

Report Prepared for:

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**REPORT OF
LABORATORY
ANALYSIS FOR
PCDD/PCDF**

Report Information:

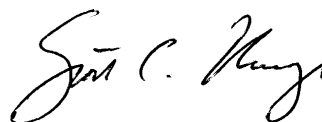
Pace Project #: 1061251
Sample Receipt Date: 10/18/2007
Client Project #: 0710092
Client Sub PO #: N/A
State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed and prepared by:



Scott Unze, Project Manager
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(612) 607-6444 (fax)
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Report Prepared Date:

November 8, 2007



Report of Laboratory Analysis

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DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Specialty Analytical. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were set to correspond to one-fifth of the lowest calibration points.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 69-115%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained. The sample was received and extracted outside the 30-day hold time recommended in the method; therefore, the reported values should be regarded as minimum possible concentrations.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results of the field sample determinations.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 76-93%. These results indicate a high degree of accuracy for these determinations.

The response obtained for the labeled HpCDD in calibration standard analysis F71103B_18 was outside the target range. As specified in the method, the average of the daily response factors for this compound was used in the calculations for the samples from this runshift. The affected values were flagged "Y" on the results tables. It should be noted that the accuracy of the native congener determinations was not impacted by this deviation.

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management



Sample Condition Upon Receipt

Client Name: Specialty Analytical Project # 1061251

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: 7903 5833 0517

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Optional:
Proj Due Date:
Proj Name:

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 230194010

Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 15.7°C

Biological Tissue is Frozen: Yes No

Date and initials of person examining contents: <u>YF 10/18/07</u>
--

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>SL</u>		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: Ned E. Date/Time: 10/18/07

Comments/ Resolution: Waited temp. req.

Project Manager Review: [Signature]

Date: 10/18/07

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Appendix B

Sample Analysis Summary



Method 8290 Sample Analysis Results

Client - Specialty Analytical

Client's Sample ID	0710092-01			
Lab Sample ID	1061251001			
Filename	U71107B_10			
Injected By	SMT			
Total Amount Extracted	12.5 g	Matrix	Soil	
% Moisture	20.0	Dilution	NA	
Dry Weight Extracted	10.0 g	Collected	07/24/2007	
ICAL Date	09/27/2007	Received	10/18/2007	
CCal Filename(s)	U71107B_02 & U71107B_18	Extracted	10/29/2007	
Method Blank ID	BLANK-14615	Analyzed	11/07/2007 16:56	

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	4.90	----	0.26	A	2,3,7,8-TCDF-13C	2.00	77
Total TCDF	40.00	----	0.26		2,3,7,8-TCDD-13C	2.00	77
					1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	0.33	----	0.22	JA	2,3,4,7,8-PeCDF-13C	2.00	72
Total TCDD	2.90	----	0.22		1,2,3,7,8-PeCDD-13C	2.00	76
					1,2,3,4,7,8-HxCDF-13C	2.00	115
1,2,3,7,8-PeCDF	6.20	----	1.00		1,2,3,6,7,8-HxCDF-13C	2.00	93
2,3,4,7,8-PeCDF	5.40	----	1.00		2,3,4,6,7,8-HxCDF-13C	2.00	94
Total PeCDF	35.00	----	1.00		1,2,3,7,8,9-HxCDF-13C	2.00	89
					1,2,3,4,7,8-HxCDD-13C	2.00	104
1,2,3,7,8-PeCDD	ND	----	1.00		1,2,3,6,7,8-HxCDD-13C	2.00	78
Total PeCDD	ND	----	1.00		1,2,3,4,6,7,8-HpCDF-13C	2.00	75
					1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	----	21.0	1.00	E	1,2,3,4,6,7,8-HpCDD-13C	2.00	75
1,2,3,6,7,8-HxCDF	6.30	----	1.00		OCDD-13C	4.00	69
2,3,4,6,7,8-HxCDF	3.50	----	1.00	J			
1,2,3,7,8,9-HxCDF	3.30	----	1.00	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	39.00	----	1.00		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	1.90	A	2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	----	2.2	2.00	IA			
1,2,3,7,8,9-HxCDD	ND	----	1.10	A			
Total HxCDD	ND	----	1.70				
1,2,3,4,6,7,8-HpCDF	60.00	----	1.00		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	11.00	----	1.00		Equivalence: 6.7 ng/Kg		
Total HpCDF	130.00	----	1.00		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	----	44.0	1.40	IA			
Total HpCDD	ND	----	1.40				
OCDF	460.00	----	2.00				
OCDD	380.00	----	2.00				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range
A = Reporting Limit based on signal to noise
E = PCDE Interference
I = Interference present

REPORT OF LABORATORY ANALYSIS

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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-14615	Matrix	Solid
Filename	F71103B_07	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	10/29/2007
ICAL Date	08/30/2007	Analyzed	11/03/2007 18:10
CCal Filename(s)	F71103B_02 & F71103B_18	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	0.20	2,3,7,8-TCDF-13C	2.00	59
Total TCDF	ND	----	0.20	2,3,7,8-TCDD-13C	2.00	63
				1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	ND	----	0.20	2,3,4,7,8-PeCDF-13C	2.00	81
Total TCDD	ND	----	0.20	1,2,3,7,8-PeCDD-13C	2.00	95
				1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	----	0.99	1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	ND	----	0.99	2,3,4,6,7,8-HxCDF-13C	2.00	78
Total PeCDF	ND	----	0.99	1,2,3,7,8,9-HxCDF-13C	2.00	74
				1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	ND	----	0.99	1,2,3,6,7,8-HxCDD-13C	2.00	89
Total PeCDD	ND	----	0.99	1,2,3,4,6,7,8-HpCDF-13C	2.00	87
				1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	ND	----	0.99	1,2,3,4,6,7,8-HpCDD-13C	2.00	81 Y
1,2,3,6,7,8-HxCDF	ND	----	0.99	OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	ND	----	0.99			
1,2,3,7,8,9-HxCDF	ND	----	0.99	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	0.99	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	0.99	2,3,7,8-TCDD-37Cl4	0.20	55
1,2,3,6,7,8-HxCDD	ND	----	0.99			
1,2,3,7,8,9-HxCDD	ND	----	0.99			
Total HxCDD	ND	----	0.99			
1,2,3,4,6,7,8-HpCDF	ND	----	0.99	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	0.99	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	----	0.99	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	----	0.99			
Total HpCDD	ND	----	0.99			
OCDF	ND	----	2.00			
OCDD	ND	----	2.00			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

Y = Calculated using average of daily RFs

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-14616	Matrix	Solid
Filename	F71103B_05	Dilution	NA
Total Amount Extracted	10.0 g	Extracted	10/29/2007
ICAL Date	08/30/2007	Analyzed	11/03/2007 16:38
CCal Filename(s)	F71103B_02 & F71103B_18	Injected By	BAL
Method Blank ID	BLANK-14615		

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.17	83	2,3,7,8-TCDF-13C	2.00	69
Total TCDF				2,3,7,8-TCDD-13C	2.00	69
				1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	0.20	0.16	81	2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD				1,2,3,7,8-PeCDD-13C	2.00	98
				1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	1.00	0.88	88	1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	1.00	0.88	88	2,3,4,6,7,8-HxCDF-13C	2.00	75
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.00	74
				1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	1.00	0.76	76	1,2,3,6,7,8-HxCDD-13C	2.00	87
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.00	85
				1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	1.00	0.84	84	1,2,3,4,6,7,8-HpCDD-13C	2.00	79 Y
1,2,3,6,7,8-HxCDF	1.00	0.93	93	OCDD-13C	4.00	70
2,3,4,6,7,8-HxCDF	1.00	0.90	90			
1,2,3,7,8,9-HxCDF	1.00	0.85	85	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	0.82	82	2,3,7,8-TCDD-37Cl4	0.20	63
1,2,3,6,7,8-HxCDD	1.00	0.88	88			
1,2,3,7,8,9-HxCDD	1.00	0.84	84			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.00	0.87	87			
1,2,3,4,7,8,9-HpCDF	1.00	0.93	93			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.00	0.79	79			
Total HpCDD						
OCDF	2.00	1.73	87			
OCDD	2.00	1.79	89			

Qs = Quantity Spiked
 Qm = Quantity Measured
 Rec. = Recovery (Expressed as Percent)
 P = Recovery outside of target range
 X = Background subtracted value
 Nn = Value obtained from additional analysis
 NA = Not Applicable
 * = See Discussion

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