

Dioxins and Furans

Marchwood, a UKAS accredited testing laboratory No 1668, provides UKAS and UK Environment Agency MCERT accredited analysis for dioxins, furans, and PCBs. This covers the requirements as laid down in technical notes USEPA TO23a, TO9, and BS EN1948-1: 2006. The facilities are operated by highly trained and experienced staff who provide an outstanding and responsive service. We pride ourselves on delivering value through the provision of high-quality reports and a first class customer service.

Analysis

After the monitoring and sampling process, analysis is performed to BSEN 1948 (part 2 and 3) in line with clients sampling to BSEN 1948 (part 1) or USEPA 0023A using an isokinetic sampling train. It is carried out using solvent extraction techniques followed by chromatographic clean-up and high resolution GCMS. We use a state-of-the-art Thermo Scientific Dual Focus Spectrometer (DFS) which is capable of measuring down to picogram levels.

Our service includes the following sampling kit:

- One resin trap containing pre-cleaned XAD-2 spiked with required C-13 standards
- A GFA filter
- An empty container for washings
- Optional extra: polyurethane foam filter (PUF) for ambient air analysis

Reporting

Our reporting process involves identification and quantification of seventeen of the most toxic dioxins and furans, as well as the calculation of the I-TEQ value. A comparison with prescribed limits and typical background levels can therefore be made.

Below are a list of the seventeen most toxic dioxin and furans along with the Toxin Equivalency (TEQ) Value. TEQs are a weighted quantity measure based on the toxicity of each member of the dioxin and dioxin-like compounds category relative to the most toxic member of the category, 2,3,7,8-TCDD.

Congener	TEQ Value
Chlorinated Dibenzo-p-dioxins (PCDDs)	
2,3,7,8-TCDD	1
1,2,3,7,8-PeCDD	0.5
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,6,7,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
OCCD	0.001

Congener	TEQ Value
Chlorinated Dibenzofurans (PCDFs)	
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF	0.05
2,3,4,7,8-PeCDF	0.5
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
OCCF	0.001

T = tetra, Pe = penta, Hx = hexa, Hp = hepta O = octa, CDD = chlorodibenzodioxin, DCF = chlorodibenzofuran Detection Limit: LOD <0.001ng/sample

Dioxin like PCBs

The WHO-12 PCBs are subject to the same regulation as dioxins and furans and require the same monitoring and analytical procedures. Analysis is carried out on the same high-resolution GC-MS as dioxins and furans to the BS EN 1948-4:2010 standard.

Congener	TEQ Value
Non-ortho PCBs	
PCB-77	0.0001
PCB-81	0.0003
PCB-126	0.1
PCB-169	0.03
Mono-ortho PCBs	
PCB-105	0.00003
PCB-114	0.00003
PCB-118	0.00003
PCB-123	0.00003
PCB-156	0.00003
PCB-157	0.00003
PCB-167	0.00003
PCB-189	0.00003

Detection limit: <0.002ng/sample

Waste Incineration Directive (WID) PAHs

Analyte	Detection	Analyte
Naphthalene*	<0.001µg/sample	Cyclopenta(cd)pyrene*
Acenaphthylene		Benzo(b)fluoranthene
Acenaphthene		Benzo(k)fluoranthene*
Fluorene		BenzoU)fluoranthene
Phenanthrene		Benzo(a)pyrene*
Anthracene		Cholanthrene*
Fluoranthene*		Indeno(1,2,3-cd)pyrene
Pyrene		Benzo(ghi)perylene*
Benzo(b)naphtho[2,dl]thiophene		Dibenzo(ah)anthracene*
Benzo(c)phenanthrene		Anthanthrene*
Benzo(a)anthracene*		Dibenzo(ai)pyrene*
Chrysene*		

*15 PAH listed in guidance on: Directive 2000/76/EC on the incineration of waste Edition 2.
All determinants listed carried out to MCerts specification

PAHs & Other Pollutants

Although not an absolute requirement for all permitted facilities, PAHs form part of the Waste Incineration Directive (WID), analysis for which is carried out to EN 11138 – 1:2003 and is covered by UKAS and MCERT accreditation.

Volatile Organic Compounds (VOCs)

We also offer UKAS accredited analysis on solid sorbent tubes for over 60 fully quantifiable VOCs that are related to pollutants from incineration and co-incineration waste plants. In addition, we offer semi-quantifiable reports using deconvolution software to cover thousands of VOC compounds.

Other Energy from Waste Residues (EFW)

Marchwood also provides analysis for dioxins, furans, and PCBs on incinerator residues (IBA and APCr). Analysis can be carried out to meet specific permit regulation criteria or to meet the more demanding ESA (Environmental Services Association) protocol which covers hazard assessment for Hazards HP1 – HP15 on incinerator bottom ash. This is to meet the requirements of the UK Environment Agency document WM3rev1.

For more information on Marchwood's services, or to request a quotation, please visit our website or contact us on the details provide below:



Customer Services

Tel: 01617 039170 | **E-mail:** sales.air@marchwood-scientific.co.uk

Jenny Wraith, Business Development Manager

Mobile: 07957 422879 | **E-mail:** jenny.wraith@marchwood-scientific.co.uk

Website: www.cawood.co.uk/marchwood

Callback: www.cawood.co.uk/callback/