

FEDERAL MINISTRY OF HEALTH

PORT HEALTH (QUARANTINE) SERVICES

RIVERS STATE

P.M.B. NO

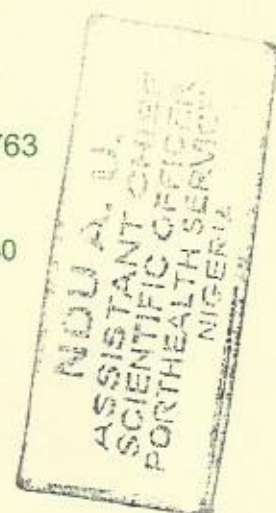
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WATER ANALYSIS RESULT/CERTIFICATION

- A. Types of Water - Fresh Water Sample
B. Source of sample - ENL SUPERIOR (BRIDGE)
C. Aim of Analysis - To Determine Portability

RESULT:-

1. PHYSICAL CHARACTERISTICS

- Colour - Colourless
Taste - Unobjectionable
Odour - Odourless

2. PHYSIO CHEMICAL CHARATERISTICS

| Physico-chemical Parameters | Units | Analytical Method | Result values | W.H.O Guideline Values |
|--------------------------------|------------------------|-------------------|---------------|------------------------|
| Colour | TCU | APHA 2120B | 10.9 | <15.00 |
| Conductivity | Us/cm | APHA 2510-B | 160.01 | 0-1000 |
| Nitrate (as NO ³) | Mg/L | APHA 418CDR2010 | 7.22 | 0-45 |
| Total Iron (Fe ²⁺) | Mg/L | ASTM D1068 | 0.24 | 0-0.30 |
| Copper (Cu ²⁺) | Mg/L | ASTM D1688 | 0.06 | 0-1.00 |
| pH | - | APHA 4500HB | 5.75 | 6.50-8.50 |
| Residual Chlorine | Mg/L | APHA 4500-CLF | <0.01 | 0-0.30 |
| Chromium (Cr ⁶⁺) | Mg/L | ASTM D1687 | ND | 0-0.05 |
| Fluoride (F ⁻) | Mg/L | APHA 4500-FP | ND | 0-45 |
| Chloride (Cl ⁻) | Mg/L | APHA 452100-B | 46.91 | 0.250 |
| Total Alkalinity | Mg/L CaCO ₃ | APHA 2091-B | 22.07 | 0-250 |

| | | | | |
|----------------------------------|----------------------|-----------------|--------|--------|
| Bicarbonate (HCO_3^-) | Mg/L | APHA 2320-B | 10.30 | 0-250 |
| Lead (Pb) | Mg/L | ASTM D3559 | ND | <0.5 |
| Sulphate (SO_4^{2-}) | Mg/L | ASTM 516DR/2010 | 32.7 | 250 |
| Manganese (Mn^{2+}) | Mg/L | ASTM D358 | <0.001 | <0.5 |
| Total hardness | Mg/L CaCO_3 | APHA 2340-C | 7.00 | 0-200 |
| Calcium hardness | Mg/L | APHA 2340-D | 4.30 | 0-75 |
| Magnesium hardness | Mg/L | APHA 2340-E | 2.50 | 0-50 |
| Total suspended solids | Mg/L | APHA 2540-D | 0.60 | 0-30 |
| Total dissolved solids | Mg/L | APHA 2540-C | 97.02 | 0-500 |
| Total Acidity | Mg/L CaCO_3 | APHA 2044-A | 0.90 | 0-250 |
| Salinity | Mg/L | APHA 45100-B | 76.01 | 0-5000 |

3. MICROBIAL / BACTERIOLOGICAL CHARACTERISTICS

CULTURE MEDIA USED: MacConkey Broth, EMB Agar, Sabouraud Agar, Nutrient Agar.

MACROSCOPY: Colourless, Odorless, Tasteless, with no deposit on standing

| S/N | PARAMETERS | UNIT | ANALYTICAL METHODS | ANALYTICAL RESULT | WHO LIMIT |
|-----|--|-----------|--------------------|-------------------|-----------|
| C | MICROBIOLOGICAL PARAMETERS | | | | |
| 1 | TOTAL COLIFORM BACTERIA COUNT AT 37°C | MPN/100ml | APHA 9221B | Absent | 0-5 |
| 2 | TOTAL HETEROPHIC BACTERIA COUNT (THBC) AT 37°C | CFU/100ml | APHA 9221D | 1 | 0-100 |
| 3 | TOTAL FILAMENTOUS FUNGAL COUNT AT 37°C | CFU/100ml | ASTM D5465-93 | Absent | <1 |

| | | |
|------------------------------|--------|---|
| Klebsiella aerogenes, CFU/ml | Absent | 0 |
| Legionella, CFU/ml | Absent | 0 |

REMARKS:

All parameters analyzed fall with W.H.O standard for portable water.

Water is therefore good for drinking and other domestic uses.

This analysis is in accordance with International Health Regulations and Nigerian Quarantine Acts. And it is valid for six (6) months.

