
CERTIFICATE OF ANALYSIS

CLIENT: Department of Environment and Heritage Protection
PO Box 731
TOOWOOMBA QLD 4350

ATTN: Tim Reid

Laboratory Reference : 12120140
Client Order Number : N/A
Quote Number : N/A
Client Project : N/A
Client Batch Reference: N/A
Date Received : 11-Dec-2012
Date Commenced : 12-Dec-2012
Laboratory Number/s : 12PW313-316

Submitting Authority : Department of Environment and Heritage Protection

Number of Samples : Air sampled into four (4) - 6L canisters

Reason for Analysis : Identification and Quantitation of Volatile Organic Compounds (VOCs)

Method/s of Analysis : 13028V5 & 28237V1 – Gas Chromatography - Mass Spectrometry (GCMS) analysis by USEPA Method TO-15

Remarks : Sample details and results are summarised in Table 1.

.....
Steve Tapper
Supervising Chemist
20 December 2012

12PW313-316

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Enquiries Steve Tapper
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Fax (+61 7) 3000 9628
Email FSS@health.qld.gov.au

CERTIFICATE OF ANALYSISLaboratory Reference : 12120140
Laboratory Number/s : 12PW313-316**Table 1: TO15 Results for 12PW313-316**

Sample Number	12PW313	12PW314	12PW315	12PW316
Sample Description	221 Happiness Rd.	40 Robbos Rd.	Rhyme Pond	Barabala State forest
Sampling Date	1 Dec.	25 Nov.	6 Dec.	4 Dec.
Canister Number	1736	1722	1729	1744
Compound List	Amount (ppbv)	Amount (ppbv)	Amount (ppbv)	Amount (ppbv)
Propene	7.7	< LOR	< LOR	< LOR
Hexane	< LOR	< LOR	< LOR	< LOR
Heptane	< LOR	< LOR	< LOR	< LOR
Cyclohexane	< LOR	< LOR	< LOR	< LOR
1,3-Butadiene	< LOR	< LOR	< LOR	< LOR
Benzene	< LOR	< LOR	< LOR	< LOR
Toluene	< LOR	< LOR	< LOR	< LOR
Ethylbenzene	< LOR	< LOR	< LOR	< LOR
m- & p-Xylene	< LOR	< LOR	< LOR	< LOR
o-Xylene	< LOR	< LOR	< LOR	< LOR
Styrene	< LOR	< LOR	< LOR	< LOR
4-Ethyltoluene	< LOR	< LOR	< LOR	< LOR
1,3,5-Trimethylbenzene	< LOR	< LOR	< LOR	< LOR
1,2,4-Trimethylbenzene	< LOR	< LOR	< LOR	< LOR
Naphthalene	< LOR	< LOR	< LOR	< LOR
Carbon disulfide	< LOR	< LOR	< LOR	< LOR
Ethanol	5.5	1.6	1.2	1.5

12PW313-316

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CERTIFICATE OF ANALYSISLaboratory Reference : 12120140
Laboratory Number/s : 12PW313-316

Isopropyl Alcohol	< LOR	< LOR	< LOR	< LOR
Acetone	10	5.6	2.0	6.7
Methyl tert-butyl ether	< LOR	< LOR	< LOR	< LOR
Methyl ethyl ketone	< LOR	< LOR	< LOR	< LOR
Ethyl acetate	< LOR	< LOR	< LOR	< LOR
Vinyl acetate	0.6	1.0	< LOR	0.7
Tetrahydrofuran	< LOR	< LOR	< LOR	< LOR
Methyl isobutyl ketone	< LOR	< LOR	< LOR	< LOR
Methyl butyl ketone	< LOR	< LOR	< LOR	< LOR
Acrolein	0.6	0.5	< LOR	0.5
1,4-Dioxane	< LOR	< LOR	< LOR	< LOR
Methyl methacrylate	< LOR	< LOR	< LOR	< LOR
Dichlorodifluoromethane	< LOR	< LOR	0.6	< LOR
Dichlorotetrafluoroethane	< LOR	< LOR	< LOR	< LOR
Trichlorofluoromethane	< LOR	< LOR	< LOR	< LOR
1,1,2-Trichloro-1,2,2-trifluoroethane	< LOR	< LOR	< LOR	< LOR
Bromomethane	< LOR	< LOR	< LOR	< LOR
Bromodichloromethane	< LOR	< LOR	< LOR	< LOR
Dibromochloromethane	< LOR	< LOR	< LOR	< LOR
1,2-Dibromoethane	< LOR	< LOR	< LOR	< LOR
Bromoform	< LOR	< LOR	< LOR	< LOR
Chloromethane	0.6	0.6	0.7	0.6
Chloroethane	< LOR	< LOR	< LOR	< LOR
1,1-Dichloroethane	< LOR	< LOR	< LOR	< LOR
1,2-Dichloroethane	< LOR	< LOR	< LOR	< LOR
1,1,1-Trichloroethane	< LOR	< LOR	< LOR	< LOR

12PW313-316

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CERTIFICATE OF ANALYSISLaboratory Reference : 12120140
Laboratory Number/s : 12PW313-316

1,2-Dichloropropane	< LOR	< LOR	< LOR	< LOR
1,1,2-Trichloroethane	< LOR	< LOR	< LOR	< LOR
1,1,2,2-Tetrachloroethane	< LOR	< LOR	< LOR	< LOR
Hexachlorobutadiene	< LOR	< LOR	< LOR	< LOR
Methylene Chloride	5.2	< LOR	0.7	0.7
Chloroform	< LOR	< LOR	< LOR	< LOR
Carbon tetrachloride	< LOR	< LOR	< LOR	< LOR
Vinyl chloride	< LOR	< LOR	< LOR	< LOR
1,1-Dichloroethylene	< LOR	< LOR	< LOR	< LOR
trans-1,2-Dichloroethylene	< LOR	< LOR	< LOR	< LOR
cis-1,2-Dichloroethylene	< LOR	< LOR	< LOR	< LOR
Trichloroethylene	< LOR	< LOR	< LOR	< LOR
cis-1,3-dichloropropene	< LOR	< LOR	< LOR	< LOR
trans-1,3-dichloropropene	< LOR	< LOR	< LOR	< LOR
Tetrachloroethylene	< LOR	< LOR	< LOR	< LOR
Chlorobenzene	< LOR	< LOR	< LOR	< LOR
Benzyl chloride	< LOR	< LOR	< LOR	< LOR
1,3-Dichlorobenzene	< LOR	< LOR	< LOR	< LOR
1,4-Dichlorobenzene	< LOR	< LOR	< LOR	< LOR
1,2-Dichlorobenzene	< LOR	< LOR	< LOR	< LOR
1,2,4-Trichlorobenzene	< LOR	< LOR	< LOR	< LOR

Limit of Reporting (LOR) is 0.5 ppbv**12PW313-316**

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CERTIFICATE OF ANALYSIS

CLIENT: Dept Environment & Heritage Protection
PO Box 731
TOOWOOMBA QLD
ATTN: Tim Reid

Laboratory Reference : 12110071
Client ID Number : N/A
Quote Number : N/A
Client Project : N/A
Client Batch Reference : N/A
Date Received : 08/11/2012
Date Commenced : 12/11/2012
Laboratory Number/s : 12PW248

Submitting Authority : Department of Environment & Heritage Protection
Number of Samples : Air sampled into one (1) 6L summa canister
Reason for Analysis : Identification of Volatile Organic Compounds (VOCs)
Method/s of Analysis : 13028V5 & 28237V1 – Gas chromatography-mass spectrometry (GC-MS) analysis by USEPA method TO-15
Remarks : Sample details and results are summarised in Table 1
Results are reported in parts per billion by volume (ppbv)

Daphne S-H Huang
Chemist, Investigative Chemistry
16th November 2012

12PW248

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CERTIFICATE OF ANALYSIS

Laboratory Reference : 12110071
 Laboratory Number/s : 12PW248

Table 1: Results summary of 12PW248

Sample Number	12PW248
Sample Description	888 Lucky Rd, Verandah
Sampling Date	1/11/2012
Canister Number	1742
Sorted Compound List	Amount (ppbv)
Hexane	< LOR
Heptane	< LOR
Cyclohexane	< LOR
1,3-Butadiene	< LOR
Benzene	< LOR
Toluene	1.5
Ethylbenzene	< LOR
m- & p-Xylene	< LOR
o-Xylene	< LOR
Styrene	< LOR
4-Ethyltoluene	< LOR
1,3,5-Trimethylbenzene	< LOR
1,2,4-Trimethylbenzene	0.7
Naphthalene	< LOR
Carbon disulfide	< LOR
Ethanol	1.5
Isopropyl Alcohol	< LOR
Acetone	1.5
Methyl tert-butyl ether	< LOR
Methyl ethyl ketone	< LOR
Ethyl acetate	< LOR
Vinyl acetate	< LOR
Tetrahydrofuran	< LOR
Methyl isobutyl ketone	< LOR
Methyl butyl ketone	< LOR
Acrolein	< LOR
1,4-Dioxane	< LOR
Methyl methacrylate	< LOR
Dichlorodifluoromethane	0.6
Dichlorotetrafluoroethane	< LOR
Trichlorofluoromethane	< LOR
1,1,2-Trichloro-1,2,2-trifluoroethane	< LOR
Bromomethane	< LOR

12PW248

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CERTIFICATE OF ANALYSIS

Laboratory Reference : 12110071
 Laboratory Number/s : 12PW248

Sample Number	12PW248
Sample Description	888 Lucky Rd, Verandah
Sampling Date	1/11/2012
Canister Number	1742
Sorted Compound List	Amount (ppbv)
Bromodichloromethane	< LOR
Dibromochloromethane	< LOR
1,2-Dibromoethane	< LOR
Bromoform	< LOR
Chloromethane	0.7
Chloroethane	< LOR
1,1-Dichloroethane	< LOR
1,2-Dichloroethane	< LOR
1,1,1-Trichloroethane	< LOR
1,2-Dichloropropane	< LOR
1,1,2-Trichloroethane	< LOR
1,1,2,2-Tetrachloroethane	< LOR
Hexachlorobutadiene	< LOR
Methylene Chloride	< LOR
Chloroform	< LOR
Carbon tetrachloride	< LOR
Vinyl chloride	< LOR
1,1-Dichloroethylene	< LOR
trans-1,2-Dichloroethylene	< LOR
cis-1,2-Dichloroethylene	< LOR
Trichloroethylene	< LOR
cis-1,3-dichloropropene	< LOR
trans-1,3-dichloropropene	< LOR
Tetrachloroethylene	< LOR
Chlorobenzene	< LOR
Benzyl chloride	< LOR
1,3-Dichlorobenzene	< LOR
1,4-Dichlorobenzene	< LOR
1,2-Dichlorobenzene	< LOR
1,2,4-Trichlorobenzene	< LOR

Limit of Reporting (LOR) is 0.5 ppbv

12PW248

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LABORATORY ANALYSIS REPORT

REPORT NUMBER	F6187R2
CUSTOMER	c/Department of Environment and Heritage Protection
	PO BOX 731
	Toowoomba QLD 4350
GRADKO LAB REFERENCE	GMSG 1587
DATE SAMPLES RECEIVED	29.10.12
BOOKING IN REF.	F6187

IDENTIFICATION AND ESTIMATION (SEMI-QUANTITATIVE ANALYSIS) OF TOP 10 VOC ON TENAX DIFFUSION TUBES BY GC/MS

Analysis has been carried out in accordance with in-house method GLM 13

Tube Number	GRA 02826
Exposure Time(mins)	28800
Sample ID	Lauren Wienibilla Rd

Top 10 VOC	ng on tube	ppb in air*
Phenylmaleic anhydride +	23.65	0.41
1-Hexanol, 2-ethyl-	14.98	0.26
alpha-Pinene	13.16	0.23
Phenol	6.75	0.12
Benzothiazole +	6.65	0.12
Pentane	<5.0	<0.09
6 Compounds detected		

Semi-quantitative results for ng on tube are calculated by reference to toluene and toluene-d8 Internal standard.
+ These compounds are not covered by our flexible scope.

	Date of Analysis	02.11.12
Analysts Name	Mariella Angelova	Date of Report
		06.11.12

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

Form LQF32b Issue 4 – September 2012

Report Number **F6187R2**

Page 1 of 1

REPORT OFFICIALLY CHECKED

Gradko International Ltd
This signature confirms the authenticity of these results
Signed.....
L. Gates, Laboratory Supervisor

Lab. Reference: 2012-2978-B

Referral Department
Sullivan Nicolaides Pathology
PO Box 344
INDOOROOPILLY QLD 4068

Your Reference: 590046419

REPORT OF ANALYSIS

EMPLOYEE'S NAME: PALMER, Jackson
NAME OF EMPLOYER: Not Stated
TYPE OF SAMPLE: 1-Urine

DATE OF BIRTH: 05/05/2009
DATE OF COLLECTION: 12/12/2012
DATE OF RECEIPT: 14/12/12

Samples Analysed as Received.

Toluene/Xylene Exposure	Result	BOEL	Units	D.L.E
Hippuric Acid in Urine	749	1010	mmol/mol creatinine	
Toluric Acid in Urine	ND	650	mmol/mol creatinine	

Urinary Creatinine	Result	Units
Creatinine	0.78	g/L
Creatinine (SI Units)	0.0069	mol/L



590046419
PALMER, JACKSON
05/05/2009

[ND]: Not Detected

D.L.E: Date of Last Exposure

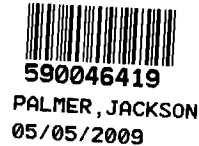
Date of Last Exposure is reported above only when stated on the request form.

BOEL: Biological Occupational Exposure Limit. Almost all workers exposed on a daily basis would not experience adverse health effects if kept under this advisory guideline value. The BOEL does not represent a sharp distinction between hazardous and nonhazardous exposures. **If a worker's result significantly or persistently exceeds the BOEL there is an increased risk of adverse health effects.** High results indicate that workplace procedures should be reviewed with the aim of decreasing worker's exposures. **Where the hazardous substance is a carcinogen exposures should be kept as low as achievable with best working practices.**

See page 2 for additional information about the above test(s).

ADDITIONAL INFORMATION ABOUT THE HIPPURIC ACID IN URINE TEST (Toluene Exposure)

Method Number: WCA.131
Technique: High Performance Liquid Chromatography with Ultra-Violet Detection
Limit of Quantitation: 0.5 mmol/L
Biological Half-Life: 1 - 3 hours
Document Control: LIMS32 5th Edition - LIMS131B Issue 1 4/1/10



This test measures exposure to toluene as approximately 64% of an absorbed dose of toluene is excreted in the urine as hippuric acid. Persons whose diets are rich in fruit and vegetables may have increased levels of hippuric acid in urine (ACGIH).

ADDITIONAL INFORMATION ABOUT THE TOLURIC ACID IN URINE TEST (Xylene Exposure)

Method Number: WCA.131
Technique: High Performance Liquid Chromatography with Ultra-Violet Detection
Detection Limit: 0.5 mmol/L
Biological Half-Life: Biphasic: 3-6 Hours, 30 Hours
Documentational Control: LIMS131B Issue 2 8/2/08

Toluric Acid (Methyl Hippuric Acid) is the major urinary metabolite of Xylene.

In order to compensate for fluctuations in excreted urine volume and concentration, urinary analytes are reported as corrected to the creatinine content. Urine specimens having creatinine concentrations less than 3 g/L (0.0265 mol/L) or greater than 0.3 g/L (0.0027 mol/L) are creatinine corrected. Urine specimens with creatinine concentrations outside this range are not creatinine corrected as less confidence can be placed on corrected values for either very concentrated or very dilute urines (ACGIH). To convert a creatinine corrected result to an uncorrected result multiply the corrected result by the creatinine result (using the same units). Creatinine assays are performed using the Jaffe reaction and measurements are done at 500 nm using Spectrophotometry. The detection limit for the creatinine assay (WCA.128) is 0.0005 mol/L.

The above results have been approved by the NATA signatory whose signature appears below.

For all administrative or account enquiries please contact Sue Northover or Jeanine Wells.

Greg O'Donnell
Manager

Referral Department
Sullivan Nicolaides Pathology
PO Box 344
INDOOROOPILLY QLD 4068

Lab. Reference: 2012-2978-A

Your Reference: 590046419

REPORT OF ANALYSIS

EMPLOYEE'S NAME: PALMER, Jackson
NAME OF EMPLOYER: Not Stated
TYPE OF SAMPLE: 1-Urine

DATE OF BIRTH: 05/05/2009
DATE OF COLLECTION: 12/12/2012
DATE OF RECEIPT: 17/12/12

Samples Analysed as Received.

Solvents in Urine Screen	Result	BOEL	Units	D.L.E
Ethanol	ND		mg/L	
Acetone	ND	50	mg/L	
Methylethylketone	ND	2	mg/L	
Ethyl Acetate	ND		mg/L	
Methylisobutylketone	ND	2	mg/L	
Cyclohexanol	ND		mg/L	
Methylene Chloride	ND		mg/L	
Tetrahydrofuran	ND	2	mg/L	
1,1,1 Trichloroethane	ND		mg/L	

Urinary Creatinine	Result	Units
Creatinine	0.78	g/L
Creatinine (SI Units)	0.0069	mol/L

[ND]: Not Detected

D.L.E: Date of Last Exposure

Date of Last Exposure is reported above only when stated on the request form.

BOEL: Biological Occupational Exposure Limit. Almost all workers exposed on a daily basis would not experience adverse health effects if kept under this advisory guideline value. The BOEL does not represent a sharp distinction between hazardous and nonhazardous exposures. **If a worker's result significantly or persistently exceeds the BOEL there is an increased risk of adverse health effects.** High results indicate that workplace procedures should be reviewed with the aim of decreasing worker's exposures. **Where the hazardous substance is a carcinogen exposures should be kept as low as achievable with best working practices.**

(Where a BOEL is not stated it has not been set)

Lab. Reference: 2012-2978-A

ADDITIONAL INFORMATION ABOUT THE SOLVENTS IN URINE TEST

Method No: WCA.163

Limit of Quantitation: 0.05 mg/L except Acetone & Ethanol which are 2.0 mg/L

Technique: Headspace Gas Chromatography with Flame Ionisation Detection

Biological Half-Life: Hours

Documentation Control: LIMS32 5th Edition - LIMS163 Issue 1 4/1/10

The recommended sample for exposure to solvents is urine. Knowledge of the particular solvent being used is necessary to be able to select the appropriate urine test. Only after the following guidelines are met is it of any use to do blood monitoring and a special request will have to be made to the laboratory for this blood test to be carried out. Particular attention must be given to the timing and method of collection of blood specimens in order for the results to be valid. Blood specimens must be collected during the shift due to the very short half life in blood of most solvents.

Important: completely fill the specimen tube and keep the sample refrigerated until analysis. In practice these requirements have been found to be difficult to achieve in routine biological monitoring situations. Therefore, solvent in blood determinations are not recommended.

To express the result in terms of creatinine correction divide the result by the g/L creatinine result. Creatinine assays are performed using the Jaffe reaction and measurements are done at 500 nm using Spectrophotometry. The detection limit for the creatinine assay (WCA.128) is 0.0005 mol/L.

The above results have been approved by the NATA signatory whose signature appears below.

For all administrative or account enquiries please contact Sue Northover or Jeanine Wells.

Greg O'Donnell
Manager

19/12/12

Page 2 of 2

LABORATORY ANALYSIS REPORT

REPORT NUMBER F6187R1
CUSTOMER c/Department of Environment and Heritage Protection
PO BOX 731
Toowoomba QLD 4350
GRADKO LAB REFERENCE GMSG 1585-1586
DATE SAMPLES RECEIVED 29.10.12
BOOKING IN REF. F6187

IDENTIFICATION AND ESTIMATION (SEMI-QUANTITATIVE ANALYSIS) OF TOP 5 VOC ON TENAX DIFFUSION TUBES BY GC/MS

Analysis has been carried out in accordance with in-house method GLM 13

Tube Number	GRA 11919	
Exposure Time(mins)	28800	
Sample ID	Bretherick Happiness Rd	
Top 5 VOC	ng on tube	ppb in air*
Heptane, 2,2,4,6,6-pentamethyl- ⁺	67.61	1.17
Phenylmaleic anhydride ⁺	32.66	0.57
Naphthalene	20.09	0.35
Hexadecane	11.95	0.21
1-Hexanol, 2-ethyl-	11.56	0.20

Tube Number	GRA 03371	
Exposure Time(mins)	28800	
Sample ID	Kate#2	
Top 5 VOC	ng on tube	ppb in air*
Toluene	379.98	6.60
m/p-Xylene	73.24	1.27
Ethylbenzene	46.67	0.81
Cyclohexane	34.99	0.61
o-Xylene	33.07	0.57

Semi-quantitative results for ng on tube are calculated by reference to toluene and toluene-d8 Internal standard.
+ These compounds are not covered by our flexible scope.

Analysts Name	Mariella Angelova	Date of Analysis	02.11.12
		Date of Report	06.11.12

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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L. Gates, Laboratory Supervisor

LABORATORY ANALYSIS REPORT

REPORT NUMBER	F6187R
CUSTOMER	c/Department of Environment and Heritage Protection PO BOX 731 Toowoomba QLD 4350
GRADKO LAB REFERENCE	GMSG 1583-1584
DATE SAMPLES RECEIVED	29.10.12
BOOKING IN REF.	F6187

IDENTIFICATION AND ESTIMATION (SEMI-QUANTITATIVE ANALYSIS) OF FULL SCAN VOC ON TENAX DIFFUSION TUBES BY GC/MS

Analysis has been carried out in accordance with in-house method GLM 13

Tube Number	GRA 02024
Exposure Time(mins)	28800
Sample ID	Orv Residence

Compounds	ng on tube	ppb in air*
Toluene	401.43	6.97
m/p-Xylene	56.04	0.97
Benzene	35.39	0.61
Phenylmaleic anhydride +	29.47	0.51
Hexane	29.04	0.50
o-Xylene	21.05	0.37
Heptadecane	21.01	0.36
Tetrachloroethylene	20.89	0.36
Butane, 2-methyl- +	19.95	0.35
Pentane	19.86	0.34
Hexane, 3-methyl- +	17.90	0.31
Heptane	17.16	0.30
Pentane, 3-methyl- +	16.41	0.28
Phenol	16.12	0.28
Ethylbenzene	14.10	0.24
Heptane, 2,2,4,6,6-pentamethyl- +	12.02	0.21
1,2,4-Trimethylbenzene	11.49	0.20
Ethyl Acetate	11.38	0.20
Methylcyclohexane	10.87	0.19

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LABORATORY ANALYSIS REPORT

Tube Number GRA 011818
Exposure Time(mins) 28800
Sample ID Chuichlla Control

Compounds	ng on tube	ppb in air*
Ethylbenzene	33.90	0.59
Toluene	29.78	0.52
m/p-Xylene	27.46	0.48
Phenylmaleic anhydride +	22.85	0.40
o-Xylene	15.88	0.28
Tetradecane	13.30	0.23

Semi-quantitative results for ng on tube are calculated by reference to toluene and toluene-d8 Internal standard.

+ These compounds are not covered by our flexible scope.

Analysts Name Mariella Angelova
Date of Analysis 02.11.12
Date of Report 06.11.12

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

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