SINGAPORE LABORATORY ACCREDITATION SCHEME

Accredited Laboratory SAC-SINGLAS

Schedule

Setsco Services Pte Ltd
531 Bukit Batok Street 23
Singapore 659547

Biological & Chemical Technology Division (BCTD)

Certificate No. : LA-2000-0181-F

Issue No. : 39

Date : 29 December 2023

Expiry of Certificate : 01 May 2028

FIELD OF TESTING : Environmental Testing

MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
		APHA Methods are based on 24th Edition: 2023
1. Water Analysis (i) Potable water (ii) Non-potable water (iii) Sewage, effluents and trade wastes (iv) Water for industrial purposes (v) Swimming pool water (vi) Ground water (vii) RO Water (viii) Sea Water / Ballast Water (ix) Dialysis Water	1. Acidity 2. Alkalinity 3. Aluminium 4. Ammonia 5. Antimony 6. Arsenic 7. Barium 8. Beryllium 9. Bicarbonate 10. Biochemical Oxygen Demand (BOD) 11. Boron 12. Bromide 13. Cadmium 14. Calcium 15. Carbon Dioxide 16. Chemical Oxygen Demand (COD) 17. Chloride 18. Chlorine(residual) 19. Chromium 20. Cobalt 21. Colour 22. Conductivity 23. Copper 24. Cyanide	APHA 2310 B APHA 2320 B APHA 3120 B, 3111(B) (D)) APHA 4500-NH_3 C/F/H) APHA 3120 (B)) APHA 3114 (C) APHA 3114 C& 3120 B APHA 3120 B, 3111(B) (D) APHA 3120 B APHA 2320 B APHA 5210 B APHA 3120 B) APHA 4110 (B)) APHA 4500-Br (B) APHA 3120 B, 3111(B) (D) APHA 3120 B, APHA 3500-Ca (B) APHA 4500-CO_2 B/C/D) APHA 5220 B, C & D) HACH Method 8000) BCTD /Env/SOP/049 APHA 4500-Cl (B) (D) & 4110 B APHA 4500-Cl & Lovibond Manual APHA 3120 B, 3111(B) (D) APHA 3120 B, 3111(B) (D) APHA 2120 B APHA 2510 B USP 41 <645> APHA 3120 B, APHA 3111(B) (D) APHA 4500-CN (C) (E) (N) (O)

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	25. Detergents (Linear alkylate sulphonate as methylene blue active substances)	APHA 5540 (C)
	26. Dissolved Oxygen	) APHA 4500-O, Dissolved Oxygen) Meter
	27. Fluoride	) APHA 4500-F (C) & 4110 B &) Lovibond
	28. Hardness	APHA 2340 B
	29. Iron	APHA 3120 B, 3111(B) (D)
	30. Lead	APHA 3120 B, 3111(B) (D)
	31. Lithium	APHA 3120 B
	32. Magnesium	APHA 3120 B, 3111(B) (D)
	33. Manganese	APHA 3120 B, 3111(B) (D)
	34. Mercury	APHA 3112 B & 3120 B
	35. Molybdenum	APHA 3120 B
	36. Nickel	APHA 3120 B, 3111(B) (D)
	37. Nitrate	APHA 4500-NO_3 (B) (I) & 4110 B
	38. Nitrite	APHA 4500-NO_2 (B) & 4110 B APHA 4500-NO_3^- (I)
	39. Nitrogen	APHA 4500-N (C)
	40. Oil & grease	APHA 5520 B
	41. Oil & grease (Hydrocarbon)	APHA 5520 F
	42. Oil & grease by FTIR	BCTD/Env/SOP/050 Rev(4) (Ref: APHA 5520C using PCE Solvent Extract)
	43. pH	APHA 4500-H(B) ISO 10523 : 2008
	44. Phosphorus	APHA 4500-P(C) (E) (G) (H) & 4110 B
	45. Phenolic Compounds (as Phenol)	APHA 5530 (C) (D) BCTD/ENV/IHM015/2001 Rev(0)
	46. Potassium	APHA 3120 B, 3111(B) (D)
	47. Salinity	APHA 2520 B
	48. Selenium	APHA 3120 B, 3114(C)
	49. Silica	APHA 3120 B, 4500 SiO_2 (C) (D)
	50. Silver	APHA 3120 B, 3111(B) (D)
	51. Sodium	APHA 3120 B, 3111(B) (D)
	52. Solids	APHA 2540 B,C,D,E
	53. Strontium	APHA 3120 B
	54. Sulphate	APHA 4500-SO_4^{2-} (C) & 4110 B
	55. Sulphide	APHA 4500-S^{2-} (D) (F)
	56. Sulphite	APHA 4500-SO_3^{2-}
	57. Temperature	APHA 2550 B
	58. Tin	APHA 3120 B
	59. Total Organic Carbon, TOC	APHA 5310 (B) (C) USP 41 <643>
	60. Total Kjeldahl Nitrogen Content	APHA 4500-Norg (D)
	61. Turbidity	APHA 2130 B

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	62. Vanadium	APHA 3120B
	63. Volatile Fatty Acids	APHA 5560 C
	64. Zinc	APHA 3120 B, 3111(B) (D)
	65. Chlorophyll a	APHA 10150 A & B
	66. UV-Absorbing Organic Constituents	APHA 5910B
	67. Settleable Solids	APHA 2540F
	68. Silt Density Index	ASTM D4189-07(2014)
	69. Borate	ISO 9390 : 1990
	70. Iodine	APHA Pt 4500-I
	71. Acrylamide	EPA 8032A:1996
	72. Bromate	) USEPA 300.1 Rev 1.0
	73. Chlorate	)
	74. Chlorite	)
	75. Cyanuric acid	HACH 8139
	76. Cyanogen Chloride	APHA Pt 4500-CN (J)
	77. Hydrazine	ASTM D1385-07(2018)$^{\varepsilon 1}$
	78. Total Chlorine	HACH 8167 (9th Edn Jan 2014)
	79. Free Chlorine	HACH 8021(9th Edn Jan 2014)
	80. Ammonium	APHA 4500-NH_3 (D)
	81. Chloramines (Mono) and Nitrogen, Free Ammonia	HACH 10200 (12th Edn Nov 2014)
	82. Iodine	HACH 8031 (8th Edn Mar 2014)
	83. Colour by Lovibond	BCTD/Env/IHM144/2018 Rev(0) Lovibond Tintometer
	84. Haloacetic Acids	USEPA 552.3
	85. Appearance	APHA 2110
	86. Total Nitrogen and Total Phosphorus	APHA 4500-P(J)
	87. Chemical Oxygen Demand by Flocculated and filtered COD Method (ffCOD)	BCTD/Env/IHM161/2020 Rev(1)
	88. Metals by ICP-OES (Refer to Appendix 5 for list of metals)	APHA 3120B
	89. Metals by ICP-MS (Refer to Appendix 4 for list of metals)	APHA 3125B
	90. Odor	APHA 2150B
	91. Taste / Flavor	APHA 2160B
	92 Oxidation-Reduction Potential (ORP)	APHA 2580B

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MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
(x) Sea Water and Water with high chloride content	1. Chemical Oxygen Demand	BCTD/ENV/IHM 045/2019 Rev(1)
2. Water Microbiology • Potable • Non-potable • Sewage, effluents & trade waste • Swimming Pool Water • Ballast Water • Dialysis Water	1. Actinomycete	APHA 9250 B
	2. Aerobic Endospore Bacteria	APHA 9218 B
	3. Aerobic Plate Count / Heterotrophic Plate Count / Total Bacteria Count / Total Colony Count / Total Plate Count / Total Viable Count	) ISO : 8199 : 2018) ISO : 6222 : 1999) APHA 9215 B (PP Method)) APHA 9215 C (SP Method)) APHA 9215 D (MF Method))
	4. *Aeromonas* spp.	APHA 9262 B
	5. Biodegradable Organic Matter	APHA 9217 B
	6. *Campylobacter* spp.	ISO 17995 :2019
	7. *Clostridium perfringens*	NSM HPA Reference No W5i3.1 ISO 14189 : 2013
	8. Coliforms	APHA 9221 B (MPN Method) APHA 9222 B & C (MF Method) ISO 9308-1 : 2014 AMD 1 : 2016 (MF Method) ISO 9308-2 : 2012 APHA 9223 B (Colilert-18)
	9. Coliphage	USEPA 1602 (2001)
	10. Faecal enterococci	APHA 9230 C (MF Method) ASTM D6503-19 APHA 9230 D (IDEXX Enterolert Test Kit)
	11. *Escherichia coli*	APHA 9221 F (MPN Method) APHA 9222 H (MF Method) ISO 9308-1 : 2014 AMD 1 : 2016 (MF Method) ISO 9308-2 : 2012 APHA 9223 B (Colilert-18)

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MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
	12. Faecal coliforms	APHA 9221 E (MPN Method) APHA 9222 D & E (MF Method)
	13. *Klebsiella* spp.	APHA 9222 F (MF Method)
	14. *Pseudomonas aeruginosa*	APHA 9213 E (MF Method)
	15. *Salmonella* spp.	APHA 9274 B
	16. *Shigella* spp.	APHA 9276 B
	17. Spore of Sulphite Reducing Anaerobes	BS EN 26461-2 : 1993 BS 6068-4.9 : 1993 ISO 6461/2 : 1986
	18. *Staphylococcus aureus*	APHA 9213 B (MF Method)
	19. Sulfate-Reducing Bacteria	ASTM D4412-19 (MPN Technique)
	20. *Vibrio cholerae*	APHA 9278 B
	21. Yeast and Mould Count	APHA 9610 D
	22. Microbial Identification	BCTD/F&B/IHM164/2021 Rev(1)
• Cooling Tower and Water Fountain	23. Aerobic Plate Count / Heterotrophic Plate Count / Total Bacteria Count / Total Colony Count / Total Plate Count / Total Viable Count	) ISO : 8199 : 2018) ISO : 6222 : 1999) APHA 9215 B (PP Method)) APHA 9215 C (SP Method)) APHA 9215 D (MF Method))
	24. *Legionella* spp.	ISO 11731 : 2017
• Fresh Water and Marine Water	25. Phytoplankton Count	APHA 10200F
	26. Zooplankton Count	APHA 10200G
• Water for pharmaceutical purposes	27. Aerobic Plate Count / Heterotrophic Plate Count / Total Bacteria Count / Total Colony Count / Total Plate Count / Total Viable Count	USP 41 <1231>

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MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
3. Environmental Samples (Water, Soil, Sediment Sludge)	1. Toxicity characteristics leaching procedure As, Ag, Ba, Cr, Cd, Cu, CN, Fe, F, Hg, Mn, Ni, Pb, Se, Zn and Phenolic Compounds (as phenol)	EPA Method 1311 : 1992 -1st Edition (exclude ZHE : Zero-Headspace Extraction)
	2. All Heavy Metals in soil As, Al, Ag, B, Be, Ba, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Se, Sn, Sr, V, Zn and Hg	USEPA 3050 B : 1996 USEPA 3051A : 2007
	3. Semi-Volatile organic scan analysis	USEPA 8270E (2018) Refer to Appendix 1 for list of semi volatile organics
	4. For determination of volatile organic compounds by GC/MS method	USEPA 8260D (2018) Refer to Appendix 2 for list of volatile Organics
	5. Total Petroleum Hydrocarbons, TPHs • Diesel Range Organics (DRO) • Gasoline Range Organics (GRO) • Oil Range Organics (ORO)	US EPA 8015C (2007)
	6. Determination of Volatile Organic Compounds and Solvents	USEPA 1666 Rev A USEPA 8260D (2018) Refer to Appendix 3 for list of VOC and Solvents
	7. Oil & Grease for Sludge	APHA 5520E
	8. 1,2-Dibromo-3-chloropropane 9. 1,2-Dibromoethane 10. 1,4-Dioxane 11. Epichlorohydrin	) USEPA 8260D (2018))))
	12. Metals by ICP-MS	APHA 3125B Refer to Appendix 4 for list of metals
	13. Chromium VI	APHA Pt 3500-Cr (B)

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MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
	14. Metals by ICP-OES	USEPA 3051A (2007) USEPA 6010D (2018)
	15. TOC for solid sample	BS EN 13137 : 2001 BS EN 15936 : 2022
	16. Toxicity	Toxic Chromo Test Kit
	17. Ready Biodegradability	OECD Method 301D
	18. Dissolved/Dispersed Petroleum Hydrocarbon in Marine Water and Beaches	Intergovernmental Oceanographic Commission, Manual and Guides Chapter 13
	19. Total, Fixed and Volatile Solids in solid and semisolid samples	APHA 2540G
	20. Fall Velocity by Bottom Withdrawal Tube Method	BCTD/Env/IHM145/2019 Rev(1)
	21. Characterisation of Waste-Leaching-Compliance Test for Leaching of Granular Waste Materials and Sludges	BS EN 12457-1:2002
	22. Synthetic Precipitation Leaching Procedure (exclude ZHE : Zero Headspace Extraction)	USEPA 1312
	23. Aluminum, Antimony, Arsenic, Boron, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Vanadium, Zinc, and Silicon	USEPA 3052
	24. In Vitro Bioaccessibility Assay in Soil (Lead, Cadmium, Arsenic)	USEPA 1340 BCTD/Env/IHM162/2020 Rev(0)

MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
	25. Volatile Fatty Acids (VFA) / Organic and Volatile Acids by GC • Acetic Acid • Propionic Acid • Isobutyric Acid • Butyric Acid • Isovaleric Acid • Valeric Acid, • Isocaproic Acid • Caproic Acid • Heptanoic Acid	APHA 5560D
	26. Organochlorine Pesticides by Gas Chromatography • delta-BHC • alpha-BHC • beta-BHC • alpha-Chlordane • Gamma-Chlordane • Endosulfan I • Endosulfan II • Endrin aldehyde • Methoxychlor	USEPA 8081B
	27. Water Soluble Magnesium	BS 1377-3 : 2018+A1 : 2021
	28. Chloride & Sulphate	BS 1377-3 : 2018+A1 : 2021
	29. Polybrominated Diphenyl Ethers (PBDEs)	BCTD/Env/SOP/136
	30. Metals by ICP-OES (Refer to Appendix 5 for list of metals)	APHA 3120B
4. Non-metallic Products for Use in Contact with Water, and Glass Reinforced Polyester Sectional Water Tanks for PUB Potable Water	Effects on water 1. Odour and Flavour 2. Appearance 3. Extraction of metals 4. Microbiological growth 5. Extraction of Substances that may be of concern to Public Health 6. High Temperature Tests	SS 375:2015 and BS 6920:2014 Part 2.2.1, 2.2.2, 2.2.3 Part 2.3 Part 2.6 Part 2.4 Part 2.5 SS375:2015 and BS 6920:2000 Part 3

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MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
5. Products for Use in Contact with Drinking Water	1. Extraction of Metals • Antimony (Sb) • Arsenic (As) • Barium (Ba) • Cadmium (Cd) • Chromium (Cr) • Copper (Cu) • Lead (Pb) • Mercury (Hg) • Molybdenum (Mo) • Nickel (Ni) • Selenium (Se) • Silver (Ag) • Aluminium (Al) • Boron (B) • Iron (Fe) • Manganese (Mn)	AS/NZS 4020 : 2005 Appendix H AS/NZS 4020 : 2005 Appendix I AS/NZS 4020 : 2018 Appendix H AS/NZS 4020 : 2018 Appendix I
	2. Sample Extraction Procedure for Use with Water-Heating Systems	AS/NZS 4020 : 2018 Appendix K AS/NZS 4020 : 2018 Appendix H
6. Water for Making Concrete	1. Suitability of water	BS EN 1008: 2002
7. Indoor Air Quality	1. Temperature	BCTD/Env/IHM135/2015 Rev (1)
	2. Relative Humidity	BCTD/Env/IHM135/2015 Rev (1)
	3. Carbon Dioxide	BCTD/Env/IHM135/2015 Rev (1)
	4. Carbon Monoxide	BCTD/Env/IHM135/2015 Rev (1)
	5. Air Velocity	BCTD/Env/IHM167/2021 Rev(0)
	6. Total Volatile Organic Compounds	BCTD/Env/IHM129/2017 Rev(2)
	7. Ozone	BCTD/Env/IHM104/2015 Rev(1)
	8. Formaldehyde	BCTD/Env/IHM005/2015 Rev(1) BCTD/Env/IHM143/2017 Rev(1)
	9. Respirable Dust	BCTD/Env/IHM138/2015 Rev(1)
	10. Total Bacterial Count	BCTD/Env/IHM023/2022 Rev(6)

MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
	11. Total Yeast & Mould Count	BCTD/Env/IHM017/2022 Rev(5)
	12. Operative Temperature	BCTD/Env/IHM133/2015 Rev(1)
	13. Dust	BCTD/Env/IHM142/2017 Rev(1)
8. Source Emission	1. Sampling and Velocity Traverse for Stationary Sources	USEPA Method 1
	2. Determination of Stack Gas Velocity and Volumetric Flow Rate	USEPA Method 2
	3. Gas Analysis for Determination of Dry Molecular Weight	USEPA Method 3a
	4. Determination of Moisture Content in Stack Gases	USEPA Method 4
	5. Determination of Particulate Matter Emission from Stationary Sources	USEPA Method 5
	6. Determination of Sulfur Dioxide Emission from Stationary Sources by Gas Analyser	USEPA Method 6C
	7. Determination of Oxides of Nitrogen Emission from Stationary Sources by Gas Analyser	USEPA Method 7E
	8. Determination of Carbon Monoxide Emission from Stationary Sources by Gas Analyser	USEPA Method 10
	9. Sampling for determination of Dioxin and Furan from Stationary Sources	USEPA Method 23

MATERIALS/ PRODUCTS TESTED		TESTS/PROPERTIES		STANDARD METHODS/ TECHNIQUES
		10.	Sampling for Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method	USEPA 26a
		11.	Sampling for Determination of Metals Emissions from Stationary Sources	USEPA 29
9.	Industrial Hygiene / Air Monitoring	1.	Elements by ICP : Ag, Al, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, K, Li, Mg, Mn, Mo, Ni,Sb, Se, Sr, Sn, Ti, V, Zn	NIOSH 7301 – 2003
		2.	Bromine & Chlorine	NIOSH 6011 – 2022
		3.	Formic Acid	NIOSH 2011- 1994
		4.	Ammonia	NIOSH 6015 -1994
		5.	Alcohols 1:Ethanol, isopropyl alcohol	NIOSH 1400 – 1994
		6.	Alcohols : n-butanol, isobutyl alcohol, n-propyl alcohol	NIOSH 1401 – 1994
		7.	Cresol & Phenol : o-cresol, m-cresol, p-cresol, phenol	NIOSH 2546 – 1994
		8.	Hydrocarbons, Aromatic : Benzene, Toluene, Ethylbenzene, o-Xylene, m-Xylene, p-Xylene, Styrene	NIOSH 1501 – 2003
		9.	Hydrocarbons, Halogenated : Chloroform, Carbon Tetrachloride, cis-1, 2- Dichloroethylene, trans-1, 2-Dichloroethylene, Tetrachloroethylene, Trichloroethlyene	NIOSH 1003 – 2003

MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
	10. Hydrocarbons, 36-126°C bp : n-heptane, n-hexane, n-pentane, cyclohexane	NIOSH 1500 – 2003
	11. Ketones 1 : Acetone, methyl isobutyl ketone	NIOSH 1300 – 1994
	12. Methylene Chloride	NIOSH 1005 – 1998
	13. Methyl Ethyl Ketone	NIOSH 2500 – 1996
	14. Oil Mist	NIOSH 5026 – 1996
	15. Nicotine	NIOSH 2551 – 1998 NIOSH 2551 – 1998 (MS Detector)
	16. Asbestos and Other Fibres	NIOSH 7400 – 2019
10. Soil	1. Moisture	BS 1377 :Part 2 :2022
	2. pH value	) BS 1377 : Part 3 : 2018 + A1 : 2021
	3. Organic matter	)
	4. Mass loss on Ignition	)
	5. Sulphates	)
	6. Carbonates	)
	7. Chlorides	)
	8. Dry Matter / Water Content	ISO 11465 : 1993/Cor.1 : 1994
11. Nitrogen Gas, Compressed Air and Breathing Air and Breathing Air	Sampling and Analysis of Nitrogen Gas, Compressed Air and Breathing Air	
	1. Dew Point / Moisture	) BCTD/Env/IHM146/2019 Rev(1)
	2. Particle Count	) BCTD/Env/IHM147/2019 Rev(1)
	3. Oxygen	)
	4. Oil Content	)
	5. Bacteria	)
	6. Carbon Dioxide	)
	7. Carbon Monoxide	)
	8. Temperature	)
	9. Relative Humidity	)
	10. Flow Rate	)
	11. Odour	)

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12. Environmental and Hygiene Monitoring	1. Contact Plate 2. Hand Swab 3. Surface Swab	) Compendium of Methods for) Microbiological Examination of) Foods, 5th Edition, 2015, Chapter 3) ISO 18593 : 2018
	4. Microbiological Control and Monitoring of Aseptic Processing Environments	USP 41 <1116>
	5. Aerobic Plate count / Heterotrophic Plate Count / Total Bacteria Count / Total Colony Count / Total Plate Count / Total Viable Count	) APHA 9215 B) FDA-BAM online Chapter 3 (Jan 2001)) AOAC 990.12, 22nd Edition (2023))))
	6. *Bacillus cereus*	FDA-BAM online Chapter 14 (Oct 2020)
	7. Coliforms	FDA-BAM online Chapter 4 (Oct 2020) AOAC 2018.13, 22nd Edition (2023) (Rapid Petrifilm)
	8. Enterobacteriaceae	ISO 21528-2 : 2017
	9. *Escherichia coli*	FDA-BAM online Chapter 4 (Oct 2020) AOAC 2018.13, 22nd Edition (2023) (Rapid Petrifilm)
	10. Fecal coliform	FDA-BAM online Chapter 4 (Oct 2020)
	11. *Listeria monocytogenes*	FDA-BAM online Chapter 10 (April 2022)
	12. *Salmonella* spp.	FDA BAM online Chapter 5 (April 2023)
	13. *Staphylococcus aureus*	FDA-BAM online Chapter 12 (March 2016)
	14. Yeast & Mould Count	APHA 9610 B

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MATERIALS/ PRODUCTS TESTED	TESTS/PROPERTIES	STANDARD METHODS/ TECHNIQUES
13. Water • Drinking Water, • Distilled / Deionized • Water & Reverse Osmosis Water • Waste Water (e.g. Grease Traps, Manholes, Inspection Chambers, Covered Drains, etc) • Cooling Towers, Water Features, Water Tanks and Swimming Pools Water • Groundwater • Ballast Water	Water Sampling and In-situ Measurements 1. Water Sampling 2. pH 3. Salinity 4. Conductivity 5. Dissolved Oxygen 6. Free and Total Chlorine 7. Turbidity 8. Total Residual Chlorine (Cl_2) 9. Chlorine Dioxide (ClO_2)	) BCTD/Env/SOP/080 Rev(1)) BCTD/Env/SOP/081 Rev(1)) BCTD/Env/SOP/082 Rev(1)) BCTD/Env/SOP/083 Rev(0)) BCTD/Env/SOP/100 Rev(1)) BCTD/Env/IHM148/2019 Rev(0)) BCTD/Env/IHM149/2019 Rev(0)) BCTD/Env/IHM150/2019 Rev(0)))) BCTD/Env/IHM154/2020 Rev(0) BCTD/Env/IHM155/2020 Rev(0)

Approved Signatories

Mr Chung Tying Chun	–	All accredited tests except Section 8 and item 15 of Section 9
Ms Ang Qi Yin	–	Section 7 (items 1 to 13)
Mr Denny Lee Wei Wah	–	Section 1 (exclude item 71), Section 2 (item 3, 8, 10, 11, 12, 23 & 24), Section 3, Section 6, Section 9 (exclude item 16), Section 10 and Section 13 (item 8 & 9)
Mr Lim Meng Hoong	–	Section 8 and Section 13
Ms Marivie Viana Gapud	–	Section 1 (exclude item 71), Section 3 (item 12, 13, 14, 16, 17, 18 & 20), Section 6 and Section 13 (item 8 & 9)
Ms Hnin Le Le Kyi	–	Section 9 (exclude item 16)
Mr M. Mahenthiran A/L Munisamy	–	Section 1 (item 90 & 91), Section 2 (item 1, 3, 11, 19, 22, 25 and 26), Section 4 and Section 5 (item 2)
Mr Chin Hui Seng	–	Section 5 and Section 9 (item 16)
Ms Renny Husni	–	Section 5
Mr Wong Sze Beng	–	Section 7, Section 8, Section 11 and Section 13 (item 1, 8 & 9)
Mr Chin Wee Kuan Don	–	Section 7, Section 11 and Section 13 (item 1, 8 & 9)

Mr Lin Zhihao	–	Section 13
Ms Revathi A/P Selvam	–	Section 2 & 12
Ms Xie Yumin	–	Section 9 (item 16)
Ms Ooi Yen Nee	–	Section 9 (item 16)
Ms Sng Mui Tiang	–	Section 1, Section 2, Section 3, Section 4, Section 5 , Section 10 and 12
Ms Zheng Yaling	–	Section 1 (item 84) and Section 3 (item 3, 4, 5, 6, 8, 9, 10, 11, 25 & 26)
Ms Ye Zhengyu, Agnes	–	Section 1(item 90 & 91), Section 2, Section 4 and Section 12
Dr Donald Jiang	–	Section 1(item 90 & 91), Section 2, Section 4 and Section 12
Mr Too See Yang	–	Section 3 (exclude item 13, 16, 17, 18, 25 & 26), Section 10 and Section 13
Mr Chua Wei Jiet	–	Section 7
Mr Lance Sum Kok Fai	–	Section 8

Note :

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid test results. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.

Appendix 1 – Semi-Volatile Organic Compounds (USEPA 8270E)

PHENOLS
2-Chlorophenol
3-Chlorophenol
4-Chlorophenol
2-Nitrophenol
2,4-Dimethylphenol
2,3-Dichlorophenol
2,4-Dichlorophenol
2,5-Dichlorophenol
2,6-Dichlorophenol
3,4-Dichlorophenol
3,5-Dichlorophenol
4-Chloro-3-methylphenol
2,3,4-Trichlorophenol
2,3,5-Trichlorophenol
2,3,6-Trichlorophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4-Dinitrophenol
4-Nitrophenol
2-Methyl-4,6-Dinitrophenol
2,3,4,5-Tetrachlorophenol
2,3,4,6-Tetrachlorophenol
2,3,5,6-Tetrachlorophenol
Tetrachlorophenol
Pentachlorophenol
Cresols (m, p, o)
Catechol
Resorcinol
Hydrochinone
Phenol

POLYCYCLIC AROMATIC HYDROCARBONS
Naphthalene
Anthracene
Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Fluoranthene
Pyrene
Chrysene
2-Chloronaphthalene

Appendix 1 – Semi-Volatile Organic Compounds (USEPA 8270E) - Continued

POLYCYCLIC AROMATIC HYDROCARBONS
Dibenz (a,h) anthracene
Benz(a)anthracene
Benzo(a)pyrene
Benzo(ghi)perylene
Benzo(b)fluoranthene
Benzo(k)fluoranthrene
Indeno(123cd)pyrene

PHTHALATE ESTERS
Dimethyl phthalate
Diethyl phthalate
Di-n-butyl phthalate
Di-n-octyl phthalate
Bis (2-ethylhexyl) phthalate
Di-isobutyl Phthalate
Butyl Benzylphthalate
Dihexyl Phthalate

NITROAMINES
N-Nitrosodimethylamine
N-Nitrosodi-n-propylamine
Pyridine

NITROAROMATICS AND KETONES
N-Nitrosodiphenylamine
Nitrobenzene
Isophorone
2,6-Dinitrotoluene
2,4-Dinitrotoluene

HALOETHERS
Bis(2-chloroethyl)ether
Bis(2-chloroethoxy)methane
Bis(2-chloroisopropyl)ether
4-Chlorophenyl phenyl ether
4-Bromophenyl phenyl ether

CHLORINATED HYDROCARBONS
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,2-Dichlorobenzene
Hexachloroethane
1,2,3-Trichlorobenzene

Appendix 1 – Semi-Volatile Organic Compounds (USEPA 8270E) - Continued

CHLORINATED HYDROCARBONS
1,2,4-Trichlorobenzene
1,3,5-Trichlorobenzene
1,2,3,4-Tetrachlorobenzene
1,2,3,5-Tetrachlorobenzene
1,2,4,5-Tetrachlorobenzene
Pentachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachlorobenzene
1-Chloronaphthalene

OTHER CHLORINATED HYDROCARBONS
2-Chloroaniline
3-Chloroaniline
4-Chloroaniline

BENZIDINES & HYDRAZINES
Benzidene
3,3'-Dichlorobenzidine
1,2-Diphenylhydrazine

PCBs
PCB 28
PCB 52
PCB 101
PCB 118
PCB 138
PCB 153
PCB 180

PESTICIDES
Chlordane (cis)
Chlordane (trans)
4,4' DDT
4,4' DDE
4,4' DDD
Aldrin
Dieldrin
Eldrin
Alpha-Endosulfan
Alpha-HCH
Beta-HCH
Gamma-HCH

Appendix 1 – Semi-Volatile Organic Compounds (USEPA 8270E) - Continued

PESTICIDES
Delta-HCH
Heptachlor
Heptachlor Epoxide
Atrazine
Carbaryl
Carbofuran
Maneb

OTHERS
Dibenzofuran

Appendix 2 – Volatile Organic Compounds (USEPA 8260D)

MONOCYCLIC AROMATICS
Benzene
Toluene
Ethylbenzene
Styrene
Xylene
1,2,4-Trimethylbenzene

OXYGENATED COMPOUNDS
Cyclohexanone
Tetrahydrofuran
Tetrahydrothiophene

FUMIGANTS
1,2-Dichloropropane
1,3-Dichloropropene (Cis)
1,3-Dichloropropene (Trans)

HALOGENATED ALIPHATICS
Vinyl Chloride
Chlorobenzene
Chloroethane
1,1-Dichloroethene
1,2-Dichloroethene (cis)
1,2-Dichloroethene (trans)
Dichloromethane
Carbon Tetrachloride
Trichloroethene
2-Chloroethylvinyl Ether
1,1,1-Trichloroethane
1,1-Dichloroethane
1,2-Dichloroethane
1,2-Dichloropropane
1,3-Dichloropropane
2,2-Dichloropropane
Tetrachloromethane
1,1,2-Trichloroethane
Tetrachloroethene
1,1,2,2-Tetrachloroethane
1,4-Dichloro-2-butene (cis)
1,4-Dichloro-2-butene (trans)
1,2,3-Trichloropropane
1.3-Dichloropropene (cis)
1.3-Dichloropropene (trans)

Appendix 2 – Volatile Organic Compounds (USEPA 8260D) - Continued

HALOGENATED AROMATICS
1,4-Dichlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene

TRIHALOMETHANES
Chloroform
Bromodichloromethane
Dibromochloromethane
Bromoform

OTHERS
Acrolein
Acrylonitrile

Appendix 3 – Volatile Organic Compounds and Solvents (USEPA 1666 Rev A and USEPA 8260D)

TEST COMPOUNDS

Methylene Chloride

Trichloroethylene (TCE)

1,1,1-trichloroethane

Perchloroethylene (PCE)

Tetrachloromethane

1,1,2-Trichloroethane

Toluene

Styrene

Methyl tert-butyl-ether (MTBE)

Acetone

Nonane

Decane

Ethylbenzene

Xylenes (o, m, p)

Ethanol

Hexane

Heptane

Octane

1,2,4-Trimethylbenzene

Isopropyl Alcohol (IPA)

Furan

Tetrahydrofuran (THF)

N,N-Dimethylformamide (DMF)

Benzene

Turpentine (*as alpha- & beta-Pinene*)

Methanol

Appendix 3 – Volatile Organic Compounds and Solvents (USEPA 1666 Rev A and USEPA 8260D) Continued

TEST COMPOUNDS

Isobutanol

Methyl Ethyl Ketone (MEK)

Methyl Isobutyl Ketone (MIBK)

Isopropyl ether

Diethyl ether

Dimethyl Sulphide

Dimethyl Sulphoxide (DMSO)

Appendix 4 – Metals by ICP-MS

Elements	
1. Silver as Ag	28. Neodymium as Nd
2. Aluminium as Al	29. Nickel as Ni
3. Arsenic as As	30. Lead as Pb
4. Gold as Au	31. Palladium as Pd
5. Boron as B	32. Phosphorus as P
6. Barium as Ba	33. Platinum as Pt
7. Beryllium as Be	34. Rhodium as Rh
8. Bismuth as Bi	35. Antimony as Sb
9. Calcium as Ca	36. Scandium as Sc
10. Cadmium as Cd	37. Selenium as Se
11. Cobalt as Co	38. Tin as Sn
12. Chromium as Cr	39. Strontium as Sr
13. Copper as Cu	40. Tantalum as Ta
14. Iron as Fe	41. Terbium as Tb
15. Germanium as Ge	42. Tellurium as Te
16. Mercury as Hg	43. Thorium as Th
17. Holmium as Ho	44. Titanium as Ti
18. Indium as In	45. Thallium as Tl
19. Iridium as Ir	46. Uranium as U
20. Potassium as K	47. Vanadium as V
21. Lanthanum as La	48. Tungsten as W
22. Lithium as Li	49. Yttrium as Y
23. Magnesium as Mg	50. Zinc as Zn
24. Manganese as Mn	51. Zirconium as Zr
25. Molybdenum as Mo	
26. Sodium as Na	
27. Niobium as Nb	

Appendix 5 – Metals by ICP-OES

Elements	
1. Silver as Ag	21. Sodium as Na
2. Aluminium as Al	22. Neodymium as Nd
3. Arsenic as As	23. Nickel as Ni
4. Gold as Au	24. Lead as Pb
5. Boron as B	25. Palladium as Pd
6. Barium as Ba	26. Phosphorus as P
7. Beryllium as Be	27. Platinum as Pt
8. Bismuth as Bi	28. Rhodium as Rh
9. Calcium as Ca	29. Antimony as Sb
10. Cadmium as Cd	30. Sulfur as S
11. Cobalt as Co	31 Selenium as Se
12. Chromium as Cr	32. Silicon as Si
13. Copper as Cu	33. Tin as Sn
14. Iron as Fe	34. Strontium as Sr
15. Gallium as Ga	35. Tellurium as Te
16. Potassium as K	36. Titanium as Ti
17. Lithium as Li	37. Thallium as Tl
18. Magnesium as Mg	38. Vanadium as V
19. Manganese as Mn	39. Tungsten as W
20. Molybdenum as Mo	40 .Zinc as Zn