



CERTIFICATE OF ANALYSIS # DAU09_099

Client	Woodbine Park (Operations) Pty Ltd PO Box 6, Berrima NSW 2577	Job No.	WOOD15/090318
Contact	Rhonda Parmenter	Sampled by Date Sampled Date Received	Client not specified 18-Mar-09

The results relate only to the sample(s) tested.

Method | AUTL_01 | **Date Reported** | 7-Apr-09

Details | The method is for determination of tetra- through octa-chlorinated dibenzo-p-dioxins (PCDDs) & dibenzofurans (PCDFs) in aqueous samples by high resolution gas chromatography / high resolution mass spectrometry (HRGC/HRMS). This method provides data on all toxic 2,3,7,8-PCDD (seven) and PCDF (ten) isomers. PCDD and PCDF totals for each homologue group (tetra to octa) are also reported. The dioxin toxicity equivalent (WHO₀₅-TEQ_{DF}) in each sample is calculated using World Health Organization toxic equivalency factors (WHO₀₅-TEFs). All results are corrected for labelled surrogate recoveries.

After sampling, the liquid is spiked with a range of isotopically labelled surrogate standards and exhaustively extracted. Clean up is effected by partitioning with sulphuric acid then distilled water. Further purification is performed using column chromatography on acid and base modified silica gels, basic alumina and carbon dispersed on celite.

Immediately prior to injection, internal standards are added to each extract, and an aliquot of the extract is injected into the GC. The analytes are separated by the GC and detected by a high-resolution (>10,000) mass spectrometer.

Authorisation

Nino Piro
Senior Chemist
Dioxin Analysis Unit

Cassandra Rauert
Chemist
Dioxin Analysis Unit

Accreditation



NATA Accredited Laboratory Number : 198
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Sample Details : Job No. WOOD15/090318

Laboratory Reg. No.	Client Sample Ref.	Matrix	Description
N09/008153/1	Source Water - Sample 1	Aqueous	Source Water

Project Details

Project Name	ABWI Water Test
Project Number	Not specified

Key**Analytes**

TCDD	Tetrachlorodibenzo-p-dioxin	TCDF	Tetrachlorodibenzofuran
PeCDD	Pentachlorodibenzo-p-dioxin	PeCDF	Pentachlorodibenzofuran
HxCDD	Hexachlorodibenzo-p-dioxin	HxCDF	Hexachlorodibenzofuran
HpCDD	Heptachlorodibenzo-p-dioxin	HpCDF	Heptachlorodibenzofuran
OCDD	Octachlorodibenzo-p-dioxin	OCDF	Octachlorodibenzofuran

Units & Abbreviations

pg/L	picograms per litre		
<	level less than limit of detection (LOD)		
WHO ₀₅ -TEF [†]	World Health Organization toxic equivalency factor		
WHO ₀₅ -TEQ _{DF} [†]	World Health Organization toxic equivalents (Dioxins & Furans)		
<p>† as defined by Van den Berg et al., <i>Toxicol. Sci.</i> 93(2), pp. 223–241 (2006)</p> <p>TEQs are calculated by multiplying the quantified level for each individual dioxin and furan congener reported by the corresponding TEF value and summing the result:</p> $\text{WHO}_{05}\text{-TEQ}_{\text{DF}} = \sum_{i=1}^7 [\text{PCDD}_i \times \text{TEF}_i] + \sum_{j=1}^{10} [\text{PCDF}_j \times \text{TEF}_j]$ <p style="text-align: right;"><i>i</i> = PCDD congener index (1 - 7) <i>j</i> = PCDF congener index (1 - 10)</p>			
Lower Bound TEQ	defines all congener values reported below the LOD as equal to zero.		
Middle Bound TEQ	defines all congener values reported below the LOD as equal to half the LOD.		
Upper Bound TEQ	defines all congener values reported below the LOD as equal to the LOD.		
Surrogate Recovery	percentage recovery for ¹³ C ₁₂ labelled surrogate standard		
☒	Laboratory surrogate recovery outside normal acceptance criteria: Solid and liquid matrices 25 - 125%		

Results : Job No. WOOD15/090318

Laboratory Reg. No.

N09/008153/1

Date Extracted

27-Mar-09

Client Sample Ref.

Source Water - Sample 1

DB5 Analysis

31-Mar-09

Matrix

Aqueous

Description

Source Water

PCDD/F Congeners	Level pg/L	WHO ₀₅ -TEF	WHO ₀₅ -TEQ contribution	Labelled Surrogate recovery
2,3,7,8-TCDF	<0.3	0.1	0.015	73
2,3,7,8-TCDD	<0.2	1	0.1	83
1,2,3,7,8-PeCDF	<0.3	0.03	0.0045	79
2,3,4,7,8-PeCDF	<0.3	0.3	0.045	81
1,2,3,7,8-PeCDD	<0.7	1	0.35	84
1,2,3,4,7,8-HxCDF	<0.3	0.1	0.015	87
1,2,3,6,7,8-HxCDF	<0.2	0.1	0.01	85
2,3,4,6,7,8-HxCDF	<0.2	0.1	0.01	89
1,2,3,7,8,9-HxCDF	<0.3	0.1	0.015	85
1,2,3,4,7,8-HxCDD	<0.5	0.1	0.025	91
1,2,3,6,7,8-HxCDD	<0.5	0.1	0.025	86
1,2,3,7,8,9-HxCDD	<0.5	0.1	0.025	
1,2,3,4,6,7,8-HpCDF	<0.4	0.01	0.002	90
1,2,3,4,7,8,9-HpCDF	<0.7	0.01	0.0035	78
1,2,3,4,6,7,8-HpCDD	<1	0.01	0.005	91
OCDF	<0.5	0.0003	0.000075	
OCDD	<0.7	0.0003	0.00011	73

PCDD/F Homologue Groups	Level pg/L
Total TCDF isomers	<2
Total TCDD isomers	<1
Total PeCDF isomers	<2
Total PeCDD isomers	<4
Total HxCDF isomers	<2
Total HxCDD isomers	<2
Total HpCDF isomers	<1
Total HpCDD isomers	<1

Summary Results**Sum of PCDD and PCDF congeners**

Excluding LOD values 0 pg/L

WHO₀₅-TEQ_{DF}

Lower Bound [excluding LOD values] 0 pg/L

Middle Bound [including half LOD values] 0.65 pg/L

Upper Bound [including LOD values] 1.3 pg/L