160277

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FROM: Steve Mueller

DATE:

TO: COMPANY Reidel Env. Svs.

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DEPT:

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SUBJECT: Project 8168

NUMBER OF PAGES (including this one): 9

If you do not receive a complete transmittal, please contact Steve at (713) 972-1037

Comments: CSH -23
CSH - 7
CSH -19
CSH - 11
Blank + Lab Spike

REIDEL ENVIRONMENTAL SERVICES, INC.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168
Client Sample: CSH-23

SAMPLE ANALYSIS SUMMARY REPORT

Ionics Project: 95-288
Ionics Sample: 3-88-1

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	0.89	0.05	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.08	ND	ND	-	-
1,2,3,6,7,8-HxCDD	11.21	0.08	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	2.12	0.08	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	431.74	0.04	ND	6.54	105%	50-150
OCDD	4918.36	0.54	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.25	0.04	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.02	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.02	ND	ND	-	-
1,2,3,4,7,8-HxCDF	4.84	0.05	ND	ND	-	-
1,2,3,6,7,8-HxCDF	2.92	0.05	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	1.13	0.06	ND	ND	-	-
1,2,3,7,8,9-HxCDF	0.39	0.07	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	123.21	0.16	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	8.66	0.18	ND	ND	-	-
OCDF	874.15	0.34	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.30	0.01	**Total dioxins/furans**
TOTAL PeCDD	4	2.03	0.05	
TOTAL HxCDD	9	66.27	0.08	**7463.83 ppb**
TOTAL HpCDD	2	825.65	0.04	
TOTAL TCDF	9	1.17	0.04	**2,3,7,8-TCDD toxicity equivalent**
TOTAL PeCDF	2	2.54	0.02	
TOTAL HxCDF	9	107.65	0.07	**14.159 ppb**
TOTAL HpCDF	4	665.73	0.18	

*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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REIDEL ENVIRONMENTAL SERVICES, INC.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168
Client Sample: CSH-7

SAMPLE ANALYSIS SUMMARY REPORT

Ionics Project: 95-288
Ionics Sample: 3-88-2

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.11	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.15	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.26	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.27	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.26	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	9.99	0.12	ND	6.54	105%	50-150
OCDD	133.93	0.27	ND	11.29	90%	50-150
2,3,7,8-TCDF	ND	0.02	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.06	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.07	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.19	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.18	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.22	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.24	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	2.82	0.70	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.83	ND	ND	-	-
OCDF	11.65	0.20	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.11	**Total dioxins/furans**
TOTAL PeCDD	0	ND	0.15	
TOTAL HxCDD	2	1.17	0.27	**177.54 ppb**
TOTAL HpCDD	2	18.28	0.12	
TOTAL TCDF	0	ND	0.02	**2,3,7,8-TCDD toxicity equivalent**
TOTAL PeCDF	0	ND	0.07	
TOTAL HxCDF	1	0.96	0.24	**0.274 ppb**
TOTAL HpCDF	2	11.55	0.83	

*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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REIDEL ENVIRONMENTAL SERVICES, INC.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168
Client Sample: CSH-19

SAMPLE ANALYSIS SUMMARY REPORT

Ionics Project: 95-288
Ionics Sample: 3-88-3

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.05	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.08	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.15	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.16	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.15	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	10.60	0.20	ND	6.54	105%	50-150
OCDD	152.69	0.23	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.44	0.05	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.04	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.04	ND	ND	-	-
1,2,3,4,7,8-HxCDF	1.44	0.21	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.31	0.20	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.23	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.26	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	6.33	0.26	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.31	ND	ND	-	-
OCDF	16.70	0.18	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.05	**Total dioxins/furans**
TOTAL PeCDD	0	ND	0.08	
TOTAL HxCDD	1	0.87	0.16	**214.39 ppb**
TOTAL HpCDD	2	19.91	0.20	
TOTAL TCDF	1	0.44	0.05	**2,3,7,8-TCDD toxicity equivalent**
TOTAL PeCDF	2	1.25	0.04	
TOTAL HxCDF	4	6.20	0.26	**0.558 ppb**
TOTAL HpCDF	2	16.33	0.31	

*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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REIDEL ENVIRONMENTAL SERVICES, INC.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168
Client Sample: CSH-11

SAMPLE ANALYSIS SUMMARY REPORT

Ionics Project: 95-288
Ionics Sample: 3-88-4

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.16	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	0.14	0.07	ND	ND	-	-
1,2,3,6,7,8-HxCDD	0.19	0.07	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	0.20	0.07	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	8.26	0.07	ND	6.54	105%	50-150
OCDD	100.30	0.11	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.04	0.04	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.08	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.09	ND	ND	-	-
1,2,3,4,7,8-HxCDF	0.15	0.04	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.09	0.04	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.05	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.05	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	2.04	0.18	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.21	ND	ND	-	-
OCDF	13.85	0.09	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	2	0.18	0.03	**Total dioxins/furans**
TOTAL PeCDD	0	ND	0.16	
TOTAL HxCDD	5	1.56	0.07	**145.53 ppb**
TOTAL HpCDD	2	17.04	0.07	
TOTAL TCDF	1	0.04	0.04	**2,3,7,8-TCDD toxicity equivalent**
TOTAL PeCDF	1	0.14	0.09	
TOTAL HxCDF	4	1.79	0.05	**0.298 ppb**
TOTAL HpCDF	2	10.63	0.21	

*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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REIDEL ENVIRONMENTAL SERVICES, INC.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 | ***BLANK ANALYSIS REPORT*** | **Ionics Project: 95-288**
Client Sample: Method Blank | **Ionics Sample: DFBLK B1-020**

Date extracted:	4/25/95	Sample size:	10 g	File:	F11578
Date analyzed:	5/10/95	Matrix:	Solid	Ret check:	F11576
				Daily cal:	F11577
				Initial cal:	F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-		U
1,2,3,7,8-PeCDD	ND	0.27	-		U
1,2,3,4,7,8-HxCDD	ND	0.10	-		U
1,2,3,6,7,8-HxCDD	ND	0.10	-		U
1,2,3,7,8,9-HxCDD	ND	0.10	-		U
1,2,3,4,6,7,8-HpCDD	ND	0.13	-		U
OCDD	ND	0.11	-		U
2,3,7,8-TCDF	ND	0.02	-		U
1,2,3,7,8-PeCDF	ND	0.09	-		U
2,3,4,7,8-PeCDF	ND	0.10	-		U
1,2,3,4,7,8-HxCDF	ND	0.05	-		U
1,2,3,6,7,8-HxCDF	ND	0.05	-		U
2,3,4,6,7,8-HxCDF	ND	0.05	-		U
1,2,3,7,8,9-HxCDF	ND	0.06	-		U
1,2,3,4,6,7,8-HpCDF	ND	0.12	-		U
1,2,3,4,7,8,9-HpCDF	ND	0.15	-		U
OCDF	ND	0.08	-		U

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.03	-
TOTAL PeCDD	0	ND	0.27	-
TOTAL HxCDD	0	ND	0.10	-
TOTAL HpCDD	0	ND	0.13	-
TOTAL TCDF	0	ND	0.02	-
TOTAL PeCDF	0	ND	0.10	-
TOTAL HxCDF	0	ND	0.06	-
TOTAL HpCDF	0	ND	0.15	-

*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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REIDEL ENVIRONMENTAL SERVICES, INC.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 | ***BLANK ANALYSIS*** | **Ionics Project: 95-288**
Client Sample: Method Blank | ***QC REPORT*** | **Ionics Sample: DFBLK B1-020**

Date extracted:	4/25/95	Sample size:	10 g	File:	F11578
Date analyzed:	5/10/95	Matrix:	Solid	Ret check:	F11576
				Daily cal:	F11577
				Initial cal:	F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.93	78.6	0.83	20:56	-
13C12-2,3,7,8-TCDD	4.38	87.6	0.81	21:33	-
13C12-1,2,3,6,7,8-HxCDD	4.43	88.6	1.36	30:54	-
13C12-1,2,3,4,6,7,8-HpCDF	8.45	84.5	1.11	34:11	-
13C12-OCDD	9.42	94.2	0.96	40:11	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.34	93.5	21:34	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:20	-
13C12-1,2,3,7,8,9-HxCDD	1.39	31:23	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occuring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occuring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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REIDEL ENVIRONMENTAL SERVICES, INC.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168
Client Sample: Lab Spike

LAB SPIKE ANALYSIS REPORT

Ionics Project: 95-288
Ionics Sample: LS B1-020

Date extracted:	4/25/95	Sample size:	10 g	File:	F11579
Date analyzed:	5/10/95	Matrix:	Solid	Ret check:	F11576
				Daily cal:	F11577
				Initial cal:	F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	2.54	0.01	0.76	21:44	
1,2,3,7,8-PeCDD	6.59	0.10	1.67	26:29	
1,2,3,4,7,8-HxCDD	ND	0.12	-	-	U
1,2,3,6,7,8-HxCDD	6.95	0.12	1.27	31:04	
1,2,3,7,8,9-HxCDD	ND	0.12	-	-	U
1,2,3,4,6,7,8-HpCDD	6.54	0.08	1.07	35:48	
OCDD	11.29	0.07	0.91	40:17	
2,3,7,8-TCDF	2.80	0.02	0.78	21:07	
1,2,3,7,8-PeCDF	6.84	0.02	1.62	25:15	
2,3,4,7,8-PeCDF	ND	0.02	-	-	U
1,2,3,4,7,8-HxCDF	ND	0.03	-	-	U
1,2,3,6,7,8-HxCDF	6.56	0.03	1.28	30:04	
2,3,4,6,7,8-HxCDF	ND	0.04	-	-	U
1,2,3,7,8,9-HxCDF	ND	0.04	-	-	U
1,2,3,4,6,7,8-HpCDF	6.39	0.06	1.08	34:20	
1,2,3,4,7,8,9-HpCDF	ND	0.07	-	-	U
OCDF	11.21	0.05	0.92	40:28	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	2.54	0.01	-
TOTAL PeCDD	1	6.59	0.10	-
TOTAL HxCDD	1	6.95	0.12	-
TOTAL HpCDD	1	6.54	0.08	-
TOTAL TCDF	1	2.80	0.02	-
TOTAL PeCDF	1	6.84	0.02	-
TOTAL HxCDF	1	6.56	0.04	-
TOTAL HpCDF	1	6.39	0.07	-

*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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REIDEL ENVIRONMENTAL SERVICES, INC.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168
Client Sample: Lab Spike

LAB SPIKE ANALYSIS
QC REPORT

Ionics Project: 95-288
Ionics Sample: LS B1-020

Date extracted:	4/25/95	Sample size:	10 g	File:	F11579
Date analyzed:	5/10/95	Matrix:	Solid	Ret check:	F11576
				Daily cal:	F11577
				Initial cal:	F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.10	82.0	0.84	21:06	-
13C12-2,3,7,8-TCDD	4.40	88.0	0.83	21:43	-
13C12-1,2,3,6,7,8-HxCDD	4.79	95.9	1.37	31:04	-
13C12-1,2,3,4,6,7,8-HpCDF	9.41	94.1	1.13	34:19	-
13C12-OCDD	9.79	97.9	0.97	40:15	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.26	90.3	21:44	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:30	-
13C12-1,2,3,7,8,9-HxCDD	1.40	31:35	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occuring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occuring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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