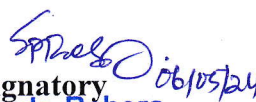


# **STACK EMISSION REPORT OF FUME TREATMENT PLANT FOR THE MONTH APRIL 2024**

| LOCATION | DATE OF TEST | STACK DISCHARGE VOLUME<br>Nm <sup>3</sup> / hr | GASEOUS FLUORIDE<br>mg/ Nm <sup>3</sup> | PARTICULATE FLUORIDE<br>mg/ Nm <sup>3</sup> | TOTAL FLUORIDE<br>mg/ Nm <sup>3</sup> | TOTAL PARTICULATE<br>mg/ Nm <sup>3</sup> |
|----------|--------------|------------------------------------------------|-----------------------------------------|---------------------------------------------|---------------------------------------|------------------------------------------|
| FTP-1    | 03.04.2024   | 734764                                         | 0.94                                    | 0.21                                        | 1.15                                  | 35.88                                    |
|          | 24.04.2024   | 735371                                         | 0.95                                    | 0.45                                        | 1.40                                  | 23.88                                    |
| FTP-2    | 02.04.2024   | 772876                                         | 0.86                                    | 0.47                                        | 1.33                                  | 22.03                                    |
|          | 24.04.2024   | 765033                                         | 0.85                                    | 0.33                                        | 1.18                                  | 22.80                                    |
| FTP-3    | 02.04.2024   | 736777                                         | 2.44                                    | 0.79                                        | 3.23                                  | 26.92                                    |
|          | 22.04.2024   | 729776                                         | 0.83                                    | 0.31                                        | 1.14                                  | 30.95                                    |
| FTP-4    | 03.04.2024   | 746170                                         | 0.57                                    | 0.24                                        | 0.81                                  | 9.58                                     |
|          | 23.04.2024   | 731252                                         | 1.03                                    | 0.34                                        | 1.37                                  | 24.49                                    |
| FTP-5    | 05.04.2024   | 792286                                         | 2.56                                    | 0.32                                        | 2.88                                  | 32.25                                    |
|          | 23.04.2024   | 760039                                         | 0.64                                    | 0.35                                        | 0.99                                  | 31.63                                    |
| FTP-6    | 04.04.2024   | 748086                                         | 0.57                                    | 0.25                                        | 0.82                                  | 29.19                                    |
|          | 25.04.2024   | 728959                                         | 2.19                                    | 0.24                                        | 2.43                                  | 36.11                                    |
| FTP-7    | 05.04.2024   | 889243                                         | 0.88                                    | 0.29                                        | 1.17                                  | 27.77                                    |
|          | 22.04.2024   | 884232                                         | 0.64                                    | 0.37                                        | 1.01                                  | 38.09                                    |
| FTP-8    | 04.04.2024   | 967390                                         | 0.53                                    | 0.26                                        | 0.79                                  | 28.01                                    |
|          | 25.04.2024   | 952537                                         | 1.07                                    | 0.51                                        | 1.58                                  | 27.50                                    |

**NOTE:**

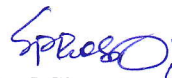
1. Total Fluoride emission 0.175 Kg/ Ton of Aluminum produced, against total hot metal Production 37429 MT.
2. **Orissa State Pollution Control Board Norm :**  
Total Fluoride emission: 0.300 Kg / Ton of Aluminum produced  
Total particulate:100 mg/Nm<sup>3</sup>.  
Stack discharge volume: 9,93,600 Nm<sup>3</sup>/hr

  
**Authorised Signatory**  
**Premananda Behera**  
 Asst. Manager (Laboratory)  
 NALCO, Smelter Plant, Angul

**STACK EMISSION REPORT OF BAKE OVEN PLANT  
FOR THE MONTH OF APRIL 2024**

| LOCATION | DATE OF TEST | STACK DISCHARGE VOLUME<br>Nm <sup>3</sup> /hr | GASEOUS FLUORIDE<br>mg/ Nm <sup>3</sup> | PARTICULATE FLUORIDE<br>mg/ Nm <sup>3</sup> | TOTAL FLUORIDE<br>mg/ Nm <sup>3</sup> | TOTAL PARTICULATE MATTER<br>mg/ Nm <sup>3</sup> |
|----------|--------------|-----------------------------------------------|-----------------------------------------|---------------------------------------------|---------------------------------------|-------------------------------------------------|
| BO-I     | 06.04.2024   | 159839                                        | 1.26                                    | 0.18                                        | 1.44                                  | 31.98                                           |
|          | 26.04.2024   | 159265                                        | 3.48                                    | 0.25                                        | 3.73                                  | 39.55                                           |
| BO-II    | 06.04.2024   | 200805                                        | 1.43                                    | 0.20                                        | 1.63                                  | 26.98                                           |
|          | 26.04.2024   | 200774                                        | 2.17                                    | 0.32                                        | 2.49                                  | 51.52                                           |

- I.** Total Fluoride emission **0.019 Kg/ Ton** of Aluminium produced, against total hot metal Production 37429 MT.
- II. Orissa State Pollution Control Board Norm:**  
Total Fluoride emission: 0.1 kg/Ton of Aluminium produced  
Total particulate: 50 mg/Nm<sup>3</sup>.  
Stack discharge volume BO-I: 1,60,000 Nm<sup>3</sup>/hr  
Stack discharge volume BO-II: 2,00,880 Nm<sup>3</sup>/hr

  
06/05/24  
**Authorised Signatory**  
**Premananda Behera**  
Asst. Manager (Laboratory)  
NALCO, Smelter Plant, Angul



# Qualissure Laboratory Services

361, Prantick Pally,  
45/361, Bose Pukur Road,  
Kolkata - 700107  
Email : qualissure@gmail.com  
Mob. No. : 9831287086  
9830093976

DOC NO : QLS/SAMP/08-B/00

## TEST REPORT

|                                                                            |                                                |
|----------------------------------------------------------------------------|------------------------------------------------|
| Name & Address Of the Customer :                                           | Report No. : QLS/MR/A/24-25/C/140              |
| M/s. National Aluminium Company Limited                                    | Date : 03.05.2024                              |
| Smelter Plant Division,                                                    | Sample No. : QLS/MR/A/24-25/140-149            |
| Angul,                                                                     | Sample Description : Stack Flue Gas            |
| Odisha- 759145                                                             | Date of Performance(s) : 25.04.2024-30.04.2024 |
| Ref No & Date: SMLT/T&C/S20/OMC-5639/5300007582/WO/7329, Dated. 13.04.2023 |                                                |

## Analysis Result

| Sampling Done by: S.Poddar |          |                  |             | Sampling done as per : EPA/IS         |                                       |            |                |                                         |
|----------------------------|----------|------------------|-------------|---------------------------------------|---------------------------------------|------------|----------------|-----------------------------------------|
| Sample No.                 | Location | Date of Sampling | Time (hrs.) | SO <sub>2</sub> (mg/Nm <sup>3</sup> ) | NO <sub>x</sub> (mg/Nm <sup>3</sup> ) | Temp. (°C) | Velocity (m/s) | Discharge Volume (Nm <sup>3</sup> /hr.) |
| 140                        | B.O-1    | 23.04.2024       | 10.30       | 236.7                                 | 120.8                                 | 93         | 9.2            | 221206                                  |
| 141                        | B.O-2    |                  | 09.45       | 284.0                                 | 144.7                                 | 91         | 10.03          | 242446                                  |
| 142                        | FTP-6    |                  | 15.39       | 33.6                                  | 24.8                                  | 99         | 10.45          | 783309                                  |
| 143                        | GTC-8    |                  | 14.00       | 62.7                                  | 29.2                                  | 101        | 9.68           | 839316                                  |
| 144                        | GTC-7    |                  | 14.45       | 57.9                                  | 26.6                                  | 102        | 10.43          | 901826                                  |
| 145                        | FTP-5    | 24.04.2024       | 09.38       | 46.9                                  | 29.7                                  | 96         | 8.93           | 674788                                  |
| 146                        | FTP-4    |                  | 10.25       | 56.7                                  | 34.7                                  | 95         | 17.88          | 743652                                  |
| 147                        | FTP-3    |                  | 11.28       | 61.8                                  | 35.5                                  | 100        | 18.19          | 746814                                  |
| 148                        | FTP-2    |                  | 14.25       | 48.0                                  | 32.5                                  | 97         | 19.42          | 803133                                  |
| 149                        | FTP-1    |                  | 15.30       | 39.7                                  | 30.0                                  | 99         | 18.58          | 764385                                  |

### METHOD OF TEST REFERENCE

**EPA Part-2** : for Temperature, Velocity & Discharge Volume

**EPA Part-6** : for Sulphur dioxide

**EPA Part-7** : for Oxides of Nitrogen

Report Prepared By:

for Qualissure Laboratory Services  
Reviewed & Authorized By

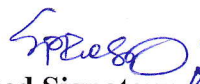
Benimadhab Gorai, Chemist  
(Authorized Signatory)

-----End of the Report-----

- The results relate only to the item(s) tested.
- This Test Report shall not be reproduced without the permission of Qualissure Laboratory Services
- The reserved part of sample(s). except perishable sample(s), shall be retained for 30 days from the date of issue of the Test Report

## FUGITIVE EMISSION OF FLUORIDE IN POTROOMS FOR THE MONTH OF APRIL 2024

| Location   | Date of Sampling         | No of Pots in operation | Fugitive emission in mg/m <sup>3</sup> (Average) | Average fugitive emission mg/m <sup>3</sup> | Average fugitive emission in kg/T of Al from pot rooms (Kg/T of Al) | OSPCB NORM: Total Fugitive emission from Pot rooms (Kg/T of Al) |
|------------|--------------------------|-------------------------|--------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------|
| Pot room-A | 13.04.2024<br>15.04.2024 | 120                     | 1.22                                             | 1.679                                       | 0.372                                                               | 0.40                                                            |
| Pot room-B | 13.04.2024<br>15.04.2024 | 120                     | 1.22                                             |                                             |                                                                     |                                                                 |
| Pot room-C | 10.04.2024<br>12.04.2024 | 119                     | 1.82                                             |                                             |                                                                     |                                                                 |
| Pot room-D | 10.04.2024<br>12.04.2024 | 119                     | 1.74                                             |                                             |                                                                     |                                                                 |
| Pot room-E | 17.04.2024<br>19.04.2024 | 117                     | 3.15                                             |                                             |                                                                     |                                                                 |
| Pot room-F | 17.04.2024<br>19.04.2024 | 120                     | 1.53                                             |                                             |                                                                     |                                                                 |
| Pot room-G | 16.04.2024<br>18.04.2024 | 120                     | 1.41                                             |                                             |                                                                     |                                                                 |
| Pot room-H | 16.04.2024<br>18.04.2024 | 120                     | 1.34                                             |                                             |                                                                     |                                                                 |

  
 Authorised Signatory 06/05/24  
**Premananda Behera**  
 Asst. Manager (Laboratory)  
 NALCO, Smelter Plant, Angul

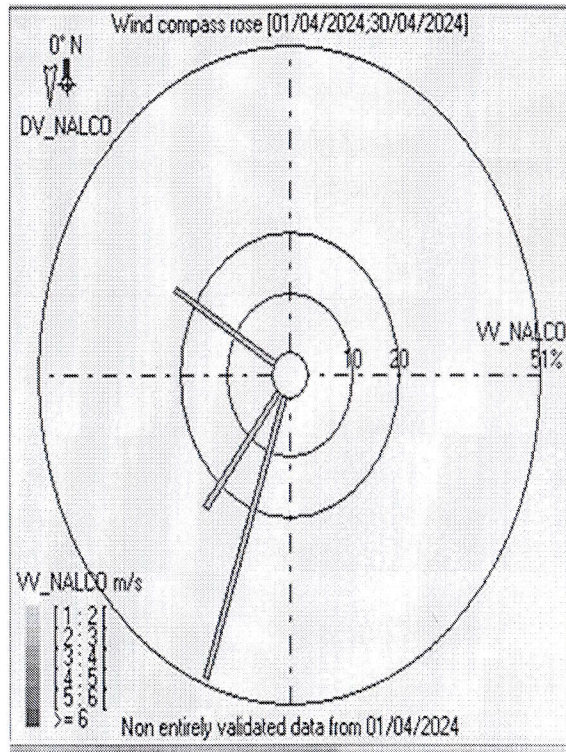
**MAXIMUM & MINIMUM TEMPERATURE AND RAIN FALL****APRIL 2024**

| DATE                               | MAXIMUM TEMP. (deg.C) | MINIMUM TEMP. (deg C) | RAIN FALL (mm)   |
|------------------------------------|-----------------------|-----------------------|------------------|
| 01-Apr                             | 40.0                  | 26.0                  | 0.0              |
| 02-Apr                             | 41.0                  | 25.0                  | 0.0              |
| 03-Apr                             | 40.0                  | 26.0                  | 0.0              |
| 04-Apr                             | 41.0                  | 28.0                  | 0.0              |
| 05-Apr                             | 43.0                  | 27.0                  | 0.0              |
| 06-Apr                             | 41.0                  | 26.0                  | 0.0              |
| 07-Apr                             | 38.0                  | 23.0                  | 21.5             |
| 08-Apr                             | 31.0                  | 22.0                  | 0.0              |
| 09-Apr                             | 34.0                  | 23.0                  | 0.0              |
| 10-Apr                             | 31.0                  | 20.0                  | 0.0              |
| 11-Apr                             | 28.0                  | 20.0                  | 6.4              |
| 12-Apr                             | 32.0                  | 21.0                  | 0.0              |
| 13-Apr                             | 32.0                  | 21.0                  | 0.0              |
| 14-Apr                             | 36.0                  | 28.0                  | 0.0              |
| 15-Apr                             | 41.0                  | 28.0                  | 0.0              |
| 16-Apr                             | 42.0                  | 28.0                  | 0.0              |
| 17-Apr                             | 44.0                  | 29.0                  | 0.0              |
| 18-Apr                             | 43.0                  | 26.0                  | 0.0              |
| 19-Apr                             | 44.0                  | 27.0                  | 0.0              |
| 20-Apr                             | 44.0                  | 27.0                  | 0.0              |
| 21-Apr                             | 43.0                  | 28.0                  | 0.0              |
| 22-Apr                             | 40.0                  | 28.0                  | 0.0              |
| 23-Apr                             | 42.0                  | 29.0                  | 0.0              |
| 24-Apr                             | 41.0                  | 28.0                  | 0.0              |
| 25-Apr                             | 43.0                  | 28.0                  | 0.0              |
| 26-Apr                             | 43.0                  | 29.0                  | 0.0              |
| 27-Apr                             | 44.0                  | 28.0                  | 0.0              |
| 28-Apr                             | 44.0                  | 28.0                  | 0.0              |
| 29-Apr                             | 44.0                  | 30.0                  | 0.0              |
| 30-Apr                             | 44.0                  | 29.0                  | 0.0              |
|                                    |                       |                       |                  |
| Max. Temp. for the month in Deg.C  |                       | 44.0                  |                  |
| Min. Temp. for the month in Deg.C. |                       | 20.0                  |                  |
| Total rainfall (mm) -              |                       | 27.9                  | YEAR 2024: 146.0 |
|                                    |                       |                       |                  |
|                                    |                       |                       |                  |
|                                    |                       |                       |                  |

  
 Authorised Signatory  
**Premananda Behera**  
 Asst. Manager (Laboratory)  
 NALCO, Smelter Plant, Angui

06/05/24

**AIR LABORATORY**  
**नालको**  **NALCO**  
**WINDROSE FOR THE MONTH OF APRIL 2024**



|               | < 1    | [ 1 : 2 [ | [ 2 : 3 [ | [ 3 : 4 [ | [ 4 : 5 [ | [ 5 : 6 [ | >= 6 | Accumulation |
|---------------|--------|-----------|-----------|-----------|-----------|-----------|------|--------------|
| [ 350 : 10 [  | 375.0  |           |           |           |           |           |      |              |
| [ 10 : 30 [   | 250.0  |           |           |           |           |           |      |              |
| [ 30 : 50 [   | 300.0  |           |           |           |           |           |      |              |
| [ 50 : 70 [   | 425.0  |           |           |           |           |           |      |              |
| [ 70 : 90 [   | 675.0  |           |           |           |           |           |      |              |
| [ 90 : 110 [  | 725.0  |           |           |           |           |           |      |              |
| [ 110 : 130 [ | 825.0  |           |           |           |           |           |      |              |
| [ 130 : 150 [ | 500.0  |           |           |           |           |           |      |              |
| [ 150 : 170 [ | 125.0  |           |           |           |           |           |      |              |
| [ 170 : 190 [ | 200.0  |           |           |           |           |           |      |              |
| [ 190 : 210 [ | 725.0  | 50.0      |           |           |           |           |      | 50.0         |
| [ 210 : 230 [ | 325.0  | 25.0      |           |           |           |           |      | 25.0         |
| [ 230 : 250 [ | 250.0  |           |           |           |           |           |      |              |
| [ 250 : 270 [ | 425.0  |           |           |           |           |           |      |              |
| [ 270 : 290 [ | 575.0  |           |           |           |           |           |      |              |
| [ 290 : 310 [ | 925.0  | 25.0      |           |           |           |           |      | 25.0         |
| [ 310 : 330 [ | 575.0  |           |           |           |           |           |      |              |
| [ 330 : 350 [ | 650.0  |           |           |           |           |           |      |              |
| Accumulation  | 8850.0 | 100.0     |           |           |           |           |      | 100 %        |

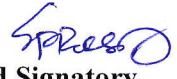
SP208 06/05/24  
 AUTHORISED SIGNATORY  
**Premananda Behera**  
 Asst. Manager (Laboratory)  
 NALCO, Smelter Plant, Angul

F60G4/QC/4.5.1  
Issue No 001.Rev 00  
Dt.04.07.2013

**ANALYSIS REPORT OF GROUND WATER AND SURFACE WATER  
FOR THE MONTH APRIL 2024**

| Sl. No. | Sampling place                    | Approx. Distance from Storm water Channel (in meter) | Fluoride mg/l (Norm 1.5 ) | pH (Norm 6.5-9.0) |
|---------|-----------------------------------|------------------------------------------------------|---------------------------|-------------------|
| 1       | Open Pond (Kulad)                 | 200                                                  | *                         | *                 |
| 2       | Open Pond (Kulad)                 | 100                                                  | *                         | *                 |
| 3       | Bore Well ( Kulad)                | 100                                                  | 1.02                      | 6.7               |
| 4       | Open Well Kulad)                  | 75                                                   | 1.28                      | 7.3               |
| 5       | Open Pond ( Bonda)                | 100                                                  | 1.42                      | 8.1               |
| 6       | Open well (Bonda)                 | 100                                                  | 1.24                      | 7.9               |
| 7       | Open Pond ( Bonda – Rly. Culvert) | 15                                                   | 1.45                      | 7.9               |
| 8       | Tube Well (Bonda)                 | 100                                                  | 1.37                      | 7.4               |
| 9       | Open well (Bonda)                 | 50                                                   | *                         | *                 |
| 10      | Open Well ( Chowadhia)            | 10                                                   | *                         | *                 |
| 11      | Open Well (Chowadhia)             | 15                                                   | *                         | *                 |
| 12      | Tube Well ( Chowadhia)            | 100                                                  | *                         | *                 |
| 13      | Open Pond (Chowadhia)             | 100                                                  | 1.33                      | 8.0               |
| 14      | Open Pond ( Banarpal)             | 200                                                  | 0.62                      | 6.8               |
| 15      | Open Pond (Banarpal)              | 200                                                  | 1.19                      | 7.0               |

- Sample could not be collected as access to the location was restricted.

  
06/05/24  
Authorised Signatory  
**Premananda Behera**  
Asst. Manager (Laboratory)  
NALCO, Smelter Plant, Angul

**ANALYSIS REPORT OF GROUND AND SURFACE WATER**  
(SURROUNDING VILLAGES OF SMELTER PLANT)  
FOR THE MONTH OF APRIL 2024

| Sl. No. | Sampling place           | Direction with respect to Smelter Plant | Approx. Distance from Smelter Plant Km | Fluoride mg/l (Norm 1.5 ) | pH (Norm 6.5-9.0) |
|---------|--------------------------|-----------------------------------------|----------------------------------------|---------------------------|-------------------|
| 1       | TURANGA TUBEWELL         | NW                                      | 4                                      | 0.56                      | 6.6               |
| 2       | KURUDOL OPEN WELL        | NW                                      | 5                                      | 0.77                      | 6.8               |
| 3       | BALARAM PRASAD TUBE WELL | N                                       | 5                                      | 0.59                      | 6.9               |
| 4       | GOTAMARA OPEN WELL       | NE                                      | 6                                      | 0.48                      | 6.9               |
| 5       | TULASIPAL OPEN WELL      | SE                                      | 4                                      | 1.48                      | 7.3               |
| 6       | LANGULIABERA OPEN WELL   | S                                       | 3                                      | 1.06                      | 7.2               |
| 7       | GOPINATHPUR OPEN WELL    | SW                                      | 2.5                                    | 0.44                      | 7.0               |
| 8       | ANKULA TUBE WELL         | W                                       | 2                                      | 0.54                      | 6.7               |

  
Authorised Signatory 06/05/24.  
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NALCO, Smelter Plant, Angul

F60G7/QC/4.5.1  
Issue No 001.Rev 00  
Dt.02.07.2015

**ANALYSIS OF TREATED EFFLUENT FROM SEWAGE TREATMENT PLANT  
(INSIDE TOWNSHIP)  
FOR THE MONTH OF APRIL 2024**

Sample Collected on: 17.04.2024

| Sl. No | Parameters                                         | Units         | Norms<br>(max) | Analysis |
|--------|----------------------------------------------------|---------------|----------------|----------|
| 1      | pH                                                 | -             | 6.5 to 9.0     | 7.2      |
| 2      | Suspended solids                                   | mg/l          | 100            | 02       |
| 3      | BOD 3 days at 27 deg. C                            | mg/l          | 30             | 04       |
| 4      | Fecal Coliform<br>(Sample collected on 19.04.2024) | MPN<br>/100ml | 1000           | 97       |

*Spreeth*  
Authorised Signatory 06/05/24  
**Premananda Behera**  
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NALCO Smelter Plant, Angul

F60G7/QC/4.5.1  
Issue No 001.Rev 00  
Dt.02.07.2015

**ANALYSIS OF TREATED EFFLUENT FROM SEWAGE TREATMENT PLANT  
(NEAR CISF BARRACK)  
FOR THE MONTH OF APRIL 2024**

Sample Collected on: 17.04.2024

| Sl. No | Parameters                                         | Units     | Norms (max) | Analysis |
|--------|----------------------------------------------------|-----------|-------------|----------|
| 1      | pH                                                 | -         | 6.5 to 9.0  | 6.5      |
| 2      | Suspended solids                                   | mg/l      | 100         | 02       |
| 3      | BOD 3 days at 27 deg. C                            | mg/l      | 30          | 06       |
| 4      | Fecal Coliform<br>(Sample collected on 19.04.2024) | MPN/100ml | 1000        | 90       |

  
Authorised Signatory 06/05/24  
**Premananda Behera**  
Asst. Manager (Laboratory)  
NALCO, Smelter Plant, Angul

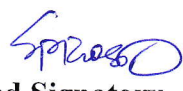
## BORE WELL ANALYSIS REPORT

FOR THE MONTH OF APRIL 2024

| Sl No. | Location                                    | Date of Collection and analysis. | pH<br>( Norm 6.5-9.0) | Fluoride as F mg/l<br>( Norm 1.5 ) | Cyanide as CN mg/l<br>( Norm 0.2 ) |
|--------|---------------------------------------------|----------------------------------|-----------------------|------------------------------------|------------------------------------|
| 1      | Bore well -3<br>(Hazardous waste land fill) | 19.04.2024                       | 7.2                   | 1.42                               | ND                                 |
| 2      | Bore well -4<br>(Hazardous waste land fill) | 19.04.2024                       | 7.4                   | 1.45                               | ND                                 |
| 3      | Bore well -5<br>(Hazardous waste land fill) | 19.04.2024                       | 6.9                   | 1.35                               | ND                                 |

**Note:**

1) ND – Not detectable.

  
06/05/24  
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**Premananda Behera**  
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NALCO, Smelter Plant, Angul

## FORAGE FLUORIDE MONITORING (GRASS SAMPLES) REPORTS AROUND SMLETER PLANT

FOR THE MONTH OF APRIL 2024

| SL. No | Location      | Direction w.r.t Smelter Plant | Date of collection of sample | Fluoride content (dry basis) in ppm for the month of APRIL'24 | Fluoride content (dry basis) in ppm for the month of MAR' 24 | Average of two consecutive months in ppm |
|--------|---------------|-------------------------------|------------------------------|---------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------|
| 1      | Bonda         | South-East                    | 10.04.2024                   | 39.1                                                          | 39.5                                                         | 39.3                                     |
| 2      | Tulsipal      | South-East                    | 09.04.2024                   | 38.2                                                          | 39.2                                                         | 38.7                                     |
| 3      | Languliabeda  | South-West                    | 09.04.2024                   | 39.4                                                          | 38.5                                                         | 38.95                                    |
| 4      | Banarpal      | East                          | 12.04.2024                   | 38.5                                                          | 38.2                                                         | 38.35                                    |
| 5      | Turang        | West                          | 04.04.2024                   | 39.1                                                          | 38.9                                                         | 39                                       |
| 6      | Balaramprasad | North                         | 08.04.2024                   | 38.6                                                          | 39.8                                                         | 39.2                                     |

Norm- For single month - 80ppm  
Average of two consecutive months - 60 ppm  
Annual average - 40 ppm

  
Authorised Signatory 06/05/24  
**Premananda Behera**  
Asst. Manager (Laboratory)  
NALCO, Smelter Plant, Angul