

16 September 2009

Chris LeMay  
 E. Roberts Alley & Associates, Inc.  
 214 Central Circle S.W.  
 Decatur, AL 35603

Ph.: 256-351-0121  
 Fax: 256-351-0151

Subject: Certificate of Results

Dear Chris;

Attached to this narrative are the analytical results you requested on samples submitted for the determination of polychlorinated dibenzo-*p*-dioxins, dibenzofurans. The insert below summarizes the relevant information pertaining to your project. In particular, QC annotations bring to your attention specific analytical observations and assessments made during the sample handling and data interpretation phases. A brief description of the report's components is provided. Results reported relate only to the items tested.

Project Information Summary	When applicable, see QC Annotations for details
Client Project No.	Eastman - Kingsport
AP Project No.	P1608
Analytical Protocol	23
No. Samples Submitted	7
No. Samples Analyzed	7
No. Laboratory Method Blanks	1
No. OPRs / Batch CS3	1
No. Outstanding Samples	0
Date Received	1-Sep-2009
Condition Received	Good
Temperature upon Receipt (C)	21 (Traps and Filters), 21 (Solvents)
Extraction within Holding Time	yes
Analysis within Holding Time	yes
Data meet QA/QC Requirements	yes
Exceptions	none
Analytical Difficulties	none



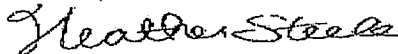
**ANALYTICAL PERSPECTIVES**

**QC Annotations:**

1. A "J" data qualifier is used for analytes with a concentration below the reporting limit.
2. The new ratio -- [Ra] -- for 2,3,7,8-TCDD following the  $^{37}\text{Cl}_4$ -2,3,7,8-TCDD correction is shown between squared brackets in the DL column.
3. The "EMPC" data qualifier is used for analytes reported as an Estimated Maximum Possible Concentration. This flag indicates that a peak is detected but did not meet all of the method required criteria.
4. A "Q" data qualifier is used to indicate sampling standards (SS) that were impacted by quantitative interference. The interference impacts the apparent percent recoveries of standards. However, the obtained concentrations are accurate.

Analytical Perspectives remains committed to serving you in the most effective manner. Should you have any questions or need additional information and technical support, please, do not hesitate to contact us. Thank you for choosing Analytical Perspectives as part of your analytical support team.

Sincerely,



Heather Steele, Ph.D.  
Project Manager

# Sample ID: Field Blank

# Method 23

Client Data		Sample Data		Laboratory Data		Date Received:	
Name:	E. Roberts Alley & Assoc. Inc.	Matrix:	Air	Project No.:	P1608	Date Received:	01/Sep/2009
Project ID:	Eastman-Kingsport	Weight/Volume:	1	Sample ID:	P1608_7130_004	Date Extracted:	08/Sep/2009
Date Collected:	25/Aug/2009	Split:	2	QC Batch No.:	7130	Date Analyzed:	13/Sep/2009
				Dilution:		Time Analyzed:	16:49:02
Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	4.05			13C-2,3,7,8-TCDD	93.7	
1,2,3,7,8-PeCDD	ND	2.65			13C-1,2,3,7,8-PeCDD	105	
1,2,3,4,7,8-HxCDD	ND	4.34			13C-1,2,3,4,7,8-HxCDD	89.5	
1,2,3,6,7,8-HxCDD	ND	4.42			13C-1,2,3,6,7,8-HxCDD	87.9	
1,2,3,7,8,9-HxCDD	ND	4.65			13C-1,2,3,7,8,9-HxCDD	92.6	
1,2,3,4,6,7,8-HpCDD	2.77			J	13C-1,2,3,4,6,7,8-HpCDD	84.9	
OCDD	ND	10.5			13C-OCDD	78.2	
2,3,7,8-TCDF	EMPC		0.856	J	13C-2,3,7,8-TCDF	94.1	
1,2,3,7,8-PeCDF	EMPC		1.64	J	13C-1,2,3,7,8-PeCDF	98.5	
2,3,4,7,8-PeCDF	2.36			J	13C-2,3,4,7,8-PeCDF	110	
1,2,3,4,7,8-HxCDF	EMPC		1.57	J	13C-1,2,3,4,7,8-HxCDF	91.6	
1,2,3,6,7,8-HxCDF	EMPC		2.84	J	13C-1,2,3,6,7,8-HxCDF	92.5	
2,3,4,6,7,8-HxCDF	1.81			J	13C-2,3,4,6,7,8-HxCDF	89.2	
1,2,3,7,8,9-HxCDF	ND	1.81		J	13C-1,2,3,7,8,9-HxCDF	83.5	
1,2,3,4,6,7,8-HpCDF	4.35			J	13C-1,2,3,4,6,7,8-HpCDF	88.3	
1,2,3,4,7,8,9-HpCDF	ND	2.74			13C-1,2,3,4,7,8,9-HpCDF	84.5	
OCDF	ND	2.81			13C-OCDF	78	
<b>Totals</b>						<b>SS Recoveries</b>	
TCDDs	9.82				37Cl-2,3,7,8-TCDD	101	Q
PeCDDs	4.91				13C-1,2,3,4,7-PeCDD	77.3	
HxCDDs	5.64				13C-1,2,3,4,6-PeCDF	98.2	
HpCDDs	5.72				13C-1,2,3,4,6,9-HxCDF	97.1	
TCDFs	15.5		26.1		13C-1,2,3,4,6,9-HpCDF	97.5	
PeCDFs	13		23.3				
HxCDFs	9.89		15.8				
HpCDFs	6.67						
<b>Total PCDD/Fs</b>	<b>71.2</b>		<b>98</b>			<b>AS Recoveries</b>	
ITEF TEQs						89.9	
TEQ: ND=0	1.43		2.04			88.6	
TEQ: ND=DL/2	5.17		5.51				
TEQ: ND=DL	8.9		8.98				

Checkcode: 5556



**ANALYTICAL PERSPECTIVES**  
 2714 Exchange Drive  
 Wilmington, NC 28405  
 USA  
 info@ultratrace.com  
 www.ultratrace.com

AP D/F 2009 Rev. J

Reviewer: *[Signature]*  
 Date: *16 Sep 09*

**Sample ID: B30/ RUN 01**

**Method 23**

Client Data		Sample Data		Laboratory Data		Date Received:	
Name: E. Roberts Alley & Assoc. Inc. Project ID: Eastman-Kingsport Date Collected: 25/Aug/2009		Matrix: Air Weight/Volume: 1 Split: 2		Project No.: P1608 Sample ID: P1608_7130_005 QC Batch No.: 7130 Dilution:		Date Received: 01/Sep/2009 Date Extracted: 05/Sep/2009 Date Analyzed: 13/Sep/2009 Time Analyzed: 17:38:10	
Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	3.05			13C-2,3,7,8-TCDD	93.6	
1,2,3,7,8-PeCDD	ND	3.16			13C-1,2,3,7,8-PeCDD	111	
1,2,3,4,7,8-HxCDD	EMPC		2.5	J	13C-1,2,3,4,7,8-HxCDD	90.3	
1,2,3,6,7,8-HxCDD	EMPC		4.1	J	13C-1,2,3,6,7,8-HxCDD	88.5	
1,2,3,7,8,9-HxCDD	3.54			J	13C-1,2,3,7,8,9-HxCDD	93.4	
1,2,3,4,6,7,8-HpCDD	17			J	13C-1,2,3,4,6,7,8-HpCDD	86	
OCDD	16.7			J	13C-OCDD	79.6	
2,3,7,8-TCDF	EMPC		4.97	J	13C-2,3,7,8-TCDF	92.5	
1,2,3,7,8-PeCDF	9.27			J	13C-1,2,3,7,8-PeCDF	94.7	
2,3,4,7,8-PeCDF	13.5			J	13C-2,3,4,7,8-PeCDF	93.1	
1,2,3,4,7,8-HxCDF	EMPC		13	J	13C-1,2,3,4,7,8-HxCDF	89.1	
1,2,3,6,7,8-HxCDF	12.2			J	13C-1,2,3,6,7,8-HxCDF	89.2	
2,3,4,6,7,8-HxCDF	11.3			J	13C-2,3,4,6,7,8-HxCDF	85	
1,2,3,7,8,9-HxCDF	EMPC		5.27	J	13C-1,2,3,7,8,9-HxCDF	82.5	
1,2,3,4,6,7,8-HpCDF	27.6			J	13C-1,2,3,4,6,7,8-HpCDF	88	
1,2,3,4,7,8,9-HpCDF	3.48			J	13C-1,2,3,4,7,8,9-HpCDF	82.2	
OCDF	12.7			J	13C-OCDF	75.8	
<b>Totals</b>						<b>SS Recoveries</b>	
TCDDs	63.9		82.8		37Cl-2,3,7,8-TCDD	101	Q
PeCDDs	80.7		88.8		13C-1,2,3,4,7-PeCDD	70.9	
HxCDDs	71.8		105		13C-1,2,3,4,6-PeCDF	97.8	
HpCDDs	17		32.6		13C-1,2,3,4,6,9-HxCDF	100	
TCDFs	154		215		13C-1,2,3,4,6,8,9-HpCDF	95.9	
PeCDFs	146		179				
HxCDFs	91.7		119				
HpCDFs	43.5						
<b>Total PCDD/FS</b>	<b>698</b>		<b>895</b>			<b>AS Recoveries</b>	
ITEF TEQs						94.2	
TEQ: ND=0	10.4		13.4		13C-1,3,6,8-TCDD	91.4	
TEQ: ND=DU2	13.3		15.7				
TEQ: ND=DL	16.2		18				


**ANALYTICAL PERSPECTIVES**  
 2714 Exchange Drive  
 Wilmington, NC 28405  
 USA  
 Tel: +1 910 794-1613; Toll-Free 866 846-8290  
 Fax: +1 910 794-3919  
 info@ultratrace.com  
 www.ultratrace.com

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 Reviewer: *[Signature]*  
 Date: 10 Sep 09

Checkcode: 5812

**Sample ID: B30/ RUN 02**

**Method 23**

Client Data		Sample Data		Laboratory Data		Date Received:	
Name: E. Roberts Alley & Assoc. Inc. Project ID: Eastman-Kingsport Date Collected: 25/Aug/2009		Matrix: Air Weight/Volume: 1 Split: 2		Project No.: P1608 Sample ID: P1608_7130_006 QC Batch No.: 7130 Dilution:		01/Sep/2009 08/Sep/2009 13/Sep/2009 18:27:23	
Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	4.91			13C-2,3,7,8-TCDD	90.3	
1,2,3,7,8-PeCDD	EMPC		4.1	J	13C-1,2,3,7,8-PeCDD	108	
1,2,3,4,7,8-HxCDD	EMPC		3.08	J	13C-1,2,3,4,7,8-HxCDD	86.8	
1,2,3,6,7,8-HxCDD	EMPC		8.35	J	13C-1,2,3,6,7,8-HxCDD	86.9	
1,2,3,7,8,9-HxCDD	7.09			J	13C-1,2,3,7,8,9-HxCDD	87.9	
1,2,3,4,6,7,8-HpCDD	EMPC		17	J	13C-1,2,3,4,6,7,8-HpCDD	83.9	
OCDD	16			J	13C-OCDD	81.1	
2,3,7,8-TCDF	8.43			J	13C-2,3,7,8-TCDF	92.7	
1,2,3,7,8-PeCDF	21.9			J	13C-1,2,3,7,8-PeCDF	93.3	
2,3,4,7,8-PeCDF	14			J	13C-2,3,4,7,8-PeCDF	104	
1,2,3,4,7,8-HxCDF	13.2			J	13C-1,2,3,4,7,8-HxCDF	86.5	
1,2,3,6,7,8-HxCDF	24.5			J	13C-1,2,3,6,7,8-HxCDF	84.8	
2,3,4,6,7,8-HxCDF	11.7			J	13C-2,3,4,6,7,8-HxCDF	83.7	
1,2,3,7,8,9-HxCDF	EMPC		6.48	J	13C-1,2,3,7,8,9-HxCDF	78.8	
1,2,3,4,6,7,8-HpCDF	22.5			J	13C-1,2,3,4,6,7,8-HpCDF	85.1	
1,2,3,4,7,8,9-HpCDF	EMPC		5.08	J	13C-1,2,3,4,7,8,9-HpCDF	81	
OCDF	8.36			J	13C-OCDF	77.4	
<b>Totals</b>						<b>SS Recoveries</b>	
TCDDs	63.1		68.5		37Cl-2,3,7,8-TCDD	102	Q
PeCDDs	75.6		87.2		13C-1,2,3,4,7-PeCDD	71.3	
HxCDDs	63.3		88.6		13C-1,2,3,4,6-PeCDF	96.6	
HpCDDs	ND		29.6		13C-1,2,3,4,6,9-HxCDF	99.6	
TCDFs	191		227		13C-1,2,3,4,6,8,9-HpCDF	98.7	
PeCDFs	184		196			<b>AS Recoveries</b>	
HxCDFs	105		118		13C-1,3,6,8-TCDD	89.5	
HpCDFs	27.5		38.9		13C-1,3,6,8-TCDF	87.8	
<b>Total PCDD/Fs</b>	<b>735</b>		<b>879</b>				
ITEF TEQs							
TEQ: ND=0	14.8		18.9				
TEQ: ND=DL/2	18.8		21.3				
TEQ: ND=DL	22.7		23.8				

ANALYTICAL PERSPECTIVES  
 2714 Exchange Drive  
 Wilmington, NC 28405  
 USA  
 info@ultratrace.com  
 www.ultratrace.com  
 Tel: +1 910 794-1613; Toll-Free 866 846-8290  
 Fax: +1 910 794-3919  
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 Date: 16-Sep-09

Checkcode: 0088

**Sample ID: B30/ RUN 03**

**Method 23**

Client Data		Sample Data		Laboratory Data		Date Received:	
Name: E. Roberts Alley & Assoc. Inc. Project ID: Eastman-Kingsport Date Collected: 26/Aug/2009		Matrix: Air Weight/Volume: 1 Split: 2		Project No.: P1608 Sample ID: P1608_7130_007 QC Batch No.: 7130 Dilution: -		01/Sep/2009 08/Sep/2009 13/Sep/2009 19:16:37	
Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	EMPC	[Ra=1.34]	1.68	J	13C-2,3,7,8-TCDD	93.7	
1,2,3,7,8-PeCDD	ND	4.86			13C-1,2,3,7,8-PeCDD	109	
1,2,3,4,7,8-HxCDD	ND	4.71			13C-1,2,3,4,7,8-HxCDD	90.5	
1,2,3,6,7,8-HxCDD	ND	5.08			13C-1,2,3,6,7,8-HxCDD	89.2	
1,2,3,7,8,9-HxCDD	ND	5.45			13C-1,2,3,7,8,9-HxCDD	92	
1,2,3,4,6,7,8-HpCDD	7.29			J	13C-1,2,3,4,6,7,8-HpCDD	86.6	
OCDD	ND	4.34			13C-OCDD	78.6	
2,3,7,8-TCDF	EMPC		3.9	J	13C-2,3,7,8-TCDF	92.5	
1,2,3,7,8-PeCDF	4.73			J	13C-1,2,3,7,8-PeCDF	96.1	
2,3,4,7,8-PeCDF	6.9			J	13C-2,3,4,7,8-PeCDF	98	
1,2,3,4,7,8-HxCDF	8.29			J	13C-1,2,3,4,7,8-HxCDF	90.8	
1,2,3,6,7,8-HxCDF	6.21			J	13C-1,2,3,6,7,8-HxCDF	89.7	
2,3,4,6,7,8-HxCDF	EMPC		5.26	J	13C-2,3,4,6,7,8-HxCDF	85.5	
1,2,3,7,8,9-HxCDF	EMPC		2.33	J	13C-1,2,3,7,8,9-HxCDF	80.5	
1,2,3,4,6,7,8-HpCDF	12.3			J	13C-1,2,3,4,6,7,8-HpCDF	89.5	
1,2,3,4,7,8,9-HpCDF	2.63			J	13C-1,2,3,4,7,8,9-HpCDF	84.5	
OCDF	ND	5.16		J	13C-OCDF	73.3	
<b>Totals</b>						<b>SS Recoveries</b>	
TCDDs	13.6		40.8		37Cl-2,3,7,8-TCDD	98.4	Q
PeCDDs	22.5		33.1		13C-1,2,3,4,7-PeCDD	71.2	
HxCDDs	32.8		35.6		13C-1,2,3,4,6-PeCDF	95.6	
HpCDDs	17.1				13C-1,2,3,4,6,9-HxCDF	100	
TCDFs	101		116		13C-1,2,3,4,6,8,9-HpCDF	94	
PeCDFs	64.1		81.2			<b>AS Recoveries</b>	
HxCDFs	44.9		57.9		13C-1,3,6,8-TCDD	89.2	
HpCDFs	18.7		20.9		13C-1,3,6,8-TCDF	87.1	
<b>Total PCDD/Fs</b>	<b>315</b>		<b>402</b>				
ITEF TEQs							
TEQ: ND=0	5.36		8.19				
TEQ: ND=DU/2	9.15		10.2				
TEQ: ND=DL	12.9		12.1				

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