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Element Materials Technology Environmental UK Ltd

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DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Health and Hygiene	Health and Safety Executive - Asbestos: The Analysts' Guide (HSG 248) – 2021
ASBESTOS IN BULK MATERIALS including materials and products suspected of containing asbestos	Identification of: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite	Documented In-House Method TM065 using stereo-microscopy, polarised light optical microscopy and dispersion staining based on HSG 248
ASBESTOS IN SOILS – The Identification of Asbestos fibres in bulk samples of Soil, *specifically*: *Soil*	Identification of: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite	Documented In-House Method PM042S and TM065 using stereo-microscopy, polarised light optical microscopy and dispersion staining based on HSG 248
ASBESTOS IN SOILS – The Identification and Quantification of Asbestos fibres in bulk samples of Soil, *specifically:* *Soil*	Identification and Quantification of Asbestos content of: Amosite Chrysotile Crocidolite Fibrous Actinolyte Fibrous Anthophyllite Fibrous Tremolite	Documented In-House Method PM042S and TM065 for identification using stereo-microscopy, polarised light optical microscopy and dispersion staining based on HSG 248.Documented In-House Method PM042S and TM131 for quantification of asbestos.

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
PETROLEUM and PETROLEUM PRODUCTS	<u>Chemical Tests</u> C5-C35 fingerprint (qualitative) and banding >C8-10 >C10-12 >C12-16 >C16-21 >C21-35 >C35 Aliphatic/aromatic fractionation and subsequent banding: Aliphatic bands: >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C35+ Aromatic bands (equivalent carbon EC): >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C35+	Fractionation by PM035 followed by in-house method TM001P using GC-FID

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
AIR Ambient Air/Soil Vapour	<u>Chemical Tests</u> (cont'd) Volatile Organic Compounds: 1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,2,4-Trimethylbenzene 1,2-Dibromoethane 1,2-Dichlorobenzene 1,2-Dichloroethane 1,2-Dichloropropane 1,3,5-Trimethylbenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzene Bromomethane Carbon Tetrachloride Chlorobenzene Chloroethane Chloroform cis-1,2-Dichloroethene cis-1,3-Dichloropropene Ethylbenzene m&p - Xylenes Methylene Chloride o-Xylene Styrene Tetrachloroethene Toluene trans-1,3-Dichloropropene Trichloroethene Trichlorofluoromethane Trichlorotrifluoroethane Vinyl Choride	In-house test method TM068G using preparation method PM 034, using Summa (Silco-can) canisters, Tedlar Bags, Bottle Vac and GC-MS based on USEPA TO15.

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
AIR (cont'd)	Chemical Tests (cont'd)	
Ambient Air	Volatile Organic Compounds 100 to 5000 pptv [equivalent to 0.1 to 5 ppbv]: 1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,2,4-Trimethylbenzene 1,2-Dibromoethane 1,2-Dichlorobenzene 1,2-Dichloroethane 1,2-Dichloropropane 1,3,5-Trimethylbenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzene Bromomethane Carbon Tetrachloride Chlorobenzene Chloroethane Chloroform cis-1,2-Dichloroethene Ethylbenzene m&p - Xylenes Methylene Chloride o-Xylene Styrene Tetrachloroethene Toluene Trichloroethene Trichlorofluoromethane Trichlorotrifluoroethane Vinyl Chloride	In-house test method TM205 using Summa (Silco-can) canisters and GC-MS detection

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on desorption tubes	Chemical Tests (cont'd)	
Tenax ATD tubes	Diethyl ether Hexane 1-Chlorobutane Benzene 1,1-Dichloropropene Chloroacetonitrile Trichloroethene Dibromomethane Methyl methacrylate Bromodichloromethane cis-1,3-dichloropropene Toluene trans-1,3-dichloropropene 1,1,2-Trichloroethane 1,3-Dichloropropane Ethyl methacrylate Dibromochloromethane 1,2-Dibromoethane Tetrachloroethylene Chlorobenzene 1,1,1,2-tetrachloroethane Ethylbenzene M/P Xylene Bromoform Styrene O Xylene 1,1,2,2-Tetrachloroethane 1,2,3-Trichloropropane trans-1,4-dichloro-2-butene Bromobenzene 2-Chlorotoluene Propyl benzene 4-Chlorotoluene 1,3,5-Trimethylbenzene tert-Butyl benzene 1,2,4-Trimethylbenzene 1,3-Dichlorobenzene sec-Butylbenzene 1,4-Dichlorobenzene p-isopropyl toluene 1,2-Dichlorobenzene n-butyl benzene Hexachloroethane 1,2-dibromo-3-chloropropane	In-house method TM 197G by Thermal Desorption GC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on desorption tubes (cont'd)	Chemical Tests (cont'd)	
Tenax ATD tubes (cont'd)	Nitrobenzene 1,2,4-Trichlorobenzene Naphthalene 1,2,3-Trichlorobenzene Hexachlorobutadiene	In-house method TM 197G by Thermal Desorption GC-MS (cont'd)
SOILS	Chemical Tests	
	Elements:	In-house method TM030S using PM 015S and PM 077S by ICP-OES
	Arsenic Barium Cadmium Chromium Cobalt Copper Lead Manganese Mercury Molybdenum Nickel Selenium Zinc	
	Water soluble boron	In-house method TM074 using PM 032 and PM 077S by ICP-OES
	Water Soluble Anions: Chloride Total Oxidised Nitrogen (TON) Sulphate	In-house method TM038 using PM 020S by discrete analyser
	Cyanide - Total	In-house method TM089W/S using PM 045S by segmented flow analysis

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd) Gasoline Range Organics (GRO) and banding: >C4-C8 >C8-C12 >C5-C6 >C6-C8 >C8-C10 Total GRO C4-C12 Total GRO C5-C12 MTBE benzene toluene ethylbenzene o-xylene m/p-xylene Also aliphatic/aromatic fractionation and subsequent banding: Aliphatic: >C5-C6 >C6-C8 >C8-C10 Aromatic (equivalent carbon EC) >C5-C7 >C7-C8 >C8-C10 Extractable petroleum hydrocarbons (EPH) in the range: C8-C40 Diesel range organics (DRO) C25-C40 range organics - lubricating oil	In-house method TM 036S using PM 012S, using headspace GC-FID In-house methods PM006S (soxhlet extraction) or PM008S (end over end shake) followed by TM005S using GC-FID

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd)	
	Extractable petroleum hydrocarbons (EPH) in the range: >C8-C40, including banding: >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35	In house methods PM008S (end over end shake) fractionation by SPE extraction PM016 followed by TM005S using GC-FID
	Extractable petroleum hydrocarbons (EPH) including aliphatic/aromatic fractionation and subsequent banding: Aliphatic: >EC10 – EC12 >EC12 – EC16 >EC16 – EC21 >EC21- EC35 Total aliphatics >C10-C40 Aromatic: >EC10 – EC12 >EC12 – EC16 >EC16 – EC21 Total aromatics >C10 – C40	
	Loss on ignition at 440 °C	In-house method TM022S using PM 004S
	pH	In house method TM073 using PM 011S using Metrohm robotic sample processor
	Total Sulphate	In-house method PM029S and PM 077 followed by TM050S using ICP-OES

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd)	
	Polychlorinated Biphenyls (PCBs): PCB 28/31 PCB 52 PCB 101 PCB 118 PCB 138 PCB 153 PCB 180 PCB 81 PCB 87 PCB 123 PCB 114 PCB 105 PCB 126 PCB 167 PCB 156/157 PCB 169 PCB 189 Total PCBs (sum of above)	In-house method TM017S using end over end shaker (PM 008) and GC-MS
	Polycyclic Aromatic Hydrocarbons (PAHs): Naphthalene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benz(a)anthracene Chrysene Benzo(b/j/k)fluoranthene Benzo(a)pyrene Indeno(123,cd)pyrene Dibenzo(ah)anthracene Benzo(ghi)perylene	In-house method TM004S using end over end shake (PM008S) and GC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd)	
	Phenols: Phenol m/p-Cresol o-Cresol Xylenols 2,3,5-Trimethylphenol 2-Isopropylphenol	In-house method TM026 using sovent extraction (PM021S) and HPLC
	Solvent Extractable Matter	In-house method TM007S using PM 006S
	Total Organic Carbon Total Carbon	In-house method TM021S using PM 024S
	Volatile Organic Compounds Chloromethane Chloroethane Trichlorofluoromethane 1,1-Dichloroethene Dichloromethane Trans-1,2-Dichloroethene 1,1-Dichloroethane Cis-1,2-Dichloroethene Bromochloromethane Chloroform 1,1,1-Trichloroethane 1,1-Dichloropropene Carbontetrachloride 1,2-Dichloroethane Benzene Trichloroethene 1,2-Dichloropropane Dibromomethane Bromodichloromethane Toluene 1,1,2-Trichloroethane Tetrachloroethene 1,3-Dichloropropane Dibromochloromethane 1,2-Dibromoethane Chlorobenzene	In-house method TM015S using PM 010S by headspace GC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd)	
	Volatile Organic Compounds (cont'd)	In-house method TM015S using PM 010S by headspace GC-MS
	1,1,1,2-Tetrachloroethane Ethylbenzene m/p Xylene o Xylene Isopropylbenzene 1,1,2,2 Tetrachloroethane 1,2,3-Trichloropropane Propylbenzene 1,3,5-Trimethylbenzene Tert-Butylbenzene 1,2,4-Trimethylbenzene Sec-Butylbenzene 1,4-Dichlorobenzene 1,3-Dichlorobenzene 1,2-Dichlorobenzene MTBE Carbon Disulphide	
	Hexavalent Chromium	In House method TM038 using PM 020S using Aquachem Photometric Analyser
	Semivolatile Organic Compounds:	In house method TM016S using PM 008 using GCMS analysis
	Phenol 2-Chlorophenol N-Nitrodi-n-propylamine Nitrobenzene Isophorone 2,4-Dichlorophenol 1,2,4-Trichlorobenzene Hexachlorobutadiene 2-Methylnapthalene 2-Chloronaphthalene Dimethylphthalate Dibenzofuran 4-Bromophenyl phenyl ether Phenanthrene Fluoranthene Pyrene	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd)	
	Poly Chlorinated Dibenzo-p-Dioxins PCDDs	Documented In-house methods based on EPA 1613. Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM139 GC-HRMS TM206
	2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD	
	Poly Chlorinated Dibenzo Furans PCDFs	Documented In-house methods based on EPA 1613. Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM139 GC-HRMS TM206
	2,3,7,8-TCDF 1,2,3,7,8-PCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd) Leachate preparation (10:1)	<u>Chemical Tests</u> (cont'd) Metals: Aluminium Ammonium Antimony Arsenic Barium Beryllium Boron Cadmium Calcium Chloride Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Molybdenum Nickel Nitrite Phosphate Phosphorus Potassium Selenium Sodium Sulphate Vanadium Zinc	PM017S 10:1 leachate preparation based on BS EN 12457

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS Potable water (tap, non-regulatory), Surface water and groundwater	Chemical Tests (cont'd) Volatile Organic Compounds (VOCs): Chloromethane Chloroethane Trichlorofluoromethane 1,1-Dichloroethene Carbon Disulphide Dichloromethane Trans-1,2-Dichloroethene 1,1 - Dichloroethane Cis-1,2-Dichloroethene Bromochloromethane Chloroform 1,1,1-Trichloroethane 1,1-Dichloropropene Carbontetrachloride 1,2-Dichloroethane Benzene Trichloroethene 1,2-Dichloropropane Dibromomethane Bromodichloromethane Toluene 1,1,2-Trichloroethane Tetrachloroethene 1,3,-Dichloropropane 1,2-Dibromoethane Chlorobenzene 1,1,1,2-Tetrachloroethane Ethylbenzene m/p Xylene o Xylene Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene Tert-Butylbenzene 1,2,4-Trimethylbenzene Sec-Butylbenzene	In-house method PM010 and TM015W by headspace GC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd)	Chemical Tests (cont'd)	
Potable water (tap, non-regulatory), Surface water and groundwater (cont'd)	Volatile Organic Compounds (VOCs) (cont'd): 4-Isopropyltoluene 1,3- Dichlorobenzene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene MTBE Vinyl Chloride	In-house method PM010 and TM015W by headspace GC-MS
Potable water (tap non-regulatory), Surface water and groundwater	Volatile Organic Compounds (VOCs): MTBE Chloromethane Vinyl Chloride Bromomethane Chloroethane Trichlorofluoromethane Diethyl Ether 1,1-Dichloroethene Carbon Disulphide Acrylonitrile Trans-1,2-Dichloroethene 1,1 - Dichloroethane Cis-1,2-Dichloroethene Propionitrile Bromochloromethane 1,1,1-Trichloroethane 1-Chlorobutane 1,1-Dichloropropene Carbontetrachloride 1,2-Dichloroethane Benzene Trichloroethene 1,2-Dichloropropane Dibromomethane Toluene Cis-1,3-Dichloropropene Trans-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene	In-house method TM 128 using PM 115W by Purge and Trap GC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd) Potable water (tap non-regulatory), Surface water and groundwater (cont'd)	<u>Chemical Tests</u> (cont'd) Volatile Organic Compounds (VOCs) (cont'd): 1,3-Dichloropropane 1,2-Dibromoethane Chlorobenzene 1,1,1,2-Tetrachloroethane Ethylbenzene m/p Xylene o Xylene Bromoform Isopropylbenzene 1,1,2,2 Tetrachloroethane Bromobenzene 1,2,3-Trichloropropane 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene Tert-butylbenzene 1,2,4-Trimethylbenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene	In-house method TM 128 using PM 115W by Purge and Trap GC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd) Drinking Water (non-regulatory), Surface water and Ground water	<u>Chemical Tests</u> (cont'd) Determination of Per - and polyfluoroalkyl substances (PFAS), specifically: 11-CL PF3OudS 3:3-FTCA 4:2 FTS 5:3-FTCA 6:2 FTS 6:2FTAB 7:3-FTCA 8:2 diPAP 8:2 FTS 9-CL PF3ONS ADONA EEA-NH4 Et-FOSE [M-H]- GenX (HFPO-DA) HFPO-TA N-EtFOSA N-MeFOSA N-MeFOSAA PFBA PFBS PFBSA PFDA PFDoDA PFDoDS PFDS PFecHS PFEESA PFHpA PFHpS PFHxA PFHxDA PFHxS PFHxSA PFMOBA PFNA PFNS PFOA PFOS linear PFOSA	In-house method TM 219 and PM 151W by direct injection LC-MS/MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd)	Chemical Tests (cont'd)	
Drinking Water (non-regulatory), Surface water and Ground water (cont'd)	Determination of Per - and polyfluoroalkyl substances (PFAS), specifically: PFPeA PFPeS PFTrDS PFTreDA PFTriDA PFUnDA PFUnDS Me-FOSE [M-H]- N-EtFOSAA	In-house method TM 219 and PM 151W by direct injection LC-MS/MS
Drinking Water (non-regulatory), Surface water and Ground water	Determination of Per - and polyfluoroalkyl substances (PFAS), specifically: PFBA PFPeA PFBS PFHxA PFPeS PFHpA naDONA PFHxS PFOA PFHpS PFNA PFOS PFDA 9Cl-PF3ONS PFUnA	In-house method TM0135 using SPE preparation (PM122W) and LC-MS/MS
Drinking Water (non-regulatory)	Determination of Per - and polyfluoroalkyl substances (PFAS), specifically: HFPO-DA	In-house method TM0135 using SPE preparation (PM122W) and LC-MS/MS.

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd)	Chemical Tests (cont'd)	
Surface Water and groundwater	Phenols Cresols Xylenols	In-house method TM026 using PM 067W, using HPLC
Surface Water and groundwater	Hexavalent Chromium	In house method TM038 using PM 031W, by an Automated photometric Analyser
Surface Water and groundwater	Dissolved Gases: Ethane Ethene Methane	In house method TM025 using GC-TCD-FID
Potable water (non-regulatory), surface water and groundwater	Extractable petroleum hydrocarbons (EPH) including banding: >C10-C12 >C12-C16 >C16-C21 >C21-C35 Total EPH >C10-C40	In-house method TM005 by GC-FID using stir bar extraction (PM030W) and fractionation by SPE extraction PM016
Potable water (non-regulatory), surface water and groundwater	And including aliphatic/aromatic fractionation and subsequent banding Aliphatic: >C10-C12 >C12-C16 >C16-C21 >C21-C35 Total Aliphatic (>C10-C40) Aromatic (equivalent carbon EC): >C10-C12 >C12-C16 >C16-C21 Total Aromatic (>C10-C40)	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd) Potable water (non-regulatory), surface water and groundwater	<u>Chemical Tests</u> (cont'd) Semi-Volatile Organic Compounds (SVOCs): 1,2,4-Trichlorobenzene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 2,4,5-Trichlorophenol 2,4-Dichlorophenol 2,4-Dinitrotoluene 2-Chloronaphthalene 2-Chlorophenol 2-Methylnapthalene 2-Methylphenol 4-Bromophenyl phenyl ether 4-Chloro-3-methylphenol 4-Chlorophenyl phenyl ether Acenaphthene Acenapthylene Anthracene Azobenzene Benz[a]anthracene Benzo[b/k]fluoranthene Benzo[ghi]perylene Bis(2-Chloroethyl)ether Bis(2-chloroethoxy)methane Carbazole Chrysene Dibenz[a,h]anthracene Dibenzofuran Diethyl phthalate Di-n-Butyl phthalate Fluoranthene Fluorene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Isophorone Napthalene Nitrobenzene N-Nitrodi-n-propylamine Phenanthrene Pyrene	In-house method TM016 using stir bar extraction (PM030W) followed by GC-MS analysis

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd)	Chemical Tests (cont'd)	
Drinking water (non-regulatory tap water), Groundwater, Surface Water (river water), Prepared leachate, Trade effluent (phosphorus -excluding tap water and trade effluent)	Metals: Aluminium Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Cobalt Copper Iron Lead Manganese Mercury Molybdenum Nickel Phosphorous Selenium Tin Vanadium Zinc	In house method PM017S based on BS EN 12457 (10:1 leachate preparation) and In house method TM170W using PM014W by ICP-MS
Surface water, groundwater and leachate from landfill	Extractable petroleum hydrocarbons (EPH) in the range: C8-C40	In-house method TM005 by GC-FID using stir bar extraction (PM030W)
	Alkalinity	In house method TM075 using PM 031W using robotic sample processor
Surface water, groundwater and leachate from landfill (cont'd)	pH	In house method TM073 using PM 031W using robotic sample processor
	Electrical Conductivity at 25 °C	In house method TM076 using PM 031W using robotic sample processor

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd)	Chemical Tests (cont'd)	
	Total Organic Carbon Dissoved Organic Carbon Total Inorganic Carbon Dissolved Inorganic Carbon Total Carbon	In-house method TM060W by TOC analyser
	Biochemical Oxygen Demand (BOD)	In house method TM058 using DO probe and meter
Surface water, groundwater, Tap water (non-regulatory) and prepared leachate	Biochemical Oxygen Demand (BOD)	In house method TM058 using Manometric Bottle top sensors
Surface water, groundwater and leachate from landfill	Polycyclic Aromatic Hydrocarbons (PAHs): Naphthalene Acenaphthene Acenaphthylene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benz(a)anthracene Benzo(b/k)fluoranthene Benzo(a)pyrene Indeno(123,cd)pyrene Dibenzo(ah)anthracene Benzo(ghi)perylene Chrysene	In-house method TM004W using stir bar extraction (PM030W) and GC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd)	Chemical Tests (cont'd)	
Surface water, groundwater and leachate from landfill (cont'd)	Gasoline Range Organics (GRO) and banding: MTBE Benzene Toluene Ethylbenzene o-xylene m/p-xylene Decane Dodecane Naphthalene >C5-C6 >C6-C8 >C5-C8 >C8-C10	In-house method TM 036W using PM 012W using headspace GC-FID
Surface water, groundwater and leachate from landfill	Gasoline Range Organics (GRO) and banding: Total GRO >C5-C12 Also aliphatic/aromatic fractionation and subsequent banding: Aliphatic: C5-C6 >C6-C8 >C8-C10 Aromatic (equivalent carbon EC) >C5-C7 >C7-C8 >C8-C10	In-house method TM 036W using PM 012W using headspace GC-FID

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd)	Chemical Tests (cont'd)	
Surface water, groundwater, leachate prepared from soils and leachate from landfill	Elements: Aluminium Antimony Arsenic Barium Cadmium Calcium Cobalt Chromium Copper Iron Lead Mercury Magnesium Manganese Molybdenum Nickel Phosphorus Potassium Selenium Sodium Vanadium Zinc	PM017S 10:1 leachate preparation based on BS EN 12457 In-house method TM 030W using PM 014W using ICP-OES
	Mercury	In house method TM061 using PM 031W using CVAFS
Surface water, groundwater, leachate prepared from soils and leachate from landfill	Ammonium Chloride Nitrate (derived) Nitrite Phosphate Sulphate	PM017S 10:1 leachate preparation based on BS EN 12457 In-house method TM038 using PM 031W using discrete analyser
	Total Solids Total Dissolved Solids	In-house method TM020W using PM 031W by Gravimetry
	Total Suspended Solids	In-house method TM037W using PM 031W by Gravimetry

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd)	Chemical Tests (cont'd)	
Tap water (non-regulatory) surface water, groundwater, leachate prepared from soils and leachate from landfill	Cyanide - Total and Free	In-house method TM089W/S using PM 031W by segmented flow analysis
Surface Water Groundwater Potable Water (non-regulatory) Trade Effluent	Poly Chlorinated Dibenzo-p-Dioxins PCDDs	Documented In-house methods based on EPA 1613. Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM146 GC-HRMS TM215W
	2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD	
	Poly Chlorinated Dibenzo Furans PCDFs	Documented In-house methods based on EPA 1613. Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM146 GC-HRMS TM215W
	2,3,7,8-TCDF 1,2,3,7,8-PCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS (cont'd)	Chemical Tests (cont'd)	
Drinking water (non-regulatory), groundwater, surface water and trade effluent	Polychlorinated Biphenyls (PCBs): PCB 28 PCB 52 PCB 101 PCB 81 PCB 77 PCB 123 PCB 118 PCB 114 PCB 157 PCB 105 PCB 153 PCB 126 PCB 167 PCB 138 PCB 156 PCB 180 PCB 169 PCB 189	PCB Congeners by in house method TM017W using stir bar extraction (PM030W) and GC-MS analysis.
	Settled Chemical Oxygen Demand	In-house method TM057W by spectrophotometry
Landfill leachate and leachate prepared from soil	Elements: Boron Beryllium	PM017S 10:1 leachate preparation based on BS EN 12457 In-house method TM030W using ICP-OES
Surface Water and Ground Water	Tert-Amyl methyl ether (TAME) Diisopropylether (DIPE) Ethyl-tert-butyl ether (ETBE)	In-house method TM083 by preparation method PM 039W and using Headspace GCMS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS	Chemical Tests (cont'd)	**Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil**
	Gasoline Range Organics (GRO) and banding: >C4-C8 >C8-C12 >C5-C6 >C6-C8 >C8-C10 Total GRO C4-C12 Total GRO C5-C12 MTBE benzene toluene ethylbenzene o-xylene m/p-xylene	In-house method TM 036S using PM 012S by headspace GC-FID

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd)	**Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)**
	Gasoline Range Organics (GRO) and banding: (cont'd)	In-house method TM 036S using PM 012S by headspace GC-FID (cont'd)
	Also aliphatic/aromatic fractionation and subsequent banding: Aliphatic: >C5-C6 >C6-C8 >C8-C10 Aromatic (equivalent carbon EC): >C5-C7 >C7-C8 >C8-C10	
	Extractable petroleum hydrocarbons (EPH) in the range: C8-C40 Diesel range organics (DRO) C25-C40 range organics - lubricating oil	In-house methods PM008S (end over end shake) followed by TM005S using GC-FID
	Extractable petroleum hydrocarbons (EPH) in the range: >C8-C40, including banding: >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C8-C10 >C10-C20 >C20-C30 >C30-C40	In house methods PM008S (end over end shake) fractionation by SPE extraction PM016 followed by TM005S using GC-FID

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd)	**Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)**
	Extractable petroleum hydrocarbons (EPH) (cont'd) And including aliphatic/aromatic fractionation and subsequent banding: Aliphatic: >EC10-EC12 >EC12-EC16 >EC16-EC21 Total aliphatics >C10-C40 Aromatic: >EC10-EC12 >EC12-EC16 >EC16-EC21 Total aromatics >C10-C40	In house methods PM008S (end over end shake) fractionation by SPE extraction PM016 followed by TM005S using GC-FID (cont'd)
	Polycyclic Aromatic Hydrocarbons (PAHs): Naphthalene Acenaphthene Fluorene Phenanthrene Fluoranthene Chrysene Benzo(b/k)fluoranthene Indeno(123,cd)pyrene	In-house method TM004S using end over end shake (PM008S) and GC-MS
	Phenols: Phenol m/p-Cresol o-Cresol Xylenols 2,3,5-Trimethylphenol 2-Isopropylphenol	In-house method TM026 using sovent extraction (PM021S) and HPLC

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd)	**Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)**
	Elements: Arsenic Barium Cadmium Chromium Cobalt Copper Lead Manganese Mercury Molybdenum Nickel Selenium Zinc	In-house method TM030S using PM 015S and PM 077S by ICP-OES
	Water soluble boron	In-house method TM074 by PM 015S and PM 077S by ICP-OES
	Water Soluble Anions: Chloride Sulphate	In-house method TM038 by PM 020S by discrete analyser
	Cyanide - Total	In-house method TM089W/S by PM 045S by segmented flow analysis

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd)	**Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)**
	Polychlorinated Biphenyls (PCBs): PCB 81 PCB 77 PCB 123 PCB 118 PCB 114 PCB 105 PCB 126 PCB 167 PCB 156/157 PCB 169 PCB 189 PCB 28 PCB 52 PCB 101 PCB 153 PCB 138 PCB180	PCB Congeners by in house method TM017S using Preparation method PM008S and GC-MS analysis.
	pH	In-house method TM073 using PM 011S by Metrohm robotic sample processor
	Total Sulphate	In-house method PM029S followed by TM050S using ICP-OES
	Volatile Organic Compounds: MTBE Chloroethane Trichlorofluoromethane 1,1-Dichloroethene 1,1 - Dichloroethane Cis-1,2-Dichloroethene Bromochloromethane Chloroform 1,1,1-Trichloroethane Carbon Tetrachloride 1,2-Dichloroethane Benzene Trichloroethene	In-house method TM015S by PM 010S by headspace GC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS (cont'd)	Chemical Tests (cont'd) Volatile Organic Compounds (cont'd): 1,2-Dichloropropane Dibromomethane Bromodichloromethane Toluene 1,1,2-Trichloroethane 1,3,-Dichloropropane Dibromochloromethane Chlorobenzene 1,1,1,2-Tetrachloroethane Ethylbenzene m/p Xylene o Xylene 1,1,2,2 Tetrachloroethane 1,2,3-Trichloropropane 1,3- Dichlorobenzene 1,2-Dichlorobenzene	**Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)**
	Semivolatile Organic Compounds Phenol 2-Chlorophenol N-Nitrodi-n-propylamine Nitrobenzene Isophorone 2,4-Dichlorophenol 1,2,4-Trichlorobenzene Hexachlorobutadiene 2-Methylnapthalene 2-Chloronaphthalene Dimethylphthalate Dibenzofuran 4-Bromophenyl phenyl ether Phenanthrene Fluoranthene Pyrene	In house method TM016S using PM 008 S by GCMS analysis

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS AND EFFLUENTS – STACK GAS SAMPLES	Chemical Tests (cont'd)	National, European, International and Environment specified standards including MIDs and documented in-house methods to meet the requirements of the Environment Agency (MCERTS) performance standard for laboratories carrying out testing of samples from stack emissions monitoring
Filters, probe and impinger rinses (Acetone, toluene and water), XAD-2 resin traps	Poly Chlorinated Dibenzo-p-Dioxins PCDDs 2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD	BS EN 1948-2:2006 and BS EN 1946-3:2006 Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM137 GCHRMS TM201
Filters, probe and impinger rinses (Acetone, toluene and water), XAD-2 resin traps	Poly Chlorinated Dibenzo Furans PCDFs 2,3,7,8-TCDF 1,2,3,7,8-PCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	BS EN 1948-2:2006 and BS EN 1946-3:2006 Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM137 GCHRMS TM201

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS AND EFFLUENTS – STACK GAS SAMPLES (Cont'd)	Chemical Tests (cont'd)	National, European, International and Environment specified standards including MIDs and documented in-house methods to meet the requirements of the Environment Agency (MCERTS) performance standard for laboratories carrying out testing of samples from stack emissions monitoring
Filters, probe and impinger rinses (Acetone, toluene and water), XAD-2 resin traps	Polychlorinated Biphenyls PCB	BS EN 1948-4:2010+A1:2013 Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM137 GCHRMS TM201
	Congener 77 Congener 81 Congener 105 Congener 114 Congener 118 Congener 123 Congener 126 Congener 156 Congener 157 Congener 167 Congener 169 Congener 189	
ASH	Poly Chlorinated Dibenzo-p-Dioxins PCDDs	Documented In-house methods based on EPA 1613. Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM139 GC-HRMS TM206
	2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS AND EFFLUENTS – STACK GAS SAMPLES (Cont'd)	Chemical Tests (cont'd)	
ASH	Poly Chlorinated Dibenzo Furans PCDFs	Documented In-house methods based on EPA 1613. Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM139 GC-HRMS TM206
	2,3,7,8-TCDF 1,2,3,7,8-PCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	
	Polychlorinated Biphenyls PCB	Documented In-house methods based on EPA 1668. Extraction followed by High Resolution Gas Chromatography High Resolution Mass Spectrometry (GC-HRMS) Extraction PM139 GC-HRMS TM206
	Congener 77 Congener 81 Congener 105 Congener 114 Congener 118 Congener 123 Congener 126 Congener 156 Congener 157 Congener 167 Congener 169 Congener 189	
END		