


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 <p>Accredited to ISO/IEC 17025:2005</p>	LGC Limited Issue No: 068 Issue date: 10 May 2012	
	Queens Road Teddington Middlesex TW11 0LY	Contact: Ms Surrinder Johal Tel: +44 (0)20 8943 7436 Fax: +44 (0)20 8943 7314 E-Mail: surrinder.johal@lgc.co.uk Website: www.lgc.co.uk
Testing performed by the Organisation at the locations specified below		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
<p>Address Queens Road Teddington Middlesex TW11 0LY</p> <p>LGC Forensics Mr Andrew Wilkins Tel: +44 (0)1235 551642 Fax: +44 (0)1265 551694 Email: andrew.wilkins@lgcforensics.com Website: www.lgc.co.uk</p> <p>LGC Science & Technology Mr Peter Roper Tel: +44 (0)20 8943 7514 Fax: +44 (0)20 8943 7314 Email: peter.roper@lgc.co.uk Website: www.lgc.co.uk</p> <p>LGC Genomics Mr Peter Roper Tel: +44 (0)20 8943 7514 Fax: +44 (0)20 8943 7314 Email: peter.roper@lgc.co.uk Website: www.lgc.co.uk</p>	<p>Forensic Analysis</p> <p>Asbestos Environmental Food & Food Products Medical/Veterinary Fuels, Oils & Lubricants Radiation & Radiochemistry Toys/Childcare Products Sports & Leisure Equipment Writing Instruments</p>	<p>Teddington</p>
<p>Address Pentland Science Park Bush Loan Penicuik Midlothian EH26 0PL</p> <p>LGC Science & Technology Ms Rona Lorimer Tel: +44 (0)1392 247905 Fax: +44 (0)1392 430855 Email: rona.lorimer@lgc.co.uk Website: www.lgc.co.uk</p>	<p>Medical/Veterinary</p>	<p>Edinburgh</p>



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Address Building 3 Swiss Lodge Drive Drayton Manor Business Park Tamworth Staffordshire B78 3GL	LGC Forensics Mr Andrew Wilkins Tel: +44 (0)1235 551642 Fax: +44 (0)1265 551694 Email: andrew.wilkins@lgcforensics.com Website: www.lgc.co.uk	Forensic Analysis	Tamworth
Address Royal Armouries Armouries Drive Leeds LS10 1LT	LGC Forensics Mr Andrew Wilkins Tel: +44 (0)1235 551642 Fax: +44 (0)1265 551694 Email: andrew.wilkins@lgcforensics.com Website: www.lgc.co.uk	Forensic Analysis	Leeds



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DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
<u>LGC FORENSICS</u>			
HUMAN BODY FLUIDS			
HUMAN BODY FLUIDS	<u>Forensic Analysis</u>		
Any material	Search for semen, saliva, blood and cellular material	Documented In-House Method using visual examination, low power microscopy and high power microscopy	Culham Risley Tamworth Teddington
Any material	Recovery of semen, saliva, blood, cellular debris, cellular material from searched materials swabs and preparation for DNA analysis	Documented In-House Method using cutting, swabbing of stains, extraction of stained materials, extraction of swabs, scraping, minitaping as appropriate	Culham Risley Tamworth Teddington
Any material	Recovery of body fluids cellular debris, cellular material from contact trace and preparation for DNA analysis	Documented In-House Method using visual examination, taping, swabbing and extraction	Teddington
Any material	Presumptive testing for seminal fluid via detection of:		Culham Risley Tamworth
	Acid phosphatase	Documented In-House Method using acid phosphatase detection (colour reaction),	
	Choline	Documented In-House Method using Florence iodine test	
	Confirmatory identification of Spermatozoa	Documented In-House Method using microscopy, Protein K reagent to aid extraction and identification using Haematoxylin and Eosin staining and Christmas Tree Stain	Culham Risley Tamworth



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HUMAN BODY FLUIDS (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Any material or object	Presumptive testing for seminal fluid via detection of: Acid phosphatase	Documented In-House Method using acid phosphatase detection (colour reaction)	Teddington
	Confirmatory identification of Spermatozoa	Documented In-House Method using microscopy and Haematoxylin and Eosin staining	Teddington
Any material or object	Presumptive testing for blood	Documented In-House Method using peroxidase tests (KM reagent) and immunochromatographic techniques (Hemastix and Hematrace)	Culham Risley Tamworth
Any material or object	Presumptive testing for blood	Documented In-House Method using peroxidase tests (LMG reagent and KM reagent)	Teddington
Any material or object	Presumptive testing for saliva via detection of: Amylase	Documented In-House Method using, Phadebas paper and Phadebas tube test	Culham Risley Tamworth Teddington
Any material	Presumptive testing for faeces via detection of: Urobilinogen	Documented In-House Method using modified Edelman's test (colour reaction under UV Light) and TLC	Culham Risley Tamworth
Any material	Presumptive testing for urine via detection of: Urea	Documented In-House Method using chemical test (DMAC) (colour reaction)	Culham Risley Tamworth
Any material	Identification and interpretation of blood patterns	Documented In-House Method using visual examination and microscopy	Culham Risley Tamworth
Any material	Recovery of hairs from clothing and objects for subsequent DNA analysis or comparison	Documented In-House Method using visual examination, low power microscopy, adhesive tapes	Culham Risley Tamworth



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HUMAN BODY FLUIDS (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Hairs	Differentiation of Human and Animal hairs	Documented In-House Method using visual examination, low power microscopy and high power microscopy	Tamworth
Blood/Urine	Detection and quantification of alcohol	Documented In-House Method using GC-FID	Culham
Blood/Urine	Detection and quantification of opiates	Documented In-House Method using GC-MS	Culham
Blood/Urine	Drugs of Abuse screen: Amphetamine and related substances Benzodiazepines Cannabinoids Cocaine metabolite Methamphetamine Methadone Opiates	Documented In-House Method using automated ELISA analyser	Culham
Blood/Urine	Drugs of abuse screen for: Amitriptyline Citalopram Chlorphenamine Cocaine Cyclizine Desipramine Dextropropoxyphene Diphenhydramine Dothiepin Fluoxetine Imipramine Ketamine Lamotrigine Methadone Mirtazapine Nortriptyline Paroxetine Procyclidine Propranolol Sertraline Tramadol Venlafaxine	Documented In-House Method using liquid-liquid extraction GCMS	Culham



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HUMAN BODY FLUIDS (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Blood/Urine	Confirmation and Quantitative analysis of drugs of abuse: 6-monoacetylmorphine Benzoyllecgonine Buprenorphine Cocaine Codeine Dihydrocodeine Methadone Morphine	Documented In-House Method using solid-phase extraction and LC-MSMS	Culham
Blood/Urine	Confirmation of drugs of abuse: Pholcodine EDDP	Documented In-House Method using solid-phase extraction and LC-MSMS	Culham
Blood	Confirmation of drugs of abuse: EDDP	Documented In-House Method using solid-phase extraction and LC-MSMS	Culham
Blood	Identification and quantification of carbon monoxide	Documented In-House Method using UV/visible spectrophotometer	Culham
Blood	Identification and quantification of Fluoride	Documented In-House Method using ion-selective electrode	Culham
Human urine (Occupational Drug Testing)	Analysis of regulated drugs: Screening for Drugs of Abuse including: Opiates, Benzoyllecgonine, THC metabolite, Methaqualone, Propoxyphene, Ecstasy, Methadone, Amphetamines, Barbiturates, Benzodiazepine, Phencyclidine, LSD	<u>Documented In-House Methods:</u> Enzyme Immunoassay Technique	Teddington



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HUMAN BODY FLUIDS (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Human urine (Occupational Drug Testing)	Analysis of regulated drugs: (cont'd) Confirmation of: Benzoylcegonine THC metabolite Barbiturates Amphetamines Benzodiazepines Methadone Nor-Propoxyphene Total opiates Phencyclidine	<u>Documented In-House Methods:</u> (cont'd) Solid phase extraction followed by GC-MS	Teddington
Human Urine (Occupational Drug Testing)	LSD	Solid phase followed by Mass Spectrometry, LCMS	Teddington
BODY FLUIDS/TISSUES			
BODY FLUIDS/TISSUES	<u>Forensic Analysis</u>		
Genomic DNA from - Buccal swabs - Hair - Crime scene samples - Bones (Teddington only) - Teeth (Teddington only)	Analysis of Short Tandem Repeat (STR) loci Measurement of PCR product fragment lengths (≈ 100 - 300 base pairs) Analysis of Short Tandem Repeat (STR) loci Measurement of PCR product fragment lengths using SGM+ at an elevated cycle number	Documented In-House Methods meeting the requirements for suppliers to the Custodian of the National DNA Database using extraction, quantitation, amplification (based on the use of SGM plus™ or SGM™ PCR amplification kit), electrophoresis and genetic characterisation techniques by manual (sites Teddington & Runcorn) and automated systems (Teddington & Runcorn) Documented In-House Methods using Automated extraction, Automated quantitation and amplification (PCR), electrophoresis and genetic characterisation techniques	Teddington Runcorn Teddington



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BODY FLUIDS/TISSUES (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Genomic DNA from - Buccal swabs - Hair - Crime scene samples - Bones (Teddington only) - Teeth (Teddington only) (cont'd)	Analysis of Short Tandem Repeat (STR) loci Measurement of PCR product fragment lengths using DNA SenCE	Documented In-House Methods using extraction, quantitation and amplification, electrophoresis and genetic characterisation techniques	Teddington
	DNA profiling of autosomal loci on extracted human genomic DNA	Documented In-House Methods based on the use of Identifier STR profiling	Teddington
Extracted Human Male Genomic DNA from - Crime scene samples - Whatman FTA Card Punches (Paternity Testing)	Analysis of Y Chromosome Short Tandem Repeat (STR) loci Measurement of PCR product fragment lengths	Documented In-House Methods using Automated extraction, Automated quantitation and amplification (based on the use of Applied Biosystems AmpF/STR® Yfiler™ amplification kit), electrophoresis and genetic characterisation techniques	Teddington
- Blood and buccal cells	Paternity testing		Teddington
	DNA profiling	Documented In-House Methods using extraction, quantitation, amplification, electrophoresis and genetic characterisation techniques	Teddington
Road traffic act and post mortem samples - Blood Urine	Ethanol > 50mg/100ml	Documented In-House Method using Headspace dual column GC/FID	Teddington
DAMAGE			
Clothing and fabric material	Examination and interpretation of damage and comparison with suspected instrument	Documented In-House Method using visual examination and microscopy	Culham Risley Tamworth



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DRUGS OF ABUSE			
Drugs of Abuse	<u>Forensic Analysis</u> Screening for the presence of Amphetamine Cocaine Ecstasy types	<u>Documented In-House Methods:</u> Documented In-House method using Spot tests	Culham Tamworth
Drugs of Abuse	Screening for the presence of Benzodiazepines Cannabis Opiates	Documented In-House method using Spot tests	Culham
Drugs of Abuse	Screening for the presence of Methylamphetamine Diamorphine	Documented In-House method using Spot tests	Tamworth
Drugs of Abuse	Screening for the presence of Amphetamine Methylamphetamine Ring substituted amphetamines Diamorphine Cocaine	Documented In-House method using Thin layer chromatography	Culham Teddington
Drugs of Abuse	Screening for the presence of Methadone	Documented In-House method using Thin layer chromatography	Teddington
Drugs of Abuse	Identification of cannabis products	Documented In-House method using Morphological examination and thin layer chromatography	Culham Teddington Tamworth
Cannabis, Cannabis Resin, Cannabis Oil	Determination of Tetrahydrocannabinol (THC)	Documented In-House method using GC-FID	Teddington



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DRUGS OF ABUSE (cont'd)	<u>Forensic Analysis</u> (cont'd)	<u>Documented In-House Methods:</u>	
Drugs of Abuse	Identification of controlled drugs: Amphetamine Cocaine Codeine Diamorphine Diazepam Dihydrocodeine Ephedrine Ketamine Methadone Methamphetamine Methylenedioxyamphetamine Methylenedioxymethyl-amphetamine Methylenedioxyethyl-amphetamine Nitrazepam Temazepam	Documented In-House method using GC-MS	Culham Teddington
Drugs of Abuse	Identification of controlled drugs Amphetamine Methylamphetamine Diamorphine Ring-substituted amphetamines	Documented In-House method using FTIR	Tamworth
Drugs of Abuse	Identification of controlled drugs Cocaine and Cocaine hydrochloride	Documented In-House method using FTIR	Teddington Tamworth
Drugs of Abuse	Identification of Lysergide	Documented In-House method using Thin-layer chromatography	Teddington
Drugs of Abuse	Identification of Opium (raw and prepared)	Documented In-House method using physical appearance, thin-layer chromatography, GC/MS	Teddington



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DRUGS OF ABUSE (cont'd)	<u>Forensic Analysis</u> (cont'd)	<u>Documented In-House Methods:</u>	
Drugs of Abuse	Quantitation of: Cocaine and Diamorphine	Documented In-House method using HPLC	Culham Teddington
Drugs of Abuse	Quantitation of: Amphetamine Methylamphetamine Methylenedioxyamphetamine (MDA) Methylenedioxymethylamphetamine (MDMA) Methylenedioxyethylamphetamine (MDEA)	Documented In-House method using HPLC	Teddington
Drugs and materials suspected of containing drugs	Identification of Characteristically marked Proprietary Pharmaceuticals, illicit copies and other drug products	Comparison of appearance, markings, dimensions with reference materials, data collections and descriptions in authoritative texts	Culham
Any material	Detection and identification of Drug Traces	Documented In-House Method using solvent washing, swabbing, dry recovery, GC-MS	Culham
Any drugs-associated material	Identification and comparison of additives commonly associated with drugs	Documented In-House Method using visual examination, GCMS, FTIR	Culham



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E-CRIME			
E-CRIME MOBILE PHONE HANDSETS, (U)SIM CARDS AND ASSOCIATED MEMORY CARDS	<u>Forensic Analysis</u> Logical Capture and Preservation of data <i>SIM Card Handset, Memory Card6</i> Physical Capture and Preservation of data Memory Cards	Documented In-house methods using manual extraction and the following 3 rd party data extraction software: <ul style="list-style-type: none"> • USIM Detective • XRY • Oxygen Forensic Suite • UFED • Aceso • Encase <ul style="list-style-type: none"> • Encase 	Teddington
HYDROCARBON OILS			
HYDROCARBON OILS	<u>Chemical/Physical Tests and Related Opinions and Interpretations</u> Coumarin Statutory Markers: Colour index solvent red 24 Colour index solvent yellow 124 Quinizarin Sulphur (25 - 1000mg/kg)	<u>Documented In-House Methods:</u> Fluorescence spectroscopy (OTH/A1-009) HPLC with diode array detection (OTH/AI-011) Preparation of standards and reference standards method Horiba SLFA-UV21 analyser (OTH/AI-017)	Teddington Teddington Teddington



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ACCELERANTS			
ACCELERANTS	<u>Forensic Analysis</u>		
Common Fire Accelerants - liquid	Analysis, identification and comparison of common fire accelerant liquids	Documented In-House Method using ATD, GC-MS	Risley
Materials recovered from and associated with fire scenes	Recovery from fire debris, analysis, identification and comparison of common fire accelerants	Documented In-House Method using solvent washing, swabbing, dry recovery, GC-MS	Risley
ALCOHOL TECHNICAL DEFENCE			
ALCOHOL TECHNICAL DEFENCE	<u>Forensic Analysis</u>		
	Estimation of alcohol consumption and elimination, back calculations of alcohol levels to time of incident, post accident consumption and additional drinks	Documented In-House Methods using mathematical calculations	Culham Teddington
DOCUMENTS			
HANDWRITING	<u>Forensic Analysis</u>		
	Comparison of handwriting	Documented In-House method using visual examination and low power microscopy	Teddington
PAPER AND OTHER MATERIALS	Detection and enhancement of indented marks made by handwriting	Documented In-House method using oblique lighting, low power microscopy and ESDA	Teddington
GLASS			
GLASS	<u>Forensic Analysis</u>		
Glass, items suspected of containing glass particles, broken windows and other glass objects	Recovery of glass from clothing and objects Comparison of glass fragments Characterisation of glass fragments	Documented In-House Methods using refractive index by oil immersion, low power and interference microscopy, UV illumination and re-annealing by tube furnace	Culham Risley



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GSR			
GSR	<u>Forensic Analysis</u>		
Any material	Recovery of Gun shot residues (GSR's - Primer)	Documented In-House Methods using carbon coated aluminium stubs	Tamworth
Recovered material	Identification of Gun shot residues (GSR's - Primer)	Documented In-House Method using SEM/EDX	Tamworth
FIREARMS			
FIREARMS	<u>Forensic Analysis</u>		
	Trigger pull measurement	Documented In-House Method using dead weights	Leeds
	Test firing	Assessing functionality of weapons and/or ammunition. Recovering test samples of ammunition for comparison to exhibits	Leeds
	Range of fire determination	Test firing using appropriate weapon/ammunition combination and target material to assess range of fire. Comparison of test patterns to exhibits	Leeds
	Velocity and mass measurement of projectile to determine kinetic energy	Documented In-House Method using chronograph and balance	Leeds
	Firearm, firearm components and ammunition identification	Visual examination, physical properties and features - standard measuring devices, low power microscopy and the use of both internal and external collection/reference sources	Leeds
	Accidental discharge	Documented In-House Method using drop and jar tests	Leeds



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FIREARMS (cont'd)	<u>Forensic Analysis</u> (cont'd)		
STUN GUNS AND CATTLE PRODS	Identification, classification and function testing	Documented In-House methods	Leeds
Any clothing material	Determination of lead	Documented In-House Method using Sodium Rhodizonate Bashinsky transfer method or Sodium Rhodizonate direct application method	Leeds
INKS			
INKS	<u>Forensic Analysis</u>		
	Recovery of inks from sources	Documented In-House Method using visual examination, low power microscopy and solvent extraction	Risley
INKS	Comparison of inks	Documented In-House Method using TLC, UV lighting	Risley
LACHRYMATORS			
LACHRYMATORS	<u>Forensic Analysis</u>		
Liquids, liquids recovered from canisters/containers	Identification of: Capsaicin, Dihydrocapsaicin PAVA	Documented In-House Method using GC-MS	Culham
LUBRICANTS			
LUBRICANTS	<u>Forensic Analysis</u>		
Swabs	Analysis of silicone based lubricants	Documented In-House Method using FTIR	Tamworth



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MARKS AND IMPRESSIONS			
MARKS AND IMPRESSIONS	<u>Forensic Analysis</u>		
Footwear marks	Comparison of footwear marks with footwear and with other marks	Documented In-House Methods using photography and visual comparison	Culham Risley
Toolmarks	Comparison of crime scene marks and suspect toolmarks	Documented In-House Methods using visual examination, dimensional measurement, casting and comparison microscopy	Culham
Any material which is capable of retaining friction ridge marks	Enhancement of fingermarks	Documented In-House Methods using chemical enhancement and lighting techniques	Risley
Recovered fingermarks	Assessment of enhanced fingermarks for the presence of ridge detail	Documented In-House Method using visual examination	Risley
Marks	Enhancement of marks	Documented In-House Method using luminol and leucocrystal violet, amido black and fuschin acid	Culham
Marks	Enhancement and recovery of marks	Documented In-House Method using electrostatic lifting and gel lifting	Culham
PAINT			
PAINT	<u>Forensic Analysis</u>		
Particulates and smears	Recovery of paint from objects and clothing	Documented In-House Methods using low power microscopy, high power comparison microscopy	Culham Risley
	Identification of paint type	Documented In-House Method using FTIR	Tamworth



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TEXTILE FIBRES			
TEXTILE FIBRES Man-made fibres, Natural (animal/vegetable) fibres	<u>Forensic Analysis</u> Recovery of fibres from clothing and objects Microscopic identification of fibres Microscopic comparison of fibres	Documented In-House Methods using taping and low power microscopy Documented In-House methods using fibre recovery and mounting, high power microscopy (including polarising and comparison microscopy)	Culham Risley Tamworth Culham Tamworth
Man-made fibres	Instrumental colour measurement and comparison Identification of fibre type	Documented In-House Method using microspectrophotometry (visible) Documented In-House Method using FTIR	Tamworth Tamworth



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LGC GENOMICS			
PHARMACOGENETICS			
- Blood, Buccal swabs	Pharmacogenetic profiling, detection of relevant SNPs predictive of: CYP2C9 & VKORC (warfarin test) genotypes	Documented in-house method using extraction, quantification. PCR amplification and Hybeacons™ DNA technology for detection.	Teddington



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FERTILISERS			
FERTILISERS	<u>Physical and Chemical Tests and Related Opinions and Interpretations</u> Analysis for the purpose of meeting the requirements for referee analysis	Agricultural Act 1970 SI 1996 No 1342 The Fertilisers (Sampling and Analysis) Regulations 1996, Schedule 2	Teddington
PRODUCTS OF ANIMAL ORIGIN/ANIMAL FEEDINGSTUFFS			
PRODUCTS OF ANIMAL ORIGIN/ANIMAL FEEDINGSTUFFS - Animal Fluids - Animal tissues - Food products of Animal Origin - Animal Feedingstuffs Drinking water for animals (potable water (non regulatory))	<u>Chemical Tests</u> Screening and Confirmation of Veterinary Drugs	<u>Documented In-House Methods:</u> Method developed following the <u>Flexible Scope protocol(RL-601)</u> using appropriate extraction procedures and instrumental analysis using GCMS, LCMSMS, LC-TOF	Teddington
PESTICIDES			
PESTICIDES - Cereal and cereal products - Meat and meat products - Fish and fish products - Dairy products - Fruits and vegetables - Beverages - Potable (bottled) Water (non regulatory) - Oils and fats - Processed foods	<u>Chemical Tests</u> Screening and confirmation of Pesticide residues and Polychlorinated biphenyls	Method developed following the <u>Flexible Scope protocol RL-601</u> using appropriate extraction procedures and instrumental analysis using LC/MS/MS, GC/TOF/MS, and GC/MS	Teddington



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TOXICOLOGY			
Greyhound Urine	<u>Chemical Tests</u> Detection and identification of doping agents including: Amphetamines Barbiturates Beta-blockers Beta-agonist Benzodiazepines Ephedrine Methylxanthines Nonsteroidal anti-inflammatory drugs (NSAIDs) Opiates Sedatives Steroids Vasodilators	Flexible scope protocol and documented in house methods using enzyme linked immunoassay, LC-MSMS, UPLC-MSMS, and UPLC-TOF-assays	Teddington
BOVINE BRAIN STEM			
Bovine brainstem	Detection of abnormal prion protein PrP ^{res}	EU Approved method by immunoassay using the Biorad test kit with purification using the semi-automated NSP system and TeSeE purification kit following the short assay protocol	Edinburgh Runcorn Exeter
Ovine and Caprine brainstem	Detection of abnormal prion protein PrP ^{res}	EU Approved method by immunoassay using the Biorad test kit with purification using the semi-automated NSP system and TeSeE purification kit following the short assay protocol	Runcorn



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FOODS/FOOD PRODUCTS			
ALCOHOLS	<u>Chemical Tests</u>		
Alcoholic Beverages (Wines, Beers and Spirits)	Alcoholic strength	Report of the Research Committee on the analysis of Potable Spirits, 3 rd Ed, LGC, 1986	Teddington
Beers and Distiller's Washes (including spoilt beers)	Original gravity	Documented In-House Method based on Beer Regulations 1985 (SI 1985 No 1627), Regulation 14, para 1	Teddington
	Analysis and related opinions and interpretation for the purpose of meeting the requirements for referee analysis		
	ash calorific value (calculated value) dietary fibre fat moisture nitrogen starch sugars trace elements fat-soluble vitamins water-soluble vitamins	British and International Standards UK Statutory Instruments EEC Directives and Regulations American Oil Chemists Society International Office of Cocoa, Chocolate and Sugar Confectionery International Dairy Federation International Union of Pure and Applied Chemistry International Association for Cereal Chemistry	Teddington
	Ascorbic acid	Documented In-House Method	Teddington
	Ash	Documented In-House Method	Teddington
	Carotene isomers	Documented In-House Method	Teddington
	Fat (total lipids)	methanol/chloroform extraction	Teddington
	Nitrogen	Kjeldahl digestion DUMAS combustion followed by thermal conductivity detection	Teddington



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FOODS/FOOD PRODUCTS (cont'd)	<u>Chemical Tests</u> (cont'd)	<u>Documented In-House Methods:</u>	
	Salt (chloride)	Corning chloride meter	Teddington
	Sugar	Polarimetry or Refractometry	Teddington
	Sugars	ion chromatography	Teddington
	Starch	ion chromatography or Ewers polarimeter	Teddington
	Water	loss on freeze drying	Teddington
	<u>Mycotoxins</u> including Aflatoxins B1, B2, G1, G2, M1 Ochratoxin A, Patulin, Deoxynivalenol	Documented In-House Methods HPLC with Fluorescence detection HPLC with UV detection	Teddington
	<u>Vitamins</u>		
	Vitamin D	HPLC	Teddington
	Tocopherol, retinol and alpha and beta carotene	HPLC	Teddington
	Vitamin B complex - biotin - cobalamin (B12) - folate - niacin - pantothenate - riboflavin (B2) - thiamin (B1) - B6	Microbiological assay techniques using documented In-House Methods	Teddington
	<u>Lipid analysis</u>		
	Fatty acid profiles	GLC	Teddington
	Sterols	GLC	Teddington
Milk fat in fat	GLC	Teddington	



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FOODS/FOOD PRODUCTS (cont'd)	<u>Chemical Tests</u> (cont'd)	<u>Documented In-House Methods:</u>	
Animal Feedstuffs and cereal products	Crude fibre	Based on 92/89 EEC using FiberCap™ 2023 system	Teddington
Meat products	Soya protein	ELISA	Teddington
Food Products (including chocolates, biscuits, cereals, nuts)	Walnut protein	ELISA	Teddington
FOODSTUFFS AND FEEDINGSTUFFS	Microscopy	Cryosectioning, staining	Teddington
ORGANIC/INORGANIC MATRICES INCLUDING FOODS/FOOD PRODUCTS			
	<u>Chemical Tests</u>	Documented In-House Methods:	
	Sample preparation for metals, nutritional elements and trace elements	Dry ashing, wet oxidation or microwave digestion	Teddington
Food/food products, organic and inorganic matrices, clinical samples. - Aqueous solutions - Digests - Extracts - Leachates	Metals, nutritional elements, trace elements, acid soluble trace elements <u>Including</u> aluminium, arsenic, boron, barium, calcium, cadmium, cobalt, chromium, copper, iron, mercury, potassium, magnesium, manganese, sodium, nickel, phosphorous, lead, sulphur, antimony, selenium, silicon, tin, strontium, titanium, vanadium, zinc, silver, iodine, molybdenum, uranium	Documented in-house methods by <u>Flexible Scope Protocol</u> using ICP-OES or ICP-MS, or HR-ICP-MS	Teddington
Natural and treated waters, aqueous solutions and effluents			



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ORGANIC MATRICES			
Dichloromethane extracts (provided by a specific customer)	Qualitative identification of organic compounds	Documented in house method using GCMS and library searching against the customer's specified mass spectral libraries with the aid of the AMDIS deconvolution software	Teddington
REFERENCE MATERIALS			
REFERENCE MATERIALS	Inorganic Analytes: Including: silver, calcium, cadmium, chromium, copper, iron, mercury, iodine, manganese, nickel, lead, platinum, palladium, sulphur, selenium, thorium, uranium, zinc	IDMS	Teddington
	Inorganic Analytes	Flexible Scope Protocol using Inorganic High Accuracy IDMS	Teddington
	Organic Analytes	Flexible Scope Protocol using Organic High Accuracy IDMS	Teddington
ASBESTOS IN BULK MATERIALS			
ASBESTOS IN BULK MATERIALS including materials and products suspected of containing asbestos	<u>Health and Hygiene</u> Identification of: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite	Health and Safety Executive Asbestos: The analysts' guide for sampling, analysis and clearance procedures (HSG 248:February 2005) by Documented In-House Method using stereo-microscopy, polarised light microscopy and dispersion staining	Teddington



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LAND, SOILS, SEDIMENTS			
LAND, SOILS, SEDIMENTS	<u>Chemical Tests</u>		
	Sample preparation	Documented In-House Methods: Initial preparation	Teddington
	<u>Radiochemical Tests</u>	Documented In-House Methods:	
	Gross alpha-activity (relative to ²⁴¹ Am, ²⁴² Pu, ²³⁹ Pu, natural U)	adapted from Standard Method DoE/SCA ISBN 011 751 909 X	Teddington
	Gross beta-activity (relative to ⁴⁰ K, ¹³⁷ Cs, ⁶⁰ Co, ⁹⁰ Sr/Y)		
	Gamma emitting radionuclides (density range 1.4 - 1.6g/cm ³) Vegetation (density range 0.25 - 0.45 g/cm ³)	gamma spectrometry	Teddington
	Total ³ H	liquid scintillation counting	Teddington
	¹⁴ C	liquid scintillation counting	Teddington
	⁹⁰ Sr	beta counting	Teddington
	²²⁸ Th, ²³⁰ Th, ²³² Th	chemical separation and α spectrometry	Teddington
²³⁸⁺²³⁹ Pu, ²⁴⁰ Pu, ²⁴¹ Pu ²⁴¹ Am ²⁴² Cm, ²⁴³ Cm, ²⁴⁴ Cm	chemical separation and α spectrometry	Teddington	
²³⁴ U, ²³⁵ U, ²³⁸ U	chemical separation and α spectrometry	Teddington	



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
MATERIALS AND FITTINGS FOR USE IN CONTACT WITH WATER INTENDED FOR HUMAN CONSUMPTION			
MATERIALS AND FITTINGS FOR USE IN CONTACT WITH WATER INTENDED FOR HUMAN CONSUMPTION	<u>Chemical Tests</u> Tests on water after contact with materials and fittings, including contact with cold and hot water:	In-house methods based on BS 6920:2000, Parts 1 to 3 and BS 6920:2001, Part 4:	Teddington
	Odour and flavour	Documented In-House Method	Teddington
	Appearance	Documented In-House Method	Teddington
	Growth of aquatic micro-organisms	Documented In-House Method	Teddington
	Cytotoxicity	Documented In-House Method	Teddington
	Metallic elements	Documented In-House Method	Teddington
	GCMS Screening	Documented In-House Method	Teddington
	Colour	Documented In-House Method	Teddington
	Turbidity	Documented In-House Method	Teddington
	High temperature tests	Documented In-House Method	Teddington
POLLUTANTS and EFFLUENTS:			
Atmospheric - Incinerator ash - Stack filters	<u>Chemical Tests</u> Water extractable amino acids and proteins	Documented In-House Method based on customer specification extraction, hydrolysis and HPLC	Teddington
WATERS			
WATERS Potable, raw, groundwater, surface water, trade effluent to controlled water, leachate from soil	<u>Chemical Tests</u> Conductivity	Documented In-House Method	Teddington
	pH	Documented In-House Method	Teddington



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Process Water (demineralised/distilled water)	Total Organic Carbon	Documented In-House Method	Teddington
Process Water (demineralised water spiked with sodium hyperchlorite)	Residual chlorine - free and total	Documented In-House Method	Teddington
Potable and trade effluent to controlled water	Suspended Solids (105 °C)	Documented In-House Method by gravimetry	Teddington
Potable, raw, groundwater, surface water	Total dissolved solids	Documented In-House Method by gravimetry	Teddington
Potable	Colour	Documented In-House Method	Teddington
Potable	Turbidity	Documented In-House Method	Teddington
	<u>Radiochemical Tests</u>	Documented In-House Method:	
Environmental waters, drinking waters, process and waste waters, effluents	Gross alpha-activity (relative to ²⁴¹ Am, ²⁴² Pu, ²³⁹ Pu natural U) Gross beta-activity (relative to ⁴⁰ K, ¹³⁷ Cs, ⁶⁰ Co, ⁹⁰ Sr/Y)	adapted from Standard Method DoE/SCA ISBN 011 751 909 X	Teddington
	Gamma emitting radionuclides (density range 0.8 - 1.2 g/cm ³)	gamma spectrometry	Teddington
	³ H as tritiated water	Distillation and liquid scintillation counting	Teddington
	³ H-total	chemical oxidation and liquid scintillation counting	Teddington
	¹⁴ C	chemical separation and liquid scintillation counting	Teddington
	³⁵ S	chemical separation and liquid scintillation counting	Teddington
	⁹⁰ Sr	chemical separation and beta counting	Teddington



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd) Environmental waters, drinking waters, process and waste waters, effluents (cont'd)	<u>Radiochemical Tests</u> (cont'd) ^{99}Tc $^{125}\text{I}, ^{129}\text{I}$ ^{210}Po $^{234}\text{U}, ^{235}\text{U}, ^{238}\text{U}$ ^{226}Ra $^{228}\text{Th}, ^{230}\text{Th}, ^{232}\text{Th}$ ^{237}Np $^{238+239}\text{Pu}, ^{240}\text{Pu}, ^{241}\text{Pu}$ ^{241}Am $^{242}\text{Cm}, ^{243}\text{Cm}, ^{244}\text{Cm}$	Documented In-House Method: ion exchange separation and beta counting ion exchange, precipitation and γ -counting chemical separation and α spectrometry chemical separation and α spectrometry chemical separation and alpha counting chemical separation and α spectrometry chemical separation and α spectrometry chemical separation and α spectrometry	Teddington Teddington Teddington Teddington Teddington Teddington Teddington
Nuclear power station bubblers/effluents	$^3\text{H} / ^{14}\text{C}$ $^3\text{H} / ^{35}\text{S}$ $^{14}\text{C} / ^{36}\text{Cl}$	Dual label liquid scintillation counting	Teddington
Nuclear power station bubblers/effluents	Screening for non volatile beta emitting isotopes relative to; $^{137}\text{Cs} / ^{14}\text{C}$ $^3\text{H} / ^{14}\text{C}$ $^3\text{H} / ^{137}\text{Cs}$	Total activity by evaporation of samples to dryness, reconstitution and measurement by dual label liquid scintillation counting	Teddington
Nuclear power station bubblers/effluents	$^3\text{H} / ^{14}\text{C} / ^{90}\text{Sr}$ $^3\text{H} / ^{35}\text{S} / ^{36}\text{Cl}$	Total activity by evaporation of samples to dryness, reconstitution and measurement by triple label liquid scintillation counting	Teddington



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
TOYS and TOY PACKAGING			
TOYS and TOY PACKAGING	<u>Chemical Tests</u> Determination of soluble antimony, barium, cadmium, chromium, lead, selenium, arsenic, mercury, zinc	Documented In-House Methods based on BS EN 71-3:1995	Teddington
CHILDCARE ARTICLES			
CHILDCARE ARTICLES	<u>Chemical Tests</u> Determination of soluble antimony, barium, cadmium, chromium, lead, selenium, arsenic, mercury, zinc	Documented In-House Methods: Documented In-House Method based on BS EN 71-3:1995 and EN 1400, Part 3, BS EN 12586, BS EN 14350-2 and BS EN 14372-2	Teddington
Plastic materials, toys, teethers	Monomeric phthalates (totals and migration)	solvent extraction followed by GCMS determination BS EN 14372-2	Teddington
Polycarbonate	Bisphenol A	HPLC BS EN 14350-2	Teddington
Latex and silicone rubber products	Nitrosamines	Documented In-House Method EN 12868, BS EN 1400-3	Teddington
	MBT	Documented In-House Method BS EN 14350-2	Teddington
Silicone Rubber	Volatile Content	based on: BS EN 1400-3 BS EN 14350-2 BS EN 14372	Teddington



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CHILDCARE ARTICLES (cont'd) Soothers, Dummies, Pacifiers, Feeding Bottles, Feeding Utensils, Cutlery, Feeding Equipment, Soother Holders, Nursing Equipment	<u>Mechanical Tests</u>		
	Tensile Testing, Puncture Testing and Compression Testing, Physical Measurements and Labelling	based on: BS EN 1400-1 BS EN 1400-2 BS EN 14350-1 BS EN 14372 BS EN 12856	Teddington
	Puncture test	Documented In-House Method	Teddington
	Tear test	Documented In-House Method	Teddington
	Tensile test	Documented In-House Method and EN 1400, Parts 1 and 2	Teddington
COSMETICS			
COSMETICS Cosmetic substances, formulations and products	<u>Chemical Tests</u>		
	Apparent total Nitrosamine content (ATNC)	Thermal Energy Analyser	Teddington
	N-Nitrosodiethanolamine (NDELA)	Documented In-House Method	Teddington
TEXTILES			
Non-woven materials	Organotin	GC-MS EDANA ERT 360.0-01 EDANA ERT 360.0-02	Teddington



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PHARMACEUTICALS			
- medicinal and pharmaceutical substances used in the preparation of pharmaceutical products		Specifications and methods detailed in the current British Pharmacopoeia (BP), European Pharmacopoeia (EP) and United States Pharmacopoeia (USP) - manufacturer's methods, published methods and methods developed in-house used in conjunction with project protocols and documented procedures	Teddington
- formulated preparations including: Oral solid preparation (tablets and capsules) Oral liquid preparations Parenteral preparations Topical liquid preparations Topical semi-solid preparations Topical solid preparations Topical semi-solid preparations Herbal preparations	Identification and assay of 'active' and 'non-active' ingredients and related impurities	Using: Infra-red Spectroscopy, Near Infra Red Spectroscopy, Thin Layer Chromatography, Liquid Chromatography with UV detection, Headspace Gas Chromatography-Mass Spectroscopy and Gas Chromatography-Mass Spectroscopy (Liquid Injection), Potentiometric Titration, Liquid Chromatography (HPLC & UPLC) with photodiode array detection and ion trap mass spectroscopy Capillary Electrophoresis with either fixed UV wavelength or photodiode array detection	Teddington
	Uniformity of content	Documented in-house method	Teddington
	pH	Documented in-house method	Teddington
	Determinations of Dissolution of Tablets and Capsules	UV/Visible Spectroscopy Colorimetric titration	Teddington



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<p>PHARMACEUTICALS (cont'd)</p> <p>British Pharmacopoeia Chemical Reference Substances (BPCRS)</p>	% Declared content, assay and identity	Using specifications and methods detailed in the current British Pharmacopoeia (BP), European Pharmacopoeia (EP), with flexible scope protocol for techniques: HPLC, GC, TLC, KF, UV-VIS, Titrimetry, Loss on drying and FT-IR	Teddington
INORGANIC/ORGANIC CHEMICALS, POLYMERS, COMPOSITES AND PROCESS RELATED MATERIALS			
INORGANIC/ORGANIC CHEMICALS, POLYMERS, COMPOSITES AND PROCESS RELATED MATERIALS	<u>Chemical and Physical Tests</u>		Runcorn
Polymers, Pharmaceuticals, Inorganic Materials, Organic Liquids, and Surface Coatings	Qualitative and Quantitative Chemical Analysis: spectra imaging and particulate characterisation	Documented In-House Methods using FT-IR	Runcorn
Pharmaceuticals, Polymers, and Resins	Qualitative, Quantitative and Semi-Quantitative Chemical Analysis : Elemental analysis: - ppt to low ppm levels - Low ppb to low % levels - Low ppb to high ppm levels	Documented In-House Methods using Atomic Spectrometry:	Runcorn
	Al, As, Ca, Cd, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Se, Zn	- ICP-OES	Runcorn
	Zn, Ca, Mg, Si	- Flame Atomic Absorption	Runcorn
Metals, Deposits, Polymers, and Resins	Sample Preparation/ Extraction/Concentration to be used in combination with measurement techniques in accordance with documented generic protocols	Documented In-House Methods	Runcorn



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INORGANIC/ORGANIC CHEMICALS, POLYMERS, COMPOSITES AND PROCESS RELATED MATERIALS (cont'd)	<u>Chemical and Physical Tests</u> (cont'd)		
Polymers, and Pharmaceutical Products: Solids, Liquids or Gases	<p>Volatile Organic Components including: Propellant gases</p> <p>Organic and Water Soluble compounds up to 2000 molecular weight</p> <p>Sample Preparation/ Separation/Concentration to be used in combination with measurement technique in accordance with documented generic protocols</p>	<p>Documented In-House Methods using Gas Chromatography (GC) and GC-Mass Spectrometry (GCMS)</p> <p>Documented In-House Methods using High Performance Liquid Chromatography (HPLC)</p> <p>Documented In-House Methods using: Centrifugation Solvent Extraction Gravimetry Liquid Chromatography Mass Spectrometry (LC-MS)</p>	<p>Runcorn</p> <p>Runcorn</p> <p>Runcorn</p>
Pharmaceuticals, and, Fillers	<u>Physical Tests</u> Particle Size Analysis (By Mass or Number) of Particulate Materials with a size range of approx 0.04 to 2000 microns	Documented In-House Methods using Laser Diffraction Particle Size Analysis by dry method	Runcorn
Fillers, Pharmaceuticals, and Fibres	BET Surface Area Pore Volume, Pore Size and Pore Shape Distribution of Particulate Materials	Documented in house methods using nitrogen gas adsorption	Runcorn
Pharmaceuticals	Determination of the Packing Density, Skeletal and Geometric Densities of Particulate Materials	Documented in house methods using Helium Pycnometry and Bulk Tapped Density	Runcorn



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INORGANIC/ORGANIC CHEMICALS, POLYMERS, COMPOSITES AND PROCESS RELATED MATERIALS (cont'd) Solid Materials made from Elements Heavier than Boron in the Periodic Table such as Surface Coatings, Impurities, Catalysts, Contamination, Corrosion Products, Fillers, Pharmaceuticals, and Stabilisers	<u>Physical Tests</u> (cont'd) Imaging of Inorganic and Organic Materials at Various Magnification Qualitative Analysis Elemental identification	Scanning Electron Microscopy (SEM) and Optical Microscopy SEM	Runcorn Runcorn
END			