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Our Ref: GOI/CHEM/14/IPP01

Date: 07/12/2014

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ANALYST'S CERTIFICATE

(In Accordance with the Institute Of Public Analysts of Nigeria Decree No. 100 of 1992)

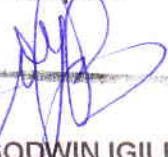
Sample Type: Water Samples from Calaro Oil Palm Plantation. Date of sampling: 28/11/014

Physical Parameters	NIS STD Spec	Ibiae Inlet 1	Ibiae Outlet 1	Ibiae Inlet 2	Ibiae Outlet 2
Colour	3.00Tcu	2.5	2.4	2.4	2.5
Odour	Unobject	Do	Do	Do	Do
Taste	Unobject	do	Do	Do	Do
Temperature	Ambient	Do	Do	Do	Do
Turbidity	5.0 NTU	1.9	1.9	1.9	1.9
Conductivity	1000us/cm	125	120	125	125
pH	6.5-8.5	5.90	5.85	5.85	5.90
Chemical Parameters					
Chloride	100	15	15	16	16
Fluoride	1.00	Nil	Nil	Nil	Nil
Copper	1.00	Nil	Nil	Nil	Nil
Iron	0.30	0.01	0.02	0.03	0.02
Nitrate	10.0	0.3	0.2	0.3	0.3
Nitrite	0.10	0.001	0.002	0.002	0.001
Sulphate	100	19	21	22	26
Manganese	0.05	Nil	Nil	Nil	Nil
Magnesium	2.00	0.22	0.24	0.23	0.22
Zinc	5.00	0.2	0.2	0.2	0.2
Total Suspended Solids (TSS)	250	42	45	44	45
Total dissolved Solids (TDS)	500	95	95	98	95
Hardness (as CaCO ₃)	100	21	21	22	20
Hydrogen Sulphide	0.01	0	0	0	0
Pesticide Resid	0.05	0	0	0	0
Glyphosate	0.02	0	0	0	0
Organochlorine	0.02	0	0	0	0
Organophosphate	0.02	0.001	0.001	0.002	0.002
Carbamate	0.02	0	0	0	0
Paraquat	0.01	0	0	0	0
Fluoranthene	} 0.0002	0	0	0	0
3, 4-Benzfluoranthene	} 0.0002	0	0	0	0
11,12-Benzfluoranthene	} Nil	0	0	0	0

3, 4-Benzpyrene	} Nil	0	0	0	0
11, 12-Benzpyrene	} Nil	0	0	0	0
Indeno (1,2,4,cd pyrene)	} Nil	0	0	0	0
Free residual chlorine	0.2	0	0	0	0
2-chlorophenol	0.01	0	0	0	0
2, 4-dichlorophenol	0.04	0	0	0	0
2, 4-trichlorophenol	0.30	0	0	0	0
Trihalomethane	0.10	0	0	0	0
Total Phenol	0.01	0	0	0	0
Heavy metals & others					
Lead	0.01	0.02	0.03	0.03	0.03
Cyanide	0.01	0.04	0.01	0.01	0
Arsenic	0.01	0.03	0.03	0.02	0.04
Cadmium	0.03	0.12	0.05	0.02	0.11
Barium	0.05	0.01	0.01	0.01	0.01
Mercury	0.00	0.001	0.001	0.001	0.002
Mineral Oil	0.01	0	0	0	0
Ammonia	0.05	0.13	0.12	0.12	0.11
Detergents (Lauryl Sulp)	0.01	0	0	0	0
Microbiology					
Radionuclides (Bq/L)	0.10	0	0	0	0
Clostridium perfringenes	Nil	0	0	0	0
Chromobacterium violac	Nil	0	0	0	0
E. Coli	Nil	0	10 ³	10 ³	10 ³
Feacal streptococci	Nil	0	10 ²	10 ³	10 ³
Klebsiella aerogenes	Nil	0	10 ²	10 ²	10 ²
Staph. Aeurus	Nil	0	10 ²	10 ²	10 ²
Yeast & Mould	Nil	10	10 ²	10 ²	10 ²
Feacal streptococci	Nil	0	10 ²	10 ²	10 ²
Total viable count (cfu/ml)	10 ³	10 ²	10 ⁶	10 ⁶	10 ⁶

Remarks:

The above test results showed that WATER SAMPLES from flowing streams in Ibiae Oil Palm Estate do not contain pesticide residues. Organophosphates detected at low limit suggest *in situ* environmental synthesis. Also, No pesticide residues were detected in the borehole and drinking water samples.

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