

Scope

Industrial Technology Institute, Chemical and Microbiology Laboratory, Sri Lanka

Analyte	Method (Reference)	Principle	Type of sample	Measurement- uncertainty	Measurement range
Chemistry					
Ammoniacal nitrogen	APHA 21 st ed. 4500 NH ₃ B & C	Titrimetry	*)	3%	5-100 mg/L
pH	APHA 4500 – H ⁺ B	Electrometric	*)	2%	1-12
Electrical Conductivity	APHA 2510 B	Conductometry	*)	3%	1 – 25000 μS/cm
BOD	APHA 5210 D	Manometry	*)	5%	15-350 mg/L
COD	APHA 5220 B	Titrimetry	*)	3%	5-25 mg/L 25-1500 mg/L
COD	APHA 5220 D	Colorimetry HACH	*)	10% 3%	5-25 mg/L 25-1500 mg/L
Alkalinity	APHA 2320 B	Titrimetry	*)	3%	>1 mg/L
Chloride	APHA 4500-Cl ⁻ B	Titrimetry	*)	3%	1-400 mg/L
Fluoride	APHA 4500 F ⁻ C	Ion Selective electrode	*)	3%	0.1-10.0 mg/L
Nitrate	SLS 614:Part1:1983	Colorimetry	*)	5%	0.1-1.2 mg/l
Nitrate	APHA 4500-NO ₃ ⁻ B	UV screening Method	*)	5%	0.1-1.2 mg/l
Nitrite	APHA 4500-NO ₂ ⁻ B	Colorimetry	*)	14%	0.01-1 mg/l
Total Hardness	APHA 2340 C	Titrimetry	*)	4%	>1 mg/L
Total Iron	APHA 3500 - Fe B	Colorimetry	*)	5%	0.1-2.0mg/L
Total Phosphorus	APHA 4500 P B & C	Colorimetry	*)	9%	1-25 mg/L
Total Dissolved Solids	APHA 2540 C	Gravimetry	*)	3%	20-4000 mg/L
Total Solids at 103° – 105°C	APHA 2540 B	Gravimetry	*)	3%	20-4000 mg/L
Total Suspended Solids	APHA 2540 D	Gravimetry	*)	3%	1-4000 mg/L
Turbidity	APHA 2130 B	Nephelometry	*)	20%	1.0– 1000 NTU

Metals

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Cr	APHA 3111 B	AAS/Flame	*)	1.0%	0.05-8.0 mg/L
Cd	APHA 3111 B	AAS/Flame	*)	1.0%	0.02-3.0 mg/L
Mn	APHA 3111 B	AAS/Flame	*)	1.0%	0.05-5.0 mg/L
Fe	APHA 3111 B	AAS/Flame	*)	1.0%	0.10-8.0 mg/L
Pb	APHA 3111 B	AAS/Flame	*)	1.5%	0.10-10.0 mg/L
Al	APHA 3111 D	AAS/Flame	*)	4.0%	0.50-50.00 mg/L
Sb	APHA 3111 B	AAS/Flame	*)	1.0%	0.50 - 8.00 mg/L
Ba	APHA 3111 D	AAS/Flame	*)	1.0%	0.50-8.00 mg/L
Co	APHA 3111 B	AAS/Flame	*)	1.0%	0.05-5.00 mg/L
Cu	APHA 3111 B	AAS/Flame	*)	1.0%	0.05-5.00 mg/L
Ni	APHA 3111 B	AAS/Flame	*)	1.0%	0.10-6.00 mg/L
Zn	APHA 3111 B	AAS/Flame	*)	1.0%	0.02-2.00 mg/L
Cd	APHA 3113 B	AAS/GTA	*)	3.0%	1.00-10.00 µg/L
Pb	APHA 3113 B	AAS/GTA	*)	6.0%	10.00-50.00 µg/L
Ni	APHA 3113 B	AAS/GTA	*)	6.0%	10.00-30.00 µg/L
As	APHA 3114 C	AAS/VGA	*)	6.5%	0.001-0.025 mg/L
Se	APHA 3114 C	AAS/VGA	*)	6.5%	0.001-0.025 mg/L
Sampling	APHA 1060, modified		*)		

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<u>Pesticide residue</u>				(0.10 µg/L)	
αHCH	CML/W&WS/022	GC-ECD	**)	23%	0.08-0.4 µg/L
βHCH	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
γHCH	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
δHCH	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
HCB	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4µg/L
Heptachlor	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
Aldrin	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
Heptachloro epoxide	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
Endosulfan I	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
Dieldrin	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
P,P' DDE	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
Endrin	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
Endosulfan II	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
P,P' DDD	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
Endrin aldehyde	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
Endosulfan sulphate	CML/W&WS/022	GC-ECD	**)	23%	0.08 – 0.4 µg/L
P,P' DDT	CML/W&WS/022	GC-ECD	**)	23%	0.08-0.4 µg/L
O,P' DDD	CML/W&WS/022	GC-ECD	**)	23%	0.08-0.4 µg/L
Triflurin	CML/W&WS/022	GC-ECD	**)	23 %	0.08-0.4µg/L

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Analyte	Method (Reference)	Principle	Type of sample	Measurement-uncertainty	Measurement range
				<u>1 µg/L</u>	
Captan	CML/W&WS/022	GC-NPD	**)	36 %	1-4 µg/L
Chlorpyrifos	CML/W&WS/022	GC-NPD	**)	36 %	1-4 µg/L
Diazinon	CML/W&WS/022	GC-NPD	**)	36 %	1-4 µg/L
Dimethoate	CML/W&WS/022	GC-NPD	**)	37 %	1-4 µg/L
Fenitrothion	CML/W&WS/022	GC-NPD	**)	37%	1-4 µg/L
Malathion	CML/W&WS/022	GC-NPD	**)	36 %	1-4 µg/L
Phenthoate	CML/W&WS/022	GC-NPD	**)	36 %	1-4 µg/L
Pirimiphos methyl	CML/W&WS/022	GC-NPD	**)	36 %	1-4 µg/L
Profenophos	CML/W&WS/022	GC-NPD	**)	37 %	1-4 µg/L

*) water, sewage, effluent, wastewater

**) potable water, ground water, river, lake & stream water

<u>Food</u>	<u>Method</u>		<u>Metrix</u>	<u>Expanded Uncertainty</u>	<u>Working Range</u>
Histamine	CML/MM/FISH-001/V1.0	HPLC-fluorescence	Fish	8 %	1 - 500 mg/kg
Lead	AOAC 999.10: 2000	AAS/GTA	Fish	5 %	0.5 – 5 mg/kg
Arsenic	AOAC 999.10: 2000	AAS/VGA	Fish	3 %	0.05 – 5 mg/kg
Mercury	AOAC 999.10: 2000	AAS/VGA	Fish	3 %	0.05 – 5 mg/kg
Cadmium	AOAC 999.10: 2000	AAS/GTA	Fish	5 %	0.05 – 5 mg/kg
Vitamin A	CML/MM/VIT-001/V1.0	HPLC-UV	Milk powder & Margarine	7 %	15-10000 µg/100 g
Vitamin E	CML/MM/VIT-001/V1.0	HPLC-UV	Milk Powder & Margarine	7 %	3-1000 mg/100 g

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<u>Microbiology</u> <u>Analyte</u>	<u>Method</u> <u>Reference</u>		<u>Type of</u> <u>sample</u>		
Coliform count (MPN)	SLS 614:Part 2 : 1983		Water		
<i>E.coli</i> (MPN)	SLS 614:Part 2 : 1983		Water		
Aerobic Plate count 22°C, 30°C, 37°C	SLS 516:Part 2 : 1991, mod		Water		
Aerobic Plate count At 30°C	SLS 516:Part 1 : 1991		Fish		
<i>Salmonella</i>	SLS 516:Part 5 : 1992		Fish		
Coliforms, Faecal Coliforms, <i>E.coli</i> (MNP)	SLS 516:Part 3 : 1982		Fish		
Staphylococcus aureus	SLS 516:Part 6:1992		Fish		
Faecal Streptococci (MPN)	ISO 7899-1:1984		Water		

mod = modified

APHA Standard methods for the Examination of Water and Wastewater. Joint publication of the American Public Health Association (APHA), American Water Works Association (AWWA), Water Environment Federation (WEF) 1998 20th Edition.

CML 11 In-house method of Chemical & Microbiology Laboratory of ITI

DIN Deutsches Institut fur Normung

MPN Most Probable Number

SLS Sri Lankan Standards of Sri Lanka Standards Institution