulting in generation of no or minimum pollutants.

WHEREAS the new categorization system shall also facilitate in self-assessment by industries;

Now, therefore, in exercise of the powers delegated to the Chairman, CPCB under Section 18(1)(b) of the Water (Prevention & Control of Pollution) Act, 1974 and Section 18(1)(b) of the Air (Prevention & Control of Pollution), Act , 1981 the earlier Directions issued in June 2012 in the context of categorisation of industries as Red, Orange & Green are withdrawn with immediate effect and following 'Directions' are hereby issued for compliance by all SPCBs and PCCs :

1. That the SPCBs and PCCs shall adopt the Revised Criteria of categorization of industrial sectors as detailed in table nos. F1, F2, F3 and F4 and Revised Lists of Red, Orange, Green and White categories of industrial sectors, presented at table no. G2, G3, G4 and G5 respectively, in the 'Final Report' as attached herewith immediately.
2. That all pending applications for consideration of 'Consent to Establish' and 'Consent to Operate' and future such applications shall be processed as per revised criteria.
3. That the SPCBs and PCCs will provide the list of industries identified in each category existing in the State which have been considered for grant of consents. SPCBs/PCCs will forward the list of such industries before 31.05.2016 and the same will be uploaded on the websites of respective SPCB/PCC.
4. That the 'Revised Lists of Red, Orange, Green and White category of industrial sectors' shall be used by the SPCBs and PCCs for Consent Management and inventorization of industries under Red, Orange, Green and White categories. Siting of industries shall be only in conforming areas. SPCBs / PCCs shall evolve sector specific plans for control of pollution and industrial surveillance for verifying compliance.
5. That the SPCBs and PCCs shall revise /prepare the inventory of Red, Orange, Green and White categories of industries operating in their jurisdiction based on the revised criteria specified in the Final Report and submit the same to CPCB within 90 days i.e., before 30.05.2016 in hard copy as well as soft copy.
6. That the listed category of industries or those identified later-on under different categories shall not be linked to sanction of loan /finance or bank proceedings.
7. That any further addition of any new or left-over industrial sector and their categorization which is not listed in the revised list of Red, Orange, Green and White industrial sectors, shall be done at the level of concerned SPCB /PCC following revised criteria & guidelines as detailed in the attached document and no concurrence of CPCB shall normally be required. It is further clarified that while categorizing the industries, fractional numbers shall be rounded off to nearest integer.

The SPCBs/PCCs shall acknowledge the receipt of directions and submit the 'Action Taken Report' in compliance with these directions to CPCB before 15.04.2016.

(Arun Kumar Mehta)  
Chairman  
7/3/16

Copy to:

1. The Chief Secretary of all the States and UTs
2. The Secretary ,  
Ministry of Micro, Small and Medium Entrepreneurs  
Udyog Bhawan, Rafi Marg, New Delhi - 110 011
3. The Secretary ,  
Ministry of Heavy Industries  
Udyog Bhawan, Rafi Marg, New Delhi - 110 011
4. The Secretary,  
Ministry of New and Renewable Energy  
Block-14, CGO Complex,  
Lodhi Road, New Delhi-110 003,
5. The Advisor(CP Division)  
Ministry of Environment ,Forests and Climate Change  
Indira Paryavaran Bhawan  
Jor Bagh Road, New Delhi - 110 003
6. All Zonal Offices of CPCB

(A. B. Akolkar) 7.3.16  
Member Secretary

Final Document  
on  
Revised  
Classification  
of  
Industrial Sectors  
Under

**Red, Orange, Green and White Categories**  
(February 29, 2016)



**Central Pollution Control Board**  
Delhi

## Executive Summary

### Categorization of Industrial Sectors under Red, Orange, Green and White Category

The Ministry of Environment, Forest and Climate Change (MoEFCC) had brought out notifications in 1989, with the purpose of prohibition/ restriction of operations of certain industries to protect ecologically sensitive Doon Valley. The notification introduced the concept of categorization of industries as "Red", "Orange" and "Green" with the purpose of facilitating decisions related to location of these industries. Subsequently, the application of this concept was extended in other parts of the country not only for the purpose of location of industries, but also for the purpose of Consent management and formulation of norms related to surveillance / inspection of industries.

The concept of categorization of industries continued to evolve and as different State Pollution Control Boards interpreted it differently, a need arose to bring about necessary uniformity in its application across the country. In order to harmonize the 'Criteria of categorization', Directions were issued by CPCB under Section 18(1)(b) of the Water (Prevention & Control of Pollution), Act, 1974 to all SPCBs/PCCs to maintain uniformity in categorization of industries as red, green and orange as per list finalized by CPCB, which identified 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green'.

The process of categorization thus far was primarily based on the size of the industries and consumption of resources. The pollution due to discharge of emissions & effluents and its likely impact on health was not considered as primary criteria. There was demand from the SPCBs / PCCs and industrial associations for categorization of the industrial sectors in a more transparent manner. Accordingly, the issue was discussed thoroughly during the national level conference of the Environment Ministers of the States, held in New Delhi during April 06-07, 2015 and a 'Working Group' comprising of the members from CPCB, APPCB, TNPCB, WBPCB, PPCB, MPPCB and Maharashtra PCB is constituted to revisit the criteria of categorization of industries and recommend measures for making the system transparent and rational.

The Working Group has developed the criteria of categorization of industrial sectors based on the Pollution Index which is a function of the emissions (air pollutants), effluents (water pollutants), hazardous wastes generated and consumption of resources. For this purpose the references are taken from the the Water (Prevention and Control of Pollution) Cess (Amendment) Act, 2003, Standards so far prescribed for various pollutants under Environment (Protection) Act, 1986 and Doon Valley Notification, 1989 issued by MoEFCC. The Pollution Index PI of any industrial sector is a number from 0 to 100 and the increasing value of PI denotes the increasing degree of pollution load from the industrial sector. Based on the series of brain storming sessions among CPCB, SPCBs and MoEFCC, the following criteria on 'Range of Pollution Index' for the purpose of categorization of industrial sectors is finalized.

- |   |                  |
|---|------------------|
| ○ Industrial Sectors having Pollution Index score of 60 and above | - Red category   |
| ○ Industrial Sectors having Pollution Index score of 41 to 59     | -Orange category |
| ○ Industrial Sectors having Pollution Index score of 21 to 40     | -Green category  |
| ○ Industrial Sectors having Pollution Index score incl.&upto 20   | -White category  |

The newly introduced White category of industries pertains to those industrial sectors which are practically non-polluting such as Biscuit trays etc. from rolled PVC sheet (using automatic vacuum forming machines), Cotton and woolen hosiers making (Dry process only without any dyeing/washing operation), Electric lamp (bulb) and CFL manufacturing by assembling only, Scientific and mathematical instrument manufacturing, Solar power generation through photovoltaic cell, wind power and mini hydel power (less than 25 MW).

The salient features of the 'Re-categorization' Exercise are as follows :

- Due importance has been given to relative pollution potential of the industrial sectors based on scientific criteria . Further, wherever possible, splitting of the industrial sectors is also considered based on the use of raw materials, manufacturing process adopted and in-turn pollutants expected to be generated.
- The Red category of industrial sectors would be 60.
- The Orange category of industrial sectors would be 83.
- The Green category of industrial sectors would be 63.
- Newly introduced White category contains 36 industrial sectors which are practically non-polluting.
- There shall be no necessity of obtaining the Consent to Operate'' for White category of industries. An intimation to concerned SPCB / PCC shall suffice.
- No Red category of industries shall normally be permitted in the ecologically fragile area / protected area.

The purpose of categorization is to ensure that the industry is established in a manner which is consistent with the environmental objectives. The new criteria will prompt industrial sectors willing to adopt cleaner technologies, ultimately resulting in generation of fewer pollutants. Another feature of the new categorization system lies in facilitating self-assessment by industries as the subjectivity of earlier assessment has been eliminated. This 'Re-categorization' is a part of the efforts, policies and objective of present government to create a clean & transparent working environment in the country and promote the Ease of Doing Business.

Other similar efforts include installation of Continuous Online Emissions/ Effluent Monitoring Systems in the polluting industries, Revisiting of the CEPI (Comprehensive Environment Pollution Index) concept for assessment of polluted industrial clusters, Revision of existing industrial Emission/Effluent discharge standards, initiation of special drive on pollution control activities in Ganga River basin and many more in coming future.

## Revised Criteria of Categorization of Industries

“Securing industrial pollution control in accordance with the Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 by linking with categorization of industries, consent management and vigilance – ‘In context of Red, Orange, Green and White categories of industries’”

### A: Genesis of Categorization:

- The Ministry of Environment, Forest and Climate Change (MoEFCC) had brought out notifications, which inter-alia refers to Prohibition/ Restriction on operation of industries to protect ecologically sensitive areas or areas of specific importance. This has for the first time brought the concept of categorization of industries to “Red”, “Orange” and “Green” and restrict their operation in certain areas of importance. Therefore, it is at-once interpreted that Red, Orange and Green categorization is linked with location specific needs.
- The notification of MoEF was first brought on 2<sup>nd</sup> February, 1989 in case of “Restriction on location of industries, mining operations and other developmental activities in Doon Valley in “Uttarakhand” and thereafter another notification on 24<sup>th</sup> February 1999 regarding restriction on the setting up of industries in Dahanu Taluka in Maharashtra. The categorization had been made mainly on the basis of size of the industries, man power and consumption of resources.
- However, in other parts of the country, there have been variations in context to the classification of industries under Red, Orange and Green categories. SPCBs / PCCs were following their own criteria in different States thereby creating confusion.
- In order to harmonize the ‘Criteria of categorization’, a ‘Working Group’ was formed as per resolution passed during the 57<sup>th</sup> Conference of the Chairmen & Member Secretaries of CPCB and SPCBs. Based on the recommendations of the Working Group, Directions dated 4/6/2012 under Section 18(1)(b) of the Water

(Prevention & Control of Pollution), Act, 1974 were issued to all SPCBs/PCCs with the effects to maintain uniformity in categorization of industries as red, green and orange as per list finalized by the Working Group. This indicative list included 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green'. However, these identified categories have not been assigned with scores as per existing criteria/ or any new criteria

**B: Categorization criteria used by SPCBs/PCCs:**

SPCBs and PCCs use the criteria of Red, Orange and Green categories for consent management and vigilance purposes for carrying out inspections to verify compliance to the stipulated standards. However the above categorization do not emphasize on sector-specific plan for control of pollution in accordance with priority based on pollution index.

**C: Gap in the process:**

1. The categorization has been made mainly on the basis of size of the industries and consumption of resources. The pollution due to discharge of emissions & effluents and its impact on health was not considered as primary criteria.
2. Categorization was on random basis, no scoring system was adopted.

**D: Resolutions made during National Level Conferences**

The issue was discussed thoroughly during the following national level conferences held in New Delhi:

- Conference of the Environment Ministers of Central Government and State Governments during April 06-07, 2015
- 59<sup>th</sup> Conference of Chairmen & Member Secretaries of Pollution Control Boards / Pollution Control Committees held on April 08, 2015

Accordingly following resolutions were made during the Conferences:

1. A 'Working Group' comprising of the members from CPCB, APPCB, TNPCB, WBPCB, PPCB, MPPCB and Maharashtra PCB is constituted.
2. This WG shall revisit the categorization of industries that is based on pollution index criteria & environmental issues such as generation of emission, effluent and hazardous wastes.
3. The categorization will be done on the basis of composite score (0-100 marks) of Pollution Index given in accordance with the following weightage.

Air Pollution Score based on parameters namely PM, CO, NO <sub>x</sub> , SO <sub>x</sub> , HMs, Benzene, Ammonia and other toxic parameters relevant to the industry.	40 Marks
Water Pollution Score based on parameters namely pH, TSS, NH <sub>3</sub> -N, BOD, Phenol and other toxic pollutants relevant to the industry.	40 Marks
Hazardous wastes (land fillable, incinerable, recyclable) as generated by the industry.	20 Marks
<p>Note :</p> <ul style="list-style-type: none"> <li>• Parameters to be decided on the basis of the nature of the wastes generating from the industrial sector.</li> <li>• Industries having only either water pollution or air pollution, the score will be normalized wrt 100.</li> </ul>	

4. Based on the score of the Pollution Index, following categorization be made :
  - Type of industries, if scores 60 and above be categorized as Red
  - Type of industries, if scores from 30 to 59 be categorized as Orange
  - Type of industries, if scores from 15 to 29 be categorized as Green
  - Type of industries, if less than 15 be categorized as White or non-polluting industry.
5. SPCBs/PCCs may issue consent to the industries
  - Red category of industries for 5 years.
  - Orange category of industries for 10 years.
  - Green category of industries for 15 years.
  - No necessity of consent for non-polluting industries.
6. No red categories of industries will be permitted to establish in eco-sensitive areas and protected areas.

### **E: Follow-up Actions made on the Resolutions :-**

- Accordingly, a Committee comprising the Chairmen of CPCB, APPCB, TNPCB, MPPCB, MPCB, PPCB, WBPCB and MS, CPCB was constituted vide CPCB OM dated

23.04.2015 to review & classify industrial sectors into different categories based on criteria of respective pollution potential.

- The categorization is made on the basis of following:
  - Quality of emissions (air pollutants) generated
  - Quality of effluents ( water pollutants) generated
  - Types of hazardous wastes generated
  - Consumption of resources
  
- Reference is taken from the following :
  - The Water (Prevention and Control of Pollution ) Cess Act, 1977
  - Standards so far prescribed for various pollutants under the Environment (Protection) Act , 1986
  - Doon Valley Notification, 1989 issued by MoEF.

#### **F : Scoring Methodology :**

The details on the scoring methodology in respect of the aforesaid 3 components is presented in the following tables F-1 to F-4 .

**Table F-1 : Water Pollution Scoring Methodology**

Sl. No.	Activity / Types of Discharges	Score
Part A : Score W1 : Score based on types of expected criteria water-pollutants present in industrial processes waste waters. <b>Maximum of the following seven categories is to be taken.</b>		
W11	Waste-water which is polluted and the pollutants are - <ul style="list-style-type: none"> <li>• not easily biodegradable ( very high strength waste waters having BOD &gt; 5000 mg/l ); or</li> <li>• toxic; or</li> <li>• both toxic and not easily biodegradable.</li> </ul> (Presence of criteria water pollutants having prescribed standard limits up-to 10 mg/l or having BOD > 5000 mg/l). For details appendix 1 may be referred)	30
W12	Non-toxic high strength polluted waste-water having BOD in the range of 1000-5000 mg/l and the pollutants are biodegradable. <p>(Presence of criteria water pollutants having prescribed standard limits from 11 mg/l to 250 mg/l and having BOD strength in the range of 1000-5000 mg/l) . For details appendix 1 may be referred)</p>	25
W13	Non toxic- polluted waste-water having BOD below 1000 mg/l and the pollutants are easily biodegradable. <p>(Presence of criteria water pollutants having prescribed standard limits from 11mg/l to 250 mg/l and having BOD strength below 1000 mg/l) . For details appendix 1 may be referred)</p>	20
W14	Waste-water generated from the chemical processes and which is polluted due to presence of high TDS ( total dissolved solids) of inorganic nature. <p>(Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)</p>	15
W15	Waste-water generated from the physical unit operations / processes and which is polluted due to presence of TDS (total dissolved solids) of inorganic nature and of natural origin like fresh-water RO rejects, boiler blow-downs, brine solution rejects etc. <p>(Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)</p>	12
W16	Non-toxic polluted waste-water from those units which are: <ul style="list-style-type: none"> <li>• Having the overall waste-water generation less than 10 KLD and</li> <li>• The pollutants are easily bio-degradable having BOD below 200 mg/l which can be easily treated in a single stage ASP (activated</li> </ul>	12

	sludge process) based Effluent Treatment Plant. Note : This is a special category and is applicable to only those units having over-all liquid waste generation less than 10 KLD with low strength organic load.	
W17	Waste-water from cooling towers and cooling-re-circulation processes	10
Part B : Score W2 : Score based on huge discharges of any kind (Penalty Clause)		
W2	Industry having overall liquid waste generation of 100 KLD or more including industrial & domestic waste-water.	10
Overall Water Pollution Score $W = W1+W2$		

## Appendix 1

- **Water Pollutants covered under Group W11:**
  - ✓ Free available Chlorine , Total residual chlorine, Fluoride (as F), Sulphide (as S), Free Ammonical Nitrogen, Dissolved phosphates (as P), Free ammonia (as NH<sub>3</sub>), Nitrate Nitrogen, Mercury (As Hg), Selenium (as Se), Hexa-valent chromium (as Cr + 6), Lead (as Pb), Tin , Vanadium (as V), Cadmium (as Cd), Manganese (as Mn), Total chromium (as Cr), Copper (as Cu), Iron (as Fe), Nickel (as Ni), Zinc (as Zn), Benzene, Arsenic (as As), Benzo-a-pyrene, Cyanide (as CN), Phenolic compounds (as C<sub>6</sub>H<sub>5</sub>OH) , Adsorbable Organic Halogens (AOX), Boron and /or
  - ✓ BOD strength of waste water > 5000 mg/l
- **Water Pollutants covered under Group W12:**
  - ✓ Sodium Absorption Ratio (SAR) , Biochemical oxygen demand (3 days at 27°C), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand, Oils & grease and
  - ✓ BOD strength of waste water is in the range of 1000-5000 mg/l
- **Water Pollutants covered under Group W13:**
  - ✓ Sodium Absorption Ratio (SAR), Biochemical oxygen demand (3 days at 27°C), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand and
  - ✓ BOD strength of waste water is below 1000 mg/l
- **Water Pollutants covered under Group W14 and W15:**

Chlorides as Cl, Colour , Total dissolved solids (TDS - Inorganic)
- **Water Pollutants covered under Group W16**
  - ✓ BOD strength of waste water is below 200 mg/l and overall discharge is less than 10 KLD.

Table F-2 : Air Pollution Score

Sl. No.	Air Pollutants Group	'Range of Prescribed Standard' of criteria pollutants	Marks
Part 1 : Score A1 = Score based on types of expected criteria Air Pollutants present in the emissions . Maximum of the following seven categories is to be taken. For details appendix 2 may be referred.			
1	Group A1A	Presence of criteria air pollutants having prescribed standard limits up to 2 mg/Nm <sup>3</sup>	30
2	Group A1B	Presence of criteria air pollutants having prescribed standard from 3 to 10 mg/Nm <sup>3</sup>	25
3	Group A1C	Presence of criteria air pollutants having prescribed standard from 11 to 50 mg/Nm <sup>3</sup>	20
4	Group A1D	Presence of criteria air pollutants having prescribed standard from 51 to 250 mg/Nm <sup>3</sup>	15
5	Group A1E	Presence of criteria air pollutants having prescribed standard from 251 mg/Nm <sup>3</sup> & above.	10
6	Group A1F	<ul style="list-style-type: none"> <li>• Generation of fugitive emissions of Particulate Matters which are: <ul style="list-style-type: none"> <li>○ Not generated as a result of combustion of any kind of fossil-fuel.</li> <li>○ Generated due to handling / processing of materials without involving the use of any kind of chemicals.</li> <li>○ Which can be easily contained / controlled with simple conventional methods</li> </ul> </li> </ul>	10
7	Group A1G	<ul style="list-style-type: none"> <li>• Generation of Odours which are : <ul style="list-style-type: none"> <li>○ Generated due to application of binding gums / cements / adhesives / enamels</li> <li>○ Which can be easily contained / controlled with simple conventional methods</li> </ul> </li> </ul>	10
Part 2 : Score A2 = Score based on consumption of fuels and technologies required for air pollution control :			
6	Group A2F1	<ul style="list-style-type: none"> <li>• All such industries in which the daily consumption of coal/fuel is more than 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled only with high level equipments / technology like ESPs, Bag House Filters, High Efficiency chemical wet scrubbers etc.</li> </ul>	10
7	Group A2F2	<ul style="list-style-type: none"> <li>• All such industries in which the daily consumption of coal/fuel is from 12 MT/day to 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled with suitable proven technology.</li> </ul>	5
Overall Air Pollution Score - A = A1 + A2			

## Appendix 2

- **Air pollutants covered under Group A1A:**  
Cd+Th, Dioxins & Furans, Mercury, Asbestos
- **Air Pollutants covered under Group A1B:**  
HF, Nickel+ Vanadium, HBr, Manganese, Lead, H<sub>2</sub>S, P<sub>2</sub>O<sub>5</sub> as H<sub>3</sub>PO<sub>4</sub>
- **Air Pollutants covered under Group A1C:**  
Chlorine, Pesticide compounds, CH<sub>3</sub>Cl, TOC, Total Fluoride, Hydrocarbons, NH<sub>3</sub>, HCL vapour & Mist, H<sub>2</sub>SO<sub>4</sub> Mist, SO<sub>2</sub>
- **Air Pollutants covered under Group A1D:**  
CO, PM, CO, NO<sub>x</sub>
- **Air Pollutants covered under Group A1E:**  
NO<sub>x</sub> with liquid-fuel, SO<sub>2</sub> with liquid-fuel

**Table F-3: Hazardous Waste Generation Score**

Sl.No.	Types of Hazardous Waste Generated as per Schedule 1 / Schedule 2 of Hazardous Waste ( Management, Handling & Trans-boundary Movement) Rules , 2008 . <b>Maximum of the following four categories is to be taken</b>	Score
HW1	<ul style="list-style-type: none"> <li>• Land disposable HW which require special care &amp; treatment for stabilization before disposal.</li> </ul>	20
HW2	<ul style="list-style-type: none"> <li>• Incinerable HW</li> </ul>	15
HW3	<ul style="list-style-type: none"> <li>• Land disposable HW which doesn't require treatment &amp; stabilization before disposal.</li> <li>• High volume low effect wastes such as fly-ash, phspho-gypsum, red-mud, slags from pyro-metallurgical operations, mine tailings and ore beneficiation rejects)</li> </ul>	10
HW4	<ul style="list-style-type: none"> <li>• Recyclable HW, which are easily recyclable with proven technologies.</li> </ul>	10

**Table F-4 : Calculation Sheet**  
Industrial Sector - .....

1. Water Pollution Score (W)			
Scores	Waste Water Category	Value	
Score on W1			
Score on W2			
Water Pollution Score = W1+W2			
2. Air Pollution Score (A)			
Scores	Air Pollutant Category	Value	
Score on A1			
Score on A2	-	-	
Air Pollution Score = A1+A2			
3. Hazardous Waste Score (HW)			
Score	HW Category	Value	
HW			
Grand Total = W + A + HW			

Note :

- Any of the industrial sector having only either air pollution (A) or water pollution (W) , the score will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times W \text{ ( or A)}\} / 40$$

- Any of the industrial sector having air pollution (A) and water pollution (W) both but no hazardous waste generation (H) , the joint score of air & water pollution will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times (W+A)\} / 80$$

- Any of the industrial sector having air pollution (A) & hazardous waste generation (H) but no water pollution (W), the joint score of air pollution & hazardous waste generation will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times (A+H)\} / 60$$

- Any of the industrial sector having water pollution (W) and hazardous waste generation (H) but no air pollution (A), the joint score of water pollution & hazardous waste generation will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times (W+H)\} / 60$$

## G : Developments :

- i. The existing Red ( 85 sectors) , Orange ( 73 sectors) and Green ( 86 sectors) i.e a total of 244 industrial sectors have been assessed as per the proposed formula by the Working Group. For this purpose, concerned Engineers / Scientists from the Member SPCBs were also involved & consulted during May 28-29, 2015.
- ii. After careful examination and consideration of the suggestions of concerned stake-holders the “Draft Document on Revised Concept of Categorization of Industrial Sectors “ was prepared by the Committee and circulated to all the SPCBs, PCCs and concerned Ministries for their information & comments. The ‘ Draft Document ’ was uploaded on the website of CPCB also for information & comments of one & all.
- iii. The matter was discussed during the 170<sup>th</sup> Board Meeting also and issues raised by the Board Members pertaining to some of the industrial sectors were clarified.
- iv. Responses were received from various concerned Ministries, SPCBs, Industrial Associations including individuals.
- v. Based on the above, final meeting was convened by the Secretary , MoEFCC with CPCB and senior officers of MoEFCC on January 06, 2016 to resolve the issues appropriately and finalize the ‘Re-categorization’. Accordingly , following modifications in the ‘Range of Pollution Index ‘for the purpose of categorization of industrial sectors were suggested :
  - Industrial Sectors having Pollution Index score of 60 and above – Red category
  - Industrial Sectors having Pollution Index score of 41 to 59 –Orange category
  - Industrial Sectors having Pollution Index score of 21 to 40 –Green category
  - Industrial Sectors having Pollution Index score incl.& upto 20 –White category
- vi. Based on the final criteria as described in v above , the final categorization is as follows :

Category of Industrial Sector	Existing Categorization	Proposed (New) categorization
Red	85	60
Orange	73	83
Green	86	63
White	---	36
Total	244	242

- vii. In the proposed categorization, some of the industrial sectors have been either deleted due to duplication or merged with similar type of sectors on account of same

characteristics of pollution generation. In a similar way, some of the industrial sectors are split into more sectors on account of variation in the raw materials / manufacturing process. As a result final totals of the existing and proposed categorization are different.

- viii. The industrial sector which doesn't fall under any of the above four categories ( Red, Orange, Green and White) , decision with regard to its categorization will be taken at the level of concerned SPCB/PCC by a committee headed by the Member Secretary , SPCB/PCC and comprising of two senior cadre Engineers / Scientists of the SPCB / PCC in accordance with the scoring-criteria specified in this document.
- ix. The summary is presented in the following Table G-1 and final lists of Red, Orange, Green and White categories of industries are presented in Tables G-2, G-3, G-4 and G-5 respectively, which are self explanatory.

Table G-1: Final Summary Table Red , Orange, Green and White Categories of Industries (16-01-16)

Sl No.	Original Categorization	Initial Nos.	Addition by Splitting into further classes	Deletion/ Shifting to foot-note due to vague term / Merger / other reasons	Re-categorization to Red	Re-categorization to Orange	Re-categorization to Green	Re-categorization to White	Check
					1	2	3	4	5
1	Red	85	11	7	60	26	3	Nil	96=96
2	Orange	73	2	3	Nil	51	19	2	75=75
3	Green	86	Nil	3+2=5	Nil	6	41	34	86=86
<b>Final Categorization</b>		244	13	15	<b>60 (Red )</b>	<b>83 (Orange)</b>	<b>63 (Green)</b>	<b>36 (White)</b>	<b>257 =257 (Total categories including in foot-note)</b>

Table G-2 : Final List of Red Category of Industrial Sectors

Sl No.	Orgnl Sl.No	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category	REMARKS
1.	38	Isolated storage of hazardous chemicals (as per schedule of manufacturing, storage of hazardous chemicals rules ,1989 as amended)									R-R	As per provisions of Rules, to be kept under Red category especially for safety purposes.
2.	4	Automobile Manufacturing (integrated facilities)	30	-	30	20	-	20	10	60	R-R	i. Such types of plants are having either one or combinations of polluting activities viz. washing, metal surface finishing operations, pickling, plating, electro-plating , phosphating, painting , heat treatment etc. ii. Some of such plants may outsource some /all of the polluting activities. In such cases, after thorough inspection of such units by concerned SPCB, re-categorization of the industry shall be made accordingly.
3.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Spent cleared metal catalyst containing copper,, Spent cleared metal catalyst containing zinc,,	30	-	30	20	-	20	10	60	R-R	All the three types of pollutants are expected.
4.	44	Manufacturing of lubricating oils ,grease and petroleum based products	20	-	20	20	-	20	20	60	R-R	Generates all sorts of pollution.
5.	66 E	DG Set of capacity > 5 MVA	-	-	-	20	5	25	-	62.5	R-R	i. Mainly air polluting. ii. DG sets consume the diesel @ 0.21 litres/hr/KVA at full load. iii. Average running is taken @ 12 hrs / day although many of the DG sets run for more than this period.
6.	31	Industrial carbon including electrodes and graphite blocks, activated carbon, carbon black	10	-	-	20	5	25	10	62.5	R-R	Mainly air polluting. Air pollution score is normalized to 100.

7.	39	Lead acid battery manufacturing(excluding assembling and charging of lead-acid battery in micro scale)	10	-	10	25	-	25	10	62.5	R-R	<ul style="list-style-type: none"> <li>i. Mainly air polluting. Air pollution scores are normalized to 100.</li> <li>ii. Lead Acid Battery manufacturing consists of various stages which broadly involve (after producing or receiving lead oxide): Paste Mixing , Grid Casting , Grid Pasting &amp; Curing , Hydro-setting, parting &amp; enveloping , Stacking, grouping &amp; inter-cell welding ,Formation.</li> <li>iii. Exposure of workmen to lead during all or any of the processes outlined above exceeds the prescribed standards if appropriate equipment in this respect is not installed at any Battery Manufacturing Unit.</li> <li>iv. All of the above processes, some more than others, involve release of lead particles or fumes into the environment. Pollution from the above processes can be grouped into two possible types, viz: (a) Lead Oxide becomes airborne and there is Particulate Pollution (b) Fumes are generated and there is Gaseous Pollution</li> </ul>
8.	62	Phosphate rock processing plant	30	-	30	20	-	20	-	62.5	R-R	<ul style="list-style-type: none"> <li>i. The separation of phosphate rock from impurities and non-phosphate materials for use in fertilizer manufacture consists of beneficiation, drying or calcining at some operations, and grinding. Phosphate rock from the mines is first sent to beneficiation units to separate sand and clay and to remove impurities. Steps used in beneficiation depend on the type of rock.</li> <li>ii. The water &amp; air pollution scores are normalized to 100.</li> </ul>

9.	66	Power generation plant [except Wind and Solar renewable power plants of all capacities and Mini Hydel power plant of capacity <25MW]	10	-	10	15	10	25		62.5	R-R	1. Mainly air polluting. It uses a mixture of biomass (agro based) and coal ( < 10 %) as a fuel. Almost, round the year operation. 2. In case of DG sets of 5 MVA & more and emissions of SO2 will take place due to use of liquid fuel. Air pollution score will be =20 + 10 = 30, Normalized score will be 75. 3. In case of 'Waste to Energy Plants' , water will be used for cooling and air score will be - 30+10 = 40.
10.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Spent catalyst containing nickel, cadmium, Zinc, copper, arsenic, vanadium and cobalt,	30	-	30	25	-	25	10	65	R-R	All the three types of pollutants are expected.
11.	67	Processes involving chlorinated hydrocarbons	30	-	30	20	-	20	15	65	R-R	Chlorinated hydrocarbons are used in the manufacture of insecticides, pesticides and organo chloro pesticides. Effluents & emissions are toxic in nature.
12.	74	Sugar ( excluding Khandsari)	20	10	30	15	10	25	10	65	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Sugar mills generate all sorts of pollution problems.
13.	22	Fibre glass production and processing (excluding moulding)	-	-	-	20	-	20	20	67	R-R	i. The use of styrene in most methods of fiberglass production causes hazardous air pollution that is harmful to breathe at excessive levels. ii. It is mainly air polluting & HW generating industry. The air pollution & HW scores are normalized to 100. iii. In case of lead containing glass, the score of A1 will be 25 and final normalized score will be 75 and shall be categorized as Red.
14.	23	Fire crackers manufacturing and bulk storage facilities	-	-	-	20	-	20	20	67	R-R	i. This is the normalized score based on air pollution & HW generation. ii. Various hazardous chemicals are used in the manufacturing process. iii. These chemicals are namely Potassium Nitrate , Potassium per-chlorate, Barium Nitrate, Aluminium compounds, Copper Chloride etc.

												iv. These chemicals are highly hazardous and cause serious diseases among the workers. especially ability of blood to carry oxygen leading to headaches, methemoglobinemia and kidney problems , skin problems, thyroid metal fume etc.
15.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Dismantlers Recycling Plants -- Components of waste electrical and electronic assembles comprising accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.	-	-	-	30	0	30	10	67	R-R	Mainly air polluting and hazardous waste generating. Air & HW pollution scores are jointly normalized to 100.
16.	47	Milk processes and dairy products(integrated project)	20	10	30	20	5	25	-	68.75	R-R	i. Water as well as air polluting due to use of boilers. ii. Water & air pollution scores are normalized to 100.
17.	63	Phosphorous and its compounds	30	-	30	25	-	25	-	68.75	R-R	Water pollution & air pollution containing compounds of phosphorous are expected
18.	61	Pulp & Paper ( waste paper based without bleaching process to manufacture Kraft paper)	20	10	30	15	10	25	0	68.75	R-R	Mainly water & air polluting . Water & air pollution scores are normalized to 100.
19.	13	Coke making , liquefaction, coal tar distillation or fuel gas making	30	-	30	20	-	20	20	70	R-R	It is a kind of petrochemical industry.

20.	41	Manufacturing of explosives, detonators, fuses including management and handling activities	30	-	30	20	-	20	20	70	R-R	<ul style="list-style-type: none"> <li>i. Explosives manufacture and use contribute some measure of hazardous waste to the environment.</li> <li>ii. Nitroglycerin produces several toxic byproducts such as acids, caustics, and oils contaminated with heavy metals. These must be disposed of properly by neutralization or stabilization and transported to a hazardous waste landfill.</li> <li>iii. The use of explosives creates large amounts of dust and particulate from the explosion, and, in some cases, releases asbestos, <b>lead</b>, and other hazardous materials into the atmosphere.</li> </ul>
21.	45	Manufacturing of paints varnishes, pigments and intermediate (excluding blending/mixing)	30	-	30	25	-	25	15	70	R-R	<ul style="list-style-type: none"> <li>i. The process may cause considerable emissions of volatile organic compounds (VOC). VOC contribute to the creation of ozone in the lower layers of the atmosphere (photochemical air pollution) and can present danger to health.</li> <li>ii. Dust and odour may also be a problem.</li> <li>iii. Washing of vessels will contribute waste-waters.</li> <li>iv. Large quantity of HWs are also produced.</li> </ul>
22.	56	Organic Chemicals manufacturing	30	-	30	20	-	50	20	70	R-R	Such types of industrial sectors generate all sorts of pollution.
23.	1	Airports and Commercial Air Strips	20	10	30	-	-	-	10	75	R-R	<ul style="list-style-type: none"> <li>i. The Airports are generating mainly the waste-waters.</li> <li>ii. This is the water pollution normalized score for airports having discharge more than 100 KLD.</li> <li>iii. The airports / strips having discharge less than 100 KLD will have score of 50 and hence orange category.</li> <li>iv. If the score is normalized wrt water + HW both, then all the airports will come under Orange category (score - 58.33).</li> </ul>
24.	3	Asbestos and asbestos based industries	-	-	-	30	-	30	10	75	R-R	<ul style="list-style-type: none"> <li>i. This is mainly air polluting industry.</li> <li>ii. Final score is based on air pollution score only.</li> <li>iii. Asbestos is carcinogenic and banned in many countries.</li> </ul>
25.	5	Basic chemicals and electro chemicals and its derivatives including manufacturing of acid	30	-	30	-	-	-	10	75	R-R	<ul style="list-style-type: none"> <li>i. Standards prescribed for Inorganic Chemicals are adopted.</li> <li>ii. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable.</li> </ul>

												<ul style="list-style-type: none"> <li>iii. Water pollution score normalized to 100 is undertaken.</li> <li>iv. The earlier Red category industrial sector namely "Hydrocyanic acid and its derivatives " is also merged under this industrial sector.</li> </ul>
26.	7	Cement	-	-	-	20	10	30	-	75	R-R	This is mainly air polluting industry & hence normalized air pollution score.
27.	9	Chlorates, per-chlorates & peroxides	30	-	30	-	-	-	-	75	R-R	<ul style="list-style-type: none"> <li>i. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable.</li> <li>ii. Water pollution score normalized to 100 is undertaken.</li> </ul>
28.	10	Chlorine, fluorine, bromine, iodine and their compounds	30	-	30	-	-	-	-	75	R-R	<ul style="list-style-type: none"> <li>i. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable.</li> <li>ii. Water pollution score normalized to 100 is undertaken.</li> </ul>
29.	16	Dyes and Dye- Intermediates	30	-	30	20	5	25	20	75	R-R	<ul style="list-style-type: none"> <li>i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'.</li> <li>ii. Such types of industrial sectors generate all sorts of pollution.</li> </ul>
30.	26	Health-care Establishment ( as defined in BMW Rules)	20	10	30	-	-	-	-	75	R-R	<ul style="list-style-type: none"> <li>i. Mainly water polluting.</li> <li>ii. The water pollution score is normalized to 100 &amp; valid for Hospitals having total waste-water generation &gt; 100 KLD.</li> <li>iii. The hospitals with incinerator will be categorized as Red irrespective of the quantity of the waste-water generation.</li> <li>iv. The hospitals having total waste-water generation less than 100 KLD and without incinerator, the normalized water pollution score will be 50 and will be categorized as Orange category.</li> </ul>
31.	29	Hotels having overall waste-water generation @ 100 KLD and more.	20	10	30	15	-	15	-	75	R-R	<ul style="list-style-type: none"> <li>i. Mainly water polluting. Small boiler may be installed.</li> <li>ii. The water pollution score is normalized to 100 &amp; valid for Hotels having waste-water generation &gt; 100 KLD.</li> <li>iii. The hotels having more than 20 rooms and waste-water generation less than 100 KLD and having a coal / oil fired boiler , the pollution score will be 35/40 &amp; are categorized as Orange.</li> <li>iv. The hotels having more than 20 rooms and waste-water generation less than 10 KLD and</li> </ul>

												having no-boiler & no hazardous waste generation, the pollution score will be 20 & are categorized as Green.
32.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Lead acid battery plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. [ * Battery scrap, namely: Lead battery plates covered by ISRI, Code word "Rails" Battery lugs covered by ISRI, Code word "Rakes". Scrap drained/dry while intact, lead batteries covered by ISRI, Code word "rains".	30	-	30	25	--	25	20	75	R-R	All the three types of pollutants are generated.
33.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Integrated Recycling Plants -- Components of waste electrical and electronic assembles comprising accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.	30	-	30	25	-	25	20	75	R-R	All the three types of pollutants are expected.
34.	43	Manufacturing of glue and gelatin	30	10	40	20	-	20	-	75	R-R	Highly water polluting & obnoxious air polluting.
35.	49	Mining and ore beneficiation	30	10	40	15	5	20	-	75	R-R	Both air and water polluting. Score is normalized with air & water pollution.

36.	52	Nuclear power plant	10	-	10	30	-	30	15	75	R-R	<ul style="list-style-type: none"> <li>i. Mainly air polluting due to incinerator. Others - cooling water.</li> <li>ii. Air pollution score is normalized to 100.</li> </ul>
37.	58	Pesticides (technical) (excluding formulation)	30	-	30	25	-	25	20	75	R-R	<ul style="list-style-type: none"> <li>i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'.</li> <li>ii. Such types of industrial sectors generate all sorts of pollution.</li> </ul>
38.	64	Photographic film and its chemicals	30	-	30	-	-	-	-	75	R-R	<ul style="list-style-type: none"> <li>i. Silver salts and other chemicals are used in preparation. Slight quantity of effluents is generated.</li> <li>ii. Water pollution scores are normalized to 100.</li> </ul>
39.	68	Railway locomotive workshop/Integrated road transport workshop/Authorized service centers	20	10	30	-	-	-	10	75	R-R	<ul style="list-style-type: none"> <li>i. Mainly water polluting industry. Water is used in the washing of locomotives, road transport vehicles during servicing.</li> <li>ii. This score is valid for those Centers having discharge more than 100 KLD.</li> <li>iii. Service Centers having waste-water generation &lt; 100 KLD, the normalized score will be = (100*20)/40= 50.</li> </ul>
40.	84	Yarn / Textile processing involving any effluent/emission generating processes including bleaching, dyeing, printing and colouring	30	10	40	15	-	15	20	75	R-R	In this sector all sorts of pollution are generated.
41.	8	Chlor Alkali	30	10	40	20	10	30	10	80	R-R	<ul style="list-style-type: none"> <li>i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'.</li> <li>ii. Chlor-alkali units are having different section like NaOH, Cl<sub>2</sub>, SBP etc which are having toxic effluents. Additionally, fuel consumption is also on higher-side.</li> </ul>
42.	70	Ship Breaking Industries	30	-	30	30	-	30	20	80	R-R	<ul style="list-style-type: none"> <li>i. The ship-breaking industry creates numerous hazards for the coastal and marine environment.</li> <li>ii. Ship-breaking releases a large number of dangerous pollutants, including toxic waste, oil, poly-chlorinated biphenyls, and heavy metals, into the waters and sea bed.</li> <li>iii. While most of the oil is removed before a ship is scrapped, sand used to mop up the remaining oil is thrown into the sea. High concentrations of oil and grease are then found in the coastal waters, choking marine life.</li> </ul>

												iv. Solid waste strewn on the shore, 45 tonnes on any given day according to a study by the Central Pollution Control Board, also finds its way into the sea. v. Adding to the stress on coastal waters, the organic load from the thousands of workers living in cramped conditions with little or no sanitary facilities results in unacceptably high levels of BOD.
43.	53	Oil and gas extraction including CBM (offshore & on-shore extraction through drilling wells)	30	-	30	-	-	-	20	83	R-R	i. Mainly water polluting & hazardous waste generating. ii. The water pollution & HW generation scores are normalized to 100.
44.	36	Industry or process involving metal surface treatment or process such as pickling/ electroplating/paint stripping/ heat treatment using cyanide bath/ phosphating or finishing and anodizing / enamellings/ galvanizing	30	-	30	-	-	-	20	83	R-R	Mainly water polluting & toxic hazardous waste generating industry. Scores are normalized to 100.
45.	80	Tanneries	30	-	30	-	-	-	20	83	R-R	Mainly water polluting & hazardous waste generating industry. Scores are normalized to 100.
46.	65	Ports and harbour, jetties and dredging operations	30	10	40	15	10	25	20	85	R-R	This category contain all sorts of pollution.
47.	77	Synthetic fibers including rayon ,tyre cord, polyester filament yarn	30	10	40	25	10	35	10	85	R-R	This sector generates all sorts of pollution problems.
48.	81	Thermal Power Plants	30	10	40	20	10	30	15	85	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. TPP generate all sorts of pollution problems.
49.	71	Slaughter house (as per notification S.O.270(E)dated 26.03.2001)and meat processing industries, bone mill, processing of animal horn, hoofs and other body parts	25	10	35	-	-	-	-	87.5	R-R	Mainly water polluting and obnoxious odour generating industry. The water pollution score is normalized to 100
50.	2	Aluminium Smelter	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. This sector is generating all sorts of pollution i.e. air, water and HW.
51.	12	Copper Smelter	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Integrated Copper Smelters contain all sorts of

													pollution.
52.	20	Fertilizer (basic) (excluding formulation)	30	10	40	20	10	30	20	90	R-R		i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Generates all sorts of pollution.
53.	37	Iron & Steel (involving processing from ore/ integrated steel plants) and or Sponge Iron units	30	10	40	20	10	30	20	90	R-R		i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
54.	61	Pulp & Paper ( waste paper based units with bleaching process to manufacture writing & printing paper)	25	10	35	25	10	35	20	90	R-R		Waste paper based Pulp & Paper mills with bleaching process generate all sorts of pollution.
55.	85	Zinc Smelter	30	10	40	20	10	30	20	90	R-R		i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Integrated Zinc smelter generates all sorts of pollution problems.
56.	55	Oil Refinery (mineral Oil or Petro Refineries)	30	10	40	25	10	35	20	95	R-R		i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
57.	59	Petrochemicals Manufacturing ( including processing of Emulsions of oil and water )	30	10	40	25	10	35	20	95	R-R		i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution. iii. The earlier red category industrial sector namely "Processing of Emulsions of Oil & Water " is merged with this industrial sector.
58.	60	Pharmaceuticals	30	10	40	30	5	35	20	95	R-R		i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
59.	61	Pulp & Paper ( Large-Agro + wood) , Small Pulp & Paper ( agro based-wheat straw/rice husk)	30	10	40	25	10	35	20	95	R-R		i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Large /Small Agro based Pulp & Paper mills contribute all sorts of pollution problems.
60.	15	Distillery ( molasses / grain / yeast based)	30	10	40	-	-	-	-	100	R-R		Mainly water polluting industry. Final score is the normalized water pollution score.

Note :

- i. Under the column Revised Category, the full forms of the abbreviations are as follows :
- R-R means original category was Red and revised category is also Red
  - R-O means original category was Red and revised category is Orange
  - O-O means original category was Orange and revised category is also Orange
  - O-G means original category was Orange and revised category is Green
  - O-W means original category was Orange and revised category is White
  - G-O means original category was Green and revised category is Orange
  - G-G means original category was Green and revised category is also Green
  - G-W means original category was Green and revised category is White
- ii. There are specific remarks in respect of some of the industrial sectors. These sectors are either merged with other relevant sectors or deleted due to duplication. The overall details are as follows :

Sl No.	Original Sl No.	Industry Sector	Original Category	Remarks
1	14	Common treatment and disposal facilities (CETP, TSDF, E-waste recycling, CBMWTF, effluent conveyance project, incinerator, solvent/acid recovery plant, MSW sanitary land fill site)	R	i. All such facilities are classified as Red but special category projects as these are parts of pollution control facilities. ii. In case of CETP, the categorization will depend upon the category of member industries being served.
2	18	Processing of Emulsions of Oil & Water		It is a part of Petrochemical industries. Transferred and merged with the industrial sector namely 'Petrochemicals' at Sl. No. 54.
3	27	Heavy engineering including ship building (with investment on Plant & Machineries more than Rs 10 crores)	R	Most of the pollution generating processes / operations under this category are similar to the industry category namely "Automobile Manufacturing (integrated facilities)" at Sl. No. 1 and may be referred accordingly.
4	30	Hydrocyanic acid and its derivatives	R	Have been merged with the red category industrial sector namely "Basic chemicals and electro chemicals and its derivatives including manufacturing of acid" at Sl. No. 24
5	32	Industrial estates/ parks / complexes/ areas/ export processing zones/ SEZs/ Biotech parks/ leather complex	R	The classification will depend upon the category(ies) of the industries operating / proposed to be permitted in the area. In this context, guidelines prescribed in EIA Notification, 2006 shall be followed.
6	33	Industrial inorganic gases namely- a) Chemical gas- Acetylene, hydrogen, chlorine, fluorine, ammonia, sulphur dioxide, ethylene, hydrogen-sulphide, phosphine b) Hydrocarbon gases- Methane, ethane, propane	R	These gases are generally secondary products and produced alongwith other main products. To be classified as per the main parent plant.
7	69	Reprocessing of used oils & waste oils	R	i. The industry generates mainly the air pollution and oil bearing hazardous wastes. The normalized (air pollution & HW generation score is 58.33). ii. To be deleted as already covered under HW Recyclers / Re-processors ( Used oils / Waste Oils) under Orange Category

Table G-3 : Final List of Orange Category of Industrial Sectors

Final Sl. No.	Orgnl S.No	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised category	Remarks
1.	20	Dismantling of rolling stocks ( wagons/ coaches)	--	--	--	15	--	15	10	41.67	O-O	Emissions of dust and generation of waste oils take place during dismantling. Air pollution & HW generation scores (15+10=25) are normalized to 100.
2.	5	Bakery and confectionery units with production capacity > 1 TPD. ( With ovens / furnaces)	20	--	20	15	--	15	--	43.75	O-O	
3.	10	Chanachur and ladoo from puffed and beaten rice( muri and shira) using husk fired oven	20	--	20	15	--	15	--	43.75	O-O	Normal water and air polluting.
4.	23	Coated electrode manufacturing	15	0	15	20	0	20	0	43.75	G-O	Preparation of core wire / rod, preparation of dry mix, preparation of wet mix, application of coating by extrusion, baking of coated electrodes
5.	24	Compact disc computer floppy and cassette manufacturing / Reel manufacturing	15	0	15	20	0	20	0	43.75	G-O	Generates waste-water and process emissions.
6.	24	Flakes from rejected PET bottle	20	-	20	15	-	15	-	43.75	R-O	Normal water & air pollutions are generated.
7.	30	Food and food processing including fruits and vegetable processing	20	--	20	15	--	15	--	43.75	O-O	Normal water and air polluting.
8.	40	Jute processing without dyeing	20	--	20	15	--	15	--	43.75	O-O	CPCB has notified standards for this category. Both air and water pollutions are generated.
9.	56	Manufacturing of silica gel	15	0	15	20	0	20	0	43.75	G-O	Waste-waters containing TDS and emissions of H <sub>2</sub> SO <sub>4</sub> are generated.

10.	45	Manufacturing of tooth powder, toothpaste, talcum powder and other cosmetic items	20	--	20	15	--	15	--	43.75	O-O	Both air and water pollution are generated.
11.	55	Printing or etching of glass sheet using hydrofluoric acid	15	--	15	20	--	20	--	43.75	O-O	Both air and water pollution are generated.
12.	65	Silk screen printing, sari printing by wooden blocks	20	--	20	15	--	15	--	43.75	O-O	Wash-water and PM emissions from boilers .
13.	76	Synthetic detergents and soaps(excluding formulation)	20	-	20	15	-	15	-	43.75	R-O	i. This is the score for units having generation of waste-waters less than 100 KLD. ii. The units having waste-water generation more than 100 KLD will become mainly water polluting and accordingly normalized water pollution score will be 75 and be categorized as Red.
14.	71	Thermometer manufacturing	15	--	15	20	--	20	--	43.75	O-O	Process - making glass bulb, forming reservoir in the glass tube for fluid, inserting fluid, scale marking. Use of fuel to heat the glass tubes and hydrofluoric acid to seal the scaling. Small quantities of spent acids are generated.
15.	14	Cotton spinning and weaving ( medium and large scale)	--	--	--	15	--	37.5	10	47.5	O-O	Mainly air polluting industry. Sources of air pollution (PM) are the fine particles of cotton from spinning process. Air pollution score is normalized to 100.
16.	1	Almirah, Grill Manufacturing (Dry Mechanical Process )	--	--	--	20	--	20	--	50	O-O	Air pollution due to spray painting (emissions of VOCs). Units without painting operations shall be categorized as White.

17.	2	Aluminium & copper extraction from scrap using oil fired furnace (dry process only)	--	--	--	20	--	20	10	50	O-O	i. Normalized Air pollution score. ii. Significant air pollution due to melting (emissions of SO <sub>2</sub> , PM).
18.	3	Automobile servicing, repairing and painting (excluding only fuel dispensing)	20	--	20	20	--	20	10	50	O-O	Normal water & air polluting and recyclable waste oil generating. If the waste water generation is more than 100 KLD, it will become mainly water polluting and Red category unit.
19.	4	Ayurvedic and homeopathic medicine	20	--	20	15	--	15	15	50	O-O	
20.	7	Brickfields ( excluding fly ash brick manufacturing using lime process)	--	--	--	20	--	20	--	50	O-O	Significantly air polluting.
21.	8	Building and construction project more than 20,000 sq. m built up area	20	--	20	20	--	20	--	50	O-O	1. In the pre-construction stage , it is mainly air polluting due to generation of dust ( PM ) emissions. 2. After construction, it is mainly water polluting. If the discharge is more than 100 KLD, it will be having the normalized score of 75 and be categorized as Red.
22.	6	Ceramics and Refractories	-	-	-	20	-	20	-	50	R-O	i. Mainly air polluting industry. ii. This score is for the units having coal consumption < than 12 MT/day. iii. For the units having coal consumption > 12 MT /day, the normalized air pollution score will be 62.5 and shall be categorized as Red.

23.	11	Coal washeries	15	10	25	15	-	15	-	50	R-O	<p>i. Wet washeries are mainly water polluting industry generating effluents which are having inorganic SS &amp; TDS. Additionally, air pollution due to PM emissions is also generated.</p> <p>ii. Water &amp; air pollution scores are jointly normalized to 100.</p>
24.	16	Dairy and dairy products (small scale)	20	--	20	20	--	20	--	50	O-O	Water and air polluting both.
25.	18	DG set of capacity >1MVA but < 5MVA	--	--	--	20	--	20	--	50	O-O	Mainly air polluting . air pollution score is normalized to 100.
26.	17	Dry coal processing, mineral processing, industries involving ore sintering, pelletisating, grinding & pulverization	-	-	-	20	-	20	-	50	R-O	Mainly air polluting industry. Final score is the normalized air pollution score.
27.	19	Fermentation industry including manufacture of yeast, beer, distillation of alcohol (Extra Neutral Alcohol)	20	-	20	-	-	-	-	50	R-O	<p>i. Mainly water polluting industry. This is the normalized water pollution score for units having discharge &lt; 100 KLD.</p> <p>ii. For the units having discharge &gt; 100 KLD, the normalized water pollution score will be 75 and shall be accordingly categorized as Red.</p>
28.	21	Ferrous and Non-ferrous metal extraction involving different furnaces through melting, refining, re-processing, casting and alloy-making	-	-	-	15	5	20	10	50	R-O	<p>i. Mainly air polluting.</p> <p>ii. This score is applicable to secondary production of ferrous &amp; non-ferrous metals (excluding lead) up-to 1 MT/hour production.</p>

												<p>iii. For lead, the normalized air pollution score will be = <math>(100 \times 25) / 40 = 62.5</math> and is categorized as Red.</p> <p>iv. For Induction Furnace clubbed with AOD furnace - separate calculation shall be made based on the capacity of the furnaces. In such industries, the molten metal from induction furnace is transferred to AOD furnace where other metals like manganese and nickel are added to get the metal of desired constituents. The lime and silicon are also added for reduction of the metal oxides to the base metal. the normalized air pollution score will be = <math>(100 \times 25) / 40 = 62.5</math> and is categorized as Red.</p>
29.	26	Fertilizer (granulation / formulation / blending only)	--	--	--	20	--	20	--	50	O-O	Air polluting.
30.	27	Fish feed, poultry feed and cattle feed	--	--	--	20	--	20	--	50	O-O	Obnoxious odour , H <sub>2</sub> S etc. AP score is normalized to 100
31.	28	Fish processing and packing (excluding chilling of fishes)	20	--	20	--	--	--	--	50	O-O	Mainly water polluting. WP score is normalized to 100.

32.	31	Forging of ferrous and non- ferrous metals ( using oil and gas fired furnaces)	--	--	--	20	--	20	--	50	O-O	Heating furnace. Mainly air polluting.
33.	32	Formulation/pelletization of camphor tablets, naphthalene balls from camphor/ naphthalene powders.	--	--	--	20	--	20	--	50	O-O	Mainly air polluting. Emissions of Benzene, HC are expected.
34.	33	Glass ceramics, earthen potteries and tile manufacturing using oil and gas fired kilns, coating on glasses using cerium fluorides and magnesium fluoride etc.	--	--	--	20	--	20	--	50	O-O	Mainly air polluting. Emissions of SO2 are expected.
35.	35	Gravure printing, digital printing on flex, vinyl	20	--	20	20	--	20	10	50	O-O	Waste waters , emissions of VOCs
36.	36	Heat treatment using oil fired furnace ( without cyaniding)	--	--	--	20	--	20	--	50	O-O	Mainly air polluting and noise generating. AP Score is normalized to 100.
37.	28	Hot mix plants	-	-	-	20	-	20	-	50	R-O	Mainly air polluting. Air pollution scores are normalized to 100.
38.	37	Hotels (< 3 star) or hotels having > 20 rooms and less than 100 rooms.	20	--	20	20	--	20	--	50	O-O	Mainly water polluting. WP score is normalized to 100.
39.	38	Ice cream	20	--	20	20	--	20	--	50	O-O	Wash-water and boilers / oven for pasteurization.
40.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Paint and ink Sludge/residues	-	-	-	20	0	20	0	50	R-O	Mainly air polluting. Air pollution score is normalized to 100
41.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Brass Dross ,, Copper Dross,, Copper Oxide Mill Scale,, Copper Reverts, Cake & Residues,, Waste Copper and copper alloys in	10	-	10	20	-	20	10	50	R-O	Mainly air polluting.

		dispersible form,, Slags from copper processing for further processing or refining ,, Insulated Copper Wire,, Scrap/copper with PVC sheathing including ISRI-code material namely "Druid" ,, Jelly filled Copper cables ,, Zinc Dross-Hot dip Galvanizers SLAB,, Zinc Dross-Bottom Dross,, Zinc ash/Skimming arising from galvanizing and die casting operations,, Zinc ash/Skimming/other zinc bearing wastes arising from smelting and refining,, Zinc ash and residues including zinc alloy residues in dispersible from,,										
42.	35	Industry or processes involving foundry operations	-	-	-	20	-	20	-	50	R-O	<ul style="list-style-type: none"> <li>i. This score is valid for the foundries having capacity &lt; 5 MT/hr as such units require the coal/coke @ &lt; 500 kg/hr.</li> <li>ii. The units having capacity of 5 MT/hr and more, the coal/coke consumption will be more than 500 kg/hr and the normalized score will be 62.5 and classified accordingly as Red.</li> </ul>
43.	40	Lime manufacturing (using lime kiln)	-	-	-	20	-	20	-	50	R-O	Mainly air polluting
44.	41	Liquid floor cleaner, black phenyl, liquid soap, glycerol mono-stearate manufacturing	20	--	20	20	--	20	--	50	O-O	Both air and water pollution are generated.

45.	42	Manufacturing of glass	10	-	-	20	-	20	-	50	R-O	<p>i. Mainly air polluting ( melting at 1500°C and refining .</p> <p>ii. In case of lead glass , the score of A1 will be 25 and accordingly the normalized scores will be 62.5 i.e. Red .</p>
46.	43	Manufacturing of iodized salt from crude/ raw salt	12	--	12	20	--	20	--	50	O-O	Boiling in Evaporators (multiple effect evaporators), centrifuging, iodization with KIO3 mixing . Mainly air polluting. Air pollution score is normalized to 100.
47.	42	Manufacturing of mirror from sheet glass	--	--	--	20	--	20	--	50	O-O	Evaporator & furnace for heating the metal to be applied as reflector on mirror. Mainly air polluting.
48.	44	Manufacturing of mosquito repellent coil	--	--	--	20	--	20	--	50	O-O	Mainly air polluting. Toxic fumes are expected.
49.	46	Manufacturing of Starch/Sago	25	-	25	15	-	15	-	50	R-O	<p>i. Water and air polluting industry. Boiler is used for steam generation.</p> <p>ii. Water &amp; air pollution scores are normalized to 100</p>
50.	46	Mechanized laundry using oil fired boiler	20	--	20	20	--	20	--	50	O-O	Both air and water pollution are generated.
51.	47	Modular wooden furniture from particle board, MDF< swan timber etc, Ceiling tiles/ partition board from saw dust, wood chips etc., and other agricultural waste using synthetic adhesive resin, wooden box making ( With boiler)	--	--	--	20	--	20	--	50	O-O	1. Mainly air polluting. Boiler as well as VOCs from use of adhesives. 2. Without boiler, it will be a Green category industry.
52.	50	New highway construction project	-	-	-	20	-	20	-	50	R-O	Mainly air polluting project.

53.	51	Non-alcoholic beverages(soft drink) & bottling of alcohol/non alcoholic products	20	-	20	15	5	20	-	50	R-O	i. Both air and water polluting. Score is normalized with air & water pollution. This score is valid for industries having waste-water generation < 100 KLD. ii. For the units having waste-water generation > 100 KLD the , normalized score would be 62.5 and categorized as Red.
54.	49	Paint blending and mixing (Ball mill)	20	--	20	20	--	20	10	50	O-O	Both air and water pollution are generated.
55.	62	Paints and varnishes (mixing and blending)	20	0	0	20	0	20	0	50	G-O	Waste-waters as well as fumes of VOCs due to solvents, pigments, varnishes.
56.	51	Ply-board manufacturing( including Veneer and laminate) with oil fired boiler/ thermic fluid heater(without resin plant)	0	--	0	20	--	20	--	50	O-O	Mainly air polluting because of use of boiler. AP score is normalized to 100
57.	52	Potable alcohol ( IMFL) by blending, bottling of alcohol products	20	--	20	--	--	--	--	50	O-O	Mainly water polluting. WP score is normalized to 100.
58.	54	Printing ink manufacturing	20	--	20	20	--	20	--	50	O-O	1. Pigments, binders and solvents are used. 2. Boiler is also used. 3. Emissions of VOCs take place.
59.	70	Printing press	20	0	20	20	0	20	0	50	G-O	Colored waste-waters containing dyes and VOC emissions are generated.
60.	59	Reprocessing of waste plastic including PVC	20	--	20	20	--	20	--	50	O-O	Large quantities of wash-water and fugitive emissions are generated.
61.	61	Rolling mill (oil or coal fired) and cold rolling mill	10	--	10	20	--	20	--	50	O-O	Mainly air polluting. Air pollution score is normalized to 100. Others - cooling water and recyclable waste oils etc. are generated.
62.	67	Spray painting, paint baking, paint shipping	--	--	--	20	--	20	10	50	O-O	Mainly air polluting. Emissions of VOCs and HC are generated.

63.	72	Steel and steel products using various furnaces like blast furnace /open hearth furnace/induction furnace/arc furnace/submerged arc furnace /basic oxygen furnace /hot rolling reheated furnace	10	-	10	20	-	20	10	50	R-O	i. Mainly air polluting. In the emissions, oxides of manganese, nickel etc. are also present. ii. Air pollution score is normalized to 100.
64.	73	Stone crushers	-	-	-	20	-	20	-	50	R-O	Mainly air polluting. Air pollution score is normalized to 100.
65.	75	Surgical and medical products including prophylactics and latex	20	-	20	20	-	20	-	50	R-O	Both air as well as water polluting. Air and water pollution scores are normalized to 100.
66.	85	Tephlon based products	0	0	0	20	0	20	0	50	<b>G-O</b>	Due to spraying applications, emissions (HC) are generated
67.	70	Thermocol manufacturing ( with boiler)	--	--	--	20	--	20	--	50	O-O	Polystyrene is heated. Mainly air polluting with boiler.
68.	82	Tobacco products including cigarettes and tobacco/opium processes	20	-	20	20	-	20	-	50	R-O	Such industries generate both air as well as water pollution. These scores are normalized to 100.
69.	72	Transformer repairing/ manufacturing ( dry process only)	--	--	--	20	--	20	10	50	O-O	Mainly air polluting because of ovens, shot-blasting etc.
70.	73	Tyres and tubes vulcanization/ hot retreating	10	--	10	20	--	20	--	50	O-O	Mainly air polluting . Emissions of PM, VOCs and obnoxious odour are generated.
71.	83	Vegetable oil manufacturing including solvent extraction and refinery /hydrogenated oils	20	-	20	15	5	20	10	50	R-O	i. All sorts of pollution are generated. ii. This score is valid for plants having waste-water generation < 100 KLD. iii. If the waste-water generation is more than 100 KLD, the unit shall be classified as Red.
72.	74	Wire drawing and wire netting	20	--	20	--	--	--	--	50	O-O	Mainly water polluting. WP score is normalized to 100.

73.	21	Dry cell battery ( excluding manufacturing of electrodes ) and assembling & charging of a lead battery on micro scale	30	--	30	15	--	15	10	55	O-O	Water and air polluting both.
74.	50	Pharmaceutical formulation and for R & D purpose ( For sustained release/ extended release of drugs only and not for commercial purpose)	20	--	20	20	--	20	15	55	O-O	i. All sorts of pollution are generated. ii. R&D activities are to be shifted to Red category.
75.	78	Synthetic resins	20	-	20	20	-	20	15	55	R-O	All sorts of pollution are generated.
76.	79	Synthetic rubber excluding molding	20	-	20	20	-	20	15	55	R-O	i. Most synthetic rubber is created from two materials, styrene and butadiene. Both are currently obtained from petroleum. ii. Process is similar to a part of Petrochemical plants.
77.	9	Cashew nut processing	25	--	25	20	--	20	--	56	O-O	Normal water and air polluting.
78.	12	Coffee seed processing	25	--	25	20	--	20	--	56	O-O	Normal water & air polluting industry.
79.	57	Parboiled Rice Mills	25	-	25	20	-	20	-	56	R-O	i. Rice Mills are generating both air and water pollution. Waste-waters are having high strength in respect of BOD. ii. This is the normalized air & water pollution score for units having waste-water generation < 100 KLD and fuel consumption less than 12 MTD. iii. For units having waste-water generation > 100 KLD or fuel consumption > 12 MTD or both , the unit shall be classified as Red.

80.	29	Foam manufacturing	--	--	--	20	--	20	15	58	O-O	i. Raw material is polyurethane, latex etc. ii. Emissions of VOCs and HAPs. CH <sub>3</sub> Cl <sub>2</sub> and similar compounds as blowing agents. iii. Outdated raw materials and spoiled slots are discarded as HW.
81.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Used Oil – As per specifications prescribed from time to time.	10	0	10	20	0	20	15	58.33	R-O	Mainly air polluting and hazardous waste generating industry. Air pollution & HW scores are normalized to 100
82.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Waste Oil ---As per specifications prescribed from time to time.	-	-	-	20	0	20	15	58.33	R-O	Mainly air polluting and hazardous waste generating industry. Air pollution & HW scores are normalized to 100.
83.	56	Producer gas plant using conventional up drift coal gasification ( linked to rolling mills glass and ceramic industry refractories for dedicated fuel supply)	--	--	--	20	--	20	15	58.33	O-O	Mainly air polluting & tar (HW) generating. SO <sub>2</sub> , CO, NO <sub>x</sub> are generated. Tar is the by-product and utilized by other industries in co-processing.

Note :

- i. Under the column Revised Category, the full forms of the abbreviations are as follows :
- R-R means original category was Red and revised category is also Red
  - R-O means original category was Red and revised category is Orange
  - O-O means original category was Orange and revised category is also Orange
  - O-G means original category was Orange and revised category is Green
  - O-W means original category was Orange and revised category is White
  - G-O means original category was Green and revised category is Orange
  - G-G means original category was Green and revised category is also Green
  - G-W means original category was Green and revised category is White

ii. There are specific remarks in respect of some of the industrial sectors. These sectors are either merged with other relevant sectors or deleted due to duplication / vague category. The overall details are as follows:

<i>Sl No .</i>	<i>Original Sl No.</i>	<i>Industry Sector</i>	<i>Original Category</i>	<i>Remarks</i>
1	24	<i>Excavation of sand from the river bed (excluding manual excavation)</i>	O	<i>Since such types of activities cause ecological disturbances, the instructions issued by the government from time to time be followed. To be categorized by MoEF&amp;CC.</i>
2	39	<i>Infrastructure Development Project</i>	O	<i>Vast variety of such projects come under such category. This is to be decided by the concerned SPCB in line of EIA Notification , 2006.</i>
3	53	<i>Power press</i>	O	<i>Very vague term hence deleted. Such types of general engineering units have already been covered.</i>

Table G-4 : Final List of Green Category of Industrial Sectors

Sl. No.	Orgnl Sl. No.	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category	Remarks
1.	2	Aluminium utensils from aluminium circles by pressing only (dry mechanical operation)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor air pollution due to some fugitive PM emissions from buffing operations.
2.	6	Ayurvedic and homeopathic medicines (without boiler)	10	--	10	--	--	--	--	25	<b>G-G</b>	Small quantities of waste-waters are generated from washing operations.
3.	8	Bakery /confectionery /sweets products (with production capacity <1tpd (with gas or electrical oven)	10	--	10	--	--	--	--	25	<b>G-G</b>	Small quantities of waste-waters are generated from washing operations.
4.	6	Bi-axially oriented PP film along with metalizing operations	10	--	10	--	--	--	--	25	<b>O-G</b>	Mainly extrusion process involving Cooling water recirculation
5.	10	Biomass briquettes (sun drying) without using toxic hazardous wastes	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor air pollution due to some fugitive PM emissions from pulverization / mixing operations.
6.	13	Blending of melamine resins & different powder, additives by physical mixing	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor air pollution due to some fugitive PM emissions from pulverization / mixing operations.
7.	15	Brass and bell metal utensils manufacturing from circles(dry mechanical operation without re-rolling facility)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor air pollution due to some fugitive PM emissions from buffing operations.
8.	16	Candy	10	--	10	10	--	10	--	25	<b>G-G</b>	Small quantities of waste-water and minor

												PM emissions are generated.
9.	17	Cardboard or corrugated box and paper products (excluding paper or pulp manufacturing and without using boilers)	--	--	--	10	--	10	--	25	<b>G-G</b>	This score is valid with Small gas / electricity operated oven / furnace for making glue.
10.	18	Carpentry & wooden furniture manufacturing (excluding saw mill) with the help of electrical (motorized) machines such as electrical wood planner, steel saw cutting circular blade, etc.	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor air pollution due to some fugitive PM emissions from cutting operations.
11.	19	Cement products (without using asbestos / boiler / steam curing) like pipe ,pillar, jafri, well ring, block/tiles etc.(should be done in closed covered shed to control fugitive emissions)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor air pollution due to some fugitive PM emissions from mixing operations.
12.	20	Ceramic colour manufacturing by mixing & blending only (not using boiler and wastewater recycling process)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor air pollution due to some fugitive PM emissions.
13.	11	Chilling plant, cold storage and ice making	10	--	10	--	--	--	--	25	<b>O-G</b>	Cooling water recirculation only.
14.	13	Coke briquetting ( sun drying)	--	--	--	10	--	10	--	25	<b>O-G</b>	Mainly air polluting industry. Sources of air pollution (PM) are pulverizes and mixers. Air pollution score is normalized to 100.
15.	28	Cotton spinning and weaving (small scale)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor PM emissions from spinning process.
16.	17	Dal Mills	--	--	--	10	--	10	--	25	<b>O-G</b>	Some fugitive emissions of PM.

17.	29	Decoration of ceramic cups and plates by electric furnace	--	--	--	10	--	10	--	25	<b>G-G</b>	Fumes of enamels. Minor air pollution.
18.	19	Digital printing on PVC clothes	--	--	--	10	--	10	--	25	<b>O-G</b>	Minor emissions / odour generations are expected.
19.	25	Facility of handling, storage and transportation of food grains in bulk	--	--	--	10	--	10	--	25	<b>O-G</b>	Some fugitive emissions of PM during handling of grains.
20.	36	Flour mills (dry process)	--	--	--	10	--	10	--	25	<b>G-G</b>	Fugitive dust emissions.
21.	41	Glass , ceramic, earthen potteries, tile and tile manufacturing using electrical kiln or not involving fossil fuel kiln	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor fugitive emissions only.
22.	34	Glue from starch (physical mixing) with gas / electrically operated oven /boiler.	--	--	--	10	--	10	--	25	<b>O-G</b>	Some fugitive emissions of PM during mixing of raw materials.
23.	42	Gold and silver smithy (purification with acid smelting operation and sulphuric acid polishing operation) (using less or equal to 1 litre of sulphuric acid/ nitric acid per month)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor fumes from cleaning process.
24.	36	Heat treatment with any of the new technology like ultrasound probe , induction hardening , ionization beam, gas carburizing etc.	10	--	10	10	--	10	--	25	<b>O-G</b>	<ul style="list-style-type: none"> <li>• Cooling waters and minor heat fumes.</li> <li>• Finalization of categorization subject to field verification.</li> </ul>
25.	46	Insulation and other coated papers (excluding paper or pipe manufacturing)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor fumes due to application of poly-urethane
26.	49	Leather foot wear and leather products (excluding tanning and hide processing except cottage scale)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor fumes due to use of adhesives / gums.

27.	50	Lubricating oil, greases or petroleum based products (only blending at normal temperature)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor fumes at the time of transfers from one container to other.
28.	54	Manufacturing of pasted veneers using gas fired boiler or thermic fluid heater and by sun drying	--	--	--	10	--	10	--	25	<b>G-G</b>	1. Minor fumes due to application of gums / adhesives / pastes etc. 2. This score is valid only for gas fired boiler. 3. The units having coal fired boilers shall be categorized as Orange.
29.	59	Oil mill Ghani and extraction ( no hydrogenation / refining)	10	--	10	--	--	--	--	25	<b>G-G</b>	Small quantities of floor washings & equipments washings are generated.
30.	48	Packing materials manufacturing from non asbestos fibre, vegetable fibre yarn	--	--	--	10	--	10	--	25	<b>O-G</b>	Some fugitive emissions of PM are expected.
31.	65	Phenyl/toilet cleaner formulation and bottling	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor fumes of VOCs in the work zone
32.	67	Polythene and plastic processed products manufacturing (virgin plastic)	10	--	10	10	--	10	--	25	<b>G-G</b>	Cooling water & emissions due to mixing of raw materials.
33.	68	Poultry, Hatchery and Piggery	--	--	--	10	--	10	--	25	<b>G-G</b>	Obnoxious odour containing H <sub>2</sub> S, CH <sub>4</sub> etc. and fugitive PM emissions
34.	69	Power looms (without dye and bleaching)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor emissions of PM.
35.	71	Puffed rice (muri) (using gas or electrical heating system)	--	--	--	10	--	10	--	25	<b>G-G</b>	Minor emissions of PM.
36.	57	Pulverization of bamboo and scrap wood	--	--	--	10	--	10	--	25	<b>O-G</b>	Some fugitive emissions of PM are expected.
37.	72	Ready mix cement concrete	--	--	--	10	--	10	--	25	<b>G-G</b>	PM emissions.
38.	73	Reprocessing of waste cotton	--	--	--	10	--	10	--	25	<b>G-G</b>	PM emissions.
39.	60	Rice mill (Rice hullers only)	--	--	--	10	--	10	--	25	<b>O-G</b>	PM emissions are generated. Mainly air

													polluting. AP score is normalized to 100
40.	62	Rolling mill ( gas fired) and cold rolling mill	10	--	10	10	--	10	--	25	<b>O-G</b>		Mainly air polluting. AP score is normalized to 100
41.	75	Rubber goods industry (with gas operated baby boiler)	--	--	--	10	--	10	--	25	<b>G-G</b>		Some PM emissions and obnoxious odour.
42.	63	Saw mills	--	--	--	10	--	10	--	25	<b>O-G</b>		Mainly air polluting. PM and noise are generated.
43.	77	Soap manufacturing (hand made without steam boiling / boiler)	10	--	10	--	--	--	--	25	<b>G-G</b>		Small quantities of waste-water are generated.
44.	80	Spice grinding (upto-20 HP motor)	--	--	--	10	--	10	--	25	<b>G-G</b>		Small quantities of fugitive emissions of raw materials.
45.	66	Spice grinding (>20 hp motor)	--	--	--	10	--	10	--	25	<b>O-G</b>		Mainly air polluting. Fugitive emissions of PM.
46.	81	Steel furniture without spray painting	--	--	--	10	--	10	--	25	<b>G-G</b>		Obnoxious gases from welding as well as noise pollution.
47.	82	Steeping and processing of grains	10	--	10	--	--	--	--	25	<b>G-G</b>		Washing waters are generated.
48.	86	Tyres and tube retreating (without boilers)	--	--	--	10	--	10	--	25	<b>G-G</b>		Due to applications of binding gum / adhesives / cement, some obnoxious fumes may generate.
49.	22	Chilling plant and ice making without using ammonia	12	--	12	--	--	--	--	30	<b>G-G</b>		Cooling water and brine water circuits. Spillages / blow down may take place
50.	26	CO2 recovery	12	--	12	--	--	--	--	30	<b>G-G</b>		Normal water pollution from scrubbing action
51.	32	Distilled water ( without boiler) with electricity as source of heat	12	--	12	--	--	--	--	30	<b>G-G</b>		TDS as distillation residues

52.	45	Hotels (up to 20 rooms and without boilers)	12	--	12	--	--	--	--	30	G-G	This score is valid for hotels having overall waste-water generation less than 10 KLD.
53.	53	Manufacturing of optical lenses (using electrical furnace)	12	--	12	--	--	--	--	30	G-G	Small quantities of waste-waters containing TDS, SS are generated.
54.	58	Mineralized water	12	--	12	--	--	--	--	30	G-G	RO Rejects.
55.	68	Tamarind powder manufacturing	12	--	12	15	--	15	--	33.75	O-G	<ul style="list-style-type: none"> <li>Dried tamarind fruits - cleaned and after soaking them in water they are boiled in steam jacketed kettle for about 40-45 minutes. Then pulp is extracted in pulper and dried in drum type drier and on cooling, the final product is packed.</li> <li>Generates small quantities of waste waters and air emissions. Joint score is normalized to 100.</li> </ul>
56.	15	Cutting, sizing and polishing of marble stone	15	--	15	--	--	--	--	37.5	O-G	Mainly water polluting . Water pollution score is normalized to 100.
57.	22	Emery powder ( fine dust of sand) manufacturing	--	--	--	15	--	15	--	37.5	O-G	Air polluting. PM emissions take place during various stages of grindings of naturally occurring minerals.
58.	25	Flyash export, transport & disposal facilities	-	-	-	15	-	15	-	37.5	R-G	<ul style="list-style-type: none"> <li>This is mainly air polluting activity.</li> <li>This is the normalized score based on air pollution.</li> </ul>
59.	48	Mineral stack yard / Railway sidings	15	-	15	15	-	15	-	37.5	R-G	<ul style="list-style-type: none"> <li>Mainly air pollution due to loading, unloading, storage and transportation of the minerals.</li> </ul>

												<ul style="list-style-type: none"> <li>Waste-water generation mainly during rains only.</li> </ul>
60.	54	Oil and gas transportation pipeline	-	-	-	10	5	15	-	37.5	R-G	<ul style="list-style-type: none"> <li>Contains small gas based power plants up-to 5 MWs.</li> <li>Air pollution score is normalized to 100.</li> <li>In case , if these power plants are bigger / liquid fuel / oil based, scores will be calculated accordingly.</li> </ul>
61.	64	Seasoning of wood in steam heated chamber	--	--	--	15	--	15	--	37.5	O-G	<p>Air pollution due to use boiler for supply of steam. Air pollution score is normalized to 100.</p>
62.	84	Synthetic detergent formulation	--	--	--	15	--	15	--	37.5	<b>G-G</b>	<ul style="list-style-type: none"> <li>This score is valid for the industries which are not manufacturing LABSA. It is procured from outside.</li> <li>Small quantities of emissions are generated from mini boiler.</li> <li>Air pollution score is normalized to 100.</li> </ul>
63.	69	Tea processing ( with boiler)	--	--	--	15	--	15	--	37.5	O-G	<p>With boiler, it is an orange category industry. Without boiler, it will be green category industry.</p>

## Note :

- i. Under the column Revised Category, the full forms of the abbreviations are as follows :
- R-R means original category was Red and revised category is also Red
  - R-O means original category was Red and revised category is Orange
  - O-O means original category was Orange and revised category is also Orange
  - O-G means original category was Orange and revised category is Green
  - O-W means original category was Orange and revised category is White
  - G-O means original category was Green and revised category is Orange
  - G-G means original category was Green and revised category is also Green
  - G-W means original category was Green and revised category is White
- ii. There are specific remarks in respect of some of the industrial sectors. These sectors are either merged with other relevant sectors or deleted due to duplication. The overall details are as follows :

Sl No .	Origin al Sl No.	Industry Sector	Original Categor y	Remarks
1	47	Jobbing and Machining	G	Vague category to be deleted, as such activities have already been covered in other categories.
2	66	Reel manufacturing	G	Already covered in other categories. Hence, deleted
3	1	Assembling of acid lead batteries (up to 10 batteries per day excluding lead plate casting)	G	Already covered in Orange category. Hence, deleted
4	5	Automobile fuel outlets (only dispensing)	G	Minor air pollution due to some fugitive emissions during fuel filling operations. May be exempted from the purview of Consent management.
5	30	Diesel generator sets (15 KVA to 1 MVA)	G	<ul style="list-style-type: none"> <li>Normal operation – 12 hrs a day.</li> <li>Consumption of diesel = 1680 litres for 1 MVA DG set at full load @ 0.21 litres / KVA / hr.</li> <li>Stand-alone DG Sets having total capacity 1 MVA or less and equipped with acoustic enclosures alongwith adequate stack height may be exempted from the purview of Consent management. Higher capacity DG sets have already been covered under Red / Orange categories .</li> </ul>

Table G-5: Final List of White Category of Industries

Sl. No.	Orgnl Sl. No.	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category
1.	3	Assembly of air coolers /conditioners ,repairing and servicing	--	--	--	--	--	--	--	--	G-W
2.	4	Assembly of bicycles ,baby carriages and other small non motorizing vehicles	--	--	--	--	--	--	--	--	G-W
3.	7	Bailing (hydraulic press)of waste papers	--	--	--	--	--	--	--	--	G-W
4.	9	Bio fertilizer and bio-pesticides without using inorganic chemicals	--	--	--	--	--	--	--	--	G-W
5.	11	Biscuits trays etc from rolled PVC sheet (using automatic vacuum forming machines)	--	--	--	--	--	--	--	--	G-W
6.	12	Blending and packing of tea	--	--	--	--	--	--	--	--	G-W
7.	14	Block making of printing without foundry (excluding wooden block making)	--	--	--	--	--	--	--	--	G-W
8.	21	Chalk making from plaster of Paris ( only casting without boilers etc. ( sun drying / electrical oven)	--	--	--	--	--	--	--	--	G-W
9.	25	Compressed oxygen gas from crude liquid oxygen ( without use of any solvents and by maintaining pressure & temperature only for separation of other gases)	--	--	--	--	--	--	--	--	G-W
10.	27	Cotton and woolen hosiers making ( Dry process only without any dyeing / washing operation)	--	--	--	--	--	--	--	--	G-W
11.	31	Diesel pump repairing and servicing ( complete mechanical dry process)	--	--	--	--	--	--	--	--	G-W
12.	33	Electric lamp ( bulb) and CFL manufacturing by assembling only	--	--	--	--	--	--	--	--	G-W

13.	34	Electrical and electronic item assembling ( completely dry process)	--	--	--	--	--	--	--	--	G-W
14.	23	Engineering and fabrication units (dry process without any heat treatment / metal surface finishing operations / painting)	--	--	--	--	--	--	--	--	O-W
15.	35	Flavoured betel nuts production/ grinding ( completely dry mechanical operations)	--	--	--	--	--	--	--	--	G-W
16.	37	Fly ash bricks/ block manufacturing	--	--	--	--	--	--	--	--	G-W
17.	38	Fountain pen manufacturing by assembling only	--	--	--	--	--	--	--	--	G-W
18.	39	Glass ampules and vials making from glass tubes	--	--	--	--	--	--	--	--	G-W
19.	40	Glass putty and sealant ( by mixing with machine only)	--	--	--	--	--	--	--	--	G-W
20.	43	Ground nut decorticating	--	--	--	--	--	--	--	--	G-W
21.	44	Handloom/ carpet weaving ( without dying and bleaching operation)	--	--	--	--	--	--	--	--	G-W
22.	48	Leather cutting and stitching (more than 10 machine and using motor)	--	--	--	--	--	--	--	--	G-W
23.	51	Manufacturing of coir items from coconut husks	--	--	--	--	--	--	--	--	G-W
24.	52	Manufacturing of metal caps containers etc	--	--	--	--	--	--	--	--	G-W
25.	55	Manufacturing of shoe brush and wire brush	--	--	--	--	--	--	--	--	G-W
26.	57	Medical oxygen	--	--	--	--	--	--	--	--	G-W
27.	60	Organic and inorganic nutrients ( by physical mixing)	--	--	--	--	--	--	--	--	G-W
28.	61	Organic manure (manual mixing)	--	--	--	--	--	--	--	--	G-W
29.	63	Packing of powdered milk	--	--	--	--	--	--	--	--	G-W
30.	64	Paper pins and u clips	--	--	--	--	--	--	--	--	G-W
31.	58	Repairing of electric motors and generators ( dry mechanical process)	--	--	--	--	--	--	--	--	O-W
32.	74	Rope (plastic and cotton)	--	--	--	--	--	--	--	--	G-W

33.	76	Scientific and mathematical instrument manufacturing	--	--	--	--	--	--	--	--	G-W
34.	78	Solar module non conventional energy apparatus manufacturing unit	--	--	--	--	--	--	--	--	G-W
35.	79	Solar power generation through solar photovoltaic cell, wind power and mini hydel power (less than 25 MW)	--	--	--	--	--	--	--	--	G-W
36.	83	Surgical and medical products assembling only (not involving effluent / emission generating processes)	--	--	--	--	--	--	--	--	G-W

Note : Under the column Revised Category, the full forms of the abbreviations are as follows :

- a. R-R means original category was Red and revised category is also Red
- b. R-O means original category was Red and revised category is Orange
- c. O-O means original category was Orange and revised category is also Orange
- d. O-G means original category was Orange and revised category is Green
- e. O-W means original category was Orange and revised category is White
- f. G-O means original category was Green and revised category is Orange
- g. G-G means original category was Green and revised category is also Green
- h. G-W means original category was Green and revised category is White





केन्द्रीय प्रदूषण नियंत्रण बोर्ड  
CENTRAL POLLUTION CONTROL BOARD  
(पर्यावरण एवं वन मंत्रालय, भारत सरकार)  
(MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

No. B-29012/ESS/CPA/2015-16

19.08.2015

Sub: "Harmonization of Classification of industries under Red / Orange / Green / White Categories".

During the Conference of the Environment Ministers of States held in New Delhi during April 06-07, 2015, it was resolved to adopt pollution potential criteria for categorization of Red, Orange & Green categories of industries and that a Committee be constituted with State representatives. Further, in the 59<sup>th</sup> Conference of Chairmen & Member Secretaries of Pollution Control Boards/PCCs held in New Delhi on April 08, 2015, it was agreed to constitute a Committee to look into categorization system of industries based on their respective pollution potential index.

2. Accordingly, a Committee comprising the Chairmen of CPCB, APPCB, TNPCB, MPPCB, MPCB, PPCB, WBPCB and MS, CPCB was constituted vide CPCB OM dated 23.04.2015 to review & classify industrial sectors into different categories based on criteria of respective pollution potential indices.
3. The existing Red ( 85 sectors) , Orange ( 73 sectors) and Green ( 86 sectors) industrial sectors have been assessed as per the proposed formula by a group of Scientists from CPCB . For this purpose , concerned Engineers / Scientists from the Member SPCBs of the Committee were also involved & consulted during May28-29, 2015.
4. After careful examination and consideration of the suggestions of concerned stake-holders the "Draft Document on Revised Concept of Categorization of Industrial Sectors " is prepared by the Committee .

In this context, the Undersigned is directed to forward a copy of the " Draft Document on Revised Concept of Categorization of Industrial Sectors to all the SPCBs, PCCs and concerned Ministries for their comments. Accordingly, the same is enclosed herewith and all the SPCBs, PCCs and concerned Ministries are, hereby requested to provide their comments by 04.09.2015. The comments may kindly be sent through hard copy as well as soft copy at e-mail: [nkgupta.cpcb@nic.in](mailto:nkgupta.cpcb@nic.in) , [nkgpcb@hotmail.com](mailto:nkgpcb@hotmail.com) .

Encl : As above

[N.K. Gupta]  
Incharge - ESS

To:

1. All the State Pollution Control Boards / Pollution Control Committees
2. The Secretary, Ministry of Micro Small and Medium Enterprises, New Delhi
3. The Secretary, Ministry of Heavy Industries & Public Enterprises, New Delhi
4. The Advisor & Incharge , CP Division, MoEFCC, New Delhi
5. CPCB Website

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032

'Parivesh Bhawan', East Arjun Nagar, Delhi - 110032

दूरभाष / Tel. : 43102030, फ़ैक्स / Fax : 22305793, 22307078, 22307079, 22301932, 22304948

ई-मेल / e-mail : [cpcb@nic.in](mailto:cpcb@nic.in) वेबसाइट / Website : [www.cpcb.nic.in](http://www.cpcb.nic.in)

## Inspection Procedure

### RED Category Industries :

Red Category Industries will be routinely visited as per the following schedule :

**Large and Medium Scale : Once in three months**

**Small Scale : Once in a year**

Usually inspection team comprising of two or more officers are authorised to carry out inspection under the provisions of various environmental legislations.

- On the entry of premises, the team serves a notice of entry & inspection to the responsible person / occupier of the premises.
- During inspection, in the presence of the responsible person / occupier of the premises the team carries out inspection, which includes, verification of:
  - ✓ Operation of plant(s),
  - ✓ Product(s) being manufactured with quantity,
  - ✓ Status of operation of Environment Management System comprising of control measures for liquid, gaseous and solid wastes,
  - ✓ Generation of liquid, gaseous and solid wastes & their disposals,
  - ✓ Maintenance of records in the form of logbooks etc.,
  - ✓ Availability of various utilities and consumption of resources viz. water, fuels electricity etc.,
  - ✓ Number of outlets provided for disposal of liquid effluent and compliance of thereof vis-à-vis conditions in the consent granted,
  - ✓ Number of emission stacks / vents / boilers etc. and compliance of thereof vis-à-vis conditions in the consent granted,
- During the inspection and verification of the industrial unit the team will collect the sample(s) of waste water, gaseous emission(s) and hazardous waste(s), as and where the team feels necessary, depending upon the environmental circumstances during the visit.
- At the end, the monitoring team issues written instructions to the industry for the non-compliances observed, if any, and they are brought to their notice with required corrective measures.
- Team also lists suggestions (based on their earlier experience) to take additional measures so as to reduce pollution load at source or to improve treatability.
- A check list of the documents, which inspection team might verify during its visit is also appended with procedure and are as under:
  - Water Consumption Data
  - Production details (RG – 1 Register)
  - Raw Material details (RG – 11 Register)
  - Hazardous Waste Generation and Disposal Records and Logbooks
  - Effluent Treatment Plant Logbook
  - Air Pollution Control Measures Logbook
  - Electricity Bills

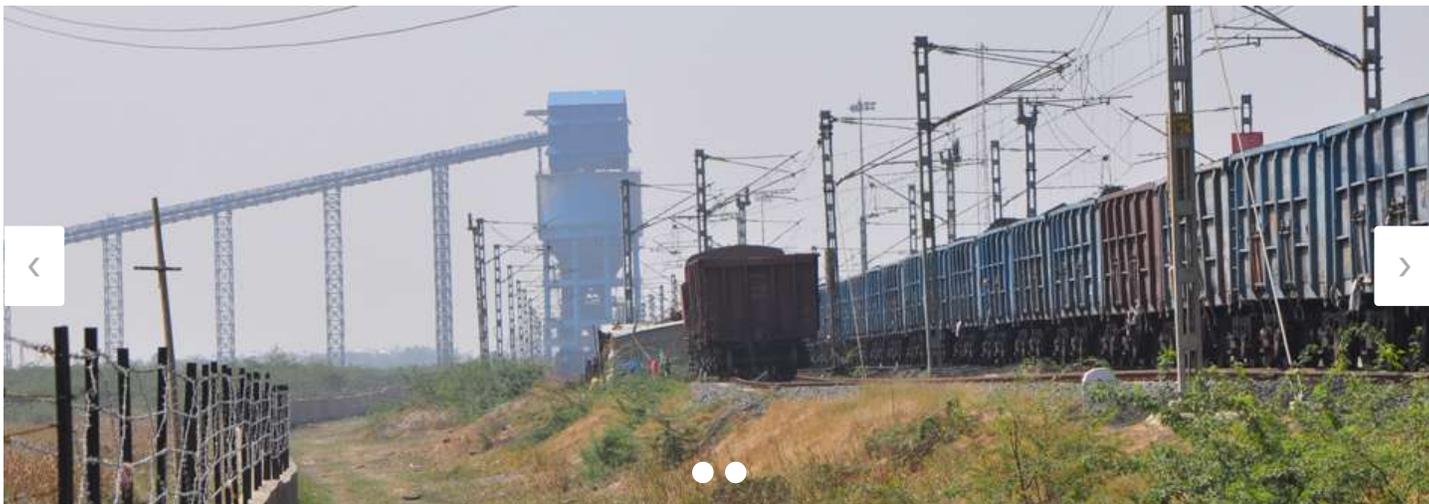
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Sr. No.	Name of Company	Products	Investment (at historical cost)
1	Reliance Petrochemical Complex (formerly IPCL)	Plastics and fibre intermediates.	5000
2	Petronet LNG Limited	LNG import and re-gasification terminal	3700
3	Hindalco Industries Ltd (Birla Copper)	Copper cathodes, copper rods, sulphuric acid, phosphoric acid and other phosphatic fertilizers	3527
4	ABG Shipyard	Ship building	2056
5	BASF Styrenics Pvt. Limited	Polystyrene	1680
6	Gujarat Alkalis and Chemicals Ltd	Caustic soda & potash, chloromethane, phosphoric acid, hydrogen peroxide etc.	1641
7	Gujarat Fluorocarbons Ltd	PTFE resins, refrigerants, caustic soda	1000
8	Oil & Natural Gas Corporation	Ethane C2, Propane C3, Butane C4	976
9	Gujarat Chemical Port Terminal Company Ltd	Chemical port and storage terminal	884
10	Meghmani Chemicals Ltd.	Pigments and additives	550
11	Welspun Gujarat Stahl Rohren Ltd	Saw pipes	500
12	Firmenich Aromatics (India)	Penty lando, Estarbeta, Mehtal, Sefanone	298
13	Gujarat State Petronet Ltd	Natural gas transmission	225





# GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN

Sector-10-A, Gandhinagar-382 010

Phone : (079) 23226295

Fax : (079) 23232156

Website : www.gpcb.gov.in

By R.P.A.D.

CONSOLIDATED CONSENT AND AUTHORIZATION(CC & A)

CCA NO: AWH-108216

**NO: GPCB/BRCH/CCA-310(19)/ID-15178/ \_\_\_\_\_**

**DT: \_\_\_/09/2020**

In exercise of the power conferred under Section-25 of the Water (Prevention and Control of Pollution) Act-1974, under Section-21 of the Air (Prevention and Control of Pollution) Act-1981 and Authorization under rule 6(2) of the Hazardous & Other Wastes (Management and Trans boundary Movement) Rules-2016, framed under the E(P) Act-1986.

And whereas Board has received consolidated application dated **30/01/2020** and inward no. **171166** for the consolidated consent and authorization (CC & A) of this Board under the provisions / rules of the aforesaid Acts, Consolidated Consent & Authorization is hereby granted as under.

**CONSOLIDATED CONSENT AND AUTHORISATION:**

(Under the provisions / rules of the aforesaid Environmental Acts)

To,

**M/s. HINDALCO INDUSTRIES LTD.,**

**PLOT NO: 2,10,11,43,**

**AT & POST DAHEJ, LAKHIGAM**

**TAL: VAGRA, GIDC ESTATE DAHEJ,**

**DIST-BHARUCH.**

1. **Consent Order No. : AWH-108216 date of Issue 30/05/2020.**
2. The consent under Water Act-1974 for conveying the industrial treated effluent discharge to deep sea. The consent under Air Act-1981 & Authorization under Environment (Protection) Act, 1986 shall be **valid up to 02/03/2026** to operate industrial plant to manufacture following products:

Sr. No.	Products	Quantity(MT/Annum)
1.	Copper Cathode	500000
2.	Sulphuric Acid (98.4 %)	1470000
3.	Oxygen ( Tech)	780000
4.	Gold	26
5.	Silver	200
6.	CC Rod	484000
7.	Phosphoric Acid (as P2O5)	360000
8.	DAP/NPK Fertilizer	872000
9.	Electric Power ( MW)	145.60
10.	Copper Wire ( $\leq 4$ mm dia) through Mechanical Drawing Process.	60000

Sr No.	Name of By-Product	Quantity
1.	Selenium	60 TPM
2.	PGM Concentrate	0.0508 TPM
3.	Granulated Slag	65500 TPM
4.	Phosphogypsum	150000 TPM
5.	Hydrofluosilic acid	5580 TPM
6.	Aluminium Fluoride	500 TPM

**Specific conditions:**

- a) Unit shall comply with all the conditions stipulated by SEIAA / MoEF in the order of Environment Clearance issued vide letter No.J-11011/07/94-IAII(I) dated 14/03/1995 No.J-11011/81/2000-IAII (I) dated 08/01/2002, No.J-11011/86/2002-IAII (I) dated 10/02/2004, No.J-11011/220/2002-IAII (I) dated 18/03/2005, No. J-11011-927/2008-IA-II (I) dated 11/02/2009 and No. J-11011-927/2008- IA-II (I) dated.23/02/2017.
- b) Unit shall sell out their hazardous waste to authorized end users who is having authorization with valid CCA and rule 9 permission to receive this waste. Unit shall make MoU with such authorized end users and submit MoU.
- c) All the efforts shall be made to send hazardous waste to cement industry for Co-processing first & there after it shall be disposed through other option.
- d) Unit shall follow coal handling guideline framed by Board and provide close ash handling facility.
- e) Unit shall strictly follow the Fly Ash Notification for disposal of generated ash.
- f) Unit shall install online Continuous Emission Monitoring Systems (CEMS) and link it with the server of GPCB for real time data transfer for boiler more than 8 TPH capacity or equivalent capacity of TFH.

**3. CONDITION UNDER THE WATER ACT:**

3.1' The quantity of total water consumption shall not exceed **39742 KL/Day** as per below break up as mentioned in form D submitted for consent application under the Water Act- 1974.

- a) Industrial: **38524 KL/Day**
- b) Domestic: **1218 KL/Day**

3.2 The quantity of total waste water generation shall not exceed **5161 KL/DAY** as per below break up as mentioned in form D submitted for consent application under the Water Act- 1974.

- a) Industrial: **4755 KL/Day** (Including R.O reject 1000 KL/day)
- b) Domestic: **406 KL/Day**

3.3 Mode of disposal of wastewater:

- a) The treated effluent conforming to the standards as per condition no. 3.4 shall be reutilized as per specific condition no. (III) of Environment Clearance Certificate

Outward No: 562901/2018/2018



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dated: 18/03/2005 i.e. unit shall use 1330 M3/Day of treated effluent for greenbelt development. 475 M3/Day of treated effluent for lime slurry preparation. 480 M3/Day of treated effluent for make up in slag granulation and remaining 370 M3/Day of treated effluent in gas cleaning section. However, additional treated effluent shall be discharged into the deep sea through HDPE pipeline at a point through multiple diffuser system as recommended by the NIO specifically for the effluent generated from copper smelter Plant I & II. There shall not be any discharge outside the premises for the effluent generated from copper smelter Plant-III. The treated effluent should conform to the marine environmental standards as specified as per condition no. 3.4.

- b) The Sewage from the entire complex shall be treated separately to conform to the following and utilized on land for gardening and plantation only.

Sr. No.	PARAMETERS	PERMISSIBLE LIMIT
1	Biochemical Oxygen Demand, BOD <sub>5</sub> , 27° C	20 mg/L
2	Total Suspended Solids (TSS)	30 mg/L
3	Total Residual Chlorine	Minimum 0.5 ppm

- c) The company should operate a separate online Fish pond using treated effluent to ensure that the quality of treated effluent discharged into the sea does not have any adverse impact on the marine life. The effluent quality at the marine discharge point must also be monitored periodically by an independent agency authorized by CPCB and report of the independent agency should be submitted to the Ministry's Regional office at Bhopal/CPCB/GPCB.
- d) Adequate facilities and safety measures including protective clothing for personnel working in the critical area. e.g. in the anode casting area must be strictly explored.

- 3.4 The quality of industrial effluent shall conform to the following standards (as per GPCB norms, whichever is applicable) (additional treated effluent shall be discharged into the deep sea through HDPE pipeline at a point through multiple diffuser system as recommended by the NIO)

Sr. No.	PARAMETERS	PERMISSIBLE LIMIT
1	pH	5.5-9.0
2	Temperature	45°C
3	Colour( Pt.Co.scale)	100 units
4	Total suspended solids	100 mg/l
5	BOD( 3 days at 27° C)	100 mg/l
6	COD	250 mg/l
7	Oil and Grease	20 mg/l
8	Phenolic Compounds	5 mg/l
9	Ammonical Nitrogen	50 mg/l
10	Sulphides	5 mg/l
11	Cyanides	0.2 mg/l
12	Fluoride	10 mg/l
13	Hexavalent Chromium	1.0 mg/l
14	Total Chromium	2.0 mg/l
15	Copper	3.0 mg/l

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Outward No: 56890/30/2005

16	Nickel	5.0 mg/l
17	Zinc	15.0 mg/l
18	Mercury	0.01 mg/l
19	Lead	1.0 mg/l
20	Arsenic	0.2 mg/l
21	Cadmium	2.0 mg/l
22	Insecticide/Pesticide	Absent
23	Selenium	0.05 mg/l
24	Bio-Assay Test	90 % survival of fish after 96 hours in 100 % effluent

- 3.5 The treated effluent conforming to the above standards shall be reutilized in the process.
- 3.6 Unit shall implement & follow communication plan so that respected work can be done in minimum response time in case of emergencies.
- 3.7 Unit shall install continuous / online monitoring system and shall transmit online data so generated simultaneously to GPCB and CPCB as well for the parameters such as pH, BOD, COD, TSS, other sector specific parameters etc. with recorder & magnetic flow meters for flow measurement of treated wastewater as per CPCB guideline.
- 3.8 Unit shall make fixed arrangement for discharge of the effluent from their Final collection tanks. Unit shall not keep any by-pass line or system or loose or flexible pipe line for discharge of the effluent into underground drainage network of Pipeline.
- 3.9 Magnetic flow meters shall be installed at the inlet & outlet of effluent collection tanks/ETP to measure the quantity of effluent.
- 3.10 Unit shall affix of water meters as per Section 4 (1) of the water (Prevention and Control of Pollution) Cess Act - 1977 for the purpose of measuring and recording the quantity of water consumed at such places as may be required.
- 3.11 Unit shall provide adequate / safe effluent sampling facility for the effluent being stored in final collection / discharge tank of ETP.
- 3.12 Unit shall put up at the entrance a board displaying the name of unit, particulars of the products/ process, the name of proprietor/partners /directors of the unit.
- 3.13 Unit shall have to display on-line data outside the main factory gate with regard to and nature of hazardous chemicals being handled in the plant, including waste water and air emission and solid hazardous waste generated within the factory premises, if applicable as per CPCB norms.
- 3.14 Unit shall either stop or curtail its production activities if the effluent is not conforming to the standards of GPCB.
- 3.15 Unit shall keep accurate records of quantity of production of each product, quantity of water consumption, quantity of effluent generated and consumption of electricity



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on day to day basis and required to submit the complied record of each month to GPCB on or before fifth day of the succeeding month.

- 3.16 Disposal system for storm water shall be provided separately. In no circumstances storm water shall be mixed with the industrial effluent.
- 3.17 Leachate from the Secured Land Fill, if any shall also be connected into a collection tank through leachate collection facilities and shall be treated along with industrial effluent.
- 3.18 The Environmental Management Unit/Cell shall be setup to ensure implementation on and monitoring of environment safeguards and other conditions stipulated by statutory authorities. The Environmental Management Cell / Unit shall directly report to the Chief Executive of the organization and shall work as a focal point for internalizing environmental issues. These Cells also coordinate the exercise of environmental audit and preparation of environmental statements.
- 3.19 The Environmental audit shall be carried out yearly, if applicable. The environmental statements pertaining to the previous year shall be submitted to this State Board latest by 30<sup>th</sup> September every year.
- 3.20 In case of change of ownership/ management the name and address of, the new ownership/ partners/ directors/ proprietor should immediately be intimate to the Board. Also any change in equipment or working conditions as mentioned in the consents form/ order should immediately be intimated to this Board.
- 3.21 The Board reserves the right to review and/or revoke the consent and / or make modifications in the conditions which it seems fit in accordance with provisions of Water Act-1974.

#### 4. CONDITIONS UNDER THE AIR ACT:

4.1 The following shall be used as fuel:

Sr. No.	Name of fuel	Quantity in TPM
1.	HSD	900
2.	HFO	1530
3.	Imported Coal	36980
4.	LNG(SCM)	1486197

4.1.1 The flue gas emission through stack shall conform to the following standards:

Stack No.	Stack attached to	Stack Height in Meter (From G.L.)	Air Pollution Control Measure (APCM)	Parameter	Permissible limit
1.	Dore furnace of PMR Plant	45	Bag Filter	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm

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Outward No: 568/01, 2/09/2020

2.	Package boiler	43	Scrubber	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm
3.	Sulphuric Acid Preheater -I	30	--	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm
4.	Sulphuric Acid Preheater -II	30	--	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm
5.	DG Set -I	30	Cyclone Separator	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm
6.	DG Sets-II	30	Cyclone Separator	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm
7.	Captive Power Plant (CPP-I) CFBC Boiler 35 MW	75	ESP + lime dosing system	PM SO <sub>2</sub> NO <sub>x</sub>	100 mg/Nm <sup>3</sup> 600 mg/Nm <sup>3</sup> 600 mg/Nm <sup>3</sup>
8.	Shaft Furnace of CCR Plant-I	26	--	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm
9.	Shaft Furnace of CCR Plant-II	26	--	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm
10.	Sulphuric Acid Preheater -III	38	--	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm
11.	Captive Power Plant (CPP-II) AFBC Boiler 15.34 MW	60	ESP + lime dosing system	PM SO <sub>2</sub> NO <sub>x</sub>	100 mg/Nm <sup>3</sup> 600 mg/Nm <sup>3</sup> 600 mg/Nm <sup>3</sup>
12.	Captive Power Plant (CPP-III) CFBC Boiler 60 MW	85	ESP + lime dosing system	PM SO <sub>2</sub> NO <sub>x</sub> Mercury	50 mg/Nm <sup>3</sup> 600 mg/Nm <sup>3</sup> 300 mg/Nm <sup>3</sup> 0.03 mg/Nm <sup>3</sup>
13.	Shaft Furnace of CCR Plant-III	35	--	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 100 ppm 50 ppm

4.2 The Process emission through various stacks/ vent of reactors, process, vessel shall conform to the following standards:



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Stack No.	Stack attached to	Stack Height in Meter (From G.L.)	Air Pollution Control Measure (APCM)	Parameter	Permissible limit
1.	Anode Casting of Smelter-I	20	--	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 40 mg/Nm <sup>3</sup> 25 mg / Nm <sup>3</sup>
2.	Main stack Secondary Gas Scrubber of Smelter-I	75	Two stage alkali Scrubber	SO <sub>2</sub>	40 mg/Nm <sup>3</sup>
3.	Copper scrap melting furnace ( Cap,50 TPD) of Smelter-I				
4.	Main stack Slag Cleaning Furnace of Smelter-I	75	Bag filter	PM SO <sub>2</sub>	150 mg/Nm <sup>3</sup> 40 mg/ Nm <sup>3</sup>
5.	Main Stack Sulphuric Acid Plant-I	75	5 stage DCDA system & Mist Eliminator	Acid Mist SO <sub>2</sub>	25 mg/Nm <sup>3</sup> 2.0 Kg per Ton of 100 % conc. Sulphuric Acid
6.	Cathode Stripping M/C Plant-I of Refinery-I	20	--	SO <sub>2</sub>	40 mg/Nm <sup>3</sup>
7.	Anode scrap Washing M/C of Refinery-I	20	--	SO <sub>2</sub>	40 mg/Nm <sup>3</sup>
8.	Liberator Stack of Refinery-I	26	Scrubber	SO <sub>2</sub> Acid Mist	40 mg/Nm <sup>3</sup> 25 mg/Nm <sup>3</sup>
9.	Slag Granulation of Smelter-I	45	--	SPM	150 mg/Nm <sup>3</sup>
10.	Steam Dryer of Copper concentrate of Smelter-I	58	Bag Filter	PM SO <sub>2</sub>	150 mg/Nm <sup>3</sup> 40 mg/ Nm <sup>3</sup>
11.	Slag Cleaning Furnace (By Pass vent) of Smelter-I	46	Bag Filter	PM SO <sub>2</sub>	150 mg/Nm <sup>3</sup> 40 mg/ Nm <sup>3</sup>

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Outward No. 56/201/30/19/2022

12.	Cathode Stripping M/C Plant-II of Refinery-II	20	--	SO <sub>2</sub>	40 mg/Nm <sup>3</sup>
13.	Centralized Scrubbing System Smelter-III	75	Bag Filter + Alkali Scrubber	PM SO <sub>2</sub>	150 mg/Nm <sup>3</sup> 40 mg/ Nm <sup>3</sup>
14.	Sulphuric Acid Plant-III	75	5 stage DCDA system & Mist Eliminator Tail Gas Scrubber based on Dynawave scrubber	Acid Mist SO <sub>2</sub>	25 mg/Nm <sup>3</sup> 1.0 Kg per Ton of 100 % conc. Sulphuric Acid
15.	Cathode Stripping M/C Refinery-III	20	--	SO <sub>2</sub>	40 mg/Nm <sup>3</sup>
16.	Liberator Stack of Refinery-III	26	Scrubber	SO <sub>2</sub> Acid Mist	40 mg/Nm <sup>3</sup> 25 mg/Nm <sup>3</sup>
17.	DAP	60	Dual media Scrubber	PM SO <sub>2</sub> NO <sub>x</sub> NH <sub>3</sub> HF	150 mg/Nm <sup>3</sup> 40 mg/Nm <sup>3</sup> 25 mg / Nm <sup>3</sup> 175 mg/Nm <sup>3</sup> 6.0 mg / Nm <sup>3</sup>
18.	PS Convertor area (Gases are to be transferred to H <sub>2</sub> SO <sub>4</sub> plant ) only emergency vent	47	--	PM SO <sub>2</sub> Copper	150 mg/Nm <sup>3</sup> 40 mg/Nm <sup>3</sup> 20 mg / Nm <sup>3</sup>
19.	Reactor (Phosphoric Acid Plant)	60	Scrubber	HF	6.0 mg/ Nm <sup>3</sup>
20.	PMR Plant Phase -III	30	Bag Filter	PM SO <sub>2</sub> NO <sub>x</sub>	150 mg/Nm <sup>3</sup> 40 mg/Nm <sup>3</sup> 25 mg / Nm <sup>3</sup>

4.3 The concentration of the following parameters in the ambient air within the premises of the unit shall not exceed the limits specified hereunder.

Sr. No.	Parameters	Permissible Limit (microgram /m <sup>3</sup> )	
		Annual	24 Hours Average
1.	Particulate Matter (PM <sub>10</sub> )	60	100
2.	Particulate Matter (PM <sub>2.5</sub> )	40	60
3.	Oxides of Sulphur (SO <sub>x</sub> )	50	80
4.	Oxides of Nitrogen (NO <sub>x</sub> )	40	80



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- 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.

- 4.4 Unit shall operate industrial plant / air pollution control equipment very efficiently and continuously so that the gaseous emission always conforms to the standards specified as above.
- 4.5 The consent to operate the industrial plant shall lapse if at any time the parameters of the gaseous emission are not within the tolerance limits specified as above.
- 4.6 Unit shall provide portholes, ladder, platform etc at chimney(s) for monitoring the air emissions and the same shall be open for inspection to/and for use of Board's staff. The chimney(s) vents attached to various sources of emission shall be designed by numbers such as S-1, S-2, etc. and these shall be painted/ displayed to facilitate identification.
- 4.7 Unit shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standards in respect of noise to less than 75 dB(a) during day time and 70 dB (A) during night time. Daytime is reckoned in between 6a.m. and 10 p.m. and nighttime is reckoned between 10 p.m. and 6 a.m.
- 4.8 All efforts shall be made to control VOC emissions and odor problem, if any.
- 4.9 Total control of odor nuisance from the plant premises, shall be achieved & maintained by the unit continuously
- 4.10 Unit shall install continuous / online monitoring system in the stacks and shall transmit online data so generated simultaneously to GPCB and CPCB as well for the parameters such as PM, SO<sub>2</sub>, NO<sub>x</sub>, other sector specific parameters etc., if applicable as per CPCB guideline.

## 5 GENERAL CONDITIONS: -

- 5.1 In case of change of ownership/ management the name and address of the new ownership/ partners/ directors/ proprietor should immediately be intimate to the Board. Also any change in equipment or working conditions as mentioned in the consents form/ order should immediately be intimated to this Board.
- 5.2 Unit shall put up at the entrance a board displaying the name of unit, particulars of the products/ process and the name of proprietor/partners /directors of the unit and the electricity consumer number as on the record of DGVCL.

## 6. AUTHORISATION FOR THE MANAGEMENT & HANDLING OF HAZARDOUS WASTES Form-2 (See rule 6(2)).

6.1 Number of authorization: **AWH-108216 date of Issue 30/05/2020.**

6.2 **M/s. HINDALCO INDUSTRIES LTD.** is hereby granted an authorization to operate facility for following hazardous wastes on the premises situated at **PLOT No.2,10,11,43, AT & PO DAHEJ, LAKHIGAM, TAL.VAGRA, GIDC ESTATE DAHEJ, DIST: BHARUCH.**

Sr. No.	Name of Haz. Waste	Category Number	Quantity	Facility
1	ETP waste sludge & Scrubber waste	8.2/1	175095 TPA	Collection, Storage, transportation and

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	(Sludge & Filter cakes)			disposal at own SLF site/ common TSDF of BEIL.
2	Arsenic bearing sludge, As-Cu precipitate	7.3/I	270.80 TPA	Collection in closed stainless steel vessel, recycle & treatment /encapsulation & disposed at own SLF site/ common TSDF of BEIL.
3	Used oil	5.1/I	50 KL/Yr	Collection, storage, transportation and disposal by sale to registered re-refiners
4	Spent Electrolyte solution	8.1/I	52560 KL/Yr	Collection, Storage, treatment in in-house ETP.
5	Residue dust from SAP	17.1/I	12 TPA	Collection, Storage, Transportation and Disposal in furnace or into own SLF site / common TSDF
6	Spent catalyst	17.2/I	160 KL/Yr	Collection, Storage, Transportation and Disposal in furnace or into own SLF site / common TSDF of BEIL
7	Used Empty Drums (Empty barrels/ Containers/ liners contaminated with hazardous chemicals /wastes)	33.1/I	200 TPA	Collection, Storage, Decontamination, Transportation and Disposal by reuse after in-house decontamination or send it to authorized decontamination facility / recycler or send back to supplier.
8	Flue gas cleaning residue (Exhaust air /gas cleaning residue)	35.1/I	864 TPA	Collection, Storage, Transportation and Recycle into process.
9	Spent resin from DM plant (Spent ion exchange resin containing toxic metals)	35.2/I	7.5 KL/Yr	Collection, Storage, transportation and disposal at own SLF site / common TSDF of BEIL.
10	Selenium & selenium compounds.	A-8/II	6 TPA	Collection, storage, transportation and disposal by sell out to



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				authorized users who is having authorization with valid CCA and rule 9 permission to receive this waste after making MoU.
11	Silver compounds.	A9/III	6 TPA	Collection, storage, transportation and disposal by sell out to authorized users who is having authorization with valid CCA and rule 9 permission to receive this waste after making MoU.
12	Inorganic Acid (Spent Acids)	B15/II	66960 TPA	Collection, storage, transportation and reuse to Mfg of ALF3 /disposal by sell out to authorized users who is having authorization with valid CCA and rule 9 permission to receive this waste after making MoU.
13	Dust & Lumpy	4/IV	35000 TPA	Collection, Storage, Transportation and recycle in smelter or sell to recyclers
14	Copper Converting or C-Slag	6/IV	6000 TPA	Collection, Storage, Transportation and recycle in smelter or sell to recyclers
15	Liberator cake	4/IV	3000 TPA	Collection, Storage, Transportation and recycle in smelter or sell to recyclers
16	Copper Revert	4/IV	72000 TPA	Collection, Storage, Transportation and recycle in smelter or sell to recyclers
17	Dore Slag (Slags from copper processing for further processing or refining)	6/IV	2500 TPA	Collection, Storage, Transportation and recycle in smelter or sell to recyclers
18	Lead Anode/ Cathode	7./I	80 TPA	Collection, Storage, Transportation and

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Outward No. 568901, 30/09/2010

				recycle in smelter or sell to recyclers.
19	Cotton waste used (Contaminated cotton rags or other cleaning materials)	33.2/l	15 TPA	Collection, Storage, Transportation and Disposal to CHWIF.
20	Used Insulation	X-X02	100 TPA	Collection, Storage, Transportation and Disposal in furnace or into own SLF site / common TSDF of BEIL.
21	Discarded PPE (Rubber)	X-X08	5 TPA	Collection, Storage, Transportation and Disposal in furnace or into own SLF site / common TSDF of BEIL.
22	Used membrane/ Filter cloth and bags	Z-Z37	20 TPA	Collection, Storage, Transportation and Disposal in furnace or into own SLF site / common TSDF of BEIL.

- 6.3 The authorization is granted to operate a facility as above.
- 6.4 The authorization shall be in force for a period **up to 02/03/2026**.
- 6.5 The authorization is subject to the conditions stated below and such other conditions as may be specified in the rules from time to time under the Environment (Protection) Act-1986.

**7. TERMS AND CONDITIONS OF AUTHORISATION:**

- 7.1 The authorised person shall comply with the provisions of the Environment (Protection) Act, 1986, and the rules made there under.
- 7.2 The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the Gujarat Pollution Control Board.
- 7.3 The person authorised shall not rent, lend, sell, transfer or otherwise transport the hazardous and other wastes except what is permitted through this authorisation.
- 7.4 Any unauthorised change in personnel, equipment or working conditions as mentioned in the application by the person authorised shall constitute a breach of his authorisation.
- 7.5 The person authorised shall implement Emergency Response Procedure (ERP) for which this authorisation is being granted considering all site specific possible scenarios such as spillages, leakages, fire etc. and their possible impacts and also carry out mock drill in this regard at regular interval of time;
- 7.6 The person authorised shall comply with the provisions outlined in the Central Pollution Control Board guidelines on "Implementing Liabilities for Environmental Damages due to Handling and Disposal of Hazardous Waste and Penalty"
- 7.7 It is the duty of the authorised person to take prior permission of the Gujarat Pollution Control Board to close down the facility.



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- 7.8 The imported hazardous and other wastes shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation.
- 7.9 The record of consumption and fate of the imported hazardous and other wastes shall be maintained.
- 7.10 The hazardous and other waste which gets generated during recycling or reuse or recovery or pre-processing or utilization of imported hazardous or other wastes shall be treated and disposed of as per specific conditions of authorization.
- 7.11 The importer or exporter shall bear the cost of import or export and mitigation of damages if, any.
- 7.12 An application for the renewal of an authorization shall be made as laid down under Hazardous & Other Wastes (Management and Transboundary Movement) Rules-2016.
- 7.13 Any other conditions for compliance as per the Guidelines issued by the Ministry of Environment, Forest and Climate Change or Central Pollution Control Board from time to time.
- 7.14 Annual return shall be filed by June 30<sup>th</sup> for the period ensuring 31<sup>st</sup> March of the year.
- 7.15 Unit shall have to display the relevant information with regard to hazardous waste as indicated in the Court's order in W.P. No. 657 of 1995 dated 14<sup>th</sup> October 2003.
- 7.16 Unit shall have to display on-line data outside the main factory gate with regard to and nature of hazardous chemicals being handled in the plant, including waste water and air emission and solid hazardous waste generated within the factory premises.
- 7.17 Unit shall have to manage used or spent oil; empty or discarded barrels / containers / liners contaminated with hazardous chemicals / wastes, process waste as per Hazardous & Other Wastes (Management and Transboundary Movement) Rules-2016, framed under the E(P)Act-1986 and shall apply Authorization for all applicable waste.

For and on behalf of  
GUJARAT POLLUTION CONTROL BOARD

(P.B Patel)

Dy. ENVIRONMENT ENGINEER

Outward No:568901,30/09/2020

*Clean Gujarat Green Gujarat*



**Dr. Rajiv Kumar Gupta IAS**  
Additional Chief Secretary  
&  
Managing Director, SSNNL

No.  
Government of Gujarat  
Forest and Environment Department  
Block No. 14, 8th, Floor, Sardar Bhavan,  
Sachivalaya, Gandhinagar-382 010  
Tel. : +91-79-23251051, 23251053  
E-mail : secfed@gujarat.gov.in

Date: 17<sup>th</sup> May, 2021

Sub : Uninterrupted oxygen supply for medical purpose from Birla Copper, Dahej.

Dear *Shri Kumar Mangalamji,*

This is to place on record our great appreciation and gratitude to Birla Copper for having supplied hundreds of tons of oxygen for medical purpose during last few weeks to Ahmedabad city. These supplies have gone a long way in treating thousands of COVID patients and saving their lives.

Since I have been looking after COVID management in Ahmedabad city for last over one year, I deem it fit to intimate you about cooperation of the highest order that we have received in Oxygen supply from Shri Ashish Patel, President (Corporate Affairs) Aditya Birla Group and also Shri S. Kankanand, President & Unit Head, Birla Copper, Dahej.

On behalf of Government of Gujarat and also on behalf of Ahmedabad Municipal Corporation I would like to again express my sincere gratitude and heartfelt thanks to you and your team in Gujarat. We would be sincerely looking forward to a similar gesture in future, if need be.

With regards,

Yours sincerely,

*[Signature]*  
[ Dr. Rajiv Kumar Gupta IAS ]  
Additional Chief Secretary, F&ED  
& Managing Director, SSNNL

Shri Kumar Mangalam Birla  
Chairman  
Aditya Birla Group  
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**Air Quality Improvement Projects:****1. Tail Gas Scrubber-****2. Bag Filters Revamping in CPP-**

**3. Wind Fencing around Coal Storage Yard:**



**4. Belt conveyor systems replacement:**



**5. Upgradation of Conveyor Scraper systems**



### ***6. Close loop handling of solids***



### ***7. Dust Free Lime Dosing***



### ***8. Major focus on Housekeeping***



## **Water Quality Improvement and Recycling Projects:**

### ***1. Secondary Water treatment***



### ***2. Tertiary Water treatment –***



### ***3. Advanced Technology for Sewage Treatment:***



#### ***4. Revamping of Drains – process and storm***



### **Improvements in Solid Waste Management**

#### ***1. Phosphogypsum yard upgradation and monsoon covering:***



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HOME > PHOTOS > INDIA > PHOTOS: HEAVY RAINS LEAD TO FLASH FLOODS IN VADODARA, GUJARAT

## PHOTOS: Heavy Rains Lead to Flash Floods in Vadodara, Gujarat

Four persons were killed and over 5,000 have been evacuated from Vadodara city and surrounding areas in Central Gujarat which was battered by nearly 500 mm of rain in 24 hours. Take a look at the pictures...

India | PTI | August 03, 2019, 23:26 IST



1 / 23



A birds eye view of a flooded area in Vadodara city. (Image: PTI)

2 / 23



A birds eye view of a flooded area in Vadodara city. (Image: PTI)



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3 / 23



NDRF personnel carry out evacuation of patients from a hospital after flood like situation following heavy monsoon rain in Vadodara. (Image: PTI)

4 / 23



Flooded villages are seen in the vicinity of Vadodara city. The Vadodara city of Gujarat state got flooded due to very heavy rains, through water coming from Ajwa Dam and Vishwamitri river. (Image: Defence Public Relations Officer (PRO) of Gujarat/AFP)

5 / 23





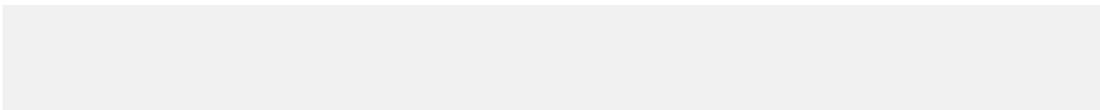
NDRF personnel carry out evacuation of patients from a hospital after flood like situation following heavy monsoon rain in Vadodara. (Image: PTI Photo)



6 / 23



Hospital staff move the body of a deceased patient on a stretcher, through a flooded area inside the S.S.G government hospital, in Vadodara. The city received nearly 500 mm rainfall in 24 hours which created a flood-like situation in the city and disrupted the normal life. (Image: PTI)



7 / 23



A view of the Vadodara airport after heavy rainfall in Vadodara. The city received nearly 500 mm rainfall in 24 hours which created a flood-like situation in the city and disrupted normal life. (Image: PTI)



8 / 23

People are being rescued on a boat by personnel from the National Disaster Response Force (NDRF) as they pass by vehicles submerged floodwaters of Vadodara. (Image: AFP)



9 / 23

A view of the Vadodara airport after heavy rainfall in Vadodara. (Image: PTI)



10 / 23



A view of flooded streets in the city following incessant monsoon rainfall, in Vadodara. The city received nearly 500 mm rainfall in 24 hours which created a flood-like situation in the city and disrupted the normal life. (Image: PTI)



People waded in floodwaters to board a rescue boat of the Disaster Response Force (DRF) of the Gujarat state, in Vadodara. (Image: AFP)



Commuters move slowly through a flooded street following incessant rains, in Vadodara. (PTI)



13 / 23



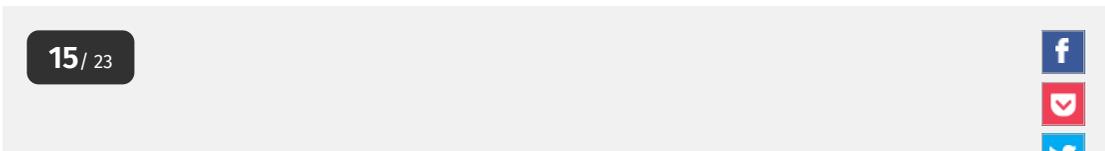
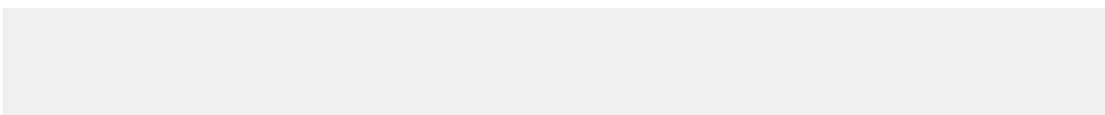
National Disaster Response Force (NDRF) personnel rescue people in Vadodra following flash floods in the city, due to heavy rainfall. (Image: ANI)



14 / 23



Flood-affected people being shifted a safer place by National Disaster Response Force (NDRF) personnel after heavy rains in Vadodra. (Image: Special Arrangement)



15 / 23





A view of a flooded locality following incessant monsoon rains in Vadodara. (Image: Special Arrangement)



16 / 23

Flood-affected people being shifted a safer place by National Disaster Response Force (NDRF) personnel after heavy rains in Vadodara. (Image: Special Arrangement)



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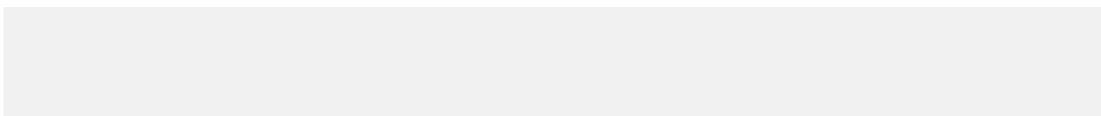
A view of a flooded locality following incessant monsoon rains in Vadodara. (Image: Special Arrangement)



18 / 23



NDRF personnel rescue people in Vadodara following flash floods in the city, due to heavy rainfall. (Image: Special Arrangement)



19 / 23



A view of a flooded locality following incessant monsoon rains in Vadodara. (Image: Special Arrangement)



20 / 23





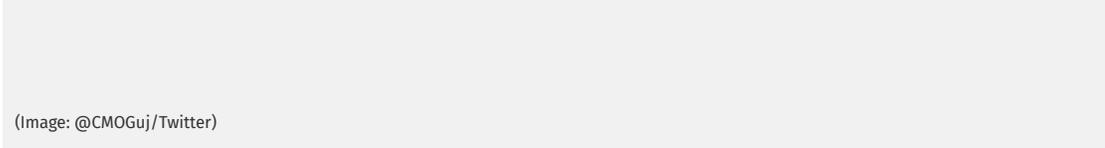
(Image: @CMOGuj/Twitter)



21 / 23



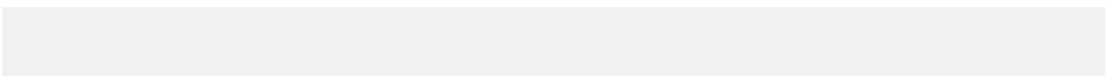
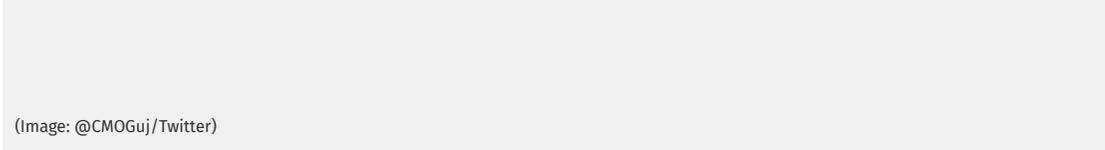
(Image: @CMOGuj/Twitter)

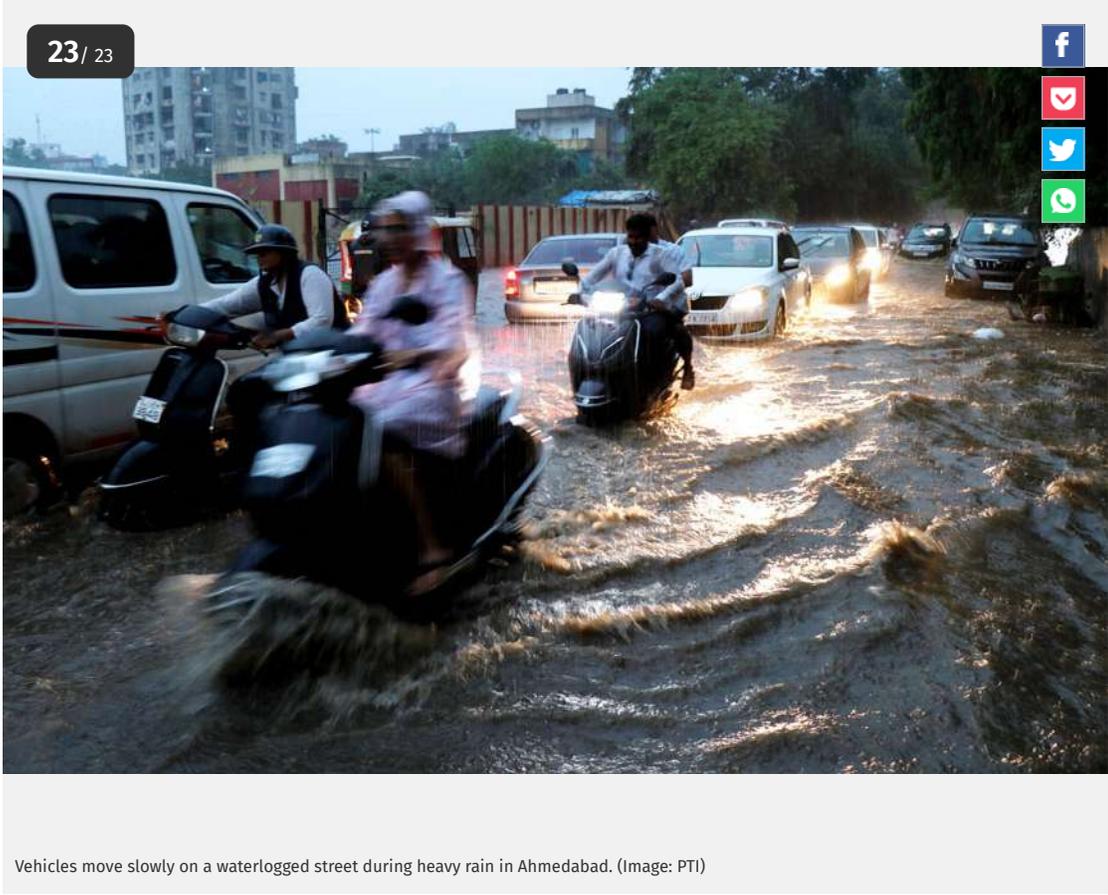


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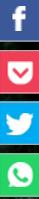


(Image: @CMOGuj/Twitter)





Vehicles move slowly on a waterlogged street during heavy rain in Ahmedabad. (Image: PTI)



23 / 23

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HOME » PHOTOS » INDIA » IN PICS: 340-KM PURVANCHAL EXPRESSWAY WITH EMERGENCY AIRSTRIP FOR IAF FIGHTER JETS

# In Pics: 340-km Purvanchal Expressway with Emergency Airstrip for IAF Fighter Jets

India | News18.com | November 11, 2021, 10:22 IST



1 / 11





The 340.824 km-long expressway will start from the state capital and end in Ghazipur, in eastern UP. Counted as one of the most prestigious and praised projects of the Yogi Adityanath-led BJP government, the total cost of the project is Rs 22,494.66 crore, including the cost of land. (Image: Special arrangements)



2 / 11



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The six-lane Purvanchal Expressway is expandable to eight lanes and will connect Lucknow with cities like- Azamgarh, Mau, Ghazipur, Faizabad, Sultanpur, Ambedkar Nagar and Amethi. (Image: Special arrangements)

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The expressway will also connect the eastern districts of Uttar Pradesh with the national capital New Delhi via the Yamuna expressway. This will become the longest expressway in the country. (Image: Special arrangements)

4 / 11





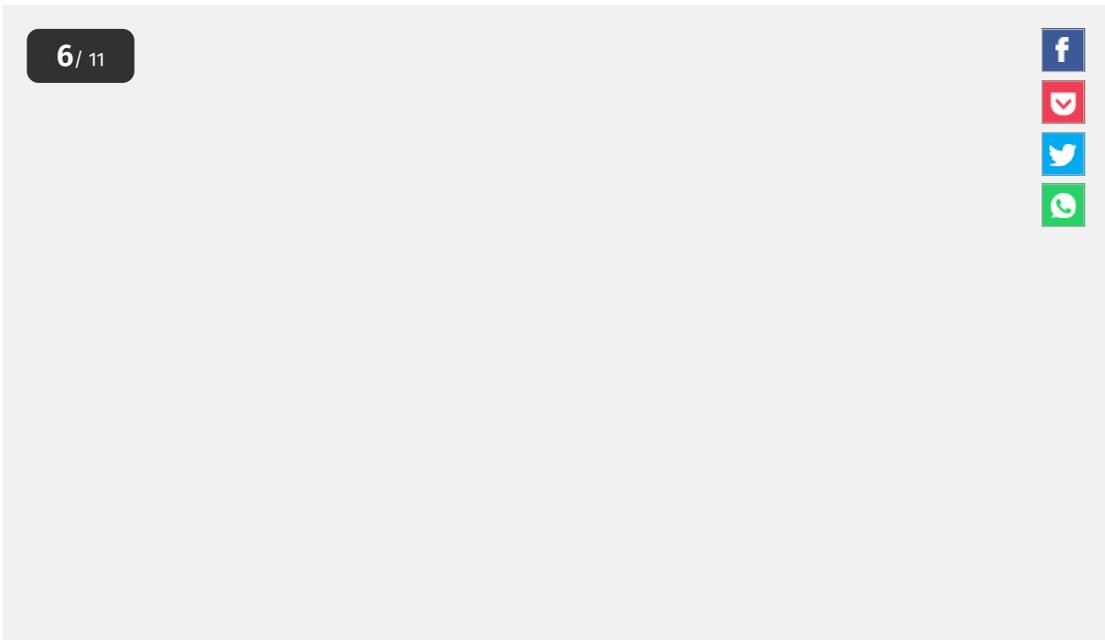
The expressway will start from village Chand Sarai in Lucknow and end in Haidariya village in Ghazipur district. (Image: Special arrangements)



5 / 11

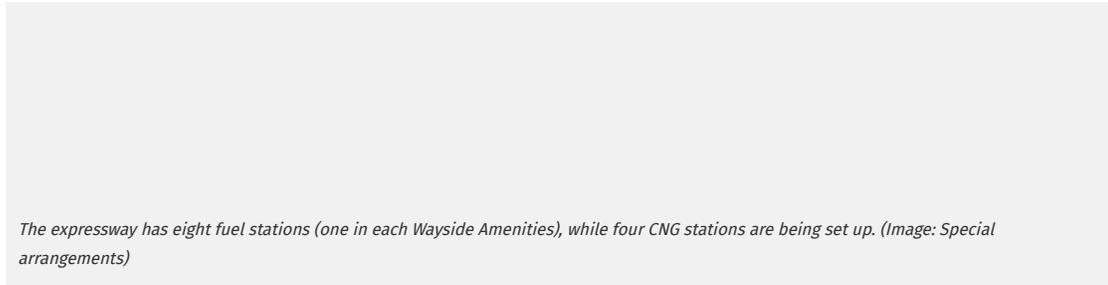


The expressway will also be used as an emergency runway for Indian Air Force (IAF) aircraft. It will allow IAF's fighter jets to use it as an airstrip for emergency situations. (Image: Special arrangements)



6 / 11





*The expressway has eight fuel stations (one in each Wayside Amenities), while four CNG stations are being set up. (Image: Special arrangements)*



7 / 11



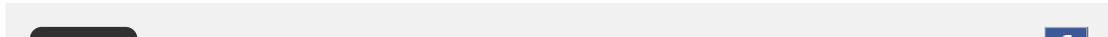
*Four lakh trees are being planted in the ROW of the expressway, and rainwater harvesting pits are also constructed as required by geological conditions, at every 500 metres. (Image: Special arrangements)*



8 / 11



*The lighting arrangements are made on interchanges, flyovers, major bridges, minor bridges and underpasses with solar backup. (Image: Special arrangements)*



9 / 11



*To handle accidents and emergencies, ambulances with life support systems will be kept ready, and reportedly, 20 patrol vehicles will also be deployed. (Image: Special arrangements)*

10 / 11



*Safety measures include- metal beam crash barriers on both side of either lanes and median, caution boards, chevrons, and median plantation has been completed. (Image: Special arrangements)*

11 / 11





Uttar Pradesh Expressways Industrial Development Authority (UPEIDA) has made elaborate security arrangements on the expressway for the safety of the passengers. It will have an advanced traffic management system and fencing to stop stray animals. (Image: Special arrangements)

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News (<https://www.thehindubusinessline.com/news/>)

## Dahej Complex water-logged; Gujarat Alkalies shuts plants

Rutam Vora (<https://www.thehindubusinessline.com/profile/author/Rutam-Vora-16066/>) Ahmedabad |

Updated on August 05, 2019

[f](#) [t](#) [in](#) [📍](#) [✉](#) (mailto:?subject=Dahej%20Complex%20water-logged%3B%20Gujarat%20Alkalies%20shuts%20plants&body=https%3A%2F%2Fwww.thehindubusinessline.com%2Fnews%2Farticle%2Farticle28823850.ece)



Rains in Gujarat - PTI

### GACL shuts units at Dahej complex due to flooding

Water-logging in Central Gujarat region, including in Vadodra, Bharuch and parts of South Gujarat, due to heavy rains has prompted State-run Gujarat Alkalies and Chemicals Ltd (GACL) to temporarily shut its all plants, except one, at Dahej Complex .

The company informed on Monday that following heavy rains and water-logging in the entire Dahej Complex, as a precautionary measure, it is shutting down all its plants at Dahej Complex, except Anhydrous Aluminum (AAC) plant, which has been running on emergency chlorine supply through tonners and hot water system.”

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“Plants were stopped in safe manner with all due precautions. De-watering measures are being taken. As per the situation, the restoration of plant operations would take some time,” GACL stated in a statement.

The region received heavy rains over the past few days causing water-logging on roads, railway tracks and in the fields, including industrial establishments. GACL clarified that all its plants at Vadodara Complex are operating normally.

Last week, another State PSE, Gujarat State Fertilizers and Chemicals Ltd (GSFC), had reported monsoon impact at its facilities in Vadodara.

“On account of heavy downpour, close to 20 inches (499 mm) within a span of 12 hours on July 31, and subsequent water-logging in plant areas, all plants except Hydrogen Section of Ammonia-IV Plant and GTG Section of Co-generation plant were affected in the Vadodara Unit of the Company.”

“Therefore, as precautionary measure, shutdown of plants was taken due to power interruption from 66 KV sub-station,” it had stated.

On Monday, GSFC shares ended 3.68 per cent lower at ₹77.30 on BSE, while GACL shares fell by nearly 1 per cent to close at ₹ 416.80 on BSE.

Published on August 05, 2019

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✉ (mailto:?subject=Dahej%20Complex%20w:

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	852.6	172.55	911.5
S DVR	237.45	54	237.45
	6,119.00	1,397.00	6,397.00
	225.8	51.65	232.2
Stampings	81.75	19.8	82.2
S	509.7	126	523.8
	1,356.50	362.5	1,534.5
als	1,115.00	298.95	1,144.3
ID	850.1	201.85	1,173.0

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### Sportstar

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T20 World Cup 2021 (<https://Sportstar.Thehindu.Com/Cricket/Icc-Mens-T20-World-Cup/2021/India-Wear-Black-Armbands-Tarak-Sinha-Passes-Away-Dhawan-Pant-Kohli-Ind-Vs-Nam-T20-Wc-2021/Article37382695.Ece>)

T20 World Cup 2021 (<https://Sportstar.Thehindu.Com/Cricket/Icc-Mens-T20-World-Cup/2021/News/Ind-Vs-Nam-Dream11-Prediction-India-Namibia-Win-Playing-Xi-Fantasy-Team-Picks-Squad/Article37376659.Ece>)

T20 World Cup (<https://Sportstar.Thehindu.Com/Cricket/Icc-Mens-T20-World-Cup/2021/Schedule/T20-World-Cup-2021-Super-12-Full-Match-Schedule-Fixtures-Squads-Timings-Venues/Article37128321.Ece>)



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## ANNEXURE R8/9

No.: A/18/Survey/2358-60/09-10  
Office of the Forest Conservator,  
Rajpipla Western Forest Department,  
Rajpipla. Date: 8/02/2010.

To,  
The Forest Conservator,  
Surat Circle, Surat.

Sub: Diversion of Forest Land of 16.00 H. of  
Forest Land for (RF) setting up 60 Mega  
watt Power plant DAP/NPK and PAP  
Project alongwith Copper Smelter  
Expansion Project Phase-3 in favour of  
Hindalco Industries in Bharuch District.

Ref: 1) This office Letter No. A/18/Survey/  
1122-23 dt. 07-08-2009.  
2) Your Letter No. / /16/295/6259  
dt. 26-08-2009.

With reference to the above subject it is to state that, Provisional Approval is given vide letter dtd. 16-03-07 of the Government of India to the Proposal made by the Hindalco Industries Ltd., under the Forest Conservation Act, 1980 regarding obtaining Forest land bearing S. No. 1504 Paiki, admeasuring 16.00 H. situated at Dahej, Ta. Vagra, Dist. Bharuch.

After making the Proposal under the Forest Conservation Act, 1980 by the User Agency, to the Government and prior to getting approval of the Government, about 25.00 Hactor of Forest Area is damaged due to draining polluted water containing chemicals in the area as demanded by them, and about 0.75 Hecior of area is covered by the User Agency by throwing solid waste, which is instantaneously removed from the Forest land. Regarding the same, crime matter lodged against the aforesaid company vide (1) Round Forest Dahej's V.R.No 6/Dt. 29-1-07 and R.Cr. No. 7/06-07(2) Rang Forest Officer, Bharuch (2) R.F. 1/07-08 dtd. 11-09-07 and R. Cr. No. 6/07-08. Final Order passed regarding the aforesaid both crime matters, vide Letter No. A/Survey/ 18/559 Dt. 30/12/2009. In which, it is order to recover the total amount of Rs.17,84,000/- including amount of total damage to the Forest area for the second time done crime matter, double of Rs. 3,50,000/- i.e. Rs. 7,00,000/- and for the third time

2

done crime matter amount of total damage to the Forest area, three fold of Rs. 3,60,000/- i.e. Rs. 10,80,000/- and in the matter of aforesaid both crime matter total compensation of Rs. 4000/- at the rate of Rs.2000/-. (Copy enclosed). Procedure to recover the amount as per order is initiated.

User Agency itself is responsible for the aforesaid crime matter. User Agency repeatedly does breach of the Forest Conservation Act, 1980.

As the User Agency has damaged total 25.00 Hector of land by draining water contains chemicals, so double that means amount to grow forest in 50 Hector of land is liable to be recovered. Hence, amount to grow forest shall be recovered as the penalty compensation in total 50.00 Hector of land from the User Agency. Scheme of Penalty Compensation Forest (Vanikaran) as per recent daily wages Rs.141.60 is prepared and enclosed herewith, which please note.

Sd/- Illegible  
(G. I. Naik)  
Deputy Forest Conservator  
Rajpipla West

Copy to: Chief Conservator Forest (Land), Gujarat State, Gandhinagar for information

Copy with Jaybharat to: President and Chief Managing Officer, Hindalco Industries Ltd. (Unit Birla Copper), Dahej, Ta. Vagra, Dist. Bharuch for information.

Sd/- Illegible  
Deputy Forest Conservator  
Rajpipla West

Remark: Total penal afforestation charges is per Hector Rs. 1,20,000/- x 50 Hectors = 60,00,000/- (This calculation is shown in the separate statement, enclosed herewith)

ક્રમાંક : અ/૧૮/સર્વે / ૨૩૫૬, ૬૦ / ૦૯-૧૦  
 નાયબ વન સંરક્ષકશ્રીની કચેરી,  
 રાજપીપલા પશ્ચિમ વન વિભાગ,  
 રાજપીપલા. તારીખ : ૧૦/૦૨/૨૦૧૦.

પ્રતિ,  
 વન સંરક્ષકશ્રી,  
 સુરત વર્તુળ, સુરત.

વિષય :- ડાયવર્ગન ઓફ ફોરેસ્ટ લેન્ડ ઓફ ૧૬.૦૦ હે. ઓફ ફોરેસ્ટ લેન્ડ ફોર (આરએફ)  
 સેટીંગઅપ ૬૦ મેગાવોટ પાવર પ્લાન્ટ ડીએપી/એનપીકે એન્ડ પીએપી પ્રોજેક્ટ  
 એલોંગ વીથ કોપર સ્પેક્ટર એક્સપેન્શન પ્રોજેક્ટ ફેઝ-૩ ઈન ફેવર ઓફ હિન્ડાલકો  
 ઇન્ડસ્ટ્રીઝ ભરૂચ ડિસ્ટ્રિક્ટ.

સંદર્ભ :- ૧) અત્રેના પત્રકમાંક : અ / ૧૮ / સર્વે / ૧૧૨૨-૨૩ તા. ૦૭-૦૮-૨૦૦૯.  
 ૨) આપશ્રીના પત્રકમાંક : બ/જમન / ૧૬ / ૨૯૫ / ૬૨૫૯ તા. ૨૬-૦૮-૨૦૦૯.

સાદર ઉપરોક્ત વિષય અન્વયે નિવેદન કરવાનું કે હિન્ડાલકો ઇન્ડસ્ટ્રીઝ લી. ધ્વારા મોજે દહેજ તા.  
 વાગરા છ. ભરૂચની જંગલ સ.નં. ૧૫૦૪ પૈકી ૧૬.૦૦ હે. જંગલ જમીન મેળવવા બાબતની વન સંરક્ષણ  
 ધારા ૧૯૮૦ હેઠળ કરવામાં આવેલ દરખાસ્તને ભારત સરકારશ્રીના તા.૧૬-૦૩-૦૭ ના પત્રથી  
 સૈધ્ધાંતિક મંજૂરી આપવામાં આવેલ છે.

પુઝર એજન્સી ધ્વારા વન સંરક્ષણ ધારા ૧૯૮૦ હેઠળની દરખાસ્ત સરકારશ્રીમાં સાદર કર્યા બાદ  
 સરકારશ્રીની મંજૂરી મળતા પહેલા તેઓની માંગણીવાળા વિસ્તારમાં કેમીકલયુક્ત દુષિત યાણી છોડવાથી  
 અંદાજે ૨૫.૦૦ હે. જંગલ વિસ્તારમાં નુકશાન થયેલ છે. તેમજ પુઝર એજન્સી ધ્વારા ૦.૭૫ હેક્ટર જેટલા  
 વિસ્તારમાં ધનકચરો નાંખી દબાણ કરવામાં આવેલ હતું. જે જંગલ જમીન ઉપરથી તુરંત દૂર કરવામાં  
 આવેલ છે. જે બાબતે (૧) રાઉન્ડ ફોરેસ્ટર દહેજના પ્ર.ગુ.રી.નં. ૬ / તા. ૨૯-૧-૦૭ તથા રા.ગુ.નં. ૭/૦૬-  
 ૦૭, (૨) રેંજ ફોરેસ્ટ ઓફિસરશ્રી ભરૂચના પ્ર.ગુ.રી.નં. ૧/૦૭-૦૮ તા. ૧૧-૦૯-૦૭ તથા રા.ગુ.નં. ૩/૦૭-  
 ૦૮ થી ઉક્ત કંપની સામે ગૂના કામ નોંધવામાં આવેલ હતું. ઉક્ત બંને ગુનાકામ બાબતે અત્રેના

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પત્રકમાંક: ક/ સર્વે/૧૮/ ૫૫૯ તા.૩૦/૧૨/૨૦૦૯ થી કાર્યનલ હુકમ કરવામા આવેલ છે. જેમાં બીજીવારના ગુનાકામ માટે જંગલ વિસ્તારમાં થયેલ કુલ નુકશાન રૂ.૩,૫૦,૦૦૦/-ના બમણાં એટલે કે રૂ.૭,૦૦,૦૦૦/- અને ત્રીજીવારના ગુનાકામ માટે જંગલ વિસ્તારમાં થયેલ કુલ નુકશાન રૂ.૩,૬૦,૦૦૦/-ના ત્રણ ગણા એટલે કે રૂ.૧૦,૮૦,૦૦૦/- તથા ઉક્ત બંને ગુના કામે રૂ.૨૦૦૦/- લેખે કુલ વળતર રૂ.૪૦૦૦/-મળી કુલ રૂ.૧૭,૮૦,૦૦૦/-વસૂલ કરી રેવન્યુ સંકરે જમા લેવા બાબતનો હુકમ કરવામા આવેલ છે.(નકલ સામેલ છે.)ગુનાકામે કરેલ હુકમ અનુસારની રકમ વસૂલ લેવાની કાર્યવાહી હાથ ધરવામા આવેલ છે.

ઉપરોક્ત ગુનાકામ માટે યુઝર એજન્સી જાતેજ જવાબદાર છે.યુઝર એજન્સી ધ્વારા વારંવાર વન સંરક્ષણ ધારા-૧૯૮૦ નો ભંગ કરવામા આવેલ છે.

યુઝર એજન્સી ધ્વારા કુલ ૨૫.૦૦ હેક્ટર જંગલ વિસ્તારમાં કેમીકલ યુક્ત પાણી છોડી નુકશાન કરવામા આવેલ હોય, તેથી બમણાં એટલે કે ૫૦.૦૦ હે.પાંખા વનોમા વનીકરણ કરવા અંગેની રકમ વસૂલ લેવાની થાય છે. આમ યુઝર એજન્સી પાસેથી કુલ ૫૦.૦૦ હેક્ટર દંડનીય વળતર વનીકરણ ની રકમ વસૂલ લેવાની થાય છે. પ્રવર્તમાન દૈનિક વેતન રૂ.૧૪૧.૬૦ અનુસાર દંડનીય વળતર વનીકરણની યોજના બનાવી આ સાથે સામેલ રાખી સાદર કરવામા આવે છે.જે મે. સાહેબને વિદિત થાય.

(જી.આઈ.નાયક)  
નાયબ વન સંરક્ષક  
રાજપીપલા પશ્ચિમ

નકલ સાદર રવાના : મુખ્ય વન સંરક્ષકશ્રી (જમીન) ગુજરાત રાજ્ય ગાંધીનગર તરફ જાણ સારું.  
નકલ જયભારત સહ રવાના: અધ્યક્ષ અને મુખ્ય કાર્યકારી અધિકારીશ્રી,હિન્ડાલકો ઇન્ડસ્ટ્રીઝ લી.  
(યુનિટ બીરલા કોપર) દહેજ.તા. વાગરા જી.ભરૂચ. તરફ જાણ સારું.

(યુનિટ બીરલા કોપર)  
નાયબ વન સંરક્ષક  
રાજપીપલા (પશ્ચિમ)

E/BirlaGrup/FCA



सत्यमेव जयते

GOVERNMENT OF INDIA  
पर्यावरण एवं वन मंत्रालय  
MINISTRY OF ENVIRONMENT & FORESTS

क्षेत्रीय कार्यालय, पश्चिम क्षेत्र  
Regional Office, Western Region,  
"केन्द्रीय पर्यावरण भवन"

"Kendriya Paryavaran Bhavan  
लिंक रोड नं-3, Link Road No. 3  
E-5, रविशंकर नगर/Ravi Shankar Nagar,  
भोपाल (म.प्र.)/Bhopal-462016 (M.P.)  
फोन- 2466525, 2463102, 2465496  
तार /Telegram: CENTFOREST  
अणुडाक /E-mail: rccfbhopal@gmail.com

No 6-GJC075/2006-BHO/ 319

To,

The Principal Secretary,  
Govt. of Gujarat,  
Environment and Forest Department,  
Sardar Patel Bhawavan,  
Block No. 14/8, Gandhiagar -382010.

Date 21/2/13

Sub: Diversion of 16.00 ha. of reserved forest land for setting up of 60 MW Power Plant, DAP/NPK and Pap projects alongwith Copper Smelter Expansion Project Phase-III in favour of Hindalco Industries in Bharuch District (Gujarat).

- Ref: 1) This office letter No. 6-GJC 075/2006-BHO/2658 dated 16/03/2007  
2) This office letter No. 6-GJC 075/2006-BHO/04 dated 02/01/2012 and even letter No. 1095 dated 06/07/2012  
3) Your office letter No. FCA-1006(10-15)/SF-87-F dated 03/05/2012 and APCCF, Gujarat State, Gandhinagar letter No. FCA/29/A/1428-29/12-13 dated 24/07/2012

Sir,

I am directed to invite a reference to your earlier letter No.FCA-1006-(10-15) SF-87-k dated 01/12/2006 vide which diversion of 16.00 ha. of reserved forest land for setting up of 60 MW Power Plant, DAP/NPK and PAP projects alongwith Copper Smelter Expansion Project Phase-III In-principle approval was given in this office letter dated 16/03/2007 (reference-1).

In view of violation of provisions of the Forest (Conservation) Act, 1980 the following additional conditions shall be included in the In-Principle approval dated 16/03/2007.

8. a) Penal compensatory afforestation shall be taken up by forest department over 50.00 ha in suitable degraded forest land at the cost of the User Agency.
- b) Penal CA scheme and the period of maintenance of afforestation shall be increased from 7 to 10 years
9. The cost of compensatory afforestation at the prevailing wage rates shall be deposited in advance with the Forest Department by the User Agency.
10. All the funds received from the User Agency under the project shall be transferred to the Ad-hoc Compensatory Afforestation Fund Management & Planning Agency(CAMPA) in Saving Bank A/c No 110003 of Corporation Bank, Lodhi Complex, New Delhi-

Contd...2

-2-

After receipt of the compliance report on the fulfillment of the conditions 8(b), 9, and 10 from the State Government further necessary action will be taken under the provisions of the Forest (Conservation) Act, 1980.

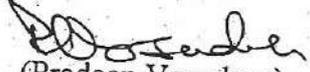
The order for diversion of forest land to User Agency shall not be issued by the State Government till formal approval order is issued by this office.

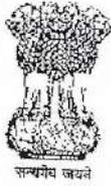
Yours faithfully,

(Pradeep Vasudeva)  
Conservator of Forests(C)

Copy to :-

- 1) The Director (FC), Ministry of Environment and Forests, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-110003.
- 2) The Addl. Chief Conservator of Forests and Nodal Officer (Forest Department) Act, Aranya Bhavan, Block No. A/3, Near "Ch" Circle, Opposite St. Xaviers High School, Sector-10A, Gandhinagar (Gujarat)
- 3) The Dy. Conservator of Forests, Rajpipla (West), District-Bharuch, Gujarat.
- 4) The Hindalco Industries Ltd, (Unit Birla Copper), Village-Dahej, Ta-Vagra, District-Bharuch (Gujarat).
- 5) Order file.

  
(Pradeep Vasudeva)  
Conservator of Forests(C)



# GOVERNMENT OF GUJARAT

Forest & Environment Department,

14/8, Sardar Bhavan, Sachivalaya, Gandhinagar-382010.

Ph. 079-23251071, Fax- 079-23252156

No.FCA-1012/7-33/11/S.F.-48/ F

Date: 22 APR 2013

To,

Addl. Principal Chief Conservator of Forests( Central )

Ministry of Environment & Forest,  
Regional Office, Western Region,  
Kendriya Paryavaran Bhavan,  
Link Road No.3, E-5, Arera Colony,  
BHOPAL (M.P.)-462016

**Subject:** Diversion of 16.00 ha. of reserved forest land for setting up of 60MW Power Plant, DAP/NPK and Pap projects along with Copper Smelter Expansion project Phase-III in favour of Hindalco Industries in Bharuch District of Gujarat.

Sir,

Please refer to your letter No. 6-GJC 075/2006-BHO/319 dated 21/2/2013 on the subject cited above and it is informed that :-

8(b)&9. The User Agency has deposited Rs. 94,20,000/- towards the cost of Compensatory Afforestation scheme revised for maintenance of plantation for 10 year in the account of Nodal Officer, FCA, Gujarat State, Gandhinagar, S. B. I. A/c No.

10. Funds recovered from the User Agency has been transferred to the CAMPA fund as per Nodal Officer's letter No. LND/29/C/257-62, Dt.28-03-2013 in the Corporation Bank, Lodhi Road, New Delhi by RTGS, UTR No is on dt.28-03-2013. A performa for standard format is enclosed.

In light of the above compliance, you are requested to issue the formal approval under the Forest ( conservation) Act, 1980.

Yours Faithfully,

*P. M. Christian*  
( P. M. Christian )

Joint Secretary to the Govt. of Gujarat,  
Forest & Environment Department.

✓ Encl. As above:

# ANNEXURE R8/12

16 Ha area









To,

09 08 2021

The Assistant Conservator of Forest  
Civil Hospital Rd,  
Railway Colony  
Bharuch,  
Gujarat 392001

Sub: Request for permission to carry-out plantation in reserve forest areas adjacent to our boundary

Dear Sir,

At the outset, we thank you for your valuable time and providing us an opportunity to express our interest in carrying out plantation in reserve forest areas adjacent to our boundary.

Sir, in all our operations across the country, we are guided by our purpose- 'Greener Stronger Smarter'- and to achieve that end we have been working industriously with nature through sustainable processes, conservation efforts, and waste management initiatives.

A demonstration of our aforesaid commitment across all our operations locations, we have expanded our green cover this year by 6.35%, which currently stands lush at 4,672 acres, with the addition of more than 4.5 lakh saplings.

In line with above said commitment, we would like to do plantation in Reserve Forest areas adjacent to our boundary covering about 3-10 Ha. Kindly allow us to collaborate with your good office in doing Plantation along with Soil preparation and other necessary measures.

We seek your valuable guidance and support on this eco-friendly initiative.

Looking forward for your early favorable response.

For Hindalco Industries Limited

*Ans*  
Anil Tiple  
Joint President-HR

Received  
9/08/2021

મહાકાલી કેસ રોડ  
મુંબઈ-૪૦૦૭૯૩  
મહાકાલી કેસ રોડ  
મુંબઈ-૪૦૦૭૯૩

HINDALCO INDUSTRIES LIMITED  
UNIT: SURLA COPPER  
P.O. : Dahaj, C-61, Bharuch,  
Gujarat-392 130, INDIA.  
Telephone +91 2641 256004-6  
Fax +91 2641 251002-3

Regd. Ahura Centre, 1st Floor, B-Wing,  
Mahakali Cases Road, Andheri (East), Mumbai 400 093  
Telephone +91 22 6691 2000 / Fax: +91 22 6691 7001

Website www.hindalco.com  
Email hindalco@adityabirla.com  
Corporate Identity No. I27020MH1958PL1

To,  
Range Forest Officer  
Maktampur, Bharuch

16.09.2021

Sub: Permission to carry-out Plantation in Reserve Forest Area adjacent to our boundary

Reference : Letter No. A/PVY/3/57071/2021-22 dated 07.09.2021

Sir,

We are extremely thankful for your abovementioned letter.

Based on the joint inspection stated in the letter, we remain available for any support/necessary actions to be initiated from our end-

Do let us know earliest convenient date and time when we can visit the site together to carry out the site inspection to enable you to initiate next steps soonest.

We remain available for any further clarifications/suggestions from your end.

Thanking You

For Hindalco Industries Limited

Unit: Birla Copper

Anil Tiple  
Jt. President (HR)

જૂન ફોરેસ્ટ ઓફીસ  
ભરૂચ.

આવક નં. ૬૦

તા. ૧૬-૦૯-૨૦૨૨

HINDALCO INDUSTRIES LIMITED  
(UNIT: BIRLA COPPER)  
P.O. : Dahej, Dist. Bharuch,  
Gujarat-392 130, INDIA.  
Telephone +91 2641 256004-6  
Fax +91 2641 251002-3

Regd. Ahura Centre, 1st Floor, B-Wing,  
Mahakali Caves Road, Andheri (East), Mumbai 400 093  
Telephone +91 22 6691 7000 / Fax: +91 22 6691 7001

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Email hindalco@adityabirla.com  
Corporate Identity No. L27020MH1958PLC011238

# ANNEXURE R8/14

## Mangroves





# ANNEXURE R8/15

Coal Yard wind screen



# ANNEXURE R8/16

Acknowledgement 148 Copy 969

ADITYA BIRLA



11<sup>th</sup> July-2018

HIL/BC/Env./GPCB/BH-18-19

The Regional Officer  
Gujarat Pollution Control Board  
C/1/119/3- phase-III  
Narmada Nagar  
Bharuch  
Gujarat

**Subject: Visit of GPCB officials dated 13.06.2018.**

**Reference: Queries raised by GPCB official dated 13.06.2018 Page no.1- 9**

Dear Sir,

This has in reference to the visit of GPCB officials along with Regional Officer on 13<sup>th</sup> June, 2018 at our plant and subsequently raised a few observations regarding environmental improvement. The point-wise replies of the observations are as under:

Sr. No	GPCB Observations	Birla copper Reply	Short term / Long Term Action Plan	Remarks
1	The ETP- 1 & 2 treated water collected in Lagoon from where water is taken to Ultra Filtration and then RO plant for further treatment and reject of RO is discharged into deep sea through pipeline. A bypass line is also kept from which 500 -600 KLD treated waste water is discharged as per record shown to us. Therefore please justify and give your clarification	The disposal of RO reject is as per stipulations mentioned in the CTO.  As suggested by GPCB officials, lagoon line is already disconnected. Now, there is only one final discharge line i.e. from Reverse Osmosis Plant Reject to deep sea. Lagoon water is being recycled in the plant.	Action already taken; Lagoon line already disconnected.  Photograph of disconnected line is attached as <b>Annexure-1</b>	As discussed during the visit, separate application is being prepared for submission to seek permission for discharge of treated water from lagoon during RO breakdown/ Maintenance.
2	The Online monitoring system is	The lagoon line is already disconnected.	Action already taken.	---

HINDALCO INDUSTRIES LIMITED  
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Telephone +91 2641 256004-6  
Fax +91 2641 251002-3

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Website www.hindalco.com  
Email hindalco@adityabirla.com  
Corporate Identity No. L27020MH1958PLC011238

Post Received 12-7-2018  
Gujarat Pollution Control Board  
BHARUCH

	installed with RO reject line where as there is no online monitoring system with lagoon water discharge point. Take necessary action	As no discharge from the lagoon is proposed, we do not foresee the requirement of installing on line effluent monitoring system at Lagoon. On line Monitoring System at RO reject line is already existing.	Photograph of CEMS attached with RO reject is attached as <b>Annexure-2</b>	
3	The fugitive dusting is observed near Lime storage area in ETP, which mix with ambient atmosphere, take necessary action	We are actively exploring the technological solutions near lime storage area.  This proposal is based on Dense Phase System with jumbo bag / Close Container Fine Dust Lime Feeding System.	The proposal prepared is attached as <b>Annexure-3</b> .  We are interacting with suppliers of proposed system.  We expect this to be completed by September 2018.	Actions under progress
4	The huge quantity of water is accumulated behind ETP boundary wall, and a flexible pipeline is seen up to the plant	We are investigating the source of water accumulated behind the ETP boundary. We assure that the water accumulated is not discharged from our premises. The hose was kept for withdrawal of accumulated water.	We are withdrawn the hose as per your advice. As soon as we determine the source of water, will approach you for both temporary and permanent solution.	Action in progress.
5	Opposite Smelter -3, slag storage area, water used for dust suppression, huge quantity of water is stored outside factory premises which should be dewatered	In line with your suggestion, we have reduced the nozzle size for dust suppression. This has addressed the concern raised by you.	Action completed.	Action completed
6.	Huge quantity of insulation and plastic waste are dumped near SLF-7. This dumping should be stopped immediately. And these waste should be disposed off as per Hazardous	The insulation and plastic waste seen near SLF-7 was temporary during the Smelter-3 shutdown. It has since been removed and consigned to the SLF-7. The photograph of stored area is attached	Action completed.	Action completed

	& Others waste handling Rule-2016	as <b>Annexure-4</b>		
7	During the visit of SAP-1 Plant, there was strong smell of gas in gas cleaning water U seal. Therefore proper system should be provided to stop the leakage	The water U seal label has been changed and leakage has been arrested. Hence there is no smell of gas in SAP.		Action Completed
8	In smelter -1 plant secondary acidic stream is provided with alkali scrubber, leakage is observed from top due to which heavy acidic smell was observed in Ambient Air	The corrective action has been taken, the top cover has been provided on secondary stream smelter -1 scrubber. And there is no acidic smell in Ambient Air now. The photograph of top cover is attached <b>Annexure-5</b>	Action taken immediately and top cover provided on 15.06.2018.	Action completed
9	Smelter-1 secondary acidic stream is connected with emergency vent/stack, but there is no air pollution control system is provided to control acidic fumes	We are in process to attach this emergency vent with our existing scrubber. The Techno-feasibility study has been completed, The third party expert agency M/s. Maxflow, Kolkata has submitted the technical reports and execution is under progress. The technical report submitted by M/s Max flow is attached as <b>Annexure-6</b>	The emergency vent will be connected with existing scrubber by Dec. 2018.	Action has been started
10	In PAP due to use of acidic waste water in cooling tower, strong acidic smell was observed in plant area. Take necessary corrective action	As per the technology provider, the PAP cooling tower is required to be operated in acidic water condition (1.25% P2O5). The copy of Original Equipment supplier guidelines is attached as <b>Annexure-7</b> .	To arrest the smell, installation of cloth curtain with Cooling tower towards the road side is under progress. It will convert the mist into droplet and the acidic water will be taken back to the cooling tower. We expect the acidic	We will continue to explore alternate solutions to completely arrest the acidic smell.

			smell to go down substantially. This will be completed by end of July, 2018.	
11	In DAP Plant, inside and outside walls are heavily deposited with dust. It seems that air pollution control devices are not in operation. Huge amount of fine dust have observed near dryer bottom and transfer of material from one machine to another machine	While comprehensive preventive action plan has been put in place to mitigate the fugitive emission, the reason for the deposit was on account of the quality of rock, which has since been changed. The current stock of rock which caused the deposit has been consumed. We do not anticipate similar situation with the change of quality of the rock. The photographs of plant area and wall is attached as <b>Annexure-8</b>	Action completed.	
12	In DAP plant, water is used to scrub ammonia gas, pH of scrubbed solution Was observed 9-10 on pH strip. Therefore, it is suggested to change the scrubbing media. It is also observed that scrubber media was laying in haphazard manner. The leakage from transfer line of PAP was observed. Due to improper arrangement of area, the storm water drain was acidic as well as alkaline. Take necessary actions	We have taken note of your observation regarding pH of scrubber solution. However, we wish to point that beyond pH of 7-8, the DAP plant would be dysfunctional. We, therefore, ensure continuous monitoring of pH at all times. We will, however, take a closer look at your observation and take necessary steps, if required. We use only water as media for scrubbing. We have further bolstered housekeeping. We have immediately replaced the pipe with PP line for take care of any	PAP transfer line already replaced on 18.06.2018  Required action taken.  <b>Photo in Annexure 8a</b>	Action completed

		sporadic leak.		
13	Phosphogypsum generated from PAP is stored in open area inside plant which should be immediately removed so that dusting can be stopped	The stored material was rock phosphate which is raw material of PAP not Phosphogypsum. However, we have covered the stored material to mitigate the fugitive emission during windy condition. The photographs of covered rock phosphate is attached as <b>Anenxure-9</b>	Required action already taken  Rock phosphate has been covered.	Action completed
14	In PAP, DAP and SAP -1 plant area. Acidic waste water was observed in storm water drain. This storm water drain is used for conveying acidic water. This should be stopped and proper conveying system for waste water to be adopted.	While we have separate drain for both acidic water and storm water, we have erected a sump pump to collect the acidic water to the PAP plant in case of breakdown.	Action completed	---
15.	Vent of (98 %) Sulfuric acid storage tank is open in atmosphere, this vent to be connected with proper scrubber system.	The vent is provided to take care of any emergency release of fumes only. This is as per the design of the manufacturer. In our view based on discussions with the manufacturer, it may not be feasible to connect this small vent kept open for emergency with scrubber. However, we are open to your suggestions in this regard.	----	---
16	The manometer of several bag filters are nonfunctional, therefore pressure drop cannot be observed. Advice to	The bag filters are already fitted with digital manometers. The photograph of DP transmitter is attached as <b>Annexure-10</b> .	Action completed	

	check the performance of bag filters and provide the correct manometers			
17	The storm water drain was filled with boiler blown down water. The transportation of boiler blown down water should be in proper manner.	The water observed was not Boiler blow down water. It was plant water used for floor cleaning. However, we will monitor and ensure no mixing of storm water with boiler blown down water.	----	-----
18	The Copper cathode cleaning chambers to be provided with scrubbing system so that residual acidic fume can be stopped to disperse in Ambient Air.	We are using fresh water for cleaning of cathode in copper cathode cleaning chamber. Therefore the possibility of residual acidic fumes from cathode cleaning chamber is nil. However, we are open to your suggestions in this regard.	----	-----
19	Where and how the exhausted scrubbing media of PAP plant is handled, explain Clearly	The exhausted scrubbing media of PAP plant is used for production HFA and this HFA is being used for manufacturing of AIF3 which is used in Aluminum industries. The total HFA produced during the month of May,18 is 36 Tonns.	---	
20	It is observed that phosphogypsum is stored at many locations in your plant premises. The belt conveyor for conveying phosphogypsum is open from both side. Therefore from storage area and belt conveyor, huge	The phosphogypsum stored at many locations contains 30-40% moisture. Therefore the possibility of fugitive emission from stored phosphogypsum and belt conveyor is minimal. However we will try to convey the phosphogypsum	---	-----

	amount of fine dust is being dispersed in Ambient Air. Immediate corrective action to be ensured.	smoothly up to the disposal point, so that there will be no spillage and fugitive emission from belt conveyor system. Analysis report for moisture content in phosphogypsum available with us and can be made available if required.		
21	It is observed that huge amount of fly ash is stored in open area of CPP-2 & CPP-3. The conveyor belt of fly ash is open from both side, which resulted huge amount of dusting in Ambient Air. The water sprinkling provided is insufficient in such a large area. Immediate corrective action is required, so that fly ash should not be stored in open area. Silo should be provided for storage of fly ash and its disposal to be done as per Environmental Rule and Regulation.	Fly ash is not stored in CPP area. However, some quantity of fly ash is stored in designated area because of little delay of getting bulker. Since 2016, fly ash is being transported through close container and bulker only.  <b>PHOTO attached as Annexure -11</b>	Fly ash stored in the fly ash pond area will be disposed off by end August, 2018 to ensure no accumulation of stock.	----
22	The coal storage yard where coal handling is being done not followed the coal handling guidelines, Corrective action to be taken and strictly follow the coal handling guidelines	The Coal is stored in close barricaded area where dedicated water sprinkling system is deployed to mitigate fugitive coal dust emission. Steps are being initiated to ensure strict compliance of coal dust guidelines in storage and handling of coal.	Required steps are being taken and a detailed project report will be submitted by mid-August, 2018.	
23	The coal is stored in open area, coal	Comprehensive technical study has	Detailed engineering is completed.	

	<p>grinding, and open conveyor belt is used. For transportation of coal which caused huge amount of dusting in Ambient Air. Therefore immediate corrective action is required to be taken</p>	<p>been conducted and techno commercial proposal has been received from one of the agency competent to address this situation.</p>	<p>Required action will be completed before Dec. 18.</p>	
24	<p>The dust deposition is observed in CPP, SLF and it's parallel road and surrounding area. Due to vehicle movement and heavy wind condition, dust is observed in Ambient Air, for which corrective action is required to be taken.</p>	<p>The dust suppression measure is already taken, and presently we are spraying water in CPP, SLF and on road parallel to SLF through truck mounted sprinkler.</p>	<p>Action already taken and completed</p>	
25	<p>In Phosphogypsum yard proper fencing or boundary wall is not available. For which corrective action is required to be taken</p>	<p>The phosphogypsum storage yard is inside the plant boundary and is protected &amp; prohibited area. The movement of unauthorized person is totally restricted. We have security deployed to ensure no unauthorized access to the storage yard. We will further look into the possibility of fencing and will revert with a proposal to your office in due course.</p>	---	---
26	<p>In phosphogypsum storage yard heaps of phosphogypsum are bigger than bund wall of phosphogypsum and periphery bund wall have no wind breaking wall</p>	<p>We have been supplying phosphogypsum continuously to cement manufacturing industries and the stock holding has already come down. We are also exploring possibility of collaborating with</p>	<p>Plantation is in progress and will be completed by March, 2019.</p>	---

	therefore dust is spreading in surrounding area, immediate correcting action is required to be taken	GNFC for use of Gypsum as product. In the meanwhile, as discussed, we are increasing the plantation to further accentuate the wind barrier to avoid dust spreading. We would appreciate your feedback and inputs and we are committed to take such further steps as may be required.		
27	In phosphogypsum storage yard from different places acidic lechate is discharged to kuccha pond, due to which ground water may be contaminated. Therefore acidic lechate should be collected in acid proof lechate collection pit.	A lechate collection pond is provided with liner. The desired protective liners will be checked and corrected as per your guidance. We are regularly checking the ground water quality and reports are available for inspection if required.	Completion and checking of liners will be completed by Nov, 2019. Liner in kutchha pond will also be completed by Nov. 2019.	----
28	East side of phosphogypsum yard open land is contaminated (Acidic) for which is remediation steps to be taken	As per the advice received from the RO, we have scrapped the acidic layer of the soil, and have started plantation of trees to remediate.	Will be completed by Aug,18	
29	Acidic lechate is collected in open concrete drainage surrounding to phosphogypsum storage yard. It is also observed that acidic lechate is collected in kuccha pond nearer to phsophogypsum yard. Flexible pipeline are used to transfer acidic	The liner will be provided in Kuchha pond, and fix pipeline will be provided to transfer the acidic lechate from drainage to leachate pond. The drainage line will be repaired  The fix HDPE pipeline for Lechate transportation from lechate sump to PAP	The preparation of proposal for procurement of liner is under process . it will be completed before Dec,18	

	lechate from drain to leachate pond. Fix pipeline arrangement to be made, it was also observed that at some area drainage are broken condition. This should be immediately repaired			
30	Lechate collected in phosphogypsum storage yard is used in phosphoric acid plant but no record is maintained. For which corrective steps to be taken. A flexible pipeline to be converted to fix pipeline and flow meter to be provided online to maintain data.	The fix HDPE pipeline for Lechate transportation from lechate sump to PAP is provided and the quantity of lechate transferred to PAP is available and maintained. The flow meter is available at plant receiving site.		
31	The Copper slag is used for land filling near jetty road whose pH was observed 2 on pH strip, which is likely to be contaminate ground water and land , therefore remediation to be done. Due to rain, acidic water should not accumulate or immediate action is required to be taken	We do not use copper slag for land filling near jetty road. And it was kept for loading in the ship for export purpose. We have completed as of know there is no copper sag near jetty area.	Soil remediation measured taken. Action completed Soil filling and tree plantation is under progress.  After loading the copper slag , we have cleaned up the top soil . as there is no copper slag near the jetty area	
32	The contaminated top soil is observed in open area opposite of road no 20 behind SAP-3 plant, remediation and corrective action is required to be taken	As explained you during the visit we have not stored the raw materials, products and by products in the open area opposite road no.20, where contaminated soil is observed. However remedial measures have been taken to remove	Contaminated soil scrapped and removed	Action completed

		the contaminated soil from that locations.		
33	The huge amount of copper slag is stored in plant premise at different places locations, this should be stored at appropriate place, What is your waste disposal action plan, submit to this office	The copper slag generated is stored at designated locations in plant premises. The disposal of slag is concern for us. Its utilization is limited. We have been selling copper slag to various cement manufacturing companies to Dubai and India. The copper slag is also used in road construction as fillers. We are in process to envisage the potential consumers such as upcoming Metro, Delhi - Mumbai Corridor and Mumbai Ahmadabad Bullets train rail corridor. Our target is to reduce the existing stock by 30% by end of this financial year	Required Action are in progress. And will be completed by Jul. 19	
34	The SLF-7 lechate sump was observed over flowing which was going to open kuchha drain, it should be stopped and corrective action is required to be taken.	We are looking into the reason of overflowing of leachate from SLF -VII . as explained during your visit We have deployed dedicated tanker and pump at lechate sump for collection, at the same time we transfer lechate from sump to ETP for treatment. there is no lechate over flow from sump. The photograph of Lechate sump is attached <b>Annexure-11A</b>	Action completed	
35	Approach road to SLF-7, no dust suppression measures are taken, therefore huge	As explained during your visit we have tanker with water sprinkling system to suppress the fugitive	Action completed	

	amount of dust is dispersed in Ambient Air. Immediate corrective action is required to be taken.	dust emission generated from approach road and vehicle movement. We have increased the frequency of tanker used for sprinkling		
36	The rainy season is about to start, the required steps to be taken to cover SLF-7, so that contamination of surrounding area through rain water and contamination of soil can be avoided	The work order has been released to M/s Kruppa construction for covering of SLF-7. Soil covering is already in progress and almost 40% is covered. The photograph of SLV-7 covering is attached as <b>Annexure-12</b>	--	
37	The online analyzer attached with boiler 3 & 4 of CPP-3 plant was found out of order, which should be immediately repaired. Appropriate steps to be taken to transmit the data to CPCB/GBPCB server as per CPCB guidelines.	The online analyzers attached with boiler 3 & 4 of CPP-3 were in functional and same is shown to GPCB official at site. However, due to linkage issue, it was not seen in DCS control room, now this has been rectified. The data transmitted to CPCB and GPCB as guidelines data sheet attached as <b>Annexure-13</b>	Action completed	
38	It is observed that the house keeping was very poor in production area, boiler area and at SLF site, Immediate corrective action is required to be taken	We have a dedicated mechanized jumbo road sweeping machine for cleaning of plant internal roads. We have increased the frequency of cleaning to ensure the proper house keeping. The photograph of jumbo mechanized road sweeping machine placed is attached as <b>Annexure-14</b>	Action taken & completed	
39	The pre-monsoon precautionary steps to mitigate the impact on	We have prepared pre monsoon action plan with responsibility to mitigate monsoon risk	Action already taken	

	environment is yet to be taken , Take it immediately and it should be informed to Board too	on environment and it's implementation is in progress as per action plan is attached as <b>Annexure-15</b>		
40	The New SLF-8 for disposal of hazardous waste is developed, but CTE is not obtained. CTE application to be done immediately	We have already submitted an application in hard copy for obtaining of NOC for construction of SLF-8 to GPCB Gandhinagar vide dated 16.04.2018. However, as suggested by esteemed officials, we have also applied online on GPCB portal dated 15.06.2018 for obtaining of NOC for construction of SLF-8. The copy of application is attached as <b>Annexure-16</b>	Application submitted	

Hope that the above submission will suffice your requirement, We , Hindalco Industries belief in greener production by abiding all the Environment Acts and Rules stipulated by MoEFCC, New Delhi, CPCB, New Delhi and GPCB, Gandhinagar. Once again We assure you that we have taken all observations on priority , most of the action are completed and some are in progress which will be completed under stipulated timeline.

We remain available for any clarification that you may require. Please do afford us an opportunity of personal hearing to put the explanations/clarifications provided by us in perspective."

Thanking you,

Yours faithfully,

**For Hindalco Industries Ltd.**

**Unit: Birla Copper**



**Sanjay Sarkar**

President & COO

CC: Member Secretary

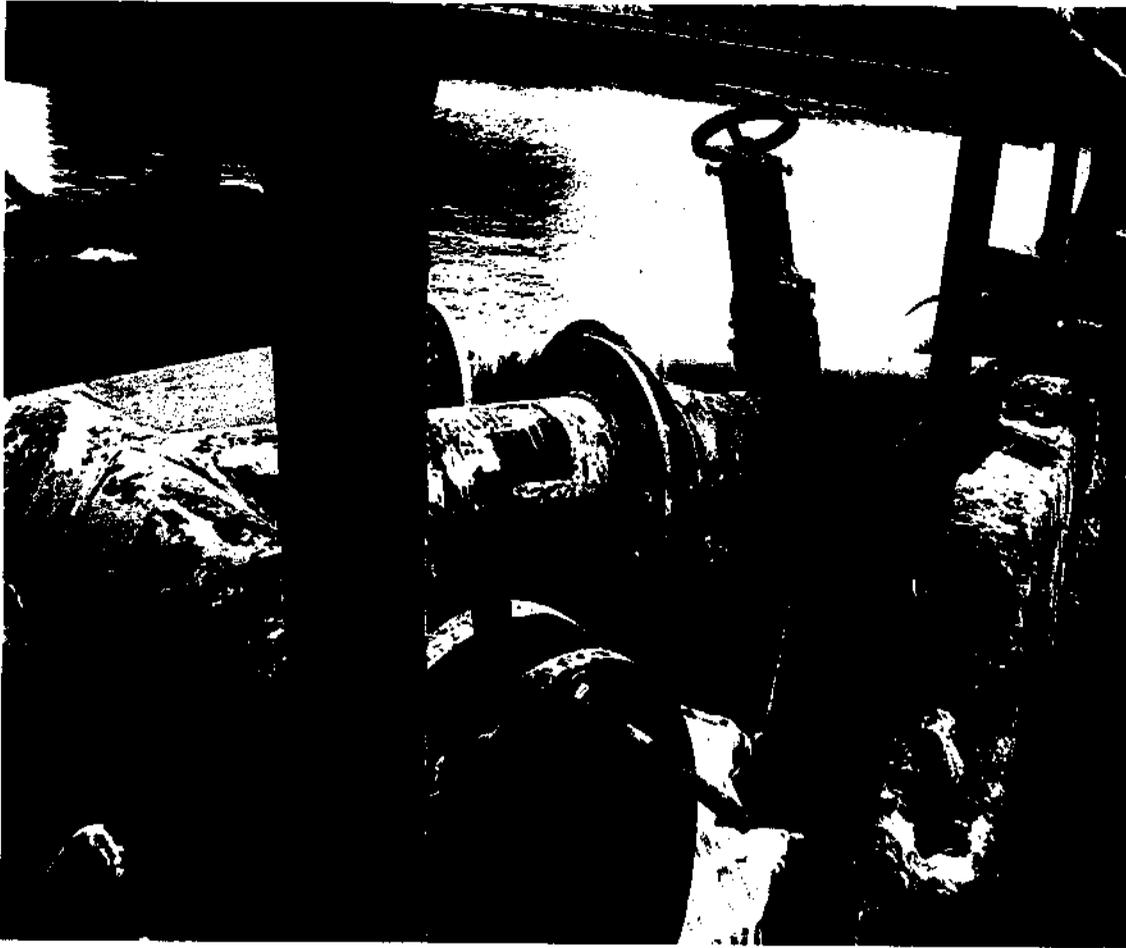
Gujarat Pollution control Board

Sec -10A

Paryavaran Bhawan

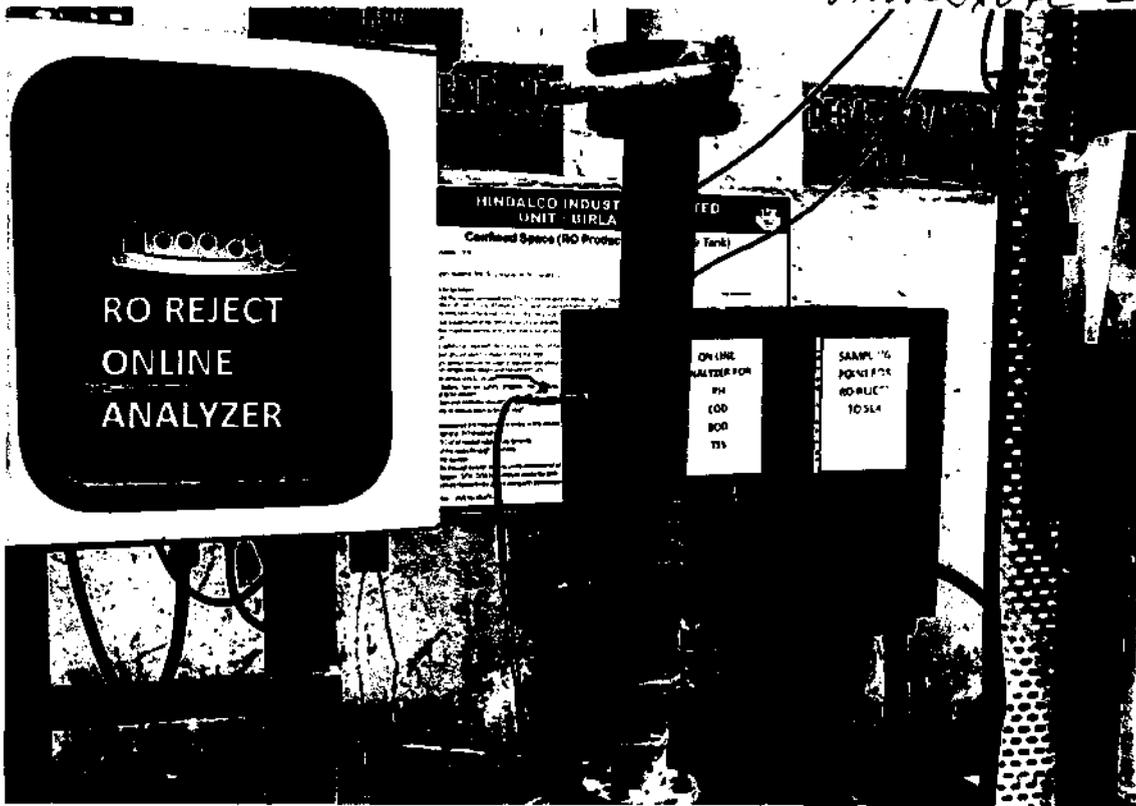
Gandhinagar- 382010

Annexure-1



Lagoon line disconnected

*Annexure 2*



RO Reject online analyser

05 July 2018

Reduction in dust and spillage of lime system in ETP

ETP plant, at present, operates on 40kg lime bags. We consume @ 100 tons of lime per day. These lime comes in trucks from where each bag is pulled using hooks, cut and unloaded into lime conveyer. This causes lot of spillage and dust. Also this is very ancient way of unloading lime and involves lot of manpower.

During statutory inspection, the dust and spillage is always an issue to be managed.

Alternatives to this issue is to buy lime either in Jumbo bag or directly in Bulklers.

If we buy lime in Jumbo bags, the extra financial implication will be 2.22 crore per annum and one-time investment will be of 1.7 crores.

Whereas if we buy lime in bulkers\*, the extra financial implication will be Rs 1.4 crore per annum and one-time investment will be @25 lacs.

The comparative cost sheets and offers are attached herewith

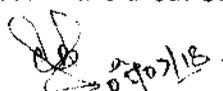
The bulker supplier has also indicated discount of Rs 500 /ton if he is able to shift to Dahaj area. This in turn will depend on the assured business from the region. With this discount we will be at par with 40kg bags.

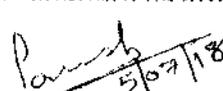
As no cutting and dragging is involved in bulkers the spillage and dusting will be eliminated. Since this is automatic process we will be able to unload 100 tons of lime in about 10 hours.

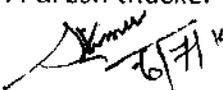
We visited couple of plants in Surat and found this to be very clean. This is best option available at present in the market.

We will keep existing system of 40kg bag in ready mode as an emergency standby during any crisis.

Looking at the stringent environment norms and upliftment being done in other areas of compliance, it is requested to approve above proposal of buying lime in bulkers to reduce the spillage and dust in the area. One-time investment needs to be added in our budget.

  
Mr. Chandra kushwa

  
Mr. Paresh thacker

  
Dr Sanjay Kumar

Head (O)

Head (Egg)

P & COO

\*Subject to trial in ETP-1

Operating cost with Jumbo bag				
Item no	Activity	Nos	Unit value	Cost/day
1	No. of labours required with jumbo bag in 24 hours	10	600	6000
2	No of labours required at present in 24 hours	24	600	14400
<b>A</b>	<b>Saving per day</b>			8400
		tons	Unit value	Total cost
1	Extra cost of lime in jumbo bags	100	300	30000
2	Extra transportation cost as Jumbo bags of 750kg will total to 18 tons in 22 t truck and fare to be paid of full truck at 1500rs/ton. Considering 75% material comes in 22 toner truck	75	300	22500
3	Reduction in lime wastage/day (lime cost + trans)	1	5800	5800
<b>B</b>	<b>Extra expense per day</b>			58200
		Months		Cost/annum
1	Hydra for unloading from truck O& M, driver and diesel	12	162000	1944000
2	Forklift for shifting to& from godown to charging system.	12	170000	2040000
				3984000
<b>C</b>	<b>Total cost of Hydra + forklift per day</b>			10916
<b>D</b>	<b>Extra cost per day (C-A-B)</b>			54600
Financial implication per annum (considering 37000T/annum consumption)				2020200
<b>Any uncovered expence</b>				2000000
<b>Total financial implication per annum</b>				2220200

Presume that all unloading and shifting to godown will be completed upto 2000hrs as Rs 600/hr to be paid extra after 2000hrs

Operating cost with Bulker				
Item no	Activity	Nos	Unit value	Cost/day
1	No. of labours required with jumbo bag in 24 hours	2	660	1320
2	No of labours required at present in 24 hours	24	660	15840
A	Saving per day			14520
		tons	Unit value	Total cost
1	Cost of lime in 40kg bags with transportation (4300/1500 (trans))	100	5800	580000
2	Cost of procuring lime in bulker including transportation	100	6325	632500
3	Reduction in lime wastage/day	1	5800	5800
B	Extra expense per day			46700
		Months		Cost/annum
1	Hydra for unloading from truck O&M, driver and diesel	Not required		0
2	Forklift for shifting to& from godown to charging system.	Not required.		0
C	Total cost of Hydra + forklift per day			0
D	Extra cost per day (C-A-B)			32180
Financial implication per annum (considering 37000T/annum consumption)				11906600
Any uncovered expense				2000000
<b>Total financial implication per annum</b>				<b>13906600</b>



archive

{In Archive} Fw: Lime in Jumbo bags  
 VIPUL TRIVEDI to PARESH THACKAR  
 CC: AJAYPAL BEDI

15-06-2018 17:13

This message is being viewed in an archive.

Vipul Trivedi  
 Material Dept.



*Tarun Bag Hill*

**Hindalco Industries Limited**  
 (Unit: Birla Copper)  
 Post Dahej, Distt. Bharuch, Gujarat  
 T: +91 2641 662758  
 E: vipul.trivedi@adityabirla.com | W: www.hindalco.com

**We manufacture materials that make the world Greener - Stronger - Smarter**  
 ----- Forwarded by VIPUL TRIVEDI/MATERIALS/DHJ/BC/ABG on 15-06-2018 17:13 -----

From: "Tara Minerals And Chemicals Private Limited" <sales@taraminerals.co.in>  
 To: "VIPUL TRIVEDI" <vipul.trivedi@adityabirla.com>  
 Cc: "Harsh Boob" <harsh.boob@gmail.com>, "Rakesh Boob" <boob.rakesh@gmail.com>, "Tavi Kumar" <tmcpt.ravi@gmail.com>  
 Date: 15-06-2018 16:18  
 Subject: RE: Lime in Jumbo bags

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

**Please Quote Our Ref:**  
 Q: E-1-1819-076-1  
 15-06-18

**M/S Hindalco Industries Limited Dahej**  
 Post- Dahej,  
 Dist: Bharuch,  
 GUJARAT, India  
 Email: vipul.trivedi@adityabirla.com

Kind Attn: Mr. Vipul Trivedi: 9723555894

**Subject: Your Requirement of Slaked Lime [Hydrated Lime 87%], HSN-2522**

Dear Sir,

With reference to your email for the above subjected matter, we are pleased to submit our offer as under:-

Sr. No	Description	Unit Price INR (PMT)	Tax (%)
1	Slaked Lime [Hydrated Lime 87%], HSN-2522	XXXXXX Works.	IGST @ 5% Extra
1.	Packing: 750 KG Approx Jumbo Bags.		
2.	Freight: Extra to be paid by us, Present Freight for XXXXX Rs. 500.00 PMT approx.		

### Cost of jumbo bag unloading and dense phase system.

No of items	Item	Cost (lacs)	Remark
1	Dense phase conveying system including PLC hoists, bag filters, etc	71	
2	Foundation for Dense phase conveying	10	Instrumentation as per our standard
3	ETP -2 Godown ext. Gantry for hoist, roofing. Structural steel 15 ton ( 50k/ton), Reinforcement 20 tons ( 45k/ton), concrete 100m <sup>3</sup> , 8000rs/m <sup>3</sup> , labour LS 2L. Roofing 0.5 lac LS, plaster+brick work 1 lac LS	28.5	
4	Piping from new dense phase to etp1 including fabrication	0	
5	Installation of dense phase and compressor	1	
6	Covering of gantry structure	3	
7	Feeder, cabling for dense phase De dusting filter 2.5KW, RAV 1.5KW, Motorail 3kw x2 nos), PLC 0.5KW	1.5	
8	Air compressor to supply @500m <sup>3</sup> /hr at 6 bar	17	
9	Foundation & piping for compressor	3	
10	Feeder and cable for compressor 60HP	2	
11	Instrumentation cabling	1	
12	Hoists for ETP-2 -- 3nos	9	
13	Gantry and godown extension design/Consultancy	3.5	
14	Contingency charges		
15	<b>Total</b>	15.35	
		<b>168.85</b>	

3. Misc. Exps: All other expenses like unloading Charges, Etc at your expense.
4. Delivery: As per the schedule given in advance.
5. Payment Terms: 30 Days from the date of dispatch.
6. Quantity: As per your requirement in Truck Loads. (Min. 21 MT)
7. Price Variation Clause: Any increase / decrease in our raw material price i.e. Limestone & coal, we shall seek price revision in our basic price by 22% of the total respectively.
8. Please release payment only in our Bank Accounts Via Cheques, P.O. NEFT, IMPS. Do not remit Cash in our Bank account OR By hand to any our Representative.
9. Our GST NO:- 08AAACT1570B1ZS

We hope you will find below offer quite competitive and suitable to your needs.

Please release one trial order for testing and evaluation of our quality.

For further information/clarification feel free to contact us, it will be our pleasure to provide the same.

Thanking You,  
Faithfully Yours,



M- +91 809 404 7869  
Tara Minerals & Chemicals Pvt. Ltd.  
CIN: U210MH1999PTC000009  
(An ISO 9001:2008 Certified Company)  
25/ Grand Hospital Road, Near Govt. Bhawan,  
Indapur - 442001 (Rajpuri Road) INDIA  
Call: +91 291-2636413, 2435228, Fax: +91 291-2617671.  
Web: [www.taraminerals.com](http://www.taraminerals.com) in  
*Taking Indian Lime to the Global Standards.*

**From:** VIPUL TRIVEDI [mailto:[vipul.trivedi@adityabirla.com](mailto:vipul.trivedi@adityabirla.com)]  
**Sent:** 14 June 2018 17:21  
**To:** Undisclosed recipients:  
**Subject:** Fw: Lime in Jumbo bags

Dear,  
Pl. offer your best price of Hyd. Lime in 750kg bag (jumbo) per ton including freight.

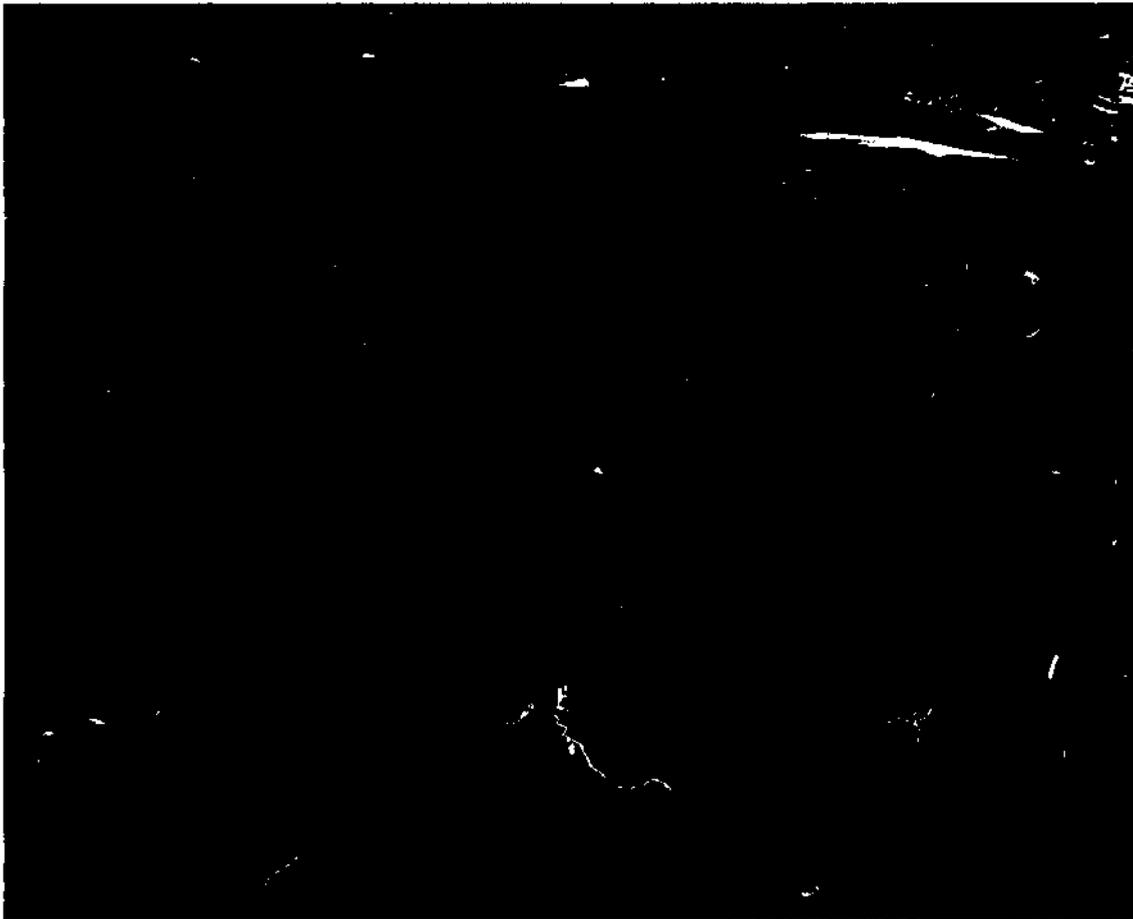
Regards

Vipul Trivedi  
Material Dept.

Hindalco Industries Limited  
(Unit - Birla Copper)  
Post Dahaj, Distt. Bhadrachal, Chhattisgarh

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Annexure-4



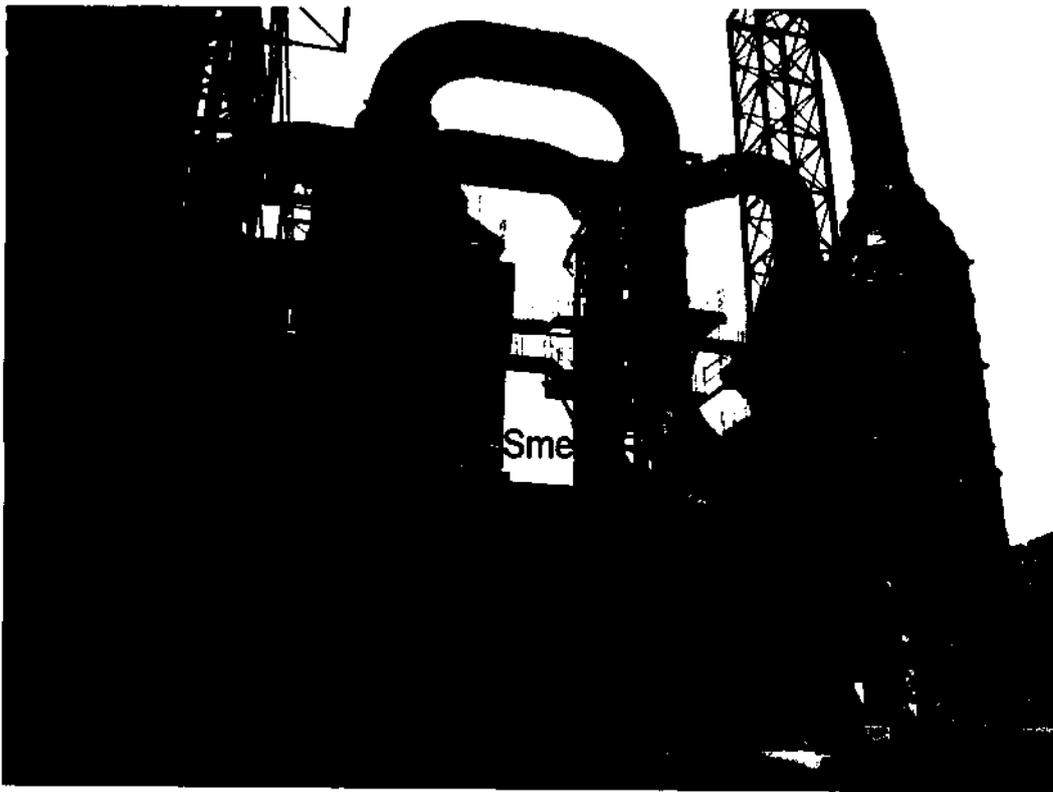
Plastic and insulation removed from the site

Annexure-4



Plastic and insulation removed from the site

Annexure-5



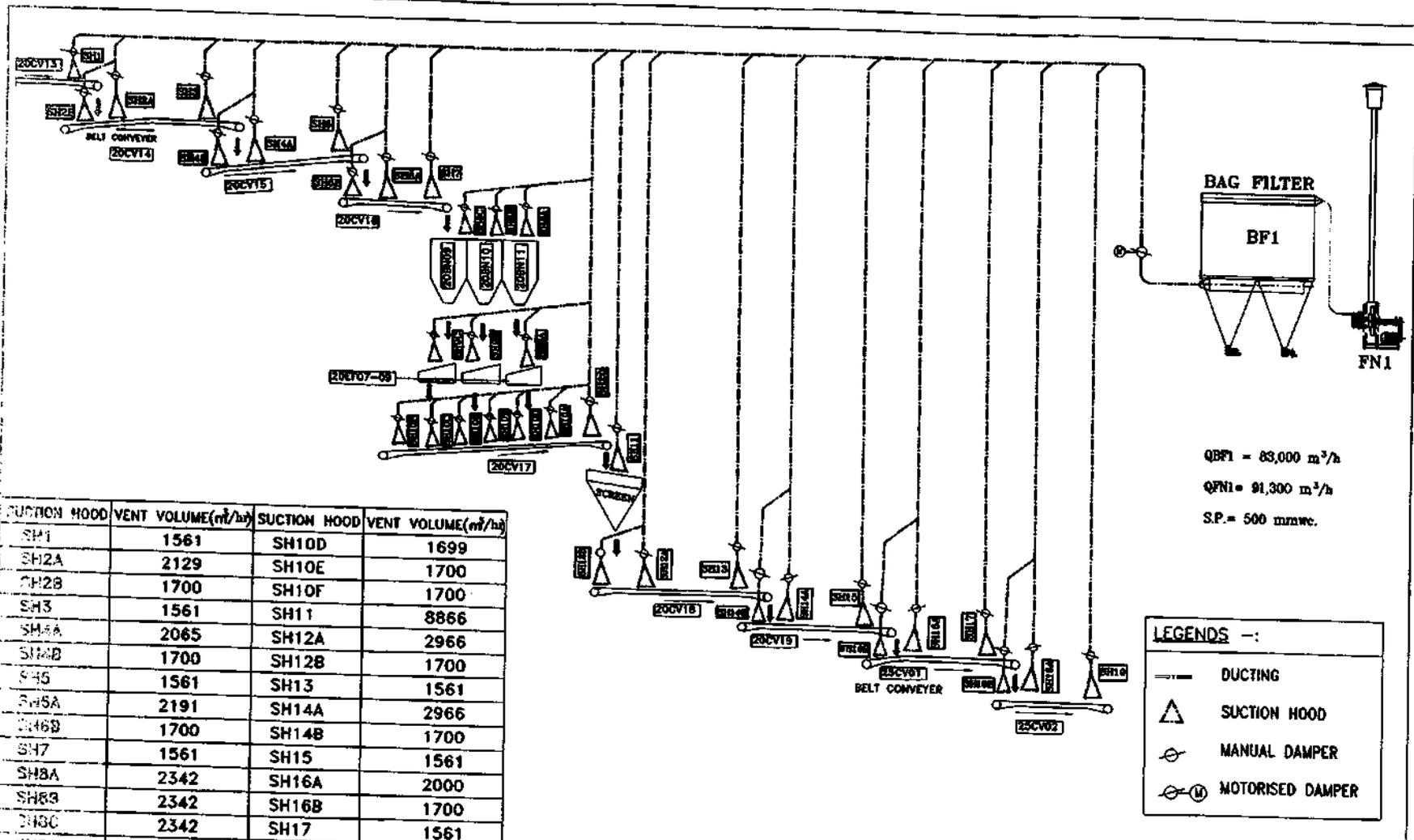
Smelter-1 Scrubber Top cover

Annexure-6

DE-DUSTING VOLUME CALCULATION OF RAW MATERIAL HANDLING SYSTEMS IN SMELTER-I		
<b>Belt Conveyor 20-CV-13 Discharge Point - SH1</b>		
Belt Speed	0.75	m/s
Belt Width	800	mm
Venting Volume	1561	m <sup>3</sup> /hr
<b>Belt Conveyor 20-CV-14 Receiving Point Point - SH2A &amp; SH2B</b>		
Belt Speed	0.75	m/s
Belt Width	800	mm
Height of fall	1700	mm
Venting Volume @ Forward Point:	2129	m <sup>3</sup> /hr
Venting Volume @ Backward Point:	1700	m <sup>3</sup> /hr
<b>Belt Conveyor 20-CV-14 Discharge Point - SH3</b>		
Belt Speed	0.75	m/s
Belt Width	800	mm
Venting Volume	1561	m <sup>3</sup> /hr
<b>Belt Conveyor 20-CV-15 Receiving Point Point - SH4A &amp; SH4B</b>		
Belt Speed	0.75	m/s
Belt Width	800	mm
Height of fall	1600	mm
Venting Volume @ Forward Point:	2066	m <sup>3</sup> /hr
Venting Volume @ Backward Point:	1700	m <sup>3</sup> /hr
<b>Belt Conveyor 20-CV-15 Discharge Point - SH5</b>		
Belt Speed	0.75	m/s
Belt Width	800	mm
Venting Volume	1561	m <sup>3</sup> /hr
<b>Shuttle Conveyor 20-CV-16 Receiving Point Point - SH6A &amp; SH6B</b>		
Belt Speed	0.75	m/s
Belt Width	800	mm
Height of fall	1800	mm
Venting Volume @ Forward Point:	2191	m <sup>3</sup> /hr
Venting Volume @ Backward Point:	1700	m <sup>3</sup> /hr
<b>Shuttle Conveyor 20-CV-16 Discharge Point - SH7</b>		
Belt Speed	0.75	m/s
Belt Width	800	mm
Venting Volume	1561	m <sup>3</sup> /hr
<b>Bins 20-BN-09, 20-BN-10 &amp; 20-BN11 Receiving Point - SH8A, 8B &amp; 8C</b>		
Bunker Opening	800 x 800	mm x mm
Venting Volume	7026	m <sup>3</sup> /hr
<b>Bins 20-BN-09, 20-BN-10 &amp; 20-BN11 To Vibro Feeder 20-FE-07, 20-FE-08 &amp; 20-FE-09 Receiving Point - SH9A, SH9B &amp; SH9C</b>		
Belt Width	1200	mm
Venting Volume:	5010	m <sup>3</sup> /hr
<b>Belt Conveyor 20-CV-17 Receiving Point Point - SH10A, SH10B, SH10C, SH10D, SH10E &amp; SH10F</b>		
Belt Speed	0.5	m/s
Belt Width	800	mm
Height of fall	1700	mm
Venting Volume @ Forward Point:	6387	m <sup>3</sup> /hr
Venting Volume @ Backward Point:	5000	m <sup>3</sup> /hr

<b>Belt Conveyor 20-CV-17 Discharge Point - SH20</b>	
Belt Speed	0.5 m/s
Belt Width	800 mm
Venting Volume	1561 m <sup>3</sup> /hr
<b>Belt Conveyor 20-CV-17 to Vibrating Screen 20-SN-01 - SH11</b>	
Screen Length	2100 mm
Screen Width	1150 mm
Venting Volume	8868 m <sup>3</sup> /hr
<b>Belt Conveyor 20-CV-18 Receiving Point Point - SH12A &amp; 12B</b>	
Belt Speed	0.4 m/s
Belt Width	800 mm
Height of fall	3300 mm
Venting Volume @ Forward Point:	2966 m <sup>3</sup> /hr
Venting Volume @ Backward Point:	1700 m <sup>3</sup> /hr
<b>Shuttle Conveyor 20-CV-18 Discharge Point - SH13</b>	
Belt Speed	0.4 m/s
Belt Width	800 mm
Venting Volume	1561 m <sup>3</sup> /hr
<b>Belt Conveyor 20-CV-19 Receiving Point Point - SH14A &amp; 14B</b>	
Belt Speed	0.4 m/s
Belt Width	800 mm
Height of fall	3300 mm
Venting Volume @ Forward Point:	2966 m <sup>3</sup> /hr
Venting Volume @ Backward Point:	1700 m <sup>3</sup> /hr
<b>Shuttle Conveyor 20-CV-19 Discharge Point - SH15</b>	
Belt Speed	0.4 m/s
Belt Width	800 mm
Venting Volume	1561 m <sup>3</sup> /hr
<b>Belt Conveyor 25-CV-01 Receiving Point Point - SH16A &amp; 16B</b>	
Belt Speed	0.4 m/s
Belt Width	800 mm
Height of fall	1500 mm
Venting Volume @ Forward Point:	2000 m <sup>3</sup> /hr
Venting Volume @ Backward Point:	1700 m <sup>3</sup> /hr
<b>Shuttle Conveyor 25-CV-01 Discharge Point - SH17</b>	
Belt Speed	0.4 m/s
Belt Width	800 mm
Venting Volume	1561 m <sup>3</sup> /hr
<b>Belt Conveyor 25-CV-02 Receiving Point Point - SH18A &amp; 18B</b>	
Belt Speed	0.4 m/s
Belt Width	800 mm
Height of fall	1500 mm
Venting Volume @ Forward Point:	2000 m <sup>3</sup> /hr
Venting Volume @ Backward Point:	1700 m <sup>3</sup> /hr
<b>Shuttle Conveyor 25-CV-02 Discharge Point - SH19</b>	
Belt Speed	0.4 m/s
Belt Width	800 mm
Venting Volume	1561 m <sup>3</sup> /hr

Total Gas Volume	75000	m <sup>3</sup> /hr
Margin for Leakages	10%	
BAG FILTER, BF1, VENT VOLUME	83,000	m <sup>3</sup> /hr
FAN CAPACITY	91,300	m <sup>3</sup> /hr
FAN STATIC PRESSURE	500	mmWG



SUCTION HOOD	VENT VOLUME(m³/h)	SUCTION HOOD	VENT VOLUME(m³/h)
SH1	1561	SH10D	1699
SH2A	2129	SH10E	1700
SH2B	1700	SH10F	1700
SH3	1561	SH11	8866
SH5A	2065	SH12A	2966
SH5B	1700	SH12B	1700
SH5	1561	SH13	1561
SH5A	2191	SH14A	2966
SH6B	1700	SH14B	1700
SH7	1561	SH15	1561
SH8A	2342	SH16A	2000
SH8B	2342	SH16B	1700
SH8C	2342	SH17	1561
SH9A	1670	SH18A	2000
SH9B	1670	SH18B	1700
SH9C	1670	SH19	1561
SH10A	2129	SH20	1561
SH10B	2129		
SH10C	2129		

**LEGENDS :-**

- DUCTING
- △ SUCTION HOOD
- ⊗ MANUAL DAMPER
- ⊗(M) NOTORISED DAMPER

QBF1 = 83,000 m³/h  
 QFN1 = 91,300 m³/h  
 S.P. = 500 mmwc.

DATE 28.03.2016	PO. No.	SCALE - NTS	PROJECTION
DRAWN ADMINISTRATOR	CHECKED SIB	APPROVED SIB	
SCHEMATIC DIAGRAM OF DE-DUSTING OF RAW MATERIAL HANDLING SYSTEM OF SMELTER-1			<b>MAXFLOW</b> FANS MANUFACTURING PVT.Ltd KOLKATA- 700 006

Drawn by: SIB, Checked by: SIB, Approved by: SIB, Date: 28.03.2016, Project: De-dusting of Raw Material Handling System of Smelter-1

JHC-2A DE-DUSTING SYSTEM		
Conveyor 20-CV-03 Discharge Point		
Belt Speed		
Belt Width	0.75 m/s	
Venting Volume	600 m <sup>3</sup> /hr	
Conveyor 20-CV-03 Receiving Point		
Belt Speed		
Belt Width	0.75 m/s	
Height of fall	600 mm	
Venting Volume @ Forward Point:	2463 m <sup>3</sup> /hr	
Venting Volume @ Backward Point:	2567 m <sup>3</sup> /hr	
Total Volume	1700 m <sup>3</sup> /hr	
	2610 m <sup>3</sup> /hr	
Type of Bag Filter	Pulse Jet Vent Filter	
Dust Type	Copper Ore Concentrates & Silica Dust	
Gas Flow through Bag Filter	Am <sup>3</sup> /hr	5819
Inlet Gas Temperature (Operating)	°C	50
Inlet Dust Load	gm/Nm <sup>3</sup>	50
Guaranteed Outlet Emission	mg/Nm <sup>3</sup>	10
Design Pressure	mm WC	2500
Normal Pressure Drop across Bag Filter	mm WC	80-120
Maximum Pressure Drop across BF	mm WC	150
Air to Cloth Ratio	m <sup>3</sup> /min/m <sup>2</sup>	1.67
Gross Fabric Area Required	m <sup>2</sup>	68
Bag Diameter	mm	150
Bag Length	mm	1000
No. of Pleats	nos	40
Depth of Pleats	mm	16
Fabric Area per Bag	m <sup>2</sup>	1.28
No. of Bags	nos	48
No. of Pulse Valves	nos	6
No. of Bags per Pulse Valve	nos	8
Type of Cleaning		Pulse Jet
Cleaning Media		Compressed Air
Compressed Air Pressure	bar	5-7
Quality of Compressed Air		Dry & Oil Free
Pulse Valve with Integral Solenoid Operator		40 NB
Comp. Air Consumption per Valve	Nm <sup>3</sup>	0.15
Cycle Time	sec	180
Compressed Air Requirement - Actual	Nm <sup>3</sup> /hr	20
Quality of compressed air		Dry & Oil Free
ID Fan Capacity		6400
Fan Static pressure	Am <sup>3</sup> /hr	200
	mmWC	
Filter Dimensions (L X B X H)	mm X mm X mm	1260 X 1660 X 1400

- Scope of Supply:**
- 3.15 MM (IS:1079) CASING WITH ROOF HATCH
  - 3.15 MM (IS:1079) BAG HOLDING PLATE
  - 40 NB (IS:1239) NOZZLE PIPES
  - 150 NB (IS:1239) AIR MANIFOLD WITH 15 NB COMPRESSED AIR CONNECTION WITH A DRAIN PETCOCK
  - 40 NB PULSE VALVES WITH INTEGRAL SOLENOID OPERATOR
  - 150 MM DIA X 1000 MM LONG NON WOVEN POLYESTER SPUN BONDED 260 GSM & PTFE PLEATED FILTER BAGS
  - 1 NO. PRESSURE SWITCH
  - 1 NO. FILTER-REGULATOR UNIT
  - 1 NO. GATE VALVE IN THE COMPRESSED AIR LINE UPSTREAM OF AIR MANIFOLD
  - 1 NO. PRESSURE GAUGE IN THE AIR MANIFOLD
  - 1 NO. DIFFERENTIAL PRESSURE SWITCH TO INTERLOCK WITH TIMER
  - 1 NO. SEQUENTIAL TIMER
  - 1 NO. TUBE MANOMETER
  - 1 NO. CONTROL JB
  - 1 LOT CONTROL CABLE BETWEEN TIMER, VALVES AND JB
  - INTEGRALLY MOUNTED ID FAN WITH MOTOR, COUPLING & EXHAUST EVASE

JHC-2B DE-DUSTING SYSTEM		
Conveyor 2B-CV-06 Discharge Point		
Bel Speed	0.75	m/s
Bel Width	600	mm
Working Volume	1581	m <sup>3</sup> /hr
Conveyor 2B-CV-09 Receiving Point		
Bel Speed	0.75	m/s
Bel Width	600	mm
Height of fall	3403	mm
Working Volume @ Forward Point:	2537	m <sup>3</sup> /hr
Working Volume @ Backward Point:	1790	m <sup>3</sup> /hr
Total Volume	3327	m <sup>3</sup> /hr
Type of Bag Filter	Pulse Jet Vent Filter	
Dust Type	Copper Ore Concentrates & Silica Dust	
Gas Flow through Bag Filter	Am <sup>3</sup> /hr	2819
Inlet Gas Temperature (Operating)	°C	30
Inlet Dust Load	gm/Nm <sup>3</sup>	50
Guaranteed Outlet Emission	mg/Nm <sup>3</sup>	10
Design Pressure	mm WC	±500
Normal Pressure Drop across Bag Filter	mm WC	50-120
Maximum Pressure Drop across BF	mm WC	150
Air to Cloth Ratio	m <sup>3</sup> /min/m <sup>2</sup>	1.67
Gross Fabric Area Required	m <sup>2</sup>	58
Bag Diameter	mm	150
Bag Length	mm	1000
No. of Pleats	nos	40
Depth of Pleats	mm	16
Fabric Area per Bag	m <sup>2</sup>	1.26
No. of Bags	nos	48
No. of Pulse Valves	nos	6
No. of Bags per Pulse Valve	nos	8
Type of Cleaning	Pulse Jet	
Cleaning Media	Compressed Air	
Compressed Air Pressure	bar	5-7
Quality of Compressed Air	Dry & Oil Free	
Pulse Valve with Integral Solenoid Operator	40 MB	
Comp. Air Consumption per Valve	Nm <sup>3</sup>	0.15
Cycle Time	sec	180
Compressed Air Requirement - Actual	Nm <sup>3</sup> /hr	20
Quality of compressed air	Oil content < 0.02 gm/Nm <sup>3</sup> , Moisture content: Atm.dew point temp (+) 10°C which corresponds to 2 gm/Nm <sup>3</sup>	
ID Fan Capacity	Am <sup>3</sup> /hr	6400
Fan Static pressure	mm WC	200
Filter Dimension (L X B X H)	mm X mm X mm	1260 x 1660 x 1400
<b>Scope of Supply:</b>		
1. 3.15 MM (IS:1079) CASING WITH ROOF HATCH		
2. 3.15 MM (IS:1079) BAG HOLDING PLATE		
3. 40 NB (IS:1239) NOZZLE PIPES		
4. 150 NB (IS:1239) AIR MANIFOLD WITH 15 NB COMPRESSED AIR CONNECTION WITH A DRAIN PETCOCK		
5. 40 NB PULSE VALVES WITH INTEGRAL SOLENOID OPERATOR		
6. 150 MM DIA X 1000 MM LONG NON WOVEN POLYESTER SPUN BONDED 260 GSM & PTFE PLEATED FILTER BAGS		
7. 1 NO. PRESSURE SWITCH		
8. 1 NO. FILTER-REGULATOR UNIT		
9. 1 NO. GATE VALVE IN THE COMPRESSED AIR LINE UPSTREAM OF AIR MANIFOLD		
10. 1 NO. PRESSURE GAUGE IN THE AIR MANIFOLD		
11. 1 NO. DIFFERENTIAL PRESSURE SWITCH TO INTERLOCK WITH TIMER		
12. 1 NO. SEQUENTIAL TIMER		
13. 1 NO. TUBE MANOMETER		
14. 1 NO. CONTROL JB		
15. 1 LOT CONTROL CABLE BETWEEN TIMER, VALVES AND JB		
16. INTEGRALLY MOUNTED ID FAN WITH MOTOR, COUPLING & EXHAUST EVASE		

JHC-2C DE-DUSTING SYSTEM		
Conveyor 20-CV-47 Discharge Point		
Belt Speed	0.75 m/s	
Belt Width	800 mm	
Venting Volume	1564 m <sup>3</sup> /hr	
Conveyor 20-CV-49 Receiving Point		
Belt Speed	0.70 m/s	
Belt Width	800 mm	
Height of fall	8453 mm	
Venting Volume @ Forward Point:	2567 m <sup>3</sup> /hr	
Venting Volume @ Backward Point:	1798 m <sup>3</sup> /hr	
Total Volume	4365 m <sup>3</sup> /hr	
Type of Bag Filter	Pulse Jet Vent Filter	
Dust Type	Copper Ore Concentrates & Silica Dust	
Gas Flow through Bag Filter	Am <sup>3</sup> /hr	8419
Inlet Gas Temperature (Operating)	°C	50
Inlet Dust Load	gm/Nm <sup>3</sup>	50
Guaranteed Outlet Emission	mg/Nm <sup>3</sup>	10
Design Pressure	mm WC	2500
Normal Pressure Drop across Bag Filter	mm WC	80-120
Maximum Pressure Drop across BF	mm WC	180
Air to Cloth Ratio	m <sup>3</sup> /min/m <sup>2</sup>	1.67
Gross Fabric Area Required	m <sup>2</sup>	58
Bag Diameter	mm	150
Bag Length	mm	1000
No. of Pleats	nos	40
Depth of Pleats	mm	16
Fabric Area per Bag	m <sup>2</sup>	1.28
No. of Bags	nos	45
No. of Pulse Valves	nos	6
No. of Bags per Pulse Valve	nos	8
Type of Cleaning	Pulse Jet	
Cleaning Media	Compressed Air	
Compressed Air Pressure	bar	5-7
Quality of Compressed Air	Dry & Oil Free	
Pulse Valve with Integral Solenoid Operator	40 NB	
Comp. Air Consumption per Valve	Nm <sup>3</sup>	0.15
Cycle Time	sec	180
Compressed Air Requirement - Actual	Nm <sup>3</sup> /hr	20
Quality of compressed air	Oil content < 0.02 gm/Nm <sup>3</sup> , Moisture content: Atm. dew point temp (-) 10°C which corresponds to 2 gm/Nm <sup>3</sup>	
ID Fan Capacity	Am <sup>3</sup> /hr	6400
Fan Static pressure	mm WC	200
Filter Dimensions (L x B x H)	mm x mm x mm	1260 x 1660 x 1400

- Scope of Supply:**
- 3.15 MM (IS:1079) CASING WITH ROOF HATCH
  - 3.15 MM (IS:1079) BAG HOLDING PLATE
  - 40 NB (IS:1239) NOZZLE PIPES
  - 150 NB (IS:1239) AIR MANIFOLD WITH 15 NB COMPRESSED AIR CONNECTION WITH A DRAIN PETCOCK
  - 40 NB PULSE VALVES WITH INTEGRAL SOLENOID OPERATOR
  - 150 MM DIA X 1000 MM LONG NON WOVEN POLYESTER SPUN BONDED 260 GSM & PTFE PLEATED FILTER BAGS
  - 1 NO. PRESSURE SWITCH
  - 1 NO. FILTER-REGULATOR UNIT
  - 1 NO. GATE VALVE IN THE COMPRESSED AIR LINE UPSTREAM OF AIR MANIFOLD
  - 1 NO. PRESSURE GAUGE IN THE AIR MANIFOLD
  - 1 NO. DIFFERENTIAL PRESSURE SWITCH TO INTERLOCK WITH TIMER
  - 1 NO. SEQUENTIAL TIMER
  - 1 NO. TUBE MANOMETER
  - 1 NO. CONTROL JB
  - 1 LOT CONTROL CABLE BETWEEN TIMER, VALVES AND JB
  - INTEGRALLY MOUNTED ID FAN WITH MOTOR, COUPLING & EXHAUST EVASE

JHC-3 DE-DUSTING SYSTEM			
Conveyor 28-CV-00 Discharge Point			
Ball Speed	0.75 m/s	<b>Scope of Supply:</b> 1. 3.15 MM (IS:1079) CASING WITH ROOF HATCH 2. 3.15 MM (IS:1079) BAG HOLDING PLATE 3. 40 NB (IS:1239) NOZZLE PIPES 4. 150 NB (IS:1239) AIR MANIFOLD WITH 15 NB COMPRESSED AIR CONNECTION WITH A DRAIN PETCOCK 5. 40 NB PULSE VALVES WITH INTEGRAL SOLENOID OPERATOR 6. 150 MM DIA X 1000 MM LONG NON WOVEN POLYESTER SPUN BONDED 260 GSM & PTFE PLEATED FILTER BAGS 7. 1 NO. PRESSURE SWITCH 8. 1 NO. FILTER-REGULATOR UNIT 9. 1 NO. GATE VALVE IN THE COMPRESSED AIR LINE UPSTREAM OF AIR MANIFOLD 10. 1 NO. PRESSURE GAUGE IN THE AIR MANIFOLD 11. 1 NO. DIFFERENTIAL PRESSURE SWITCH TO INTERLOCK WITH TIMER 12. 1 NO. SEQUENTIAL TIMER 13. 1 NO. TUBE MANOMETER 14. 1 NO. CONTROL JB 15. 1 LOT CONTROL CABLE BETWEEN TIMER, VALVES AND JB 16. INTEGRALLY MOUNTED ID FAN WITH MOTOR, COUPLING & EXHAUST EVASE	
Ball Width	800 mm		
Verifying Volume	1501 m <sup>3</sup> /hr		
Conveyor 28-CV-10 Receiving Point			
Ball Speed	0.75 m/s		
Ball Width	800 mm		
Height of fall	2642 mm		
Verifying Volume @ Forward Point:	2502 m <sup>3</sup> /hr		
Verifying Volume @ Backward Point:	1700 m <sup>3</sup> /hr		
Total Volume	5613 m <sup>3</sup> /hr		
Type of Bag Filter	Pulse Jet Vent Filter		
Dust Type	Copper Ore Concentrates & Silica Dust		
Gas Flow through Bag Filter	Am <sup>3</sup> /hr		9813
Inlet Gas Temperature (Operating)	°C		50
Inlet Dust Load	gm/Nm <sup>3</sup>		50
Guaranteed Outlet Emission	mg/Nm <sup>3</sup>		10
Design Pressure	mm WC	±500	
Normal Pressure Drop across Bag Filter	mm WC	80-120	
Maximum Pressure Drop across BF	mm WC	150	
Air to Cloth Ratio	m <sup>3</sup> /min/m <sup>2</sup>	1.67	
Cross Fabric Area Required	m <sup>2</sup>	58	
Bag Diameter	mm	150	
Bag Length	mm	1000	
No. of Pleats	nos	40	
Depth of Pleats	mm	16	
Fabric Area per Bag	m <sup>2</sup>	1.28	
No. of Bags	nos	48	
No. of Pulse Valves	nos	6	
No. of Bags per Pulse Valve	nos	8	
Type of Cleaning	Pulse Jet		
Cleaning Media	Compressed Air		
Compressed Air Pressure	bar	5-7	
Quality of Compressed Air	Dry & Oil Free		
Pulse Valve with Integral Solenoid Operator	40 NB		
Comp. Air Consumption per Valve	Nm <sup>3</sup>	0.15	
Cycle Time	sec	1.80	
Compressed Air Requirement - Actual	Nm <sup>3</sup> /hr	20	
Quality of compressed air	Oil content < 0.02 gm/Nm <sup>3</sup> , Moisture content: Atm. dew point temp (+10°C which corresponds to 2 gm/Nm <sup>3</sup> )		
ID Fan Capacity	Am <sup>3</sup> /hr	6394	
Fan Static pressure	mm WC	200	
Filter Dimension (L x B x H)	mm x mm x mm	1250 x 1600 x 1400	

Annexure - 7

Home

Cut Copy Paste Format Painter

Arial - 10 A Aa

B I U abc x, x'

Clipboard Font Paragraph Styles

Navigation

Search document

Headings Pages Results

Create an interactive outline of your document.

It's a great way to keep track of where you are or quickly move your content around.

To get started, go to the Home tab and apply Heading styles to the headings in your document.

PRAYON TECHNOLOGIES S.A. Project n° : 2903 HINDALCO

## 7 WATER CIRCUIT

There are basically two types of water supplied to the Plant

- Process water: Fresh Water
- Acidic cooling water: Water circulating from acidic cooling tower

**Process Water**

Fresh water mainly enters the plant through the following equipment items:

- Gear box cooling of the new ball mill
- Various seal water duties on pumps
- LLFC Vacuum Pump (06.VE.101)
- Filter Vacuum Pumps (06.VE.103 – 06.VE.104)
- Gas scrubber make-up

**Acidic Cooling Water**

The cooling water provided by the cooling tower feeds the following equipment items:

- Flash Cooler Condenser (06.WC.101)
- Filter Condenser (06.WC.103)
- Evaporator Condensers (Unit #)

Hot cooling water leaving these equipments returns to the cooling tower. To avoid an impurities build-up in the closed circuit, a bleed is provided in the cooling water circuit. This bleed is sent to the pre-condenser (06.WC.101) and is used as make up water on the Dalkor filter.

Page 12 of 12 3718 words



TDS

Centralized Processing Cell

TRACES

TDS Reconciliation Analysis and Correction Enabling System

Government of India  
Income Tax Department

## FORM NO. 16

[See rule 31(1)(a)]

## PART A

Certificate under Section 203 of the Income-tax Act, 1961 for tax deducted at source on salary

Certificate No. BVB/XAL

Last updated on 20-Jun-2018

Name and address of the Employer

Name and address of the Employee

HINDALCO INDUSTRIES LTD.,  
PLOT NO:2, DAHEJ INDUSTRIAL ESTATE, VILLAGE:LAKHIGAM,  
DAHEJ, BHARUCH - 392130  
Gujarat  
+(91)-251069  
SUSHANT.NAYAK@ADITYABIRLA.COM

LALJIBHAI NAVJIBHAI RATHVA  
F 7 2, BIRLA COPPER TOWN SHIP, DAHEJ, VAGRA, BHARUCH -  
392130 Gujarat

PAN of the Deductor

TAN of the Deductor

PAN of the Employee

Employee Reference No.  
provided by the Employer  
(If available)

CIT (TDS)

Assessment Year

Period with the Employer

The Commissioner of Income Tax (TDS)  
Room No. 201, 2nd Floor, Navjivan Trust Building, B/h Gujarat  
Vidhyapith, Ashram Road, Ahmedabad - 380014

2018-19

From  
01-Apr-2017To  
31-Mar-2018

Summary of amount paid/credited and tax deducted at source thereon in respect of the employee

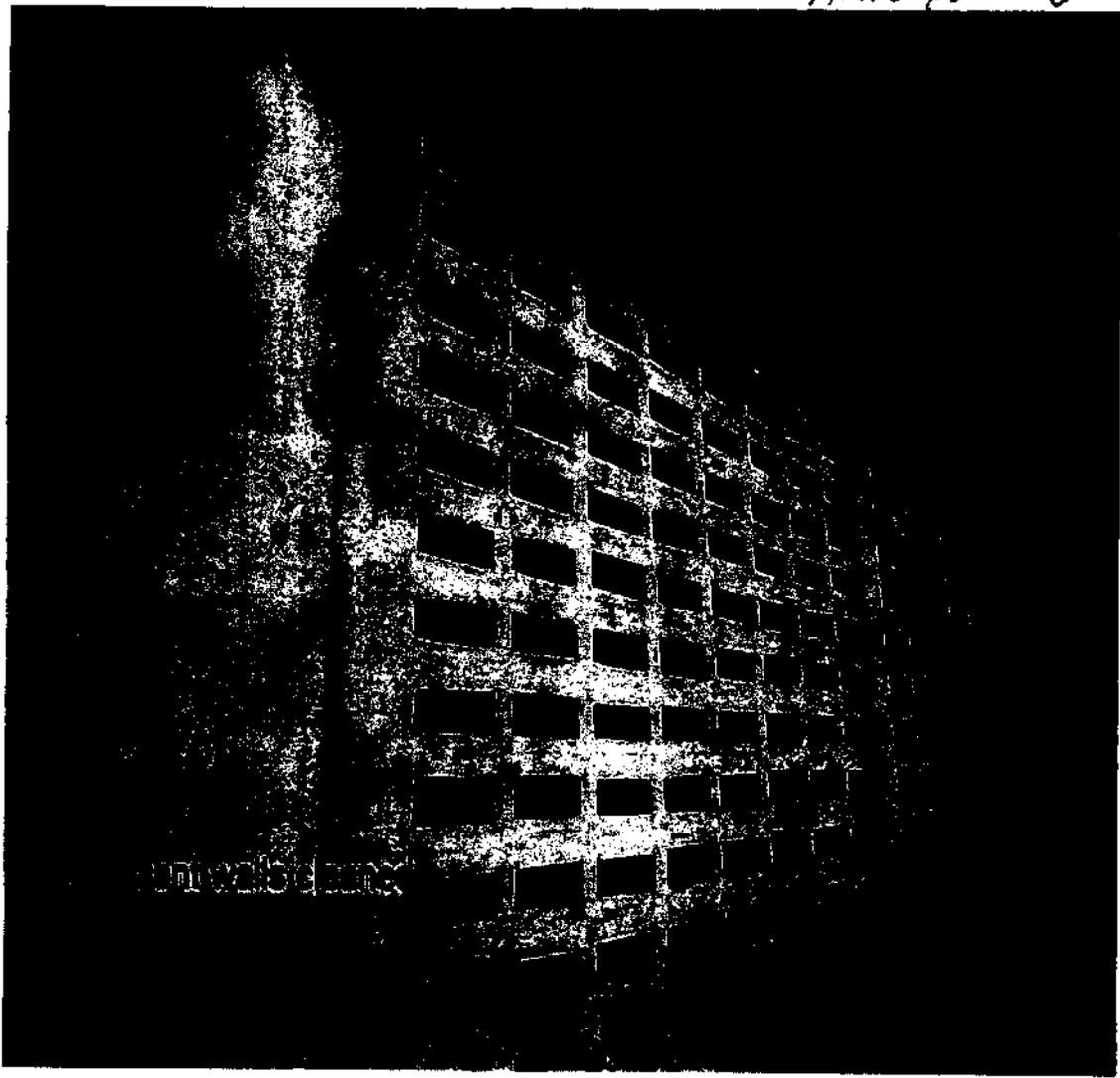
Quarter(s)	Receipt Numbers of original quarterly statements of TDS under sub-section (3) of Section 200	Amount paid/credited	Amount of tax deducted (Rs.)	Amount of tax deposited / remitted (Rs.)
Q3	QSVGFUKF	66452.00	3060.00	3060.00
Q4	QTAPOZQA	510375.00	25641.00	25641.00
<b>Total (Rs.)</b>		<b>576827.00</b>	<b>28701.00</b>	<b>28701.00</b>

## I. DETAILS OF TAX DEDUCTED AND DEPOSITED IN THE CENTRAL GOVERNMENT ACCOUNT THROUGH BOOK ADJUSTMENT

(The deductor to provide payment wise details of tax deducted and deposited with respect to the deductee)

Sl. No.	Tax Deposited in respect of the deductee (Rs.)	Book Identification Number (BIN)			
		Receipt Numbers of Form No. 24G	DDO serial number in Form no. 24G	Date of transfer voucher (dd/mm/yyyy)	Status of matching with Form no. 24G

*Annexure - 8*

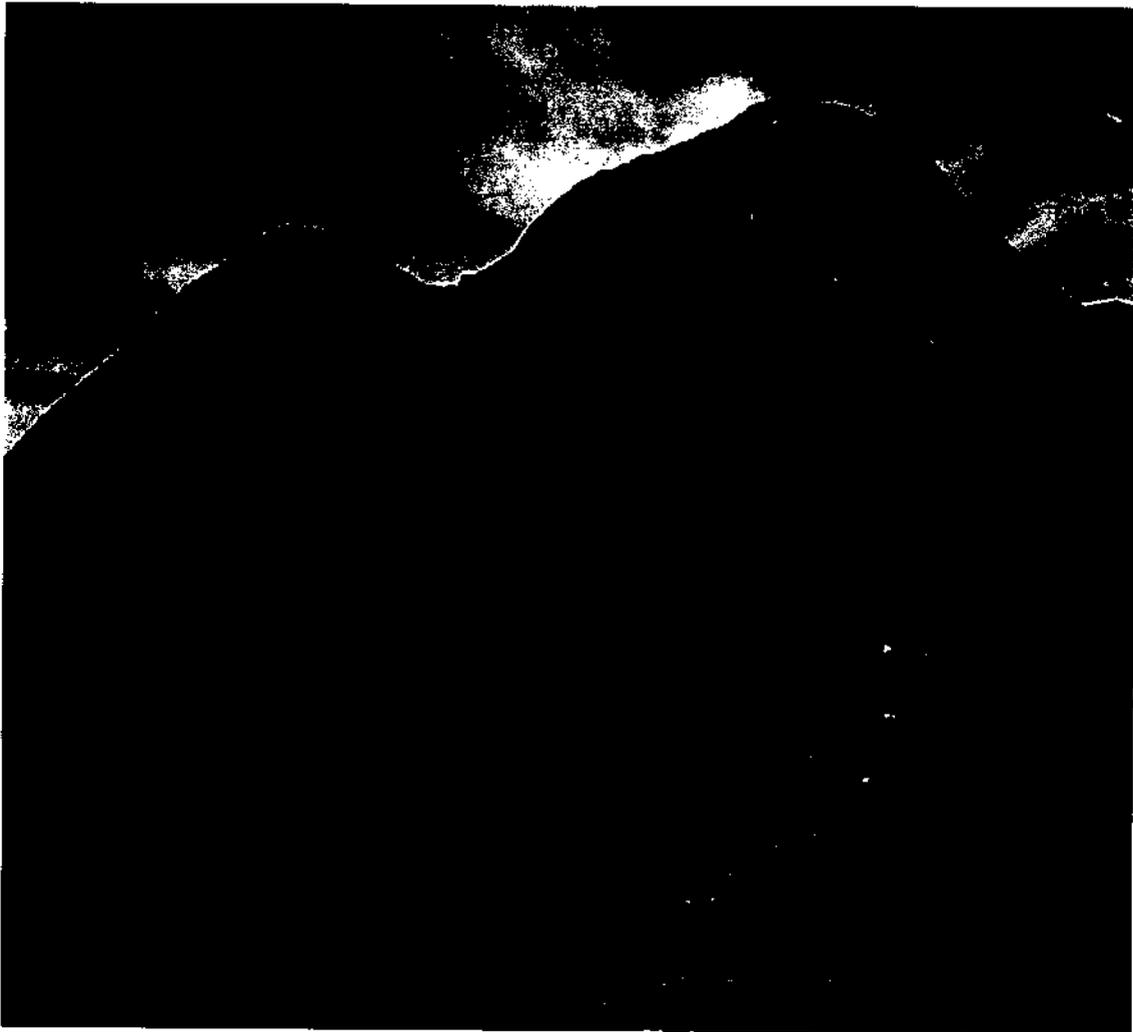


DAP plant walls cleaned



Amexora - 89

Annexure-9



Rock Phosphate covered with tarpauline

*Annexure-10*



Digital DP transmitter for Dust bag filter



Lechate collection sump of SLF VII

Annexure 11



Annexure -12



Top covering of SLF-VII in progress

7/17/2018

Welcome Hindalco Industries Limited



LIVE MAP LIVE CAMERA DATA VALIDATION REPORTS

Select Data Type -

Select a Graph Type -

Select an Owner and Station and Click add to see its air data. You may add multiple stations and select the parameters.

Industry Type :

Company Name :

Station :

Check All

UNIT BIRLA COPPER : SLAG CLEANING FURNACE  Select All  Unselect All

SO2

UNIT BIRLA COPPER : SLAG CLEANING FURNACE PM  Select All  Unselect All

PM

UNIT BIRLA COPPER : SMELTER 1 SCRUBBER  Select All  Unselect All

SO2

UNIT BIRLA COPPER : SMELTER PLANT 3  Select All  Unselect All

SO2

From :

<http://www.nevcopcb.com/cemsHome.php?idType=Mw==>

Annexure-15

7/17/2018

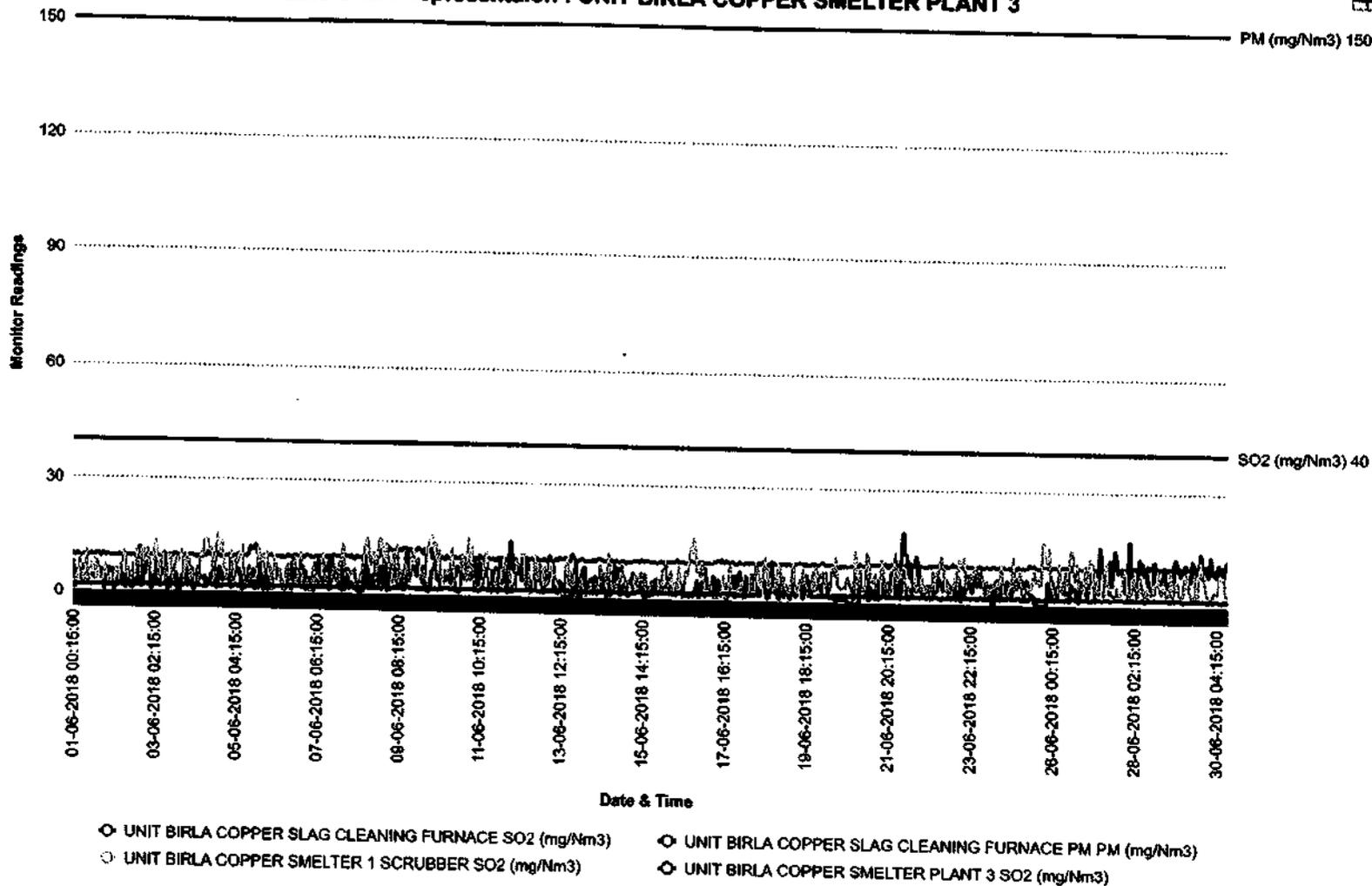
CEMS - Real-Time Data Monitoring System - Gujarat Pollution Control Board

<b>To</b>	:	<input type="text" value="30-06-2018 10:40"/>
<b>Time Base</b>	:	<input type="text" value="15 Minutes"/>
<b>Value Type</b>	:	<input type="text" value="Average"/>
<b>Range</b>	:	Min. <input type="text"/> Max. <input type="text"/>
<input type="button" value="Generate Report"/>		

7/1/2018

CEMS - Real-Time Data Monitoring System - Gujarat Pollution Control Board

Line Chart Representaion : UNIT BIRLA COPPER SMELTER PLANT 3



Nevco Engineers Pvt. Ltd. 2018.

Server Current Date & Time 01-Jul-2018 10:43

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LIVE MAP LIVE CAMERA DATA VALIDATION REPORTS

Select Data Type -         Select a Graph Type -

Select an Owner and Station and Click add to see its air data. You may add multiple stations and select the parameters.

Industry Type :

Company Name :

Station :

[Add Station](#)   [Add multiple stations to view its data](#)

Check All

UNIT BIRLA COPPER : SMELTER PLANT 3  Select All  Unselect All X

SO2

UNIT BIRLA COPPER : SMELTER-3  Select All  Unselect All X

PM

UNIT BIRLA COPPER : STACK\_1\_FLUE\_DORE FURNACE  Select All  Unselect All X

SO2  PM

Advance Search Quick Reports

From :

To :

Time Base :

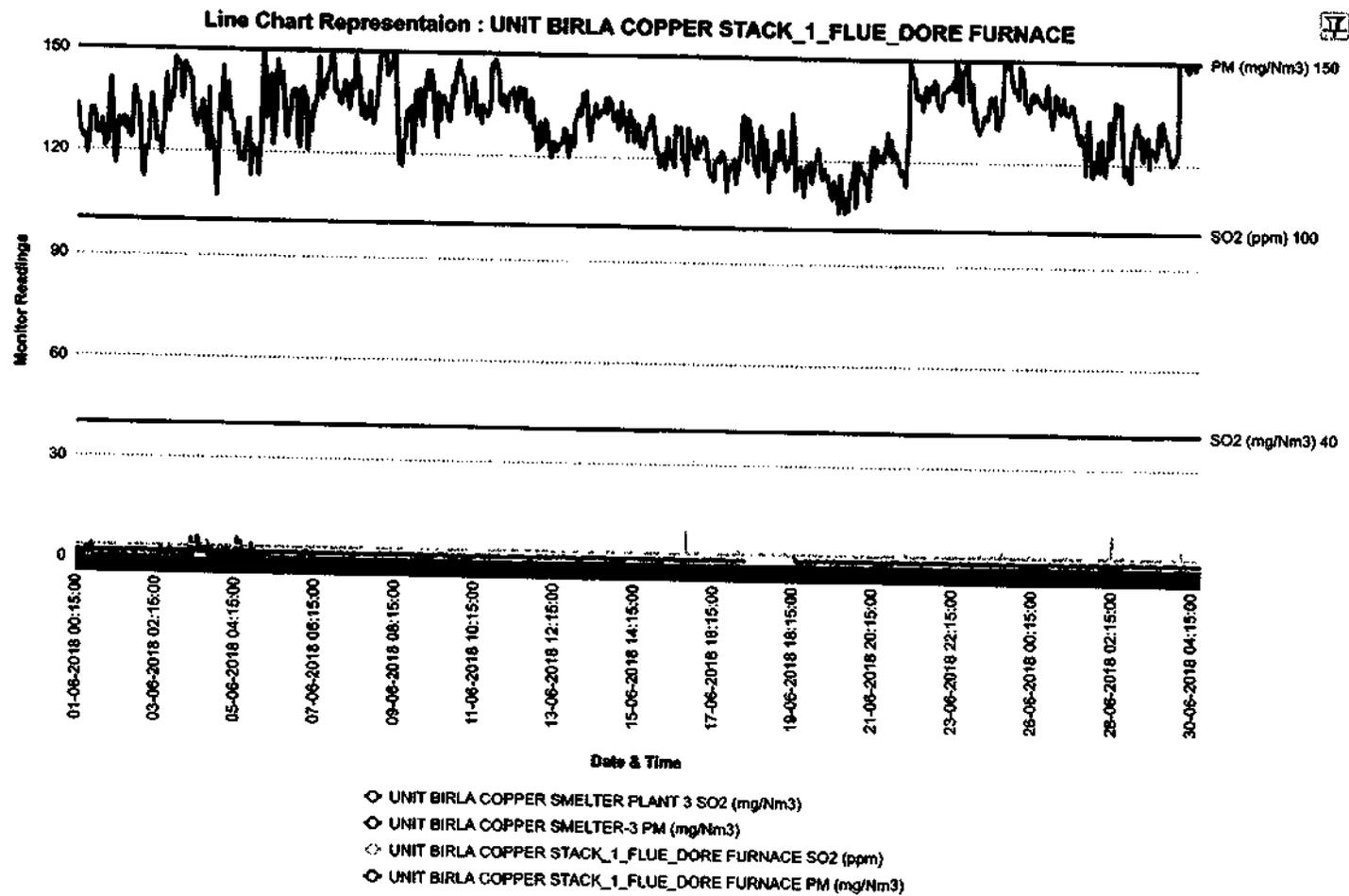
Value Type :

Range

7/17/2018

CEMS - Real-Time Data Monitoring System - Gujarat Pollution Control Board

: Min.  Max.



Nevco Engineers Pvt. Ltd, 2018.

Server Current Date & Time 01-Jul-2018 10:47

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LIVE MAP LIVE CAMERA DATA VALIDATION REPORTS

Select Data Type -         Select a Graph Type -

Select an Owner and Station and Click add to see its air data. You may add multiple stations and select the parameters.

Industry Type :

Company Name :

Station :

[Add Station](#)   [Add multiple stations to view its data](#)

Check All

UNIT BIRLA COPPER : STACK\_11\_CPP-2    Select All    Unselect All  

SO2  NOX  PM

UNIT BIRLA COPPER : STACK\_7\_CPP-1    Select All    Unselect All  

SO2  NOX  PM

Advance Search   Quick Reports

From :

To :

Time Base :

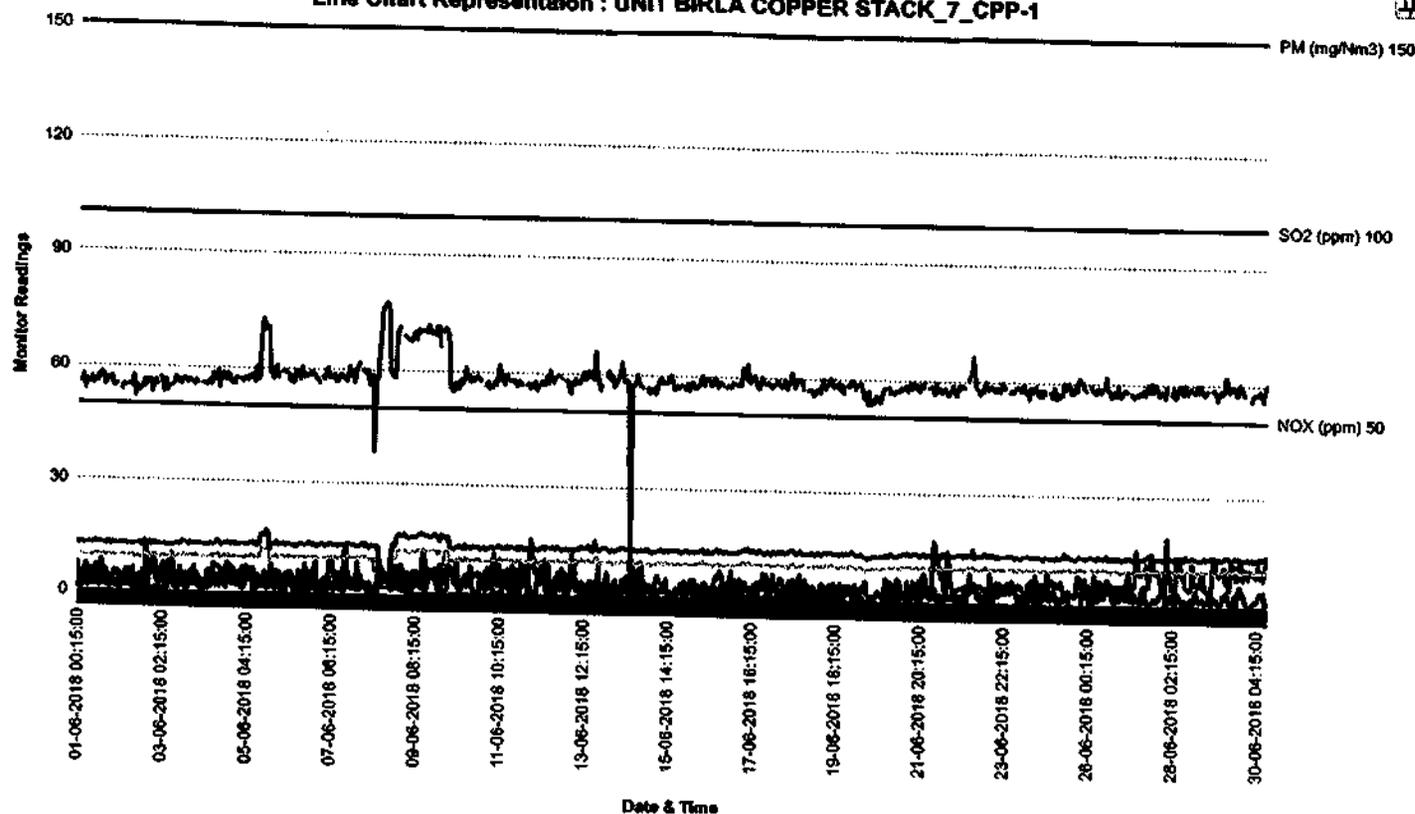
Value Type :

Range : Min.  Max.

7/1/2018

CEMS - Real-Time Data Monitoring System - Gujarat Pollution Control Board

Line Chart Representation : UNIT BIRLA COPPER STACK\_7\_CPP-1



- ◇ UNIT BIRLA COPPER STACK\_11\_CPP-2 SO2 (ppm)
- ◇ UNIT BIRLA COPPER STACK\_11\_CPP-2 PM (mg/Nm3)
- ◇ UNIT BIRLA COPPER STACK\_7\_CPP-1 NOX (ppm)
- ◇ UNIT BIRLA COPPER STACK\_11\_CPP-2 NOX (ppm)
- ◇ UNIT BIRLA COPPER STACK\_7\_CPP-1 SO2 (ppm)
- ◇ UNIT BIRLA COPPER STACK\_7\_CPP-1 PM (mg/Nm3)

Nevco Engineers Pvt. Ltd. 2018.

Server Current Date & Time 01-Jul-2018 10:50

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LIVE MAP LIVE CAMERA DATA VALIDATION REPORTS

Select Data Type -    Select a Graph Type -

Select an Owner and Station and Click add to see its air data. You may add multiple stations and select the parameters.  
Industry Type :   
Company Name :   
Station :

Check All

UNIT BIRLA COPPER : STACK\_FLUE\_8\_CCR I  Select All  Unselect All X  
SO2  PM

UNIT BIRLA COPPER : STACK\_FLUE\_9\_CCR II  Select All  Unselect All X  
SO2  PM

UNIT BIRLA COPPER : STACK\_PROCESS\_22\_PMR PHASE III  Select All  Unselect All X  
SO2  PM

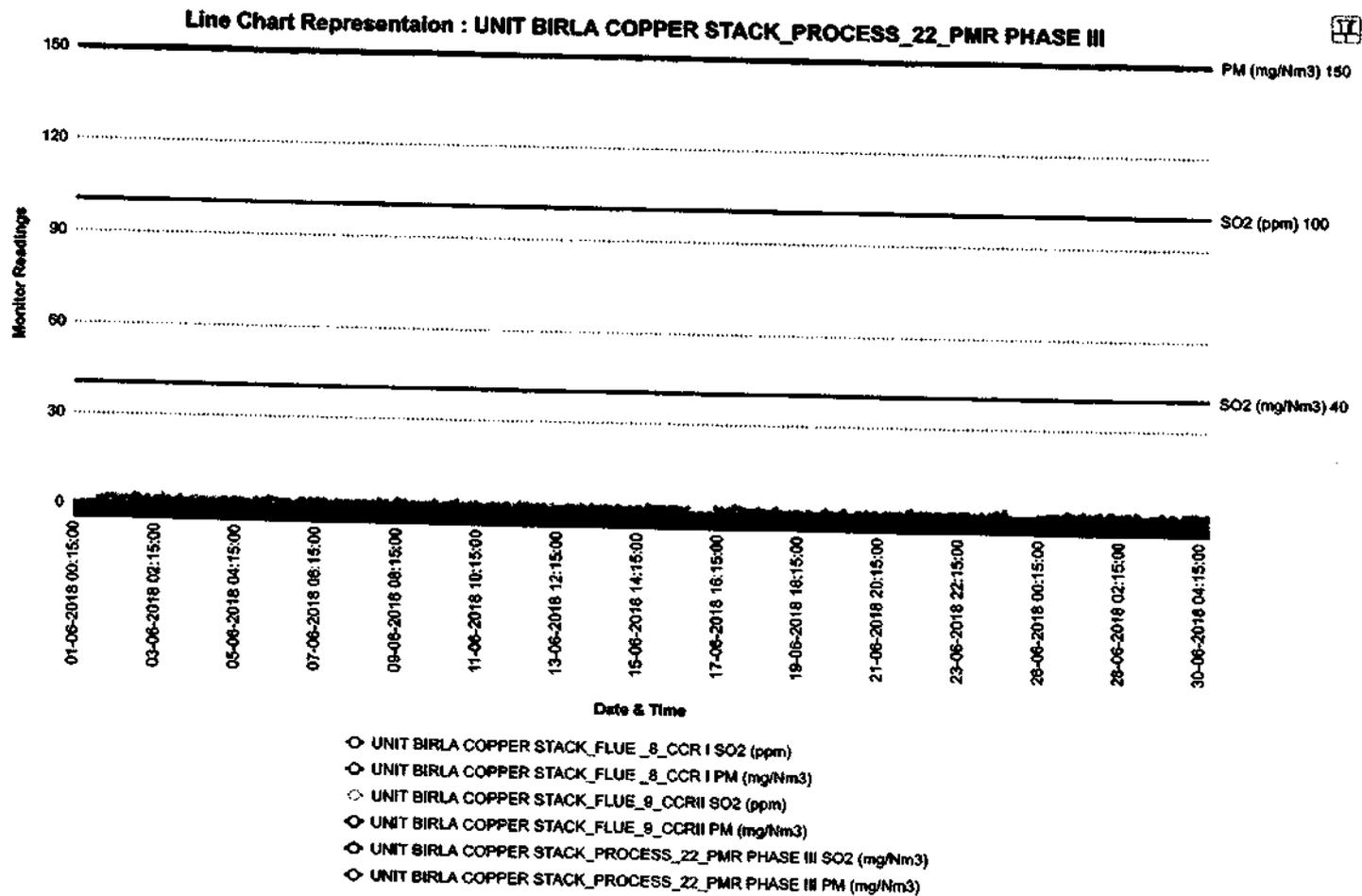
Advance Search Quick Reports

From :   
To :   
Time Base :   
Value Type :   
Range

7/1/2018

: Min.  Max.

CEMS - Real-Time Data Monitoring System - Gujarat Pollution Control Board



Nevco Engineers Pvt. Ltd. 2018.

Server Current Date & Time 01-Jul-2018 10:52

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LIVE MAP LIVE CAMERA DATA VALIDATION REPORTS

Select Data Type -    Select a Graph Type -

Select an Owner and Station and Click add to see its air data. You may add multiple stations and select the parameters.  
Industry Type :   
Company Name :   
Station :   
[Add Station](#) [Add multiple stations to view its data](#)

Check All

UNIT BIRLA COPPER : SULPHURIC ACID PLANT 1  Select All  Unselect All X  
SO2

UNIT BIRLA COPPER : SULPHURIC ACID PLANT 3  Select All  Unselect All X  
SO2

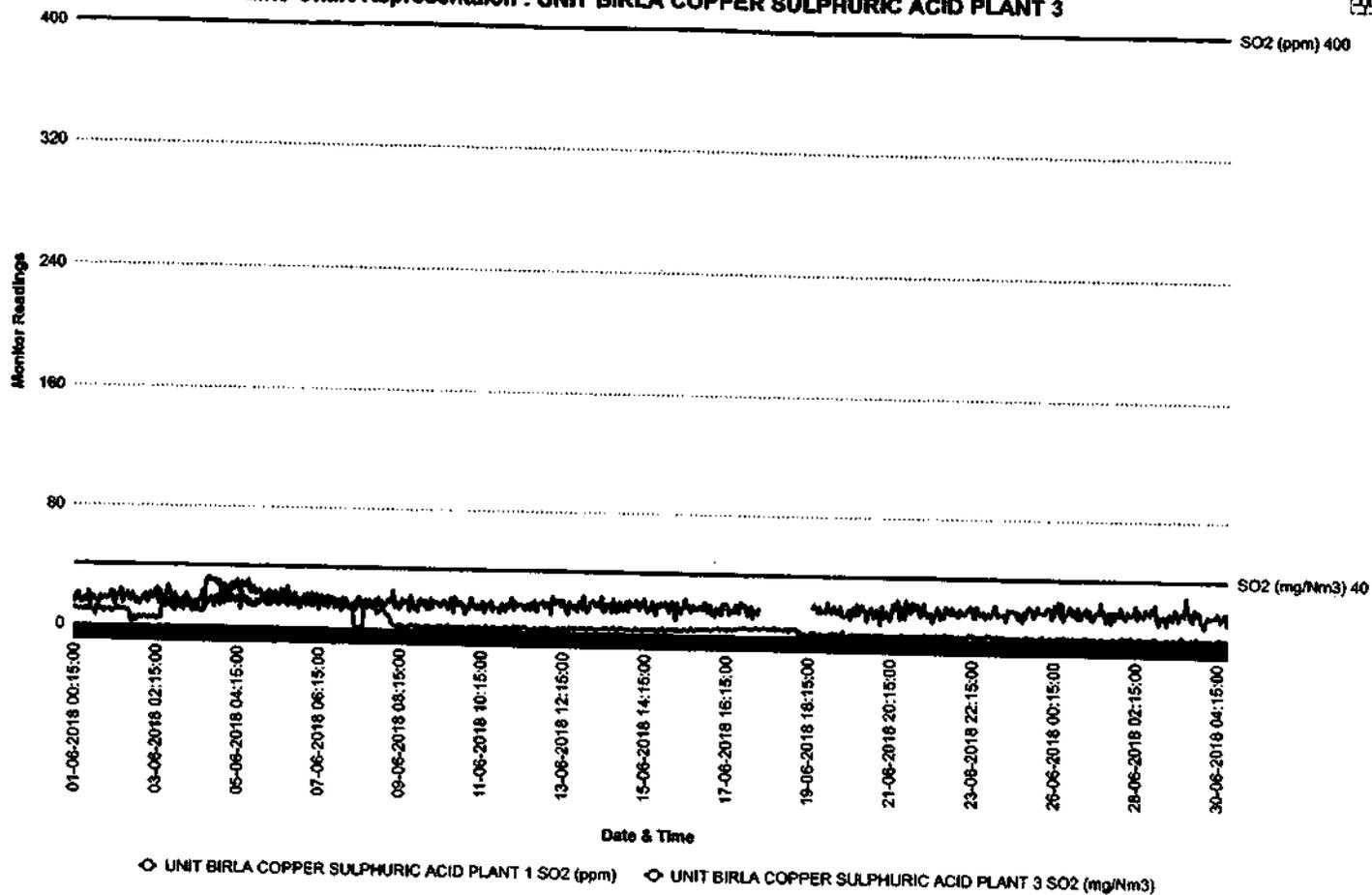
Advance Search Quick Reports

From :   
To :   
Time Base :   
Value Type :   
Range : Min.  Max.

7/1/2018

CEMS - Real-Time Data Monitoring System - Gujarat Pollution Control Board

Line Chart Representaion : UNIT BIRLA COPPER SULPHURIC ACID PLANT 3

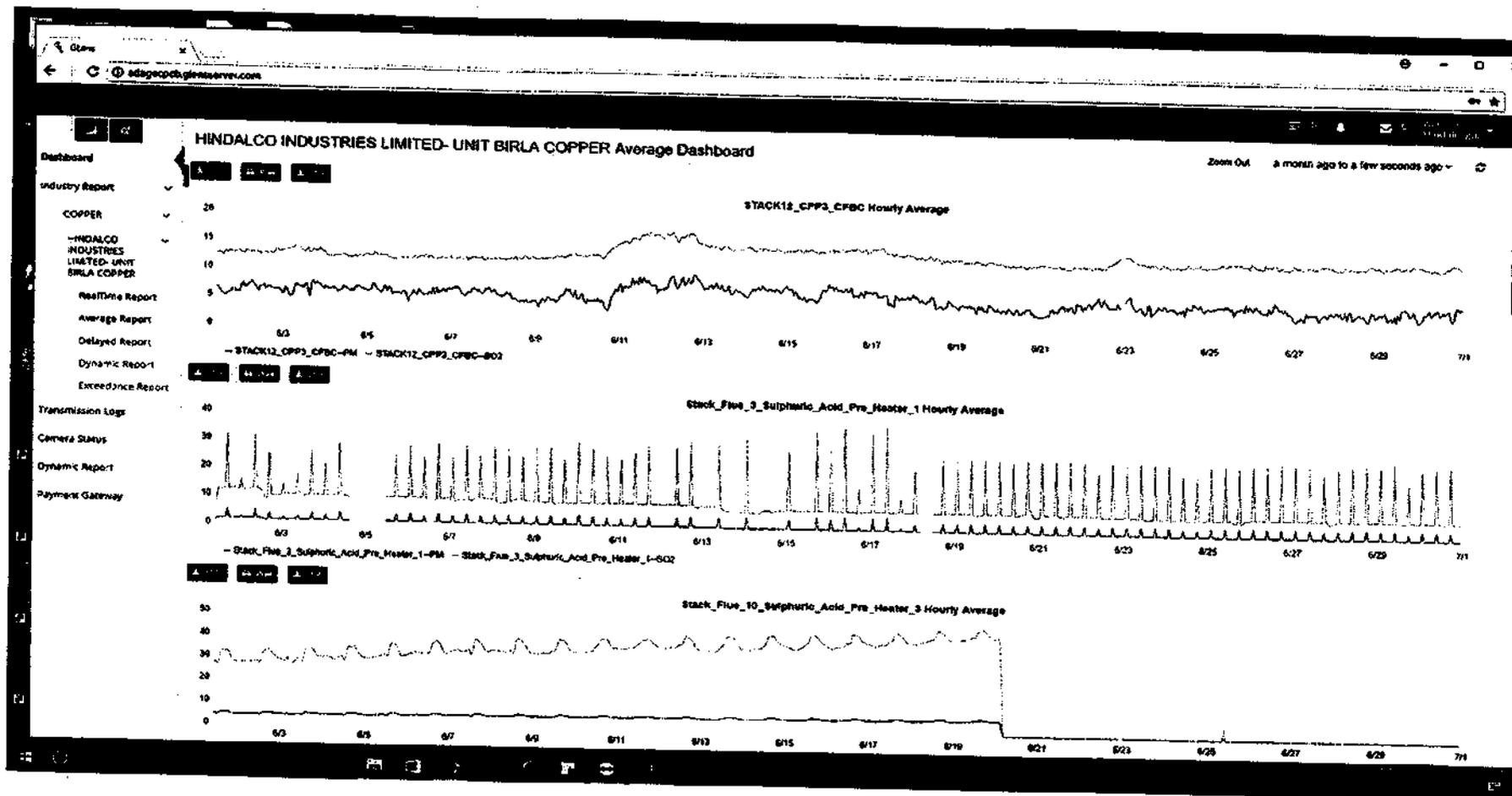


Nevco Engineers Pvt. Ltd. 2018.

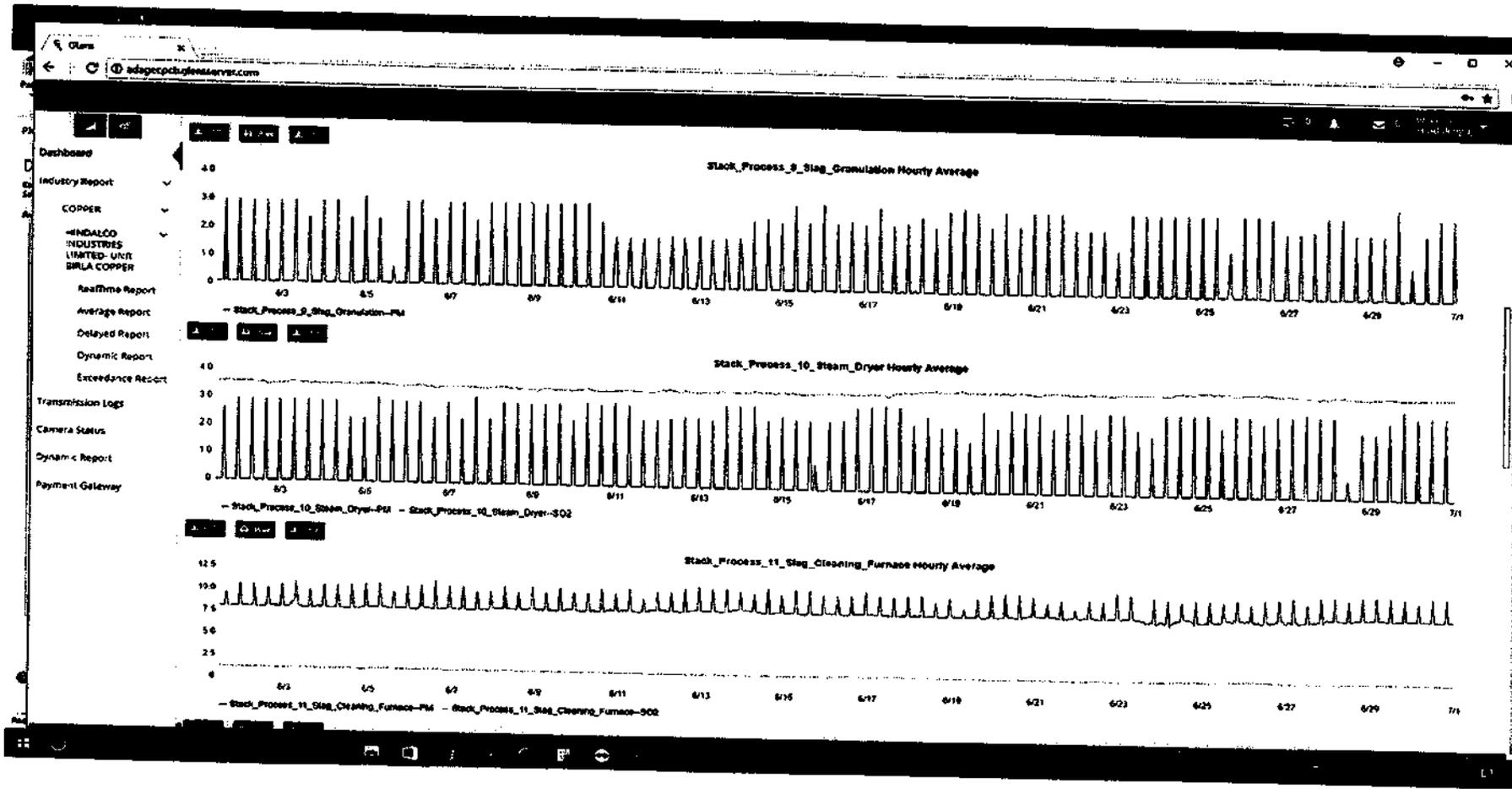
Server Current Date & Time 01-Jul-2018 10:54

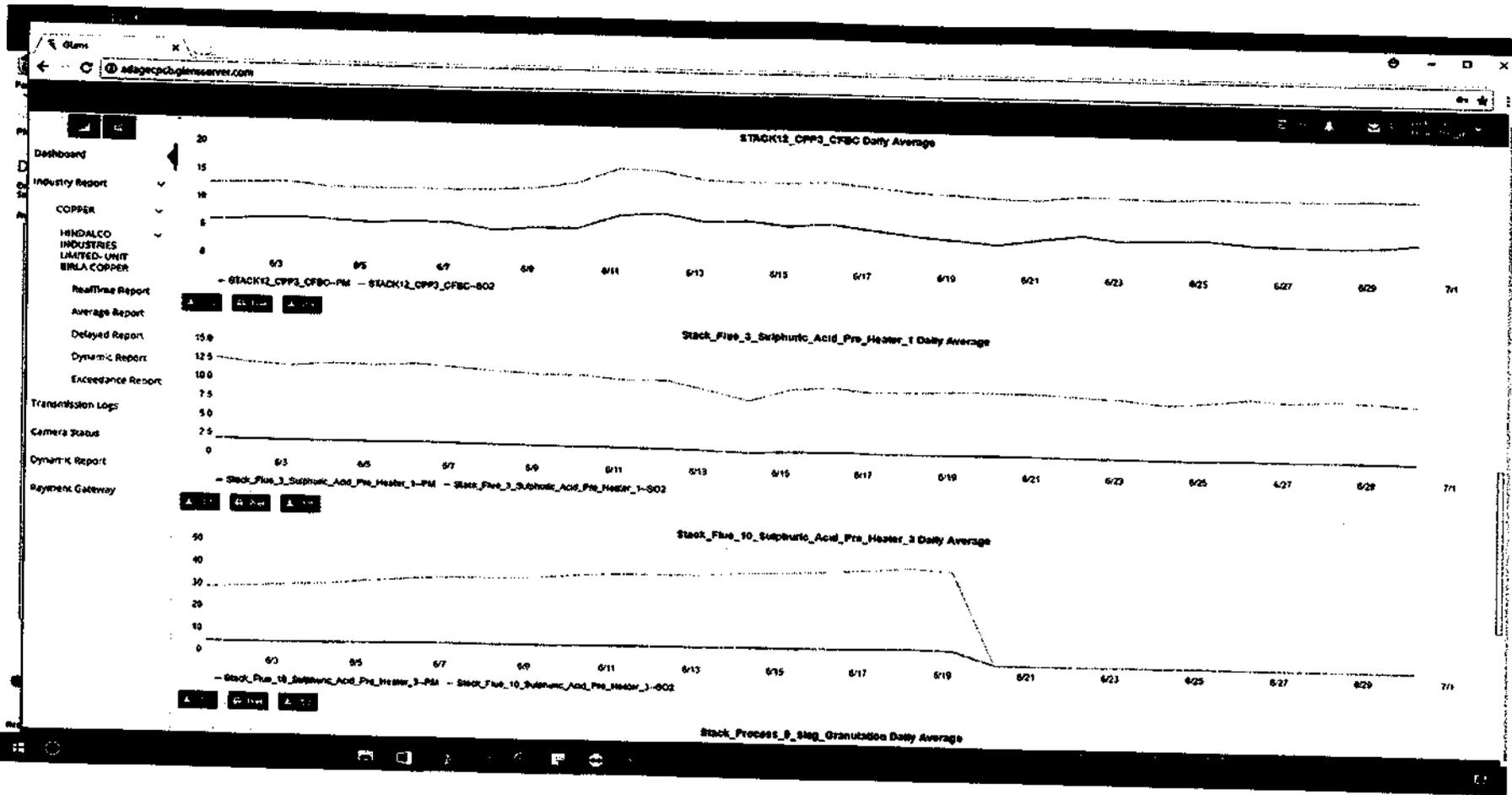
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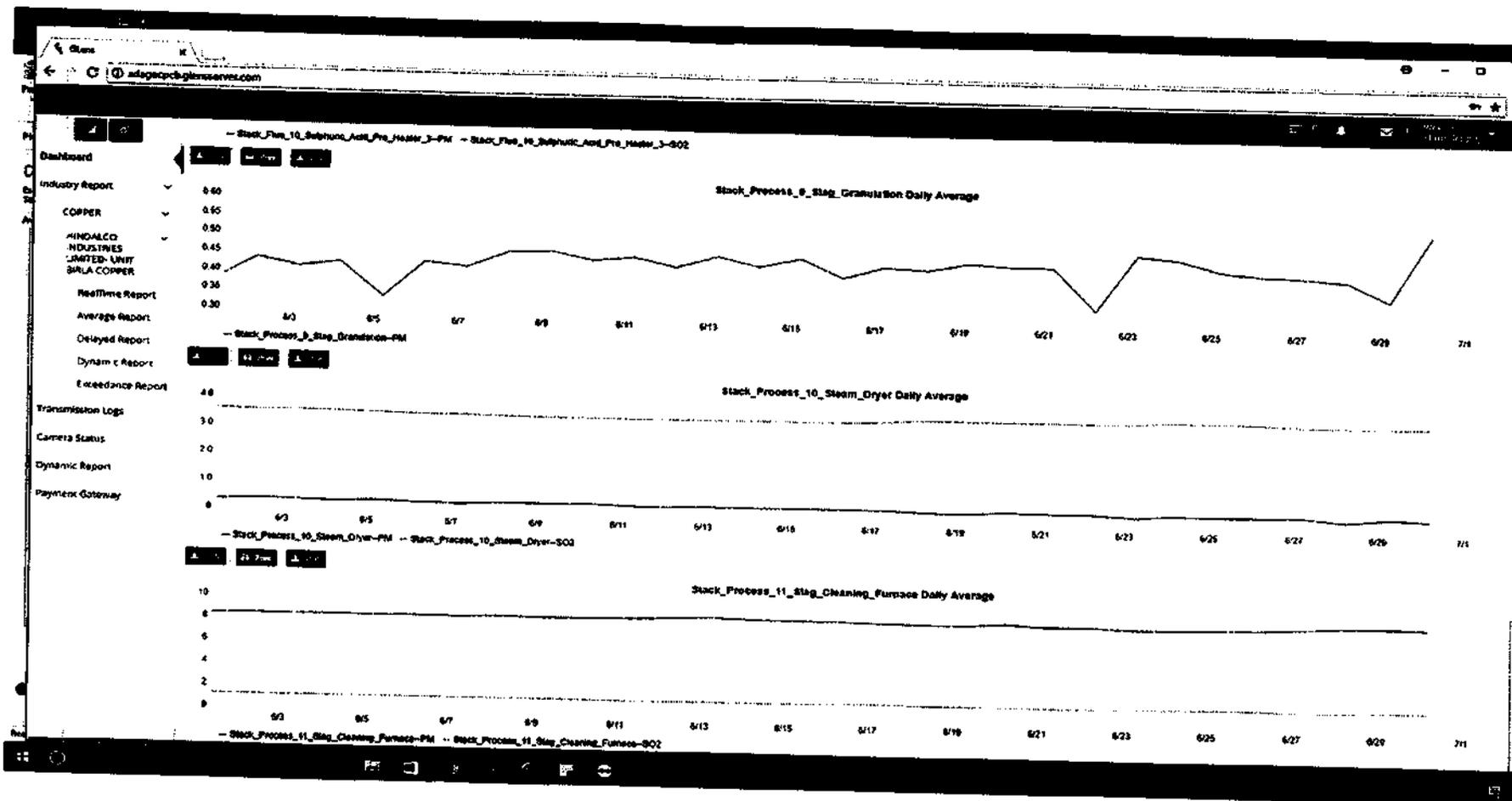
<http://www.nevcopcb.com/cemaHome.php?idType=Mw==>



Annexure 13







LIVE MAP LIVE CAMERA DATA VALIDATION REPORTS

Select Data Type -         Select Export Format -

Select an Owner and Station and Click add to see its air data. You may add multiple stations and select the parameters.

Industry Type :

Company Name :

Station :

Check All

UNIT BIRLA COPPER : STACK\_1\_FLUE\_DORE FURNACE   

SO2  PM

UNIT BIRLA COPPER : STACK\_11\_CPP-2   

SO2  NOX  PM

UNIT BIRLA COPPER : STACK\_7\_CPP-1   

SO2  NOX  PM

UNIT BIRLA COPPER : STACK\_FLUE\_8\_CCR I   

SO2  PM

UNIT BIRLA COPPER : STACK\_FLUE\_9\_CCR II   

SO2  PM

UNIT BIRLA COPPER : STACK\_PROCESS\_22\_PMR PHASE III   

SO2  PM

UNIT BIRLA COPPER : SULPHURIC ACID PLANT 1

SO2

UNIT BIRLA COPPER : SULPHURIC ACID PLANT 3  Select All  Unselect All X

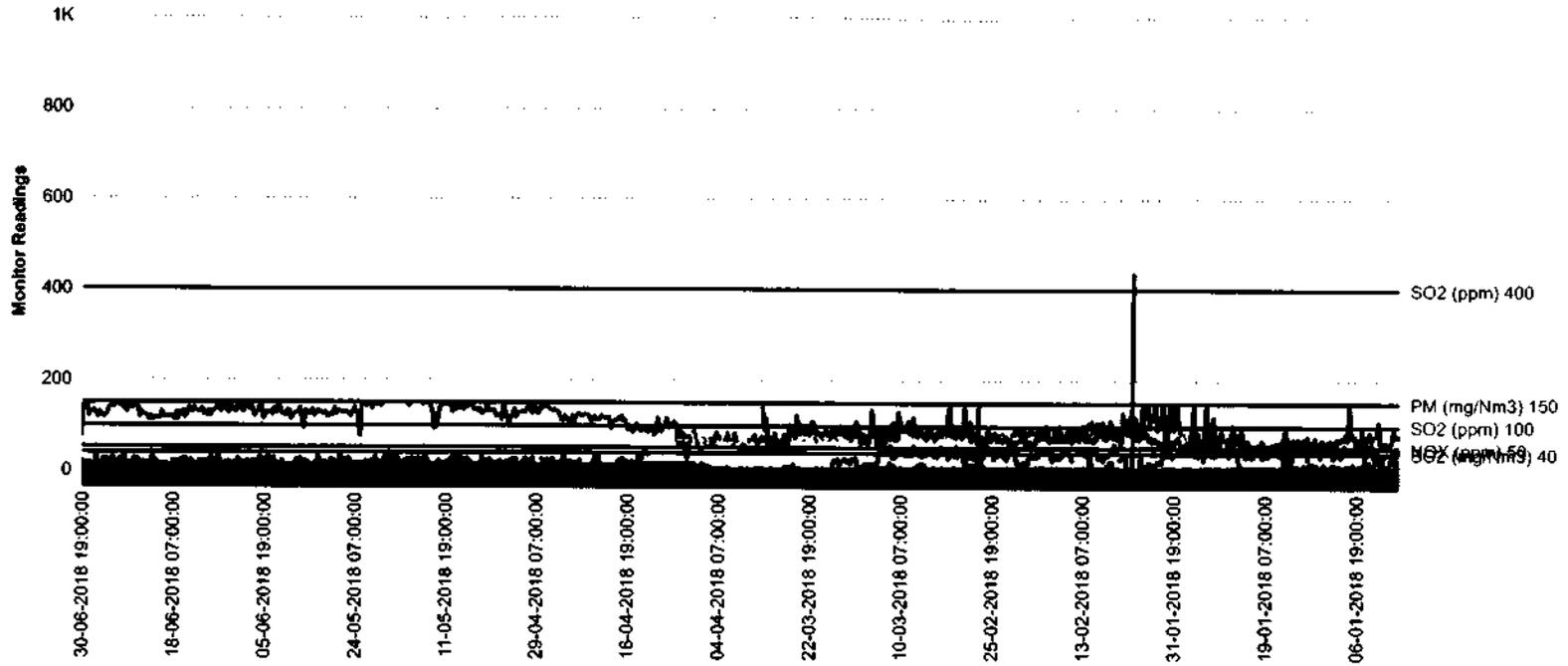
SO2

Advance Search Quick Reports

From : 01-01-2018 00:00  
To : 30-06-2018 19:10  
Time Base : 30 Minutes ▼  
Value Type : Normal ▼  
Range :  Min.  Max.



### Line Chart Representaton : UNIT BIRLA COPPER SULPHURIC ACID PLANT 3

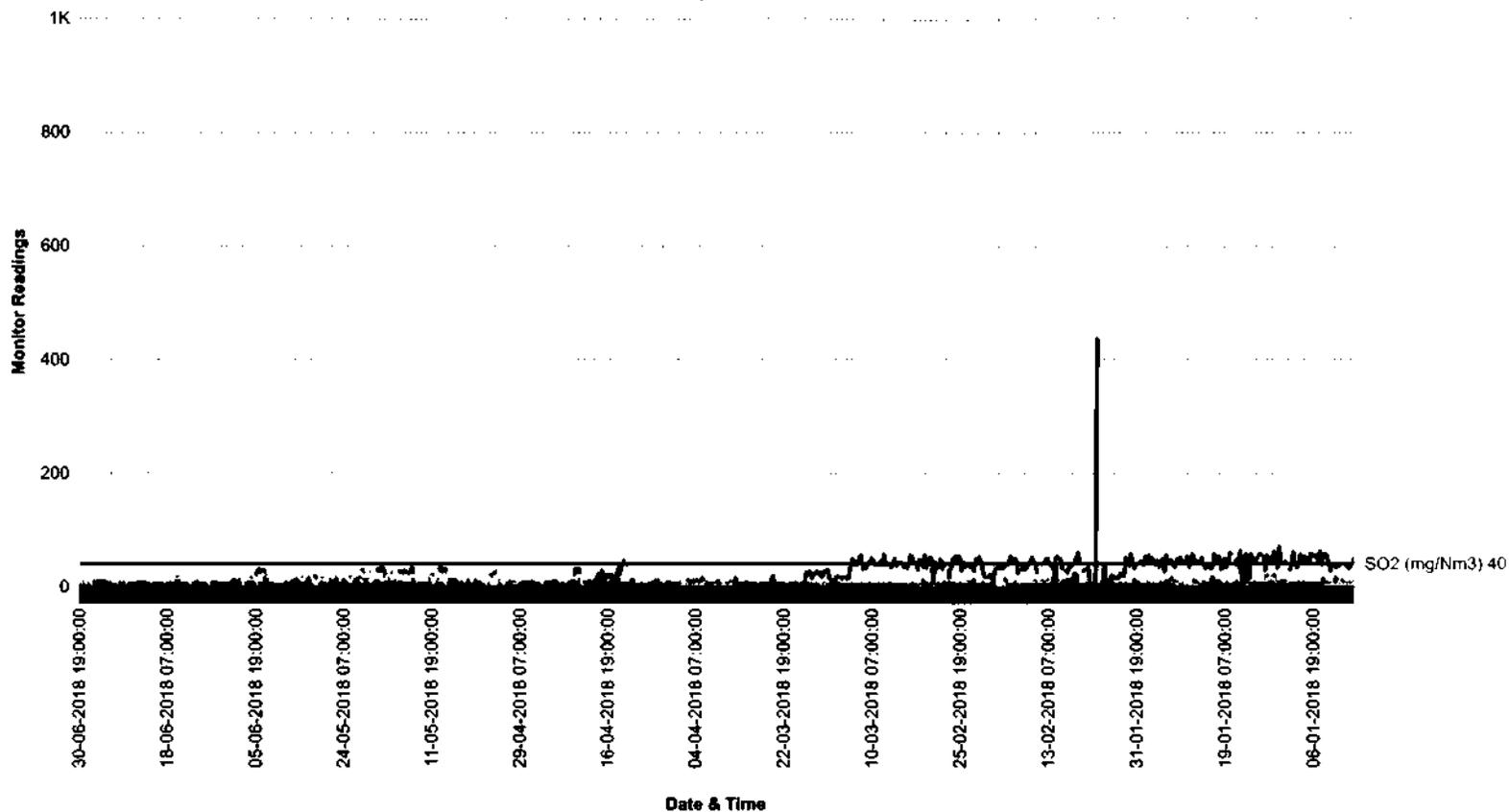


Date & Time

- ◇ UNIT BIRLA COPPER STACK\_1\_FLUE\_DORE FURNACE SO2 (ppm)
- ◇ UNIT BIRLA COPPER STACK\_1\_FLUE\_DORE FURNACE PM (mg/Nm3)
- ◇ UNIT BIRLA COPPER STACK\_11\_CPP-2 SO2 (ppm)
- ◇ UNIT BIRLA COPPER STACK\_11\_CPP-2 NOX (ppm)
- ◇ UNIT BIRLA COPPER STACK\_11\_CPP-2 PM (mg/Nm3)
- ◇ UNIT BIRLA COPPER STACK\_7\_CPP-1 SO2 (ppm)
- ◇ UNIT BIRLA COPPER STACK\_7\_CPP-1 NOX (ppm)
- ◇ UNIT BIRLA COPPER STACK\_7\_CPP-1 PM (mg/Nm3)
- ◇ UNIT BIRLA COPPER STACK FLUE 8 CPP1 SO2 (ppm)

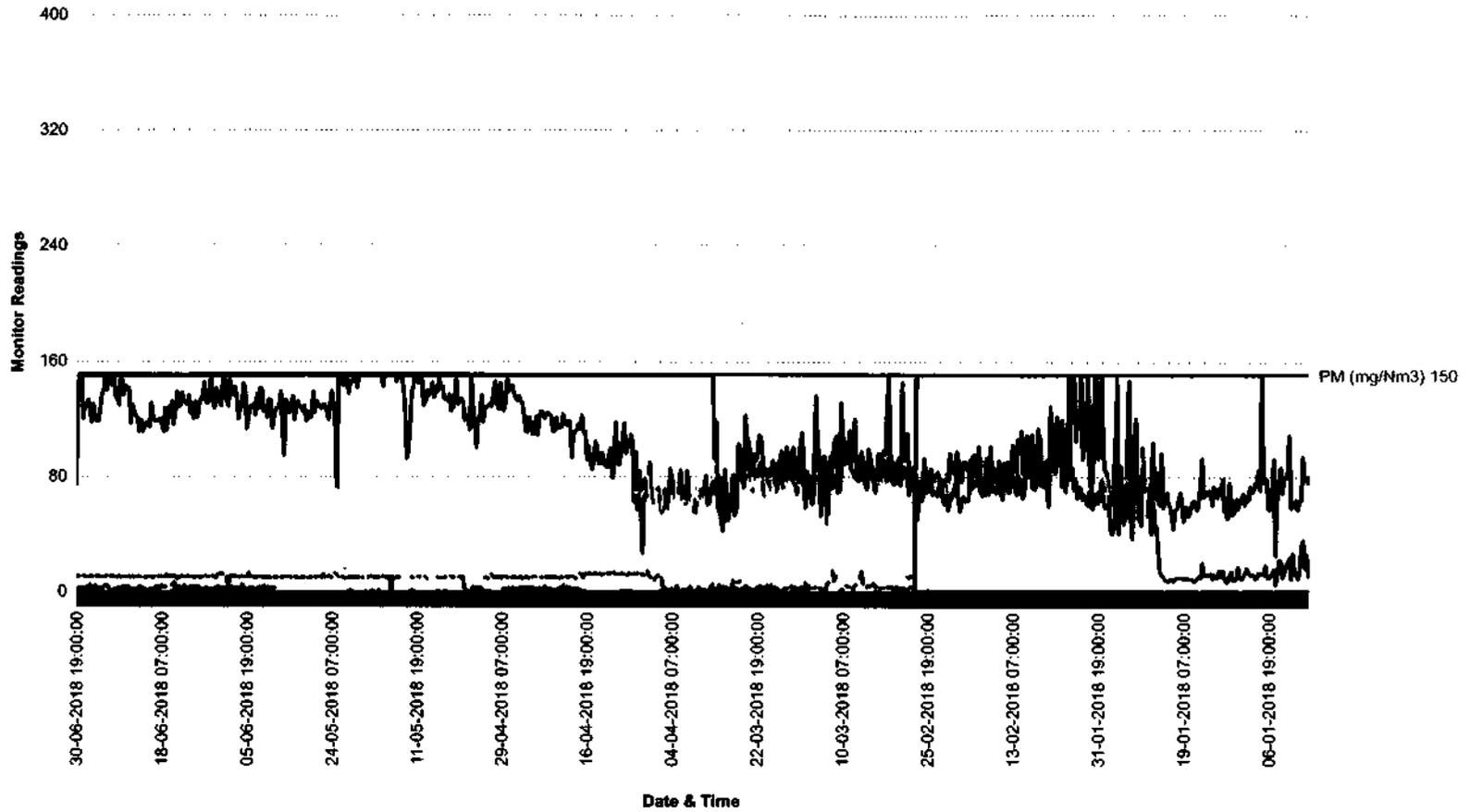


### Line Chart Representation SO2



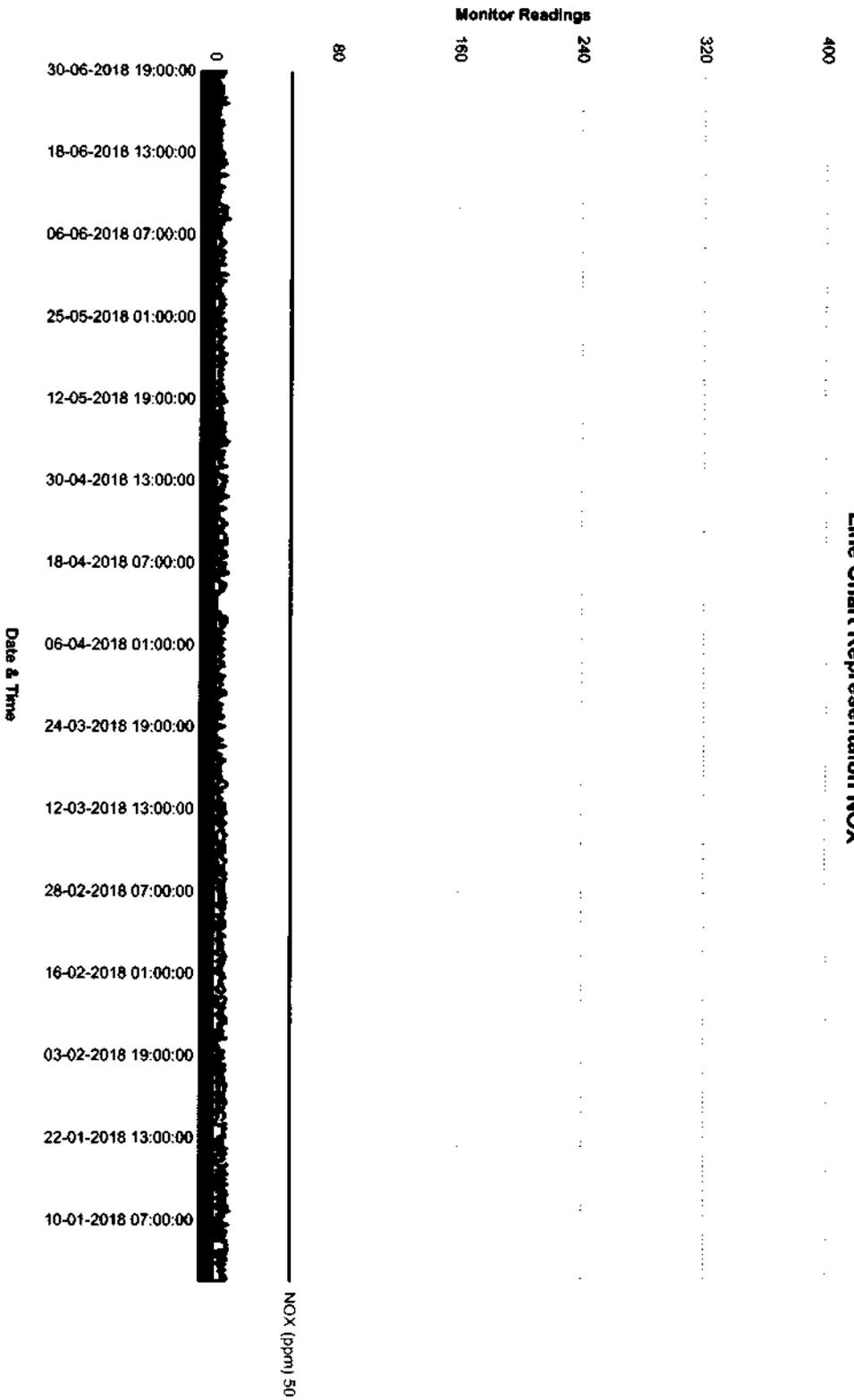
- ◇ UNIT BIRLA COPPER STACK\_1\_FLUE\_DORE FURNACE SO2
- ◇ UNIT BIRLA COPPER STACK\_7\_CPP-1 SO2
- ◇ UNIT BIRLA COPPER STACK\_FLUE\_9\_CCR II SO2
- ◇ UNIT BIRLA COPPER SULPHURIC ACID PLANT 1 SO2
- ◇ UNIT BIRLA COPPER STACK\_11\_CPP-2 SO2
- ◇ UNIT BIRLA COPPER STACK\_FLUE\_8\_CCR I SO2
- ◇ UNIT BIRLA COPPER STACK\_PROCESS\_22\_PMR PHASE III SO2
- ◇ UNIT BIRLA COPPER SULPHURIC ACID PLANT 3 SO2

### Line Chart Representaion PM



- UNIT BIRLA COPPER STACK\_1\_FLUE\_DORE FURNACE PM
- UNIT BIRLA COPPER STACK\_7\_CPP-1 PM
- UNIT BIRLA COPPER STACK\_FLUE\_9\_CCR II PM
- UNIT BIRLA COPPER STACK\_11\_CPP-2 PM
- UNIT BIRLA COPPER STACK\_FLUE\_8\_CCR I PM
- UNIT BIRLA COPPER STACK\_PROCESS\_22\_PMR PHASE III PM

Line Chart Representation NOX



Nevco Engineers Pvt. Ltd. 2018.

Server Current Date & Time 03-Jul-2018 19:13

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Glens x  
adagepcb.glensserver.com

### HINDALCO INDUSTRIES LIMITED- UNIT BIRLA COPPER Average Dashboard

Zoom Out Jan 1 2018 17:31:27 to Jun 30 2018 17:31:27

**Dashboard**

- Industry Report
  - COPPER
    - HINDALCO INDUSTRIES LIMITED- UNIT BIRLA COPPER
      - RealTime Report
      - Average Report
      - Delayed Report
      - Dynamic Report
      - Exceedance Report
- Transmission Logs
- Camera Status
- Dynamic Report
- Payment Gateway

**STACK12\_CPP3\_CFBC Hourly Average**

25  
20  
15  
10  
5  
0

1:8 1:16 1:24 2:1 2:8 2:15 2:22 3:1 3:8 3:15 3:24 4:1 4:8 4:16 4:23 5:1 5:8 5:16 5:24 6:1 6:8 6:16 6:23

— STACK12\_CPP3\_CFBC-PM STACK12\_CPP3\_CFBC-SO2

**Stack\_Flue\_3\_Sulphuric\_Acid\_Pre\_Heater\_1 Hourly Average**

200  
150  
100  
50  
0

1:8 1:16 1:24 2:1 2:8 2:15 2:22 3:1 3:8 3:16 3:24 4:1 4:8 4:16 4:23 5:1 5:8 5:16 5:24 6:1 6:8 6:16 6:23

— Stack\_Flue\_3\_Sulphuric\_Acid\_Pre\_Heater\_1-PM Stack\_Flue\_3\_Sulphuric\_Acid\_Pre\_Heater\_1-SO2

**Stack\_Flue\_10\_Sulphuric\_Acid\_Pre\_Heater\_3 Hourly Average**

125  
100  
75  
50  
25  
0

1:8 1:16 1:24 2:1 2:8 2:15 2:22 3:1 3:8 3:16 3:24 4:1 4:8 4:16 4:23 5:1 5:8 5:16 5:24 6:1 6:8 6:16 6:23

— Stack\_Flue\_10\_Sulphuric\_Acid\_Pre\_Heater\_3-PM Stack\_Flue\_10\_Sulphuric\_Acid\_Pre\_Heater\_3-SO2

Windows taskbar at the bottom shows the date as 11/24/2018 and the time as 11:24 AM.

Glens x  
adagepcb.glensserver.com

Dashboard

- Industry Report
  - COPPER
    - HINDALCO INDUSTRIES
    - JIMTED-UNIT
    - BIRLA COPPER
- RealTime Report
- Average Report
- Delayed Report
- Dynamic Report
- Exceedance Report
- Transmission Logs
- Camera Status
- Dynamic Report
- Payment Gateway

### Stack\_Process\_9\_Slag\_Granulation Hourly Average

— Stack\_Process\_9\_Slag\_Granulation—PM

### Stack\_Process\_10\_Steam\_Dryer Hourly Average

— Stack\_Process\_10\_Steam\_Dryer—PM Stack\_Process\_10\_Steam\_Dryer—SO2

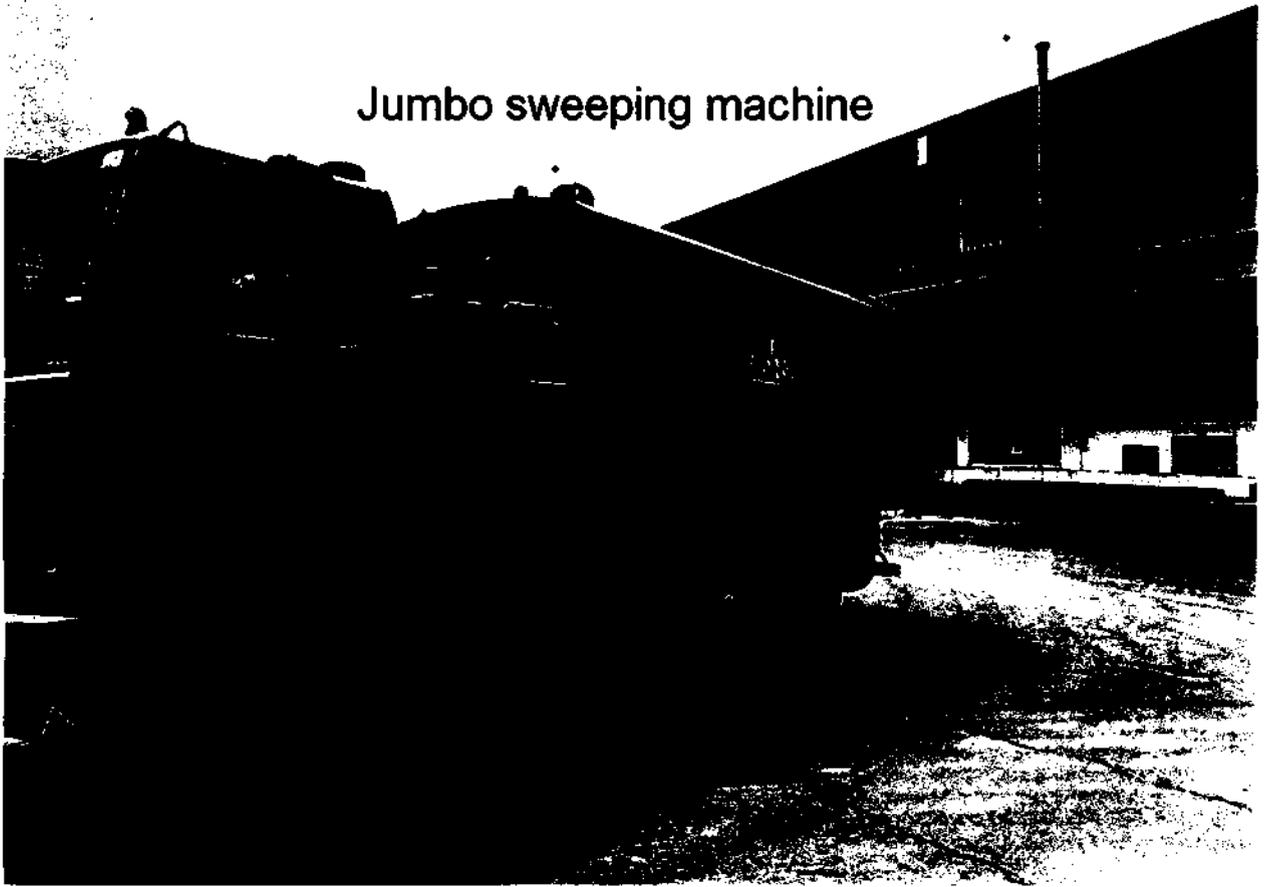
### Stack\_Process\_11\_Slag\_Cleaning\_Furnace Hourly Average

— Stack\_Process\_11\_Slag\_Cleaning\_Furnace—PM Stack\_Process\_11\_Slag\_Cleaning\_Furnace—SO2

Windows taskbar at the bottom shows the date 10/10/2016 and time 10:10.

*Annexure-14*

Jumbo sweeping machine



Hindalco Industries Limited, Unit: Birla Copper, Dahej						
Monsoon Preparedness Plan for 2018						
Sr. No	Activities to be done	Responsible Team	Accountability	Original Timeline	Status	Remarks
1	All storm water drains along with culverts to be cleaned. Entry of materials like slag, fly ash and gypsum should be restricted to avoid choking. After cleaning all drains should be covered.	Mr. Ravindranathan (Civil) Mr. D. Jagtap (Admin) Mr. Dinesh Bhaduria (Admin)	Mr. Devendra Jagtap (Admin)	June 1 <sup>st</sup> week	Completed	Cleaning of all drains has been completed. There are few drains which are required to be cleaned on a regular basis (weekly, fortnightly etc.), which is also being done.
2	All sump pumps available in plants need to be used efficiently to maintain zero water levels into storm water drains during monsoon. Necessary hoses, pipelines, auto level switches and surrounding net to protect garbage to be installed.	All the drains in the complex along with responsibility is circulated to all concerned. They will be responsible.	HOD of the drain owner	31.05.18	Completed	PM of all the sump pumps (including the spare ones) is completed. Few additional pumps for critical locations have been identified and installed.
3	Hume pipe connected to drain at Road No. 9 to be cleaned for smooth flow of water to sea during rain.	Mr. Ravindranathan (Civil) Mr. D. Jagtap (Admin), Dinesh Bhaduria (Admin)	Mr. Devendra Jagtap (Admin)	25.05.18	Completed	However, it will be checked on regular basis
4	Pumps installed in gypsum yard should be operational, throughout monsoon it should be operated.	Mr. B.Basu (PAP) Mr. Nishit Dave	Mr. Nishit. Dave	25.05.18	Completed	PM of 4 Pumps + 1 spare already done. Manpower will be deputed there during monsoon for operating the pumps
5	Civil and Admin team along with JCB to be made available in each shift for monsoon activities.	Mr. T. Ravindranathan (Civil) Mr. D. Jagtap (Admin)	Mr. Devendra Jagtap (Admin)	Jun'18	Completed	List given at the end.

6	Liberator area to be cleaned and liberator cake should be kept under proper shed to avoid leachate flowing down to drain. Temporary sheds to be made ready through hire.	Mr. R. Adiga (Ref) Mr. RK Gangopadhyay (Materials)	Mr. Adiga (Refinery)	27.06.18	Shed erection in progress	Liberator cake lying in between circuit # 4 and stores have been shifted to RMH area and covered. Liberator cake lying in spent anode area has been covered. Monsoon shed at spent anode yard is also being erected and will be completed by 27/06/2018.
7	Ensure no spillage of ETP sludge in bund of SLF-VII and leachate drain. ETP sludge lying in leachate drain needs to be cleaned before monsoon.	Mr. Paresh Thackar Mr. Ajita Choudhary (ETP/WTP)	Mr. Paresh Thackar(ETP/WTP)	25.05.18	Regular cleaning started	-
8	Blackish water from CCR should not flow down to main storm water drain at road no. 3. Ensure that effluent goes to ETP only.	Mr. Jayesh Pawar (CCR)	Mr. Jayesh Pawar (CCR)	25.05.18	Drain has been cleared now. Water will not be diverted to drain anymore.	-
9	Acidic water should not be discharged to main storm water drain at road no. 20 from SM-3 & SAP-3	Mr. Anil Singh (SM-3) Mr. Pradeep Binu (SAP-3)	Mr. Anil Singh (SM-3)	25.05.18	Acidic water from the plant will be recycled in plant itself.	-
10	Roof sheeting should be completed in all plants before monsoon	Mr. Muralidhar (Civil)	Mr. Muralidhar (Civil)	30.06.18	17504 m2 out of 20000 completed.	Work in all critical areas have been completed.
11	Cleaning of gypsum lying below conveyor from labor gate to visitor parking should be completed. Fly ash and slag lying near the boundary wall on Road No. 16 should be shifted inside.	Mr. Nishit Dave (PAP), Mr. B Basu (PAP), Mr. Devendra Jagtap (Admin), Mr. Alex D'Mello (Commercial)	Mr. Nishit. Dave (PAP) for Gypsum, Mr. Alex (Commercial) for Fly ash and Slag	31.05.18	Completed	Monsoon cleaning completed. However, cleaning at regular interval will be required.

12	No water should be discharged to Road No.09 from PAP,DAP and SAP.	Mr. Nishit Dave (PAP) Mr. B Basu (PAP) Mr. Pradeep Binu (SAP-3)	Mr. B Basu for PAP/DAP Mr.Pradeep Binu for SAP	15.06.18	Drain is completely dry now. Water will not be diverted to drain anymore.	-
13	Regular trials of DG sets at CPP should be taken.	Mr. Mohan Sharma (CPP)	Mr. Mohan Sharma (CPP)	-	Completed	Trial frequency is increased to 3 from 1 per week.
14	Sealing of all electrical JB, DB, transformer, TB, light pole TB etc. Waterproof electric connections and lights to be provided near all sump pumps.	Mr. Mahesh Saini Mr. Sriram (Electrical)	Mr. M Saini(Electrical)	31.05.18	Completed	-
15	Provision should be made for dewatering from areas which are not connected to any drain. Tankers shall be hired for the same.	Concerned area owners	Concerned area owners	15.07.18	-	Such areas will be identified and informed by the concerned plant incharge to Admin dept.

Details of manpower available in Monsoon			
Sr No	Shift	Name	Cell Number
1	B	Ajay Sinh Rana	8155 006214
2	B	Jagdish M Ahir	9624498602
3	B	Parasnath Manji	8155005979
4	Night	Manoj singh	7046766144
5	Night	Dharmendra	7698959723
6	General	Dinesh Singh	9723555821

Acknowledgement Copy



Date: 16/04/2018

Member Secretary  
Gujarat Pollution Control Board  
Aryavaran Bhavan  
Sector-10-A  
Gandhinagar- 382019

**Subject : Request for approval of drawing and plan SLF-8**

Dear Sir,

This has reference to handling, storage, management of hazardous waste ( ETP sludge) generated at effluent treatment Plant. For handling and management storage we have already obtained CCA vice order no. GPCB/BRCH-B-CCA-310 ( 11)/15178-216033 dated 11.06.2014 valid upto 02.03.2019 extended upto 02.03.2020. We have own captive secured land fill site. The SLF - 7 is in operation which is about to complete and new SLF is required for handling and management of ETP sludge. We have approached to National Productive Council, Gandhinagar for technical support as per Central Pollution Control Board guidelines i.e. preparation of design, drawing and plan for construction of new SLF-8. The required design, drawing and plan have been submitted by National Productive Council.

We are sending herewith proposed SLF-8 layout plan showing the location of SLF-VIII, Plan as Annexure-1 & 2 respectively for your information and approval pls.

Thanking You

Yours Faithfully

For Hindalco Industries Limited

Signature: Birla Copper

Sanjay Kumar

General Manager (Environment & Utility)

Hindalco Industries Limited

Signature: Birla Copper

Dahej, Dahej ( Guj.)

Yours: a/a

13/4/18  
Gujarat Pollution Control Board  
Sector No. 10 A,  
Gandhinagar - 382 019

**THE HON'BLE NATIONAL GREEN TRIBUNAL  
WESTERN ZONE BENCH, PUNE  
ORIGINAL APPLICATION NO. 70 OF 2021**

**IN THE MATTER OF:**

BRACKISH WATER RESEARCH CENTRE

.... APPLICANT

VERSUS

GUJARAT STATE POLLUTION CONTROL  
BOARD & ORS.

.... RESPONDENT(S)

**INDEX (VOL-II)**

18.	<b><u>ANNEXURE R8/17:</u></b> A copy of the Respondent No. 8's reply dated 25.08.2018.	217-220
19.	<b><u>ANNEXURE R8/18:</u></b> Copies of the Respondent No. 8's reply dated 12.08.2019, 03.09.2019.	221-240
20.	<b><u>ANNEXURE R8/19:</u></b> Copies of Show Cause Notice dated 24.01.2020 and replies dated 23.09.2019, 11.10.2019, 18.11.2019.	241-252
21.	<b><u>ANNEXURE R8/20:</u></b> A copy of Notice of Direction dated 02.02.2020 and response dated 06.02.2020.	253-259
22.	<b><u>ANNEXURE R8/21:</u></b> Copies of Inspection Reports dated 18-20.03.2021 and replies dated 31.03.2021, 24.05.2021, 05.08.2021 and 17.09.2021.	260-341
23.	<b><u>ANNEXURE R8/22:</u></b> A copy of the Respondent No. 1's observations dated 8.11.2021 and Response filed by the Respondent No. 8 on 11.11.2021.	342-352

Through:



(ASHISH PRASAD/MUKTA DUTTA/  
KAUSTUBH MISHRA/SPARSH PRASAD)  
ADVOCATE FOR RESPONDENT NO.8  
(ECONOMIC LAWS PRACTICE)  
801 A, KONNECTUS TOWER, BHAVBHUTI  
MARG, OPP. AJMERI GATE RAILWAY  
STATION, NEW DELHI-110002.  
Mobile No.9911445855  
E-MAIL: kaustubhmishra@elp-in.com

Place: New Delhi

Date: 17.11.2021



## ANNEXURE R8/17

HIL/BC/Env./GPCB/BH-18-19

 25<sup>th</sup> Aug, 2018  
 PCB ID: 15178

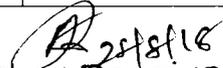
 ✓ The Regional Officer  
 Gujarat Pollution Control Board  
 C/1/119/3- phase-III  
 Narmada Nagar  
 Bharuch (Guj.)

**Subject: Visit of GPCB officials dated 14.08.2018.**
**Reference: Queries raised by GPCB official dated 14.08.2018**

Dear Sir,

This has in reference to the visit of GPCB officials at our plant dated 14.08.2018 and subsequently raised some observations regarding environmental improvement. The point-wise replies of the observations are as under:

Sr. No	GPCB Observations	Birla copper Reply	Short term / Long Term Action Plan	Remarks
1	SLF Site- Cell No.VII is not being covered in rainy season, therefore take immediate necessary steps.	The work order has been released to M/s Kruppa construction for covering of SLF-7. Once the covering SLF-VI is finished which is expected in Sep't,2018 after that immediately we will start the covering of SLF- VII	The photograph of SLV-VI covering is attached as Annexure-1 Covering of SLF-VII will be started in Sep'2018	Action in progress.
2	SLF Site- Cell No.VII lechate collection well no-01 was observed over flowing, and no approach to reach that location. Corrective action is required to be taken and care should be taken to avoid overflow.	As explained during your visit. The lechate of intermediate well is connected to final sump from where dedicated tanker lift the lechate and transfer to our ETP. However we assure you that overflow of lechate will be not happened and proper care will be taken	Action completed.  The photograph of Leachate sump is attached- Annexure-2	---

  
 Post Received

 Gujarat Pollution Control Board  
**BHARUCH**

3	Observations of non compliance during visit by GPCB team on 13-06-2018 should be complied with.	The latest status of observations made on 13.06.2018 is attached as Annexure-3	---	
4	RO Reject discharge line connected with final discharge line is underground, therefore suggested to bring it above the ground, so that it can be visible.	As suggested by GPCB officials, Reverse Osmosis discharge line shifting above ground is in progress and will be completed in Sep'2018	Sep'2018	---

We remain available for any clarification that you may require. Please do afford us an opportunity of personal hearing to put the explanations/clarifications provided by us in perspective."

Thanking you,

Yours faithfully,

For: Hindalco Industries Ltd.  
Unit: Birla Copper, Dahej



Dr Sanjay Kumar

Asst Vice President (Environment)

CC: Member Secretary  
Gujarat Pollution control Board  
Sec -10A Paryavaran Bhawan  
Gandhinagar- 382010

Annexure -1

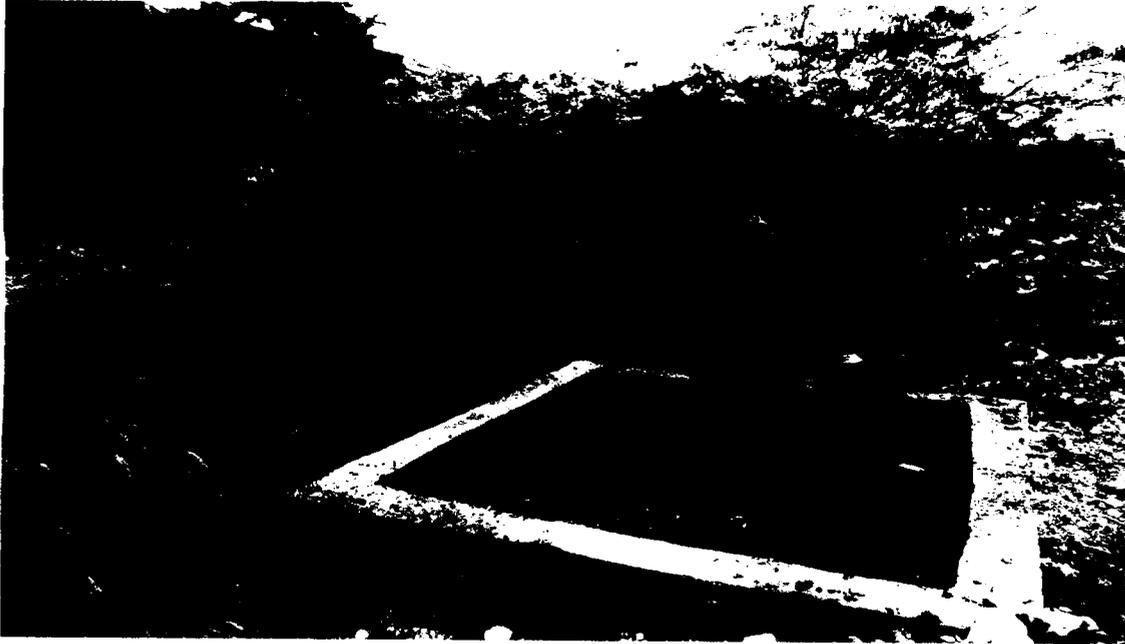
Hindalco Industries Ltd.  
Unit: Birla Copper, Dahej

Top covering of SLF-VI in progress

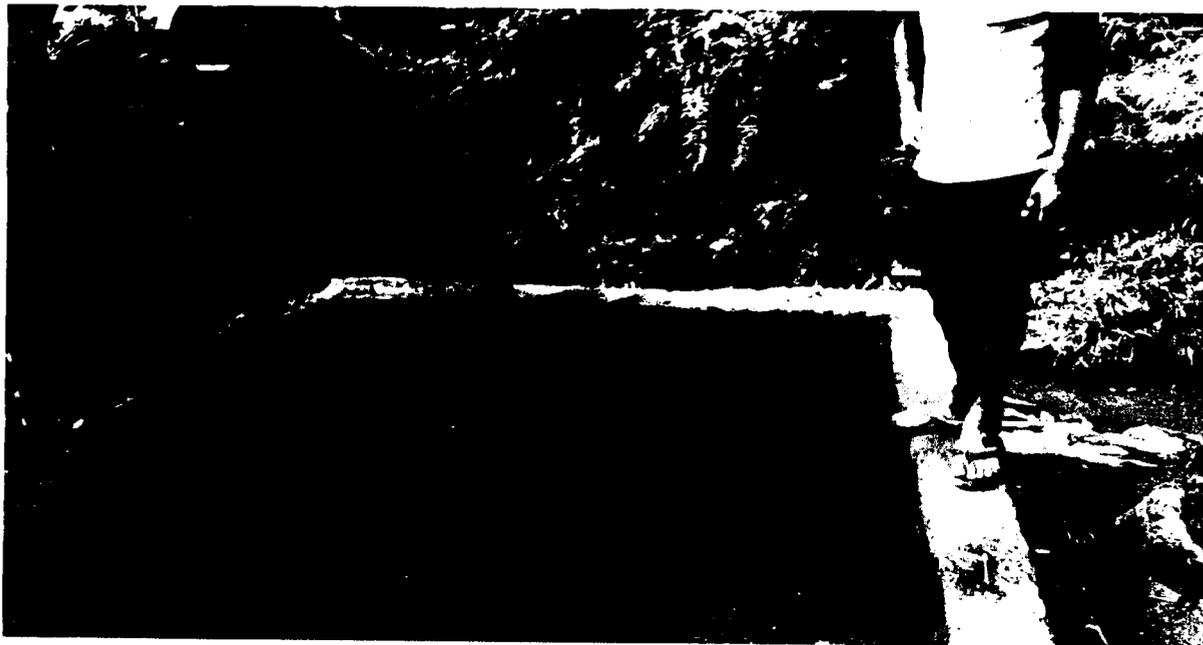


## Annexure-2

Hindalco Industries Ltd.  
Unit: Birla Copper, Dahej



Dewatering of SLF-VII well no.01 channelized through drain



Collected by Pump mounted tanker from Well no.02 of SLF-VII

## ANNEXURE R8/18



HIL/BC/Env./GPCB/BH-19-20

12.08.2019  
PCB ID:15178

**The Regional Officer**  
Gujarat Pollution Control Board  
C-1/119/3, GIDC Phase - II,  
**Narmada Nagar,**  
**Dist. Bharuch - 392 015**  
**Gujarat**

**Subject: Visit to Hindalco Industries Limited, Dahej on 10.08.2019.**

**Reference: Visit Report dated 10.08.2019.**

Dear Sir,

Due to heavy rains in the region, Lakhigam village got flooded with very high level of water. Local administration led by Ms Kshipra Agre IAS (Collector-in-Charge, Bharuch & DDO) visited Lakhigam along with GIDC officials for evacuating water from the village. After the visit, the villagers, local administration and Collector-in-Charge came to our plant. The villagers requested for breaking the road and our compound wall to allow water evacuation from their village through our premises. Looking at the precarious condition of the flood in Lakhigam, the Collector-in-Charge, as per the National Disaster Management requirements, decided to evacuate the water from the village and therefore instructed GIDC officials to break the road. The GIDC officials along with the villagers broke the road in two places. The villagers also broke the compound wall to make the passage for the water to flow through our premises.

In addition to the above, more than 15 pumps were deployed to evacuate water from Lakhigam village which is also flowing through our premises. Both of the above actions resulted in to flooding of our premises and water management became impractical.

With reference to your visit along with team of GPCB Officials on 10th August, 2019 and subsequent observations raised by the esteemed Officials. We would like to submit our point wise responses below:

**Observation No. 1**

**In your unit, today morning, during transferring of coal from coal yard to cpp-3 via coal conveyer, worker fell down from coal transfer junction tower, due to this accident he died; submit in detail about this accident to regional office as well as head office.**

**Our Response**

We have notified the Factory Inspector on 10<sup>th</sup> August 2019 morning itself about the "**Fatal Accident**" and submitted the "**Form 21**". A summary report of the incident was submitted to you during the visit. Copy of the **Incident Summary Report and Form 21** is attached in **Annexure 1 & Annexure 2 respectively** for ready reference.

Post Received  
Gujarat Pollution Control Board  
**BHARUCH**

**Observation No. 2**

**Storm water drain near Sulphuric Acid Plant-1 of road no.6 and in surrounding area was found with contaminated rain water of approx. pH 4-6 is seen accumulated, which should be immediately shifted to ETP for corrective disposal. Sample is collected from this area for analysis.**

**Our Response**

Due to heavy rains, some acidic water had overflowed from our Sulphuric Acid Plant 1 dyke area. The contaminated rain water was contained in under construction process drain of Sulphuric Acid plant. This was shown to Officials during their visit.

Two pumps were continuously working to transfer this acidic water to the Effluent Treatment Plant for treatment and reuse.

In addition, we had also deployed more than 8 dewatering tankers. However, due to heavy rains and water logging on roads, some tankers had a breakdown. Hence, we could not completely evacuate the rainwater accumulated due to the sudden downpour. Accordingly, when the GPCB Officials visited, they observed few acidic puddle, which we have immediately removed and recycled back.

Sir, as intimated to you earlier, our process and storm drain improvement work is already in progress (more than 3 km length drain network under implementation).

**Observation No. 3**

**Monsoon action plan to be implemented as per notification given previously and to be complied with.**

**Our Response**

Updated Monsoon plan is attached as **Annexure- 3**. Implementation of the activities are in progress.

Sir, we remain available for any clarification that you may require. Please do offer us an opportunity of personal hearing to put the explanations/clarifications provided by us in right perspective.

Thanking you,

Yours faithfully,

**For Hindalco Industries Limited,  
Dahej Unit**



Dr. Sanjay Kumar  
Head - Environment

**Copy to :**

The Member Secretary, GPCB, Gandhinagar 382010

Summary Report of fatal Incident

Due to heavy rains and high wind velocity for last few days, a portion of structure related to the transfer tower of coal conveyor of CPP-3 weakened and fell down at 06:50 AM today 10 August 2019. Mr. Akhilesh Kumar Singh, helper of M/S Sunil Enterprise GP No. 2000835, Age - 25 Years, who was deployed for cleaning work fell down along with part of the structure and passed away.

Aug 10 2019  
224 1047

o/c

ADITYA BIRLA



Date: 11/08/2019

To  
The Dy Director Industrial Health & Safety,  
Office of the factory inspectorate,  
2<sup>nd</sup> Floor, Multi-storey Building  
Kanbivaga  
Bharuch-392 001.

Sub: Submission of Accident Report in Form No-21

Dear Sir,

Please find enclosed herewith Form No-21, duly filled in & signed in respect of, Akhlesh kumar Singh (EC No-2000835) of M/s Sunil Enterprise who met with an accident on dated 10<sup>th</sup> Aug'2019 at around 6:50 AM.

Thanking you,

Yours faithfully,  
For HINDALCO INDUSTRIES LIMITED,  
UNIT: BIRLA COPPER

S. Kananand  
President & Unit Head  
Factory Manager

Encl: as above.

HINDALCO INDUSTRIES LIMITED  
(UNIT: BIRLA COPPER)  
P.O.: Dahej, Dist. Bharuch,  
Gujarat-392 130, INDIA.  
Telephone +91 2641 256004-6  
Fax +91 2641 251002-3

Regd. Ahura Centre, 1st Floor, B-Wing,  
Mahakali Caves Road, Andheri (East), Mumbai 400 093  
Telephone +91 22 6691 7000 / Fax : +91 22 6691 7001

Website www.hindalco.com  
Email hindalco@adityabirla.com  
Corporate Identity No. L27020MH1958PLC011238

**FORM NO. 21**  
**(Prescribed Under Rule 103)**

**Report of accident including, dangerous occurrence resulting in death or bodily injury**

---

ESIC Employer's Code Number ..... NA

Name and Address of Local ESIC office ..... NA

Registration Number :- 233/27201/1997

Licence Number :- 11335

(as given in the licence)

- 1) Name and Address of Factory : Hindalco Industries Ltd. Unit: Birla Copper  
Lakhigam, P.O Dahej,  
Tal: Vagra, Dist. Bharuch  
Pin-392 130 Gujarat
- 2) Name, address and telephone : Sh.K.N.Bhandari  
number of the occupier : 5-New power house road  
Sector-7.  
Jodhpur -342003  
Tel. 0291-2549948
- 3) Nature of Industry : Copper Smelting  
(as given in the licence)
- 4) Date, shift and hour of : 10<sup>th</sup> Aug'2019 at around 06.50AM (Night  
accident or dangerous : Shift)  
occurrence
- 5) Department section and exact : CPP III, Junction Tower-6 near Road no  
place where the accident or : 16 beside CFBC#3  
dangerous occurrence took  
place
- 6) a) Describe briefly how the : Akhilesh Kumar Singh fell down to  
accident or dangerous : breaking of part of MS sheet platform  
occurrence took place : because of heavy wind and rain

Sent him to civil hospital, Bharuch where  
he declared dead.

b) Did it involve Explosion ..... NO ..... , Fire ..... No .....  
Emission of toxic substances NO ..... Substances emitted: No

7) Give the total number of persons injured / Killed:

Number of persons injured		Number of person killed	
Inside the factory	*Outside the factory	Inside the factory	*Outside the factory
00	Nil	01	Nil

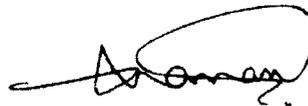
**Note:-**

- 1) If an accident / dangerous occurrence, persons outside the factory premises are injured or killed, please furnish the information to the extent available. -N/A
- 2) Details regarding injury and persons injured / killed should be supplied in the format given in the annexure.-A

- |    |   |   |  |
|----|---|---|--|
| 8) | Name and Address of witness               | : | Anil Patel, EC no :75516<br>Jitu Patel, EC :75413  |
| 9) | Cause of accident or dangerous occurrence | : | Akhilesh Kumar Singh fell down to breaking of part of MS sheet platform because of heavy wind and rain |

I certify that to the best of my knowledge and belief the above particulars are correct in every respect.

Signature of Factory Manager



S. Kanakanand  
President & Unit Head  
Factory Manager

**(To be completed by the Inspector of Factories)**

- 1) Date of receipt of the report :
- 2) District :
- 3) a) Number allotted to accident involving reportable injury and/or fatality :
- b) Number allotted to dangerous occurrence involving reportable injury and/or fatality :
- 4) Date of Investigation :
- 5) Classification of accident :
  - a) Cause wise (give code) :
  - b) Industries wise (Give \*NIC - Code) :
  - c) Dangerous operation wise (give schedule number under section 87) :
  - d) Hazardous process wise section 2(cb) :
  - e) Occupation wise (NCO-Code number) :
- 6) Result of Investigation :
- 7) Remarks, if any :

Date :

Signature of the Inspector

Name (in block letters)

## Annexure-A

**Particulars of Persons Injured, Killed**

## 1) Particulars of injured person.

- a) Name : Akhlesh kumar Singh (EC No-2000835) of  
M/s Sunil Enterprise, Contractor of Hindalco  
Industries Limited
- b) Age : 25 Year
- c) Sex : Male
- d) Serial number in the register : EC No-2000835  
of adult workers
- e) Address : Labour Colony, Dahej Vagara, Bharuch,  
392130
- f) Precise occupation : Worker
- g) Nature of job : Cleaning

2) Cause of injury Explosion:.....No, FIRE-...NO,  
Emission of toxic substance: No, Others- Akhilesh Kumar Singh fell down  
to breaking of part of MS sheet platform because of heavy wind and rain

## 3) Particulars of injury :

- a) Fatal (time and date of : 10.08.2019, 06:50AM  
death)
- b) Non-fatal (if serious, give : NA  
the extent of injury such as  
loss of limb / sight &  
hearing, fracture, permanent  
impairment, severe burns)
- c) State whether the injured : Yes  
person was disabled for  
more than 48 hours

- d) Location of injury (i.e. part of body such as right leg, left hand, left eye, etc. injured) : NA.
- 4) a) State exactly what the injured person was doing at the time of accident or dangerous occurrence : Akhlesh kumar Singh (EC No-2000835) of M/s Sunil Enterprise was deployed for cleaning Job
- b) Does this work fall in the category of hazardous / dangerous process or operations (please tick mark in the box) : No
- 5) a) Hours at which the injured person started work in the days of accident or dangerous occurrence : 9<sup>th</sup> Aug 2019 at 20:21 PM
- b) Whether wages in full or part are payable to him for the day of accident or dangerous occurrence : Full
- 6) In case the accident or dangerous occurrence took place while travelling in the employer's transport, state whether: - : No
- a) The injured person was travelling as a passenger to and from his place of work : No
- b) The injured person or implied permission of his employer : No

- c) The transport is being operated by or on behalf of the employer or some other person by whom it is provided in pursuance of arrangements made with the employer : N/A
- d) The vehicles is being / not being operated in the ordinary course of public transport service : N/A
- 7) In case the accident took place while meeting emergencies, state
- a) Its nature; and : N/A
- b) Whether the injured person at the time of accident was employed for the purpose of his employer's trade or business in or about the premises at which the accident took place : N/A
- 8) a) Physicians, dispensary or hospital from whom or in which injured person received or is receiving treatment : Civil Hospital, Bharuch  
Dr. Dibakar
- b) Name of dispensary / panel doctor selected by the injured person : Dr. Jaimesh Rao

Signature of Factory Manager



S. Kananand  
President & Unit Head  
Factory Manager

<b>Annexure 3: Responses on Monsoon Planning</b>			
<b>Sr. No</b>	<b>GPCB Letter on Monsoon Planning dated 03<sup>rd</sup> June 2019</b>	<b>Biria Copper reply submitted on 12<sup>th</sup> June 2019</b>	<b>Present status as on 11.08.2019</b>
1.	The runoff/storm water at various signification points, which leads to vital stretches of Rivers, Nalas, natural drain etc., should be constantly monitored for its water quality assurance.	The runoff/storm water at various signification points, which leads to vital stretches of Rivers, Nalas, natural drain etc., will be monitored periodically for its water quality assurance.	Water quality is monitored regularly and record is being maintained
2.	Final outlet of industries / Facility is also required to be monitored during rainy days to ensure that there is no irregular discharge by any means.	Final outlet of industries / Facility will be monitored periodically during rainy days to ensure that there is no irregular discharge by any means.	Water quality is monitored regularly and record is being maintained
3.	The Hazardous waste and other solid waste accumulated in storage site should be provided with complete waterproof cover/ roof in order to avoid mixing up of rainwater/ industrial effluent with the solid wastes so as to prevent the excess leachate generation. You are also requested to dispose off all the accumulated hazardous waste / sludge to TSDF site or incinerate it as the case may be so that stock hazardous waste and other waste for a period of not exceeding 90days.	The Hazardous waste and other solid waste accumulated in storage site are being provided with complete waterproof cover/ roof in order to avoid mixing up of rainwater/ industrial effluent with the solid wastes to prevent excess leachate generation. Stock of hazardous waste and other waste is not exceeding 90days is already followed.	Hazardous waste and solid waste is accumulated and storage are kept covered
4.	You are also required to implement relevant guidelines for management plan for used/ Discarded packaging materials etc	Relevant guidelines are implemented for used/discarded packaging materials.	Discarded packaging materials are stored in separate storage area
5.	Effluent treatment plant units & chemical storage tanks/ Hazardous waste storage sites etc. should be monitored to prevent overflow/leakage to the surrounding environment	Effluent treatment plant units & chemical storage tanks/ Hazardous waste storage sites etc. will be monitored to prevent overflow/leakage to the surrounding environment	Leakage in ETP/ chemical storage area/ Hazardous waste is monitored regularly
6.	You are required to monitor air quality & operate Air Pollution Control equipment measures efficiently in such a manner that any flue gas/process emission from your industrial plants/facility should comply the GPCB Norms .Further, you are required to ensure that accidental leakages, fugitive	Periodic monitoring is done of air quality & air pollution control equipments and the report is being submitted to GPCB regularly. All accidental leakages, fugitive emissions etc. are taken periodically under maintenance during preventive maintenance.	Air quality is being monitored and report being submitted to GPCB periodically

	emissions etc. are prevented through preventive maintenance		
7.	You are required to control/avoid Odorous substances that are emitted from industrial sources include both inorganic and organic gases and particulate	Required control measures are taken to avoid odour from odorous substances emitted from industrial sources including both gases and particulate.	Requisite control measures to avoid odour is being maintained.
8.	You are required to avoid flooding in ETP unit's and area viz. Collection Tank; Equalization Tank, clarifiers, Aeration Tanks, treated waste water Holding Tanks and Open waste water conveyance drainage.	All the required steps are already taken to avoid flooding in ETP unit's and area viz. Collection Tank; Equalization Tank, clarifiers, Aeration Tanks, treated waste water Holding Tanks and Open waste water conveyance drainage.	There is no flooding in ETP in various units of ETP
9.	You are also required to ensure good housekeeping practices to avoid any chemical contamination of rain water and to avoid any uncertainties	Good housekeeping practices are followed to avoid any chemical contamination of rain water and to avoid any uncertainties.	Dedicated sweeping machine and man power is deployed to maintain good housekeeping.
10	You are also advice to review all the safety measures in your plant and follow all the Act /Rules /Guide lines issued by the various concerned authorities under the guidance of respective .Authorities like. DISH, PESO, Fire etc so that pollution caused by accident could be avoided during this adverse season of monsoon.	All the Act /Rules /Guide lines issued by the various government authorities under the guidance of respective like DISH, PESO, and Fire are already followed, so that pollution caused by accident could be avoided during this adverse season of monsoon.	All applicable rules and Acts are reviewed periodically and adhere to

As World Environment Day (5th June every year) also falls in the monsoon season, which is symbolic celebrated to show our commitment to protect Environment & conserve biodiversity.

Following point if duly covered voluntarily under Pre Monsoon planning will definitely help in long term.

11.	Development of the Green belt not only soothes the eyesight but also helps to protect the environment. Pre Monsoon is an ideal time for the planning for the plantation. It would be pleasure to see if you will include your "Green Belt Plan" along with nos. of plants, species and location in compliance report.	Development of green belt is as per guidelines and meeting the required %	Being complied. We have planted more than 600 trees in the plant area during World Environment Day, on 5 <sup>th</sup> June, 2019
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ADITYA BIRLA



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HIL/BC/GPCB 19-20

03.09.2019  
PCB ID. 15178

**Shri A V Shah**  
**Senior Environmental Engineer**  
 Gujarat Pollution Control Board  
 Paryavaran Bhawan  
 Sector -10,  
**Gandhinagar 382 010**  
**Gujarat**

**Subject: Direction under section 33-A, dated 31/08/2019**

**Reference: No: GPCB/BRCH-B/CCA-310 (18)/ID-15178/, dated 31/08/2019**

Dear Sir,

With reference to above subject, we are submitting herewith the point wise reply, compliance status and short and long term action plans to your esteemed office.

We are very much committed to abide by all the statutory rules and regulations under various environmental laws. We hope our reply and action plans will suffice your requirement and humbly request your esteemed office to revoke the direction.

Sir, we remain available for any clarification that you may require. Please do offer us an opportunity for personal hearing to put forward the explanations/clarifications provided by us.

Thanking you,

Yours faithfully,

**For Hindalco Industries Limited,**  
**Dahej Unit**

Dr. Sanjay Kumar  
 Head - Environment

03/09/19

**Gujarat Pollution Control Board**  
 Sector No. 10 A,  
 Gandhinagar - 382 010

**Copy to :** The Regional Officer, GPCB, Bharuch

**Gujarat Pollution Control Board**

Form No.D7

## APPLICATION FOR REVOCATION OF CLOSURE ORDER

(Required in both the cases of closure i.e. with immediate effect or with the effect of 15/30 days)

1. Full name and address of the industrial unit: Hindalco Industries Ltd. Unit: Birla Copper, Dahej-392130

2. GPCB ID No.15178

CTE No. &amp; Date: CCA No. &amp; Date:

Consent Order No.: AWH-62117, No. GPCB/BRCH/B-CCA-310(11) ID-15178/216033 Dated: 11-06-2014

Amendment to Consent No: AWH 62117, No. GPCB/BRCH/B-CCA-310 (12) ID-15178/227652 Dated: 07-10-2014

3. No. and date of the closure order for which the revocation is sought for:

No: GPCB/BRCH-B/CCA-310 (18)/ID-15178/, dated 31/08/2019

4. Date of disconnection of electric supply: After 15 days of closure order

5. Date of disconnection of water supply: -

6. Remedial measures taken to control the pollution:

The details of remedial measures taken against each of the points raised has been presented in the table on the next page. In this table, we have presented the details of both, the immediate actions taken by us as well as the details of various relevant action plans that we have been working on for longer term transformation on water, emissions and waste management at the factory.

At the outset, we also would like to set out the key environmental factors prevailing at the time of sampling, testing done at the factory.

1. Heavy Rains: From 4th August, for a week, there were heavy rains in the region and the neighbouring village, Lakhigam, got flooded with very high level of water.
2. Rainwater evacuation through our factory: Local administration led by Ms Kshipra Agre IAS (Collector-in-Charge, Bharuch & DDO) and GIDC officials, after visiting the villages and our plant, decided following measures:
  - Breaking the plant's road at two places for evacuating water from the village.
  - Breaking the compound wall to make the passage for the water to flow through our premises.
  - In addition to the above, more than 15 pumps were deployed to evacuate water from Lakhigam village which is also flowing through our premises.

These above actions resulted in to flooding of our premises, making water management impractical and rendering our monsoon preparedness plans ineffective.

We are working on engineering options to control and evacuate the rain water effectively and would also be working with local administration to further strengthen this,

Sr. no.	Reason of Closure	Remedial Measures taken	Date of completion of the measures	Where compliance requires more than 07 days' time, likely date of its completion																								
1.	<p>(below sr.nos are as per GPCB notice dated 31/08/2019)</p> <p>a) Acidic Waste water (pH@2 on pH strip) is observed in storm water drains in SA-1 plant, SA-3 plant and PAP plant within premises, where intensive odour is also felt.                      b) Discharge of acidic waste water (pH @2-4 on pH strip) is found from the two separate storm water drains outside premises leading to sea.                      f) Huge acidic waste water logging is also observed in the Sulphuric Acid Plant (SAP-1) on roadside (Road No. 6) and nearby storm water drain and in event of further heavy downpour in the area, it may lead to the sea through nearby storm water drain, such sample of the acidic wastewater is also collected during the site inspection.</p>	<p><b>Immediate remedial actions:</b></p> <ul style="list-style-type: none"> <li>Due to heavy rains, some rain water has mixed with acid particles in Sulphuric Acid Plant 1 dyke area and slightly overflowed. The contaminated rain water was contained in process drain (under construction) of Sulphuric Acid Plant. Photo of dyke area is attached as Annexure P1.</li> <li>Two pumps were continuously working to transfer this acidic water to the Effluent Treatment Plant for treatment and reuse.</li> <li>In addition, we had also deployed more than 8 dewatering tankers and kept the dyke dry by instantly pumping the spillage to effluent tank.</li> </ul>	20/08/2019																									
2.	<p>c) Analysis report of sample collected indicate that it is exceeding the permissible limit as under.</p> <table border="1"> <thead> <tr> <th>Parameter Source</th> <th>Result</th> <th>Result</th> <th>Permissible Limit</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>2.93</td> <td>2.71</td> <td>5.5-9.0</td> </tr> <tr> <td>SS</td> <td>86 mg/l</td> <td>108 mg/l</td> <td>100 mg/l</td> </tr> <tr> <td>Ammonical Nitrogen</td> <td>21.45 mg/l</td> <td>254.86 mg/l</td> <td>50 mg/l</td> </tr> <tr> <td>Fluoride</td> <td>58 mg/l</td> <td>82 mg/l</td> <td>10 mg/l</td> </tr> <tr> <td>Copper</td> <td>224.9 mg/l</td> <td>54.51 mg/l</td> <td>3 mg/l</td> </tr> </tbody> </table>	Parameter Source	Result	Result	Permissible Limit	pH	2.93	2.71	5.5-9.0	SS	86 mg/l	108 mg/l	100 mg/l	Ammonical Nitrogen	21.45 mg/l	254.86 mg/l	50 mg/l	Fluoride	58 mg/l	82 mg/l	10 mg/l	Copper	224.9 mg/l	54.51 mg/l	3 mg/l	<p><b>Long-term Measures:</b></p> <ul style="list-style-type: none"> <li>Revamping of drain, dykes, floor and covering acid loading point in SAP I and SAP III areas.</li> </ul> <p><b>Ammonical Nitrogen: Immediate remedial measures:</b>                      To control DAP Spillages at loading area, we have undertaken following measures in last few weeks:</p> <ul style="list-style-type: none"> <li>Brick bund walls at DAP Loading area, DAP Off grade charging area and DAP Off grade storage area</li> <li>Tarpaulin covering of DAP Off grade storage</li> <li>Shift wise monitoring of floor cleaning</li> <li>Deployment of BobCat -mini pay loader cum sweeping machine and manual labourers</li> </ul> <p>To eliminate generation of off grade DAP we have now developed a robust system for rock phosphate along with the procurement and quality teams so that full specification of rock is known before consumption. Hence, proper blending can be taken care.</p>	<p>31/08/2019 07/08/2019 07/08/2019 15/08/2019</p>	<p>30/04/2020 Action Plan is attached as Annexure A1.  14/09/2019</p>
Parameter Source	Result	Result	Permissible Limit																									
pH	2.93	2.71	5.5-9.0																									
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Sr. no.	Reason of Closure  (below sr.nos are as per GPCB notice dated 31/08/2019)	Remedial Measures taken	Date of completion of the measures	Where compliance requires more than 07 days' time, likely date of its completion
		<p><b>Ammonical Nitrogen: Long-term measures:</b></p> <ul style="list-style-type: none"> <li>• Our objective is to eliminate spillages from DAP loading conveyors. We have completed a thorough study of the conveyors through M/s Martin Engineering. There recommendations are being implemented and will be completed by June 2020.</li> <li>• We target to consume off grade DAP, our action plan is as below <ul style="list-style-type: none"> <li>○ System modification of Rock phosphate handling</li> <li>○ JPMC rock phosphate parcel ordered 30 KT arriving in Nov-19 after which Off grade DAP consumption will start at a faster pace</li> </ul> </li> </ul>		15/06/2020 Action Plan is attached as Annexure A2
		<p><b>Fluorides: Immediate remedial measures:</b></p> <p>As attributable to Rock Phosphate Spillages and Phospho gypsum spillages: After the visit, we have investigated the sources thoroughly and created Bund walls surrounding the entire PAP area to prevent mixing of rain water in road and drains.</p>	17/08/2019	
		<p><b>Fluorides: Long -term measures:</b></p> <p>We have completed a thorough study of the Rock Phosphate Spillages and Phospho gypsum conveyors through M/s Martin Engg. Recommendations are being implemented.</p>		15/06/2020 Action Plan is attached as Annexure A2
		<p><b>Copper: Immediate remedial measures:</b></p> <p>Copper dust fly over due to inadequate dust handling system during maintenance period and operational disturbances.</p> <ul style="list-style-type: none"> <li>• In the last 2 months, we have implemented 6 Nos. dust collection trolleys at dust generating locations to recycle dust through material handling circuit</li> <li>• Along with this, a shed is prepared in furnace dust handling area which will ensure no dust particles flies</li> </ul>	Completed	

Sr. no.	Reason of Closure (below sr.nos are as per GPCB notice dated 31/08/2019)	Remedial Measures taken	Date of completion of the measures	Where compliance requires more than 07 days' time, likely date of its completion
		<p>out.</p> <ul style="list-style-type: none"> <li>Dust lying near Rd 20 storm water drain shifted to tarpaulin covered area and installed dust screening system to help in segregating dust by size wise components for recycling back in various furnaces.</li> </ul>	<p>16/08/2019</p> <p>07/09/2019</p>	
		<p><b>Copper: Long-term measures:</b></p> <ul style="list-style-type: none"> <li>To control copper concentrate spillage from conveyor we have increased periodicity of maintenance of conveyor scrapers. Further, we have studied the conveyors by M/s Martin Engg. (expert in conveyors) and will be implementing recommendations.</li> <li>Further we will implement additional 8 nos dust collection trolleys</li> <li>Permanent shed specifically for dust and intermediates will be constructed.</li> <li>We have also contacted recyclers for export of our dust and intermediates and in the process of taking necessary approvals.</li> </ul>		<p>15/06/2020 Action Plan is attached as Annexure A2.</p> <p>31/01/2020 Action Plan is attached as Annexure A3.</p> <p>15/05/2021 Action Plan is attached as Annexure A4</p> <p>30/05/2021</p>

Sr. no.	Reason of Closure  (below sr.nos are as per GPCB notice dated 31/08/2019)	Remedial Measures taken	Date of completion of the measures	Where compliance requires more than 07 days' time, likely date of its completion
3.	<p>d) Water logging is observed in plant premises and waste water logging along with continuous flowing of the acidic waste water nearby coal transfer tower area from road side is observed. Such sample of the waste water is collected during inspection, this acidic wastewater is observed being continuously flowing through this area and observed being passed through their colony/township area which is ultimately leading to the sea.</p> <p>e) Leachate generated from the phosphogypsum yard (Approx. 800 m * 300 m * 4.75 m depth) along with previous occurred heavy downpour in the area resulted into the continuous flowing of the acidic waste water in the nearby area, photographs of the same is uploaded separately.</p> <p>h) Huge storage of Phosphogypsum sludge in the yard (not covered from top) and exhausted capacity of the leachate sump for the Phosphogypsum yard observed.</p>	<p>The water logging has been dueto seepage from phosphogypsum yard, spillage of phosphogypsum from transporting conveyors on road, and flooding during torrential rain caused in area causing over flow of leachate in drain.</p> <p><b>Immediate remedial measures:</b></p> <ul style="list-style-type: none"> <li>• To prevent seepage, wall has been erected west side till south west corner. Photo is attached as Annexure P2.</li> <li>• Old gypsum emptied out below and near the wall</li> <li>• Additional physical barrier created inside the wall.</li> <li>• Additional dewatering system created inside wall.</li> <li>• Cleaning of the road with increased frequency on daily basis.</li> <li>• Bund created at the north side the pond</li> <li>• Water recycling to process increased by deploying tanker.</li> </ul> <p><b>Long-term measures:</b></p> <ul style="list-style-type: none"> <li>• We are in the process of strengthening embankment of gypsum yard including leachate management system with an investment around Rs 30 Crs. Photo of embankment strengthening work is attached as Annexure P3. The leachate is being recycled in Phosphoric acid plant. Leachate collection pond volume will be increased from presently 65000m<sup>3</sup> to 100000 m<sup>3</sup></li> <li>• We are planning on long term contract with cement manufacturers to evacuate our existing stock and future generation.</li> <li>• Conveyor spillage third party study done by M/s Marin engineering , solution will be as per the recommendation</li> </ul>	11/08/2019	
				<p>15/06/2020 Action Plan is Attached as Annexure A5</p> <p>30/03/2020</p> <p>15/06/2020 Action Plan is Attached as Annexure A2</p>

Sr. no.	Reason of Closure  (below sr.nos are as per GPCB notice dated 31/08/2019)	Remedial Measures taken	Date of completion of the measures	Where compliance requires more than 07 days' time, likely date of its completion
4.	<p>g). During inspection of coal storage yard, continuous flow of the waste water (containing coal dust particle) from the upstream part of the plant along with rainy water due to previously occurred heavy downpour in the area is observed being flowing through nearby passing storm water drain ultimately led to the sea passing through colony/township, such sample of the wastewater is also collected to evaluate the quality of the wastewater.</p>	<p>Excessive rainfall caused washing of coal in open yard leading to coal carry over to nearby storm water drain.  <b>Immediate remedial measures:</b></p> <ul style="list-style-type: none"> <li>Coal Catcher provided to catch the coal dust from coal run off water. Photo of Coal Catcher is attached as <b>Annexure P4</b>.</li> <li>Periodic drain cleaning started</li> <li>Housekeeping improved</li> <li>Crusher &amp; other equipment modified to avoid spillage outside CHP boundary wall</li> </ul>	12/08/2019	
5.	<p>i). Housekeeping observed poor.</p>	<p><b>Long term Measures:</b></p> <ul style="list-style-type: none"> <li>Coal Handling Plant Wind fencing, Garland drain with Sump and pump (including coal separation system)</li> <li>Bag filter installation in coal handling circuit 6 Nos.</li> <li>Cover for conveyor belts and conveyor improvement study done through expert M/s Martin implementation being planned for execution</li> </ul> <p>We have deployed additional sweeping machines and increased manpower for road and drain cleaning. Photos of improved housekeeping is attached as <b>Annexure P5</b>.            Further, we have already taken up following initiatives:</p> <ul style="list-style-type: none"> <li>Mega Cleaning drive for removal of unwanted scrap in operating area.</li> <li>Mechanised collection of dust using trolleys attached with tractor</li> <li>Additional bund walls in PAP, DAP and SM1</li> <li>Dust containment shed in sm1</li> </ul>	20/08/2019	<p>30/06/2020            Action Plan is attached as <b>Annexure A6</b></p> <p>15/06/2020            Action Plan is attached as <b>Annexure A7</b></p> <p>15/06/2020            Action Plan is attached as <b>Annexure A2</b></p>
			Completed	

7. Where remedial measures to mitigate pollution are likely to last more than 07 days, an undertaking (on stamp paper of Rs.100/- duly signed and sealed by the Notary) Undertaking is attached as Annexure 1

8. Letter of Bank Guarantee, if required:  
Letter of Bank Guarantee is attached as Annexure 2

9. Status of CCA along with date of expiry:  
CCA Compliance report is attached as Annexure 3 & Date of expiry is 02-03-2020

10. Upto which period the Water Cess is paid?  
Water Cess has been paid up to June-2017.  
Receipt of July 2017 Water Cess payment is available as Annexure 4

11. Are sample analysis charges paid?  
Receipt attached for analysis charges paid dated 13<sup>th</sup> August 2019 is attached as Annexure 5.

12. If the unit is in critically dark zone area, what is the source of water? If bore well is in use, can it be sealed  
We currently do not use any bore well. Water is supplied to us by Gujarat Industrial Development Corporation (GIDC).

13. Closure order(s) issued to the unit by GPCB in last two years:  
We did not receive any closure order in last 2 years.

14. Status of Monthly Report from industry (Form -D2):  
Monthly Report for July 2019 submitted on 06-08-19 is attached as Annexure 6.

15. Status of Annual Report from industry (Form -D5):  
Annual Report in Form D5 is attached as Annexure 7.

16. Env. Audit Report (if applicable) submitted?  
Environmental Audit Report for year 2018-19 by Charusat Environmental Engineering Laboratory is attached as Annexure 8.

17. Status of Environment Statement [Form-V, E (P) Act]:  
Environment Statement submitted for Year 2018-19 dated: 08th July-2019 is attached as Annexure 9

For Hindalco Industries Ltd.  
Unit : Birla Copper, Dahanu

*K. N. Bhandari*  
K. N. Bhandari, Occupier  
(Occupier)

ANNEXURE A/16  
(Copy)  
278  
727

## ANNEXURE R8/19

SHOW CAUSE NOTICE

PCB ID : [REDACTED]

Legal ID : [REDACTED]

Gujarat Pollution Control Board  
Paryavaran Bhavan, Sector-10/A,  
Gandhinagar - 382010  
23222756

ACT : Air , Water , Hazardous

Show Cause Notice DATE : 24/01/2020

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 09/10/2019 in order to verify the statements made by you in your application for Consent to Operate under the Air , Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

Reason :

(1) Stone pitching on the soil of the embankment is so far not carried out.

1 This indicates that you have failed to fulfill the conditions mentioned in the Consent Order. Consequently, you have rendered yourself liable to be prosecuted under the provisions of the above mentioned Sections-Acts.

NOW THEREFORE, in exercise of the powers vested with this Board Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974 Under section 31(A) read with section 21 of the Air (Prevention and Control of Pollution) Act, 1981 Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008 notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of  
Gujarat Pollution Control Board

A.V. Shah, Unit Head

NO : SCN-552401, 24/01/2020

Hindalco Industries Ltd,  
2,10,11,43 GIDC, AT POST. DAHEJ-LAKHIGAM,  
TAL:VAGRA,  
DAHEJ,  
Dist : Bharuch, Tal : Vagra, SIDC : Dahej  
Phone : 02641662522

## COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

  
TRUE COPY



## SHOW CAUSE NOTICE

PCB ID : 15178  
 Legal ID : 38946

Gujarat Pollution Control Board  
 Paryavaran Bhavan, Sector-10/A,  
 Gandhinagar - 382010  
 23222756

ACT : Air , Water , Hazardous

Show Cause Notice DATE : 24/01/2020

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 19/09/2019 in order to verify the statements made by you in your application for Consent to Operate under the Air , Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

**Reason :**

(1) At the time of inspection heavy acidic fugitive emission in form of white cloud formation is observed from Phosphoric acid plant(PAP). (2) It has been noticed that acidic fumes being emitted through leakages in PAP digestors and reactors (no. 1 & 3) and open manhole of one scrubber attached to PAP plant. (3) Severe eye irritation is felt in nearby of PAP area (4) acidic water being accumulated in storm water drain line of PAP plant area is observed (5) post closure SLF site cell number 2, 6 & 7 are observed damaged due to soil erosion during heavy rain

*	1	This indicates that you have failed to fulfill the conditions mentioned in the Consent Order. Consequently, you have rendered yourself liable to be prosecuted under the provisions of the above mentioned Sections-Acts.
---	---	---

NOW THEREFORE, in exercise of the powers vested with this Board

Under Section 33(A) read with section 25 26 of the Water(Prevention and Control of Pollution) Act, 1974

Under section 31(A) read with section 21 of the Air (Prevention and Control of Pollution) Act, 1981

Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008

notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of  
 Gujarat Pollution Control Board

*A.V. Shah*

A.V. Shah, Unit Head

NO : SCN-552400 , 24/01/2020

Hindalco Industries Ltd,  
 2,10,11,43 GIDC, AT POST. DAHEJ-LAKHIGAM,  
 TAL:VAGRA,  
 DAHEJ,  
 Dist : Bharuch, Tal : Vagra, SIDC : Dahej  
 Phone : 02641682522

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed L.R. & A.R. for the sample collected to this office immediately.

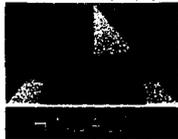
Printed On : 24/01/2020

1 - Through XGN

TRUE COPY

N I C

ADITYA BIRLA

23 September, 2019  
PCB ID 15178

To  
The Regional Officer  
Gujarat Pollution Control Board  
C-1/119/3, GIDC Phase - II,  
Narmada Nagar,  
Dist. Bharuch - 392 015  
Gujarat

**Subject : Visit to Hindalco Industries Limited, Dahej on 19-09-2019**

**Reference : Visit Report dated 19 September 2019**

Dear Sir,

This has reference to the visit of GPCB Officials to Hindalco Industries Limited, Dahej Unit on 19<sup>th</sup> September, 2019 and their observations.

We would like to submit our response as given below:

**Observation No. 1**

**During the visit, from your Phosphoric Acid Plant reactor, digester and scrubbing system's manhole huge quantity of acidic fumes forming white clouds was observed and in the nearby areas irritation in the eyes was felt, regarding this details to be provided and corrective steps to be taken.**

**Our Response**

The Phosphoric Acid Plant (PAP) had developed choking in the scrubbing system and the plant was stopped at around 3 pm. For carrying out dechoking, man hole was opened for inspection and closed immediately after completing the inspection by maintenance team. The choking occurred due to sudden failure of impeller fan. This has been replaced and system has been restored. Photo of replacement is attached as **Annexure 1**.

Moreover, for long term solution, we are in the process of finding appropriate world class technology for upgrading the scrubbing system in PAP - we are in dialogue with M/s Prayon, Belgium the Original Equipment Manufacturer (OEM) and their Indian partner Thyssenkrupp. Once technology is finalised we will be implementing the improvements.

**Observation No. 2**

**In PAP areas' storm water drain acidic wastewater accumulated was observed which should be lifted and properly disposed and leakages to be controlled.**

**Our Response**

As submitted earlier, the storm and process water drain renovation is under progress in PAP area. These are yet to be connected to the overall plant drain network. The acidic water has been taken into process and leakage has been arrested. We have stopped the drain construction work and will be taken up post the monsoon. The photograph is enclosed as **Annexure 2**.

**Observation No. 3**

**From your WIP area collection tank, water tanker No. GJ 12 Y 7495 and GJ 03 AX 5096 transferring of bluish coloured acidic wastewater to PAP cooling tower was observed, wastewater stream generation, transportation and cooling tower reuse details to be submitted.**

**Our Response**

Rain water which comes in contact with some copper containing "WIP" materials becomes bluish in color due to copper. This water is collected in the collection tank near WIP area. The copper content in this water is 16 ppm and is used as makeup water in PAP cooling tower which contains around 15 ppm copper. The Phosphoric acid inherently as part of its process contains 100-250 ppm of copper. From a technical perspective, addition of this water results in no adverse impact in PAP but helps in reducing fresh water consumption.

The water is getting transported in suitable tankers from the collection tank to the cooling tower.

To reduce the generation of such water, we have two action plans in place:

- 1) **Covered Storage of WIP material**- As an immediate measure, the material has been covered with tarpaulin sheet. As a long term measure, a covered shed will be constructed for storing these materials.
- 2) **Sale of WIP material** - We are looking to reduce the quantum of WIP stored onsite. Towards this, we have identified overseas vendors who will take these materials for further processing and recycling of metals. We are in the process to obtain NOC from MoEF&CC, New Delhi.

**Observation No. 4**

**In your premises closed SLF Cell No.2,6 and 7 stone pitching and washing of soil due to rains have been observed, also the internal liners at many places is found torn, corrective steps in this regard to be taken.**

**Our Response**

Post the excessive rains in the month of August 2019, there has been partial damage to SLF 2,6 and 7. This has been identified by us and work towards repairing has been initiated. However, due to continuing rains work progress has suffered. As an immediate corrective measure, the liner repair work has been taken up on priority. Photo is attached as **Annexure 3**.

**Observation No. 5**

**SLF-8 which is currently in operation its leachate sump is submerged in water due to rains, corrective steps in this regard to be taken.**

**Our Response:**

Immediate corrective action has been taken, approach road has been constructed, increase of leachate sump height is in progress.

Sir, we have already taken different Environment Improvement projects based on significant aspects i.e. water conservation, waste water generation & recycling, better controlled emission and mitigation of fugitive emission. We are very much committed to improve our environmental performance. Some environment projects are already implemented such as TGS-3 and water cooled hood in Smelter-1, some projects are in progress i.e. implementation of Zero Liquid Discharge and some environment improvement projects are in process.

We request to your esteemed office to kindly note that we will be installing and operating the below mentioned environment improvement projects.

Sr. No.	Stack attached to	Stack height	Existing APCM	Proposed Modification	Remarks	
1	Main Stack Sulphuric Acid Plant-1	75	5 stage DCDA system & Mist Eliminator	New Proposed Tail Gas Scrubber and associated effluent treatment.	In addition to latest Monsanto /Dupont technology based plant, we are proposing additional Tail Gas scrubber after 5th pass of catalytic converter and Final Absorption Tower	
2	Main Stack Secondary Gas Scrubber	75	Two Stage alkali scrubber	Upgrading with proposed 3 new Technology alkali scrubber systems and associated effluent treatment.	Anode Furnace, Flash Smelting heating gases, Tertiary Anode furnace & Tertiary Scrap melting furnace gases will be routed through new scrubber.	
3	Copper Scrap melting furnace (Cap 50 TPD)				Gases through Copper Scrap melting furnace will be routed through new scrubber.	
4	P S Converter Area (Gases are to be transferred to H <sub>2</sub> SO <sub>4</sub> plant) only emergency vent	47	-		Gases through P S Converter during emergency will be routed through new scrubber.	
5	Main Stack Slag cleaning Furnace	75	Bag Filter		Instead of just Bag filter, we are proposing new scrubber in this stream after Bag filter. Slag Cleaning Furnace gases and Launder off gases will be routed through new scrubber.	
6	Dore Furnace of PMR plant	45	Bag Filter		New proposed additional scrubber and	Instead of just Bag filter, we are proposing new scrubber in this stream after Bag filter. The

Sr. No.	Stack attached to	Stack height	Existing APCM	Proposed Modification	Remarks
				associated effluent treatment.	new stack after scrubber will have a height of 75 m.
7	Captive Power Plant (CPP-III)	85	ESP	No modification in Main stack line; however, dust reduction using bag filters being proposed in Coal Handling Plant	Additional Bag Filters in Coal Handling area in screen house, crusher house and transfer towers
8	Smelter 1 Copper concentrate transfer towers	-	Dust suppression system.	Dust collection and filtration through Bag Filters.	We propose installation of Bag Filters at all transfer points of Copper concentrate conveyor system.

Sir, in case of any additional information / clarification, please do give us an opportunity to submit the same.

Thanking you,

**For Hindalco Industries Limited,  
Dahej Unit**



Dr. Sanjay Kumar  
Head - Environment

CC: Shri. A V Shah  
Gujarat Pollution Control Board,  
Gandhinagar.

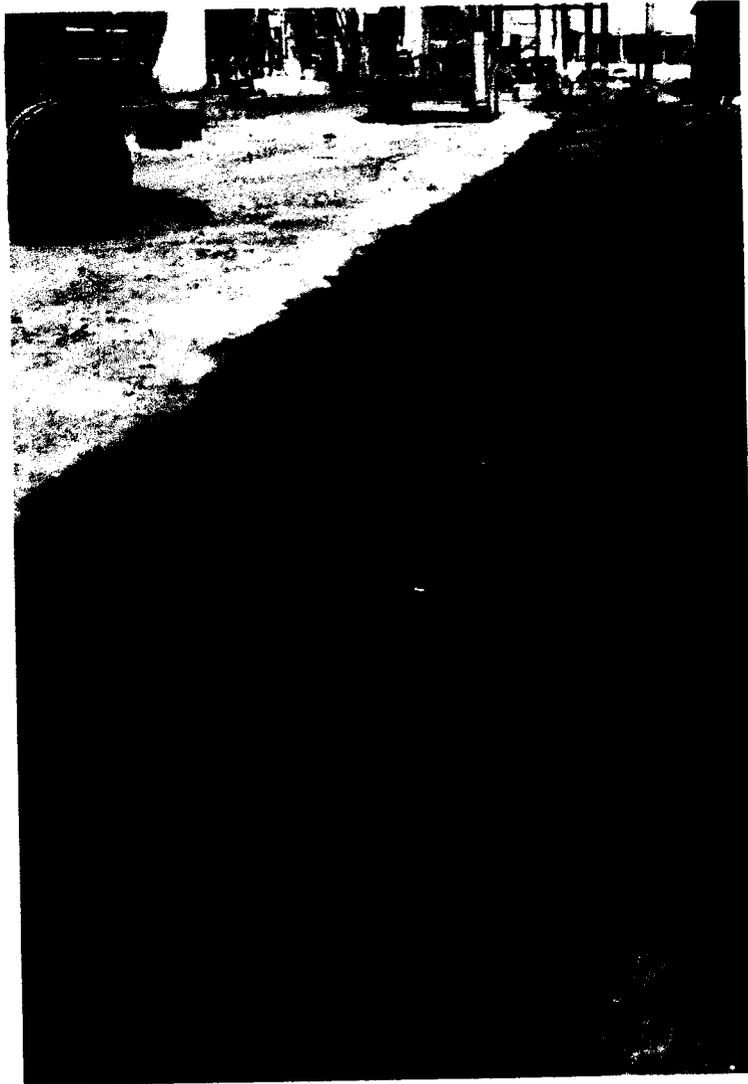
**Annexure 1**

**Photo of PAP scrubber impeller fan replacement**



**Annexure 2**

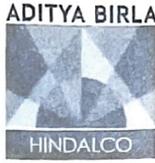
**PAP Drain Construction**



**Annexure 3**  
**Repair work in SLF**



Acknowledgement Copy  
250 1073  
GPCB, Gandhinagar



HIL/BC/Env./GPCB/BH-19-20

11.10.2019  
PCB ID:15178

The Regional Officer  
Gujarat Pollution Control Board  
C-1/119/3, GIDC Phase - II,  
Narmada Nagar,  
Dist. Bharuch - 392 015  
Gujarat

**Subject:** Visit to Hindalco Industries Limited, Dahej on 09.10.2019.  
**Reference:** Details desired during the visit on 09.10.2019.

Dear Sir,

This has reference to above mentioned subject, and observation given thereafter.  
Our reply to the observation is furnished below.

Sr. no.	Observations mentioned in GPCB Visit dated 09/10/2019	Remedial Measures/Status Update	Timeline
1	In captive SLF site 3, 6 and 7 of your unit due to rain washing away of soil, damage to soil pitching had occurred. For which details of corrective action and time bound action plan for revamping of washed off soil and stone pitching to be submitted.	a) For SLF-3 washed away soil from one part of embankment has already been refilled with fresh soil. Stone pitching will be done as per the timeline mentioned. b) For SLF-6 necessary repair in embankment will be done as per the timeline mentioned. c) In SLF-7, washed away soil in embankment has already been filled in at South-West corner. Balance of repair has been going on and will be done as per timeline mentioned.	As per Annexure-1

We hope the above will suffice your query

Thanking you,

Yours faithfully,

For Hindalco Industries Limited,  
Unit Birla copper Dahej

  
Dr. Sanjay Kumar  
Head - Environment

  
14/10/19  
Gujarat Pollution Control Board  
Sector No. 10 A,  
Gandhinagar - 392 010

CC: SHRI A. V. SHAH  
GPCB, GANDHINAGAR



HIL/BC/Env./GPCB/BH-19-20

PCB ID:15178

Date: 18.11.2019

Shri A. V. Shah  
Sr. Environmental Engineer  
Gujarat Pollution Control Board  
Paryavaran Bhavan, Sector-10-A  
Gandhinagar- 382019

*M*  
18/11/19  
Gujarat Pollution Control Board  
Head Office  
Sector No. 10-A,  
Gandhinagar-382010

Subject: Request for permanent revocation.

Reference: Direction under section 33 –A, water act-1974 dated 31/08/2019

Dear Sir,

This has reference to direction under section 33 –A, water act-1974 dated 31/08/2019 and aforesaid subject. Through this letter, we would like to submit our compliance status against the observations mentioned in the letter dated 31/08/2019 from your esteemed office and then during subsequent visits by officials from Regional Office. Basis this, we request for the permanent revocation of the closure notice.

We are proud to mention that, Hindalco has made its entry in the 2019 edition of the S&P Dow Jones Sustainability Indices (DJSI). Its DJSI score places Hindalco among the world's top 3 aluminium companies.

Our vision at Birla Copper Dahej is to establish best-in-class environment management practices in copper manufacturing. In keeping with this vision, many proactive measures and projects are in various stages of implementation.

**Registered Office**

Century Bhawan, Dr. Annie Besant Road, WORLI, MUMBAI – 400030 Telephone : + 91 22 66626666 Fax: +91 22 24227586  
Corporation Identity Number : L27020MH1958PLC011238, E-Mail ID: hildalco@adityabirla.com

**HINDALCO INDUSTRIES LIMITED**  
**UNIT : BIRLA COPPER)**  
D: Dahej, Dist: Bharuch  
Gujarat – 392 130 (India)

Telephone: +91 2641256004-6

Website www.hindalco.com

Fax: +91 2641 251002-3

We have taken up all your suggestions with due seriousness and developed a detailed time based project plan right from conceptualization to implementation and commissioning. In keeping with this plan, as updated earlier vide our letter dated 3<sup>rd</sup> Sep, 2019 all the short term actions have been completed. A list to this effect is attached herewith as **Annexure 1**. To make the environment management even more robust, we are also in the process of implementing long term projects and upgrading our system and processes. Details of these projects are mentioned in **Annexure 2**. Sir, we assure you that we shall complete all the long term actions as per time line.

The present status of all observations made during the visit of officials from regional office Bharuch are attached herewith as **Annexure 3**. We humbly request to your esteemed office to kindly grant us permanent revocation against direction issued dated 31.08.2019. We are very much committed to abide by the applicable Acts & Rules under Environmental laws.

Sir, we remain available for any clarification that you may require. Please do offer an opportunity for personal hearing to put forward the explanations/clarifications provided by us.

Thanking you.

Yours faithfully,

**For Hindalco Industries Limited,  
Unit Birla copper Dahej**



Dr. Sanjay Kumar  
Head – Environment

**CC : Regional Officer, GPCB, Bharuch**

**Registered Office**

Century Bhawan, Dr. Annie Besant Road, WORLI, MUMBAI – 400030 Telephone : + 91 22 66626666 Fax: +91 22 24227586  
Corporation Identity Number : L27020MH1958PLC011238, E-Mail ID: hidalco@adityabirla.com

**HINDALCO INDUSTRIES LIMITED**  
(UNIT : BIRLA COPPER)  
PO: Dahej, Dist: Bharuch  
Gujarat – 392 130 (India)

Telephone: +91 2641256004-6

Fax: +91 2641 251002-3

Website [www.hindalco.com](http://www.hindalco.com)

**GUJARAT POLLUTION CONTROL BOARD**

PARYAVARAN BHAVAN

Sector-10-A, Gandhinagar 382 010

Phone : (079) 23222425

(079) 23232152

Fax : (079) 23232156

Website : www.gpcb.gov.in

**R.P.A.D.**

**NOTICE OF DIRECTION UNDER SECTION 31-A OF THE AIR (PREVENTION AND CONTROL OF POLLUTION) ACT-1981 (HERE IN AFTER REFERRED TO AS THE "AIR ACT") AS AMENDED FROM TIME TO TIME.**

WHEREAS you **M/s. Hindalco Industries Ltd.** are having an industrial plant at **Plot No:2,10,11,43, At Post. Dahej-Lakhigam, Gidc Dahej, Tal: Vagra, Dist: -Bharuch.**

AND WHEREAS you are having CCA No.AWH-62117 valid up to 02/03/2020 to manufacture various inorganic products (i.e. copper cathode, DAP/NPK, phosphoric Acid, Sulphuric Acid, Gold, Silver, etc.)

AND WHEREAS during the inspection of your industrial plant on 21/01/2020 under Section -24 of the Air Act by the authorized officer of the Board it has been noticed and required to attend following issues:

- During loading/unloading and transportation of phospho gypsum from your unit to Bharuch Railway Yard dusting/fugitive emission were observed.
- On the rail dock, phospho gypsum and grain are stored together so phospho gypsum may be mixed with grains.
- Railway has not provided separate storage for phospho gypsum and other goods

NOW THEREFORE Board proposes to issue directions under Section 31-A of the Air Act-1981as under:

1. To prohibit you from the manufacturing of above said products and upgrade APCM.
2. To close the operation of your industrial plant on the above mentioned site till complying consented conditions.
3. To direct the concerned authority to stop supply of electricity and water till that time.
4. Submit compliance report for above points.

(P.T.O.)

**Clean Gujarat Green Gujarat**

ISO-9001-2008 &amp; ISO-14001 - 2004 Certified Organisation

You are hereby directed to reply within 15 days from the date of service of this notice failing which, it shall be presumed that you have nothing to say in this matter and appropriate action will be initiated against you for the conduct of the business of your industry, under the Air Act-1981 for above non-compliance.

FOR AND ON BEHALF OF  
GUJARAT POLLUTION CONTROL BOARD



(A.V. SHAH)

SENIOR ENVIRONMENT ENGINEER

NO: GPCB/BRCH-CCA-310/ID: 15178/

Date: \_\_/02/2020

Issued to:

✓ M/S. HINDALCO INDUSTRIES LTD.  
PLOT NO: 2, 10, 11,43,  
AT-PO: DAHEJ-LAKHIGAM, TAL: VAGRA,  
DIST: BHARUCH.

Copy To:

- **Regional Officer,**  
Gujarat Pollution Control Board,  
Regional Office,  
Bharuch.... for monitoring & verification.
- **Divisional Railway Manager,**  
69, Santosh Wadi Rd,  
Railway Colony, Danteshwar,  
Vadodara, Gujarat 390004..... with respect to complaint received regarding fugitive emission in Bharuch Railway Yard, you are requested to take necessary action to prevent mixing of phospho gypsum and grains which is stored within same premises and to stop fugitive emission/dusting in Bharuch Railway Yard.

Outward No: 5555



Date: 06<sup>th</sup> February, 2020  
PCB ID: 15178

HIL/BC/Env./GPCB/BH-20-21

To,  
**The Regional Officer**  
Gujarat Pollution Control Board  
C-1/119/3, GIDC Phase - II,  
Narmada Nagar,  
Dist. Bharuch - 392 015 (Guj.)

**Subject: GPCB Observation dated 06<sup>th</sup> February, 2020**

**Dear Sir,**

This has reference to your visit of our plant dated 06<sup>th</sup> February, 2020 and observations given thereafter. We would like to submit our reply as mentioned below:

**Observation 1.**

In your PAP plant acidic fumes are found from Reactor-3 and it seems that more dusting during conveyance of the Rock phosphate. So take necessary improvement steps for that.

**Our Response:**

We are working on improving the entire phosphoric acid plant operation including scrubbing system. A study will be conducted by M/s. Thyssenkrupp, who is Indian partner to process licensor M/s. Prayon, Belgium. This will take care of necessary system to control minor acidic fumes noticed on the PAP Reactor-3. We will be taking necessary action based on the OEM recommendations. For the dust control, we will install suitable dust abatement system.

**Observation 2.**

To construct wind breaking wall in Coal storage yard and make provision for storage of coal as per the coal storage guidelines.

**Our Response:**

In line with the Coal Storage Guideline we are implementing wind screen along with green belt surrounding the coal yard. This project is under execution and civil construction is going on. This will be completed by July 2020. The photograph is attached as **Annexure-1**.

**Observation 3.**

To construct remaining drainage of phospho-gypsum yard & embankment wall on immediate basis, and submit the action plan for that.

**Our Response:**

As observed during the visit today the drain surrounding the gypsum yard are empty and dry. The embankment and drainage construction work is under progress and will be completed by May 2020.

*R. H. 120*

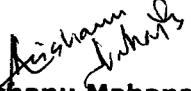
**Observation 4.**

To take immediate necessary action for the broken stone pitching on SLF no. 6 & 7.

**Our Response:**

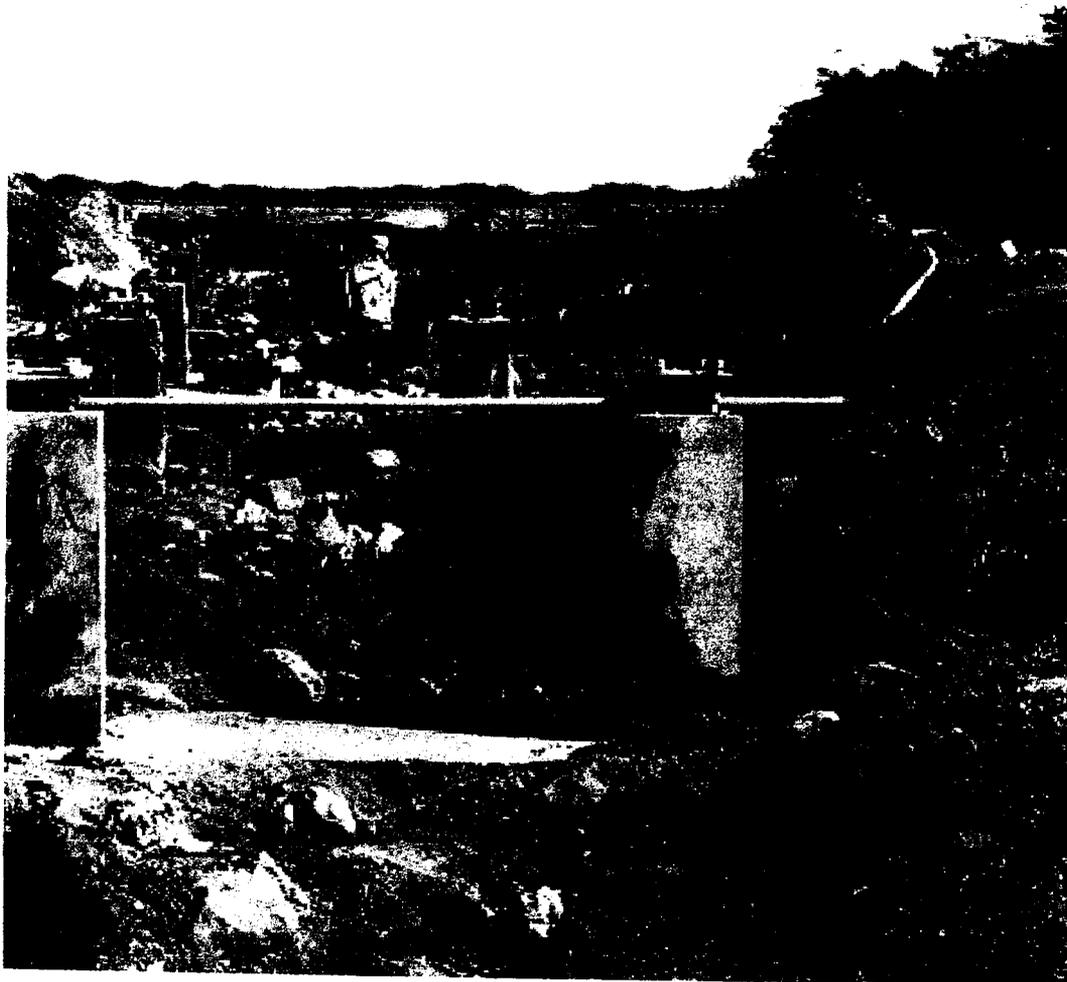
As submitted earlier the stone pitching work is in progress as per the plan it will be completed latest by June 2020. The photograph is attached as **Annexure-2**.

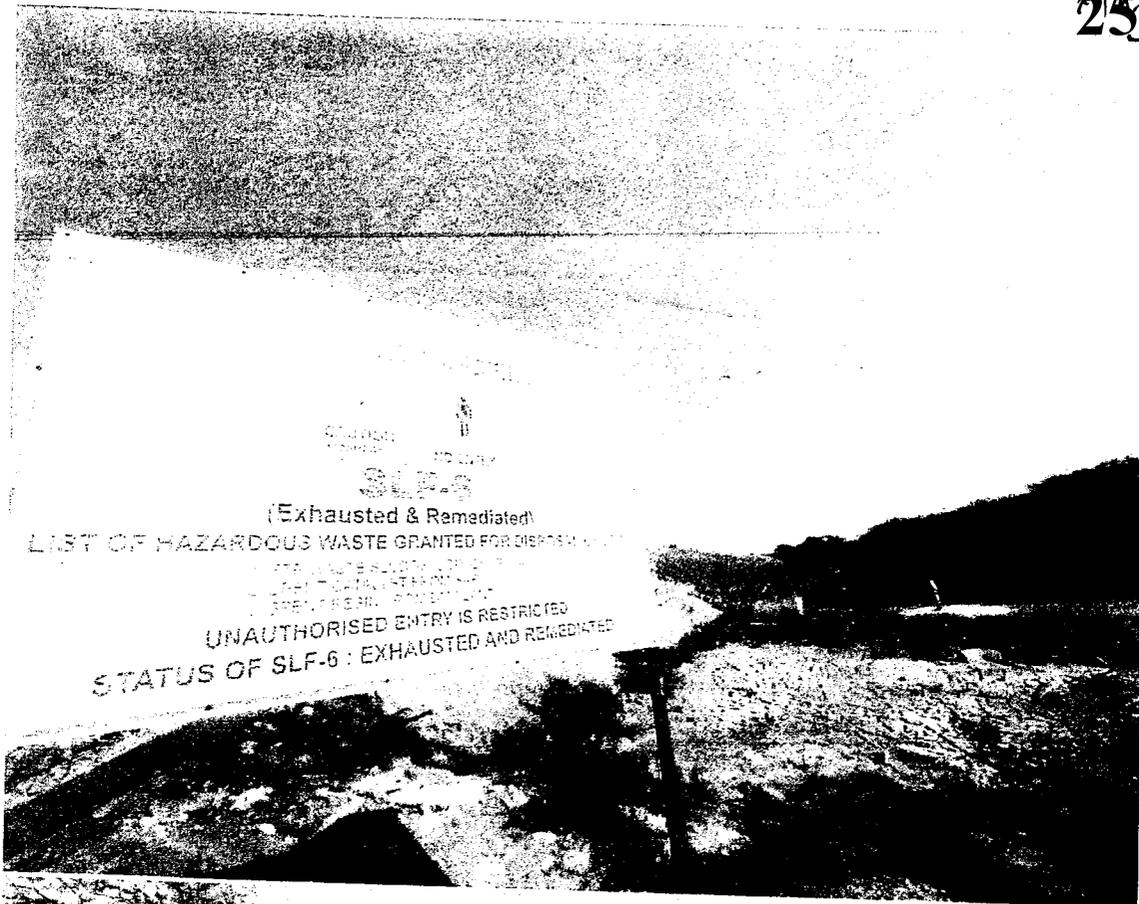
**For Hindalco Industries Limited**

  
**Krishanu Mahapatra**

**Authorized Signatory**

cc. MR. A V SHAH  
Sr. Environmental Engineer  
CPCB, Gandhinagar.





Date: 06/02/2020

To,

The Gujarat Pollution Control Board,

Regional Office, Bharuch

Subject: GPCB Visited on 06/02/2020 and given the observation as follow.

Respected Sir,

1. In your PAP plant acidic fumes are found from Reactor-3 and it seems to found that more dusting during conveyance of the Rock phosphate. So take necessary improvement steps for that.
2. To construct wind breaking wall in Coal storage yard and make provision for storage of coal as per the coal storage guidelines.
3. To construct remaining drainage of phospho-gypsum yard & embankment wall on immediate basis, And submit the action plan for that.
4. To take immediate necessary action for the broken stone pitching on SLF no. 6 & 7.

260, 1083  
792

# ANNEXURE R8/21

## Inspection Report

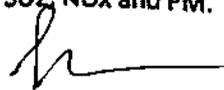
Name of Industry : Hindalco Industries Limited, Dahej GIDC, Lakhigam (PCB ID-15178)  
Date and Time of Inspection : 18/03/2021 at 12:30 hrs

### Observations

- This unit is inspected on 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> March 2021 with ref to the complaint of Shri MSH Sheikh, President, Brackish Water Research Centre, Olpad received through HO letter no. GPCB/prajasake/General-14(1)/585543 dated 10/03/2021 via mail.
- During inspection, unit is found working. smelter plant 1, sulphuric acid plant 1(SAP 1) were taken under monthly shut down on 18<sup>th</sup> March 21 and restarted on 19/03/2021. Smelter plant 3 and sulphuric acid plant 3 are taken under annual shut down. cleaning of furnaces of smelter plant 3 is going on. phosphoric acid plant and Di ammonium phosphate plant are closed since April 2020 for carrying out up gradation/modification work. but, upgradation/modification work is yet not started. Captive power plant 1 & 3 are observed in operation.
- Production taken during Dec 20 to Feb 21 as per their record, 1) copper cathode-Dec 20 to Feb 21-18007 MT, 31357 MT & 30659 MT respectively 2) sulphuric acid during Dec 20 to Feb 21-69326 MT, 84881 MT & 89937 MT respectively 3) Oxygen during Dec 20 to Feb 21-34372 MT, 37099 MT & 37591 MT respectively 4) Gold during Dec 20 to Feb 21-0.595 MT, 0.387 MT & 0.577 MT respectively 5) Silver during Dec 20 to Feb 21-4.109 MT, 2.956 MT & 5.119 MT respectively 6) CCR during Dec 20 to Feb 21-23327 MT, 23862 MT & 18960 MT respectively 7) Phosphoric acid during Dec 20 to Feb 21-nil 8) DAP/NPK during Dec 20-Feb 21-nil 9) Copper wire (<4mm) during Dec 20 to Feb 21-1403 MT, 1572 Mt & 898 Mt respectively 10) electric power during Dec 20 to Feb 21-49806 MWh, 59483 MWh & 56593 MWh. As per production record submitted by unit, the production is observed within the consented quantity.
- Water consumed during Dec 20 to Feb 21 as per submitted record: 479796 KL, 560565 KL & 575888KL respectively.
- During visit, continuous seepage of acidic greenish coloured wastewater is observed in Sulphuric acid Plant 1(SAP 1) area. seeped wastewater is being accumulated in kutchra drain in about 15 meter\* 0.5-meter area with 3 feet depth. one sample of wastewater is collected from the same. they have been instructed to lift seeped wastewater to ETP for the treatment and identify/trace out the source of seepage and rectify the same to prevent seepage and percolation of acidic wastewater into underground strata.

  
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- Unit has two stage ETP : (1) First stage ETP consists of Raw effluent storage tanks (2 no's) ,First stage precipitation Reaction tanks ( 2nos) with lime slurry & FESO4 solution dosing system, 1<sup>st</sup> stage Primary clarifier, 2<sup>nd</sup> stage precipitation reaction tanks(3 no's) with lime dosing system, 2<sup>nd</sup> stage Primary Clarifier, Intermediate tank, First stage treated wastewater holding Lagoon, RVDF(for sludge dewatering) (2) second stage (Polishing) ETP consist of Polishing Neutralization cum Equalization tank, Polishing clarifier, Clarified w/w holding tank, PSF( 3 w+ 1 standby), Filter w/w tank, Dual Medial Filter, Ultra Filtration unit, RO feed tank, RO Plant( 2nos. X 108 KL/hr each),permeate storage tank, RO reject storage tank. First stage Treated w/w from First stage treated wastewater holding Lagoon is taken into the second stage ETP for further treatment. Final treated w/w (i.e. RO permeate is reused in plant while RO reject is discharged into deep sea through Discharge pipeline of the unit. During inspection, all treatment sections are found in operation and back wash of RO is going on. Provided all Existing ETP units are observed In operation.
- During visit, RO rejected water is being discharged from final outlet of ETP into deep sea, through pipeline.one sample of wastewater is collected from the final outlet of ETP.as per their submitted record, total effluent generation during Dec-20 to Feb 21 month 73970 KL, 77537 KL and 80993 KL respectively. RO permeate water from ETP recycled during Dec 20 to Feb 21 61825 KL, 65101 KL and 69525 KL respectively whereas RO rejected water discharged during Dec20 to Feb 21 12161 KL,12436 KI and 11468 KL respectively.
- Sludge deposition on tank internal walls is observed during visit. They have been instructed to remove deposited sludge in ETP tanks to increase efficiency.
- During inspection, heavy stack emission of SO2 gas and particulate matter is observed being emitted through stack attached to centralized scrubbing system of smelter plant 3. provided ESPs are found not working. only centralized alkali scrubber is observed in operation. stack sampling is carried out for probable pollutants like SO2 and PM during inspection. They have been instructed to operate provided APCMs properly and efficiently during regular operation and start-up/shut down & cleaning operation period to avoid heavy stack emission. they have also been instructed to evaluate the efficiency and adequacy of all provided ESPs.
- Heavy fugitive emission of SO2 gas is also observed through leakages at various location of duct line of smelter plant 3, during visit. eye and nose irritation is felt due to heavy SO2 gas emission in work zone area of smelter plant 3. They have been instructed to rectify all leakages of duct line to avoid fugitive gas emission.
- Actual results of parameters like Particulate matter and SO2 are not reflected in OCEMS of stacks attached to centralized scrubbing system of smelter plant 3. other results of OCEMS have not been furnished by person contacted during visit. they have been instructed to carry out frequent and regular calibration of OCEMS provided in different stacks of industrial plants.
- During inspection, stack sampling is carried out from stack attached to smelter plant 1 and SAP 1 through respective APCM. Provided all APCM In Smelter plant 1 and SAP 1 are observed in operation.
- During inspection, stack sampling is also carried out from stack attached to CPP 1 cfbc boiler 60 MW & CPP 3 cfbc boiler 35 MW for probable pollutants like SO2, NOx and PM.



TRUE COPY

- Dusting is observed at various location of construction site area in factory premises. they have been instructed to sprinkle water regularly during construction activity to suppress the dust emission.
- During visit, all APCM attached to DAP and phosphoric acid plant are observed not in operation as both plants are closed since April 2020. They have been instructed to submit time bound action plan for modification/upgradation of DAP and H<sub>3</sub>PO<sub>4</sub> plant.
- During visit, installation of wind breaking wall in coal storage/handling area is going on. five nos. bag filters for coal crusher plant are observed newly installed but still to be commissioned. about 35,000 MT coal is stored in coal handling area. water sprinkling system in periphery of coal handling area is not provided. they are using movable water sprinkler/fogger machine to suppress the dusting. Distance between the two heaps of coal is not maintained as per coal handling guide lines. they have been instructed to implement coal handling guidelines properly in coal handling area. they have also been instructed to submit time bound action plan for the same.
- During inspection, Ambient air monitoring is carried out, in down wind direction (SW to NE), at 16-hectare land area (behind the centralized scrubbing system of smelter plant 3).
- During visit, copper slag and Construction & Demolition waste (C & D waste) is observed being dumped in open land area (16-hectare area) located north side of smelter plant 3. leachate generated due to dumped copper slag is observed being accumulated in three small wastewater ponding. one sample of leachate wastewater and copper slag are collected from the said location. they have been instructed to lift left over copper slag which was previously dumped from said area to dedicated storage area.
- During inspection, copper slag is observed being dumped in about 10-meter width area of Reserved Forest, along the boundary wall of factory premises (outside the factory premises), behind the 16-hectare land area. Leachate wastewater is observed being accumulated in Reserved Forest area in the form of small wastewater ponding. (@ 2meter dia with 2 feet depth) which are generated due to previously discharged wastewater and dumped copper slag. Whitish spots due to salt precipitation/deposition is observed in huge area of Reserved Forest. One wastewater sample and dumped copper slag sample are collected from the Reserved Forest area. they have been instructed to lift previously dumped copper slag from Reserved Forest area with permission from concerned authority i.e. Forest Department and to ensure no copper slag should be dumped in Reserved Forest area. they have also been instructed to ensure preventive and corrective actions to prevent any seepage/discharge of wastewater or dumping of any solid waste in Reserved Forest area and CRZ area.
- During visit, Total 07 cells (cell no. 1 to 7) of captive solid waste land fill (SLF) site are found closed by means of earth filling only. SLF no. 8 A is under operation. Cell no. 8 B is observed under construction. ETP sludge, scrubber solid waste, spent catalyst generated from sulphuric acid plant, spent resin generated from DM plant and contaminated filter cloth are disposed of into SLF. Total 09 nos. water samples are collected from bore wells (test wells) of SLF site and one leachate wastewater sample is collected from leachate collection pit of SLF cell 8 A, during inspection. one dumped waste sludge sample is collected from SLF cell no. 8 A.

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- During visit, there is no generation of Phospho gypsum sludge presently as DAP and phosphoric acid plant is closed since April 2020. Present stock of Phosphogypsum sludge is about 1300000 MT in storage yard. Phosphogypsum sludge sent to various cement industries i.e. Ultra tech, ACC cement, Ambuja Cement through Sujal Logistics by railway and road transportation during Dec20 to Feb 21 115178 MT, 197265 MT & 213811 MT respectively. Garland drain is constructed in the periphery of phosphor gypsum storage yard. one collection well is connected to this garland drain. No wastewater discharge is observed from phosphor gypsum storage yard.
- Copper slag disposed during Dec 20 to Feb 21 as per submitted record 32202 MT, 46973 MT & 38852 MT respectively. Present stock of copper slag in copper slag storage yard is about 1446458 MT. They have sent copper slag to Ashoka Bulidcon for Vadodara- Mumbai Express highway construction during previous calendar year. presently, copper slag is sent to Ultratech Cement, India Cement, Gujarat Siddhi Cement and Saurashtra Cement.
- Fly ash is sent to cement industry Ultratech Cement and Kantheria Bricks through bulker. Fly ash sent during Dec 20 to Feb 21 4728 MT, 10867 MT & 9461 MT respectively. present fly ash stock is 1107 MT.
- During visit, it is observed that copper slag was utilized in constructed road near GMB Port area. one road is observed being constructed in creek area. Person contacted informed that this road was previously constructed by Sterling group for Jetty project. They have been instructed to furnish the details about utilization of copper slag in road construction in Dahej GMB Port area and also give clarification about the road constructed in creek area.
- They have been instructed to develop green belt and plantation area in periphery of factory premises to control dust emission.

### Crux for CTE amendment for proposed tertiary water recycling unit(TWRU)

- They have proposed to treat 700 KLD RO rejected water to TWRU unit. Discharge quantity of RO rejected water will be only 300 KLD after commissioning of TWRU. about 200 KLD wastewater of existing ETP will be remaining with sludge. about 1600 KLD RO permeate water of existing ETP will be recycled in plant after commissioning of TWRU. For that, they have already installed Tertiary water recycling unit(TWRU) consist of a) Equalization tank b) High rate solid contact clarifier(HRSCC) c) submerge UF d) SWRO e) De-aerator f) Crystallizer g) centrifuge. Newly installed TWRU is still to be commissioned.

Date: 20/03/2021

R.P. Buha A.H. Vasava R.R. Gaekwad N.D. Patel F.M. Modi

SSA

AEE

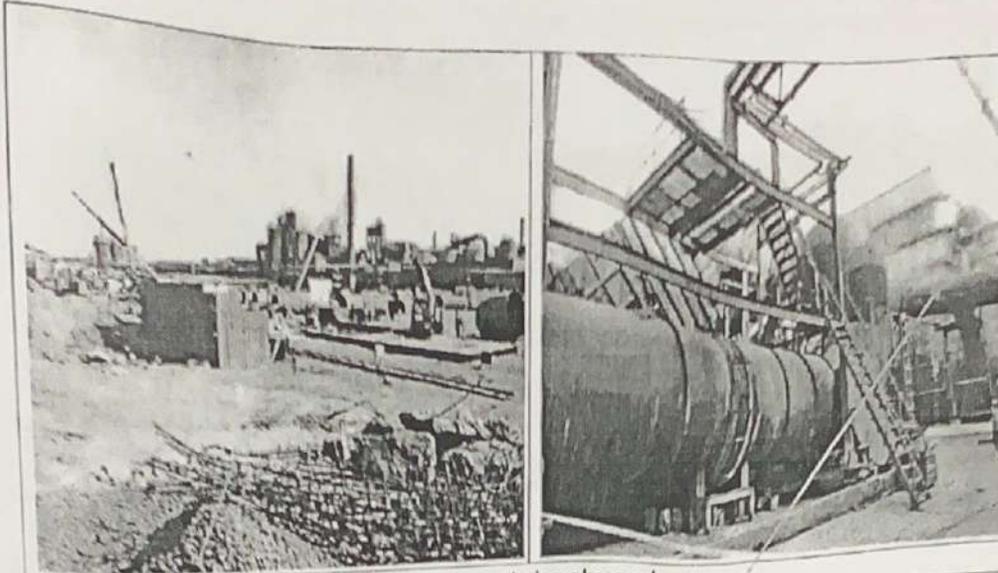
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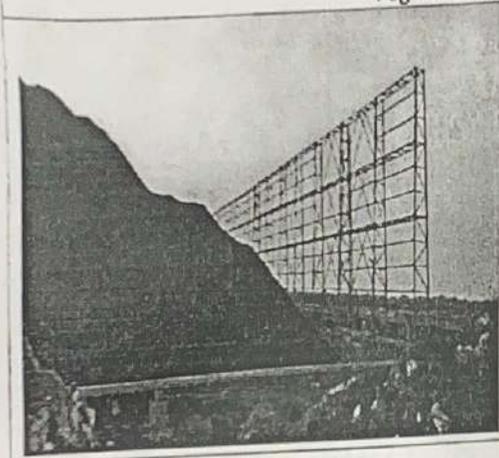
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Fugitive emission observed



Coal storage/handling area.



Whitish spots due to salt precipitation/deposition is observed in huge area of Reserved Forest and copper slag.

*[Signature]*  
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797



Copper slag dumped in Reserved Forest area



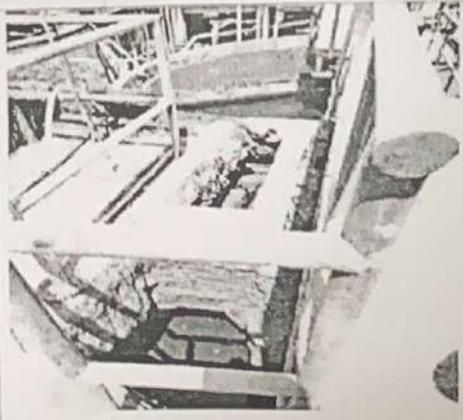
Leachate wastewater is observed being accumulated in Reserved Forest area



copper slag was utilized in constructed road near GMB Port area



Road construction in creek area



Sludge Deposition in internal wall of ETP tanks.



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Translation of IR date: 18/03/2021

**Gujarat Pollution Control Board**

(Inspection Report)- Air, Water, Hazardous

(Under section 23 of The Water Act 1974, Under section 24 of The Air Act 1981 and Under section 10 of EP Act 1986)**Compliance observed in this Inspections.**

Instructions in Previous Visits and reply	Insp Det	Instruction Status
There is moisture observed more than the criteria in the waste disposed by you. Provide the clarification that, whether the test is being done or not before the waste disposal. And shall be taken care of as the moisture waste will not go into your site.	596555(18/02/2021)	Partial Compliance

  
TRUE COPY

ADITYA BIRLA



HINDALCO

Acknowledgement copy  
267 1090  
GPCB Bharuch.

31.03.2021  
PCB ID 15178

To  
✓ The Regional Officer,  
The Gujarat Pollution Control Board  
Bharuch

**Sub:** Reply to the observations by the GPCB team from 18<sup>th</sup> to 20<sup>th</sup> of March, 2021  
**Ref:** GPCB Notice dated 18-20/03/2021 with observations

**Respected Sir,**

As you are kindly aware, we are the major producer of Copper in India. Out of total Indian refined copper market of 750 KT (FY'20 data), we produce about 322 KT which is about 43% of requirement in the country today. We are committed to play a pivotal role in fulfilling the country's vision of being "Atmanirbhar".

The custom smelter in our complex at Dahej (Gujarat) houses copper smelters, refineries, rod plants, by-product, captive power plant, a captive jetty and other utilities. The complex also includes metals recovery plant which produces precious metals which help in import substitution.

Copper is critical part of various industries like automobile, consumer durables, electrical equipment's, railways and wire and cable industries besides copper finds use in the manufacture of continuous copper rods for wire, cable and transformer industries, copper tubes for consumer durable goods and other applications in the form of alloys and sheets.

We are happy to inform you that we were ranked as the sector leader globally for its sustainability performance in the 2020 edition of the S&P Dow Jones Sustainability Indices (DJSI) Corporate Sustainability Assessment (CSA) rankings. This award has been achieved by Hindalco in stiff competition with other metal companies worldwide and demonstrates Hindalco's commitment towards sustainable production practices and environment friendly manufacturing.

In line with our policies, our vision is to establish best-in-class environment management practices in copper manufacturing. We have already taken up various Environment Improvement projects in the areas of air, water and waste management by adopting the 3Rs approach i.e. Reduce, Reuse and Recycle.

The improvement projects are guided by renowned and competent technology experts and Original Equipment Manufacturers such as Dupont, MECON, Maxflow, Thermax, SUEZ, Outotec, Recco Filters, etc and will help in achieving our vision for manufacturing excellence.

KAC  
5.4.2021

Regional Officer  
Gujarat Pollution Control Board  
BHARUCH

HINDALCO INDUSTRIES LIMITED  
(UNIT : BIRLA COPPER)  
P.O. : Dahej, Dist. Bharuch,  
Gujarat-392130, INDIA.  
Telephone +91 2641 256004-6  
Fax +91 2641 251002-3

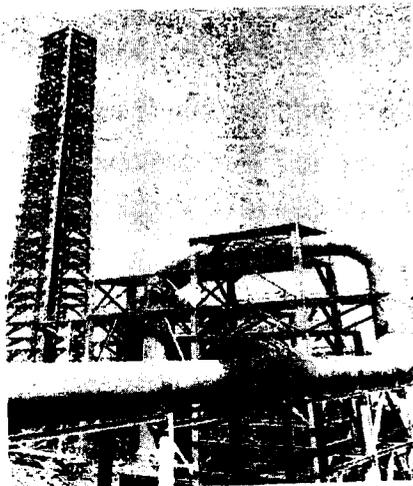
Regd. Ahura Centre, 1st Floor, B-Wing,  
Mahakali Caves Road, Andheri (East), Mumbai 400 093  
Telephone +91 22 6691 7000 / Fax : +91 22 6691 7001

Website www.hindalco.com  
Email hindalco@adityabirla.com  
Corporate Identity No. L27020MH1958PLC011238

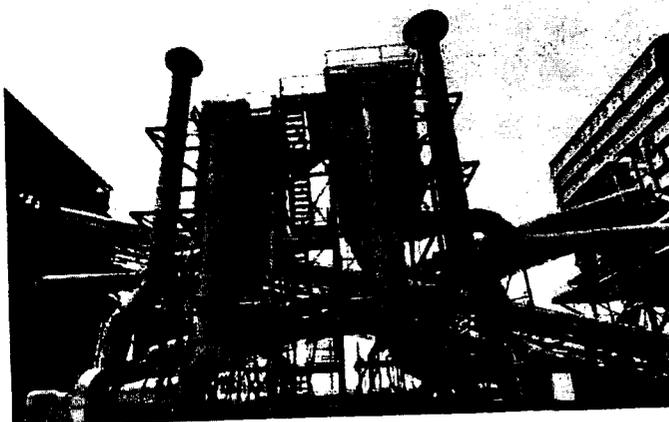
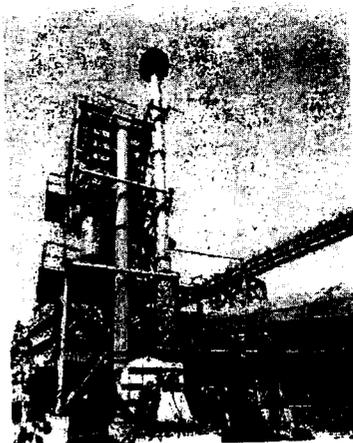
*In the last couple of years, we have taken constructive steps across Air, Water and Waste Management:*

**Air Quality Improvement Projects:**

**1. Tail Gas Scrubber-** We have commissioned Tail gas scrubber at our SAP3 (Sulphuric Acid Plant) in the year 2019, with world class technology from Dupont, USA with a total investment of around INR 34 crores. This is a high efficiency caustic based three stage scrubber system with a reverse jet technology. This scrubber is instrumental in providing sustainable solution to maintain SO<sub>2</sub> level at or better than prescribed standards.

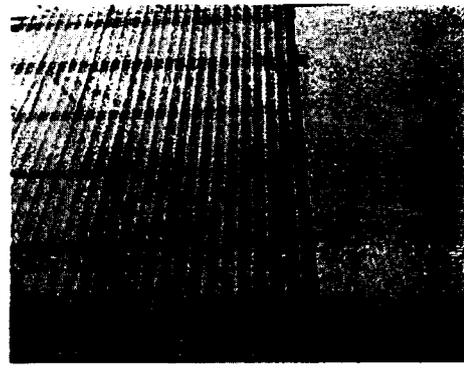
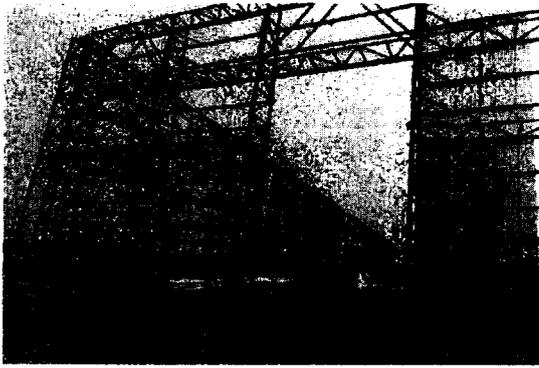


**2. Bag Filters Revamping in CPP-** In the year 2020, we have installed 4 Nos bag filters across the coal transfer towers with an investment to the tune of INR 7 crores to extract dust during coal transfer and the dust will be auto transferred back into coal feeding system. This will control the fugitive emissions due to coal handling and transportation from screening, crushing and up to coal feeding.



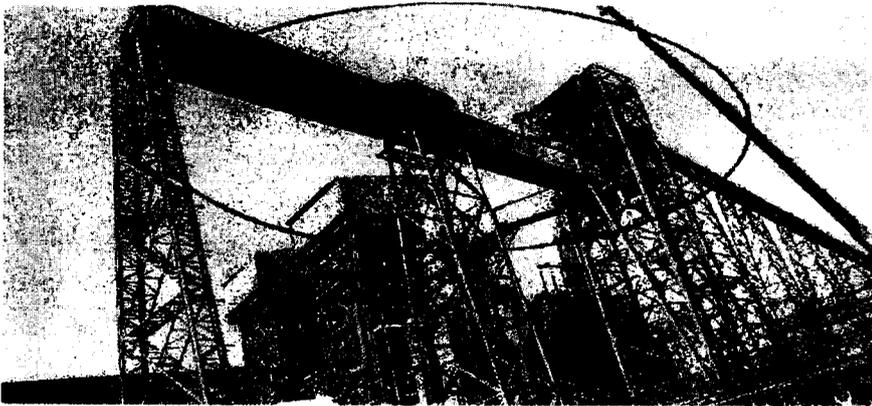
**3. Wind Fencing around Coal Storage Yard:**

In line with the Coal Handling Guidelines, we are implementing Wind Fencing around the coal Yard. Out of 1100m, around 700m the structure erection is already completed and remaining 400m erection is ongoing. This wind fencing project includes the garland drain and pits that will help us prevent fugitive dust emission and Ambient Air Pollution in the surrounding Coal Yard.



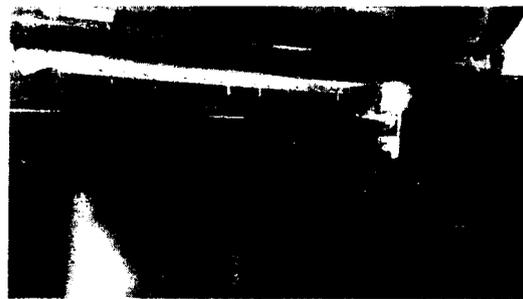
#### **4. Belt conveyor systems replacement:**

We are installing new conveyor systems with covered galleries to prevent spillages. About 30% of coal conveyor length is already under construction.



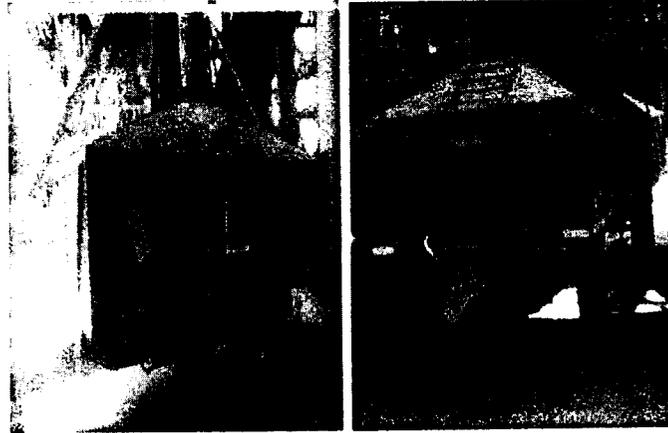
#### **5. Upgradation of Conveyor Scrapper systems**

We are upgrading more than 20 Nos of scrapping systems of conveyors with latest technologies to prevent dust generation from the return belt.



#### **6. Close loop handling of solids**

For all the dust generation handling points, we have implemented dust collection trolleys that collect with tractor to collect dust from chute directly instead of manual handling and transfer back into the process in close loop system.



**7. Dust Free Lime Dosing-** We have already installed a pneumatic system for lime handling instead of lime bags at our ETP Plant, thereby greatly mitigating fugitive emission and reduction of dusty spillages. This has eliminated the manual lime handling practice and helped in the control of fugitive emission and reduction of dust spillages.



#### **8. Major focus on Housekeeping**

In addition to above measures in last couple of years, we have made concerted efforts to implement 5s in letter and spirit. Sort and Set in Order are our prime focus areas. In terms of Good Housekeeping, in addition to manual cleaning activities, we are implementing pneumatic dust collection systems in plant operation areas. In road cleaning, we have implemented two Jumbo sized Vacuum Road Sweeping Machines for continuous sweeping and dust collection.



#### **9. Technological Upgradation of Gas Scrubbers**

We are working on upgradation of off-gas scrubbers in Smelter- 1 and Precious Metal Recovery plants. Basic Engineering study for treatment philosophy and downstream is completed with support of M/s MECON. Further, we are engaging US based copper technology expert for off-gas reduction at source, gas convey to primary handling system and bleed treatment process. The study is likely to be completed in about six months. Implementation basis the recommendation will be commenced immediately thereafter.

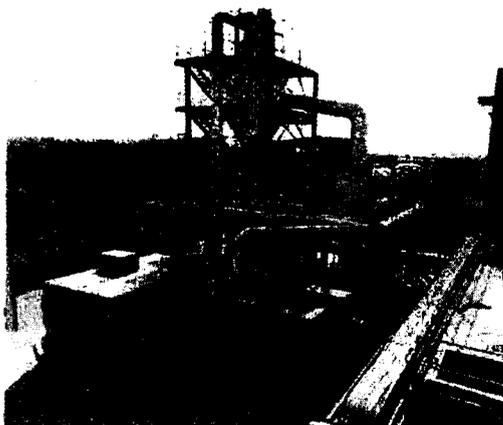
**10. Revamping of Smelter 1 Gas Collection system-** Water cooled hood has been implemented in three converters of Smelter 1 for efficient collection and further neutralization of off-gas generated during the charging process.

#### **Water Quality Improvement and Recycling Projects:**

**1. Secondary Water treatment** – We have installed Brackish Water RO for recycling of treated effluent from ETP which is enabling recycling of about 1600 KL/Day water.



**2. Tertiary Water treatment** – Further, to recycle Brackish water RO reject in the process we have completed the construction and erection of a Tertiary Water Recycling Unit (TWRU) with an investment of about of INR 60 crores. The commissioning and the start-up of the TWRU is under progress.



**3. Advanced Technology for Sewage Treatment:** We have also implemented a submerged Ultrafiltration based membrane bio-reactor Sewage Treatment Plant for treatment and recycling of sewage.



#### **4. Revamping of Drains – process and storm**

The unit has undertaken multiple projects for revamping of storm and process water drains inside and on the peripheral premises. More than 13km length of drains are revamped already and additional 5km is under progress which is likely to be completed by March, 2022.



#### **Improvements in Solid Waste Management**

##### **1. Phosphogypsum yard upgradation and monsoon covering:**

We have covered the entire gypsum yard (400X800m) with HDPE Liner in 2020 monsoon to avoid generation of leachate and to directly transfer the rainwater in storm drain. This has effectively arrested any possibility of potential contamination and as a best practice, we intend to continue this process in every monsoon herein.



##### **2. Value recovery from wastes**

As a part of manufacturing activities various kinds of wastes are generated. We have been making consistent efforts to apply the waste management hierarchy to all our waste. It is meant to reduce the quantity of waste produced through our operations, by following techniques to reuse and recycle generated waste in an environmentally friendly manner.

Apart from Copper Slag, Solid Wastes generated from our Smelters, Refinery and Precious Metal Recovery plants have valuable metals. We have been recycling these through smelters to recover such metals internally through various stages of smelting process. We have also got permission from Ministry of Environment, Forest, and Climate Change (MOEF&CC) for exporting Dore Slag, C- Slag, Dust & Lumpy and Liberator Cake materials to overseas authorised recyclers.

In addition to the above initiatives focused on environmental performance, we are undertaking major overhauling and revamps of two major production facilities.

1. Smelter 3 is under shutdown from 18<sup>th</sup> of March, 2021 for a period of roughly two months. During this period, we will be replacing and revamping major equipment at an overall cost of around INR 200 crores supported by major vendors such as GE, Tata, Siemens, Dupont, Howden and L&T.
2. The Fertilizer plant consisting of Phosphoric Acid Plant and Di-ammonium Phosphate plant (DAP) has been shut from 27<sup>th</sup> April, 2020. M/s. ThyssenKrupp, M/s Prayon (Belgium), M/s Incro (Spain) have been engaged to study the plant and recommend equipment and process upgradation to ensure sustainable plant operations. The finalization of the technical study and subsequent way-forward will take another 6 months.

Further to your visit dated 18.03.2021 and your subsequent observation notice, we would like to submit that we have taken up all your suggestions with due seriousness and developed a detailed project plan right from conceptualization to implementation and commissioning. Pointwise response to the observation notice is as under:

**Observation 1: Continuous seepage of acidic greenish colored wastewater is observed in SAP-1 area. Seeped wastewater is being accumulated in kachcha drain in about 15 m \* 0.5 m area with 3 feet depth. To lift seeped and wastewater to ETP and identify the source of seepage and rectify the same to prove seepage and percolation of acidic wastewater into underground storage.**

**Reply:** The observation is at sulphuric acid plant (gas processing and absorption area). The seepage noticed at the time of inspection was at the acid handling area, containment wall and floor joints. We would like to submit for your consideration that as a part of the planned maintenance, the repair activities were started couple of weeks back and is in progress. The source of acid has been identified to be on account of pipeline leakage in the contained acid handling area. The seepage was minor in nature and was accumulated in a single small puddle in that section and was pumped to ETP. During inspection itself the seepage was arrested.

We would submit for your consideration that the containment area is almost 30 mtr x 30 mtr. The inspection and deliberation on repair methodology demand exposing the floor and dyke joints. In order to do that, we had to break the outside area floor and expose 0.5 mtr area of floor in a section of 15 mtr at one side of the containment wall. The channel of 1 to 2 ft depth is not the drainage, rather it is the excavated area to expose the floor HDPE liner and containment wall joints. Temporary repairs have been done in two places and the one noticed during inspection was in the process of being attended to.

Further, we would submit for your consideration that this activity is part of the various planned upliftment and routine maintenance activities. We have already decided to completely reconstruct the entire area from bottom soil with an upgraded design and work in that direction has already started. The construction procedure involves taking out contaminated soil to stabilize and re-develop the entire area. In order to start the construction from virgin soil with a monolithic construction, HDPE liner and acid resistant tiles etc. This work is likely to be completed between three to nine months.

**Observation 2: To remove deposited sludge in ETP tanks to increase efficiency of ETP.**

**Reply:** In ETP 1, we have 5 Reaction Tanks with 4 in operation and 1 in maintenance. The Lime scale observed in Reaction Tank #3 during the visit is of regular size for any lime-based Reaction Tanks. We have not observed any drop in efficiency in pH Neutralization. There is cycle of 6 months with Reaction Tanks are taken-up subsequently for cleaning. Currently Reaction Tank #1 is under maintenance and #3 will be taken-up after this.

**Observation 3: ESPs attached to smelter plant 3 area observed not in operation during shutdown and cleaning period of smelter plant 3 furnace. Heavy dust & SO2 gas emission is observed being emitted through process vent of common scrubber of smelter plant 3. To operate provided APCMs properly and efficiently during regular operation and startup/shutdown & cleaning operation period to avoiding heavy stack emission.**

**Reply:**

During plant running conditions, when the Smelter feed is on, the off gas from furnaces are passed through Waste Heat Recovery Boiler and ESP. After dust removal in ESP, SO2 rich gas are taken into SAP for gas cleaning, drying and catalytic conversion of SO2 to SO3, followed by absorption in water to produce Sulphuric Acid (Dupont Technology). Post recovery of SO2 from the gases, the residual gas passes through the Tail Gas Scrubber (DuPont Dyna wave technology).

As mentioned earlier, Smelter 3 was under shutdown for conducting major revamp activities for a period of 57 days. During the visit, the shutdown was underway with feed having been stopped at 3:50 AM on 18.03.2021. Post the stoppage of feed, the liquid metal in the furnaces must be drained out and furnace to be subsequently cooled for man entry to undertake the overhauling jobs. For draining the molten metal, the burners have to be kept on which results into generation of residual flue gases. The volume of this residual gas is low and therefore the residual gas cannot entirely heat up the off-gas circuit above dew point. Due to this, the downstream off-gas circuit equipment (ESP and ducts) remains at a lower temperature than its dew point leading to acid condensation and associated equipment corrosion. During such condition if ESP is kept ON, it will create sparks, trip frequently and lead to short-circuit in emitting electrodes.

The recommendation from OEM (Alstom, now GE) is to stop electrical circuit of ESP when off-gas temperature drops below 230 Deg C. The SOP from OEM is attached herewith as **Annexure-01**.

The residual gas during shutdown cannot be taken to SAP because of lower SO2 concentration which will lead to fouling and fast deterioration of catalyst. Also, it will lead to problem of running the Wet ESP and lead to corrossions in the system and create more operational and environmental issues. Therefore, the residue gas was diverted to common scrubber as per the standard practice.

Taking into consideration the above two points, during shutdown the ESP electrical system is switched off as well as the off gases are not taken into the SAP and diverted to common scrubber.

The diversion duct to common scrubber is unutilised during normal operations and has a dead zone inside the duct before the diverting valve/damper. The dead zone may have had some dust deposits which travelled to the common scrubber when the residual gases were diverted from the main circuit to common scrubber. This dust carryover has impacted the common scrubber liquid circulation, thereby reducing the efficiency of scrubbing. The common scrubber and slurry dewatering system are not designed for such dust loads as dust accumulation in the duct and subsequent carry over was not envisaged.

The root cause of dust deposition at the dead zone of diversion duct is due to dust carryover from ESP over a period, whenever there is a drop in temperature of gas. In this annual shutdown, we have a thorough revival plan for ESPs. The replacement of both the ESPs are planned with technological upgradation as below.

- a) change in MOC from MS to more corrosion resistant stainless steel,
- b) conversion to high frequency transformers,
- c) upgrade design based on computational fluid dynamic study for better off-gas distribution,
- d) improvement in rapping system
- e) upgraded design with heaters in the hoppers for better temperature retention.

In addition to the above, we are taking steps to provide RAV (Rotary Air lock Valve) for periodic draining of dusts from ducts. This process is likely to be completed by end of May, 2021

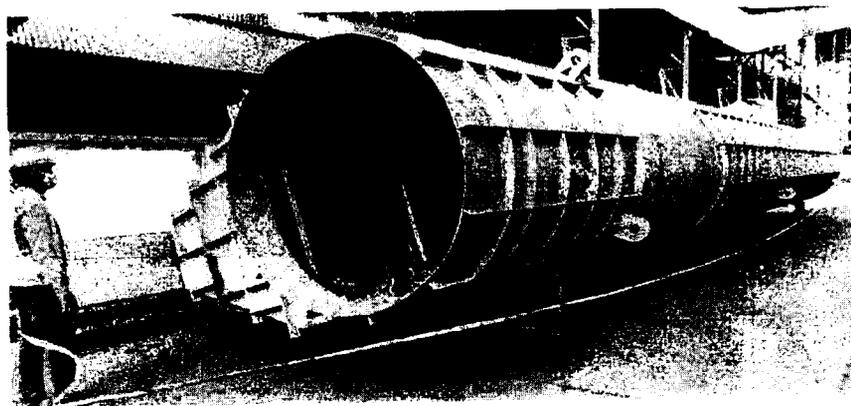
**Observation 4: During visit, heavy fugitive emission is observed from various location of duct line of smelter plant 3 due to leakage in duct line. To rectify all leakage to avoid fugitive emission.**

**Reply:** We have smelting furnaces in Smelter3 connected with sulphuric acid plant (SAP3) in the off-gas circuit with large diameter of ducts ranging from 1 to 2.4 meters. During normal operation the off gas goes to SAP for Sulphuric Acid Production.

The entire system including ducts from the smelter to Sulphuric Acid Plant is kept in negative pressure to ensure movement of off-gas from smelter to SAP and then to the stack via Tail Gas Scrubber. This ensures that there is no fugitive emission from the system during normal operation.

During the visit, the plant was under shutdown and the system was not under desired negative pressure. Due to thermal shocks during operations and consequent contraction and expansion of the ducting minor cracks occur in the bellows and expansion joints. As the system was not under negative pressure, some amount of residual gas escapes during the duration of shutdown activities. As part of the overall 57 days' shutdown, 200 metre length ducts and bellows is planned to be replaced and which we believe will address this situation from recurring.

During the visit, ongoing duct fabrication work was shown, and photographs of fabrication, prefabricated ducts and installation work is furnished below.



**Observation 5: Actual Results of parameters like PM & SO<sub>2</sub> are not reflected in OCEMS of stack of smelter 3 plant. Hence, frequent calibration of OCEMS provided in different stack should be done.**

**Reply:** Calibration of OCEMS is done every quarter as per the CPCB guidelines. However, we have called engineers from vendor organizations to check for any erratic results and re-calibrate the OCEMS sensors accordingly. This will be further validated after the Smelter 3 start-up.

**Observation 6: Evaluate the efficiency and adequacy of all provided ESPs.**

**Reply:** We have started evaluation of the efficiency of all ESPs in power plant internally and invited competent vendors for conducting technical evaluation. We will complete the study by 6 months and initiate necessary improvements as required.

**Observation 7: DAP & H<sub>3</sub>PO<sub>4</sub> plant are closed since April'2020 for carrying out modification work. Submit time bound action plan for modification/upgradation of DAP and H<sub>3</sub>PO<sub>4</sub> plant.**

**Reply:** H<sub>3</sub>PO<sub>4</sub> and DAP plants have been taken for maintenance/modernization shutdown since 27<sup>th</sup> April 2020. M/s. ThyssenKrupp, M/s. Prayon (Belgium), M/s. Incro (Spain) have been engaged to study the plant and recommend equipment and process upgradation to ensure sustainable plant operations. It will take another 6 months for finalizing the technical study and deciding on way forward. Further details as may be required will provided as required.

**Observation 8: To implement coal handling guidelines properly for coal storage yard. Also submit time bound action plan for the same.**

**Reply:** In-conformance with coal handling guidelines, we are executing following activities:

Activity	Status	Timeline
Installation of Wind Screen	North and west sides completed, South and East erection work in progress	June 2021
5 numbers of Bag filters at Conveyor transfer towers	3 Nos - erection completed. 2 Nos - erection in progress	3 Nos: June 2021 2 Nos: Dec 2021
Dust suppression using mobile mist canon	Completed	Completed in Dec 2020
Upgradation of Drain and Road	Ongoing	Mar 2022

**Observation 9: Regular water sprinkling should be carried out in construction area to prevent dusting.**

**Reply:** Dust observed during the visit was observed in Smelter 3 shutdown related fabrication area, the day of the visit was first day of annual shutdown of smelter 3. Mobile sprinkling system mobilization got delayed by a day but was implemented on the same day as the visit. Photograph of tanker Water Sprinkling is as below.



**Observation 10: Copper slag and C & D waste is observed being dumped in open land area (16-hectare area) located north side of smelter plant 3. To lift left over copper slag which was previously dumped from said area to dedicated storage area.**

**Reply:** The traces of leftover quantity are currently being cleaned up and surface compaction and dressing is under progress from the west end as observed during the visit at said location. More than 50% of the area has already been completed and remaining work is ongoing.

Construction and Demolition waste is kept for ongoing filling and levelling of the land and for road and other infrastructure construction will be completed by October, 2021.

**Observation 11: Copper slag is observed being dumped in about 10-meter width area of reserved forest, along the boundary wall of factory premises behind the 16 hector land area. Leachate wastewater is observed being accumulated in reserved forest area in the form of small wastewater pondings (@2meter diameter with 2 feet depth) generated due to previously discharged wastewater and dumped copper slag. Whitish spot due to salt precipitation is observed in large area of reserved forest.**

**To lift previously dumped copper slag from reserved forest area and also ensure no copper slag should be dumped in reserved forest area.**

**Reply:**

We would like to mention that there is no water discharge from our plant to Forest area. Our water management is through closed network of pipelines and dedicated drains with necessary treatment & recycling facilities.

In our continued commitment to ensure not only compliance to regulatory requirements as also being conscious of taking proactive steps towards conservation of environment

we are in the discussion with the forest department and shall initiate immediate steps to carry out such activity as may be permitted/required. We wish to assure that since the reinforcement of our premises as stated above no copper slag has escaped our premises inadvertently or otherwise.

**Observation 12: To ensure preventive and corrective actions to prevent any seepage/discharge of wastewater or dumping of any solid waste in reserved forest area and CRZ area.**

**Reply:** We have complete pipeline and drainage network for wastewater handling, treatment and recycling. We do not dispose any wastewater in open land.

Boundary wall on the northern side of Birla Copper was constructed a few years back. After this, there is no possibility of material crossing into forest area from Birla Copper premises.

**Observation 13: To furnish the details about utilization of copper slag in road construction in Dahej GMB port area and also give clarification about the same.**

**Reply:** We understand that during 2009-11, M/s Sterling Port Limited has procured Copper Slag from Birla Copper. On 20.03.2021 a joint visit was done by us along with GPCB officials to GMB port which is 12 km away from our plant. We further understand that discussions were held with local people and that the road was constructed by M/s Sterling Port Limited. We have observed that the said road is constructed by utilizing Copper Slag blended with Fly Ash which is in-line with the approvals and industry best practice.

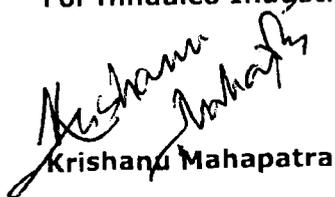
**Observation 14: Green Belt and plantation area should be developed in periphery of factory premises to control dust emissions.**

**Reply:** Currently, we have about 33% of area covered under Green Belt. Further to this, as mentioned above, we plan to develop significant area of 16 Ha into green belt. The area development is under progress and plantation will start in few months.

We are very much committed to abide by all the statutory rules and regulations under various environmental laws.

We remain available for any clarification that you may require, please do offer us an opportunity for personal hearing to put forward the explanations/clarifications provided by us.

For Hindalco Industries Limited

  
Krishanu Mahapatra

Head - Quality and Environment

Copy to:

Unit Head - Bharuch

GPCB-Gandhinagar

GPCB stack analysis report  
1 Stack attached to Parameters

GPCB visit date 18-03-2021 to 20-03-2021

Stack No.	Stack attached to	Parameter	Actual Result from GPCB	Permissible limit
1	Centralized Scrubbing System Smelter-III	PM	390.40mg/Nm <sup>3</sup>	150 mg/Nm <sup>3</sup>
		SO <sub>2</sub>	299.4 mg/ Nm <sup>3</sup>	40 mg/ Nm <sup>3</sup>
2	Main Stack Sulphuric Acid Plant-I	Acid Mist	195 mg/Nm <sup>3</sup>	25 mg/Nm <sup>3</sup>
		SO <sub>2</sub>	0.68 Kg/T	2.0 Kg per Ton of 100 % conc. Sulphuric Acid
3	Main stack Secondary Gas Scrubber of Smelter-I	SO <sub>2</sub>	87 mg/Nm <sup>3</sup>	40 mg/Nm <sup>3</sup>
4	Captive Power Plant (CPP-I) CFBC Boiler 35 MW	PM	131.05	150 mg/Nm <sup>3</sup>
		SO <sub>2</sub>	97.96	600 mg/Nm <sup>3</sup>
		NO <sub>x</sub>	BDL	600 mg/Nm <sup>3</sup>
5	Captive Power Plant (CPP-III) CFBC Boiler 60 MW	PM	89.35	50 mg/Nm <sup>3</sup>
		SO <sub>2</sub>	40.69	600 mg/Nm <sup>3</sup>
		NO <sub>x</sub>	BDL	300 mg/Nm <sup>3</sup>

<b>Waste water analysis results declared by GPCB for the visit dated 18 to 20th March</b>				
<b>Parameters</b>	<b>ETP-RO reject</b>	<b>16 ha land pond</b>	<b>SAP-1 internal drain</b>	<b>Lechate collection from SLF-8</b>
Temperature	30	30	30	30
pH	8.27	8.42	1.1	7.81
Colour	2.5	50	70	30
Total Dissolved Solids (TDS)	5044	25682	48124	8746
Suspended solids	4	198	656	24
Ammonical Nitrogen	BDL	BDL	29.68	31.36
Chloride	not given	8790	18630	not given
Chemical Oxygen Demand	270	94	651	27
Phenolic compounds	BDL	BDL	BDL	BDL
Copper	Inprocess	Inprocess	Inprocess	Inprocess
Lead	Inprocess	Inprocess	Inprocess	Inprocess
Arsenic	Inprocess	Inprocess	Inprocess	Inprocess
Mercury	Inprocess	Inprocess	Inprocess	Inprocess



Analysis report by GPCB during vist Dt. 18 to 20 March-21			
<i>Ambient Air quality monitoring at 16 ha land b/h SM-3</i>			
Parameters	GPCB Norms	UOM	Results obtained
SOx	80	microgram/m3	2.5
Mercury	Not given	PPB	In process
NOx	80	microgram/m3	15.8
RSPM	60	microgram/m3	276
Arsenic	Not given	microgram/m3	In process

Soil and solid waste analysis results declared by GPCB for the visit dated 18 to 20th March								
Sr No.	Parameters	Top surface soil collected from Reserved forest	Soil sample collected from Reserved forest	Soil sample collected near ponding at Reserved forest area	Copper slag sample collected from Reserved forest area	Copper slag sample collected from 16ha area	Copper slag sample collected from near GMB port area	Hazardous waste sludge sample collected from SLF site no.8A
1	pH	not given	7.42	7.42	7.11	7.20	6.87	7.04
2	Chemical Oxygen Demand	6.90	0.73	0.73	0.06	3.13	0.06	0.38
3	Phenolic compounds	BDL	<b>not given</b>	<b>not given</b>	not given	BDL	BDL	<b>not given</b>
4	Copper	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess
5	Lead	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess
6	Zinc	Inprocess	Inprocess	Inprocess	Inprocess	<b>not given</b>	<b>not given</b>	Inprocess
7	Asbestos	Inprocess	Inprocess	Inprocess	Inprocess	<b>not given</b>	<b>not given</b>	<b>not given</b>
8	Totak Organic Carbon	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess
9	Mercury	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess	Inprocess
10	Arsenic	<b>not given</b>	<b>not given</b>	<b>not given</b>	Inprocess	Inprocess	Inprocess	Inprocess



# ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ

સી-૧/૧૧૯/૩, ઝ.આઈ.ડી.સી., ફેઝ-૨, નર્મદાનગર, ભરૂચ-૩૯૨ ૦૧૫. ફોન : (૦૨૬૪૨) ૨૪૬૩૩૩  
ઈમેઈલ : ro-gpcb-bhar@gujarat.gov.in વેબ સાઈટ : www.gpcb.gujarat.gov.in

## તપાસ માટે દાખલ થવાની સૂચના (નોટીસ)

ID - 15178

તારીખ : ૨૦/૦૫/૨૦૨૧

પાણી અધિનિયમ ૧૯૭૪ની કલમ-૨૩, હવા અધિનિયમ ૧૯૮૧ની કલમ-૨૪ અને પર્યાવરણ (સુરક્ષા) અધિનિયમ - ૧૯૮૬ની કલમ-૧૦ હેઠળ અમોને મળેલ સત્તાની રૂએ અમો નીચે સહી કરનાર અમોને જરૂરી લાગે તેની સહાય લઈને તમામ સમયે નીચેના હેતુઓ માટે આપની જગ્યામાં દાખલ થવાનો અને તપાસ કરવાનો અધિકાર ધરાવીએ છીએ.

- (૧) અમોને સોંપેલા રાજ્ય બોર્ડ/કેન્દ્ર સરકારનાં કાર્ય બજાવવાના હેતુ માટે,
- (૨) આવા કોઈ કાર્યો બજાવવાના છે કે કેમ અને તેમ હોય તો કઈ રીતે તે બજાવવાના છે અથવા આ અધિનિયમ અથવા તે હેઠળ કરેલા નિયમોની અથવા આ અધિનિયમ હેઠળ બજાવેલી કોઈ નોટીસની, કરેલા કોઈ હુકમની, આદેશની અથવા આપેલા કોઈ અધિકારપત્રની કોઈ જોગવાઈનું પાલન કરવામાં આવી રહ્યું છે કે પાલન કરવામાં આવ્યું છે કે કેમ તે નક્કી કરવાના હેતુ માટે,
- (૩) કોઈ સાધન સામગ્રી, ઔદ્યોગિક પ્લાન્ટ, રેકર્ડ, રજીસ્ટર, દસ્તાવેજ અથવા અન્ય કોઈ મહત્વની વસ્તુની તપાસ કરવા અને તેની કસોટી કરવાના હેતુ માટે અથવા જે જગ્યામાં તેને એમ માનવાને કારણ હોય કે આ કાયદા કે તે હેઠળ કરેલા નિયમો મુજબ કોઈ ગુનો કરવામાં આવ્યો છે, અથવા થવાની તૈયારીમાં છે, તેવી કોઈ જગ્યાની ઝડતી લેવા માટે અને તેને એમ માનવાને કારણ હોય કે આ કાયદા કે તે હેઠળ કરેલ નિયમો હેઠળ શિક્ષાપાત્ર કોઈ ગુનો કર્યાનો પુરાવો, તેવા સાધન સામગ્રી, ઔદ્યોગિક પ્લાન્ટ, રેકર્ડ, રજીસ્ટર, દસ્તાવેજ અથવા અન્ય કોઈ મહત્વની વસ્તુ કબજે લેવા માટે અમે નીચે જણાવેલ સમયે દાખલ થઈએ છીએ.

ઉદ્યોગ/કારખાનામાં દાખલ થવાનો સમય : ૧૩:૩૦ હવ તા. ૨૦ / ૦૫ / ૨૦૨૧  
અમારી સાથે સહાય માટે નીચેની વ્યક્તિઓ પણ છે.

1. N. D. Patel (AEE)
- 2.
- 3.

પ્રતિ,

M/S. Hindalco Industries Ltd  
Plot no. 2, 10, 11, 43...  
KSRC - Dahanu Twp  
.....

સહી :-.....  
અધિકારીનું નામ :- N. D. Patel.....  
હોદ્દો :- AEE.....

આ સૂચના (નોટીસ) મેળવનારની સહી :- DR. Sanjay Kumar  
NSSI. Vice President

TRANSLATION COPY

284-A

**GUJARAT POLLUTION CONTROL BOARD**

C-1/119/3, GIDC, Phase-2, Narmadanagar, Bharuch-392

015, Phone: (02642) 246333

Email: ro-gpcb-bhar@gujarat.gov.in

Website: www.gpcb.gujarat.gov.in

**Notice for entry for inspection purpose**

ID-15178

Date: 20/05/2021

I the undersigned have the authority to enter and inspect your premise for the below mentioned purpose, with assistance if required, under section 23 of the Water Act 1974, section 24 of the Air Act 1981 and section 10 of the Environment (Protection)-1875 act.

1. For the acts directed to be undertaken by the state board/Central government.
2. For deciding if any such acts are to be committed and are to be committed in what manner or under this particular act or under the relevant rules or notice served under the rules or for

**284-B**

compliance of any order, direction or power entrusted.

3. For inspection of any equipment, industrial plant, record, register, document or other important thing and for its examination or if at any place there is reason to believe that, such an offence is committed under the act or rules framed under the same or there is preparation of commission of such a crime, thereby for search of the premise and if there is reason to believe that, under this particular act or rules there are chances of finding any evidence for crime, such equipments, industrial plant, record, register, document or other important item that needs to be seized.

The time for entry into the industry/factory: 13-30 hours of 20/05/2021.

The below mentioned persons are present for my assistance:

1. N. D. Patel (AEE)
- 2.

3.

To,

M/s. Hindalco Industries Ltd.

Plot no. 2, 10, 11, 43

GIDC-Dahej Tal

Sd/- illegible

Name of officer: N. A. Patel

Designation: AEE

The signature of the person accepting this notice:

Dr. Sanjay Kumar, Ass. Vice President



# ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ

સી-૧/૧૧૯/૩, ઁ.આઈ.ડી.સી., ફેઝ-૨, નર્મદાનગર, ભરૂચ-૩૯૨ ૦૧૫. ફોન : (૦૨૬૪૨) ૨૪૬૩૩૩  
ઈમેઈલ : ro-gpcb-bhar@gujarat.gov.in વેબ સાઈટ : www.gpcb.gujarat.gov.in

પ્રતિ શ્રી

Hindalco Industries Ltd  
P. No: ૨, ૧૦, ૧૧, ૪૬  
At Post: Dahej - Lakhigam  
Tal: Vagda  
Bharuch

વિષય : આપના એકમની બોર્ડ દ્વારા લેવામાં આવેલ તા. ૨૦/૦૬/૨૦૨૧ નાં રોજની મુલાકાત.

શ્રીમાન,

આપના એકમની આજ રોજ મુલાકાત લેવામાં આવેલ તે દરમિયાન નીચે મુજબના મુદ્દાઓ ધ્યાનમાં આવેલ છે.

૧. સમુગાઉ તા. ૧૬/૦૩/૨૦૨૧ ના આપેલ સૂચનાઓ પૈકી બાકી રહેલ સૂચનાઓની પૂર્તતા કરવી.
૨. આપની ત્યાં જનરેટ થતાં જ્વલિ scale h/w ને copper & recycle અને આપવાનાં હો તો તે કોમિ આપવાના તેની detial & supporting documents એકે submit કરાવવું.

ઉત્તરોક્ત બાબતોની પૂર્તતા દિન-૩ માં કરી અત્રેની તેમજ ગાંધીનગર ખાતેની વડી કચેરીએ જાણ કરવા આથી જણાવવામાં આવે છે. સદર બાબતે પગલાં લેવામાં ચૂક થશે તો બોર્ડ દ્વારા કાયદાકીય પગલાં લેવામાં આવશે જેની નોંધ લેવી.

સ્વીકારનારનું નામ, હોદ્દો તથા સહી (Asst VP)

N.D. Patel  
AEE

N.A. Patel  
AEE

નકલ રવાના : સભ્ય સચિવશ્રી, ગુ.પ્ર.નિ. બોર્ડ કચેરી, ગાંધીનગર.....જાણ સારું

**Clean Gujarat Green Gujarat**

TRANSLATION COPY

285-A

**GUJARAT POLLUTION CONTROL BOARD**

C-1/119/3, GIDC, Phase-2, Narmadanagar, Bharuch-

392 015, Phone: (02642) 246333

Email: ro-gpcb-bhar@gujarat.gov.in

Website: www.gpcb.gujarat.gov.in

To,

Hindalco Industries Ltd.

P. No. 2, 10, 11, 43,

At Post: Dahej Lakhigam, Tal: Vagra, Bharuch

Subject: The visit by board on 20/05/2021 at your  
unit.

Sir,

Your unit was visited today and the below mentioned  
aspects came to light.

1. To comply by the instructions that are provided  
on 18/03/2021 but not yet complied.
2. To submit the details with supporting documents  
suggesting that which copper recycler are you to  
give the Mill Scale h/w generated at your  
premise.

**285-B**

You are to provide the above mentioned details within days-3 and provide the information at this office as well as Gandhinagar. In case if you fail to take steps in this regard, the legal steps shall be taken. Take note of the above.

Sd/- illegible

Dr. Sanjay Kumar (Asst. UP)

Sd/- illegible

N.D. Patel AEE

Sd/- illegible

N. A. Patel AEE

Copy sent: Member secretary, GPC Board office,  
Gandhinagar- for information purpose

*Clean Gujarat Green Gujarat*



Date: 24-05-2021  
PCB ID :15178

**To**  
**The Regional Officer**  
Gujarat Pollution Control Board,  
C-1/119/3, GIDC Phase – II,  
Narmada Nagar,  
Dist.-Bharuch – 392 015

**Sub:** Submission of reply based on observations by the GPCB team dated 20<sup>th</sup> of May,2021

**Ref: GPCB inspection dated 20<sup>th</sup> May 2021.**

**Dear Sir,**

This has reference to above mentioned subject; we are submitting herewith point wise reply as below:

**Observation No.1.** To complete the remaining instructions as per the instructions given on 18/03/2021.

**Reply No.1:** The status of instructions given during 18<sup>th</sup> March 2021 visit is attached as **Annexure-1**

**Observation No.2.** The Hazardous waste mill scale which is generated in your industries, which you are going to sell to copper recycler, submit the details of vendor to whom you are going to sell along with supporting documents (MOU).

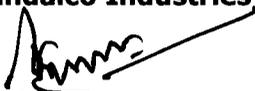
**Reply No.2.**

We have identified one authorised recycler for CCR mil scale and identification of more authorised recycler is under progress. The details about identified recycler is attached as **Annexure-2**

We are very much committed to abide by all the statutory rules and regulations under various environmental laws.

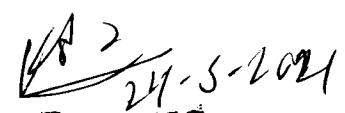
We remain available for any clarification that you may require, please do offer us an opportunity for personal hearing to put forward the explanations/clarifications provided by us.

**For Hindalco Industries Limited**

  
**Dr Sanjay Kumar**

**Head –Environment**

**Copy to:** Unit Head – Bharuch, GPCB-Gandhinagar

  
Post Received  
Gujarat Pollution Control Board  
BHARUCH

**Annexure-1**

**Observation 1: Continuous seepage of acidic greenish colored wastewater is observed in SAP-1 area. Seeped wastewater is being accumulated in kachcha drain in about 15 m \* 0.5 m area with 3 feet depth. To lift seeped and wastewater to ETP and identify the source of seepage and rectify the same to prove seepage and percolation of acidic wastewater into underground storage.**

**Reply submitted dated 25.03.2021:** The observation is at sulphuric acid plant (gas processing and absorption area). The seepage noticed at the time of inspection was at the acid handling area, containment wall and floor joints. We would like to submit for your consideration that as a part of the planned maintenance, the repair activities were started couple of weeks back and is in progress. The source of acid has been identified to be on account of pipeline leakage in the contained acid handling area. The seepage was minor in nature and was accumulated in a single small puddle in that section and was pumped to ETP. During inspection itself the seepage was arrested.

We would submit for your consideration that the containment area is almost 30 mtr x 30 mtr. The inspection and deliberation on repair methodology demand exposing the floor and dyke joints. In order to do that, we had to break the outside area floor and expose 0.5 mtr area of floor in a section of 15 mtr at one side of the containment wall. The channel of 1 to 2 ft depth is not the drainage, rather it is the excavated area to expose the floor HDPE liner and containment wall joints. Temporary repairs have been done in two places and the one noticed during inspection was in the process of being attended to.

Further, we would submit for your consideration that this activity is part of the various planned upliftment and routine maintenance activities. We have already decided to completely reconstruct the entire area from bottom soil with an upgraded design and work in that direction has already started. The construction procedure involves taking out contaminated soil to stabilize and re-develop the entire area. In order to start the construction from virgin soil with a monolithic construction, HDPE liner and acid resistant tiles etc. This work is likely to be completed between three to nine months.

**Current status:**

Redevelopment of entire area is under progress as per plan.

**Observation 2: To remove deposited sludge in ETP tanks to increase efficiency of ETP.**

**Reply submitted dated 25.03.2021:** In ETP 1, we have 5 Reaction Tanks with 4 in operation and 1 in maintenance. The Lime scale observed in Reaction Tank #3 during the visit is of regular size for any lime-based Reaction Tanks. We have not observed any drop in efficiency in pH Neutralization. There is cycle of 6 months with Reaction Tanks are taken-up subsequently for cleaning. Currently Reaction Tank #1 is under maintenance and #3 will be taken-up after this.

**Current Status:** Completed

**Observation 3: ESPs attached to smelter plant 3 area observed not in operation during shutdown and cleaning period of smelter plant 3 furnace. Heavy dust & SO<sub>2</sub> gas emission is observed being emitted through process vent of common scrubber of smelter plant 3. To operate provided APCMs properly and efficiently during regular operation and startup/shutdown & cleaning operation period to avoiding heavy stack emission.**

**Reply submitted dated 25.03.2021:**

During plant running conditions, when the Smelter feed is on, the off gas from furnaces are passed through Waste Heat Recovery Boiler and ESP. After dust removal in ESP, SO<sub>2</sub> rich gas are taken into SAP for gas cleaning, drying and catalytic conversion of SO<sub>2</sub> to SO<sub>3</sub>, followed by absorption in water to produce Sulphuric Acid (Dupont Technology). Post recovery of SO<sub>2</sub> from the gases, the residual gas passes through the Tail Gas Scrubber (DuPont Dyna wave technology).

As mentioned earlier, Smelter 3 was under shutdown for conducting major revamp activities for a period of 57 days. During the visit, the shutdown was underway with feed having been stopped at 3:50 AM on 18.03.2021. Post the stoppage of feed, the liquid metal in the furnaces must be drained out and furnace to be subsequently cooled for man entry to undertake the overhauling jobs. For draining the molten metal, the burners have to be kept on which results into generation of residual flue gases. The volume of this residual gas is low and therefore the residual gas cannot entirely heat up the off-gas circuit above dew point. Due to this, the downstream off-gas circuit equipment (ESP and ducts) remains at a lower temperature than its dew point leading to acid condensation and associated equipment corrosion. During such condition if ESP is kept ON, it will create sparks, trip frequently and lead to short-circuit in emitting electrodes.

The residual gas during shutdown cannot be taken to SAP because of lower SO<sub>2</sub> concentration which will lead to fouling and fast deterioration of catalyst. Also, it will lead to problem of running the Wet ESP and lead to corrossions in the system and create more operational and environmental issues. Therefore, the residue gas was diverted to common scrubber as per the standard practice.

Taking into consideration the above two points, during shutdown the ESP electrical system is switched off as well as the off gases are not taken into the SAP and diverted to common scrubber.

The diversion duct to common scrubber is unutilised during normal operations and has a dead zone inside the duct before the diverting valve/damper. The dead zone may have had some dust deposits which travelled to the common scrubber when the residual gases were diverted from the main circuit to common scrubber. This dust carryover has impacted the common scrubber liquid circulation, thereby reducing the efficiency of scrubbing. The common scrubber and slurry dewatering system are not designed for such dust loads as dust accumulation in the duct and subsequent carry over was not envisaged.

The root cause of dust deposition at the dead zone of diversion duct is due to dust carryover from ESP over a period, whenever there is a drop in temperature of gas. In this annual shutdown, we have a thorough revival plan for ESPs. The replacement of both the ESPs are planned with technological upgradation as below.

- a) change in MOC from MS to more corrosion resistant stainless steel,
- b) conversion to high frequency transformers,
- c) upgrade design based on computational fluid dynamic study for better off-gas distribution,
- d) improvement in rapping system
- e) upgraded design with heaters in the hoppers for better temperature retention.

In addition to the above, we are taking steps to provide RAV (Rotary Air lock Valve) for periodic draining of dusts from ducts. This process is likely to be completed by end of May, 2021.

**Current Status:**

Required RAV (Rotary Air Lock Valve) have been procured, installation will be completed within the ongoing shutdown.

**Observation 4: During visit, heavy fugitive emission is observed from various location of duct line of smelter plant 3 due to leakage in duct line. To rectify all leakage to avoid fugitive emission.**

**Reply submitted dated 25.03.2021:** We have smelting furnaces in Smelter3 connected with sulphuric acid plant (SAP3) in the off-gas circuit with large diameter of ducts ranging from 1 to 2.4 meters. During normal operation the off gas goes to SAP for Sulphuric Acid Production.

The entire system including ducts from the smelter to Sulphuric Acid Plant is kept in negative pressure to ensure movement of off-gas from smelter to SAP and then to the stack via Tail Gas Scrubber. This ensures that there is no fugitive emission from the system during normal operation.

During the visit, the plant was under shutdown and the system was not under desired negative pressure. Due to thermal shocks during operations and consequent contraction and expansion of the ducting minor cracks occur in the bellows and expansion joints. As the system was not under negative pressure, some amount of residual gas escapes during the duration of shutdown activities. As part of the overall 57 days' shutdown, 200 metre length ducts and bellows is planned to be replaced and which we believe will address this situation from recurring.

**Current Status:** Replacement of duct line and bellows are in progress and will be completed within the ongoing shutdown.

**Observation 5: Actual Results of parameters like PM & SO<sub>2</sub> are not reflected in OCEMS of stack of smelter 3 plant. Hence, frequent calibration of OCEMS provided in different stack should be done.**

**Reply submitted dated 25.03.2021:** Calibration of OCEMS is done every quarter as per the CPCB guidelines. However, we have called engineers from vendor organizations to check for any erratic results and re-calibrate the OCEMS sensors accordingly. This will be further validated after the Smelter 3 start-up.

**Current Status:** This will be further validated after start-up of Smelter 3.

**Observation 6: Evaluate the efficiency and adequacy of all provided ESPs.**

**Reply submitted dated 25.03.2021:** We have started evaluation of the efficiency of all ESPs in power plant internally and invited competent vendors for conducting technical evaluation. We will complete the study by 6 months and initiate necessary improvements as required.

**Current Status:** Technical evaluation of ESP efficiency is under progress and will be completed by August 2021. Due to COVID condition vendors are reluctant to travel and visit the site.

**Observation 7: DAP & H<sub>3</sub>PO<sub>4</sub> plant are closed since April'2020 for carrying out modification work. Submit time bound action plan for modification/upgradation of DAP and H<sub>3</sub>PO<sub>4</sub> plant.**

**Reply submitted dated 25.03.2021:** H<sub>3</sub>PO<sub>4</sub> and DAP plants have been taken for maintenance/modernization shutdown since 27<sup>th</sup> April 2020. M/s. ThyssenKrupp, M/s. Prayon (Belgium), M/s. Incro (Spain) have been engaged to study the plant and recommend equipment and process upgradation to ensure sustainable plant operations.

It will take another 6 months for finalizing the technical study and deciding on way forward. Further details as may be required will provided as required.

**Current Status:** Technical studies and way forward is under progress.

**Observation 8: To implement coal handling guidelines properly for coal storage yard. Also submit time bound action plan for the same.**

**Reply submitted dated 25.03.2021:** In-conformance with coal handling guidelines, we are executing following activities:

Activity	Current Status	Timeline
Installation of Wind Screen	North and west sides completed, South and East erection work in progress	June 2021
5 numbers of Bag filters at Conveyor transfer towers	3 Nos – erection completed. 2 Nos – erection in progress	3 Nos: June 2021 2 Nos: Dec 2021
Dust suppression using mobile mist canon	Completed	Completed in Dec 2020
Upgradation of Drain and Road	Ongoing	Mar 2022

**Observation 9: Regular water sprinkling should be carried out in construction area to prevent dusting.**

**Reply submitted dated 25.03.2021:** Dust observed during the visit was observed in Smelter 3 shutdown related fabrication area, the day of the visit was first day of annual shutdown of smelter 3. Mobile sprinkling system mobilization got delayed by a day but was implemented on the same day as the visit.

**Current status:** Completed.

**Observation 10: Copper slag and C & D waste is observed being dumped in open land area (16-hectare area) located north side of smelter plant 3. To lift left over copper slag which was previously dumped from said area to dedicated storage area.**

**Reply submitted dated 25.03.2021:** The traces of leftover quantity are currently being cleaned up and surface compaction and dressing is under progress from the west end as observed during the visit at said location. More than 50% of the area has already been completed and remaining work is ongoing.

Construction and Demolition waste is kept for ongoing filling and levelling of the land and for road and other infrastructure construction will be completed by October, 2021.

**Current Status:** Under progress as per the plan.

**Observation 11: Copper slag is observed being dumped in about 10-meter width area of reserved forest, along the boundary wall of factory premises behind the 16 hector land area. Leachate wastewater is observed being accumulated in reserved forest area in the form of small wastewater pondings (@2meter diameter with 2 feet depth) generated due to previously discharged wastewater and dumped copper slag. Whitish spot due to salt precipitation is observed in large area of reserved forest.**

**To lift previously dumped copper slag from reserved forest area and also ensure no copper slag should be dumped in reserved forest area.**

**Reply submitted dated 25.03.2021:**

We would like to mention that there is no water discharge from our plant to Forest area. Our water management is through closed network of pipelines and dedicated drains with necessary treatment & recycling facilities.

In our continued commitment to ensure not only compliance to regulatory requirements as also being conscious of taking proactive steps towards conservation of environment we are in the discussion with the forest department and shall initiate immediate steps to carry out such activity as may be permitted/required. We wish to assure that since the reinforcement of our premises as stated above no copper slag has escaped our premises inadvertently or otherwise.

**Current Status:** Under progress and impacted by COVID

**Observation 12: To ensure preventive and corrective actions to prevent any seepage/discharge of wastewater or dumping of any solid waste in reserved forest area and CRZ area.**

**Reply submitted dated 25.03.2021:** We have complete pipeline and drainage network for wastewater handling, treatment and recycling. We do not dispose any wastewater in open land.

Boundary wall on the northern side of Birla Copper was constructed a few years back. After this, there is no possibility of material crossing into forest area from Birla Copper premises.

**Current status:** Completed

**Observation 13: To furnish the details about utilization of copper slag in road construction in Dahej GMB port area and also give clarification about the same.**

**Reply submitted dated 25.03.2021:** We understand that during 2009-11, M/s Sterling Port Limited has procured Copper Slag from Birla Copper. On 20.03.202 a joint visit was done by us along with GPCB officials to GMB port which is 12 km away from our plant. We further understand that discussions were held with local people and that the road was constructed by M/s Sterling Port Limited. We have observed that the said road is constructed by utilizing Copper Slag blended with Fly Ash which is in-line with the approvals and industry best practice.

**Current Status:** Completed

**Observation 14:** Green Belt and plantation area should be developed in periphery of factory premises to control dust emissions.

**Reply submitted dated 25.03.2021:** Currently, we have about 33% of area covered under Green Belt. Further to this, as mentioned above, we plan to develop significant area of 16 Ha into green belt. The area development is under progress and plantation will start in few months.

**Current Status:** The land development work in 16 ha area is almost 40% completed, Plantation layout has been finalised. The sapling and other materials are being procured. The plantation will be started shortly.

**RED Category**

Renewal Consent to be applied  
before 120 days of validity period

292 1115

**WEST BENGAL POLLUTION CONTROL BOARD**

'Paribesh Bhawan',  
Bldg. No. - 10A, Block-LA, Sector-III,  
Salt Lake City, Kolkata-700 098



Consent Letter Number: **CO83542**

Memo Number: **1734 /ka\_co\_r/14/0277**

**31.07.2018**  
Date

**Consent to Operate**

under **Application no. CO0000000199830**

Section 25 & 26 of the **Water (Prevention and Control of Pollution) Act, 1974** and  
Section 21 of the **Air (Prevention and Control of Pollution) Act, 1981.**

The West Bengal Pollution Control Board (hereinafter referred to as State Board) under the provisions of Section 25 & 26 of the Water (Prevention and Control of Pollution) Act, 1974, as amended and Section 21 of the Air (Prevention and Control of Pollution) Act, 1981, as amended, and Rules and Orders made thereunder, hereby grants its consent to:

**Eastern Dyechem Pvt. Ltd.,**

**WEST BENGAL**

(Address of Regd. office/Head/Office/City Office)

(hereinafter referred to as Applicant) for its unit located at **164, Das Para, East Deyrajpur,**

**P.O: East Deyrajpur, Kolkata - 700129, P.S: Madhyamgram, Madhyamgram Municipality Ward**

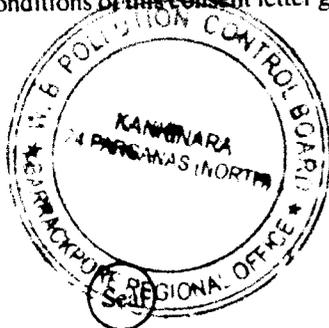
(Detailed address of the manufacturing unit)

for a period from **the date of issue** **1/8/2023**

to operate the industrial unit and to discharge liquid effluent and to emit gaseous effluent from the premises/land of the industrial unit, in accordance with the conditions as mentioned in the Annexure to this consent letter provided on any day at any instance the quantity and quality of liquid discharge and gaseous emission shall not exceed the permissible limit as specified in the Table I & II of this consent letter and in the Environmental (Protection) Act, 1986.

Breach of the conditions and / or failure to comply with the directions as set out in the Annexure shall render the applicant liable for prosecution under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981.

The State Board reserve the right to revoke, withdraw or make any reasonable variation / change / alter the conditions of this consent letter giving one month's notice to the applicant.



For and on behalf of the State Board

*[Handwritten Signature]*

**Senior Environmental Engineer**  
Member Secretary / Sr. Env. Engg. (Barrackpore Regional Office)  
West Bengal Pollution Control Board  
Barrackpore Regional Office



**Pass Book for Procurement of Hazardous and Other Wastes**

Name and Address of the industry: EASTERN DYECHEM PVT LTD  
 Das Para, PO East Udayrajpur  
 PS Machhyangram North 24 Pgs  
 Pin - 700129

Telephone No: 25262545, 8240043009

Fax No: .....

E-mail Address: eastindia@rediffmail.com

Passbook No: BOC4943

Date of Issue: 20/11/2019

Validity of Authorization: No. 145/25(HW), 2290/2007  
 dt. 19.01.2019

issued under Hazardous & Other Waste (M&TBM) Valid upto: 31/12/2023

Rules, 2016

Type & Quantity of Hazardous & Other Waste(s) permitted for procurement and recycling :

Sl. No.	Hazardous & Other Wastes	Quantity (Tons Per Annum)
01	Copper Dress Copper Oxide mill scale, Copper cake and Residues, Waste Copper & copper alloys scrap (including copper wire scrap/copper with PVC sheathing including ISRI)	- 500 MTA - Five hundred)

Authorised Signatory & Seal

Dr. T. K. GUPTA  
 Chief Engineer

Planning & Waste Management Cell  
 West Bengal Pollution Control Board



05<sup>th</sup> August 2021  
PCB ID 15178

**To**  
**The Regional Officer,**  
**The Gujarat Pollution Control Board**  
**Bharuch**

**Sub:** Currents status of GPCB observations dated 18<sup>th</sup> to 20<sup>th</sup> of March 2021  
**Ref:** GPCB Visit dated 05<sup>th</sup> August 2021

The Pointwise updates to the observation dated 18.03.2021 is as under:

**Observation 1: Continuous seepage of acidic greenish colored wastewater is observed in SAP-1 area. Seeped wastewater is being accumulated in kachcha drain in about 15 m \* 0.5 m area with 3 feet depth. To lift seeped and wastewater to ETP and identify the source of seepage and rectify the same to prove seepage and percolation of acidic wastewater into underground storage.**

**Current Status:** Pipeline leakage attended, and seepage stopped by carrying out planned civil activities. The internal process drain has been changed from kachcha drain to RCC. As on date there is no acidic water in drain.

**Observation 2: To remove deposited sludge in ETP tanks to increase efficiency of ETP.**

**Current Status:** We are currently following a six-monthly cleaning cycle. The reaction tank no.1,4 and 5 are cleaned and in good condition, no.2 and 3 will be taken for cleaning as planned. We will revisit the current cleaning cycle of frequency based on process requirement.

**Observation 3: ESPs attached to smelter plant 3 area observed not in operation during shutdown and cleaning period of smelter plant 3 furnace. Heavy dust & SO<sub>2</sub> gas emission is observed being emitted through process vent of common scrubber of smelter plant 3. To operate provided APCMs properly and efficiently during regular operation and startup/shutdown & cleaning operation period to avoiding heavy stack emission.**

**Current Status:** Planned shutdown jobs completed in ESP, Bag houses including installation of RAV in ducts and all APCM are running properly. The Plant started on 18.06.2021 and currently operating in normal condition.

**Observation 4: During visit, heavy fugitive emission is observed from various location of duct line of smelter plant 3 due to leakage in duct line. To rectify all leakage to avoid fugitive emission.**

**Current Status:** Planned shutdown jobs completed in all ducts and there is no fugitive emission observed in duct line. The Plant started on 18.06.2021 and currently operating in normal condition.

*KOE*  
10-8-2021  
Post Received  
Gujarat Pollution Control Board  
BHARUCH

**Observation 5: Actual Results of parameters like PM & SO2 are not reflected in OCEMS of stack of smelter 3 plant. Hence, frequent calibration of OCEMS provided in different stack should be done.**

**Current Status:** The calibration of all OCEMS equipment are done as per CPCB guidelines and found running properly. Photo of Sm-3 OCEMS display is attached as **Annexure -1**

**Observation 6: Evaluate the efficiency and adequacy of all provided ESPs.**

**Current Status:** The Technical evaluation of powerplant ESPs completed, and report is attached as **Annexure-2**. Ordering of equipment for recommended actions is in progress.

**Observation 7: DAP & H3PO4 plant are closed since April'2020 for carrying out modification work. Submit time bound action plan for modification/upgradation of DAP and H3PO4 plant.**

**Current Status:** H3PO4 and DAP plants are still closed and not in operation. Finalization of way forward is in progress.

**Observation 8: To implement coal handling guidelines properly for coal storage yard. Also submit time bound action plan for the same.**

**Current Status :**

Activity	Status	Timeline
Installation of Wind Screen	Overall, 90% work completed	Nov, 2021
4 numbers of Bag filters at Conveyor transfer towers	Completed	Completed
Dust suppression using mobile mist canon	Completed	Completed
Upgradation of Drain and Road	Ongoing	Mar 2022

**Observation 9: Regular water sprinkling should be carried out in construction area to prevent dusting.**

**Current Status:** Mobile water sprinkling system is deployed and continued ( on non rainy days). Currently there is no major construction activities and no fugitive emission observed.

**Observation 10: Copper slag and C & D waste is observed being dumped in open land area (16-hectare area) located north side of smelter plant 3. To lift left over copper slag which was previously dumped from said area to dedicated storage area.**

**Current status:** Copper slag and C&D waste have been shifted to designated areas. phot attached as **Annexure- 3**.

**Observation 11: Copper slag is observed being dumped in about 10-meter width area of reserved forest, along the boundary wall of factory premises behind the 16 hector land area. Leachate wastewater is observed being accumulated in reserved forest area in the form of small wastewater pondings (@2meter diameter with 2 feet depth) generated due to previously discharged wastewater and dumped copper slag. Whitish spot due to salt precipitation is observed in large area of reserved forest.**

**To lift previously dumped copper slag from reserved forest area and also ensure no copper slag should be dumped in reserved forest area.**

**Current Status:** We have approached to Forest department on this subject and will update progress from time to time.

**Observation 12: To ensure preventive and corrective actions to prevent any seepage/discharge of wastewater or dumping of any solid waste in reserved forest area and CRZ area.**

**Current status:** Since 2011, we have constructed facilities such as boundary wall, proper drainage and pipeline network. This robust system ensures there is no seepage/discharge of wastewater or any waste dumping in surrounding reserve forest area, CRZ area or any other areas adjoining factory boundary.

**Observation 13: To furnish the details about utilization of copper slag in road construction in Dahej GMB port area and also give clarification about the same.**

**Current Status:** The details about utilization of copper slag in above mentioned road construction in Dahej GMB port area and related clarification is attached as **Annexure-4**.

**Observation 14: Green Belt and plantation area should be developed in periphery of factory premises to control dust emissions.**

**Current Status:** We are continuously involved in developing & expanding green belt in out premises. Our total plant area is 342 Ha and out of that our greenbelt cover is 117 Ha.

We have dedicated team for Horticulture and green belt development in plant premises. The plantation done during last financial year is 1676 Nos and during current financial year till July is 573 Nos. We have also started doing plantation in Northern periphery and the same will be completed within 5th June, 2022.

**For Hindalco Industries Limited**

**Thanking You**



**Dr. Sanjay Kumar**

**Head – Environment**

**Copy to:**

Unit Head – Bharuch

GPCB-Gandhinagar

Date: 05-Aug-'21

**Hindalco Industries Ltd Birla Copper Unit, Dahej, Dist-Bharuch****Online Continuous Emission Monitoring Systems attached to CPCB Portal**

Sr. No.	Stack Name	Parameter	OCEMS Result
1	Dore Furnace of PMR Plant	PM	21.5
		SO <sub>2</sub>	15.8
		No <sub>x</sub>	9.1
2	Suphuric Acid Preheater-I	PM	10.9
		SO <sub>2</sub>	19.2
		No <sub>x</sub>	1.1
3	Suphuric Acid Preheater-III	PM	20.8
		SO <sub>2</sub>	24.6
		No <sub>x</sub>	8.9
4	Captive Power Plant (CPP-I) CFBC Boiler 35 MW	PM	39.2
		SO <sub>2</sub>	54.8
		No <sub>x</sub>	21.5
5	Shaft Furnace of CCR Plant-I	PM	18.1
		SO <sub>2</sub>	0
		No <sub>x</sub>	0
6	Captive Power Plant (CPP-II) CFBC Boiler 15.34MW	PM	Plant stopped
		SO <sub>2</sub>	
		No <sub>x</sub>	
7	Shaft Furnace of CCR Plant-II	PM	Plant stopped
		SO <sub>2</sub>	
		No <sub>x</sub>	
8	Captive Power Plant (CPP-III) CFBC Boiler 60 MW	PM	29.4
		SO <sub>2</sub>	60.1
		No <sub>x</sub>	18.2
9	Shaft Furnace of CCR Plant-III	PM	16.7
		SO <sub>2</sub>	0
		No <sub>x</sub>	0
10	Anode Casting of Smelter-I	PM	31.6
		SO <sub>2</sub>	0
		No <sub>x</sub>	0
11	Main Stack Secondary Gas Scrubber of Smelter-I	SO <sub>2</sub>	19.2
12	Main Stack Slag Cleaning Furnace of Smelter-I	PM	14.1
		SO <sub>2</sub>	10.9
13	Main Stack Sulphuric Acid Plant-I	Acid Mist SO <sub>2</sub>	NIL 18.2
14	Slag Granulation of Smelter-I	SPM	13.1
15	Steam Dryer of Copper concentrate of Smelter-I	PM	21.5
		SO <sub>2</sub>	0
16	Centralized Scrubbing System Smelter-III	PM	18.6
		SO <sub>2</sub>	21.4

17	Sulphuric Acid Plant-III	Acid Mist SO <sub>2</sub>	NIL 10.2
18	PMR Plant Phase III	PM	20.3
		SO <sub>2</sub>	12.3
		No <sub>x</sub>	7.2

**Hindalco Industries Limited**  
**Unit: Birla copper**

**Technical Evaluation of ESP in Power Plant**

Hindalco Industries Limited has contact three expert agencies M/s Soil & Enviro Industries Ltd, M/s Helios Enfrapro and M/s VT Corp for Technical evaluation / feasibility study of existing ESP. The recommendation suggested by expert agency are as below:

1. Hopper heaters with thermostats and high- & low-level indicators for all hoppers are to be changed
2. Change Collecting Electrodes and its rapping spares for all fields.
3. Change Discharge Electrodes and its rapping spares for all fields
4. Replace Inlet / outlet Gas Distribution screen installation
5. Replace Purge Air Heater and Blower / seal air fan
6. Existing single phase Transformer sets are to be change by new 3-Phase Transformer / High Frequency Transformer sets
7. Gas Distribution testing is to be done.

Annexure-3

Slag designated storage area :



C&D waste designated storage area:



### Annexure-4

#### **Sale of Copper Slag to M/s Sterling Port Limited:**

In the year 2009 M/s Sterling Port had approached us for copper slag for road construction activity at their upcoming port near GMB, Dahej. The quantity sold to them from Dec'10 to July'11 is mentioned in the table below.

We understand that during 2009-11, M/s Sterling Port Limited has procured 79659 MT Copper Slag from Birla Copper for the said road construction.

<b>Sr. No</b>	<b>Year of dispatched</b>	<b>Month</b>	<b>Quantity ( MT)</b>
1	2009-10	December	8347.41
2		January	18553.18
3		February	770.23
4		March	7694.58
5	2010-11	April	13142.79
6		May	18947.73
7		June	10746.78
8		July	1456.25
9		August	Nil
<b>Total</b>			<b>79658.95</b>

#### **As per our Environmental Clearance, Copper Slag is to be used for construction of road and as building material.**

We have not sold any slag to M/s Sterling Port Limited after 2010-11. As the end use was proper, we have neither expected and nor come across any problem regarding road construction with copper slag.

#### **Copper Slag Non-hazardous Nature:**

##### **Conclusion of Industrial Toxicology Research Centre, Lucknow:**

The Copper Slag characteristic has been studied at Industrial Toxicology Research Centre, Lucknow. The conclusion of reports of Industrial Toxicology Research Centre states that Copper Slag waste acute and subacute study indicates that in 10% leachate of both the samples prepared in water or within the range of sediment samples did not show much difference in survival, reproductive behavioural observations, etc. as compared to control studies. Most of these parameters are not in alarming range, which can pose any hard to the fish and fish food organism, aquatic environment and it's ecosystem. Furthermore, the test results data on acute and subacute toxicity test performed of the 10% leachate of slag found to be safe when tested to freshwater unicellular green algae ( *Chlorella vulgaris*), macrophyte duckweed ( *Lemna minor*) water flea ( *Daphnia magna*), tabified or sludge worm ( *Tubifex tubifex*), common guppy fish ( *Poecilla reticulata*) and amphibians tadpole ( *Bufo melanostictus*). Sediment acute and subacute test also show that the slag samples are not toxic to the bottom dwelling test organism namely chironomid larvae ( *Chironomus tentamus*), pond snail ( *Viviparus bengalensis*) and tubified worm ( *Tubifex tubifex*)

### **Central Pollution Control Board Opinion:**

In the year of 2003 the Central Pollution control Board had also communicated to Gujarat Pollution control Board about the manufacturing process of primary copper and about slag as below.

Manufacturing process of "primary production of copper" is listed at sl. No.7 of the Schedule 1 of the H.W. (M&H) Rules 1989, as amended in May 2003. In the Column No.3 of the Schedule 1 hazardous wastes generated are listed. However, this do not include slag which is generated during the process of primary smelting for the production of copper. In this case, slag is generated during the separation phase of pyro-metallurgical reaction which takes place at about 1300 degree Celsius. At this stage, all toxic compounds (organic & inorganic) get mineralized. Therefore, slag generated by M/s Hindalco Industries Ltd, Dahej may be considered as non-hazardous waste unless it contains hazardous constituents beyond the limits stipulated in Schedule 2 of the HW Rules. Since the report by ITRC corroborates with the above, the slag may be considered as non-hazardous waste as far as M/s Hindalco Industries Ltd, Dahej, is concerned.

Thus on the basis of the above studies conducted at IRTC, it may be finally conclude that slag waste sample is environmentally safe and non toxic to aquatic fauna and flora.

### **Central Scientific Research Institute : Feasibility study of fine copper slag in road and structural fill applications study report for the utilisation of Copper :**

Different materials viz. fine copper slag, granular copper slag and fly ash were evaluated for their geotechnical characteristics. Fine copper slag was also mixed separately with granular copper slag and fly ash in the proportion of 25-75 % and their geotechnical characteristics were evaluated. Suitability of fine copper slag as a replacement of fine aggregate was also assessed by carrying out design of bituminous mixes and by carrying out volumetric analysis. The feasibility of its use for structural fill application was assessed by carrying out plate load test on fine copper slag-granular copper slag-fly ash mixes. Brief summary of the conclusions are given below:

1. Fine copper slag, granular copper slag and fly ash were observed to be non plastic and cohesionless materials in nature.
2. The geotechnical characteristics of fine copper slag satisfy the MORTH and MORD criteria for use as an embankment and sub grade material. Therefore, this material may be tried for the construction of experimental test track of limited.

length to study the performance of embankment and sub grade. However, this material has to be protected with cover soil on both side slopes to reduce the erosion as it is cohesion less material.

3. Fine copper slag + fly ash mix (75%) and fine copper slag +granular copper slag mixes (25-75%) satisfy the specification requirements as per MORTH and MORD criteria. Therefore, these mixes can also be tried for the construction of sub grade in an experimental test track.

4. Considering high values of CBR of mixes (fine copper slag + granular copper slag, 25-50 % fine copper slag), may be tried for the construction of experimental test track section in granular sub base layer.

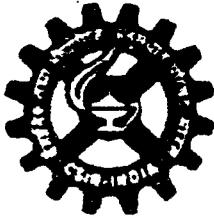
5. About 15 % of fine copper slag can be used as a replacement of fine aggregate in DBM (grade-2)

6. The high modulus of elasticity values and CBR of fine copper slag and its mixes with granular copper slag (50:50) indicate their suitability for structural fill application.

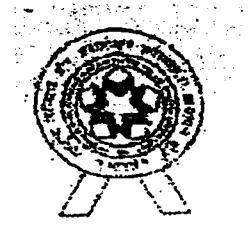
7. Utilization of fine copper slag and their mixes in embankment/sub grade/granular sub base/bituminous layers/structural fill construction will certainly create value addition in the form of avoiding accumulation of waste on fertile land at one end and mining of resources at the other end. This initiative shall have a tremendous value from environment conservation angle. This will create a win-win situation for the user, for the generator and for the society at large. Therefore, its utilization in road and structural fill applications is strongly recommended. The Utilization of fine copper slag and their mixes in embankment/sub grade/granular sub base/bituminous layers/structural fill construction will certainly create value addition in the form of avoiding accumulation of waste on fertile land at one end and mining of resources at the other end. This initiative shall have a tremendous value from environment conservation angle. This will create a win-win situation for the user, for the generator and for the society at large. Therefore, its utilization in road and structural fill applications is strongly recommended.

8. Before undertaking as test road construction, fine copper slag should be tested to ensure that it does not has heavy metal/contaminants which may leach out and pollute the environment

The report of Industrial Toxicology Research centre, Lucknow and communication from CPCB New Delhi to GPCB Gandhinagar and Chemical analysis test report of copper slag done by NABL and MOEFCC approved laboratory and CSRI report are attached as **Annexure-4A, Annexure-4B , Annexure-4C and 4d** respectively.



ITRC



NABL

ITRC Report Code - SP 15

Date of preparation - 19.04.2002

Total number of page- 52

# TOXICITY EVALUATION OF SLAG AND PHOSPHOGYPSUM

## FINAL REPORT

### *Industrial Toxicology Research Centre*

(Council of Scientific & Industrial Research)

P.B. No. 80, M. G. Marg, Lucknow- 226 001, India

Telephone: 0522- 211547; 221856 Fax: 228227, 211547

Email: [envis@id.eth.net](mailto:envis@id.eth.net); [itrc@sancharnet.in](mailto:itrc@sancharnet.in)

**APRIL 2002**

No. of copies *Four*  
This copy no. with location *1<sup>st</sup>, client*

*Handwritten notes:*  
12-10-02  
27.10.02

### General Conclusion

Slag waste and phosphogypsum acute and sub-acute study indicates that in 10% leachate of both the samples prepared in water or within the range of sediment samples did not show much difference in survival, reproductive, behavioral observations, etc. etc. as compared to control studies. Most of these parameters are not in alarming range, which can pose any hazard to the fish and fish-food organisms, aquatic environment and its ecosystems. Furthermore, the test result data on acute and sub-acute toxicity test performed of the 10% leachate of slag [SP-15(i)] and phosphogypsum [SP-15(ii)] found to be safe when tested to freshwater unicellular green algae (*Chlorella vulgaris*), macrophyte duckweed (*Lemna minor* L.), water flea (*Daphnia magna*), tubificid or sludge worm (*Tubifex tubifex*), common guppy fish (*Poecilia reticulata*), and amphibian tadpole (*Bufo melanostictus*). Sediment acute and sub-acute tests also show that the slag and phosphogypsum samples are not toxic to the bottom dwelling test organisms namely chironomid larvae (*Chironomus tentanus*), pond snail (*Viviparus bengalensis*) and tubificid worm (*Tubifex tubifex*).

Thus, on the basis of the above studies conducted at ITRC, it may be finally concluded that slag waste [SP-15(i)] and phosphogypsum [SP-15(ii)] samples are environmentally safe and non-toxic to aquatic fauna and flora, if released at lower concentrations in the aquatic reservoirs.

BS  
Khargaria  
19.04.2002  
Signature of Principal Investigator.

### Notes

- (i) The above results relate only to the test material indicated in item 1 and to the extend received and analyzed in the laboratory.
- (ii) The report shall not be reproduced in fragments without the written approval of ITRC.
- (iii) This report shall not be used for any purpose other than declared by the sponsor.



Annexure 306 4B 1129

केन्द्रीय प्रदूषण नियंत्रण बोर्ड  
CENTRAL POLLUTION CONTROL BOARD  
(पर्यावरण एवं वन मंत्रालय, भारत सरकार)  
(MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

No. B-12015/64/03-AS/

May 19, 2003

To

The Chairman,  
Gujarat Pollution Control Board,  
Paryavarán Bhavan,  
Sector-10A,  
Gandhinagar - 382 043.

Sub: By-Product /Solid waste from Copper Smelter and Phosphoric Acid  
Plant of M/s Hindalco Industries Ltd., Dahej (Gujarat)

Sir,

This has reference to letter No HIL/TIC/04 dated 29/4/03 from M/s Hindalco Industries Ltd, Dahej, addressed to you with a copy to this office vide their letter dated May 12, 2003 along with the Final Report from ITRC, Lucknow on the "Toxicity Evaluation of Slag and Phospho Gypsum". We have examined the meter and our opinion is as under:

1. Phosphogypsum :

The manufacturing process for "production of acids" is listed at sl. no. 17 of the Schedule 1 of the H.W. (M & H) Rules 1989, as amended in May 2003. As per these Rules, the residues, dusts or filter cakes and spent catalysts are hazardous wastes unless proved otherwise by the occupier based on sampling and analysis carried out by a laboratory recognised under the Environment (Protection) Act, 1986 not to contain any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified there in. In the instant case, the report submitted by ITRC indicate that the phosphogypsum waste generated do not contain hazardous constituents beyond the limits stipulated in Schedule 2 of the HW Rules. Thus, phosphogypsum waste generated by M/s Hindalco Industries Ltd, Dahej may be considered as non-hazardous waste.

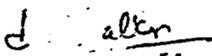
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परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली-110 032  
Parivesh Bhawan, East Arjun Nagar, Delhi-110 032  
दूरभाष/Tel: 2225792, 2432717 (कैबल)/Fax: 2225793, 2217079, 2411539, 2451932, 2204948  
ई-मेल/e-mail: cpcb@epa.nic.in • वेबसाइट/Website: www.cpcb.delhi.nic.in

## 2. Slag :-

Manufacturing process of "primary production of copper" is listed at sl. no. 7 of the Schedule 1 of the H.W. (M & H) Rules 1989, as amended in May 2003. In the Column No. 3 of the Schedule 1 hazardous wastes generated are listed. However, this do not include slag which is generated during the process of primary smelting for the production of copper. In this case, slag is generated during the separation phase of pyrometallurgical reaction which takes place at about 1300 degrees celsius. At this stage, all toxic compounds (organic & inorganic) get minerlised. Therefore, slag generated by M/s Hindalco Industries Ltd. Dahej may be considered as non-hazardous waste unless it contains hazardous constituents beyond the limits stipulated in Schedule 2 of the HW Rules. Since the report by ITRC corroborates with the above, the slag may be considered as non-hazardous waste as far as M/s Hindalco Industries Ltd., Dahej, is concerned.

Yours faithfully,

  
(D.B. Boralkar)

Assistant Secretary

✓  
Copy to : M/s Hindalco Industries Ltd  
Dahej. (Gujarat)

MoEF&CC (GOI) Recognized Environmental Laboratory under the EPA-1986 (12.01.2020 to 17.03.2023)

QCI-NABET Accredited EIA Consultant Organization

GPCB Recognized Environmental Auditor (Schedule-II)

ISO 9001:2015 Certified Company

ISO 45001:2018 Certified Company

### TEST REPORT

Report No.	URC /21/06/L-0400		
Name & Address of Customer	M/s. HINDALCO INDUSTRIES LIMITED. P.O.: Dahej, Dist. Bharuch, Gujarat – 392 130, INDIA.	Date Of Report	30/06/2021
		Customer's Ref.	--
Sample Details	Solid Sample (Slag – 1)	Location	--
Sample Qty.	1 kg.	Appearance	Black Colour
Sampling Date	23/06/2021	Sample Received Date	25/06/2021
Test Started Date	25/06/2021	Test Completion Date	29/06/2021
Sampled By	Party.	Sampling Method	--
UERL Lab ID. No.	21/06/L-0400		

### TEST RESULTS:

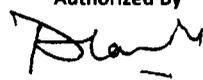
Sr. No.	Parameters	Unit Of Measurement	Results
1.	pH	--	6.67
2.	Chromium as Cr	mg/l	BDL(MDL:1.0)
3.	Manganese as Mn	mg/l	BDL(MDL:1.0)
4.	Iron as Fe	mg/l	8.341
5.	Nickel as Ni	mg/l	BDL(MDL:1.0)
6.	Copper as Cu	mg/l	17.71
7.	Zinc as Zn	mg/l	2.843
8.	Lead as Pb	mg/l	BDL(MDL:1.0)
9.	Phosphorus as PO4	mg/kg	0.065
10.	Arsenic as As	mg/l	BDL(MDL:0.05)
11.	Moisture	%	2.46

**Remarks:** BDL= Below Detection Limit, MDL = Minimum Detection Limit.

**Opinion & Interpretation (If required):** --

\*\*\*\*\* End of Report \*\*\*\*\*

Checked By  
  
 N. C. P.  
 (Nilesh C. Patel)  
 (Sr. Chemist)

Authorized By  
  
 (Nitin B. Tandel)  
 (Technical Manager)

MoEF&CC (GOI) Recognized Environmental Laboratory under the EPA-1986 (12.01.2020 to 17.03.2023)

QCI-NABET Accredited EIA Consultant Organization

GPCB Recognized Environmental Auditor (Schedule-II)

ISO 9001:2015 Certified Company

ISO 45001:2018 Certified Company

## TEST REPORT

Report No.	URC /21/06/L-0400		
Name & Address of Customer	M/s. HINDALCO INDUSTRIES LIMITED.	Date Of Report	30/06/2021
	P.O.: Dahej, Dist. Bharuch, Gujarat – 392 130, INDIA.	Customer's Ref.	--
Sample Details	Solid Sample (Slag – 1)	Location	--
Sample Qty.	1 kg.	Appearance	Black Colour
Sampling Date	23/06/2021	Sample Received Date	25/06/2021
Test Started Date	25/06/2021	Test Completion Date	29/06/2021
Sampled By	Party.	Sampling Method	--
UERL Lab ID. No.	21/06/L-0400		

### TEST RESULTS:

Sr. No.	Parameters	Unit Of Measurement	Results
1.	Sodium as Na	mg/kg	201.8
2.	Phosphorus as P	mg/kg	0.021
3.	Calcium as Ca	mg/kg	155.3
4.	Magnesium as Mg	mg/kg	235.3
5.	Potassium as K	mg/kg	9.7
6.	Sodium as Na <sub>2</sub> O	mg/kg	272
7.	Phosphorus as P <sub>2</sub> O <sub>5</sub>	mg/kg	0.048
8.	Magnesium as MgO	mg/kg	390.2
9.	Arsenic as AsO	mg/l	N.D.
10.	Potassium as K <sub>2</sub> O	mg/kg	11.69
11.	Calcium as CaO	mg/kg	213.5
12.	Chromium as CrO	mg/l	0.089
13.	Manganese as MnO	mg/l	0.171
14.	Iron as FeO	mg/l	10.73
15.	Nickel as NiO	mg/l	0.066
16.	Copper as CuO	mg/l	22.17
17.	Zinc as ZnO	mg/l	3.539
18.	Lead as PbO	mg/l	0.554
19.	Total Solid	%	97.54
20.	Fixed Solid	%	96.76
21.	Volatile Solid	%	0.77
22.	Density	Gm/cc	2.041

Remarks: BDL=, N.D. = Not Detected,

Opinion & Interpretation (If required): --

\*\*\*\*\* End of Report \*\*\*\*\*

Checked By

  
N. C. P.  
(Nilesh C. Patel)  
(Sr. Chemist)

Page No. 2

Authorized By

  
(Nitin B. Tandel)  
(Technical Manager)

UERL/CHM/F-2/05

Note: This report is subject to terms and conditions mentioned overleaf.

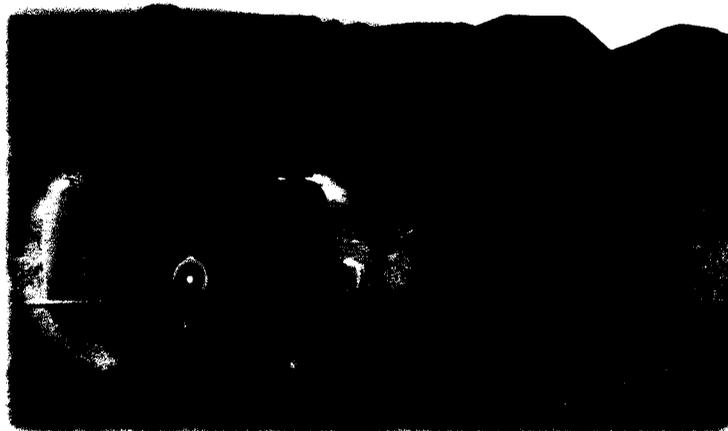


Final Report

**FEASIBILITY STUDY OF FINE COPPER SLAG IN  
ROAD AND STRUCTURAL FILL APPLICATIONS**

**SPONSORED BY**

**Hindalco Industries Ltd. Dahej, Gujrat**



**SUBMITTED BY**

**GEOTECHNICAL ENGINEERING DIVISION  
CENTRAL ROAD RESEARCH INSTITUTE, NEW DELHI**

**October 2012**

- About 15 % of fine copper slag can be used as a replacement of fine aggregate in DBM (grade-2) and BC (grade-2) mixes. Marshall Stability test results at OBC and volumetric analysis indicate its feasibility in the two layers. Hence, construction of test track and monitoring for a period of time is required before recommending for large scale field application.

#### *8.5 As a structural fill material*

- The high modulus of elasticity values (17000 – 21400 kPa) and CBR (7-11 %) of fine copper slag and its mixes with granular copper slag (50:50) indicate their suitability for structural fill application.

### **9. Conclusions**

Different materials viz. fine copper slag, granular copper slag and fly ash were evaluated for their geotechnical characteristics. Fine copper slag was also mixed separately with granular copper slag and fly ash in the proportion of 25-75 % and their geotechnical characteristics were evaluated. Suitability of fine copper slag as a replacement of fine aggregate was also assessed by carrying out design of bituminous mixes and by carrying out volumetric analysis. The feasibility of its use for structural fill application was assessed by carrying out plate load test on fine copper slag-granular copper slag-fly ash mixes. Brief summary of the conclusions are given below:

1. Fine copper slag, granular copper slag and fly ash were observed to be non plastic and cohesionless materials in nature.
2. The geotechnical characteristics of fine copper slag satisfy the MORTH and MORD criteria for use as an embankment and sub grade material. Therefore, this material may be tried for the construction of experimental test track of limited

length to study the performance of embankment and sub grade. However, this material has to be protected with cover soil on both side slopes to reduce the erosion as it is cohesion less material.

3. Fine copper slag + fly ash mix (75%) and fine copper slag +granular copper slag mixes (25-75%) satisfy the specification requirements as per MORTH and MORD criteria. Therefore, these mixes can also be tried for the construction of sub grade in an experimental test track.
4. Considering high values of CBR of mixes (fine copper slag + granular copper slag, 25-50 % fine copper slag), may be tried for the construction of experimental test track section in granular sub base layer.
5. About 15 % of fine copper slag can be used as a replacement of fine aggregate in DBM (grade-2) and BC mixes. However, construction of test track and monitoring for a period of time is required before recommending for large scale field application.
6. The high modulus of elasticity values and CBR of fine copper slag and its mixes with granular copper slag (50:50) indicate their suitability for structural fill application.
7. Utilization of fine copper slag and their mixes in embankment/sub grade/granular sub base/bituminous layers/structural fill construction will certainly create value addition in the form of avoiding accumulation of waste on fertile land at one end and mining of resources at the other end. This initiative shall have a tremendous value from environment conservation angle. This will create a win-win situation for the user, for the generator and for the society at large. Therefore, its utilization in road and structural fill applications is strongly recommended.

8. Before undertaking as test road construction, fine copper slag should be tested to ensure that it does not has heavy metal/contaminants which may leach out and pollute the environment.

## 10. References

1. Al-Jabri, Taha K., and Al-Ghassani, M. (2002). Use of copper slag and cement by-pass dust as cementations materials. *Cement, concrete and aggregates*, Vol.24, No.1, 7-12.
2. Das, B.M., A.J.Tarquin, and A.D. Jones (1993). Geotechnical properties of copper slag. *Transportation Research Record 941*, Washington D.C
3. IRC: SP: 58 (2001). Guidelines for use of fly ash in road embankments. Published by Indian Road Congress, New Delhi, India.
4. IS 1888(1982): Methods of load test on soils: Plate load test. Published by Bureau of Indian standard, New Delhi, India.
5. IS 2720(Part 4)-1985: Methods of test for soils: Part 4 Grain size analysis. Published by Bureau of Indian standard, New Delhi, India.
6. IS 2720(Part 5)-1985: Methods of test for soils: Part 5 Determination of liquid and plastic limit. Published by Bureau of Indian standard, New Delhi, India.
7. IS 1498-1970: Classification and identification of soils for general engineering purposes. Published by Bureau of Indian standard, New Delhi, India.
8. IS 2720(Part 40)-1977: Methods of test for soils: Part 40 Determination of free swell index of soils. Published by Bureau of Indian standard, New Delhi, India.
9. IS 2720(Part 3/ sec 2)-1980: Methods of test for soils: Part 3 Determination of specific gravity, section 2 fine, medium and coarse grained soils. Published by Bureau of Indian standard, New Delhi, India.
10. IS 2720(Part 8)-1983: Methods of test for soils: Part 8 Determination of water content- dry density relation using heavy compaction. Published by Bureau of Indian standard, New Delhi, India.
11. IS 2720(Part 16)-1973: Methods of test for soils: Part 16 Laboratory determination of CBR. Published by Bureau of Indian standard, New Delhi, India.
12. IS 2720(Part 15)-1986: Methods of test for soils: Part 15 Determination of consolidation properties. Published by Bureau of Indian standard, New Delhi, India.
13. IS 2720(Part 13)-1973: Methods of test for soils: Part 13 Direct shear test. Published by Bureau of Indian standard, New Delhi, India.
14. IS 2720(Part 17)-1986: Methods of test for soils: Part 17 Laboratory determination of permeability. Published by Bureau of Indian standard, New Delhi, India.
15. Leonards, G. A., and B. Bailey (1982). Pulverized coal ash as structural fill. *J. of Geotechnical Engineering Division, ASCE*, 108, 517-550.



Sample ID:304452 - Analysis Completion:09/06/2021

Copper Smelter / LAB Inward : 44076

## TEST REPORT

Date: 10/06/2021

Date: 10/06/2021

Test Report No. : 44076

1. Name of the Customer : Hindalco Industries Ltd - 15178
2. Address : 2,10,11,43 GIDC,AT POST. DAHEJ-LAKHIGAM,TAL:VAGRA  
DAHEJ-392130, Taluka : Vagra, District : Bharuch, GIDC : Dahej
3. Nature of Sample : REP-Representative/Grab, (Insp Type : APP-On Application)
4. Sample Collected By : Ms Patel. Nancy. A, AEE
5. Quantity of Sample Received : 5 lit
6. Code No. of the Sample : 304452
7. Date & Time of Collection & Inwarding : 20/05/2021 , (1400 to 1401) & 21/05/2021
8. Date of Start & Completion of Analysis : 21/05/2021 & 09/06/2021
9. Sampling Point : ## Final Outlet of the ETP ~ From Final outlet of ETP
10. Flow Details (Remarks) : ----
11. Mode of Disposal : -----
12. Ultimate Receiving Body : Deep sea though multiple diffuser system
13. Temperature on Collection : & pH Range on pH Strip :@7-8 on pH Strip
14. Carboys Nos for : Barcode & Color & Appearance :Light yellowish  
: Ind :38374.000 , Dom :2336.000 & Ind :4729.000 , Dom :1300.000
15. Water Consumption & W.W.G (KLPD) : 12 ,Cap No & Weight :

Sr	Parameter	Unit	Test Method	Range of Testing	Result
1	Colour	Pt.Co.Sc.	2120 B APHA Standard Methods 22nd edi. 2012	2 - to 99 Hazen & 1-50	<2.5
2	Copper	mg/l	3111 B APHA Standard methods 21st edi)	0.01-150 mg/l	0.33
3	Lead	mg/l	(3111 B APHA Standard methods 21st edi)	0.05-150 mg/l	0.265
4	Arsenic	mg/l	(3111 B APHA Standard methods 21st edi)	-	NA
5	MERCURY	mg/l	(3111 B APHA Standard methods 21st edi)		NA

Laboratory Remarks : Approved By:236-lab\_236 Dt: 10/06/2021

D. N. Vasadia, Lab Head

## Note :

- The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
- Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
- This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
- The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
- Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
- Permissible Limits: as per Schedule VI of EPA Rules, 1986 as ammended by Second and Third ammendment 1993 for Effluents
- Physicochemical and microbiological parameters, Std.Methods for Water and Waste Water- 23nd Edition by APHA.
- Bioassay test (for toxicity) -IS:6582:Part-2:2001; Reaffirmed 2007.



ANALYSIS REPORT FOR  
WATER / WASTE WATER SAMPLE

Gujarat Pollution Control Board  
Bharuch 315 1138  
C-1/119/3, GIDC Phase-2  
Narmadanagar  
Bharuch-392015  
Tele:(0264)2246333  
TC-7844

Sample ID:304452 - Analysis Completion:09/06/2021

Copper Smelter / LAB Inward : 44076

Accreditation Standards & NABL Certificate Details : -- / TC-7844 / -- / Validity: 10/09/2021

TEST REPORT

Test Report No. : 44076

Date: 10/06/2021

1. Name of the Customer : Hindalco Industries Ltd - 15178  
2. Address : 2,10,11,43 GIDC,AT POST. DAHEJ-LAKHIGAM,TAL:VAGRA  
DAHEJ-392130, Taluka : Vagra, District : Bharuch, GIDC : Dahej  
3. Nature of Sample : REP-Representative/Grab, (Insp Type : APP-On Application)  
4. Sample Collected By : Ms Patel. Nancy. A, AEE  
5. Quantity of Sample Received : 5 lit  
6. Code No. of the Sample : 304452  
7. Date & Time of Collection & Inwarding : 20/05/2021 , (1400 to 1401) & 21/05/2021  
8. Date of Start & Completion of Analysis : 21/05/2021 & 09/06/2021  
9. Sampling Point : ## Final Outlet of the ETP ~ From Final outlet of ETP  
10. Flow Details (Remarks) : ----  
11. Mode of Disposal : -----  
12. Ultimate Receiving Body : Deep sea though multiple diffuser system  
13. Temperature on Collection : & pH Range on pH Strip :@7-8 on pH Strip  
14. Carboys Nos for : Barcode & Color & Appearance :Light yellowish  
15. Water Consumption & W.W.G (KLPD) : Ind :38374.000 , Dom :2336.000 & Ind :4729.000 , Dom :1300.000  
16. Parameter : 12 ,Cap No & Weight :

Sr	Parameter	Unit	Test Method	Range of Testing	Result
1	Temperature	Centigrade	IS: 3025 (Part – 9) – 1984(Reaffirmed 2006)	Ambient oC - 60 oC	30
2	pH	pH Units	4500 H+ B APHA Standard Methods 22nd edi.2012	1 – 14 pH value As or	8.28
3	Total Dissolved Solids	mg/l	Gravimetric method. (2540 C APHA Standard Method	10 – 200000 mg/L	12744
4	Suspended Solids	mg/l	Gravimetric method. (2540 D APHA Standard Method	2 – 10000 mg/L	106
5	Ammonical Nitrogen	mg/l	1).Titrimetric method (4500 NH3 B & C APHA Standar	1 - 2000 mg/l.	BDL
6	Chemical Oxygen Demand	mg/l	APHA (22nd Edition)- 5220 B Open Reflux Method-2	5.0- 50000 mg/l	110
7	Phenolic Compounds	mg/l	4 Amino Antipyrine method without Chloroform Extra	0.1 – 50 mg/l	BDL

laboratory Remarks : Approved By:236-lab\_236 Dt.: 10/06/2021

D. N. Vasadia, Lab Head

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- Physicochemical and microbiological parameters, Std.Methods for Water and Waste Water- 23nd Edition by APHA.
- Bioassay test (for toxicity) -IS:6582:Part-2:2001; Reaffirmed 2007.



ANALYSIS REPORT FOR  
WATER / WASTE WATER SAMPLE

Gujarat Pollution Control Board

Bharuch  
C-1/119/3, GIDC Phase-2

Narmadanagar

Bharuch-392015

Tele:(0264)2246333



Sample ID:304450 - Analysis Completion:10/06/2021

Copper Smelter / LAB Inward : 44075

GPCB vst dt 20/5/21 TC-7844

Accreditation Standards & NABL Certificate Details : -- / FC-7844 / -- / Validity: 10/09/2021

TEST REPORT

Test Report No. : 44075

Date: 11/06/2021

1. Name of the Customer : Hindalco Industries Ltd - 15178  
 2. Address : 2,10,11,43 GIDC,AT POST. DAHEJ-LAKHIGAM,TAL:VAGRA  
 DAHEJ-392130, Taluka : Vagra, District : Bharuch, GIDC : Dahej  
 3. Nature of Sample : REP-Representative/Grab, (Insp Type : APP-On Application)  
 4. Sample Collected By : Ms Patel. Nancy. A, AEE  
 5. Quantity of Sample Received : 5 lit  
 6. Code No. of the Sample : 304450  
 7. Date & Time of Collection & Inwarding : 20/05/2021 , (1355 to 1356) & 21/05/2021  
 8. Date of Start & Completion of Analysis : 21/05/2021 & 10/06/2021  
 9. Sampling Point : From Final outlet of Unit STP ~  
 10. Flow Details (Remarks) : ---  
 11. Mode of Disposal : -----  
 12. Ultimate Receiving Body : Deep sea though multiple diffuser system  
 13. Temperature on Collection : & pH Range on pH Strip :@6-7 on pH Strip  
 14. Carboys Nos for : Barcode & Color & Appearance :Colourless  
 15. Water Consumption & W.W.G (KLPD) : Ind :38374.000 , Dom :2336.000 & Ind :4729.000 , Dom :1300.000  
 16. Parameter : 4 ,Cap No & Weight :

Sr	Parameter	Unit	Test Method	Range of Testing	Result
1	pH	pH Units	4500 H+ B APHA Standard Methods 22nd edi.2012	1 – 14 pH value As or	6.72
2	Suspended Solids	mg/l	Gravimetric method. (2540 D APHA Standard Method 2 – 10000 mg/L		8
3	B.O.D (3 Days 27oC)	mg/l	3 – Day BOD test. (IS 3025 (Part 44) 1993 Reaffirmed 05–50000 mg/l		10

Laboratory Remarks : Approved By:236-lab\_236 Dt.: 11/06/2021

D. N. Vasadia, Lab Head

Note :

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- Physicochemical and microbiological parameters, Std.Methods for Water and Waste Water- 23rd Edition by APHA.
- Bioassay test (for toxicity) -IS:6582:Part-2:2001; Reaffirmed 2007.



ANALYSIS REPORT FOR  
WATER / WASTE WATER SAMPLE

Gujarat Pollution Control Board

Bharuch

317 1140

C-1/119/3, GIDC Phase-2

Narmadanagar

Bharuch-392015

Tele:(0264)2246333

Sample ID:304450 - Analysis Completion:10/06/2021

Copper Smelter / LAB Inward : 44075

TEST REPORT

Test Report No. : 44075

Date: 11/06/2021

1. Name of the Customer : Hindalco Industries Ltd - 15178
2. Address : 2,10,11,43 GIDC,AT POST. DAHEJ-LAKHIGAM,TAL:VAGRA  
DAHEJ-392130, Taluka : Vagra, District : Bharuch, GIDC : Dahej
3. Nature of Sample : REP-Representative/Grab, (Insp Type : APP-On Application)
4. Sample Collected By : Ms Patel. Nancy. A, AEE
5. Quantity of Sample Received : 5 lit
6. Code No. of the Sample : 304450
7. Date & Time of Collection & Inwarding : 20/05/2021 , (1355 to 1356) & 21/05/2021
8. Date of Start & Completion of Analysis : 21/05/2021 & 10/06/2021
9. Sampling Point : From Final outlet of Unit STP ~
10. Flow Details (Remarks) : ----
11. Mode of Disposal : -----
12. Ultimate Receiving Body : Deep sea though multiple diffuser system
13. Temperature on Collection : & pH Range on pH Strip :@6-7 on pH Strip
14. Carboys Nos for : Barcode & Color & Appearance :Colourless  
: Ind :38374.000 , Dom :2336.000 & Ind :4729.000 , Dom :1300.000
15. Water Consumption & W.W.G (KLPD) : 4 ,Cap No & Weight :

Sr	Parameter	Unit	Test Method	Range of Testing	Result
1	Fecal Coliform	MPN/100 ml	2.9221 E APHA 22nd Edition IS 1622-1981	<1.8 to >1600 MPN/10	79

laboratory Remarks : Approved By:236-lab\_236 Dt.: 11/06/2021

D. N. Vasadia, Lab Head

Note :

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- Permissible Limits: as per Schedule VI of EPA Rules, 1986 as ammended by Second and Third ammendment 1993 for Effluents
- Physicochemical and microbiological parameters, Std.Methods for Water and Waste Water- 23nd Edition by APHA.
- Bioassay test (for toxicity) -IS:6582:Part-2:2001; Reaffirmed 2007.



ANALYSIS REPORT FOR  
WATER / WASTE WATER SAMPLE

Gujarat Pollution Control Board  
Bharuch  
C-1/119/3, GIDC Phase-2  
Narmadanagar  
Bharuch-392015  
Tele:(0264)2246333



Sample ID:304446 - Analysis Completion:10/06/2021

Copper Smelter / LAB Inward : 44074

GPB No. 11 21/5/2021 TC-7844

Accreditation Standards & NABL Certificate Details : -- / TC-7844 / -- / Validity: 10/09/2021

TEST REPORT

Test Report No. : 44074

Date: 11/06/2021

1. Name of the Customer : Hindalco Industries Ltd - 15178  
 2. Address : 2,10,11,43 GIDC,AT POST. DAHEJ-LAKHIGAM,TAL:VAGRA  
 DAHEJ-392130, Taluka : Vagra, District : Bharuch, GIDC : Dahej  
 3. Nature of Sample : REP-Representative/Grab, (Insp Type : APP-On Application)  
 4. Sample Collected By : Ms Patel. Nancy. A, AEE  
 5. Quantity of Sample Received : 5 lit  
 6. Code No. of the Sample : 304446  
 7. Date & Time of Collection & Inwarding : 20/05/2021 , (1335 to 1336) & 21/05/2021  
 8. Date of Start & Completion of Analysis : 21/05/2021 & 10/06/2021  
 9. Sampling Point : from final outlet of Township STP ~  
 10. Flow Details (Remarks) : ---  
 11. Mode of Disposal : on land for irrigation / plantation  
 12. Ultimate Receiving Body : Deep sea through multiple diffuser system  
 13. Temperature on Collection : & pH Range on pH Strip :@7-8 on pH Strip  
 14. Carboys Nos for : Barcode & Color & Appearance :Light yellowish  
 15. Water Consumption & W.W.G (KLPD) : Ind :38374.000 , Dom :2336.000 & Ind :4729.000 , Dom :1300.000  
 16. Parameter : 4 ,Cap No & Weight :

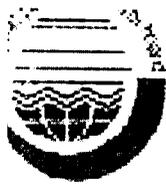
Sr	Parameter	Unit	Test Method	Range of Testing	Result
1	pH	pH Units	4500 H+ B APHA Standard Methods 22nd edi.2012	1 – 14 pH value As or	7.3
2	Suspended Solids	mg/l	Gravimetric method. (2540 D APHA Standard Method 2 – 10000 mg/L		8
3	B.O.D (3 Days 27oC)	mg/l	3 – Day BOD test. (IS 3025 (Part 44) 1993 Reaffirmed	05–50000 mg/l	11

Laboratory Remarks : Approved By:236-lab\_236 Dt.: 11/06/2021

D. N. Vasadia, Lab Head

Note :

- The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
- Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
- This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
- The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
- Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
- Permissible Limits: as per Schedule VI of EPA Rules, 1986 as ammended by Second and Third ammendment 1993 for Effluents
- Physicochemical and microbiological parameters, Std.Methods for Water and Waste Water- 23nd Edition by APHA.
- Bioassay test (for toxicity) -IS:6582:Part-2:2001; Reaffirmed 2007.



ANALYSIS REPORT FOR  
WATER / WASTE WATER SAMPLE

Gujarat Pollution Control Board  
Bharuch 319 1142

Sample ID:304446 - Analysis Completion:10/06/2021

C-1/119/3, GIDC Phase-2  
Narmadanagar  
Bharuch-392015  
Tele:(0264)2246333

Copper Smelter / LAB Inward : 44074

TEST REPORT

Test Report No. : 44074

Date: 11/06/2021

1. Name of the Customer : Hindalco Industries Ltd - 15178
2. Address : 2,10,11,43 GIDC,AT POST. DAHEJ-LAKHIGAM,TAL:VAGRA  
DAHEJ-392130, Taluka : Vagra, District : Bharuch, GIDC : Dahej
3. Nature of Sample : REP-Representative/Grab, (Insp Type : APP-On Application)
4. Sample Collected By : Ms Patel. Nancy. A, AEE
5. Quantity of Sample Received : 5 lit
6. Code No. of the Sample : 304446
7. Date & Time of Collection & Inwarding : 20/05/2021 , (1335 to 1336) & 21/05/2021
8. Date of Start & Completion of Analysis : 21/05/2021 & 10/06/2021
9. Sampling Point : from final outlet of Township STP ~
10. Flow Details (Remarks) : ---
  1. Mode of Disposal : on land for irrigation / plantation
  2. Ultimate Receiving Body : Deep sea through multiple diffuser system
  3. Temperature on Collection : & pH Range on pH Strip :@7-8 on pH Strip
  4. Carboys Nos for : Barcode & Color & Appearance :Light yellowish  
Ind :38374.000 , Dom :2336.000 & Ind :4729.000 , Dom :1300.000
5. Water Consumption & W.W.G (KLPD) : 4 ,Cap No & Weight :

Sr	Parameter	Unit	Test Method	Range of Testing	Result
1	Fecal Coliform	MPN/100 ml	2.9221 E APHA 22nd Edition IS 1622-1981	<1.8 to >1600 MPN/10	94

Laboratory Remarks : Approved By:236-lab\_236 Dt.: 11/06/2021

D. N. Vasadia, Lab Head

Note :

1. The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
2. Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
3. This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
4. The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
5. Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
6. Permissible Limits: as per Schedule VI of EPA Rules, 1986 as ammended by Second and Third ammendment 1993 for Effluents
7. Physicochemical and microbiological parameters, Std.Methods for Water and Waste Water- 23rd Edition by APHA.
8. Bioassay test (for toxicity) -IS:6582:Part-2:2001; Reaffirmed 2007.



## GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN

Sector-10-A, Gandhinagar 382 010

Phone : (079) 23222425

(079) 23232152

Fax : (079) 23232156

Website : www.gpcb.gov.in

### BY R.P.A.D.

### NOTICE OF DIRECTION UNDER SECTION-5 OF ENVIRONMENT (PROTECTION) ACT-1986 FOR THE VIOLATIONS OF THE HAZARDOUS & OTHER WASTE (MANAGEMENT & TRANSBOUNDARY MOVEMENT) RULES -2016 AS AMENDED FROM TIME TO TIME.

WHEREAS you M/S. HINDALCO INDUSTRIES LTD are having an industrial plant at Plot No: 2,10,11,43 GIDC Estate Dahej, At Po: Dahej-Lakhigam, Tal: Vagra, Dist: Bharuch.

AND WHEREAS the Gujarat Pollution Control Board has issued Consolidated Consent & Authorization AWH- 108216 valid up to 02/03/2026 subject to conditions mentioned therein for manufacturing Copper Cathode, Sulphuric Acid (98%), Oxygen (tech.), Phosphoric Acid (as P<sub>2</sub>O<sub>5</sub>) etc. products.

AND WHEREAS during the inspection of your industrial plant on **18/03/2021**, **19/03/21**, **20/03/21** and **05/08/2021** by the Authorized officer of the Board, it has been noticed that:

1. Copper slag is observed being dumped in about 10-meter width area of Reserved Forest, along the boundary wall of factory premises (outside the factory premises) behind the 16-hectare land area. As per analysis report of top surface soil sample collected from reserved forest area, copper concentration is 28.71 mg/l.
2. Copper slag and Construction & Demolition waste (C & D waste) is observed being dumped in open land area (16-hectare area) located north side of smelter plant.
3. AR of sample collected from Leachate generated due to dumped copper slag shows pH: 8.42, COD: 94 mg/l and AR of sample collected from Leachate wastewater observed being accumulated in Reserved Forest area shows pH: 8.42, COD: 2812 mg/l.
4. Analysis Report dated 18/03/2021 and dated 05/08/2021 of sample collected from Final outlet of ETP shows COD: 270 mg/l, SS: 106 mg/l which is more than CCA limit.
5. Analysis Report of Ambient Sampling Point ~ AAQM carried out at 16 hector land area shows, RSPM : 276 microgram / m<sup>3</sup> which is more than limit.
6. Analysis report of Samples collected from stacks shows unit is not complying emission norms prescribed in CCA as below:

Sample collected from	Parameters observed	Permissible Limit
Stack attached to centralized scrubbing system of smelter-III	PM: 390.4 mg/Nm <sup>3</sup> SO <sub>2</sub> : 299.32 mg/Nm <sup>3</sup>	PM: 150 mg/Nm <sup>3</sup> SO <sub>2</sub> : 40 mg/Nm <sup>3</sup>
Main stack attached to Sulphuric Acid Plant-I	Acid Mist: 195 mg/Nm <sup>3</sup>	Acid Mist: 25 mg/Nm <sup>3</sup>
Main stack attached to secondary gas scrubber of Smelter-I plant	SO <sub>2</sub> : 87 mg/Nm <sup>3</sup>	SO <sub>2</sub> : 40 mg/Nm <sup>3</sup>
Stack attached to CPP-I CFBC boiler 35 MW	PM: 131.05 mg/Nm <sup>3</sup>	PM: 100 mg/Nm <sup>3</sup>
Stack attached to CPP-III CFBC boiler 60 MW	PM: 89.35 mg/Nm <sup>3</sup>	PM: 50 mg/Nm <sup>3</sup>

**Clean Gujarat Green Gujarat**

ISO-9001-2008 & ISO-14001 - 2004 Certified Organisation

7. Sludge deposition on tank internal walls of ETP is observed.
8. Unit has partly complied coal handling guideline framed by Board.

Now, therefore, I A.V.SHAH, Member Secretary of Gujarat Pollution Control Board in exercise of the power conferred on file no. Legal-G-28 under section (5) of the Environment (Protection) Act -1986 propose to issue Notice of directions as under:

1. To close down your industrial activity under the section (5) of The Environment (Protection) Act - 1986.
2. To close down your industrial activity under said act if industrial activity runs by Captive Power Plant or D.G.Set.
3. To direct the concerned authority to disconnect electrical supply and Water supply of your unit.

You are hereby directed to reply within 15 days from the date of service of this notice failing which, it shall be presumed that you have nothing to say in this matter and appropriate action will be initiated against you for the conduct of the business of your industry, under the Environment (protection) Act 1986 for non-compliance of Hazardous and Other Waste (Management and Trans boundary Movement) Rules - 2016 & amendments thereof.

For and on behalf of  
Gujarat Pollution Control Board

*A.V. Shah*

(A.V.SHAH)  
MEMBER SECRETARY

**NO: GPCB/BRCH-B/CCA-310(20)/ID:15178/** \_\_\_\_\_ **Date: /09/2021**

**Issued to:**

- **M/s. HINDALCO INDUSTRIES LTD**  
Plot No: 2,10,11,43,  
GIDC Estate Dahej,  
At Po: Dahej-Lakhigam,  
Tal: Vagra, Dist: Bharuch.

**Copy To:**

- **The Regional Officer,**  
Gujarat Pollution Control Board,  
Regional Office, Bharuch..... for monitoring & verification.


 17<sup>th</sup> September 2021  
 PCB- 15178

To,

**Shri A.V. Shah**  
 Member Secretary  
 Gujarat Pollution Control Board  
 Paryavaran Bhavan, Sector-10-A  
 Gandhinagar- 382019

**Subject : Reply to Notice of Direction under Section 5 of Environmental protection Act-1986 dated 04<sup>th</sup> September 2021.**

**Reference : Visit of GPCB officials dated 18<sup>th</sup>-20<sup>th</sup> March 2021 & 5<sup>th</sup> August 2021**

Dear Sir,

This has reference to mentioned Notice of Direction and observations therein. We are submitting herewith pointwise reply as below:

#### Observation No. 1

**Copper slag is observed being dumped in about 10-meter width area of Reserved Forest, along the boundary wall of factory premises (outside the factory premises) behind the 16- hectare land area. As per analysis report of top surface soil sample collected from reserved forest area, copper concentration is 28.71 mg/L.**

#### Our Response:

As informed earlier vide letter dated 05.08.2021 and 26.08.2021, since the inadvertent incident in 2009 relating to solid waste/effluent run-off in the Reserved Forest area along the boundary wall (northern periphery), we had constructed the Boundary wall to arrest any such possibility going forward and also worked with the Forest Department for removal of the material. A perusal of the attached letters would also show that the Forest Department had levied compensation in the sum of INR 94,20,000/- which was paid by us in the year 2013 (**Annexure-A1**). As informed earlier vide letter dated 05.08.2021, we continue to be in discussion with the Forest Department for further remedial steps for carrying out soil amelioration including plantation and the recent letters exchanged with the Forest Department are attached for your review. We shall keep you informed of the progress in this regard. The request letter from Hindalco to Forest department, Forest Department's communication and our further communication to Forest department are attached as **Annexure A2, A3 and A4** respectively.

1/10/21  
 20-6-2021  
 Post Received  
 Gujarat Pollution Control Board  
 BHARUCH

Page 1 of 7

**Observation No. 2**

**Copper slag and Construction & Demolition waste (C & D waste) is observed being dumped in open land area (16-hectare area) located north side of smelter plant.**

**Our Response:**

The Copper slag and Construction & Demolition waste (C & D waste) observed located north side of smelter plant had been removed and shifted to designated areas.

**Observation No. 3**

**AR or sample collected from Leachate generated due to dumped copper slag shows pH: 8.42, COD: 94 mg/L and AR of sample collected from Leachate wastewater observed being accumulated in Reserved Forest area shows pH: 8.42, COD: 2812 mg/L.**

**Our Response:**

We understand that the results of AR Sample reflecting pH of 8.42 and COD of 94 mg/L is within the norms. In so far as, sample collected from the Reserve Forest area, while pH continues to be within the norms, higher COD in the test result (2812 mg/L) could possibly be due to stagnant rain water with possible interplay with organic material present at various stages of decomposition.

**Observation.4:**

**Analysis Report dated 18/03/2021 and dated 05/08/2021 of sample collected from Final outlet of ETP shows COD: 270 mg/L, SS: 106 mg/L which is more than CCA limit.**

**Our Response:**

The latest water sample collected by GPCB officer on dated 05/08/2021 is well within the limit. The same is enclosed as **Annexure-B1**.

The subsequent monthly analysis by MoEFCC approved and NABL accredited third party also within limit and is attached as **Annexure- B2**.

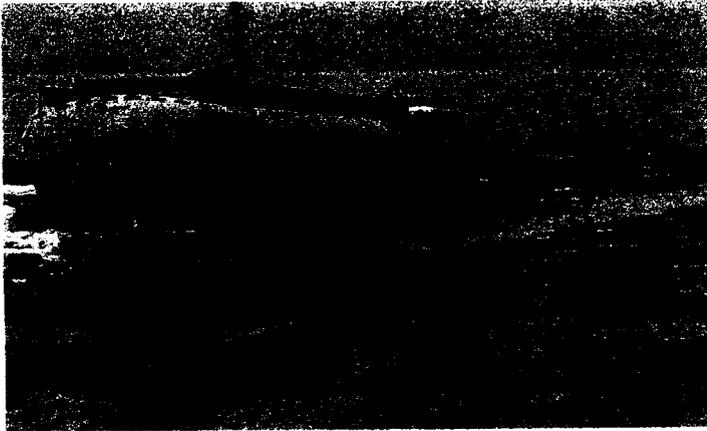
Our effluent passes through ultrafiltration and reverse osmosis membrane systems. The reject water after passing through ultrafiltration and reverse osmosis goes to final discharge. The entire reject water is passing through multiple membranes, which has a design that does not allow high COD and TSS reject water to pass through.

**Observation No. 5**

**Analysis Report of Ambient Sampling Point - AAQM carried out at 16 hector land area shows, RSPM : 276 microgram / m3 which is more than limit.**

**Our Response:**

The AAQM carried out at 16 hector land area shows, RSPM : 276 microgram / m<sup>3</sup> which is more than limit was due to temporary arrangement for fabrication and movement of material for ongoing scheduled Sm-3 shutdown work. The vehicular movement was more due to initiation of shutdown activities on that day and the incremental fugitive dust emission generated is due to increased vehicular movement for a short period of time. The frequency of water sprinkling through tanker was increased to minimize the dusting from the road due to vehicular movement. The photograph is enclosed as below.



Currently, the SM-3 shutdown work is over and required fabrication is finished. Vehicular movement in 16 Ha due to shutdown activities have been stopped and has reduced dusting from the road.

**Observation No. 6**

**Analysis report of samples collected from stacks shows unit is not complying emission norms prescribed in CCA.**

**a. Sample collected from Stack attached to centralized scrubbing system of smelter-III: Parameters observed PM: 390.4 mg/Nm<sup>3</sup> 502: 299.32 mg/Nm<sup>3</sup> against Permissible Limit PM: 150 mg/Nm<sup>3</sup> 502:40 mg/Nm<sup>3</sup>.**

**Our Response:**

As mentioned earlier, Smelter 3 was under shutdown for conducting major revamp activities for a period of 57 days. During the visit, the shutdown was underway with feed having been stopped at 3:50 AM on 18.03.2021. Post the stoppage of feed, the liquid metal in the furnaces must be drained out and furnace to be subsequently cooled for man entry to undertake the overhauling jobs. For draining the molten metal, the burners have to be kept on which results into generation of residual flue gases. The volume of this residual gas is low and therefore the residual gas cannot entirely heat up the off-gas circuit above dew point. Due to this, the downstream off-gas circuit equipment (ESP and ducts) remains at a lower temperature than its dew point leading to acid condensation and associated equipment corrosion. During such condition if ESP is kept ON, it will create sparks, trip frequently and lead to short-circuit in emitting electrodes.

The residual gas during shutdown cannot be taken to SAP because of lower SO<sub>2</sub> concentration which will lead to fouling and fast deterioration of catalyst. Also, it will lead to problem of running the Wet ESP and lead to corrossions in the system and create more operational and environmental issues. Therefore, the residue gas was diverted to common scrubber as per the standard practice.

Taking into consideration the above two points, during shutdown the ESP electrical system is switched off as well as the off gases are not taken into the SAP and diverted to common scrubber.

The diversion duct to common scrubber is unutilised during normal operations and has a dead zone inside the duct before the diverting valve/damper. The dead zone may have had some dust deposits which travelled to the common scrubber when the residual gases were diverted from the main circuit to common scrubber. This dust carryover had impacted the common scrubber liquid circulation, thereby reducing the efficiency of scrubbing. The common scrubber and slurry dewatering system are not designed for such dust loads, as dust accumulation in the duct and subsequent carry over was not envisaged.

We have already implemented the preventing action for evacuation of dust deposited in duct during the shutdown period. The two Rotary Air valves have been installed to evacuate the dust deposited in duct, which will not carry over to scrubber and finally to stack emission.

The subsequent monthly analysis by MoEFCC approved and NABL accredited third party also within limit and is attached as **Annexure- C**.

**b. Sample collected from Main stack attached to Sulphuric Acid Plant-1. Parameters observed Acid Mist: 195 mg/Nm<sup>3</sup> against Permissible Limit 25 mg/Nm<sup>3</sup>.**

**Our Response:**

Our Sulphuric Acid plant is designed with Dupont (Monsanto). Double contact double absorption (DCDA) process and runs with automatic control through DCS. We have been monitoring the stack periodically by thimble method (IS-11255 part-2) the analysis for the last few months and till today is as below:

Month	March, 21	April,21	May,21	June,21	July,21	Aug,21
Acid Mist (mg/Nm <sup>3</sup> )	BDL	BDL	BDL	BDL	BDL	BDL

The above mentioned monthly analysis by MoEFCC approved and NABL accredited third party also within limit and is attached as **Annexure- D**.

**c. Sample collected from: Main stack attached to secondary gas scrubber of Smelter-I plant. Parameters observed SO<sub>2</sub>: 87 mg/Nm<sup>3</sup> against Permissible Limit SO<sub>2</sub>: 40 mg/Nm<sup>3</sup>.**

**Our Response:**

On investigation, we have found one out of four circulation pump was choked. We have carried out necessary maintenance and all the four circulation pumps are fully operational now. The stack parameter monitored thereafter in the month of April-21 was within limit. The latest stack reports for the month of Aug-21 are also showing that the parameter is within limit. The copy of the April and Aug 2021 reports from M/s Greenleaf Envirotech Pvt. (NABL accredited and MOEFCC approved third party laboratory) are enclosed as **Annexure- E**.

**d. Sample collected from Stack attached to CPP-I CFBC boiler. Parameters observed PM: 131.05 mg/Nm<sup>3</sup> Permissible Limit.**

**Our Response:**

As per our earlier CCA with validity till last year, we are within limit in PM. After renewal of CCA, the limit has been reduced and we are in the process of upgrading our system to comply the same. We have conducted studies for our Boilers and ESPs to meet the reduced PM norms. Based on the study, we are upgrading the ESPs to comply with the norms. We have already placed order for modification of ESPs and the upgradation work will be executed by Jan'22.

However, during the of month April-May 2021 annual shutdown we have carried out maintenance and cleaning activities for the internals, which is helping to control the PM. The subsequent monthly analysis by MoEFCC approved and NABL accredited third party is attached as **Annexure- F**.

**e. Sample collected from Stack attached to CPP-III CFBC boiler 60MW: Parameters observed PM: 89.35 mg/Nm<sup>3</sup>, Permissible Limit PM: 50 mg/Nm<sup>3</sup>.**

**Our Response:**

As per our earlier CCA with validity till last year, we are within limit in PM. After renewal of CCA, the limit has been reduced and we are in the process of upgrading our system to comply the same. We have conducted studies for our Boilers and ESPs to meet the reduced PM norms. Based on the study, we are upgrading the ESPs to comply with the norms. We have already placed order for modification of ESPs and the upgradation work will be executed by Jan'22.

However, during the of month April-May 2021 annual shutdown we have carried out maintenance and cleaning activities for the internals, which is helping to control the PM. The subsequent monthly analysis by MoEFCC approved and NABL accredited third party is attached as **Annexure- G**.

**Observation no. 7**

**Sludge deposition on tank internal walls of ETP is observed.**

**Our Response:**

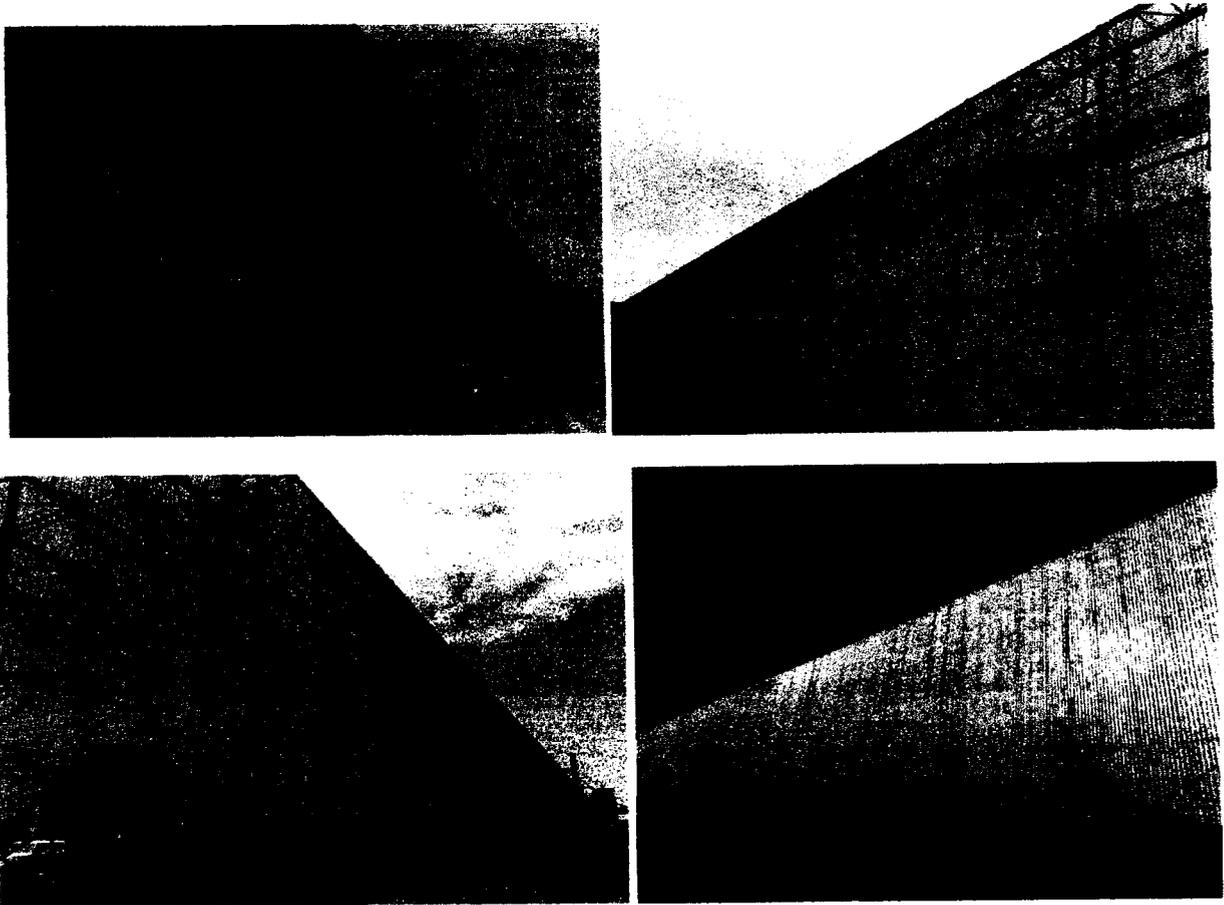
In ETP 1, we have 5 Reaction Tanks with 4 in operation and 1 in maintenance cleaning. The Lime scale observed in Reaction Tank #3 during the visit is of regular size for any lime-based Reaction Tanks producing calcium sulphate at lower pH. The ETP department maintains period cleaning schedule based on pH balancing and the cycle is of 6 months. Currently, all operating Reaction Tanks are in cleared condition.

**Observation no. 8**

**Unit has partly complied coal handling guideline framed by Board.**

**Our Response:**

Coal handling guideline related initiatives are implemented now. Photograph of Coal Yard is enclosed as below.

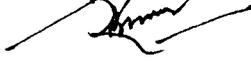


We have already taken up multiple Environment Improvement projects covering all the aspects i.e. water conservation, waste water generation & recycling, better controlled emission and mitigation of fugitive emission. We are very much committed to improve our environmental performance. Some environment projects are already implemented such as TGS-3, bag filter for transfer towers, wind screen and water-cooled hood in Smelter-1. Some of the other projects are in progress i.e. implementation of tertiary water recycling and evaporation system, and many other technology improvement projects for better environmental performance, spanning across the unit.

Sir, in case of any additional information / clarification, please do give us an opportunity to submit the same.

Thanking you,

**For Hindalco Industries Limited,  
Dahej Unit**



Dr. Sanjay Kumar  
Head - Environment

~~CC~~ GPCB Regional Office, Bharuch

જા.નં.:ક/સર્વ/વ.સ.પા./લ/૪૪૮૮-૬૦/૧૧-૧૨  
મદદનીશ વન સંરક્ષકની કચેરી,  
પેટા વન વિભાગ ભરૂચ  
ભરૂચ, તા. ૪/૦૩/૨૦૧૩.

પ્રતિ,  
હીન્દાલ્કો ઈન્ડ. લી.  
બીરલા કોપર મુનીટ,  
દહેજ.

Sub:- 1) Diversion of 16.00 Ha. of Reserved forest land for setting up of 60 MW Power plant DAP/NPK and Pap Projects along with Copper Smelter Expansion Project Phase -III in favour of Hindalco Industries in Bharuch District of Gujarat.

Ref:- 1. Ad.Pri.c.e.f, Land Letters No.FCA/10-15/06/5799-5801/  
dt.2-3-2013  
2. GOI letter No. 6 -GJC075/2006-BHO/319 dt. 21-2-13

જયભારત સહ ઉપરોક્ત વિષય અન્વયે જણાવવાનું કે ઉપરોક્ત પત્રથી મળેલ સુચના મુજબ ૫૦ હેક્ટરમાં દંડનીય વળતર વનીકરણ યુગ્મર એજન્સીના ખર્ચે હીગ્રેડેડ વન વિસ્તારમાં કરવાનું થાય છે. હાલમાં પ્રવર્તમાન ૧૯૧.૪૦ રૂ. ના દર મુજબ ૧ હેક્ટરમાં વાવેતર માટે અંકે ૧,૮૮,૪૦૦ રૂ. થાય છે. જે મુજબ ૫૦ હેક્ટર વિસ્તારમાં દંડનીય વળતર વનીકરણ માટે ૯૪,૨૦,૦૦૦ રૂ. (અંકે ચોરાણું છાપ વીસ હજાર) યુગ્મર એજન્સી દ્વારા નીચે જણાવ્યા મુજબના ખાતામાં જમાં કરવાના થાય છે. જે તાત્કાલિક ભરપાઈ મળી આવવા વિનંતી છે. જેથી આગળની કાર્યવાહી હાથ ધરી શકાય.

State Bank Of India Udhog Bhavan Branch Gandhinagar  
Account No : 66013423126  
In the Name of : NOIDA. OFFICER FCA GUJARAT

  
(સી.કે.પટેલ)  
મદદનીશ વન સંરક્ષક  
કેન્દ્રિય વન પેટા વિભાગ ભરૂચ

નકલ સાદર રવાના અધિક અગ્ર મુખ્ય વન સંરક્ષકની જમીન ગુ.રા. નાંપીનગર તરફ જણ સારૂ.  
નકલ સાદર રવાના મુખ્ય વન સંરક્ષકની સુરત વર્તુળ સુરત તરફ જણ સારૂ.

TRANSLATION COPY

329-A

OUTWARD NO. K/SURVEY/SP/8/1488-90/11-12

**The office of Assistant Forest Conservator**

Sub-Forest Division, Bharuch

Date: 04/03/2013

To,

Hindalco Industries Ltd.

Birla Copper Unit, Dahej

Subject: 1) Diversion of 16.00 Hs. OF Reserved forest land for setting up of 60 MW Power Plant DAP/NPK and Pap Projects along with Copper Smelter Expansion Project Phase-III in favour of Hindalco Industries in Bharuch District of Gujarat.

Ref.: 1) Ad.Pri.c.c.f, 1 and letters No. FCA/10-15/06/5799-5801/Dt. 2-3-2013

2) GOI Letter No. 6-GJC075/2006-BHO/319 Dt. 21-2-13

It is hereby stated with regards to the above subject and reference that, on the basis of the instructions received by the above mentioned letter, the forestation user agency is to pay a

**329-B**

penalizing compensation for the 50 heactor area degraded forest area expenses. At present, under the prevailing rate of Rs. 191-40, the amount comes to Rs. 1,88,400/- for cultivation for 1 heactor. As per the same, for the 50 heactor area the penalizing compensation comes to Rs. 94,20,000 (Rupees ninety four lacs twenty thousand only) and thereby the user agency is required to deposit this particular amount in the below mentioned account. It is a request to deposit this amount on immediate basis so that the further proceedings can be initiated.

State Bank of India Udhog Bhavan Branch Gandhinagar  
Account No: 6601342316

In the Name of: NODAL OFFICER FCA GUJARAT

Sd/- illegible

(D. K. Patel)

Assistant Forest Conservator

Sub-Division Forest Region, Bharuch

Copy sent to the Add. Chief Forest Conservator,  
land, Gujarat state, Gandhinagar - for information  
purpose

Copy sent to the Chief Forest Conservator, Surat  
division, Surat for information purpose



To,

09 08 2021

The Assistant Conservator of Forest  
Civil Hospital Rd.  
Railway Colony  
Bharuch,  
Gujarat 392001

Sub: Request for permission to carry-out plantation in reserve forest areas adjacent to our boundary

Dear Sir,

At the outset, we thank you for your valuable time and providing us an opportunity to express our interest in carrying out plantation in reserve forest areas adjacent to our boundary

Sir, in all our operations across the country, we are guided by our purpose- 'Greener Stronger Smarter'- and to achieve that end we have been working inclusively with nature through sustainable processes, conservation efforts, and waste management initiatives

A demonstration of our aforesaid commitment across all our operations locations, we have expanded our green cover this year by 6.38%, which currently stands lush at 4,672 acres, with the addition of more than 4.5 lakh saplings

In line with above said commitment, we would like to do plantation in Reserve Forest areas adjacent to our boundary covering about 5-10 Ha. Kindly allow us to collaborate with your good office in doing Plantation along with Soil preparation and other necessary measures.

We seek your valuable guidance and support on this eco-friendly initiative.

Looking forward for your early favorable response.

For Hindalco Industries Limited

*Signature*

Anil Tiple  
Joint President-HR

Received  
9/08/2021

સુચિત મુદ્દા  
વિભાગના અધિકારી  
શ્રી અનિલ તિપ્પે  
જોઇએ તેમજ સહાયક  
અધિકારી સુધી મોકલવા

HINDALCO INDUSTRIES LIMITED  
UNIT: BIRLA COPPER  
P.O.: Dahej, Dist. Bharuch,  
Gujarat-392 130, INDIA.  
Telephone +91 2641 256004-6  
Fax +91 2641 251002-3

Regd. Ahura Centre, 1st Floor, B-Wing,  
Mahabali Caves Road, Andheri (East), Mumbai 400 093  
Telephone +91 22 6691 7000 / Fax: +91 22 6691 7001

Website  
Email

www.hindalco.com  
hindalco@adityabirla

E:\Manisha E Drive\T-3\2018-19\Word File/Forward 2018-19 final 15.01.2021

835



ઈ-મેઇલ :- acfnbh@yahoo.in

મદદનીશ વન સંરક્ષકશ્રી, પેટા વન વિભાગ ભરૂચ

કલેક્ટર કચેરી કંપાઉન્ડ, કણબીવગા, ભરૂચ

ટેલીફોન નં. :- ૦૨૬૪૨ - ૨૫૦૪૩૦

ફેક્સ નં. :- ૦૨૬૪૨ - ૨૫૦૪૩૦



ક્રમાંક: અ/પવચ/૩/૧૭૦-૭/૨૦૨૧-૨૨

ભરૂચ.તા. ૭ /૦૯/૨૦૨૧

વિષય :- Request for Permission to carry-out Plantation in reserve forest areas adjacent to our boundary.

સંદર્ભ :- આપની કચેરીના પત્રાંક :- અ/પવચ/૨૪૧ તા..૨૬/૦૮/૨૦૨૧

આથી પરિક્ષેત્ર વન અધિકારીશ્રી ભરૂચને જણાવવાનું કે, આદિત્ય બિરલા હિન્દાલ્કો દ્વારા તેમની સીમાને અડીને આવેલા અનામત જંગલ વિસ્તારોમાં વાવેતર કરવા માટે વિનંતી કરેલ છે. જે બાબતે આપના સંદર્ભના પત્રથી આદિત્ય બિરલા હિન્દાલ્કો સાથે સંયુક્ત સ્થળ તપાસ કરતા પ થી ૧૦ હેક્ટરમાં વાવેતર થઈ શકશે તેમ દર્શાવેલ છે જે અંગે જણાવવાનું કે, સોઈલ ટેસ્ટીંગ કરાવી જણાવેલ વિસ્તારમાં કેટલા હેક્ટરમાં કયા સ્થળે કયા મોડલ હેઠળ કયું વાવેતર થઈ શકે તેમ છે તે બાબતે સ્પષ્ટ અભિપ્રાય સહિત સ્કીમ તૈયાર કરી સાદર કરવા નોંધ લેવી.

પી.જી.ચૌધરી

મદદનીશ વન સંરક્ષક  
પેટા વન વિભાગ ભરૂચ

પ્રતિ,

પરિક્ષેત્ર વન અધિકારીશ્રી,

ભરૂચ

નકલ રવાના :- જોઈન્ટ પ્રેસિડન્ટ (એચ.આર), હિન્દાલ્કો ઈન્ડસ્ટ્રીઝ લિમિટેડ ( યુનિટ- બિરલા કોપર),

દહેજ જી.ભરૂચ તરફ જાણ સારુ.

TRANSLATION COPY

331-A

**Assistant conservator of forest, sub-division  
forest Bharuch**

Collector office compound, Kanbiwaga, Bharuch

Email: acfnbh@yahoo.in

Telephone no.: 02642-250430

FAX No.: 02642-250430

No. A/PVY/3/57071/2021-22

Bharuch, Dated 07/09/2021

Subject: Request for Permission to carry-out  
Plantation in reserve forest areas adjacent to  
our boundary.

Reference: Your office correspondence no. A/PY/241  
dated 26/08/2021

It is hereby stated to the forest zonal office,  
Bharuch that, the Aditya Birla Hindalco has  
requested for cultivation in the reserve forest  
that is adjacent to their boundary. It is mentioned  
in the referred letter that, upon site visit  
jointly

**331-B**

with Aditya Birla Hindalco, it has come to notice that a cultivation in 5 to 10 heactor area is possible. It is hereby stated in this context that, a soil testing be carried out and specific scheme be prepared and provided with opinion whereby it is signified that in how much heactor what modal based cultivation is possible.

Sd/- illegible

(P. J. Chaudhary)

Assistant Conservator of Forest

Sub-Division Bharuch

To,

Regional Forest officer

Bharuch

Copy sent to: Joint President (HR), Hindalco Industries limited (Unit-Birla Copper), Dahej, district Bharuch - for information purpose



To,  
Range Forest Officer  
Maktampur, Bharuch

16.09.2021

**Sub:** Permission to carry-out Plantation in Reserve Forest Area adjacent to our boundary

**Reference :** Letter No. A/PVY/3/57071/2021-22 dated 07.09.2021

Sir,

We are extremely thankful for your abovementioned letter.

Based on the joint inspection stated in the letter, we remain available for any support/necessary actions to be initiated from our end.

Do let us know earliest convenient date and time when we can visit the site together to carry out the site inspection to enable you to initiate next steps soonest.

We remain available for any further clarifications/suggestions from your end.

Thanking You

For Hindalco Industries Limited

Unit: Birla Copper

Anil Tiple  
Jt. President (HR)

૨'જ ફોરેસ્ટ ઓફીસ  
ભરૂચ.

આવક નં. ૫૦

તા. ૧૬-૦૯-૨૦૨૧

HINDALCO INDUSTRIES LIMITED

(UNIT: BIRLA COPPER)

P.O. : Dahej, Dist. Bharuch,

Gujarat-392 130, INDIA.

Telephone +91 2641 256004-6

Fax +91 2641 251002-3

Regd. Ahura Centre, 1st Floor, B-Wing,

Mahakali Caves Road, Andheri (East), Mumbai 400 093

Telephone +91 22 6691 7000 / Fax: +91 22 6691 7001



Sample ID:309788 - Analysis Completion:27/08/2021

C-1/119/3, GI

Nar

Bhar.

Tele:(02)

Copper Smelter / LAB Inward : 44837

Accreditation Standards & NABL Certificate Details : - / 10-7544 - - Validity : 10/09/202

TEST REPORT

Test Report No. : 44837

1. Name of the Customer : Hindalco Industries Ltd - 15178  
2. Address : 2,10,11,43 GIDC,AT POST. DAHEJ-LAKHIGAM,TAL:VAGRA  
DAHEJ-392130, Taluka : Vagra, District : Bharuch, GIDC : Dahej  
3. Nature of Sample : REP-Representative/Grab, (Insp Type : HOR-H.O.Reference)  
4. Sample Collected By : Shri B.D.Prasad,DEE  
5. Quantity of Sample Received : 0  
6. Code No. of the Sample : 309788  
7. Date & Time of Collection & Inwarding : 05/08/2021 , (1600 to 1600) & 06/08/2021  
8. Date of Start & Completion of Analysis : 06/08/2021 & 27/08/2021  
9. Sampling Point : ## Final Outlet of the ETP ~  
10. Flow Details (Remarks) : ---  
11. Mode of Disposal : Into Sea through unit's pipeline  
12. Ultimate Receiving Body : Deep sea though multiple diffuser system  
13. Temperature on Collection : 29 & pH Range on pH Strip :@ 7  
14. Carboys Nos for : barcode & Color & Appearance :colorless  
15. Water Consumption & W.W.G (KLPD) : Ind :38374.000 , Dom :2336.000 & Ind :4729.000 , Dom :1300.000  
16. Parameter : 12 ,Cap No & Weight :

Sr	Parameter	Unit	Test Method	Range of Testing	Result
1	Temperature	Centigrade	IS: 3025 (Part - 9) - 1984(Reaffirmed 2006)	Ambient oC - 60 oC	29
2	pH	pH Units	4500 H+ B APHA Standard Methods 22nd edi.2012	1 - 14 pH value As or	7.26
3	Total Dissolved Solids	mg/l	Gravimetric method. (2540 C APHA Standard Method	10 - 200000 mg/L	3060
4	Suspended Solids	mg/l	Gravimetric method. (2540 D APHA Standard Method	2 - 10000 mg/L	18
5	Ammonical Nitrogen	mg/l	1).Titrimetric method (4500 NH3 B & C APHA Standal	1 - 2000 mg/l.	BDL
6	Chloride	mg/l	Argentometric method. (4500 Cl? B APHA Standard M	1 - 50000 mg/l	1773
7	Sulphate	mg/l	APHA(22nd edi)4500 SO4 E	2-40mg/l	276
8	Chemical Oxygen Demand	mg/l	APHA (22nd Edition)- 5220 B Open Reflux Method-2	5.0- 50000 mg/l	8
9	Oil & Grease	mg/l	Liquid - Liquid Partition Gravimetric method. (5520 B	01 - 1000 mg/l	BDL
10	Phenolic Compounds	mg/l	4 Amino Antiprene method without Chloroform Extra	0.1 - 50 mg/l	BDL
11	B.O.D (3 Days 27oC)	mg/l	3 - Day BOD test. (IS 3025 (Part 44) 1993 Reaffirme	05-50000 mg/l	<5

Laboratory Remarks : Approved By:399-lab\_399 Dt.: 28/08/2021

R.C.VASAVA,S.O

Note :

- The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
- Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
- This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Board in writing.
- The Board is not responsible for the authenticity for the samples not collected by the Board's officials.
- Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
- Permissible Limits: as per Schedule VI of EPA Rules, 1986 as ammended by Second and Third ammendment 1993 for Effluents
- Physicochemical and microbiological parameters, Std.Methods for Water and Waste Water- 23rd Edition by APHA.
- Bioassay test (for toxicity) -IS:6582:Part-2:2001; Reaffirmed 2007.

*Green Leaf*

TEST REPORT  
WASTE WATER ANALYSIS REPORT

Customer's Name & Address: Hindalco Industries Ltd. (Unit: Birla Copper) Post, Dahej, Dist. Bharuch.	Report No: GLEPL/160821/01
Contact Person: Dr Sanjay Kumar HOD (Environment)	Issue Date: 21/08/2021

Lab ID Code	GLEPL/160821/WL <sub>1</sub>
Sample Description	RO Reject
Date of Sampling	16/08/2021

RESULT TABLE

Sr. No.	Test Parameters	Test Method	Unit	GPCB Norms	Results Obtained
1.	pH	IS 3025 (P-11) 1983	pH Unit	5.5 - 9.0	7.69
2	Temperature	IS 3025 (P-9) 1984	°C	45°C	31.0
3	Color	IS 3025 (P-4) 1983	Hazen	100	10.1
4	Suspended Solids	IS 3025 (P-17) 1984	mg/L	100	18.9
5.	COD	IS 3025 (P-58) 2006	mg/L	250	32.7
6	BOD (3 days at 27°C)	IS 3025 (P-44) 1993	mg/L	100	8.1
7	Oil & Grease	IS 3025 (P-39) 1991	mg/L	20.0	<0.1
8	Phenolic Compound	IS 3025 (P-43) 1992	mg/L	5.00	<0.1
9	Ammonical Nitrogen	IS 3025 (P-34) 1988	mg/L	50.0	9.20
10.	Sulphides	IS 3025 (P-29) 1986	mg/L	5.00	<0.2
11.	Cyanides	IS 3025 (P-27) 1986	mg/L	0.20	Nil
12	Fluoride	APHA 23 <sup>rd</sup> Ed. 2017 4500 F D (4-90)	mg/L	10.0	1.75
13.	Hexa Chromium	IS 3025 (P-52) 2003	mg/L	1.00	0.35
14	Total Chromium	IS 3025 (P-52) 2003	mg/L	2.00	0.43
15.	Copper	IS 3025 (P-42) 1992	mg/L	3.00	0.22
16.	Nickel	IS 3025 (P-54) 2003	mg/L	5.00	0.07
17	Zinc	IS 3025 (P-49) 1994	mg/L	15.0	0.22
18.	Mercury	IS 3025 (P-48) 1994	mg/L	0.01	<0.005
19	Lead	IS 3025 (P-47) 1994	mg/L	1.00	<0.005
20.	Arsenic	IS 3025 (P-37) 1988	mg/L	0.20	0.035
21	Cadmium	IS 3025 (P-41) 1992	mg/L	2.00	<0.01
22.	Insecticides /Pesticides	USEPA Method No. 8081 A		Absent	Absent
23.	Selenium	IS 3025 (P-56) 2003	mg/L	0.05	<0.01
24.	Bio Assay Test	APHA 23 <sup>rd</sup> Ed. 2017 10600 (10-97)	% Survival of fish after 96 hours in 100% effluent.	90	96.52

*[Signature]*  
Chemist

*[Signature]*  
Authorized Signatory  
Rekha Dare

Note:

- The results pertain to tested items only.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- Authenticity of this report could be validated with office copy at Green Leaf Envirotech Pvt. Ltd.
- Perishable samples will be destroyed after testing, others after 7 days from the date of issue of the report, unless otherwise agreed with the customer or as required by the applicable regulations.

-----End of Test Report-----

**TEST REPORT**  
**STACK SAMPLE ANALYSIS REPORT**

<b>Customer's Name &amp; Address:</b> Hinda Co Industries Ltd (Unit: Bilta Copper) Post: Daneg, Dist: Bharuch	<b>Report No:</b> GLEPL/280422/17
<b>Contact Person:</b> Dr. Sanchay K. Amb: HRD, Environment	<b>Issue Date:</b> 28/04/2017

<b>Lab ID Code:</b>	GLEPL/280422/ST1		
<b>Description of Stack:</b>	Process Stack Attached to Central Scrubbing System Copper II		
<b>Date of Sampling:</b>		<b>Stack Dia (cm):</b>	350
<b>Sample Collected by:</b>		<b>Stack Height (m):</b>	75
<b>Stack Type:</b>	Process	<b>Stack Temperature (°C):</b>	

**RESULT TABLE**

Sr. No.	Test Parameters	Test Method	Unit	Result	GPCB Limit
1.	Particulate Matter	IS 12855 (P. 1), 1985	mg/Nm <sup>3</sup>	Plant Shut down	150
2.	Sulphur Dioxide (SO <sub>2</sub> )	IS 12855 (P. 2), 1985	mg/Nm <sup>3</sup>		40

Name Of Instrument	Calibration On	Calibration Due On
Mumbaiath Stack Sampler SS, Ser. No. 183, DTG-2019	16/04/2017	16/04/2018

*Rekha*  
Chemist

*Rekha*  
Authorized Signatory  
Rekha Dora

Notes:

- 1. The test results are based on the sample collected during the test.
- 2. The test results are based on the sample collected during the test.
- 3. The test results are based on the sample collected during the test.
- 4. The test results are based on the sample collected during the test.

-----End of Test Report-----

GreenLeaf

**TEST REPORT**  
**STACK SAMPLE ANALYSIS REPORT**

<b>Customer's Name &amp; Address:</b> Hindalco Industries Ltd Unit: Pila Copper Post, Banej, Dist: Bikaner	<b>Report No:</b> GLEPL/1304/13
<b>Contact Person:</b> Dr. Saay Kumar HOD, Environment	<b>Issue Date:</b> 14/04/2012

<b>Lab ID Code:</b> GLEPL/1304/13	<b>Description of Stack:</b> Process Stack Attached to Main Stack Supplier - Acid Plant I
<b>Date of Sampling:</b> 13/04/2012	<b>Stack Dia (cm):</b> 180
<b>Sample collected by:</b> GLEPL Team	<b>Stack Height (m):</b> 25
<b>Stack Type:</b> Process	<b>Stack Temperature (°C):</b> 60

**RESULT TABLE**

Sr. No	Test Parameters	Test Method	Unit	Result	GPCB Limit
1	Acid Mist Sulphur Dioxide (SO <sub>2</sub> ) Nitrogen Dioxide (NO <sub>2</sub> )	IS: 1235 (I)-1-1985	mg/Nm <sup>3</sup>	BDL	15
2	Sulphur Dioxide (SO <sub>2</sub> ) Nitrogen Dioxide (NO <sub>2</sub> )	IS: 1235 (I)-2-1985 IS: 1235 (I)-1-2008	KG/T Nm <sup>3</sup> /hr	0.70 KG/T of 100% H <sub>2</sub> SO <sub>4</sub> 9.015 mg	2.0 KG/T of 100% H <sub>2</sub> SO <sub>4</sub>

Name Of Instrument	Calibration On	Calibration Due On
Vybhushan Stack sampler / 2007 No. 185-1712015	14/03/2012	14/03/2013

Note: BDL: Below Detectable Limit

*Rekha*  
 Chemist

*Rekha Dare*  
 Authorized Signatory  
 Rekha Dare

- Notes:
- 1. This report is valid only for the purpose mentioned above.
  - 2. The results are based on the data received from the customer.
  - 3. The results are based on the data received from the customer.
  - 4. The results are based on the data received from the customer.

-----End of Test Report-----

**TEST REPORT  
 STACK SAMPLE ANALYSIS REPORT**

Customer's Name & Address: Hindalco Industries Ltd (Unit: Bhilai Copper) Post: Durgam, Dist: Bhanuapuri	Report No: E-EPH/01-421/01
Contact Person: Dr. Sanjay Kumar (HCL Environment)	Issue Date: 05/04/2021

Lab Id Code	GLEP/030421/ST
Description of Stack	Process Stack Attached to Main Stack Secondary Gas Scrubber
Date of Sampling	03/04/2021
Sample collected by	GLEP Team
Stack Type	Process Stack

**RESULT TABLE**

Sr. No.	Test Parameters	Test Method	Unit	Result	SPCB Limit
1	Sulphur Dioxide (SO <sub>2</sub> )	IS 15519:2005	mg/Nm <sup>3</sup>	2.131	40
2	Gas Flow	IS 15519:2005	Nm <sup>3</sup> /Hr	1100.043	---

Name Of Instrument	Calibration On	Calibration Due On
Gas analyser (SO <sub>2</sub> ) (SS) (Model: 4100)	6/03/2021	6/03/2022

*[Signature]*  
 Chemist

Authorized Signatory  
 Rekha Dare

Note:

- 1. This report is valid only for the purpose mentioned above.
- 2. This report is not valid for any other purpose.
- 3. This report is not valid for any other purpose.

End of Test Report

*GreenLeaf*

**TEST REPORT  
 STACK SAMPLE ANALYSIS REPORT**

<b>Customer's Name &amp; Address:</b> Hindalen Industries Ltd. (Unit: Birla Copper) Port, Durg, Dist. Bhanupur	<b>Report No.:</b> GLEPL/190421/03
<b>Contact Person:</b> Dr. Sanjay Kumar (HOD, Environment)	<b>Issue Date:</b> 11/04/2021

Lab ID Code	GLEPL/190421/STL
Description of Stack	Stack Attached to Captive Power Plant (C-PP-1, CFBC Boiler 35 MW)
Date of Sampling	19/04/2021
Stack Dia (cm)	300
Sample collected by	GLEPL Team
Stack Height (m)	75
Stack Type	Flue
Stack Temperature (°C)	125

**RESULT TABLE**

Sr. No.	Test Parameters	Test Method	Unit	Result	GPCB Limit
1	Particulate Matter	IS 11255 (P-1) 1995	mg/Nm <sup>3</sup>	29.34	100
2	Sulphur Dioxide (SO <sub>2</sub> )	IS 11255 (P-2) 1995	mg/Nm <sup>3</sup>	108.34	600
3	Oxides of Nitrogen (NO <sub>x</sub> )	IS 11255 (P-3) 2007	mg/Nm <sup>3</sup>	29.69	500
4	Gas Flow	IS 11255 (P-4) 1995	Nm <sup>3</sup> /hr	1013.12	---

Name Of Instrument	Calibration On	Calibration Due On
Raychem In Stack Sampler VSS Ltd. No. 87, HFC 2129	21/03/2021	21/03/2022

*[Signature]*  
 Chemist

Authorized Signatory  
 Rekha Dare

**Note:**

- 1. This report is valid only for the purpose mentioned above.
- 2. This report is valid only for the period mentioned above.
- 3. This report is valid only for the location mentioned above.
- 4. This report is valid only for the parameters mentioned above.

..... End of Test Report .....

*GreenLeaf*

**TEST REPORT**  
**STACK SAMPLE ANALYSIS REPORT**

<b>Customer's Name &amp; Address:</b> Hindalco Industries Ltd (Unit - Rishi Copper) Post, Dabhol Dist. Bhavnagar	<b>Report No.:</b> GLEPL/190421/01
<b>Contact Person:</b> Dr. Sangay Kumar HOD (Environment)	<b>Issue Date:</b> 11/04/2021

<b>Lab ID Code</b>	GLEPL/190421/S1		
<b>Description of Stack</b>	Stack Attached to Captive Power Plant (C/P-1, CFB Boiler 35 MW)		
<b>Date of Sampling</b>	19/04/2021	<b>Stack Dia (cm)</b>	300
<b>Sample collected by</b>	GLEPL Team	<b>Stack Height (m)</b>	75
<b>Stack Type</b>	Flue	<b>Stack Temperature (°C)</b>	125

**RESULT TABLE**

Sl. No.	Test Parameters	Test Method	Unit	Result	SPCB Limit
1	Particulate Matter	IS 11255 (Part 1) 1986	mg/Nm <sup>3</sup>	29.34	100
2	Sulphur Dioxide (SO <sub>2</sub> )	IS 11255 (Part 1) 1986	mg/Nm <sup>3</sup>	108.84	600
3	Oxides of Nitrogen (NO <sub>x</sub> )	IS 11255 (Part 2) 2005	mg/Nm <sup>3</sup>	26.69	600
4	Gas flow	IS 11255 (Part 1) 1986	Nm <sup>3</sup> /hr	1013.12	---

<b>Name Of Instrument</b>	<b>Calibration On</b>	<b>Calibration Due On</b>
Caylab In-Plant Stack Sampler (SS10) Model: 831-01C-2019	16/03/2021	15/03/2022

*(Signature)*  
Chemist

(Signature)  
Authorized Signatory  
Rekha Dare

Note:

- This report is valid only for the purpose mentioned above.
- This report is valid only for the period mentioned above.
- This report is valid only for the location mentioned above.
- This report is valid only for the parameters mentioned above.

..... End of Test Report .....

**TEST REPORT**  
**STACK SAMPLE ANALYSIS REPORT**

<b>Customer's Name &amp; Address:</b> Hindalco Industries Ltd. (Unit: Birla Copper) Post, Dahej, Dist. Bharuch.	<b>Report No:</b> GLEPL/030821/03
<b>Contact Person:</b> Dr Sanjay Kumar HOD (Environment)	<b>Issue Date:</b> 04/08/2021

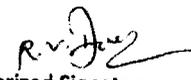
Lab ID Code	:	GLEPL/030821/ST <sub>3</sub>			
Description of Stack	:	Stack Attached to Captive Power Plant (CPP-1) CFBC Boiler 35 MW			
Date of Sampling	:	03/08/2021	Stack Dia (cm)	:	300
Sample collected by	:	GLEPL Team	Stack Height (m)	:	75
Stack Type	:	Flue	Stack Temperature (°C)	:	118
			Gas flow ( Nm <sup>3</sup> /hr)	:	168356.23

**RESULT TABLE**

Sr. No.	Test Parameters	Test Method	Unit	Result	GPCB Limit
1.	Particulate Matter	IS:11255(P-1):1985	mg/Nm <sup>3</sup>	43.23	100
2.	Sulphur Dioxide (SO <sub>2</sub> )	IS:11255(P-2):1985	mg/Nm <sup>3</sup>	96.00	600
3.	Oxides of Nitrogen (NO <sub>x</sub> )	IS:11255(P-7):2005	mg/Nm <sup>3</sup>	23.00	600

Name Of Instrument	Calibration On	Calibration Due On
Vayubodhan Stack Sampler VSS1 Sr. No. 183- DTC-2019	16/03/2021	15/03/2022

  
 Chemist

  
 Authorized Signatory  
 Rekha Dare

**Note:**

- The results pertain to tested items only.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- Authenticity of this Report could be validated with office copy at Greenleaf Envirotech Pvt.Ltd.
- Perishable samples will be destroyed after testing, others after 7 days from the date of issue of the report, unless otherwise agreed with the customer or as required by the applicable regulations.

-----End of Test Report-----

PAGE 1 OF 1

Recognised by MoEF, Govt. of India, EP Act 1986; NABL accredited; GPCB Schedule II Environment Auditor; OHSAS-45001:2018, ISO 9001:2018 Certified Laboratory

Greenleaf Envirotech Pvt. Ltd., Nr. Rangoli Flats, Radhanpur Road, Mehsana - 384002, Gujarat, India.

Tel: +91-9725519974, E-mail: info@glepl.com, Web: www.glepl.com

Branch Office : 304, Kankavali Complex, Singapur-Cauzway Road, Katargam, Surat - 395004

GreenLeaf

**TEST REPORT**  
**STACK SAMPLE ANALYSIS REPORT**

<b>Customer's Name &amp; Address:</b> Hindalco Industries Ltd. (Unit: Birla Copper) Post, Dahej, Dist. Bharuch.	<b>Report No:</b> GLEPL/200521/08
<b>Contact Person:</b> Dr Sanjay Kumar HOD (Environment)	<b>Issue Date:</b> 31/05/2021

Lab ID Code	GLEPL/200521/ST <sub>a</sub>		
Description of Stack	Stack Attached to Captive Power Plant (CPP-III)CFBC Boiler 60 MW		
Date of Sampling	20/05/2021	Stack Dia (cm)	300
Sample collected by	GLEPL Team	Stack Height (m)	85
Stack Type	Flue	Stack Temperature (°C)	120

**RESULT TABLE**

Sr. No.	Test Parameters	Test Method	Unit	Result	GPCB Limit
1.	Particulate Matter	IS:11255:(P-1):1985	mg/Nm <sup>3</sup>	36.78	50
2.	Sulphur Dioxide (SO <sub>2</sub> )	IS:11255:(P-2):1985	mg/Nm <sup>3</sup>	107.38	600
3.	Oxides of Nitrogen (NO <sub>x</sub> )	IS:11255:(P-7):2005	mg/Nm <sup>3</sup>	24.64	300
4.	Mercury	EP method 29	mg/Nm <sup>3</sup>	BDL	0.03
5.	Gas flow	IS:11255(P-3):2008	Nm <sup>3</sup> /Hr	95051.39	---

Name Of Instrument	Calibration On	Calibration Due On
Vayubodhan Stack Sampler VSS1 Sr. No. 183- DTC-2019	16/03/2020	15/03/2021

*[Signature]*  
Chemist

*[Signature]*  
Authorized Signatory  
Rekha Dare

**Note:**

- The results pertain to tested items only.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- Authenticity of this Report could be validated with office copy at Greenleaf Envirotech Pvt Ltd.
- Perishable samples will be destroyed after testing, others after 7 days from the date of issue of the report, unless otherwise agreed with the customer or as required by the applicable regulations.

-----End of Test Report-----



# ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ

ANNEXRUE R/22

342 1165

સી-૧/૧૧૯/૩, ઁ.આઈ.ડી.સી., ફેઝ-૨, નર્મદાનગર, ભરૂચ-૩૯૨ ૦૧૫. ફોન : (૦૨૬૪૨) ૨૪૬૩૩૩  
ઈમેઈલ : ro-gpcb-bhar@gujarat.gov.in વેબ સાઈટ : www.gpcb.gujarat.gov.in

પ્રતિ શ્રી

Hindalco Industries Ltd,  
Plot No. 2, 10, 11, 43  
GIDC Dahij  
Tal. Vagra, Dist Bharuch

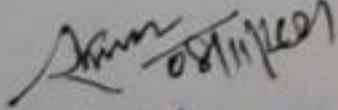
વિષય : આપના એકમની બોર્ડ દ્વારા લેવામાં આવેલ તા. ૦૪/૧૧/૨૦૨૧ નાં રોજની મુલાકાત.

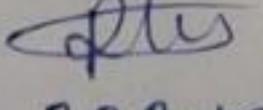
શ્રીમાન,

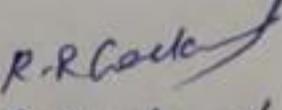
આપના એકમની આજ રોજ મુલાકાત લેવામાં આવેલ તે દરમિયાન નીચે મુજબના મુદ્દાઓ ધ્યાનમાં આવેલ છે.

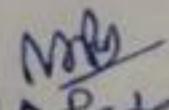
1. Intermittent unclean emission is observed from the Smelter-1 stack. One sample is collected from the same. Submit clarification in this regard and take necessary action for the same.
2. Copper Slag is still observed lying dumped in about 10 metre width area of Reserve forest along the boundary of factory premises.
3. Contaminated water/water ponding is observed in the reserved forest area along the boundary wall of the premises. One sample of the same is collected to check the Contamination level.
4. Submit the details about generation and disposal of Arsenic bearing waste.
5. Develop Green belt and Plantation in the periphery of factory premises.

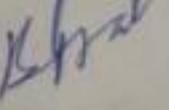
ઉત્તરોક્ત બાબતોની પૂર્વતા દિન-૩ માં કરી અત્રેની તેમજ ગાંધીનગર ખાતેની વડી કચેરીએ જાણ કરવા આથી જણાવવામાં આવે છે. સદર બાબતે પગલાં લેવામાં ચૂક થશે તો બોર્ડ દ્વારા કાયદાકીય પગલાં લેવામાં આવશે જેની નોંધ લેવી.

  
Dr. Sanjay Kumar  
(AVP-Environment)

  
R.P. Bhatt  
(SSA)

  
R.R. Cockwad  
ACE

  
N.D. Patel  
DEE

  
B.D. Prasad  
DEE

સ્વીકારનારનું નામ, હોદ્દો તથા સહી

નકલ રવાના : સભ્ય સચિવશ્રી, ગુ.પ્ર.નિ. બોર્ડ કચેરી, ગાંધીનગર.....જાણ સારું

**Clean Gujarat Green Gujarat**



HIL/BC/Env./GPCB/BH-20-21

PCB ID:15178

Date: 11<sup>th</sup> Nov 2021

Regional Office  
Gujarat Pollution Control Board  
C-1/119/3, GIDC Phase – II,  
Narmada Nagar,  
Dist.-Bharuch – 392 015

**Subject: Submission of reply based on observations by the GPCB team dated 08<sup>th</sup> Nov, 2021**

**Reference: GPCB visit dated 8th November 2021**

Dear Sir,

This has reference to GPCB official visit dated 08th November 2021 and observation given subsequently. We are submitting here with our reply as below:

**Observation No. 1: Intermittent uneven emission is observed from the smelter -1 stack. One sample is collected from the same. Submit clarification in this regard and take necessary action for the same.**

**Reply:** The intermittent uneven emission noticed during the visit was due to certain issues in the draft management equipment and control system in Smelter-1. The issue has been promptly addressed by adding additional scrubber recirculation pumps in line by making provision after thorough overhauling. We are closely monitoring the process parameters on regular intervals. Also, damper seals (flow regulating valve seat) are being improved for better draft management.

Since, this system has been in operation for close to 20 years, we have been constantly evaluating contemporary technological options to modernize entire off-gas management system. As communicated earlier, we engaged M/s. MECON (reputed engineering solutions consultant) who carried out pre-feasibility study, technology assessment as well as evaluating globally renowned technology supplier such as MECS, ABB, DUCON, HATCH etc. This exercise was carried out 2018-2020.

We have also been engaged with internationally renowned experts for copper metallurgical industry on Integration Master Plan, Pre- Basic and Basic engineering as well as planning the equipment ordering and other ancillary support. As you would appreciate, owing to restrictions, both domestic and international travel due to COVID-19, our plans were adversely impacted. Notwithstanding, we have released the order to M/s. Gas Cleaning Technologies LLC, USA in July, 2021 and the expert conducted a site visit in August, 2021. We envisage the entire execution would cost around INR 150 crore (approx.) which would require not only delivery of hundreds of equipment but also mobilization of about 1000(+) manpower etc. We will continue to keep tight timelines for early completion of this project which given the current limitations on travel, mobilization etc. appears to be achievable by the end of 2022.

**Observation No.2: Copper slag is still observed lying dumped in about 10-meter width area of Reserve forest along the boundary of the factory premises.**

**Reply:** As informed earlier vide letter dated 05.08.2021, 26.08.2021 and 18.09.2021, since the inadvertent incident in 2009 relating to solid waste/effluent run-off in the Reserved Forest area along the boundary wall (northern periphery), we had constructed the Boundary wall to arrest any such possibility going forward and also worked with the Forest Department for removal of the material. A perusal of the attached letters would also show that the Forest Department had levied compensation in the sum of INR 94,20,000/- which was paid by us in the year 2013 (**Annexure-A1**). As informed earlier vide letter dated 05.08.2021, we continue to be in discussion with the Forest Department for further remedial steps for carrying out soil amelioration including plantation and the recent letters exchanged with the Forest Department are attached for your review. We shall keep you informed of the progress in this regard. The request letter from Hindalco to Forest department, Forest Department's communication and our further communication to Forest department are attached as Annexure **A2, A3, and A4** respectively.

**Observation No.3: Contaminated water/ water ponding is observed in the reserved forest area along the boundary wall of the premises. One sample of the same is collected to check the contamination level.**

**Reply:** We have observed severe rainfall (Almost two times to average yearly rainfall) in the region and September 2021 being the highest rainfall in any month. Therefore, the reserve forest area, which acts as catchment area to significant forest land, is observed with huge monsoon accumulation. The area is not approachable and full of grass land and water bodies. The photograph of the area is enclosed as **Annexure-B1**. As per our observation in earlier years, the natural evaporation for the entire area will take approximately five months. Therefore, we have requested forest department vide our letter dated 11.11.2021 to allow us to evacuate the monsoon accumulation in the Reserve Forest area (copy enclosed as **Annexure-B2**). As soon as we get the permission from forest department, the water evacuation will take about a month and subsequently soil amelioration followed by plantation activities will start in supervision of forest department.

**Observation no. 4: Submit the details about generation and disposal of Arsenic bearing waste.**

**Reply:** In Copper Smelting process, the source of Arsenic is Copper Concentrate procured

from international market. Copper concentrate is the enriched form of Copper ore.

Copper is most commonly present in the earth's crust as copper-iron-sulphide and copper sulphide minerals, such as chalcopyrite ( $\text{CuFeS}_2$ ) and chalcocite ( $\text{Cu}_2\text{S}$ ). The concentration of these minerals in ore relatively lower from 0.5% Cu to 2% Cu and is enriched through froth flotation process to produce copper concentrate (20-35% copper). Arsenic is one of the elements found in copper concentrates, due to sulphide mineralogy of ores. The main Arsenic containing mineral species in the copper concentrates are obtained from the ore deposits like, enargite ( $\text{Cu}_3\text{AsS}_4$ ) and luzonite ( $\text{Cu}_3\text{AsS}_4$ ), while realgar ( $\text{As}_4\text{S}_4$ ) and arsenopyrite ( $\text{FeAsS}$ ) are present in lesser amounts.

Since, Arsenic is associated with sulphide deposits, during froth flotation process, it stays with the copper concentrate.

Pure copper metal is produced from copper concentrate by smelting, converting, fire refining, anode casting and electrorefining process. In electrorefining process, Arsenic is required as an essential element in electrolyte, for which the source of Arsenic is copper anode, which is produced by smelting copper concentrate. Role of Arsenic in electrolyte is to maintain molar ratio of As/(Sb+Bi) with the minimum value of 3.5. This ratio is required to ensure impurity free LME grade Copper Cathode product, which in turn ensures proper conductivity and wire drawability for cable and conductor related end use.

We ensure optimal concentration of Arsenic in the Copper concentrate blend with responsible and diligent sourcing during import of Copper Concentrates from various mines across the globe. Thus, the Copper Concentrate as procured has a relatively purer concentrate with optimal Arsenic concentration.

If input through copper concentrate is considered 100% for the basis of Arsenic, the exit route of Arsenic and potential end-use/ disposal from the system is as follows:

<b>Component</b>	<b>Source of Generation</b>	<b>Typical Distribution</b>	<b>Typical Concentration</b>	<b>Potential method of Disposal/End Use</b>
Copper Slag (Non-Hazardous-Byproduct)	Smelting	53%	250 to 350 ppm	Cement Industry, Road Construction, Abrasive Industry
ETP sludge/Gypsum (Hazardous Waste)	ETP (Neutralization of SAP gas cleaning and Refinery effluent)	39%	1.5 to 2%	Captive Secured Land Fill
Cu-As Sludge/Residue (Hazardous Waste)	Refinery Liberator Section	4%	10 to 15%	Recycling to own Smelter
Dore Slag (Other Waste-Schedule B)	Precious Metal Refinery	4%	1 to 1.8%	Sold to Secondary Lead Smelters in India

				and Abroad with MOEF approval
--	--	--	--	----------------------------------

**Observation no. 5: Develop green belt and plantation in the periphery of factory premises.**

**Reply :** As suggested during the visit we have initiated dialogue with the stakeholders in the periphery of our premises and will take all necessary steps to develop a Green Belt/Plantation. We would also like to state that currently we have about 117 ha under Green Belt. Every year, we do replantation and develop new plantation for the areas affected due to natural events such as cyclone. As an example, we have also done plantation in about 1000sqm since April this year and we have plans to cover additional 5000sqm by March next year.

We are committed to abide by all the statutory rules and regulations under various environmental laws.

Sir, we remain available for any clarification that you may require. Please do offer an opportunity for personal hearing to put forward the explanations/clarifications provided by us.

**Thanking you.**  
**Yours faithfully,**

**For Hindalco Industries Limited,**  
**Unit Birla copper Dahej**

**Dr. Sanjay Kumar**  
**Head – Environment**

CC : Regional Officer, GPCB, Bharuch

જા.નં.:ક/સર્વે/વ.સ.પા./૯/૧૪૮૮-૬૦/૧૧-૧૨  
મદદનીશ વન સંરક્ષકશ્રીની ડ્યેરી,  
પેટા વન વિભાગ ભરૂચ  
ભરૂચ, તા.૪/૦૩/૨૦૧૩.

પ્રતિ,  
હીન્દાલ્કો ઇન્ડ. લી.  
બીરલા કોપર યુનીટ,  
દહેજ.

Sub:- 1) Diversion of 16.00 Ha. of Reserved forest land for setting up of 60 MW Power plant DAP/NPK and Pap Projects along with Copper Smelter Expansiion Project Phase -III in favour of Hindalco Industries in Bharuch District of Gujarat.

Ref:- 1. Ad.Pri.c.c.f, Land Letters No.FCA/10-15/06/5799-5801/  
dt.2-3-2013  
2. GOI letter No. 6 -GJC075/2006-BHO/319 dt. 21-2-13

જયભારત સહ ઉપરોક્ત વિષય અન્વયે જણાવવાનું કે ઉપરોક્ત પત્રથી મળેલ સુચના મુજબ ૫૦ હેક્ટરમાં દંડનીય વળતર વનીકરણ યુક્ત એજન્સીના ખર્ચે હીગ્રેડેડ વન વિસ્તારમાં કરવાનું ધાય છે. હાલમાં પ્રવર્તમાન ૧૯૧.૪૦ રૂ. ના દર મુજબ ૧ હેક્ટરમાં વાવેતર માટે અંકે ૧,૮૮,૪૦૦ રૂ. ધાય છે. જે મુજબ ૫૦ હેક્ટર વિસ્તારમાં દંડનીય વળતર વનીકરણ માટે ૯૪,૨૦,૦૦૦ રૂ. (અંકે ચોરાણું હાખ વીસ હજાર) યુક્ત એજન્સી દ્વારા નીચે જણાવ્યા મુજબના ખાતામાં જમાં કરવાના ધાય છે. જે તાત્કાલીક ભરપાઈ મુદ્દા આવવા વિનંતી છે. જેથી આગળની કાર્યવાહી હાથ ધરી શકાય.

State Bank Of India Udhog Bhavan Branch Gandhinagar

Account No : 66013423126

In the Name of : NOIDA. OFFICER FCA GUJARAT

  
(ડી.કે.પટેલ)

મદદનીશ વન સંરક્ષક  
કેન્દ્રિય વન પેટા વિભાગ ભરૂચ

નક્લ સાદર રવાના અધિક અગ્ર મુખ્ય વન સંરક્ષકશ્રી જમીન ગુ.રા. ગાંધીનગર તરફ જણા સારૂ.  
નક્લ સાદર રવાના મુખ્ય વન સંરક્ષકશ્રી સુરત વર્તુળ સુરત તરફ જણા સારૂ.

TRANSLATION COPY

347-A

OUTWARD NO. K/SURVEY/SP/8/1488-90/11-12

The office of Assistant Forest Conservator

Sub-Forest Division, Bharuch

Date: 04/03/2013

To,

Hindalco Industries Ltd.

Birla Copper Unit, Dahej

Subject: 1) Diversion of 16.00 Hs. OF Reserved forest land for setting up of 60 MW Power Plant DAP/NPK and Pap Projects along with Copper Smelter Expansion Project Phase-III in favour of Hindalco Industries in Bharuch District of Gujarat.

Ref.: 1) Ad.Pri.c.c.f, 1 and letters No. FCA/10-15/06/5799-5801/Dt. 2-3-2013

2) GOI Letter No. 6-GJC075/2006-BHO/319 Dt. 21-2-13

It is hereby stated with regards to the above subject and reference that, on the basis of the instructions received by the above mentioned

**347-B**

letter, the forestation user agency is to pay a penalizing compensation for the 50 heactor area degraded forest area expenses. At present, under the prevailing rate of Rs. 191-40, the amount comes to Rs. 1,88,400/- for cultivation for 1 heactor. As per the same, for the 50 heactor area the penalizing compensation comes to Rs. 94,20,000 (Rupees ninety four lacs twenty thousand only) and thereby the user agency is required to deposit this particular amount in the below mentioned account. It is a request to deposit this amount on immediate basis so that the further proceedings can be initiated.

State Bank of India Udhog Bhavan Branch  
Gandhinagar

Account No: 6601342316

In the Name of: NODAL OFFICER FCA GUJARAT

Sd/- illegible

(D. K. Patel)

Assistant Forest Conservator

Sub-Division Forest Region, Bharuch

**347-C**

Copy sent to the Add. Chief Forest Conservator,  
land, Gujarat state, Gandhinagar - for information  
purpose

Copy sent to the Chief Forest Conservator, Surat  
division, Surat for information purpose



To,

09 08 2021

The Assistant Conservator of Forest  
Civil Hospital Rd,  
Railway Colony  
Bharuch,  
Gujarat 392001

Sub: Request for permission to carry-out plantation in reserve forest areas adjacent to our boundary

Dear Sir,

At the outset, we thank you for your valuable time and providing us an opportunity to express our interest in carrying out plantation in reserve forest areas adjacent to our boundary.

Sir, in all our operations across the country, we are guided by our purpose- 'Greener Stronger Smarter'- and to achieve that end we have been working inclusively with nature through sustainable processes, conservation efforts, and waste management initiatives.

A demonstration of our aforesaid commitment across all our operations locations, we have expanded our green cover this year by 6.38%, which currently stands lush at 4,672 acres, with the addition of more than 4.5 lakh saplings.

In line with above said commitment, we would like to do plantation in Reserve Forest areas adjacent to our boundary covering about 5-10 Ha. Kindly allow us to collaborate with your good office in doing Plantation along with Soil preparation and other necessary measures.

We seek your valuable guidance and support on this eco-friendly initiative.

Looking forward for your early favorable response.

For Hindalco Industries Limited

Anil Tiple  
Joint President-HR

Received  
9/08/2021

સુચારુ રીતે  
સંબંધિત કાગળો  
કોલેક્ટ કરી લેવા  
શ્રી અ. તિપ્પે  
જોડવામાં આવ્યા

HINDALCO INDUSTRIES LIMITED  
(UNIT: BIRLA COPPER)  
P.O. : Dahej, Dist. Bharuch,  
Gujarat-392 130, INDIA.  
Telephone +91 2641 256004-6  
Fax +91 2641 251002-3

Regd. Ahura Centre, 1st Floor, B-Wing,  
Mahakali Caves Road, Andheri (East), Mumbai 400 093  
Telephone +91 22 6691 2000 / Fax: +91 22 6691 7001

Website  
Email  
Corporate Identity No. L27020MH1958PL1  
www.hindalco.com  
hindalco@adityabirla

E:\Manisha E Drive\T-3\2018-19\Word File/Forward 2018-19 final 15.01.2021

835

ઇ-મેઇલ :- [acfnbh@yahoo.in](mailto:acfnbh@yahoo.in)

મદદનીશ વન સંરક્ષકશ્રી, પેટા વન વિભાગ ભરૂચ

કલેક્ટર કચેરી કંપાઉન્ડ, કણબીવગા, ભરૂચ

ટેલીફોન નં. :- ૦૨૬૪૨ - ૨૫૦૪૩૦

ફેક્સ નં. :- ૦૨૬૪૨ - ૨૫૦૪૩૦



ક્રમાંક: અ/પવચ/૩/૧૯૦૭/૨૦૨૧-૨૨

ભરૂચ.તા. ૭/૦૮/૨૦૨૧

વિષય :- Request for Permission to carry-out Plantation in reserve forest areas adjacent to our boundary.

સંદર્ભ :- આપની કચેરીના પત્રાંક :- અ/પવચ/૨૪૧ તા. ૨૬/૦૮/૨૦૨૧

આથી પરિક્ષેત્ર વન અધિકારીશ્રી ભરૂચને જણાવવાનું કે, આદિત્ય બિરલા હિન્દાલ્કો દ્વારા તેમની સીમાને અડીને આવેલા અનામત જંગલ વિસ્તારોમાં વાવેતર કરવા માટે વિનંતી કરેલ છે. જે બાબતે આપના સંદર્ભના પત્રથી આદિત્ય બિરલા હિન્દાલ્કો સાથે સંયુક્ત સ્થળ તપાસ કરતા પ થી ૧૦ હેક્ટરમાં વાવેતર થઈ શકશે તેમ દર્શાવેલ છે જે અંગે જણાવવાનું કે, સોઈલ ટેસ્ટીંગ કરાવી જણાવેલ વિસ્તારમાં કેટલા હેક્ટરમાં કયા સ્થળે કયા મોડલ હેઠળ કયું વાવેતર થઈ શકે તેમ છે તે બાબતે સ્પષ્ટ અભિપ્રાય સહિત સ્કીમ તૈયાર કરી સાદર કરવા નોંધ લેવી.

પી.જી.ચૌધરી

મદદનીશ વન સંરક્ષક  
પેટા વન વિભાગ ભરૂચ

પ્રતિ,

પરિક્ષેત્ર વન અધિકારીશ્રી,

ભરૂચ

નકલ રબાના :- જોઈન્ટ પ્રેસિડન્ટ (એચ.આર), હિન્દાલ્કો ઈન્ડસ્ટ્રીઝ લિમીટેડ ( યુનિટ- બિરલા કોપર),  
દહેજ જી.ભરૂચ તરફ જાણ સારુ.

TRANSLATION COPY

349-A

**Assistant conservator of forest, sub-division  
forest Bharuch**

Collector office compound, Kanbiwaga, Bharuch

Email: acfnbh@yahoo.in

Telephone no.: 02642-250430

FAX No.: 02642-250430

No. A/PVY/3/57071/2021-22

Bharuch, Dated 07/09/2021

Subject: Request for Permission to carry-out  
Plantation in reserve forest areas adjacent to  
our boundary.

Reference: Your office correspondence no.

A/PY/241 dated 26/08/2021

It is hereby stated to the forest zonal office,  
Bharuch that, the Aditya Birla Hindalco has  
requested for cultivation in the reserve forest  
that is adjacent to their boundary. It is  
mentioned in the referred letter that, upon site  
visit jointly with Aditya Birla Hindalco, it has  
come to notice

349-B

that a cultivation in 5 to 10 heactor area is possible. It is hereby stated in this context that, a soil testing be carried out and specific scheme be prepared and provided with opinion whereby it is signified that in how much heactor what modal based cultivation is possible.

Sd/- illegible

(P. J. Chaudhary)

Assistant Conservator of Forest

Sub-Division Bharuch

To,

Regional Forest officer

Bharuch

Copy sent to: Joint President (HR), Hindalco Industries limited (Unit-Birla Copper), Dahej, district Bharuch - for information purpose



To,  
Range Forest Officer  
Maktampur, Bharuch

16.09.2021

**Sub:** Permission to carry-out Plantation in Reserve Forest Area adjacent to our boundary

**Reference :** Letter No. A/PVY/3/57071/2021-22 dated 07.09.2021

Sir,

We are extremely thankful for your abovementioned letter.

Based on the joint inspection stated in the letter, we remain available for any support/necessary actions to be initiated from our end.

Do let us know earliest convenient date and time when we can visit the site together to carry out the site inspection to enable you to initiate next steps soonest.

We remain available for any further clarifications/suggestions from your end.

Thanking You

For Hindalco Industries Limited

Unit: Birla Copper

Anil Tiple  
Jt. President (HR)

इं. अ. इ. रि. अ. सी. सी.  
अ. अ. अ.

अ. अ. अ. नं. १५०

त. १५-०९-२०२१

HINDALCO INDUSTRIES LIMITED  
(UNIT: BIRLA COPPER)  
P.O. : Dahej, Dist. Bharuch,  
Gujarat-392 130, INDIA.  
Telephone +91 2641 256004-6  
Fax +91 2641 251002-3

Regd. Ahura Centre, 1st Floor, B-Wing,  
Mahakali Caves Road, Andheri (East), Mumbai 400 093  
Telephone +91 22 6691 7000 / Fax : +91 22 6691 7001

Website  
Email

www.hindalco.com  
hindalco@adityabirla.com

Photograph of Water Accumulation in Reserve Forest Area (Annexure-C1)





To,  
Assistant Conservator of Forest  
Collector Office Compound  
Kanbiyaga, Bharuch

11.11.2021

**Sub:** Permission to evacuate in Reserve Forest Area adjacent to our boundary

**Reference :**

1. Letter No. A/PVY/3/57071/2021-22 dated 07.09.2021
2. Our reply to the letter dated A/PVY PVY/3/57071/2021-22 dated

Sir,

This refers to the abovementioned communication for permission to carry out soil amelioration and plantation in the Reserve Forest Area adjacent to our northern side boundary.

In last monsoon, we have observed severe rainfall (Almost two times to average yearly rainfall) in the region and the month of September 2021 recording the highest rainfall in any month. Therefore, the reserve forest area, which acts as catchment area to significant forest land, is observed with huge accumulation of monsoon water.

To initiate soil amelioration and plantation activity, it is necessary to evacuate the monsoon water under your supervision and guidance.

Please allow us and guide us and in evacuating the water accumulated in the area.

We remain available for any further clarifications/suggestions from your end.

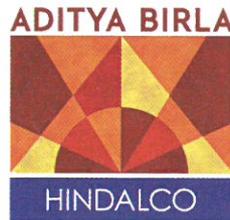
**Thanking You**

**For Hindalco Industries Limited**

**Anil Tiple.**  
**Jt. President (HR)**

CC: Range Forest Officer, Maktampur, Bharuch

*11/11/2021*  
Asstt. Conservator of Forest  
Bharuch Region Sub-Division, Bharuch



May 28, 2019

### AUTHORITY LETTER

Hindalco Industries Limited, a company incorporated and registered under the Companies Act, 1956 (hereinafter referred to as the "Company") and having its Registered Office at 6<sup>th</sup> Floor, Birla Centurion, Pandurang Budhkar Marg, Worli, Mumbai -400030 has vide Power of Attorney dated 2<sup>nd</sup> September, 2017 nominated and appointed Mr. V. R Shankar, S/o Late Mr. V J Ranganathan, as the true and lawful attorney of the company and has further authorized him to commence, prosecute, enforce, defend, answer, oppose or appear or appeal in all actions and other legal proceedings and demands whether civil, criminal, political, administrative or revenue, or proceedings relating to the litigations, legal matters or otherwise and to retain, appoint, engage any advocates and to sign Vakalatnamas and other necessary authorities for defending/representing in relation to above actions, on behalf of the Company.

Whereas for better and more effectively doing, effectuating, executing and performing his responsibility vide the same power of Attorney Mr. V R Shankar has been authorized to delegate any of the powers and authorities as specified in the above paragraph to any other person.

1. Accordingly, in exercise of the said power he hereby authorizes Dr. Vinod K Verma S/o Shri Dharampal Verma to sign, execute, file and institute Writs, applications, affidavits, petitions, suits, appeal, written statements, rejoinder and all other necessary pleadings, as may be required, in the civil/criminal proceedings to be initiated by/ on behalf of the Company before the Hon'ble Supreme Court of India, Hon'ble High Court of Delhi at New Delhi and Tribunals at New Delhi .
2. Any action done or taken by Dr. Vinod K Verma pursuant to this authority shall be deemed to have been ratified by the Company and authorized to do all necessary or incidental acts, deeds, things and matters while representing the Company.

  
 \_\_\_\_\_  
 V R Shankar  
 President Legal & Duly Constituted Attorney

Hindalco Industries Limited

6th & 7th Floor, Birla Centurion, Pandurang Budhkar Marg, Worli, Mumbai 400030, India.

T: +91 22 6662 6666 / 62610555 | F: +91 22 62610400 / 62610500 | W: www.hindalco.com

Registered Office: Ahura Centre, B-Wing, 1st Floor, Mahakali Caves Road, Andheri (East), Mumbai 400 093, India.