

REPORT

on

PHASE I INVESTIGATION OF DIOXIN/FURAN SOIL
LEVELS IN COLUMBUS, OHIO

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February 22, 1996

SUMMARY

This report presents results from the analysis of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF) in 34 soil samples from the area around a municipal Waste-to-Energy (WTE) facility located in Columbus, OH. These samples were analyzed according to U.S. Environmental Protection Agency (EPA) Method 8290 and the Quality Assurance Project Plan (QAPP) established for this project.

BACKGROUND INFORMATION

The U.S. EPA Office of Pollution Prevention and Toxics conducted an initial soil sampling study to characterize site contamination at the Columbus WTE facility. This report provides a perspective on PCDD/PCDF contamination in the soil samples collected for Phase I of this program. Phase II sampling will be directed according to the results from the Phase I samples. These results, and information from previous and concurrent investigations may indicate that more comprehensive sampling efforts are required for future site contamination studies

EXPERIMENTAL PROCEDURES

The 34 samples were processed in two sets of 17 with a method blank, a matrix spike, matrix spike duplicate, and sample duplicate processed with each set. In addition to these four laboratory quality control (QC) samples, one of the background soils was spiked with PCDD/PCDF at 5 times the method detection limits (MDL) to verify that detection limits were achieved. Method detection limits are 1, 5, and 10 pg/g for the respective tetra, penta/hexa/hepta, and octa congeners. This detection limit (DL) sample was included in the

first sample set. The soil samples and associated QC samples processed in each set, in order of analysis, are as follows:

<u>Set #1:</u>	<u>Set #2:</u>	
Method Blank ✓	S18	24
S01, Field Blank	S19	3
S04, Background Soil Duplicate	S34	
S05, Background Soil	S34, Matrix Spike ✓	
S06, Background Soil	S34, Matrix Spike Duplicate ✓	3
S07	Method Blank	4
S17, Field Blank	S20	
S08	S21	5
S09	S22	1
S09, Duplicate ✓	S23	
S03, Background Soil	S24	
S03, Detection Limit Sample	S25	
S02, Soil SRM ✓	S26	
S10	S27	
S11	S28	
S12	S29	
S13	S30	
S14	S31	
S04, Matrix Spike	S32	
S04, Matrix Spike Duplicate ✓	S33	
S15	S33, Duplicate	
S16		

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Approximately 10 g of each soil sample was used to determine percent solids (percent dry weight). Another approximately 10 g of each sample was combined with sodium sulfate for extraction. All samples were spiked with isotopically labeled analogs of fifteen of the seventeen 2,3,7,8-substituted PCDD/PCDF prior to extraction. The samples were extracted for approximately 18 hours with toluene in a Soxhlet apparatus. Extracts were spiked with $^{37}\text{Cl}_4$ -2,3,7,8-TCDD cleanup standard, partitioned against base and acid solutions, and processed through acid/base silica, basic alumina, and carbon AX-21/Celite cleanup columns. Extracts were spiked with 1,2,3,4-TCDD- $^{13}\text{C}_{12}$ /1,2,3,7,8,9-HxCDD- $^{13}\text{C}_{12}$ recovery standard and concentrated to a final volume of 20 μL .

During the final sample preparation steps for the second set of samples, a stop work order was received from EPA. Sample extracts were processed through the carbon column cleanup procedure and were ready for final sample concentration. The extracts, in 100-mL round bottom flasks, were sealed with teflon tape and stored in a refrigerator for 3 weeks until authorization to proceed was received. During this storage period, four sample extracts, S19, S20, S21, and S22, went dry in the round bottom flasks. After reconstituting these four samples with 1 mL of hexane, all of the Set #2 samples were concentrated to a final volume of 20 μ L as with Set #1.

Sample extracts were analyzed on a VG AutoSpec high resolution gas chromatography/high resolution mass spectrometer (HRGC/HRMS) (Serial #X088, System #6744) in the selected ion monitoring mode on a J&W DB-5 capillary column (Serial #4499117) at an instrument resolution of approximately 10,000 (10 percent valley). A Hewlett Packard 5890 Series II Gas Chromatograph (C128/83) served as the inlet. Data reduction was performed on a VAX station 3100, M38, Model WS42A-BC (Serial #AB11300V6D) using OpusQuan software. The criteria used to identify chromatographic peaks were: (1) ≥ 2.5 signal-to-noise ratio; (2) ion abundance ratios within 15% of theoretical values; (3) retention times of native analytes within ± 2 seconds of $^{13}\text{C}_{12}$ -labelled internal standards; and (4) no diphenyl ether interferences. Some samples were diluted to reduce chromatographic interference problems. The dilution factor is noted on individual analysis data sheets. Because 2,3,7,8-TCDF is not completely resolved from all other tetra-chlorinated isomers on the DB-5 column, second column confirmation of 2,3,7,8-TCDF levels above 1 pg/g dry weight in the initial analysis was performed on a J&W DB-Dioxin column (Serial #2743516) for 14 samples.

Per the QAPP for this project, the following deviations to Method 8290, which are part of routine sample preparation/analysis in Battelle's Dioxin Laboratory, were employed:

Sample Preparation

1. The following additional internal standards were added to the samples prior to extraction to improve analytical accuracy:

$^{13}\text{C}_{12}$ -2,3,4,7,8-PeCDF

$^{13}\text{C}_{12}$ -1,2,3,6,7,8-HxCDF

$^{13}\text{C}_{12}$ -2,3,4,6,7,8-HxCDF

$^{13}\text{C}_{12}$ -1,2,3,4,7,8-HxCDD

$^{13}\text{C}_{12}$ -1,2,3,7,8,9-HxCDF

$^{13}\text{C}_{12}$ -1,2,3,4,7,8,9-HpCDF

2. A cleanup standard, $^{37}\text{Cl}_4$ -2,3,7,8-TCDD, was added to the samples prior to processing through cleanup columns to evaluate analyte recovery through cleanup.
3. A 30-mL volume of acid was used for the first acid wash of the sample extract, rather than 40-mL; 20 mL of acid was used for each successive acid wash instead of 40 mL; 15 mL of base was used for the base wash; and 20 mL of distilled water was used instead of the 40 mL of 5% sodium chloride washes.
4. In the acid/base silica column cleanup, a 1-g plug of silica gel was placed between the basic silica and the acid silica layers. In addition, sodium sulfate was added to the top of the column. The column is rinsed with 30 mL of hexane instead of 10 mL. The sample was usually applied in 5 mL of hexane instead of the 2 mL of hexane specified in Method 8290. The column was eluted with 75 mL of hexane instead of 90 mL.
5. In the alumina column cleanup, Sigma basic alumina, WB-2, activity grade I, was used instead of acidic or neutral alumina. For the first elution, the alumina column was rinsed with 15 mL of 3% methylene chloride/hexane instead of 20 mL of hexane. The second elution, containing the PCDD/PCDF, consisted of 40 mL of 50% methylene chloride/hexane instead of 15 mL of 60% methylene chloride/hexane specified in Method 8290.
6. For the carbon column cleanup, the columns did not include plugs of celite at the top and bottom of the carbon/celite packed bed. The carbon column was eluted with 30 mL of toluene instead of 20 mL as specified in Method 8290.

Sample Analysis

1. Commercially-prepared calibration standards at concentrations specified in Method 1613 were used instead of calibration concentrations specified in Method 8290. The Method 1613 calibration concentrations cover a wider range and lower limits for some compounds than the Method 8290 calibration concentrations.
2. Typical injection volume was 0.5 μL or 1 μL instead of 2 μL specified in Method 8290. Acceptable sensitivity (i.e., 1 pg/g detection limit for soil samples) has been demonstrated by Battelle using the smaller injection volume.

SAMPLE RESULTS

Appendix A includes data sheets with analytical results from the initial analysis and associated quality control results. Abbreviated analysis data sheets presenting only sample results are provided in Appendix B. Data sheets in Appendix C present 2,3,7,8-TCDF concentrations from second column confirmation analysis of 14 samples. Where applicable,

results from the 2,3,7,8-TCDF second column confirmation analysis have been inserted into the initial analysis data sheets in Appendices A and B. Please note the following when reviewing these results:

- (1) The "*" on the data sheets indicates that the analyte was not detected at a concentration above the sample limit of detection.
- (2) The HRGC/HRMS instrumentation was calibrated in the ranges corresponding to analyte levels in the samples of 1.3 to 520 pg/g dry weight for tetra compounds, 6.4 to 2560 pg/g dry weight for penta through hepta compounds, and 13 to 5120 pg/g dry weight for octa compounds. These calibration ranges are based on an average sample dry weight of 7.8 g and a 1- μ L injection volume. Concentrations below these calibration ranges have been reported; however, accuracy of concentrations outside the calibration range cannot be guaranteed.
- (3) Of the 34 samples, 29 had 2,3,7,8-TCDF concentrations above 1 pg/g dry weight and required second column confirmation analysis. Only 14 of these 29 samples received a second column confirmation analysis due to budget constraints. For those samples which received a second column confirmation run, the 2,3,7,8-TCDF value from the second run has been inserted into the initial data sheet. The 2,3,7,8-TCDF values for the 14 extracts which were processed through the second column confirmation run showed a 25% - 50% decrease from 2,3,7,8-TCDF values obtained in the initial analysis.
- (4) Some samples had polychlorinated diphenyl ether (PCDPE) responses at the same retention time as 1,2,3,4,7,8-HxCDF and 1,2,3,6,7,8-HxCDF. Per Method 8290, Section 7.8.4.4, 1,2,3,4,7,8-HxCDF and 1,2,3,6,7,8-HxCDF peaks could not be identified definitively as PCDF and were therefore not quantified as PCDF.
- (5) The matrix spike recoveries for S34 MS and S34 MSD were calculated using the equation:

$$\% \text{ REC} = 100 (\text{MS conc. found}) / (\text{Spike conc.} + \text{Background conc.})$$

(L. P. Provost and R. S. Elder, "Interpretation of Percent Recovery Data," *Amer. Lab.*, 15(12), pg. 57, 1983). The above equation was employed since the background level of analytes was much higher than the spike level. In this method of calculating percent recovery, the small spike levels are not "lost in the noise" of large background levels.

- (6) Sample S27 had very poor chromatography in the 2,3,7,8-TCDD window which may have affected its detection.

- (7) In some instances an analyte concentration which is slightly below the instrument limit of quantitation (LOQ) has been reported. In these cases, the analyst judged the analyte met Method 8290 identification criteria and so the concentration determined has been reported along with the sample limit of detection (LOD) and the instrument limit of quantitation (LOQ).
- (8) The sample limits of detection shown on the data sheets were calculated according to Method 8290, Section 7.9.5.1.1. For all but two analyses, the LODs achieved were well below the method detection limits outlined in Method 8290 of 1, 5, and 10 pg/g for tetra, penta/hexa/hepta, and octa congeners. The S03 and S03 DL spike samples had to be diluted 1:2 due to chromatographic interferences. As a result, the LODs shown on the data sheets in Appendix A are above the method detection limits for these two samples. The LOD achieved for OCDD in two samples was higher than the method detection limit of 10 pg/g, however, since OCDD was found at much higher levels in background soil samples, this high LOD does not adversely impact the sample results.

QUALITY CONTROL RESULTS

Appendix C contains summary tables of quality control results for matrix spike, matrix spike duplicate, sample duplicate, standard reference material, and detection limit (DL) samples. In addition, prior method detection limit study results and prior soil SRM results have been provided.

Method Blanks: A method blank was processed with each of the two sample sets to demonstrate freedom from contamination in the laboratory processing and analysis procedures. A 10-g aliquot of sodium sulfate was processed through all extraction, cleanup, and analysis procedures as if it were an actual sample. PCDD/PCDF were not detected or were detected at levels below the sample limits of detection achieved for the background soil samples S03 and S04.

Field Blanks: In order to verify that the reference matrix (playsand) used for field blanks was PCDD/PCDF-free prior to use, a 10-g aliquot of the playsand was spiked with internal standards, extracted, and processed through all cleanup procedures as described for field samples. In addition, an aliquot of methylene chloride was used to rinse the jars in which the

field blanks would be shipped. Both playsand extract and the jar rinsate samples were analyzed and found to be free of PCDD/PCDF. Field blank samples were thus prepared by rinsing new 500-mL jars with methylene chloride, filling about 1/2 full with playsand, and sealing jars with lids and teflon tape.

The field blanks for Phase I sampling effort were samples S01, S17, and S32. In each case, PCDD/PCDF were not detected or were detected at levels well below both the LOQ and below the sample limit of detection achieved for the background soil samples S03 and S04.

Surrogate Internal Standards: Each sample was spiked with $^{13}\text{C}_{12}$ -labeled analogs of fifteen of the seventeen 2,3,7,8-PCDD/PCDF prior to extraction. Recovery of these internal standards gives an indication of method performance. All internal standard recoveries were within the 40-135 percent limit stated in Method 8290 except for OCDD- $^{13}\text{C}_{12}$ in sample S18 and several internal standards in samples S20 and S23. For sample S23, chromatographic interferences may have caused the low internal standard recoveries. The low recoveries for sample S20 may have resulted from the sample going dry during the storage period required by the stop work order.

Matrix Spike/Matrix Spike Duplicate: A matrix spike (MS) and matrix spike duplicate (MSD) were processed with each sample batch by spiking both samples with a low level of the seventeen 2,3,7,8-PCDD/PCDF and processing through all extraction, cleanup, and analysis procedures.

Spike recoveries for these four quality control samples were 81 to 139 percent with one exception. Recovery of the 1,2,3,7,8,9-HxCDD in the S34 matrix spike and S34 matrix spike duplicate was high and is attributed to polychlorinated diphenyl ether interference. Recoveries of all of the analytes in the S34 MS and S34 MSD were calculated using the equation listed on the data table in Appendix D. The equation was employed since the background level of analytes was much higher than the spike level. In this method of calculating percent recovery, the small spike levels are not "lost in the noise" of large background levels.

Required control limits for matrix spike/matrix spike duplicate agreement were $\pm 20\%$ relative percent difference (RPD). This control limit was met for both sets of matrix spike/matrix spike duplicates.

Sample Duplicates: One sediment sample was processed in duplicate for both extraction sets. Required control limits for duplicates were less than 25% RPD for analytes at levels greater than ten times the method detection limit. The control limit was met for all analytes in both samples. In S09, RPD greater than 25 percent were obtained for some analytes but in these cases analyte concentrations were less than ten times the method detection limit and in most cases below the instrument limit of quantitation.

Standard Reference Material: One soil standard reference material (Cambridge Isotope Laboratories #EDF-2513) was received with the soil samples, designated S02. This soil SRM was extracted with the first set of samples. Recoveries of the analytes ranged from 86.4% for 1,2,3,6,7,8-HxCDD to 123.5% for OCDD. A table of previous results obtained for this soil SRM can be found in Appendix D.

Detection Limit (DL) Sample: One of the background soils (S03) was used to verify that method detection limits were achieved. Two aliquots of S03, one spiked with PCDD/PCDF at about 5 times the method detection limit (MDL) and one unspiked to serve as its background, were extracted with the first set of samples. The recoveries of the analytes ranged from 75.0% to 117.0%. Recoveries were calculated using the same equation as for the S34 MS/S34 MSD:

$$\% \text{ REC} = 100 (\text{Conc. found}) / (\text{Spike conc.} + \text{Background conc.})$$

(L. P. Provost and R. S. Elder, "Interpretation of Percent Recovery Data," *Amer. Lab.*, 15(12), pg. 57, 1983). The above equation was employed due to the high OCDD background concentration measured in unspiked sample S03. In this method of calculating percent recovery, the small spike levels are not "lost in the noise" of large background levels.

The acceptable recoveries obtained for the DL sample demonstrate that PCDD/PCDF concentrations near the method detection limit can be accurately quantified.

APPENDIX A

COMPLETE ANALYSIS DATA SHEETS FOR
INITIAL ANALYSIS OF PHASE I SOILS

Phase I Sample Analyses

Set #1:

47482-6-22	[Method Blank
47482-6-16	[S01, Field Blank
47482-6-2	[S04, Background Soil <i>Field Duplicate</i>
47482-6-3	S05, Background Soil
47482-6-4	S06, Background Soil
47482-6-5	S07
47482-6-15	[S17, Field Blank
47482-6-6	S08
47482-6-7	S09
47482-6-20	[S09, Duplicate - lab
47482-6-18	S03, Background Soil
47482-6-19	[S03, Detection Limit Sample
47482-6-17	[S02, Soil SRM
47482-6-8	S10
47482-6-9	S11
47482-6-10	S12
47482-6-11	S13
47482-6-12	S14
47482-6-21	[S04, Matrix Spike
47482-6-23	[S04, Matrix Spike Duplicate
47482-6-13	S15
47482-6-14	[S16 - <i>Field Duplicate</i>

Set #2:

47482-10-2	S18
47482-10-3	S19
47482-10-19	S34
47482-10-20	[S34, Matrix Spike
47482-10-21	[S34, Matrix Spike Duplicate
47482-10-22	[Method Blank
47482-10-4	S20
47482-10-5	S21
47482-10-6	S22
47482-10-7	S23
47482-10-8	S24
47482-10-9	S25
47482-10-10	S26
47482-10-11	S27
47482-10-12	S28
47482-10-13	S29
47482-10-14	S30
47482-10-15	[S31 <i>Field Duplicate</i>
47482-10-16	[S32, Field Blank
47482-10-17	S33
47482-10-18	[S33, Duplicate <i>lab</i>

SET #1

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-06-95
 Ext Date 12-07-95
 Analysis Date 18-DEC-95 Time 10:56:04
 Extract Volume (uL) 20
 Injection Volume (uL) 1
 Dilution Factor NONE

Lab Sample ID: 47482-6-22, METHOD BLANK
 Sample Wt/Vol: 10.0000 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A037804
 Blank Data Filename: A037803
 Cal. Ver. Data Filename: A037802

ANALYTE	CONC. FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	0.26	1.00	*	13C-2,3,7,8-TCDD	2000	1509	75	0.79
1,2,3,7,8-PeCDD	0.36 ~	0.20	5.00	1.43	13C-1,2,3,7,8-PeCDD	2000	1428	71	1.55
1,2,3,4,7,8-HxCDD	*	0.25	5.00	*	13C-1,2,3,4,7,8-HxCDD	2000	1576	79	1.25
1,2,3,6,7,8-HxCDD	*	0.27	5.00	1.21	13C-1,2,3,6,7,8-HxCDD	2000	1728	86	1.27
1,2,3,7,8,9-HxCDD	*	0.14	5.00	1.23	13C-1,2,3,4,6,7,8-HpCDD	2000	1582	79	1.04
1,2,3,4,6,7,8-HpCDD	0.53 ~	0.51	5.00	1.20	13C-OCDD	4000	2641	66	0.90
OCDD	*	4.61	10.00	0.90	13C-2,3,7,8-TCDF	2000	1644	82	0.80
2,3,7,8-TCDF	*	0.30	1.00	0.77	13C-1,2,3,7,8-PeCDF	2000	1699	85	1.58
1,2,3,7,8-PeCDF	*	0.23	5.00	*	13C-2,3,4,7,8-PeCDF	2000	1694	85	1.61
2,3,4,7,8-PeCDF	0.26 ~	0.26	5.00	1.69	13C-1,2,3,4,7,8-HxCDF	2000	1642	82	0.53
1,2,3,4,7,8-HxCDF	*	0.16	5.00	*	13C-1,2,3,6,7,8-HxCDF	2000	1697	85	0.52
1,2,3,6,7,8-HxCDF	0.24 ~	0.13	5.00	1.24	13C-1,2,3,7,8,9-HxCDF	2000	1555	78	0.51
1,2,3,7,8,9-HxCDF	*	0.17	5.00	1.30	13C-2,3,4,6,7,8-HxCDF	2000	1674	84	0.54
2,3,4,6,7,8-HxCDF	0.45 ~	0.10	5.00	1.24	13C-1,2,3,4,6,7,8-HpCDF	2000	1612	81	0.44
1,2,3,4,6,7,8-HpCDF	0.43 ~	0.05	5.00	1.06	13C-1,2,3,4,7,8,9-HpCDF	2000	1569	78	0.43
1,2,3,4,7,8,9-HpCDF	*	0.22	5.00	*					
OCDF	0.29 ~	0.27	10.00	0.85					
Total Tetra-Furans	*	0.34		*	CLEANUP STANDARD				
Total Tetra-Dioxins	0.33			0.75	37Cl-2,3,7,8-TCDD	200	197	98	
Total Penta-Furans	*	0.47		*					
Total Penta-Dioxins	*	0.40		*					
Total Hexa-Furans	1.25			*					
Total Hexa-Dioxins	*	0.32		*					
Total Hepta-Furans	1.16			*					
Total Hepta-Dioxins	0.66			1.15					

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 18-DEC-95 Time 13 15 49

Extract Volume (uL) 20

Injection Volume (uL) 1

Lab Sample ID: 47482-6-16, S01

Sample Wt/Vol: 10.1772 units g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A037806

Blank Data Filename: A037803

Cal Ver. Data Filename: A037802

ANALYTE	CONC. FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	0.22	0.98	*		2000	1593	80	0.78
1,2,3,7,8-PeCDD	*	0.16	4.91	*	13C-1,2,3,7,8-PeCDD	2000	1593	80	1.57
1,2,3,4,7,8-HxCDD	*	0.23	4.91	*	13C-1,2,3,4,7,8-HxCDD	2000	1582	79	1.26
1,2,3,6,7,8-HxCDD	*	0.25	4.91	*	13C-1,2,3,6,7,8-HxCDD	2000	1808	90	1.24
1,2,3,7,8,9-HxCDD	*	0.13	4.91	*	13C-1,2,3,4,6,7,8-HpCDD	2000	1666	83	1.05
1,2,3,4,6,7,8-HpCDD	0.62 ~	0.44	4.91	1.10	13C-OCDD	4000	2821	71	0.90
OCDD	*	4.05	9.83	0.87	13C-2,3,7,8-TCDF	2000	1549	77	0.81
2,3,7,8-TCDF	0.39 ~	0.28	0.98	0.86	13C-1,2,3,7,8-PeCDF	2000	1734	87	1.62
1,2,3,7,8-PeCDF	*	0.20	4.91	*	13C-2,3,4,7,8-PeCDF	2000	1654	83	1.60
2,3,4,7,8-PeCDF	0.46 ~	0.24	4.91	1.65	13C-1,2,3,4,7,8-HxCDF	2000	1617	81	0.53
1,2,3,4,7,8-HxCDF	^	0.16	4.91	*	13C-1,2,3,6,7,8-HxCDF	2000	1579	79	0.52
1,2,3,6,7,8-HxCDF	*	0.13	4.91	*	13C-1,2,3,7,8,9-HxCDF	2000	1562	78	0.52
1,2,3,7,8,9-HxCDF	*	0.16	4.91	*	13C-2,3,4,6,7,8-HxCDF	2000	1609	80	0.52
2,3,4,6,7,8-HxCDF	0.35 ~	0.10	4.91	1.17	13C-1,2,3,4,6,7,8-HpCDF	2000	1621	81	0.45
1,2,3,4,6,7,8-HpCDF	0.41 ~	0.04	4.91	0.91	13C-1,2,3,4,7,8,9-HpCDF	2000	1590	80	0.43
1,2,3,4,7,8,9-HpCDF	*	0.20	4.91	*					
OCDF	0.38 ~	0.24	9.83	0.96					
Total Tetra-Furans	0.58			0.68	CLEANUP STANDARD				
Total Tetra-Dioxins	0.54			0.70	37Cl-2,3,7,8-TCDD	200	179	90	
Total Penta-Furans	0.60			1.48					
Total Penta-Dioxins	*	0.32		*					
Total Hexa-Furans	1.13			1.27					
Total Hexa-Dioxins	*	0.29		*					
Total Hepta-Furans	1.35			0.91					
Total Hepta-Dioxins	1.29			1.13					

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-06-95
 Ext Date 12-07-95
 Analysis Date 18-DEC-95 Time 14 28 07
 Extract Volume (uL) 20
 Injection Volume (uL) 1
 Dilution Factor NONE

Lab Sample ID 47482-6-2, S04
 Sample Wt/Vol: 6.5575 units' g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A037807
 Blank Data Filename: A037803
 Cal Ver Data Filename: A037802

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	0.54	1.52	*	13C-2,3,7,8-TCDD	2000	1333	67	0.78
1,2,3,7,8-PeCDD	*	0.41	7.62	*	13C-1,2,3,7,8-PeCDD	2000	1268	63	1.57
1,2,3,4,7,8-HxCDD	0.74 ~	0.60	7.62	1.14	13C-1,2,3,4,7,8-HxCDD	2000	1376	69	1.24
1,2,3,6,7,8-HxCDD	1.39 ~	0.65	7.62	1.36	13C-1,2,3,6,7,8-HxCDD	2000	1564	78	1.28
1,2,3,7,8,9-HxCDD	2.11 ~	0.34	7.62	1.12	13C-1,2,3,4,6,7,8-HpCDD	2000	1302	65	1.03
1,2,3,4,6,7,8-HpCDD	31.60		7.62	1.03	13C-OCDD	4000	2355	59	0.90
OCDD	298.32		15.25	0.88	13C-2,3,7,8-TCDF	2000	1243	62	0.81
2,3,7,8-TCDF	*	1.97	3.05	*	13C-1,2,3,7,8-PeCDF	2000	1362	68	1.59
1,2,3,7,8-PeCDF	*	0.52	7.62	*	13C-2,3,4,7,8-PeCDF	2000	1352	68	1.61
2,3,4,7,8-PeCDF	*	0.59	7.62	*	13C-1,2,3,4,7,8-HxCDF	2000	1272	64	0.52
1,2,3,4,7,8-HxCDF	^	0.44	7.62	*	13C-1,2,3,6,7,8-HxCDF	2000	1345	67	0.53
1,2,3,6,7,8-HxCDF	^	0.35	7.62	*	13C-1,2,3,7,8,9-HxCDF	2000	1312	66	0.50
1,2,3,7,8,9-HxCDF	*	0.43	7.62	*	13C-2,3,4,6,7,8-HxCDF	2000	1490	74	0.52
2,3,4,6,7,8-HxCDF	0.89 ~	0.23	7.62	1.46	13C-1,2,3,4,6,7,8-HpCDF	2000	1459	73	0.44
1,2,3,4,6,7,8-HpCDF	6.46 ~	0.11	7.62	1.03	13C-1,2,3,4,7,8,9-HpCDF	2000	1208	60	0.44
1,2,3,4,7,8,9-HpCDF	*	0.58	7.62	*					
OCDF	18.02		15.25	0.92					
Total Tetra-Furans	4.22			0.69	CLEANUP STANDARD				
Total Tetra-Dioxins	1.98			0.72	37Cl-2,3,7,8-TCDD	200	156	78	
Total Penta-Furans	4.58			1.60					
Total Penta-Dioxins	*	0.83		*					
Total Hexa-Furans	4.87			1.35					
Total Hexa-Dioxins	7.72			1.19					
Total Hepta-Furans	18.52			*					
Total Hepta-Dioxins	74.13			1.02					

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 18-DEC-95 Time 15 34 43

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-3, S05
 Sample Wt/Vol 7.9895 units. g
 Initial Calibration Date 04-13-95
 Instrument ID Autospec
 GC Column ID 60M DB5
 Sample Data Filename A037808
 Blank Data Filename A037803
 Cal Ver Data Filename A037802

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	0.34 ~	0.28	1.25	0.69	13C-2,3,7,8-TCDD	2000	1450	73	0.79
1,2,3,7,8-PeCDD	*	0.21	6.26	*	13C-1,2,3,7,8-PeCDD	2000	1435	72	1.55
1,2,3,4,7,8-HxCDD	*	0.32	6.26	*	13C-1,2,3,4,7,8-HxCDD	2000	1617	81	1.23
1,2,3,6,7,8-HxCDD	0.52 ~	0.36	6.26	1.46	13C-1,2,3,6,7,8-HxCDD	2000	1672	84	1.23
1,2,3,7,8,9-HxCDD	0.75 ~	0.18	6.26	1.37	13C-1,2,3,4,6,7,8-HpCDD	2000	1643	82	1.05
1,2,3,4,6,7,8-HpCDD	9.40		6.26	1.09	13C-OCDD	4000	2632	66	0.89
OCDD	75.76		12.52	0.86	13C-2,3,7,8-TCDF	2000	1502	75	0.79
2,3,7,8-TCDF	0.39 ~	0.35	1.25	0.65	13C-1,2,3,7,8-PeCDF	2000	1555	78	1.61
1,2,3,7,8-PeCDF	*	0.26	6.26	*	13C-2,3,4,7,8-PeCDF	2000	1451	73	1.58
2,3,4,7,8-PeCDF	*	0.33	6.26	*	13C-1,2,3,4,7,8-HxCDF	2000	1593	80	0.52
1,2,3,4,7,8-HxCDF	^	0.22	6.26	*	13C-1,2,3,6,7,8-HxCDF	2000	1657	83	0.52
1,2,3,6,7,8-HxCDF	^	0.17	6.26	*	13C-1,2,3,7,8,9-HxCDF	2000	1484	74	0.52
1,2,3,7,8,9-HxCDF	*	0.24	6.26	*	13C-2,3,4,6,7,8-HxCDF	2000	1655	83	0.52
2,3,4,6,7,8-HxCDF	0.55 ~	0.13	6.26	1.20	13C-1,2,3,4,6,7,8-HpCDF	2000	1578	79	0.43
1,2,3,4,6,7,8-HpCDF	2.42 ~	0.06	6.26	1.08	13C-1,2,3,4,7,8,9-HpCDF	2000	1324	66	0.43
1,2,3,4,7,8,9-HpCDF	*	0.32	6.26	*					
OCDF	4.70 ~	0.35	12.52	0.89					
Total Tetra-Furans	0.85			0.81	CLEANUP STANDARD				
Total Tetra-Dioxins	0.95			0.88	37Cl-2,3,7,8-TCDD	200	177	89	
Total Penta-Furans	0.70			1.45					
Total Penta-Dioxins	*	0.43		*					
Total Hexa-Furans	2.43			1.18					
Total Hexa-Dioxins	2.18			1.17					
Total Hepta-Furans	5.93			*					
Total Hepta-Dioxins	17.92			1.01					

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 18-DEC-95 Time 16 41 51

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-4, S06
 Sample Wt/Vol: 8.2683 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A037809
 Blank Data Filename: A037803
 Cal Ver. Data Filename: A037802

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND µg	R(%)	ION RATIO
2,3,7,8-TCDD	0.57 ~	0.26	1.21	0.69	13C-2,3,7,8-TCDD	2000	1367	68	0.77
1,2,3,7,8-PeCDD	*	0.20	6.05	*	13C-1,2,3,7,8-PeCDD	2000	1328	66	1.56
1,2,3,4,7,8-HxCDD	*	0.29	6.05	*	13C-1,2,3,4,7,8-HxCDD	2000	1517	76	1.28
1,2,3,6,7,8-HxCDD	0.54 ~	0.33	6.05	1.06	13C-1,2,3,6,7,8-HxCDD	2000	1649	82	1.27
1,2,3,7,8,9-HxCDD	0.83 ~	0.17	6.05	1.36	13C-1,2,3,4,6,7,8-HpCDD	2000	1569	78	1.03
1,2,3,4,6,7,8-HpCDD	12.20		6.05	1.05	13C-OCDD	4000	2755	69	0.89
OCDD	108.60		12.09	0.87	13C-2,3,7,8-TCDF	2000	1318	66	0.81
2,3,7,8-TCDF	0.55 ~	0.34	1.21	0.66	13C-1,2,3,7,8-PeCDF	2000	1399	70	1.61
1,2,3,7,8-PeCDF	*	0.26	6.05	*	13C-2,3,4,7,8-PeCDF	2000	1338	67	1.59
2,3,4,7,8-PeCDF	*	0.31	6.05	*	13C-1,2,3,4,7,8-HxCDF	2000	1486	74	0.53
1,2,3,4,7,8-HxCDF	^	0.21	6.05	*	13C-1,2,3,6,7,8-HxCDF	2000	1506	75	0.52
1,2,3,6,7,8-HxCDF	^	0.16	6.05	*	13C-1,2,3,7,8,9-HxCDF	2000	1439	72	0.52
1,2,3,7,8,9-HxCDF	*	0.21	6.05	*	13C-2,3,4,6,7,8-HxCDF	2000	1585	79	0.52
2,3,4,6,7,8-HxCDF	0.47 ~	0.12	6.05	1.26	13C-1,2,3,4,6,7,8-HpCDF	2000	1628	81	0.42
1,2,3,4,6,7,8-HpCDF	3.30 ~	0.05	6.05	1.09	13C-1,2,3,4,7,8,9-HpCDF	2000	1289	64	0.43
1,2,3,4,7,8,9-HpCDF	0.35 ~	0.28	6.05	1.06					
OCDF	9.43 ~	0.28	12.09	0.84					
Total Tetra-Furans	1.70			0.65	CLEANUP STANDARD				
Total Tetra-Dioxins	0.99			0.72	37Cl-2,3,7,8-TCDD	200	173	87	
Total Penta-Furans	1.05			1.34					
Total Penta-Dioxins	*	0.40		*					
Total Hexa-Furans	3.08			1.31					
Total Hexa-Dioxins	4.49			1.41					
Total Hepta-Furans	10.42			*					
Total Hepta-Dioxins	21.26			1.07					

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 18-DEC-95 Time 17 48 26

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-5, S07
Sample Wt/Vol. 7 4596 units: g
Initial Calibration Date 04-13-95
Instrument ID Autospec
GC Column ID: 60M DB5
Sample Data Filename A037810
Blank Data Filename A037803
Cal Ver Data Filename: A037802

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	0.45	1.34	*	13C-2,3,7,8-TCDD	2000	1335	67	0.76
1,2,3,7,8-PeCDD	1.12 ~	0.35	6.70	1.54	13C-1,2,3,7,8-PeCDD	2000	1201	60	1.56
1,2,3,4,7,8-HxCDD	1.05 ~	0.49	6.70	1.27	13C-1,2,3,4,7,8-HxCDD	2000	1655	83	1.24
1,2,3,6,7,8-HxCDD	1.20 ~	0.54	6.70	1.08	13C-1,2,3,6,7,8-HxCDD	2000	1748	87	1.25
1,2,3,7,8,9-HxCDD	1.47 ~	0.28	6.70	1.07	13C-1,2,3,4,6,7,8-HpCDD	2000	1579	79	1.05
1,2,3,4,6,7,8-HpCDD	11.69		6.70	1.10	13C-OCDD	4000	2537	63	0.89
OCDD	93.36		13.41	0.89	13C-2,3,7,8-TCDF	2000	1361	68	0.79
2,3,7,8-TCDF#	0.78 ~	0.66	1.34	0.82	13C-1,2,3,7,8-PeCDF	2000	1290	64	1.57
1,2,3,7,8-PeCDF	1.01 ~	0.44	6.70	1.36	13C-2,3,4,7,8-PeCDF	2000	1237	62	1.58
2,3,4,7,8-PeCDF	1.41 ~	0.54	6.70	1.40	13C-1,2,3,4,7,8-HxCDF	2000	1576	79	0.52
1,2,3,4,7,8-HxCDF	^	0.36	6.70	*	13C-1,2,3,6,7,8-HxCDF	2000	1500	75	0.50
1,2,3,6,7,8-HxCDF	1.70 ~	0.29	6.70	1.21	13C-1,2,3,7,8,9-HxCDF	2000	1379	69	0.52
1,2,3,7,8,9-HxCDF	*	0.41	6.70	*	13C-2,3,4,6,7,8-HxCDF	2000	1507	75	0.51
2,3,4,6,7,8-HxCDF	1.74 ~	0.22	6.70	1.35	13C-1,2,3,4,6,7,8-HpCDF	2000	1622	81	0.43
1,2,3,4,6,7,8-HpCDF	6.56 ~	0.09	6.70	0.97	13C-1,2,3,4,7,8,9-HpCDF	2000	1292	65	0.42
1,2,3,4,7,8,9-HpCDF	*	0.52	6.70	*					
OCDF	3.67 ~	0.57	13.41	0.79					
Total Tetra-Furans	7.56			0.70	CLEANUP STANDARD				
Total Tetra-Dioxins	4.04			0.68	37Cl-2,3,7,8-TCDD	200	156	78	
Total Penta-Furans	12.61			1.45					
Total Penta-Dioxins	3.61			1.33					
Total Hexa-Furans	9.17			1.19					
Total Hexa-Dioxins	9.24			1.21					
Total Hepta-Furans	7.77			0.97					
Total Hepta-Dioxins	22.96			1.02					

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected

PCDD/PCDF ANALYSIS DATA SHEET

Lab Sample ID: 47482-6-15, S17
 Sample Wt/Vol: 10.0121 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A037904
 Blank Data Filename: A037903
 Cal Ver. Data Filename: A037902

Lab Name: BATTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-07-95
 Ext Date: 12-07-95
 Analysis Date: 19-DEC-95 Time: 11 00 03
 Extract Volume (uL): 20
 Injection Volume (uL): 1
 Dilution Factor: NONE

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	0.23	1.00	*	13C-2,3,7,8-TCDD	2000	1256	63	0.78
1,2,3,7,8-PeCDD	*	0.36	5.00	*	13C-1,2,3,7,8-PeCDD	2000	1292	65	1.56
1,2,3,4,7,8-HxCDD	*	0.13	5.00	*	13C-1,2,3,4,7,8-HxCDD	2000	1375	69	1.26
1,2,3,6,7,8-HxCDD	*	0.16	5.00	*	13C-1,2,3,6,7,8-HxCDD	2000	1449	72	1.26
1,2,3,7,8,9-HxCDD	*	0.18	5.00	*	13C-1,2,3,4,6,7,8-HpCDD	2000	1300	65	1.04
1,2,3,4,6,7,8-HpCDD	0.58 ~	0.36	5.00	1.12	13C-OCDD	4000	2177	54	0.90
OCDD	*	5.81	10.00	*	13C-2,3,7,8-TCDF	2000	1273	64	0.78
2,3,7,8-TCDF	*	0.18	1.00	*	13C-1,2,3,7,8-PeCDF	2000	1330	67	1.58
1,2,3,7,8-PeCDF	*	0.27	5.00	*	13C-2,3,4,7,8-PeCDF	2000	1351	68	1.61
2,3,4,7,8-PeCDF	*	0.24	5.00	*	13C-1,2,3,4,7,8-HxCDF	2000	1338	67	0.52
1,2,3,4,7,8-HxCDF	*	0.34	5.00	*	13C-1,2,3,6,7,8-HxCDF	2000	1287	64	0.53
1,2,3,6,7,8-HxCDF	*	0.26	5.00	*	13C-1,2,3,7,8,9-HxCDF	2000	1327	66	0.51
1,2,3,7,8,9-HxCDF	*	0.10	5.00	*	13C-2,3,4,6,7,8-HxCDF	2000	1355	68	0.51
2,3,4,6,7,8-HxCDF	0.26 ~	0.20	5.00	1.35	13C-1,2,3,4,6,7,8-HpCDF	2000	1242	62	0.44
1,2,3,4,6,7,8-HpCDF	*	0.16	5.00	*	13C-1,2,3,4,7,8,9-HpCDF	2000	1214	61	0.43
1,2,3,4,7,8,9-HpCDF	*	0.08	5.00	*					
OCDF	*	0.31	10.00	*					

CLEANUP STANDARD
 37Cl-2,3,7,8-TCDD

Total Tetra-Furans	*			*					
Total Tetra-Dioxins	0.38			0.67		200	142	71	
Total Penta-Furans	*	0.40		*					
Total Penta-Dioxins	*	0.32		*					
Total Hexa-Furans	0.52			1.28					
Total Hexa-Dioxins	0.34			1.42					
Total Hepta-Furans	*	0.18		*					
Total Hepta-Dioxins	0.60			1.12					

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 19-DEC-95 Time 12 06 56

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-6, S08
Sample Wt/Vol 8.3373 units g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A037905
Blank Data Filename: A037903
Cal Ver Data Filename: A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	1.52		1.20	0.82	13C-2,3,7,8-TCDD	2000	1508	75	0.77
1,2,3,7,8-PeCDD	1.41 ~	0.39	6.00	1.59	13C-1,2,3,7,8-PeCDD	2000	1554	78	1.56
1,2,3,4,7,8-HxCDD	1.12 ~	0.16	6.00	1.19	13C-1,2,3,4,7,8-HxCDD	2000	1589	79	1.26
1,2,3,6,7,8-HxCDD	1.46 ~	0.20	6.00	1.12	13C-1,2,3,6,7,8-HxCDD	2000	1742	87	1.25
1,2,3,7,8,9-HxCDD	3.43 ~	0.23	6.00	1.07	13C-1,2,3,4,6,7,8-HpCDD	2000	1551	78	1.06
1,2,3,4,6,7,8-HpCDD	15.47		6.00	0.98	13C-OCDD	4000	2856	71	0.89
OCDD	312.42		11.99	0.86	13C-2,3,7,8-TCDF	2000	1586	79	0.77
2,3,7,8-TCDF#	0.76 ~	0.34	1.20	0.84	13C-1,2,3,7,8-PeCDF	2000	1585	79	1.60
1,2,3,7,8-PeCDF	1.24 ~	0.31	6.00	1.67	13C-2,3,4,7,8-PeCDF	2000	1394	70	1.60
2,3,4,7,8-PeCDF	2.13 ~	0.36	6.00	1.49	13C-1,2,3,4,7,8-HxCDF	2000	1595	80	0.52
1,2,3,4,7,8-HxCDF	^	0.42	6.00	*	13C-1,2,3,6,7,8-HxCDF	2000	1602	80	0.52
1,2,3,6,7,8-HxCDF	1.71 ~	0.32	6.00	1.20	13C-1,2,3,7,8,9-HxCDF	2000	1592	80	0.52
1,2,3,7,8,9-HxCDF	*	0.13	6.00	*	13C-2,3,4,6,7,8-HxCDF	2000	1676	84	0.53
2,3,4,6,7,8-HxCDF	1.65 ~	0.25	6.00	1.25	13C-1,2,3,4,6,7,8-HpCDF	2000	1511	76	0.42
1,2,3,4,6,7,8-HpCDF	6.11		6.00	1.14	13C-1,2,3,4,7,8,9-HpCDF	2000	1334	67	0.43
1,2,3,4,7,8,9-HpCDF	0.49 ~	0.11	6.00	1.01					
OCDF	2.36 ~	0.35	11.99	0.82					
Total Tetra-Furans	13.96			0.85	CLEANUP STANDARD				
Total Tetra-Dioxins	7.46			0.84	37Cl-2,3,7,8-TCDD	200	183	91	
Total Penta-Furans	15.61			1.55					
Total Penta-Dioxins	1.41			1.59					
Total Hexa-Furans	9.37			1.09					
Total Hexa-Dioxins	20.71			1.23					
Total Hepta-Furans	6.60			*					
Total Hepta-Dioxins	38.11			1.07					

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to dihalogenol ether interference per EPA Method 8000 Section 7.6.4

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-06-95
Ext Date 12-07-95
Analysis Date 19-DEC-95 Time 13 14 56
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID: 47482-6-7, S09
Sample Wt/Vol: 7.5058 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A037906
Blank Data Filename: A037903
Cal. Ver. Data Filename: A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	0.49 ~	0.36	1.33	0.74	13C-2,3,7,8-TCDD	2000	1166	58	0.77
1,2,3,7,8-PeCDD	1.69 ~	0.61	6.66	1.64	13C-1,2,3,7,8-PeCDD	2000	1133	57	1.50
1,2,3,4,7,8-HxCDD	1.53 ~	0.20	6.66	1.11	13C-1,2,3,4,7,8-HxCDD	2000	1425	71	1.26
1,2,3,6,7,8-HxCDD	1.79 ~	0.26	6.66	1.10	13C-1,2,3,6,7,8-HxCDD	2000	1458	73	1.27
1,2,3,7,8,9-HxCDD	2.85 ~	0.28	6.66	1.39	13C-1,2,3,4,6,7,8-HpCDD	2000	1398	70	1.03
1,2,3,4,6,7,8-HpCDD	16.64		6.66	1.05	13C-OCDD	4000	2506	63	0.90
OCDD	81.49		13.32	0.88	13C-2,3,7,8-TCDF	2000	1206	60	0.78
2,3,7,8-TCDF#	*	3.21"	1.33	*	13C-1,2,3,7,8-PeCDF	2000	1249	62	1.59
1,2,3,7,8-PeCDF	1.61 ~	0.43	6.66	1.71	13C-2,3,4,7,8-PeCDF	2000	1273	64	1.59
2,3,4,7,8-PeCDF	2.51 ~	0.38	6.66	1.51	13C-1,2,3,4,7,8-HxCDF	2000	1255	63	0.52
1,2,3,4,7,8-HxCDF	^	0.58	6.66	*	13C-1,2,3,6,7,8-HxCDF	2000	1225	61	0.51
1,2,3,6,7,8-HxCDF	2.57 ~	0.45	6.66	1.08	13C-1,2,3,7,8,9-HxCDF	2000	1181	59	0.52
1,2,3,7,8,9-HxCDF	*	0.19	6.66	*	13C-2,3,4,6,7,8-HxCDF	2000	1361	68	0.53
2,3,4,6,7,8-HxCDF	2.62 ~	0.33	6.66	1.17	13C-1,2,3,4,6,7,8-HpCDF	2000	1429	71	0.45
1,2,3,4,6,7,8-HpCDF	11.54		6.66	1.15	13C-1,2,3,4,7,8,9-HpCDF	2000	1220	61	0.44
1,2,3,4,7,8,9-HpCDF	0.73 ~	0.12	6.66	0.90					
OCDF	6.76 ~	0.42	13.32	0.89					
Total Tetra-Furans	21.67			0.78	CLEANUP STANDARD				
Total Tetra-Dioxins	11.70			0.79	37Cl-2,3,7,8-TCDD	200	147	73	
Total Penta-Furans	21.46			1.50					
Total Penta-Dioxins	7.85			1.43					
Total Hexa-Furans	15.29			1.18					
Total Hexa-Dioxins	22.15			1.17					
Total Hepta-Furans	17.56			*					
Total Hepta-Dioxins	31.68			1.07					

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

" Sample limit of detection (LOD) higher than instrument limit of quantitation (LOQ) due to sample matrix effects

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 19-DEC-95 Time 14 23 23

Extract Volume (ul) 20

Injection Volume (ul) 1

Dilution Factor NONE

Lab Sample ID 47482-6-20, S09, Duplicate
Sample Wt/Vol. 7 5170 units. g
Initial Calibration Date 04-13-95
Instrument ID. Autospec
GC Column ID 60M DB5
Sample Data Filename A037907
Blank Data Filename: A037903
Cal Ver Data Filename A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	0.54 ~	0.26	1.33	0.75	13C-2,3,7,8-TCDD	2000	1356	68	0.78
1,2,3,7,8-PeCDD	2.41 ~	0.46	6.65	1.72	13C-1,2,3,7,8-PeCDD	2000	1227	61	1.53
1,2,3,4,7,8-HxCDD	2.00 ~	0.17	6.65	1.33	13C-1,2,3,4,7,8-HxCDD	2000	1554	78	1.26
1,2,3,6,7,8-HxCDD	2.33 ~	0.22	6.65	1.35	13C-1,2,3,6,7,8-HxCDD	2000	1570	78	1.26
1,2,3,7,8,9-HxCDD	4.16 ~	0.24	6.65	1.34	13C-1,2,3,4,6,7,8-HpCDD	2000	1588	79	1.02
1,2,3,4,6,7,8-HpCDD	19.71		6.65	1.02	13C-OCDD	4000	2724	68	0.88
OCDD	89.99		13.30	0.86	13C-2,3,7,8-TCDF	2000	1318	66	0.77
2,3,7,8-TCDF#	2.03		1.33	0.83	13C-1,2,3,7,8-PeCDF	2000	1335	67	1.60
1,2,3,7,8-PeCDF	1.73 ~	0.33	6.65	1.59	13C-2,3,4,7,8-PeCDF	2000	1281	64	1.61
2,3,4,7,8-PeCDF	3.70 ~	0.31	6.65	1.50	13C-1,2,3,4,7,8-HxCDF	2000	1479	74	0.51
1,2,3,4,7,8-HxCDF	^	0.45	6.65	*	13C-1,2,3,6,7,8-HxCDF	2000	1459	73	0.50
1,2,3,6,7,8-HxCDF	3.89 ~	0.34	6.65	1.25	13C-1,2,3,7,8,9-HxCDF	2000	1568	78	0.51
1,2,3,7,8,9-HxCDF	0.36 ~	0.13	6.65	1.11	13C-2,3,4,6,7,8-HxCDF	2000	1560	78	0.52
2,3,4,6,7,8-HxCDF	3.36 ~	0.26	6.65	1.15	13C-1,2,3,4,6,7,8-HpCDF	2000	1461	73	0.43
1,2,3,4,6,7,8-HpCDF	13.82		6.65	1.08	13C-1,2,3,4,7,8,9-HpCDF	2000	1350	68	0.43
1,2,3,4,7,8,9-HpCDF	1.04 ~	0.10	6.65	0.99					
OCDF	7.87 ~	0.37	13.30	0.92					
Total Tetra-Furans	27.12			0.73	CLEANUP STANDARD				
Total Tetra-Dioxins	11.34			0.75	37Cl-2,3,7,8-TCDD	200	169	84	
Total Penta-Furans	35.16			1.48					
Total Penta-Dioxins	3.57			1.67					
Total Hexa-Furans	19.55			1.36					
Total Hexa-Dioxins	28.40			1.22					
Total Hepta-Furans	21.69			*					
Total Hepta-Dioxins	36.35			1.06					

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4

* Analyte not detected

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 19-DEC-95 Time 16 36 31

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor 12

Lab Sample ID: 47482-6-18, S03
 Sample Wt/Vol: 6.6061 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A037909
 Blank Data Filename: A037903
 Cal. Ver. Data Filename: A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	2.27	6.06	*	13C-2,3,7,8-TCDD	2000	1337	67	0.77
1,2,3,7,8-PeCDD	*	1.95	30.28	*	13C-1,2,3,7,8-PeCDD	2000	1213	61	1.56
1,2,3,4,7,8-HxCDD	1.48 ~	0.83	30.28	1.23	13C-1,2,3,4,7,8-HxCDD	2000	1472	74	1.25
1,2,3,6,7,8-HxCDD	1.67 ~	1.06	30.28	1.20	13C-1,2,3,6,7,8-HxCDD	2000	1590	79	1.24
1,2,3,7,8,9-HxCDD	2.00 ~	1.18	30.28	1.32	13C-1,2,3,4,6,7,8-HpCDD	2000	1555	78	1.05
1,2,3,4,6,7,8-HpCDD	28.00 ~	2.17	30.28	1.07	13C-OCDD	4000	2677	67	0.88
OCDD	285.65		60.55	0.88	13C-2,3,7,8-TCDF	2000	1437	72	0.80
2,3,7,8-TCDF#	1.60 ~	1.05	6.06	0.78	13C-1,2,3,7,8-PeCDF	2000	1246	62	1.57
1,2,3,7,8-PeCDF	1.97 ~	1.82	30.28	1.32	13C-2,3,4,7,8-PeCDF	2000	840	42	1.63
2,3,4,7,8-PeCDF	*	3.94	30.28	*	13C-1,2,3,4,7,8-HxCDF	2000	1307	65	0.53
1,2,3,4,7,8-HxCDF	^	2.52	30.28	*	13C-1,2,3,6,7,8-HxCDF	2000	1368	68	0.50
1,2,3,6,7,8-HxCDF	*	1.79	30.28	*	13C-1,2,3,7,8,9-HxCDF	2000	1406	70	0.49
1,2,3,7,8,9-HxCDF	*	0.70	30.28	*	13C-2,3,4,6,7,8-HxCDF	2000	1384	69	0.53
2,3,4,6,7,8-HxCDF	*	1.42	30.28	*	13C-1,2,3,4,6,7,8-HpCDF	2000	1452	73	0.44
1,2,3,4,6,7,8-HpCDF	7.40 ~	1.00	30.28	1.20	13C-1,2,3,4,7,8,9-HpCDF	2000	1347	67	0.43
1,2,3,4,7,8,9-HpCDF	1.38 ~	0.49	30.28	1.05					
OCDF	18.28 ~	1.77	60.55	0.78					
Total Tetra-Furans	2.06			0.71	CLEANUP STANDARD				
Total Tetra-Dioxins	*	2.09		*	37Cl-2,3,7,8-TCDD	200	179	89	
Total Penta-Furans	*	4.35		*					
Total Penta-Dioxins	*	1.75		*					
Total Hexa-Furans	*	1.94		*					
Total Hexa-Dioxins	6.25			1.33					
Total Hepta-Furans	20.63			*					
Total Hepta-Dioxins	64.01			1.10					

2,3,7,8-TCDF value from second column confirmation

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diethyl ether interference per EPA Method 8290. Section 7.8.4.4.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-06-95
Ext Date 12-07-95
Analysis Date 19-DEC-95 Time 17:52:10
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor 12

Lab Sample ID 47482-6-19, S03, DL Spike
Sample Wt/Vol 6.6138 units: g
Initial Calibration Date: 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename: A037910
Blank Data Filename: A037903
Cal Ver Data Filename: A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	9.64		6.05	0.71	13C-2,3,7,8-TCDD	2000	1386	69	0.78
1,2,3,7,8-PeCDD	46.40		30.24	1.43	13C-1,2,3,7,8-PeCDD	2000	1351	68	1.60
1,2,3,4,7,8-HxCDD	40.54		30.24	1.30	13C-1,2,3,4,7,8-HxCDD	2000	1545	77	1.25
1,2,3,6,7,8-HxCDD	35.90		30.24	1.28	13C-1,2,3,6,7,8-HxCDD	2000	1664	83	1.24
1,2,3,7,8,9-HxCDD	39.03		30.24	1.14	13C-1,2,3,4,6,7,8-HpCDD	2000	1623	81	1.03
1,2,3,4,6,7,8-HpCDD	60.44		30.24	1.01	13C-OCDD	4000	3012	75	0.89
OCDD	270.77		60.48	0.90	13C-2,3,7,8-TCDF	2000	1409	70	0.82
2,3,7,8-TCDF	9.82		6.05	0.77	13C-1,2,3,7,8-PeCDF	2000	1366	68	1.58
1,2,3,7,8-PeCDF	40.52		30.24	1.54	13C-2,3,4,7,8-PeCDF	2000	1346	67	1.59
2,3,4,7,8-PeCDF	43.62		30.24	1.52	13C-1,2,3,4,7,8-HxCDF	2000	1438	72	0.53
1,2,3,4,7,8-HxCDF	40.79		30.24	1.17	13C-1,2,3,6,7,8-HxCDF	2000	1397	70	0.51
1,2,3,6,7,8-HxCDF	42.32		30.24	1.19	13C-1,2,3,7,8,9-HxCDF	2000	1536	77	0.51
1,2,3,7,8,9-HxCDF	42.32		30.24	1.30	13C-2,3,4,6,7,8-HxCDF	2000	1537	77	0.52
2,3,4,6,7,8-HxCDF	40.64		30.24	1.22	13C-1,2,3,4,6,7,8-HpCDF	2000	1492	75	0.42
1,2,3,4,6,7,8-HpCDF	38.85		30.24	1.01	13C-1,2,3,4,7,8,9-HpCDF	2000	1371	69	0.43
1,2,3,4,7,8,9-HpCDF	40.83		30.24	1.05					
OCDF	87.91		60.48	0.85					
Total Tetra-Furans	9.82			*	CLEANUP STANDARD				
Total Tetra-Dioxins	9.64			0.71	37Cl-2,3,7,8-TCDD	200	164	82	
Total Penta-Furans	86.18			1.74					
Total Penta-Dioxins	46.40			1.43					
Total Hexa-Furans	169.51			1.26					
Total Hexa-Dioxins	115.47			1.30					
Total Hepta-Furans	79.68			*					
Total Hepta-Dioxins	89.91			1.06					

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date: 12-06-95
 Ext Date 12-07-95
 Analysis Date: 19-DEC-95 Time 18 58 11
 Extract Volume (uL) 20
 Injection Volume (uL) 10
 Dilution Factor NONE

Lab Sample ID: 47482-6-17, S02, SRM
 Sample Wt/Vol 10.0000 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A037911
 Blank Data Filename: A037903
 Cal. Ver Data Filename: A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	486.79		1.00	0.77	13C-2,3,7,8-TCDD	2000	1436	72	0.78
1,2,3,7,8-PeCDD	1072.82		5.00	1.54	13C-1,2,3,7,8-PeCDD	2000	1420	71	1.56
1,2,3,4,7,8-HxCDD	941.48		5.00	1.24	13C-1,2,3,4,7,8-HxCDD	2000	1480	74	1.22
1,2,3,6,7,8-HxCDD	864.45		5.00	1.24	13C-1,2,3,6,7,8-HxCDD	2000	1503	75	1.24
1,2,3,7,8,9-HxCDD	926.91		5.00	1.24	13C-1,2,3,4,6,7,8-HpCDD	2000	1592	80	1.04
1,2,3,4,6,7,8-HpCDD	1450.53		5.00	1.06	13C-OCDD	4000	2865	72	0.89
OCDD	3086.77		10.00	0.88	13C-2,3,7,8-TCDF	2000	1381	69	0.79
2,3,7,8-TCDF	467.75		1.00	0.76	13C-1,2,3,7,8-PeCDF	2000	1464	73	1.58
1,2,3,7,8-PeCDF	925.28		5.00	1.53	13C-2,3,4,7,8-PeCDF	2000	1385	69	1.60
2,3,4,7,8-PeCDF	972.43		5.00	1.52	13C-1,2,3,4,7,8-HxCDF	2000	1374	69	0.52
1,2,3,4,7,8-HxCDF	965.78		5.00	1.21	13C-1,2,3,6,7,8-HxCDF	2000	1382	69	0.52
1,2,3,6,7,8-HxCDF	942.33		5.00	1.21	13C-1,2,3,7,8,9-HxCDF	2000	1536	77	0.51
1,2,3,7,8,9-HxCDF	1010.55		5.00	1.22	13C-2,3,4,6,7,8-HxCDF	2000	1396	70	0.51
2,3,4,6,7,8-HxCDF	936.04		5.00	1.20	13C-1,2,3,4,6,7,8-HpCDF	2000	1427	71	0.44
1,2,3,4,6,7,8-HpCDF	1332.23		5.00	1.00	13C-1,2,3,4,7,8,9-HpCDF	2000	1496	75	0.43
1,2,3,4,7,8,9-HpCDF	1414.48		5.00	1.00					
OCDF	2348.15		10.00	0.86					
Total Tetra-Furans	467.75			*	CLEANUP STANDARD				
Total Tetra-Dioxins	486.79			0.77	37Cl-2,3,7,8-TCDD	200	175	87	
Total Penta-Furans	1897.71			1.53					
Total Penta-Dioxins	1072.82			1.54					
Total Hexa-Furans	3854.70			1.21					
Total Hexa-Dioxins	2732.84			1.24					
Total Hepta-Furans	2746.71			1.00					
Total Hepta-Dioxins	1464.93			1.06					

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-07-95

Analysis Date 15-JAN-96 Time 14 57 09

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-11, S13
 Sample Wt/Vol: 8.0366 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A038907
 Blank Data Filename: A038903
 Cal Ver Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	0.67 ~	0.14	1.24	0.67	13C-2,3,7,8-TCDD	2000	1436	72	0.78
1,2,3,7,8-PeCDD	3.41 ~	0.28	6.22	1.53	13C-1,2,3,7,8-PeCDD	2000	1326	66	1.52
1,2,3,4,7,8-HxCDD	3.23 ~	0.34	6.22	1.31	13C-1,2,3,4,7,8-HxCDD	2000	1386	69	1.26
1,2,3,6,7,8-HxCDD	3.81 ~	0.20	6.22	1.18	13C-1,2,3,6,7,8-HxCDD	2000	1554	78	1.29
1,2,3,7,8,9-HxCDD	5.21 ~	0.27	6.22	1.22	13C-1,2,3,4,6,7,8-HpCDD	2000	1524	76	1.04
1,2,3,4,6,7,8-HpCDD	29.20		6.22	1.05	13C-OCDD	4000	2679	67	0.89
OCDD	126.12		12.44	0.89	13C-2,3,7,8-TCDF	2000	1311	66	0.81
2,3,7,8-TCDF	(7.42)		1.24	(0.72)	13C-1,2,3,7,8-PeCDF	2000	1392	70	1.59
1,2,3,7,8-PeCDF	2.73 ~	0.23	6.22	1.62	13C-2,3,4,7,8-PeCDF	2000	1348	67	1.59
2,3,4,7,8-PeCDF	4.92 ~	0.21	6.22	1.60	13C-1,2,3,4,7,8-HxCDF	2000	1380	69	0.52
1,2,3,4,7,8-HxCDF	^	0.23	6.22	*	13C-1,2,3,6,7,8-HxCDF	2000	1403	70	0.52
1,2,3,6,7,8-HxCDF	4.91 ~	0.33	6.22	1.25	13C-1,2,3,7,8,9-HxCDF	2000	1537	77	0.51
1,2,3,7,8,9-HxCDF	*	0.12	6.22	*	13C-2,3,4,6,7,8-HxCDF	2000	1473	74	0.52
2,3,4,6,7,8-HxCDF	4.80 ~	0.09	6.22	1.15	13C-1,2,3,4,6,7,8-HpCDF	2000	1482	74	0.44
1,2,3,4,6,7,8-HpCDF	20.96		6.22	0.99	13C-1,2,3,4,7,8,9-HpCDF	2000	1407	70	0.43
1,2,3,4,7,8,9-HpCDF	1.59 ~	0.77	6.22	0.94					
OCDF	11.18 ~	0.55	12.44	0.87					
Total Tetra-Furans	40.17			0.79	CLEANUP STANDARD				
Total Tetra-Dioxins	15.71			0.68	37Cl-2,3,7,8-TCDD	200	160	80	
Total Penta-Furans	50.32			1.48					
Total Penta-Dioxins	20.64			1.48					
Total Hexa-Furans	24.82			1.28					
Total Hexa-Dioxins	44.22			1.25					
Total Hepta-Furans	32.65			*					
Total Hepta-Dioxins	55.01			1.05					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-06-95
Ext Date 12-07-95
Analysis Date 15-JAN-96 Time 12 39 50
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID: 47482-6-9, S11
Sample Wt/Vol: 7.5250 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A038905
Blank Data Filename: A038903
Cal. Ver Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	0.79 ~	0.12	1.33	0.71	13C-2,3,7,8-TCDD	2000	1547	77	0.80
1,2,3,7,8-PeCDD	2.84 ~	0.23	6.64	1.55	13C-1,2,3,7,8-PeCDD	2000	1608	80	1.55
1,2,3,4,7,8-HxCDD	2.95 ~	0.26	6.64	1.32	13C-1,2,3,4,7,8-HxCDD	2000	1555	78	1.34
1,2,3,6,7,8-HxCDD	3.37 ~	0.16	6.64	1.24	13C-1,2,3,6,7,8-HxCDD	2000	1684	84	1.17
1,2,3,7,8,9-HxCDD	6.71		6.64	1.25	13C-1,2,3,4,6,7,8-HpCDD	2000	1550	77	1.05
1,2,3,4,6,7,8-HpCDD	31.22		6.64	1.04	13C-OCDD	4000	2894	72	0.89
OCDD	124.76		13.29	0.88	13C-2,3,7,8-TCDF	2000	1482	74	0.81
2,3,7,8-TCDF	(7.27)		1.33	(0.79)	13C-1,2,3,7,8-PeCDF	2000	1680	84	1.57
1,2,3,7,8-PeCDF	2.15 ~	0.19	6.64	1.34	13C-2,3,4,7,8-PeCDF	2000	1604	80	1.60
2,3,4,7,8-PeCDF	3.88 ~	0.17	6.64	1.45	13C-1,2,3,4,7,8-HxCDF	2000	1557	78	0.52
1,2,3,4,7,8-HxCDF	^	0.17	6.64	*	13C-1,2,3,6,7,8-HxCDF	2000	1530	76	0.53
1,2,3,6,7,8-HxCDF	4.00 ~	0.25	6.64	1.13	13C-1,2,3,7,8,9-HxCDF	2000	1581	79	0.51
1,2,3,7,8,9-HxCDF	*	0.10	6.64	*	13C-2,3,4,6,7,8-HxCDF	2000	1656	83	0.52
2,3,4,6,7,8-HxCDF	4.49 ~	0.07	6.64	1.16	13C-1,2,3,4,6,7,8-HpCDF	2000	1551	78	0.44
1,2,3,4,6,7,8-HpCDF	23.83		6.64	1.00	13C-1,2,3,4,7,8,9-HpCDF	2000	1462	73	0.44
1,2,3,4,7,8,9-HpCDF	1.59 ~	0.58	6.64	0.93					
OCDF	32.95		13.29	0.89					
Total Tetra-Furans	37.50			0.68	CLEANUP STANDARD				
Total Tetra-Dioxins	10.80			0.74	37Cl-2,3,7,8-TCDD	200	205	102	
Total Penta-Furans	45.76			1.56					
Total Penta-Dioxins	22.37			1.53					
Total Hexa-Furans	23.95			1.22					
Total Hexa-Dioxins	40.95			1.37					
Total Hepta-Furans	36.08			*					
Total Hepta-Dioxins	57.44			1.08					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.
~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).
^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.
* Analyte not detected.

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Exp Date 12-07-95

Analysis Date: 15-JAN-96 Time 17 12 38

Extract Volume (uL): 20

Injection Volume (uL): 1

Dilution Factor NONE

Lab Sample ID: 47482-6-21, S04, MS

Sample Wt/Vol: 6.5583 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A038909

Blank Data Filename: A038903

Cal. Ver. Data Filename: A038902

ANALYTE	CONC. FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	37.23		1.52	0.76	13C-2,3,7,8-TCDD	2000	1450	73	0.79
1,2,3,7,8-PeCDD	193.83		7.62	1.56	13C-1,2,3,7,8-PeCDD	2000	1442	72	1.53
1,2,3,4,7,8-HxCDD	168.85		7.62	1.34	13C-1,2,3,4,7,8-HxCDD	2000	1509	75	1.24
1,2,3,6,7,8-HxCDD	147.66		7.62	1.21	13C-1,2,3,6,7,8-HxCDD	2000	1606	80	1.25
1,2,3,7,8,9-HxCDD	160.72		7.62	1.23	13C-1,2,3,4,6,7,8-HpCDD	2000	1514	76	1.03
1,2,3,4,6,7,8-HpCDD	191.35		7.62	1.08	13C-OCDD	4000	2525	63	0.87
OCDD	544.99		15.25	0.88	13C-2,3,7,8-TCDF	2000	1477	74	0.78
2,3,7,8-TCDF	35.49		1.52	0.77	13C-1,2,3,7,8-PeCDF	2000	1511	76	1.60
1,2,3,7,8-PeCDF	167.14		7.62	1.55	13C-2,3,4,7,8-PeCDF	2000	1433	72	1.55
2,3,4,7,8-PeCDF	169.57		7.62	1.54	13C-1,2,3,4,7,8-HxCDF	2000	1378	69	0.52
1,2,3,4,7,8-HxCDF	172.18		7.62	1.25	13C-1,2,3,6,7,8-HxCDF	2000	1337	67	0.51
1,2,3,6,7,8-HxCDF	172.44		7.62	1.18	13C-1,2,3,7,8,9-HxCDF	2000	1438	72	0.51
1,2,3,7,8,9-HxCDF	179.73		7.62	1.24	13C-2,3,4,6,7,8-HxCDF	2000	1433	72	0.52
2,3,4,6,7,8-HxCDF	169.94		7.62	1.21	13C-1,2,3,4,6,7,8-HpCDF	2000	1470	73	0.43
1,2,3,4,6,7,8-HpCDF	158.59		7.62	1.00	13C-1,2,3,4,7,8,9-HpCDF	2000	1323	66	0.44
1,2,3,4,7,8,9-HpCDF	171.61		7.62	1.00					
OCDF	359.45		15.25	0.91					
Total Tetra-Furans	36.31			0.87	CLEANUP STANDARD				
Total Tetra-Dioxins	37.23			0.76	37Cl-2,3,7,8-TCDD	200	184	92	
Total Penta-Furans	336.70			1.55					
Total Penta-Dioxins	193.83			1.56					
Total Hexa-Furans	694.29			*					
Total Hexa-Dioxins	477.23			1.34					
Total Hepta-Furans	340.29			*					
Total Hepta-Dioxins	218.67			1.05					

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-06-95
Ext Date 12-07-95
Analysis Date 15-JAN-96 Time 11.10.41
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID: 47482-6-8, S10
Sample Wt/Vol 6.8140 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A038904
Blank Data Filename: A038903
Cal. Ver Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	0.74 ~	0.15	1.47	0.69	13C-2,3,7,8-TCDD	2000	1493	75	0.78
1,2,3,7,8-PeCDD	2.42 ~	0.29	7.34	1.58	13C-1,2,3,7,8-PeCDD	2000	1590	79	1.57
1,2,3,4,7,8-HxCDD	3.76 ~	0.35	7.34	1.28	13C-1,2,3,4,7,8-HxCDD	2000	1499	75	1.24
1,2,3,6,7,8-HxCDD	5.69 ~	0.21	7.34	1.32	13C-1,2,3,6,7,8-HxCDD	2000	1658	83	1.25
1,2,3,7,8,9-HxCDD	8.85		7.34	1.22	13C-1,2,3,4,6,7,8-HpCDD	2000	1530	77	1.02
1,2,3,4,6,7,8-HpCDD	145.09		7.34	1.08	13C-OCDD	4000	2738	68	0.88
OCDD	1204.99		14.68	0.88	13C-2,3,7,8-TCDF	2000	1484	74	0.77
2,3,7,8-TCDF	(13.82)		1.47	(0.74)	13C-1,2,3,7,8-PeCDF	2000	1594	80	1.57
1,2,3,7,8-PeCDF	1.95 ~	0.25	7.34	1.58	13C-2,3,4,7,8-PeCDF	2000	1582	79	1.57
2,3,4,7,8-PeCDF	4.55 ~	0.21	7.34	1.39	13C-1,2,3,4,7,8-HxCDF	2000	1533	77	0.51
1,2,3,4,7,8-HxCDF	^	0.21	7.34	*	13C-1,2,3,6,7,8-HxCDF	2000	1563	78	0.51
1,2,3,6,7,8-HxCDF	3.39 ~	0.32	7.34	1.11	13C-1,2,3,7,8,9-HxCDF	2000	1565	78	0.51
1,2,3,7,8,9-HxCDF	*	0.13	7.34	*	13C-2,3,4,6,7,8-HxCDF	2000	1629	81	0.52
2,3,4,6,7,8-HxCDF	3.43 ~	0.09	7.34	1.21	13C-1,2,3,4,6,7,8-HpCDF	2000	1645	82	0.43
1,2,3,4,6,7,8-HpCDF	37.32		7.34	1.05	13C-1,2,3,4,7,8,9-HpCDF	2000	1481	74	0.43
1,2,3,4,7,8,9-HpCDF	2.51 ~	0.78	7.34	1.03					
OCDF	81.41		14.68	0.87					
Total Tetra-Furans	78.74			0.79	CLEANUP STANDARD				
Total Tetra-Dioxins	8.25			0.67	37Cl-2,3,7,8-TCDD	200	192	96	
Total Penta-Furans	50.94			1.62					
Total Penta-Dioxins	2.42			1.58					
Total Hexa-Furans	43.33			1.28					
Total Hexa-Dioxins	55.54			1.31					
Total Hepta-Furans	104.54			*					
Total Hepta-Dioxins	256.53			1.04					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-07-95

Analysis Date 16-JAN-96 Time 11 20 42

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor: NONE

Lab Sample ID: 47482-6-13, S15

Sample Wt/Vol. 7.9766 units g

Initial Calibration Date: 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename: A039004

Blank Data Filename: A039003

Cal. Ver Data Filename: A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	3 46		1 25	0 75	13C-2,3,7,8-TCDD	2000	1376	69	0 80
1,2,3,7,8-PeCDD	9 79		6 27	1 67	13C-1,2,3,7,8-PeCDD	2000	1429	71	1 56
1,2,3,4,7,8-HxCDD	9 95		6 27	1 31	13C-1,2,3,4,7,8-HxCDD	2000	1403	70	1 27
1,2,3,6,7,8-HxCDD	31 83		6 27	1 23	13C-1,2,3,6,7,8-HxCDD	2000	1538	77	1 26
1,2,3,7,8,9-HxCDD	19 18		6 27	1 29	13C-1,2,3,4,6,7,8-HpCDD	2000	1441	72	1 05
1,2,3,4,6,7,8-HpCDD	572 53		6 27	1 07	13C-OCDD	4000	2815	70	0 88
OCDD	3994 50		12 54	0 89	13C-2,3,7,8-TCDF	2000	1394	70	0 79
2,3,7,8-TCDF	(17 91)		1 25	(0 75)	13C-1,2,3,7,8-PeCDF	2000	1528	76	1 57
1,2,3,7,8-PeCDF	7 52		6 27	1 50	13C-2,3,4,7,8-PeCDF	2000	1462	73	1 59
2,3,4,7,8-PeCDF	8 21		6 27	1 45	13C-1,2,3,4,7,8-HxCDF	2000	1424	71	0 55
1,2,3,4,7,8-HxCDF	^	0 34	6 27	*	13C-1,2,3,6,7,8-HxCDF	2000	1428	71	0 51
1,2,3,6,7,8-HxCDF	8 82		6 27	1 20	13C-1,2,3,7,8,9-HxCDF	2000	1450	73	0 52
1,2,3,7,8,9-HxCDF	*	1 01	6 27	*	13C-2,3,4,6,7,8-HxCDF	2000	1502	75	0 52
2,3,4,6,7,8-HxCDF	7 98		6 27	1 19	13C-1,2,3,4,6,7,8-HpCDF	2000	1461	73	0 43
1,2,3,4,6,7,8-HpCDF	75 66		6 27	1 00	13C-1,2,3,4,7,8,9-HpCDF	2000	1379	69	0 42
1,2,3,4,7,8,9-HpCDF	3 82 ~	0 43	6 27	0 97					
OCDF	74 74		12 54	0 87					
Total Tetra-Furans	89 94			0 80	CLEANUP STANDARD				
Total Tetra-Dioxins	51 87			0 77	37Cl-2,3,7,8-TCDD	200	149	74	
Total Penta-Furans	113 25			1 62					
Total Penta-Dioxins	39 58			1 55					
Total Hexa-Furans	105 07			1 11					
Total Hexa-Dioxins	205 82			1 22					
Total Hepta-Furans	170 54			*					
Total Hepta-Dioxins	1028 51			1 05					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE

Matrix: SOIL

Sample Receipt Date: 12-06-95

Ext. Date: 12-07-95

Analysis Date: 15-JAN-96 Time: 13:48:39

Extract Volume (uL): 20

Injection Volume (uL): 1

Dilution Factor: NONE

Lab Sample ID: 47482-6-10, S12
 Sample Wt/Vol: 7.6567 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A038906
 Blank Data Filename: A038903
 Cal. Ver. Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	0.54 ~	0.20	1.31	0.85	13C-2,3,7,8-TCDD	2000	1391	70	0.78
1,2,3,7,8-PeCDD	2.06 ~	0.41	6.53	1.69	13C-1,2,3,7,8-PeCDD	2000	1337	67	1.53
1,2,3,4,7,8-HxCDD	2.20 ~	0.42	6.53	1.38	13C-1,2,3,4,7,8-HxCDD	2000	1468	73	1.23
1,2,3,6,7,8-HxCDD	2.49 ~	0.25	6.53	1.30	13C-1,2,3,6,7,8-HxCDD	2000	1555	78	1.25
1,2,3,7,8,9-HxCDD	2.75 ~	0.34	6.53	1.29	13C-1,2,3,4,6,7,8-HpCDD	2000	1498	75	1.03
1,2,3,4,6,7,8-HpCDD	24.99		6.53	1.05	13C-OCDD	4000	2300	58	0.88
OCDD	142.08		13.06	0.87	13C-2,3,7,8-TCDF	2000	1387	69	0.78
2,3,7,8-TCDF	(4.35)		1.31	(0.75)	13C-1,2,3,7,8-PeCDF	2000	1397	70	1.55
1,2,3,7,8-PeCDF	2.24 ~	0.33	6.53	1.35	13C-2,3,4,7,8-PeCDF	2000	1361	68	1.56
2,3,4,7,8-PeCDF	2.88 ~	0.27	6.53	1.33	13C-1,2,3,4,7,8-HxCDF	2000	1386	69	0.52
1,2,3,4,7,8-HxCDF	^	0.28	6.53	*	13C-1,2,3,6,7,8-HxCDF	2000	1382	69	0.52
1,2,3,6,7,8-HxCDF	3.33 ~	0.42	6.53	1.14	13C-1,2,3,7,8,9-HxCDF	2000	1422	71	0.52
1,2,3,7,8,9-HxCDF	*	0.16	6.53	*	13C-2,3,4,6,7,8-HxCDF	2000	1429	71	0.51
2,3,4,6,7,8-HxCDF	3.33 ~	0.12	6.53	1.37	13C-1,2,3,4,6,7,8-HpCDF	2000	1452	73	0.45
1,2,3,4,6,7,8-HpCDF	14.29		6.53	1.01	13C-1,2,3,4,7,8,9-HpCDF	2000	1336	67	0.43
1,2,3,4,7,8,9-HpCDF	1.04 ~	1.00	6.53	1.17					
OCDF	13.10		13.06	0.84					
Total Tetra-Furans	17.02			0.68	CLEANUP STANDARD				
Total Tetra-Dioxins	3.60			0.76	37Cl-2,3,7,8-TCDD	200	154	77	
Total Penta-Furans	30.25			1.63					
Total Penta-Dioxins	7.82			1.73					
Total Hexa-Furans	21.30			1.05					
Total Hexa-Dioxins	18.87			1.23					
Total Hepta-Furans	22.99			*					
Total Hepta-Dioxins	46.84			1.01					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

SET #2

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-07-95
Analysis Date: 15-JAN-96 Time 16 06 00
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID: 47482-6-12, 514
Sample Wt/Vol: 7.2963 units g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A038908
Blank Data Filename: A038903
Cal. Ver Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	10.91		1.37	0.73	13C-2,3,7,8-TCDD	2000	1247	62	0.80
1,2,3,7,8-PeCDD	4.08 ~	0.29	6.85	1.67	13C-1,2,3,7,8-PeCDD	2000	1234	62	1.54
1,2,3,4,7,8-HxCDD	3.90 ~	0.32	6.85	1.11	13C-1,2,3,4,7,8-HxCDD	2000	1325	66	1.22
1,2,3,6,7,8-HxCDD	7.34		6.85	1.24	13C-1,2,3,6,7,8-HxCDD	2000	1463	73	1.26
1,2,3,7,8,9-HxCDD	5.93 ~	0.26	6.85	1.15	13C-1,2,3,4,6,7,8-HpCDD	2000	1286	64	1.04
1,2,3,4,6,7,8-HpCDD	127.53		6.85	1.06	13C-OCDD	4000	2370	59	0.89
OCDD	997.01 (13.50)		13.71	0.87	13C-2,3,7,8-TCDF	2000	1170	58	0.81
2,3,7,8-TCDF			1.37	(0.81)	13C-1,2,3,7,8-PeCDF	2000	1239	62	1.58
1,2,3,7,8-PeCDF	4.14 ~	0.25	6.85	1.42	13C-2,3,4,7,8-PeCDF	2000	1198	60	1.57
2,3,4,7,8-PeCDF	5.79 ~	0.21	6.85	1.45	13C-1,2,3,4,7,8-HxCDF	2000	1244	62	0.52
1,2,3,4,7,8-HxCDF	^	0.23	6.85	*	13C-1,2,3,6,7,8-HxCDF	2000	1187	59	0.51
1,2,3,6,7,8-HxCDF	5.04 ~	0.34	6.85	1.22	13C-1,2,3,7,8,9-HxCDF	2000	1290	65	0.51
1,2,3,7,8,9-HxCDF	*	0.13	6.85	*	13C-2,3,4,6,7,8-HxCDF	2000	1291	65	0.52
2,3,4,6,7,8-HxCDF	4.76 ~	0.10	6.85	1.23	13C-1,2,3,4,6,7,8-HpCDF	2000	1251	63	0.44
1,2,3,4,6,7,8-HpCDF	30.87		6.85	0.97	13C-1,2,3,4,7,8,9-HpCDF	2000	1129	56	0.42
1,2,3,4,7,8,9-HpCDF	1.70 ~	0.83	6.85	1.02					
OCDF	31.49		13.71	0.86					
Total Tetra-Furans	86.66			0.69	CLEANUP STANDARD				
Total Tetra-Dioxins	32.32			0.76	37Cl-2,3,7,8-TCDD	200	141	70	
Total Penta-Furans	63.76			1.53					
Total Penta-Dioxins	4.08			1.67					
Total Hexa-Furans	42.85			1.12					
Total Hexa-Dioxins	62.86			1.19					
Total Hepta-Furans	64.79			*					
Total Hepta-Dioxins	230.85			1.04					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantification (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

Lab Name: BATTELLE

Matrix: SOIL

Sample Receipt Date: 12-07-95

Ext. Date: 12-12-95

Analysis Date: 16-JAN-96 Time: 14:42:05

Extract Volume (uL): 20

Injection Volume (uL): 0.5

Dilution Factor: NONE

Lab Sample ID: 47482-10-3, S19

Sample Wt/Vol: 8.8356 units. g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039007

Blank Data Filename: A039003

Cal Ver Data Filename: A039002

ANALYTE	CONC. FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	0.93 ~	0.30	2.26	0.84	13C-2,3,7,8-TCDD	2000	1517	76	0.78
1,2,3,7,8-PeCDD	2.69 ~	0.71	11.32	1.43	13C-1,2,3,7,8-PeCDD	2000	1520	76	1.54
1,2,3,4,7,8-HxCDD	2.26 ~	0.38	11.32	1.24	13C-1,2,3,4,7,8-HxCDD	2000	1575	79	1.25
1,2,3,6,7,8-HxCDD	3.74 ~	0.28	11.32	1.20	13C-1,2,3,6,7,8-HxCDD	2000	1650	83	1.24
1,2,3,7,8,9-HxCDD	3.86 ~	0.53	11.32	1.10	13C-1,2,3,4,6,7,8-HpCDD	2000	1579	79	1.02
1,2,3,4,6,7,8-HpCDD	58.39		11.32	1.03	13C-OCDD	4000	2741	69	0.89
OCDD	615.85		22.64	0.88	13C-2,3,7,8-TCDF	2000	1594	80	0.82
2,3,7,8-TCDF	(5.62)		2.26	(0.73)	13C-1,2,3,7,8-PeCDF	2000	1676	84	1.59
1,2,3,7,8-PeCDF	2.22 ~	0.68	11.32	1.63	13C-2,3,4,7,8-PeCDF	2000	1633	82	1.58
2,3,4,7,8-PeCDF	3.53 ~	1.03	11.32	1.46	13C-1,2,3,4,7,8-HxCDF	2000	1492	75	0.50
1,2,3,4,7,8-HxCDF	^	0.39	11.32	*	13C-1,2,3,6,7,8-HxCDF	2000	1426	71	0.51
1,2,3,6,7,8-HxCDF	3.34 ~	0.29	11.32	1.14	13C-1,2,3,7,8,9-HxCDF	2000	1541	77	0.49
1,2,3,7,8,9-HxCDF	*	1.12	11.32	*	13C-2,3,4,6,7,8-HxCDF	2000	1577	79	0.51
2,3,4,6,7,8-HxCDF	3.05 ~	0.55	11.32	1.23	13C-1,2,3,4,6,7,8-HpCDF	2000	1493	75	0.44
1,2,3,4,6,7,8-HpCDF	21.82		11.32	0.99	13C-1,2,3,4,7,8,9-HpCDF	2000	1430	71	0.43
1,2,3,4,7,8,9-HpCDF	1.62 ~	0.48	11.32	1.04					
OCDF	22.73		22.64	0.84					
Total Tetra-Furans	30.61	0.38		0.85	CLEANUP STANDARD				
Total Tetra-Dioxins	12.73	0.49		0.83	37Cl-2,3,7,8-TCDD	200	218	109	
Total Penta-Furans	32.72	0.70		1.48					
Total Penta-Dioxins	18.49	0.55		1.78					
Total Hexa-Furans	28.14	0.53		1.26					
Total Hexa-Dioxins	32.93	0.42		1.22					
Total Hepta-Furans	49.68	0.35		*					
Total Hepta-Dioxins	107.20	0.60		1.04					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-06-95
Ext Date 12-07-95
Analysis Date 15-JAN-96 Time 18 19 06
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID: 47482-6-23, S04, MSD
Sample Wt/Vol: 6.5930 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A038910
Blank Data Filename: A038903
Cal. Ver. Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	36.00		1.52	0.77	13C-2,3,7,8-TCDD	2000	1398	70	0.80
1,2,3,7,8-PeCDD	193.90		7.58	1.54	13C-1,2,3,7,8-PeCDD	2000	1273	64	1.52
1,2,3,4,7,8-HxCDD	173.60		7.58	1.24	13C-1,2,3,4,7,8-HxCDD	2000	1426	71	1.22
1,2,3,6,7,8-HxCDD	140.62		7.58	1.27	13C-1,2,3,6,7,8-HxCDD	2000	1585	79	1.24
1,2,3,7,8,9-HxCDD	159.06		7.58	1.24	13C-1,2,3,4,6,7,8-HpCDD	2000	1436	72	1.04
1,2,3,4,6,7,8-HpCDD	197.31		7.58	1.04	13C-OCDD	4000	2548	64	0.89
OCDD	568.12		15.17	0.88	13C-2,3,7,8-TCDF	2000	1362	68	0.79
2,3,7,8-TCDF	34.94		1.52	0.75	13C-1,2,3,7,8-PeCDF	2000	1334	67	1.57
1,2,3,7,8-PeCDF	162.82		7.58	1.56	13C-2,3,4,7,8-PeCDF	2000	1274	64	1.58
2,3,4,7,8-PeCDF	169.29		7.58	1.56	13C-1,2,3,4,7,8-HxCDF	2000	1321	66	0.53
1,2,3,4,7,8-HxCDF	170.26		7.58	1.20	13C-1,2,3,6,7,8-HxCDF	2000	1276	64	0.50
1,2,3,6,7,8-HxCDF	167.91		7.58	1.18	13C-1,2,3,7,8,9-HxCDF	2000	1417	71	0.51
1,2,3,7,8,9-HxCDF	176.07		7.58	1.20	13C-2,3,4,6,7,8-HxCDF	2000	1425	71	0.52
2,3,4,6,7,8-HxCDF	165.92		7.58	1.21	13C-1,2,3,4,6,7,8-HpCDF	2000	1376	69	0.44
1,2,3,4,6,7,8-HpCDF	158.11		7.58	1.01	13C-1,2,3,4,7,8,9-HpCDF	2000	1198	60	0.44
1,2,3,4,7,8,9-HpCDF	169.34		7.58	1.01					
OCDF	336.43		15.17	0.86					
Total Tetra-Furans	35.71			0.66	CLEANUP STANDARD				
Total Tetra-Dioxins	36.00			0.77	37Cl-2,3,7,8-TCDD	200	172	86	
Total Penta-Furans	332.11			1.56					
Total Penta-Dioxins	193.90			1.54					
Total Hexa-Furans	680.17			*					
Total Hexa-Dioxins	477.83			1.09					
Total Hepta-Furans	338.67			*					
Total Hepta-Dioxins	233.51			1.03					

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-12-95

Analysis Date 16-JAN-96 Time 16 55 40

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-20, S34, MS

Sample Wt/Vol: 7.6950 units: g

Initial Calibration Date: 04-13-95

Instrument ID Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039009

Blank Data Filename: A039003

Cal Ver. Data Filename: A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	Labeled Compounds	Spike Conc. pg	Conc. Found pg	R(%)	ION Ratio
2,3,7,8-TCDD	45.57		2.60	0.75	13C-2,3,7,8-TCDD	2000	1388	69	0.77
1,2,3,7,8-PeCDD	233.48		13.00	1.53	13C-1,2,3,7,8-PeCDD	2000	1311	66	1.58
1,2,3,4,7,8-HxCDD	212.73		13.00	1.25	13C-1,2,3,4,7,8-HxCDD	2000	1381	69	1.25
1,2,3,6,7,8-HxCDD	201.38		13.00	1.22	13C-1,2,3,6,7,8-HxCDD	2000	1478	74	1.26
1,2,3,7,8,9-HxCDD	313.61		13.00	1.25	13C-1,2,3,4,6,7,8-HpCDD	2000	1654	83	1.05
1,2,3,4,6,7,8-HpCDD	597.88		13.00	1.07	13C-OCDD	4000	3006	75	0.87
OCDD	1058.34		25.99	0.89	13C-2,3,7,8-TCDF	2000	1384	69	0.77
2,3,7,8-TCDF	202.97		2.60	0.76	13C-1,2,3,7,8-PeCDF	2000	1309	65	1.60
1,2,3,7,8-PeCDF	174.41		13.00	1.68	13C-2,3,4,7,8-PeCDF	2000	1279	64	1.58
2,3,4,7,8-PeCDF	228.11		13.00	1.59	13C-1,2,3,4,7,8-HxCDF	2000	1329	66	0.52
1,2,3,4,7,8-HxCDF	244.72		13.00	1.17	13C-1,2,3,6,7,8-HxCDF	2000	1300	65	0.52
1,2,3,6,7,8-HxCDF	241.33		13.00	1.19	13C-1,2,3,7,8,9-HxCDF	2000	1450	73	0.51
1,2,3,7,8,9-HxCDF	149.02		13.00	1.18	13C-2,3,4,6,7,8-HxCDF	2000	1393	70	0.52
2,3,4,6,7,8-HxCDF	212.90		13.00	1.24	13C-1,2,3,4,6,7,8-HpCDF	2000	1510	76	0.44
1,2,3,4,6,7,8-HpCDF	510.32		13.00	1.03	13C-1,2,3,4,7,8,9-HpCDF	2000	1431	72	0.43
1,2,3,4,7,8,9-HpCDF	164.88		13.00	1.04					
OCDF	332.72		25.99	0.88					
Total Tetra-Furans	977.98			0.75	CLEANUP STANDARD				
Total Tetra-Dioxins	523.46			0.77	37Cl-2,3,7,8-TCDD	200	187	93	
Total Penta-Furans	1269.31			1.61					
Total Penta-Dioxins	987.36			1.35					
Total Hexa-Furans	1242.53			1.21					
Total Hexa-Dioxins	1351.72			1.28					
Total Hepta-Furans	811.74			*					
Total Hepta-Dioxins	950.77			1.05					

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-07-95
Analysis Date 16-JAN-96 Time 12 27 46
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID 47482-6-14, S16
Sample Wt/Vol 8.0213 units. g
Initial Calibration Date 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename A0390005
Blank Data Filename A0390003
Cal Ver. Data Filename: A0390002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	3.33		1.25	0.74	13C-2,3,7,8-TCDD	2000	1464	73	0.79
1,2,3,7,8-PeCDD	8.81		6.23	1.62	13C-1,2,3,7,8-PeCDD	2000	1517	76	1.57
1,2,3,4,7,8-HxCDD	9.07		6.23	1.27	13C-1,2,3,4,7,8-HxCDD	2000	1483	74	1.24
1,2,3,6,7,8-HxCDD	32.10		6.23	1.20	13C-1,2,3,6,7,8-HxCDD	2000	1639	82	1.26
1,2,3,7,8,9-HxCDD	17.64		6.23	1.32	13C-1,2,3,4,6,7,8-HpCDD	2000	1577	79	1.04
1,2,3,4,6,7,8-HpCDD	591.09		6.23	1.07	13C-OCDD	4000	2927	73	0.90
OCDD	4300.91		12.47	0.88	13C-2,3,7,8-TCDF	2000	1552	78	0.77
2,3,7,8-TCDF	(16.92)		1.25	(0.75)	13C-1,2,3,7,8-PeCDF	2000	1617	81	1.59
1,2,3,7,8-PeCDF	8.14		6.23	1.36	13C-2,3,4,7,8-PeCDF	2000	1573	79	1.61
2,3,4,7,8-PeCDF	9.35		6.23	1.50	13C-1,2,3,4,7,8-HxCDF	2000	1521	76	0.52
1,2,3,4,7,8-HxCDF	^	0.34	6.23	*	13C-1,2,3,6,7,8-HxCDF	2000	1494	75	0.51
1,2,3,6,7,8-HxCDF	8.23		6.23	1.15	13C-1,2,3,7,8,9-HxCDF	2000	1515	76	0.52
1,2,3,7,8,9-HxCDF	*	1.02	6.23	*	13C-2,3,4,6,7,8-HxCDF	2000	1552	78	0.52
2,3,4,6,7,8-HxCDF	7.91		6.23	1.19	13C-1,2,3,4,6,7,8-HpCDF	2000	1447	72	0.43
1,2,3,4,6,7,8-HpCDF	84.56		6.23	1.02	13C-1,2,3,4,7,8,9-HpCDF	2000	1404	70	0.42
1,2,3,4,7,8,9-HpCDF	3.48 ~	0.45	6.23	0.94					
OCDF	83.05		12.47	0.86					
Total Tetra-Furans	121.64			0.73	CLEANUP STANDARD				
Total Tetra-Dioxins	44.78			0.78	37Cl-2,3,7,8-TCDD	200	161	80	
Total Penta-Furans	118.08			1.61					
Total Penta-Dioxins	56.27			1.51					
Total Hexa-Furans	115.03			1.22					
Total Hexa-Dioxins	200.08			1.23					
Total Hepta-Furans	192.32			*					
Total Hepta-Dioxins	1041.07			1.06					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.
~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).
^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8210.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-12-95
Analysis Date 17-JAN-96 Time 11:33:14
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor 12

Lab Sample ID: 47482-10-22, METHOD BLANK
Sample Wt/Vol 10.0000 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A039105
Blank Data Filename: A039103
Cal. Ver Data Filename: A039102

ANALYTE	CONC. FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	Labeled Compounds	Spike Conc. pg	Conc. Found pg	R(%)	ION Ratio
2,3,7,8-TCDD	*	1.08	4.00	*	13C-2,3,7,8-TCDD	2000	1600	80	0.79
1,2,3,7,8-PeCDD	*	1.34	20.00	*	13C-1,2,3,7,8-PeCDD	2000	1443	72	1.58
1,2,3,4,7,8-HxCDD	*	1.68	20.00	*	13C-1,2,3,4,7,8-HxCDD	2000	1668	83	1.25
1,2,3,6,7,8-HxCDD	*	1.61	20.00	*	13C-1,2,3,6,7,8-HxCDD	2000	1856	93	1.26
1,2,3,7,8,9-HxCDD	*	1.57	20.00	*	13C-1,2,3,4,6,7,8-HpCDD	2000	1674	84	1.00
1,2,3,4,6,7,8-HpCDD	*	3.73	20.00	*	13C-OCDD	4000	2916	73	0.88
OCDD	*	45.49"	40.00	*	13C-2,3,7,8-TCDF	2000	1573	79	0.82
2,3,7,8-TCDF	*	4.81"	4.00	*	13C-1,2,3,7,8-PeCDF	2000	1473	74	1.60
1,2,3,7,8-PeCDF	*	1.62	20.00	*	13C-2,3,4,7,8-PeCDF	2000	811	41	1.56
2,3,4,7,8-PeCDF	*	*	20.00	*	13C-1,2,3,4,7,8-HxCDF	2000	1568	78	0.56
1,2,3,4,7,8-HxCDF	*	1.57	20.00	*	13C-1,2,3,6,7,8-HxCDF	2000	1603	80	0.49
1,2,3,6,7,8-HxCDF	*	2.59	20.00	*	13C-1,2,3,7,8,9-HxCDF	2000	1659	83	0.51
1,2,3,7,8,9-HxCDF	*	1.40	20.00	*	13C-2,3,4,6,7,8-HxCDF	2000	1635	82	0.49
2,3,4,6,7,8-HxCDF	*	1.92	20.00	*	13C-1,2,3,4,6,7,8-HpCDF	2000	1617	81	0.44
1,2,3,4,6,7,8-HpCDF	*	1.98	20.00	*	13C-1,2,3,4,7,8,9-HpCDF	2000	1432	72	0.44
1,2,3,4,7,8,9-HpCDF	*	1.14	20.00	*					
OCDF	*	1.74	40.00	*					
Total Tetra-Furans	*	2.84		*	CLEANUP STANDARD				
Total Tetra-Dioxins	*	2.00		*	37Cl-2,3,7,8-TCDD	200	177	88	
Total Penta-Furans	*	2.44		*					
Total Penta-Dioxins	*	1.48		*					
Total Hexa-Furans	*	1.26		*					
Total Hexa-Dioxins	*	1.78		*					
Total Hepta-Furans	*	1.52		*					
Total Hepta-Dioxins	*	2.36		*					

* Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

** Sample limit of detection (LOD) listed; the instrument limit of quantitation (LOQ) due to blank.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix: SOIL

Sample Receipt Date 12-07-95

Ext Date 12-12-95

Analysis Date 16-JAN-96 Time 13:36:12

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID: 47482-10-2, S18
 Sample Wt/Vol 8.4973 units g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A039006
 Blank Data Filename: A039003
 Cal Ver. Data Filename: A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	0.40	1.18	*	13C-2,3,7,8-TCDD	2000	1489	74	0.80
1,2,3,7,8-PeCDD	4.80 ~	0.36	5.88	1.67	13C-1,2,3,7,8-PeCDD	2000	2113	106	1.54
1,2,3,4,7,8-HxCDD	6.31		5.88	1.20	13C-1,2,3,4,7,8-HxCDD	2000	1592	80	1.24
1,2,3,6,7,8-HxCDD	16.17		5.88	1.28	13C-1,2,3,6,7,8-HxCDD	2000	1673	84	1.26
1,2,3,7,8,9-HxCDD	9.88		5.88	1.31	13C-1,2,3,4,6,7,8-HpCDD	2000	1270	64	1.04
1,2,3,4,6,7,8-HpCDD	312.06		5.88	1.06	13C-OCDD	4000	1533	38<	0.90
OCDD	2275.10		11.77	0.88	13C-2,3,7,8-TCDF	2000	1908	95	0.81
2,3,7,8-TCDF	(7.62)		1.18	(0.81)	13C-1,2,3,7,8-PeCDF	2000	2322	116	1.56
1,2,3,7,8-PeCDF	2.99 ~	0.35	5.88	1.66	13C-2,3,4,7,8-PeCDF	2000	2336	117	1.58
2,3,4,7,8-PeCDF	4.09 ~	0.49	5.88	1.69	13C-1,2,3,4,7,8-HxCDF	2000	1546	77	0.51
1,2,3,4,7,8-HxCDF	^	0.22	5.88	*	13C-1,2,3,6,7,8-HxCDF	2000	1454	73	0.52
1,2,3,6,7,8-HxCDF	3.97 ~	0.17	5.88	1.28	13C-1,2,3,7,8,9-HxCDF	2000	1456	73	0.52
1,2,3,7,8,9-HxCDF	*	0.72	5.88	*	13C-2,3,4,6,7,8-HxCDF	2000	1483	74	0.52
2,3,4,6,7,8-HxCDF	3.61 ~	0.36	5.88	1.18	13C-1,2,3,4,6,7,8-HpCDF	2000	1104	55	0.44
1,2,3,4,6,7,8-HpCDF	34.78		5.88	1.02	13C-1,2,3,4,7,8,9-HpCDF	2000	1291	65	0.44
1,2,3,4,7,8,9-HpCDF	1.90 ~	0.33	5.88	1.07					
OCDF	48.78		11.77	0.86					
Total Tetra-Furans	36.32			0.85	CLEANUP STANDARD				
Total Tetra-Dioxins	25.78			0.74	37Cl-2,3,7,8-TCDD	200	225	113	
Total Penta-Furans	45.76			1.56					
Total Penta-Dioxins	22.41			1.51					
Total Hexa-Furans	47.36			1.23					
Total Hexa-Dioxins	101.42			1.28					
Total Hepta-Furans	96.64			*					
Total Hepta-Dioxins	561.94			1.06					

< Outside 40-135% limit.

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date: 12-07-95

Ext Date 12-12-95

Analysis Date 17-JAN-96 Time 13:51:19

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-5, S21

Sample Wt/Vol: 7.5419 units/g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039107

Blank Data Filename: A039103

Cal Ver. Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	0.46	2.65	*	13C-2,3,7,8-TCDD	2000	1140	57	0.78
1,2,3,7,8-PeCDD	1.67 ~	0.97	13.26	1.53	13C-1,2,3,7,8-PeCDD	2000	1177	59	1.60
1,2,3,4,7,8-HxCDD	1.68 ~	1.09	13.26	1.09	13C-1,2,3,4,7,8-HxCDD	2000	1078	54	1.22
1,2,3,6,7,8-HxCDD	1.62 ~	1.06	13.26	1.47	13C-1,2,3,6,7,8-HxCDD	2000	1353	68	1.24
1,2,3,7,8,9-HxCDD	3.31 ~	1.02	13.26	1.10	13C-1,2,3,4,6,7,8-HpCDD	2000	1186	59	1.04
1,2,3,4,6,7,8-HpCDD	14.48		13.26	1.02	13C-OCDD	4000	2143	54	0.89
OCDD	76.61		26.52	0.86	13C-2,3,7,8-TCDF	2000	1184	59	0.80
2,3,7,8-TCDF	(3.85)		2.65	(0.82)	13C-1,2,3,7,8-PeCDF	2000	1138	57	1.63
1,2,3,7,8-PeCDF	1.84 ~	1.03	13.26	1.58	13C-2,3,4,7,8-PeCDF	2000	1233	62	1.59
2,3,4,7,8-PeCDF	2.49 ~	1.34	13.26	1.61	13C-1,2,3,4,7,8-HxCDF	2000	1113	56	0.51
1,2,3,4,7,8-HxCDF	^	1.09	13.26	*	13C-1,2,3,6,7,8-HxCDF	2000	1193	60	0.50
1,2,3,6,7,8-HxCDF	2.32 ~	1.74	13.26	1.05	13C-1,2,3,7,8,9-HxCDF	2000	1259	63	0.49
1,2,3,7,8,9-HxCDF	*	0.93	13.26	*	13C-2,3,4,6,7,8-HxCDF	2000	1177	59	0.52
2,3,4,6,7,8-HxCDF	2.42 ~	1.17	13.26	1.29	13C-1,2,3,4,6,7,8-HpCDF	2000	1045	52	0.44
1,2,3,4,6,7,8-HpCDF	9.28 ~	1.46	13.26	0.92	13C-1,2,3,4,7,8,9-HpCDF	2000	1040	52	0.43
1,2,3,4,7,8,9-HpCDF	*	0.77	13.26	*					
OCDF	5.03 ~	1.14	26.52	0.86					
Total Tetra-Furans	16.57			0.80	CLEANUP STANDARD				
Total Tetra-Dioxins	5.29			0.88	37Cl-2,3,7,8-TCDD	200	158	79	
Total Penta-Furans	21.38			1.62					
Total Penta-Dioxins	5.66			1.51					
Total Hexa-Furans	6.78			1.17					
Total Hexa-Dioxins	14.54			1.14					
Total Hepta-Furans	11.36			0.92					
Total Hepta-Dioxins	27.92			1.02					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date: 12-07-95

Ext Date 12-12-95

Analysis Date 16-JAN-96 Time 15 48 21

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-19, S34
 Sample Wt/Vol: 7.6565 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A039008
 Blank Data Filename: A039003
 Cal. Ver Data Filename: A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	14.62		2.61	0.79	13C-2,3,7,8-TCDD	2000	1623	81	0.79
1,2,3,7,8-PeCDD	84.78		13.06	1.53	13C-1,2,3,7,8-PeCDD	2000	1518	76	1.55
1,2,3,4,7,8-HxCDD	71.47		13.06	1.22	13C-1,2,3,4,7,8-HxCDD	2000	1628	81	1.26
1,2,3,6,7,8-HxCDD	64.68		13.06	1.26	13C-1,2,3,6,7,8-HxCDD	2000	1855	93	1.26
1,2,3,7,8,9-HxCDD	96.10		13.06	1.27	13C-1,2,3,4,6,7,8-HpCDD	2000	1798	90	1.04
1,2,3,4,6,7,8-HpCDD	411.19		13.06	1.03	13C-OCDD	4000	3247	81	0.90
OCDD	773.32		26.12	0.89	13C-2,3,7,8-TCDF	2000	1657	83	0.79
2,3,7,8-TCDF#	41.85		2.61	0.75	13C-1,2,3,7,8-PeCDF	2000	1631	82	1.57
1,2,3,7,8-PeCDF	70.83		13.06	1.56	13C-2,3,4,7,8-PeCDF	2000	1604	80	1.59
2,3,4,7,8-PeCDF	99.65		13.06	1.55	13C-1,2,3,4,7,8-HxCDF	2000	1534	77	0.52
1,2,3,4,7,8-HxCDF	^	0.81	13.06	*	13C-1,2,3,6,7,8-HxCDF	2000	1530	77	0.52
1,2,3,6,7,8-HxCDF	105.99		13.06	1.15	13C-1,2,3,7,8,9-HxCDF	2000	1696	85	0.50
1,2,3,7,8,9-HxCDF	5.37 ~	2.30	13.06	1.39	13C-2,3,4,6,7,8-HxCDF	2000	1600	80	0.52
2,3,4,6,7,8-HxCDF	77.02		13.06	1.07	13C-1,2,3,4,6,7,8-HpCDF	2000	1722	86	0.45
1,2,3,4,6,7,8-HpCDF	344.45		13.06	1.00	13C-1,2,3,4,7,8,9-HpCDF	2000	1605	80	0.44
1,2,3,4,7,8,9-HpCDF	29.80		13.06	1.04					
OCDF	87.93		26.12	0.83					
Total Tetra-Furans	786.22			0.74	CLEANUP STANDARD				
Total Tetra-Dioxins	425.73			0.75	37Cl-2,3,7,8-TCDD	200	223	112	
Total Penta-Furans	1010.97			1.54					
Total Penta-Dioxins	632.56			1.54					
Total Hexa-Furans	537.05			1.20					
Total Hexa-Dioxins	748.54			1.25					
Total Hepta-Furans	494.36			*					
Total Hepta-Dioxins	716.51			1.04					

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-12-95

Analysis Date 16-JAN-96 Time 18 01 38

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-21, S34, MSD

Sample Wt/Vol 7.6564 units g

Initial Calibration Date 04-13-95

Instrument ID Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039010

Blank Data Filename: A039003

Cal. Ver Data Filename A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	46.33		2.61	0.77	13C-2,3,7,8-TCDD	2000	1190	59	0.78
1,2,3,7,8-PeCDD	255.46		13.06	1.60	13C-1,2,3,7,8-PeCDD	2000	972	49	1.53
1,2,3,4,7,8-HxCDD	209.34		13.06	1.23	13C-1,2,3,4,7,8-HxCDD	2000	1119	56	1.25
1,2,3,6,7,8-HxCDD	172.39		13.06	1.26	13C-1,2,3,6,7,8-HxCDD	2000	1266	63	1.26
1,2,3,7,8,9-HxCDD	281.64		13.06	1.21	13C-1,2,3,4,6,7,8-HpCDD	2000	1217	61	1.05
1,2,3,4,6,7,8-HpCDD	591.83		13.06	1.02	13C-OCDD	4000	2193	55	0.87
OCDD	1145.12		26.12	0.87	13C-2,3,7,8-TCDF	2000	1159	58	0.78
2,3,7,8-TCDF	186.98		2.61	0.76	13C-1,2,3,7,8-PeCDF	2000	1115	56	1.59
1,2,3,7,8-PeCDF	181.54		13.06	1.34	13C-2,3,4,7,8-PeCDF	2000	1042	52	1.57
2,3,4,7,8-PeCDF	231.60		13.06	1.58	13C-1,2,3,4,7,8-HxCDF	2000	1055	53	0.51
1,2,3,4,7,8-HxCDF	246.72		13.06	1.20	13C-1,2,3,6,7,8-HxCDF	2000	992	50	0.51
1,2,3,6,7,8-HxCDF	261.15		13.06	1.28	13C-1,2,3,7,8,9-HxCDF	2000	1141	57	0.51
1,2,3,7,8,9-HxCDF	153.39		13.06	1.18	13C-2,3,4,6,7,8-HxCDF	2000	1050	53	0.52
2,3,4,6,7,8-HxCDF	224.36		13.06	1.19	13C-1,2,3,4,6,7,8-HpCDF	2000	1121	56	0.44
1,2,3,4,6,7,8-HpCDF	490.06		13.06	1.00	13C-1,2,3,4,7,8,9-HpCDF	2000	1053	53	0.43
1,2,3,4,7,8,9-HpCDF	162.78		13.06	1.00					
OCDF	331.61		26.12	0.89					
Total Tetra-Furans	903.60		0.79	0.79	CLEANUP STANDARD				
Total Tetra-Dioxins	491.90		0.74	0.74	37Cl-2,3,7,8-TCDD	200	158	79	
Total Penta-Furans	1158.30		1.57	1.57					
Total Penta-Dioxins	884.17		1.50	1.50					
Total Hexa-Furans	1269.46		1.20	1.20					
Total Hexa-Dioxins	1214.11		1.26	1.26					
Total Hepta-Furans	780.94		*	*					
Total Hepta-Dioxins	917.13		1.09	1.09					

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix: SOIL

Sample Receipt Date 12-07-95

Ext Date 12-12-95

Analysis Date 17-JAN-96 Time 16 04 48

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor 12

Lab Sample ID: 47482-10-7, S23

Sample Wt/Vol: 7.6321 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039109

Blank Data Filename: A039103

Cal Ver Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	3.00	5.24	*	13C-2,3,7,8-TCDD	2000	405	20<	0.81
1,2,3,7,8-PeCDD	*	6.55	26.21	*	13C-1,2,3,7,8-PeCDD	2000	513	26<	1.72
1,2,3,4,7,8-HxCDD	6	30.41	26.21	1.36	13C-1,2,3,4,7,8-HxCDD	2000	485	24<	1.29
1,2,3,6,7,8-HxCDD	24.49 ~	4.23	26.21	1.36	13C-1,2,3,6,7,8-HxCDD	2000	519	26<	1.29
1,2,3,7,8,9-HxCDD	29.66		26.21	1.32	13C-1,2,3,4,6,7,8-HpCDD	2000	1437	72	1.04
1,2,3,4,6,7,8-HpCDD	1174.14		26.21	1.07	13C-OCDD	4000	2534	63	0.91
OCDD	18875.28		52.41	0.87	13C-2,3,7,8-TCDF	2000	306	15<	0.75
2,3,7,8-TCDF	*	53.63"	5.24	*	13C-1,2,3,7,8-PeCDF	2000	544	27<	1.70
1,2,3,7,8-PeCDF	*	6.59	26.21	*	13C-2,3,4,7,8-PeCDF	2000	505	25<	1.75
2,3,4,7,8-PeCDF	*	7.95	26.21	*	13C-1,2,3,4,7,8-HxCDF	2000	1146	57	0.52
1,2,3,4,7,8-HxCDF	^	5.67	26.21	*	13C-1,2,3,6,7,8-HxCDF	2000	958	48	0.49
1,2,3,6,7,8-HxCDF	*	9.28	26.21	*	13C-1,2,3,7,8,9-HxCDF	2000	1323	66	0.50
1,2,3,7,8,9-HxCDF	*	3.16	26.21	*	13C-2,3,4,6,7,8-HxCDF	2000	490	25<	0.51
2,3,4,6,7,8-HxCDF	*	7.21	26.21	*	13C-1,2,3,4,6,7,8-HpCDF	2000	1261	63	0.45
1,2,3,4,6,7,8-HpCDF	226.39		26.21	1.04	13C-1,2,3,4,7,8,9-HpCDF	2000	1235	62	0.44
1,2,3,4,7,8,9-HpCDF	19.26 ~	2.75	26.21	0.94					
OCDF	422.85		52.41	0.85					
Total Tetra-Furans	198.25			0.79	CLEANUP STANDARD				
Total Tetra-Dioxins	*	5.56		*	37Cl-2,3,7,8-TCDD	200	*	*	
Total Penta-Furans	323.36			1.78					
Total Penta-Dioxins	*	7.24		*					
Total Hexa-Furans	201.39			1.39					
Total Hexa-Dioxins	575.90			1.41					
Total Hepta-Furans	882.00			*					
Total Hepta-Dioxins	2449.77			1.05					

< Outside 40-135% limit.

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4

" Sample limit of detection (LOD) higher than instrument limit of quantitation (LOQ) due to sample matrix effects

* Analyte not detected

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-08-95

Ext Date 12-12-95

Analysis Date 17-JAN-96 Time 18:20:42

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-9, S25
 Sample Wt/Vol: 8.1293 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A039111
 Blank Data Filename: A039103
 Cal Ver. Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	3.37		2.46	0.75	13C-2,3,7,8-TCDD	2000	1483	74	0.79
1,2,3,7,8-PeCDD	11.53 ~	1.03	12.30	1.63	13C-1,2,3,7,8-PeCDD	2000	1392	70	1.53
1,2,3,4,7,8-HxCDD	10.34 ~	0.87	12.30	1.19	13C-1,2,3,4,7,8-HxCDD	2000	1486	74	1.23
1,2,3,6,7,8-HxCDD	13.67		12.30	1.27	13C-1,2,3,6,7,8-HxCDD	2000	1546	77	1.23
1,2,3,7,8,9-HxCDD	17.81		12.30	1.25	13C-1,2,3,4,6,7,8-HpCDD	2000	1377	69	1.07
1,2,3,4,6,7,8-HpCDD	154.90		12.30	1.04	13C-OCDD	4000	2566	64	0.89
OCDD	1075.87 (24.36)		24.60	0.88 (0.80)	13C-2,3,7,8-TCDF	2000	1367	68	0.80
2,3,7,8-TCDF			2.46		13C-1,2,3,7,8-PeCDF	2000	1481	74	1.60
1,2,3,7,8-PeCDF	10.31 ~	0.95	12.30	1.62	13C 1,4,7,8-PeCDF	2000	1388	69	1.61
2,3,4,7,8-PeCDF	14.27		12.30	1.36	13C-1,2,3,4,7,8-HxCDF	2000	1436	72	0.52
1,2,3,4,7,8-HxCDF	^a	0.88	12.30	*	13C-1,2,3,6,7,8-HxCDF	2000	1351	68	0.51
1,2,3,6,7,8-HxCDF	17.64		12.30	1.27	13C-1,2,3,7,8,9-HxCDF	2000	1482	74	0.51
1,2,3,7,8,9-HxCDF	1.07 ~	0.77	12.30	1.25	13C-2,3,4,6,7,8-HxCDF	2000	1463	73	0.51
2,3,4,6,7,8-HxCDF	14.49		12.30	1.33	13C-1,2,3,4,6,7,8-HpCDF	2000	1279	64	0.44
1,2,3,4,6,7,8-HpCDF	74.88		12.30	1.01	13C-1,2,3,4,7,8,9-HpCDF	2000	1302	65	0.42
1,2,3,4,7,8,9-HpCDF	5.95 ~	0.58	12.30	0.89					
OCDF	48.85		24.60	0.89					
Total Tetra-Furans	120.59			0.75	CLEANUP STANDARD				
Total Tetra-Dioxins	61.09			0.72	37Cl-2,3,7,8-TCDD	200	202	101	
Total Penta-Furans	146.88			1.34					
Total Penta-Dioxins	12.37			1.72					
Total Hexa-Furans	91.20			1.20					
Total Hexa-Dioxins	139.43			1.24					
Total Hepta-Furans	127.28			0.89					
Total Hepta-Dioxins	284.29			1.01					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^a Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-12-95

Analysis Date 17-JAN-96 Time 12 43 14

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID 47482-10-4, S20

Sample Wt/Vol 8.7148 units g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039106

Blank Data Filename: A039103

Cal Ver Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	31.06		2.29	0.80	13C-2,3,7,8-TCDD	2000	567	28<	0.81
1,2,3,7,8-PeCDD	84.70		11.47	1.57	13C-1,2,3,7,8-PeCDD	2000	522	26<	1.56
1,2,3,4,7,8-HxCDD	14.51		11.47	1.21	13C-1,2,3,4,7,8-HxCDD	2000	513	26<	1.28
1,2,3,6,7,8-HxCDD	74.43		11.47	1.23	13C-1,2,3,6,7,8-HxCDD	2000	620	31<	1.26
1,2,3,7,8,9-HxCDD	169.09		11.47	1.24	13C-1,2,3,4,6,7,8-HpCDD	2000	588	29<	1.04
1,2,3,4,6,7,8-HpCDD	878.03		11.47	1.06	13C-OCDD	4000	1029	26<	0.89
OCDD	9005.18		22.95	0.88	13C-2,3,7,8-TCDF	2000	543	27<	0.80
2,3,7,8-TCDF	(5.27)		2.29	(0.72)	13C-1,2,3,7,8-PeCDF	2000	558	28<	1.57
1,2,3,7,8-PeCDF	*	2.04	11.47	*	13C-2,3,4,7,8-PeCDF	2000	519	26<	1.60
2,3,4,7,8-PeCDF	*	2.96	11.47	*	13C-1,2,3,4,7,8-HxCDF	2000	512	26<	0.52
1,2,3,4,7,8-HxCDF	*	2.10	11.47	*	13C-1,2,3,6,7,8-HxCDF	2000	525	26<	0.50
1,2,3,6,7,8-HxCDF	4.04 ~	3.47	11.47	1.33	13C-1,2,3,7,8,9-HxCDF	2000	601	30<	0.51
1,2,3,7,8,9-HxCDF	*	1.67	11.47	*	13C-2,3,4,6,7,8-HpCDF	2000	541	27<	0.44
2,3,4,6,7,8-HpCDF	3.64 ~	2.30	11.47	1.14	13C-1,2,3,4,6,7,8-HpCDF	2000	481	24<	0.42
1,2,3,4,6,7,8-HpCDF	37.16		11.47	0.98					
1,2,3,4,7,8,9-HpCDF	2.66 ~	1.44	11.47	1.15					
OCDF	79.09		22.95	0.86					
Total Tetra-Furans	16.91			0.77	CLEANUP STANDARD				
Total Tetra-Dioxins	78.00			0.72	37Cl-2,3,7,8-TCDD	200	73	36<	
Total Penta-Furans	73.89			1.49					
Total Penta-Dioxins	287.85			1.54					
Total Hexa-Furans	58.48			1.25					
Total Hexa-Dioxins	1473.65			1.24					
Total Hepta-Furans	110.03			*					
Total Hepta-Dioxins	2200.80			1.05					

<Outside 40-135% limit.

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE

Matrix: SOIL

Sample Receipt Date: 12-08-95

Ext Date: 12-12-95

Analysis Date: 18-JAN-96 Time: 11:30:40

Extract Volume (μL): 20

Injection Volume (μL): 0.5

Dilution Factor: NONE

Lab Sample ID: 47482-10-11, S27

Sample Wt/Vol: 7.4562 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039204

Blank Data Filename: A039203

Cal. Ver. Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	1.52	2.68	*	13C-2,3,7,8-TCDD	2000	1721	86	0.80
1,2,3,7,8-PeCDD	16.91		13.41	1.69	13C-1,2,3,7,8-PeCDD	2000	1645	82	1.57
1,2,3,4,7,8-HxCDD	14.76		13.41	1.28	13C-1,2,3,4,7,8-HxCDD	2000	1644	82	1.22
1,2,3,6,7,8-HxCDD	19.47		13.41	1.33	13C-1,2,3,6,7,8-HxCDD	2000	1709	85	1.24
1,2,3,7,8,9-HxCDD	21.65		13.41	1.18	13C-1,2,3,4,6,7,8-HpCDD	2000	1636	82	1.02
1,2,3,4,6,7,8-HpCDD	298.28		13.41	1.06	13C-OCDD	4000	2993	75	0.89
OCDD	2690.97		26.82	0.88	13C-2,3,7,8-TCDF	2000	1780	89	0.77
2,3,7,8-TCDF#	10.35		2.68	0.77	13C-1,2,3,7,8-PeCDF	2000	1684	84	1.60
1,2,3,7,8-PeCDF	14.15		13.41	1.76	13C-2,3,4,7,8-PeCDF	2000	1465	73	1.59
2,3,4,7,8-PeCDF	23.17		13.41	1.73	13C-1,2,3,4,7,8-HxCDF	2000	1586	79	0.50
1,2,3,4,7,8-HxCDF	25.99	0.62	13.41	*	13C-1,2,3,6,7,8-HxCDF	2000	1509	75	0.49
1,2,3,6,7,8-HxCDF	1.42 ~	0.74	13.41	1.18	13C-1,2,3,7,8,9-HxCDF	2000	1707	85	0.52
1,2,3,7,8,9-HxCDF	20.79		13.41	1.09	13C-2,3,4,6,7,8-HxCDF	2000	1597	80	0.52
2,3,4,6,7,8-HxCDF	95.99		13.41	1.23	13C-1,2,3,4,6,7,8-HpCDF	2000	1518	76	0.44
1,2,3,4,6,7,8-HpCDF	7.05 ~	0.54	13.41	0.96	13C-1,2,3,4,7,8,9-HpCDF	2000	1423	71	0.44
1,2,3,4,7,8,9-HpCDF	61.79		26.82	0.92					
OCDF				0.92					
Total Tetra-Furans	156.51			0.80	CLEANUP STANDARD				
Total Tetra-Dioxins	48.78			0.85	37Cl-2,3,7,8-TCDD	200	231	116	
Total Penta-Furans	202.33			1.48					
Total Penta-Dioxins	57.25			1.66					
Total Hexa-Furans	127.49			1.37					
Total Hexa-Dioxins	183.13			1.20					
Total Hepta-Furans	168.95			0.92					
Total Hepta-Dioxins	525.38			1.07					

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-07-95
 Ext Date 12-12-95
 Analysis Date 17-JAN-96 Time 14 58 33
 Extract Volume (uL) 20
 Injection Volume (uL) 0.5
 Dilution Factor NONE

Lab Sample ID 47482-10-6, S22
 Sample Wt/Vol 7.8343 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A039108
 Blank Data Filename: A039103
 Cal Ver. Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	1.76 ~	0.25	2.55	0.69	13C-2,3,7,8-TCDD	2000	1557	78	0.78
1,2,3,7,8-PeCDD	2.85 ~	0.75	12.76	1.68	13C-1,2,3,7,8-PeCDD	2000	1365	68	1.52
1,2,3,4,7,8-HxCDD	2.73 ~	0.67	12.76	1.15	13C-1,2,3,4,7,8-HxCDD	2000	1460	73	1.22
1,2,3,6,7,8-HxCDD	5.24 ~	0.68	12.76	1.28	13C-1,2,3,6,7,8-HxCDD	2000	1706	85	1.21
1,2,3,7,8,9-HxCDD	4.10 ~	0.64	12.76	1.16	13C-1,2,3,4,6,7,8-HpCDD	2000	1493	75	1.05
1,2,3,4,6,7,8-HpCDD	76.76		12.76	1.02	13C-OCDD	4000	2745	69	0.89
OCDD	572.75		25.53	0.88	13C-2,3,7,8-TCDF	2000	1447	72	0.78
2,3,7,8-TCDF	(6.30)		2.55	(0.75)	13C-1,2,3,7,8-PeCDF	2000	1411	71	1.55
1,2,3,7,8-PeCDF	2.51 ~	0.72	12.76	1.33	13C-2,3,4,7,8-PeCDF	2000	1361	68	1.60
2,3,4,7,8-PeCDF	3.84 ~	1.01	12.76	1.53	13C-1,2,3,4,7,8-HxCDF	2000	1402	70	0.52
1,2,3,4,7,8-HxCDF	^	0.70	12.76	*	13C-1,2,3,6,7,8-HxCDF	2000	1434	72	0.51
1,2,3,6,7,8-HxCDF	3.96 ~	1.17	12.76	1.13	13C-1,2,3,7,8,9-HxCDF	2000	1512	76	0.53
1,2,3,7,8,9-HxCDF	*	0.61	12.76	*	13C-2,3,4,6,7,8-HxCDF	2000	1527	76	0.52
2,3,4,6,7,8-HxCDF	3.36 ~	0.73	12.76	1.18	13C-1,2,3,4,6,7,8-HpCDF	2000	1467	73	0.44
1,2,3,4,6,7,8-HpCDF	20.18		12.76	1.03	13C-1,2,3,4,7,8,9-HpCDF	2000	1310	66	0.45
1,2,3,4,7,8,9-HpCDF	1.13 ~	0.48	12.76	0.97					
OCDF	11.78 ~	0.70	25.53	0.91					
Total Tetra-Furans	34.57			0.68	CLEANUP STANDARD				
Total Tetra-Dioxins	16.54			0.73	37Cl-2,3,7,8-TCDD	200	210	105	
Total Penta-Furans	42.43			1.65					
Total Penta-Dioxins	11.69			1.66					
Total Hexa-Furans	27.88			1.20					
Total Hexa-Dioxins	41.02			1.20					
Total Hepta-Furans	40.11			*					
Total Hepta-Dioxins	138.28			1.07					

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to dihalogen ether interference per EPA Method 8200. Section 7.8.4.4

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTTELLE

Matrix SOIL

Sample Receipt Date 12-08-95

Exp Date 12-12-95

Analysis Date 18-JAN-96 Time 13 49 28

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-13, S29

Sample Wt/Vol 8.2512 units/g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039206

Blank Data Filename: A039203

Cal. Ver. Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	38.27		2.42	0.75	13C-2,3,7,8-TCDD	2000	1652	83	0.78
1,2,3,7,8-PeCDD	220.55		12.12	1.60	13C-1,2,3,7,8-PeCDD	2000	1524	76	1.55
1,2,3,4,7,8-HxCDD	179.48		12.12	1.33	13C-1,2,3,4,7,8-HxCDD	2000	1530	76	1.27
1,2,3,6,7,8-HxCDD	172.87		12.12	1.17	13C-1,2,3,6,7,8-HxCDD	2000	1789	89	1.27
1,2,3,7,8,9-HxCDD	260.79		12.12	1.21	13C-1,2,3,4,6,7,8-HpCDD	2000	1572	79	1.03
1,2,3,4,6,7,8-HpCDD	1001.35		12.12	1.05	13C-OCDD	4000	3077	77	0.89
OCDD	1973.49		24.24	0.88	13C-2,3,7,8-TCDF	2000	1577	79	0.80
2,3,7,8-TCDF#	105.66		2.42	0.78	13C-1,2,3,7,8-PeCDF	2000	1617	81	1.60
1,2,3,7,8-PeCDF	168.48		12.12	1.53	13C-2,3,4,7,8-PeCDF	2000	1595	80	1.57
2,3,4,7,8-PeCDF	239.20		12.12	1.56	13C-1,2,3,4,7,8-HxCDF	2000	1519	76	0.55
1,2,3,4,7,8-HxCDF	^	0.36	12.12	*	13C-1,2,3,6,7,8-HxCDF	2000	1515	76	0.50
1,2,3,6,7,8-HxCDF	261.58		12.12	1.23	13C-1,2,3,7,8,9-HxCDF	2000	1651	83	0.53
1,2,3,7,8,9-HxCDF	14.88		12.12	1.27	13C-2,3,4,6,7,8-HpCDF	2000	1615	81	0.51
2,3,4,6,7,8-HpCDF	195.87		12.12	1.22	13C-1,2,3,4,6,7,8-HpCDF	2000	1489	74	0.44
1,2,3,4,6,7,8-HpCDF	772.00		12.12	1.00	13C-1,2,3,4,7,8,9-HpCDF	2000	1441	72	0.44
1,2,3,4,7,8,9-HpCDF	68.64		12.12	1.01					
OCDF	297.35		24.24	0.87					
Total Tetra-furans	2171.82			0.76	CLEANUP STANDARD				
Total Tetra-Dioxins	1101.21			0.77	37Cl-2,3,7,8-TCDD	200	234	117	
Total Penta-Furans	2304.49			1.60					
Total Penta-Dioxins	1825.92			1.44					
Total Hexa-Furans	1078.75			1.27					
Total Hexa-Dioxins	1893.64			1.23					
Total Hepta-Furans	1184.23			*					
Total Hepta-Dioxins	1779.71			1.05					

2,3,7,8-TCDF value from second column confirmation.

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL

Sample Receipt Date 12-08-95

Ext Date 12-12-95

Analysis Date 18-JAN-96 Time 12 37 55

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-12, S28
Sample Wt/Vol: 8.4043 units g
Initial Calibration Date 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A039205
Blank Data Filename: A039203
Cal Ver Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	4.71		2.38	0.75	13C-2,3,7,8-TCDD	2000	1704	85	0.80
1,2,3,7,8-PeCDD	24.62		11.90	1.56	13C-1,2,3,7,8-PeCDD	2000	1807	90	1.55
1,2,3,4,7,8-HxCDD	21.94		11.90	1.32	13C-1,2,3,4,7,8-HxCDD	2000	1596	80	1.23
1,2,3,6,7,8-HxCDD	29.91		11.90	1.33	13C-1,2,3,6,7,8-HxCDD	2000	1833	92	1.24
1,2,3,7,8,9-HxCDD	36.29		11.90	1.28	13C-1,2,3,4,6,7,8-HpCDD	2000	1588	79	1.04
1,2,3,4,6,7,8-HpCDD	482.26		11.90	1.08	13C-OCDD	4000	3046	76	0.88
OCDD	4811.18		23.80	0.89	13C-2,3,7,8-TCDF	2000	1760	88	0.79
2,3,7,8-TCDF#	10.66		2.38	0.82	13C-1,2,3,7,8-PeCDF	2000	1845	92	1.58
1,2,3,7,8-PeCDF	18.51		11.90	1.53	13C-2,3,4,7,8-PeCDF	2000	1760	88	1.59
2,3,4,7,8-PeCDF	26.61		11.90	1.72	13C-1,2,3,4,7,8-HxCDF	2000	1614	81	0.52
1,2,3,4,7,8-HxCDF	^	0.34	11.90	*	13C-1,2,3,6,7,8-HxCDF	2000	1578	79	0.52
1,2,3,6,7,8-HxCDF	28.13		11.90	1.31	13C-1,2,3,7,8,9-HxCDF	2000	1716	86	0.52
1,2,3,7,8,9-HxCDF	1.98 ~	0.44	11.90	1.37	13C-2,3,4,6,7,8-HxCDF	2000	1664	83	0.51
2,3,4,6,7,8-HxCDF	20.43		11.90	1.21	13C-1,2,3,4,6,7,8-HpCDF	2000	1550	77	0.43
1,2,3,4,6,7,8-HpCDF	138.76		11.90	1.03	13C-1,2,3,4,7,8,9-HpCDF	2000	1530	76	0.43
1,2,3,4,7,8,9-HpCDF	11.10 ~	0.32	11.90	0.98					
OCDF	199.37		23.80	0.88					
Total Tetra-Furans	244.29			0.81	CLEANUP STANDARD				
Total Tetra-Dioxins	115.10			0.79	37Cl-2,3,7,8-TCDD	200	235	117	
Total Penta-Furans	278.91			1.55					
Total Penta-Dioxins	161.29			1.57					
Total Hexa-Furans	188.32			1.18					
Total Hexa-Dioxins	278.57			1.26					
Total Hepta-Furans	322.68			*					
Total Hepta-Dioxins	843.23			1.08					

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-08-95

Ext Date 12-12-95

Analysis Date 18-JAN-96 Time 16:01:00

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID 47482-10-15, S31

Sample Wt/Vol: 8.1683 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039208

Blank Data Filename: A039203

Cal Ver Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	72.54		2.45	0.77	13C-2,3,7,8-TCDD	2000	1760	88	0.79
1,2,3,7,8-PeCDD	405.88		12.24	1.54	13C-1,2,3,7,8-PeCDD	2000	1738	87	1.53
1,2,3,4,7,8-HxCDD	358.99		12.24	1.25	13C-1,2,3,4,7,8-HxCDD	2000	1702	85	1.24
1,2,3,6,7,8-HxCDD	305.24		12.24	1.27	13C-1,2,3,6,7,8-HxCDD	2000	2023	101	1.27
1,2,3,7,8,9-HxCDD	462.25		12.24	1.28	13C-1,2,3,4,6,7,8-HpCDD	2000	1723	86	1.05
1,2,3,4,6,7,8-HpCDD	1634.40		12.24	1.07	13C-OCDD	4000	2793	70	0.87
OCDD	2662.38		24.48	0.89	13C-2,3,7,8-TCDF	2000	1818	91	0.78
2,3,7,8-TCDF#	208.93		2.45	0.77	13C-1,2,3,7,8-PeCDF	2000	1764	88	1.60
1,2,3,7,8-PeCDF	337.39		12.24	1.50	13C-2,3,4,7,8-PeCDF	2000	1752	88	1.62
2,3,4,7,8-PeCDF	486.79		12.24	1.55	13C-1,2,3,4,7,8-HxCDF	2000	1756	88	0.52
1,2,3,4,7,8-HxCDF	^	0.44	12.24	*	13C-1,2,3,6,7,8-HxCDF	2000	1756	88	0.51
1,2,3,6,7,8-HxCDF	530.30		12.24	1.21	13C-1,2,3,7,8,9-HxCDF	2000	1700	85	0.52
1,2,3,7,8,9-HxCDF	26.25		12.24	1.18	13C-2,3,4,6,7,8-HxCDF	2000	1804	90	0.52
2,3,4,6,7,8-HxCDF	375.89		12.24	1.24	13C-1,2,3,4,6,7,8-HpCDF	2000	1621	81	0.42
1,2,3,4,6,7,8-HpCDF	1435.59		12.24	1.01	13C-1,2,3,4,7,8,9-HpCDF	2000	1503	75	0.43
1,2,3,4,7,8,9-HpCDF	130.35		12.24	1.01					
OCDF	300.56		24.48	0.88					
Total Tetra-Furans	4219.69			0.74	CLEANUP STANDARD				
Total Tetra-Dioxins	2034.88			0.77	37Cl-2,3,7,8-TCDD	200	242	121	
Total Penta-Furans	4797.72			1.54					
Total Penta-Dioxins	2530.19			1.44					
Total Hexa-Furans	2635.91			1.18					
Total Hexa-Dioxins	3495.62			1.26					
Total Hepta-Furans	2036.93			*					
Total Hepta-Dioxins	2834.56			1.06					

2,3,7,8-TCDF value from second column confirmation.

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-08-95
Ext Date 12-12-95
Analysis Date 18-JAN-96 Time 14 55 00
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor NONE

Lab Sample ID 47482-10-14, S30
Sample Wt/Vol 8 0175
Initial Calibration Date 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename A039207
Blank Data Filename A039203
Cal Ver Data Filename A039202

units g

ANALYTE	CONC. FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELED COMPOUNDS	SPIKE CONC. pg	CONC. FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	56.99		2.49	0.76	13C-2,3,7,8-TCDD	2000	1678	84	0.78
1,2,3,7,8-PeCDD	393.18		12.47	1.57	13C-1,2,3,7,8-PeCDD	2000	1523	76	1.54
1,2,3,4,7,8-HxCDD	297.59		12.47	1.22	13C-1,2,3,4,7,8-HxCDD	2000	1667	83	1.25
1,2,3,6,7,8-HxCDD	295.49		12.47	1.25	13C-1,2,3,6,7,8-HxCDD	2000	1868	93	1.26
1,2,3,7,8,9-HxCDD	422.85		12.47	1.24	13C-1,2,3,4,6,7,8-HpCDD	2000	1737	87	1.04
1,2,3,4,6,7,8-HpCDD	1508.86		12.47	1.06	13C-OCDD	4000	3282	82	0.88
OCDD	2581.50		24.95	0.89	13C-2,3,7,8-TCDF	2000	1696	85	0.78
2,3,7,8-TCDF#	184.66		2.49	0.75	13C-1,2,3,7,8-PeCDF	2000	1673	84	1.59
1,2,3,7,8-PeCDF	298.89		12.47	1.58	13C-2,3,4,7,8-PeCDF	2000	1586	79	1.60
2,3,4,7,8-PeCDF	434.37		12.47	1.54	13C-1,2,3,4,7,8-HxCDF	2000	1598	80	0.51
1,2,3,4,7,8-HxCDF	^	0.41	12.47	*	13C-1,2,3,6,7,8-HxCDF	2000	1565	78	0.52
1,2,3,6,7,8-HxCDF	437.19		12.47	1.15	13C-1,2,3,7,8,9-HxCDF	2000	1763	88	0.51
1,2,3,7,8,9-HxCDF	24.16		12.47	1.23	13C-2,3,4,6,7,8-HxCDF	2000	1685	84	0.51
2,3,4,6,7,8-HxCDF	327.62		12.47	1.18	13C-1,2,3,4,6,7,8-HpCDF	2000	1593	80	0.44
1,2,3,4,6,7,8-HpCDF	1340.60		12.47	1.01	13C-1,2,3,4,7,8,9-HpCDF	2000	1500	75	0.44
1,2,3,4,7,8,9-HpCDF	123.81		12.47	1.01					
OCDF	307.96		24.95	0.85					
Total Tetra-Furans	3517.40			0.72	CLEANUP STANDARD				
Total Tetra-Dioxins	1839.01			0.76	37Cl-2,3,7,8-TCDD	200	229	114	
Total Penta-Furans	4422.76			1.53					
Total Penta-Dioxins	3037.44			1.47					
Total Hexa-Furans	2024.89			1.38					
Total Hexa-Dioxins	3078.33			1.24					
Total Hepta-Furans	1927.79			*					
Total Hepta-Dioxins	2683.34			1.04					

2,3,7,8-TCDF value from second column confirmation.

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-08-95

Exp Date 12-12-95

Analysis Date 18-JAN-96 Time 18:17 54

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-17, S33

Sample Wt/Vol. 7.9871 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039210

Blank Data Filename: A039203

Cal. Ver. Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	4.20		2.50	0.76	13C-2,3,7,8-TCDD	2000	1075	54	0.79
1,2,3,7,8-PeCDD	21.52		12.52	1.60	13C-1,2,3,7,8-PeCDD	2000	980	49	1.58
1,2,3,4,7,8-HxCDD	20.61		12.52	1.18	13C-1,2,3,4,7,8-HxCDD	2000	941	47	1.22
1,2,3,6,7,8-HxCDD	18.15		12.52	1.19	13C-1,2,3,6,7,8-HxCDD	2000	1197	60	1.25
1,2,3,7,8,9-HxCDD	26.69		12.52	1.20	13C-1,2,3,4,6,7,8-HpCDD	2000	1025	51	1.02
1,2,3,4,6,7,8-HpCDD	139.24		12.52	1.04	13C-OCDD	4000	2137	53	0.87
OCDD	653.25		25.04	0.88	13C-2,3,7,8-TCDF	2000	1000	50	0.77
2,3,7,8-TCDF#	11.40		2.50	0.82	13C-1,2,3,7,8-PeCDF	2000	949	47	1.56
1,2,3,7,8-PeCDF	20.11		12.52	1.46	13C-2,3,4,7,8-PeCDF	2000	914	46	1.60
2,3,4,7,8-PeCDF	26.55		12.52	1.47	13C-1,2,3,4,7,8-HxCDF	2000	924	46	0.51
1,2,3,4,7,8-HxCDF	^	0.61	12.52	*	13C-1,2,3,6,7,8-HxCDF	2000	925	46	0.51
1,2,3,6,7,8-HxCDF	31.68		12.52	1.18	13C-1,2,3,7,8,9-HxCDF	2000	1075	54	0.52
1,2,3,7,8,9-HxCDF	1.79 ~	0.73	12.52	1.08	13C-2,3,4,6,7,8-HxCDF	2000	933	47	0.53
2,3,4,6,7,8-HxCDF	26.13		12.52	1.18	13C-1,2,3,4,6,7,8-HpCDF	2000	923	46	0.44
1,2,3,4,6,7,8-HpCDF	106.75		12.52	1.01	13C-1,2,3,4,7,8,9-HpCDF	2000	922	46	0.43
1,2,3,4,7,8,9-HpCDF	9.30 ~	0.59	12.52	1.01					
OCDF	44.74		25.04	0.84					
Total Tetra-Furans	195.62			0.81	CLEANUP STANDARD				
Total Tetra-Dioxins	105.97			0.74	37Cl-2,3,7,8-TCDD	200	139	70	
Total Penta-Furans	254.09			1.45					
Total Penta-Dioxins	134.88			1.59					
Total Hexa-Furans	142.44			1.18					
Total Hexa-Dioxins	215.79			1.23					
Total Hepta-Furans	165.87			*					
Total Hepta-Dioxins	255.32			1.08					

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-08-95
 Ext Date 12-12-95
 Analysis Date 18-JAN-96 Time 17 11 56
 Extract Volume (uL) 20
 Injection Volume (uL) 0.5
 Dilution Factor NONE

Lab Sample ID: 47482-10-16, S32
 Sample Wt/Vol: 10.0644 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A039209
 Blank Data Filename: A039203
 Cal Ver Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	LABELLED COMPOUNDS	SPIKE CONC. pg	CONC FOUND pg	R(%)	ION RATIO
2,3,7,8-TCDD	*	0.57	1.99	*	13C-2,3,7,8-TCDD	2000	1449	72	0.79
1,2,3,7,8-PeCDD	*	1.25	9.94	*	13C-1,2,3,7,8-PeCDD	2000	1255	63	1.50
1,2,3,4,7,8-HxCDD	*	0.52	9.94	*	13C-1,2,3,4,7,8-HxCDD	2000	1435	72	1.20
1,2,3,6,7,8-HxCDD	*	0.34	9.94	*	13C-1,2,3,6,7,8-HxCDD	2000	1804	90	1.24
1,2,3,7,8,9-HxCDD	*	0.41	9.94	*	13C-1,2,3,4,6,7,8-HpCDD	2000	1449	72	1.04
1,2,3,4,6,7,8-HpCDD	*	0.96	9.94	*	13C-OCDD	4000	2606	65	0.89
OCDD	*	28.06 "	19.87	*	13C-2,3,7,8-TCDF	2000	1362	68	0.78
2,3,7,8-TCDF	*	0.30	1.99	*	13C-1,2,3,7,8-PeCDF	2000	1298	65	1.58
1,2,3,7,8-PeCDF	*	1.67	9.94	*	13C-2,3,4,7,8-PeCDF	2000	1292	65	1.59
2,3,4,7,8-PeCDF	*	0.95	9.94	*	13C-1,2,3,4,7,8-HxCDF	2000	1316	66	0.53
1,2,3,4,7,8-HxCDF	*	0.46	9.94	*	13C-1,2,3,6,7,8-HxCDF	2000	1390	69	0.51
1,2,3,6,7,8-HxCDF	*	0.41	9.94	*	13C-1,2,3,7,8,9-HxCDF	2000	1441	72	0.50
1,2,3,7,8,9-HxCDF	*	0.54	9.94	*	13C-2,3,4,6,7,8-HxCDF	2000	1375	69	0.52
2,3,4,6,7,8-HxCDF	*	0.77	9.94	*	13C-1,2,3,4,6,7,8-HpCDF	2000	1326	66	0.43
1,2,3,4,6,7,8-HpCDF	*	0.74	9.94	*	13C-1,2,3,4,7,8,9-HpCDF	2000	1282	64	0.43
1,2,3,4,7,8,9-HpCDF	*	0.41	9.94	*					
OCDF	*	0.91	19.87	*					
Total Tetra-Furans	*	0.62		*	CLEANUP STANDARD				
Total Tetra-Dioxins	*	0.55		*	37Cl-2,3,7,8-TCDD	200	192	96	
Total Penta-Furans	*	1.20		*					
Total Penta-Dioxins	*	1.51		*					
Total Hexa-Furans	*	0.58		*					
Total Hexa-Dioxins	*	0.61		*					
Total Hepta-Furans	*	0.85		*					
Total Hepta-Dioxins	*	0.96		*					

" Sample limit of detection (LOD) higher than instrument limit of quantitaion (LOQ) due to sample matrix effects.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-08-95
Ext Date 12-12-95
Analysis Date 18-JAN-96 Time 19 24 45
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor NONE

Lab Sample ID 47482-10-18, S33, Duplicate
Sample Wt/Vol 8.0124 units g
Initial Calibration Date 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename A039211
Blank Data Filename A039203
Cal Ver Data Filename A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry	ION RATIO	Labeled Compounds	Spike Conc pg	Conc Found pg	R(%)	ION Ratio
2,3,7,8-TCDD	4.15		2.50	0.66	13C-2,3,7,8-TCDD	2000	1756	88	0.78
1,2,3,7,8-PeCDD	21.02		12.48	1.42	13C-1,2,3,7,8-PeCDD	2000	1547	77	1.52
1,2,3,4,7,8-HxCDD	18.30		12.48	1.20	13C-1,2,3,4,7,8-HxCDD	2000	1628	81	1.32
1,2,3,6,7,8-HxCDD	17.54		12.48	1.29	13C-1,2,3,6,7,8-HxCDD	2000	1883	94	1.13
1,2,3,7,8,9-HxCDD	26.64		12.48	1.16	13C-1,2,3,4,6,7,8-HpCDD	2000	1697	85	1.02
1,2,3,4,6,7,8-HpCDD	130.35		12.48	1.06	13C-OCDD	4000	3260	82	0.89
OCDD	668.85		24.96	0.87	13C-2,3,7,8-TCDF	2000	1664	83	0.79
2,3,7,8-TCDF#	11.24		2.50	0.79	13C-1,2,3,7,8-PeCDF	2000	1493	75	1.55
1,2,3,7,8-PeCDF	17.66		12.48	1.46	13C-2,3,4,7,8-PeCDF	2000	1467	73	1.57
2,3,4,7,8-PeCDF	23.94		12.48	1.44	13C-1,2,3,4,7,8-HxCDF	2000	1449	72	0.52
1,2,3,4,7,8-HxCDF		0.53	12.48	*	13C-1,2,3,6,7,8-HxCDF	2000	1448	72	0.51
1,2,3,6,7,8-HxCDF	29.92		12.48	1.16	13C-1,2,3,7,8,9-HxCDF	2000	1740	87	0.52
1,2,3,7,8,9-HxCDF	1.74 ~	0.63	12.48	1.31	13C-2,3,4,6,7,8-HxCDF	2000	1525	76	0.51
2,3,4,6,7,8-HxCDF	22.72		12.48	1.11	13C-1,2,3,4,6,7,8-HpCDF	2000	1541	77	0.43
1,2,3,4,6,7,8-HpCDF	98.58		12.48	1.01	13C-1,2,3,4,7,8,9-HpCDF	2000	1492	75	0.42
1,2,3,4,7,8,9-HpCDF	8.79 ~	0.48	12.48	0.93					
OCDF	42.12		24.96	0.84					
Total Tetra-Furans	195.58			0.69	CLEANUP STANDARD				
Total Tetra-Dioxins	87.06			0.81	37Cl-2,3,7,8-TCDD	200	220	110	
Total Penta-Furans	238.88			1.52					
Total Penta-Dioxins	119.68			1.42					
Total Hexa-Furans	149.99			1.13					
Total Hexa-Dioxins	192.53			1.23					
Total Hepta-Furans	150.98			*					
Total Hepta-Dioxins	236.82			1.01					

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4

* Analyte not detected.

APPENDIX B

ABBREVIATED ANALYSIS DATA SHEETS FOR
INITIAL ANALYSIS OF PHASE I SOILS

SET #1

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-06-95
Ext Date 12-07-95
Analysis Date 18-DEC-95 Time 10 56 04
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID: 47482-6-22, METHOD BLANK
Sample Wt/Vol: 10.0000 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A037804
Blank Data Filename: A037803
Cal Ver. Data Filename: A037802

ANALYTE	CONC. FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	*	0.26	1.00
1,2,3,7,8-PeCDD	0.36 ~	0.20	5.00
1,2,3,4,7,8-HxCDD	*	0.25	5.00
1,2,3,6,7,8-HxCDD	*	0.27	5.00
1,2,3,7,8,9-HxCDD	*	0.14	5.00
1,2,3,4,6,7,8-HpCDD	0.53 ~	0.51	5.00
OCDD	*	4.61	10.00
2,3,7,8-TCDF	*	0.30	1.00
1,2,3,7,8-PeCDF	*	0.23	5.00
2,3,4,7,8-PeCDF	0.26 ~	0.26	5.00
1,2,3,4,7,8-HxCDF	*	0.16	5.00
1,2,3,6,7,8-HxCDF	0.24 ~	0.13	5.00
1,2,3,7,8,9-HxCDF	*	0.17	5.00
2,3,4,6,7,8-HxCDF	0.45 ~	0.10	5.00
1,2,3,4,6,7,8-HpCDF	0.43 ~	0.05	5.00
1,2,3,4,7,8,9-HpCDF	*	0.22	5.00
OCDF	0.29 ~	0.27	10.00
Total Tetra-Furans	*	0.34	
Total Tetra-Dioxins	0.33		
Total Penta-Furans	*	0.47	
Total Penta-Dioxins	*	0.40	
Total Hexa-Furans	1.25		
Total Hexa-Dioxins	*	0.32	
Total Hepta-Furans	1.16		
Total Hepta-Dioxins	0.66		

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 18-DEC-95 Time 13 15 49

Extract Volume (uL) 20

Injection Volume (uL) 1

Lab Sample ID 47482-6-16, S01

Sample Wt/Vol 10 1772 units g

Initial Calibration Date 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A037806

Blank Data Filename: A037803

Cal Ver Data Filename A037802

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	*	0.22	0.98
1,2,3,7,8-PeCDD	*	0.16	4.91
1,2,3,4,7,8-HxCDD	*	0.23	4.91
1,2,3,6,7,8-HxCDD	*	0.25	4.91
1,2,3,7,8,9-HxCDD	*	0.13	4.91
1,2,3,4,6,7,8-HpCDD	0.62 ~	0.44	4.91
OCDD	*	4.05	9.83
2,3,7,8-TCDF	0.39 ~	0.28	0.98
1,2,3,7,8-PeCDF	*	0.20	4.91
2,3,4,7,8-PeCDF	0.46 ~	0.24	4.91
1,2,3,4,7,8-HxCDF	^	0.16	4.91
1,2,3,6,7,8-HxCDF	*	0.13	4.91
1,2,3,7,8,9-HxCDF	*	0.16	4.91
2,3,4,6,7,8-HxCDF	0.35 ~	0.10	4.91
1,2,3,4,6,7,8-HpCDF	0.41 ~	0.04	4.91
1,2,3,4,7,8,9-HpCDF	*	0.20	4.91
OCDF	0.38 ~	0.24	9.83
Total Tetra-Furans	0.58		
Total Tetra-Dioxins	0.54		
Total Penta-Furans	0.60		
Total Penta-Dioxins	*	0.32	
Total Hexa-Furans	1.13		
Total Hexa-Dioxins	*	0.29	
Total Hepta-Furans	1.35		
Total Hepta-Dioxins	1.29		

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Sample ID 47482-6-2, S04
 Sample Wt/Vol: 6.5575 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A037807
 Blank Data Filename: A037803
 Cal Ver Data Filename: A037802

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-06-95
 Ext Date 12-07-95
 Analysis Date 18-DEC-95 Time 14 28 07
 Extract Volume (uL) 20
 Injection Volume (uL) 1
 Dilution Factor NONE

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	*	0.54	1.52
1,2,3,7,8-PeCDD	*	0.41	7.62
1,2,3,4,7,8-HxCDD	0.74 ~	0.60	7.62
1,2,3,6,7,8-HxCDD	1.39 ~	0.65	7.62
1,2,3,7,8,9-HxCDD	2.11 ~	0.34	7.62
1,2,3,4,6,7,8-HpCDD	31.60		7.62
OCDD	298.32		15.25
2,3,7,8-TCDF	*	1.97	3.05
1,2,3,7,8-PeCDF	*	0.52	7.62
2,3,4,7,8-PeCDF	*	0.59	7.62
1,2,3,4,7,8-HxCDF	0.74	0.44	7.62
1,2,3,6,7,8-HxCDF	^	0.35	7.62
1,2,3,7,8,9-HxCDF	*	0.43	7.62
2,3,4,6,7,8-HxCDF	0.89 ~	0.23	7.62
1,2,3,4,6,7,8-HpCDF	6.46 ~	0.11	7.62
1,2,3,4,7,8,9-HpCDF	*	0.58	7.62
OCDF	18.02		15.25
Total Tetra-Furans	4.22		
Total Tetra-Dioxins	1.98		
Total Penta-Furans	4.58		
Total Penta-Dioxins	*	0.83	
Total Hexa-Furans	4.87		
Total Hexa-Dioxins	7.72		
Total Hepta-Furans	18.52		
Total Hepta-Dioxins	74.13		

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 18-DEC-95 Time 15 34 43

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-3, S05

Sample Wt/Vol 7 9895 units g

Initial Calibration Date 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename A037808

Blank Data Filename A037803

Cal Ver Data Filename A037802

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	0.34 ~	0.28	1.25
1,2,3,7,8-PeCDD	*	0.21	6.26
1,2,3,4,7,8-HxCDD	*	0.32	6.26
1,2,3,6,7,8-HxCDD	0.52 ~	0.36	6.26
1,2,3,7,8,9-HxCDD	0.75 ~	0.18	6.26
1,2,3,4,6,7,8-HpCDD	9.40		6.26
OCDD	75.76		12.52
2,3,7,8-TCDF	0.39 ~	0.35	1.25
1,2,3,7,8-PeCDF	*	0.26	6.26
2,3,4,7,8-PeCDF	*	0.33	6.26
1,2,3,4,7,8-HxCDF	^	0.22	6.26
1,2,3,6,7,8-HxCDF	^	0.17	6.26
1,2,3,7,8,9-HxCDF	*	0.24	6.26
2,3,4,6,7,8-HxCDF	0.55 ~	0.13	6.26
1,2,3,4,6,7,8-HpCDF	2.42 ~	0.06	6.26
1,2,3,4,7,8,9-HpCDF	*	0.32	6.26
OCDF	4.70 ~	0.35	12.52
Total Tetra-Furans	0.85		
Total Tetra-Dioxins	0.95		
Total Penta-Furans	0.70		
Total Penta-Dioxins	*	0.43	
Total Hexa-Furans	2.43		
Total Hexa-Dioxins	2.18		
Total Hepta-Furans	5.93		
Total Hepta-Dioxins	17.92		

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-06-95
Ext Date 12-07-95
Analysis Date 18-DEC-95 Time 16:41:51
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID: 47482-6-4, S06
Sample Wt/Vol: 8.2683 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A037809
Blank Data Filename: A037803
Cal Ver Data Filename: A037802

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry		INSTRUMENT LIMIT OF QUANTITATION pg/g dry	
2,3,7,8-TCDD	0.57 ~	0.26		1.21	
1,2,3,7,8-PeCDD	*	0.20		6.05	
1,2,3,4,7,8-HxCDD	*	0.29		6.05	
1,2,3,6,7,8-HxCDD	0.54 ~	0.33		6.05	
1,2,3,7,8,9-HxCDD	0.83 ~	0.17		6.05	
1,2,3,4,6,7,8-HpCDD	12.20			6.05	
OCDD	108.60			12.09	
2,3,7,8-TCDF	0.55 ~	0.34		1.21	
1,2,3,7,8-PeCDF	*	0.26		6.05	
2,3,4,7,8-PeCDF	*	0.31		6.05	
1,2,3,4,7,8-HxCDF	^	0.21		6.05	
1,2,3,6,7,8-HxCDF	^	0.16		6.05	
1,2,3,7,8,9-HxCDF	*	0.21		6.05	
2,3,4,6,7,8-HxCDF	0.47 ~	0.12		6.05	
1,2,3,4,6,7,8-HpCDF	3.30 ~	0.05		6.05	
1,2,3,4,7,8,9-HpCDF	0.35 ~	0.28		6.05	
OCDF	9.43 ~	0.28		12.09	
Total Tetra-Furans	1.70				
Total Tetra-Dioxins	0.99				
Total Penta-Furans	1.05				
Total Penta-Dioxins	*	0.40			
Total Hexa-Furans	3.08				
Total Hexa-Dioxins	4.49				
Total Hepta-Furans	10.42				
Total Hepta-Dioxins	21.26				

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 18-DEC-95 Time 17 48 26

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-5, S07

Sample Wt/Vol 7 4596 units g

Initial Calibration Date: 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename: A037810

Blank Data Filename A037803

Cal Ver Data Filename A037802

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	*	0.45	1.34
1,2,3,7,8-PeCDD	1.12 ~	0.35	6.70
1,2,3,4,7,8-HxCDD	1.05 ~	0.49	6.70
1,2,3,6,7,8-HxCDD	1.20 ~	0.54	6.70
1,2,3,7,8,9-HxCDD	1.47 ~	0.28	6.70
1,2,3,4,6,7,8-HpCDD	11.69		6.70
OCDD	93.36		13.41
2,3,7,8-TCDF#	0.78 ~	0.66	1.34
1,2,3,7,8-PeCDF	1.01 ~	0.44	6.70
2,3,4,7,8-PeCDF	1.41 ~	0.54	6.70
1,2,3,4,7,8-HxCDF	^	0.36	6.70
1,2,3,6,7,8-HxCDF	1.70 ~	0.29	6.70
1,2,3,7,8,9-HxCDF	*	0.41	6.70
2,3,4,6,7,8-HxCDF	1.74 ~	0.22	6.70
1,2,3,4,6,7,8-HpCDF	6.56 ~	0.09	6.70
1,2,3,4,7,8,9-HpCDF	*	0.52	6.70
OCDF	3.67 ~	0.57	13.41
Total Tetra-Furans	7.56		
Total Tetra-Dioxins	4.04		
Total Penta-Furans	12.61		
Total Penta-Dioxins	3.61		
Total Hexa-Furans	9.17		
Total Hexa-Dioxins	9.24		
Total Hepta-Furans	7.77		
Total Hepta-Dioxins	22.96		

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-07-95
Analysis Date 19-DEC-95 Time 11 00 03
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID: 47482-6-15, S17
Sample Wt/Vol: 10 0121 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A037904
Blank Data Filename: A037903
Cal. Ver. Data Filename: A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	*	0.23	1.00
1,2,3,7,8-PeCDD	*	0.36	5.00
1,2,3,4,7,8-HxCDD	*	0.13	5.00
1,2,3,6,7,8-HxCDD	*	0.16	5.00
1,2,3,7,8,9-HxCDD	*	0.18	5.00
1,2,3,4,6,7,8-HpCDD	0.58 ~	0.36	5.00
OCDD	*	5.81	10.00
2,3,7,8-TCDF	*	0.18	1.00
1,2,3,7,8-PeCDF	*	0.27	5.00
2,3,4,7,8-PeCDF	*	0.24	5.00
1,2,3,4,7,8-HxCDF	*	0.34	5.00
1,2,3,6,7,8-HxCDF	*	0.26	5.00
1,2,3,7,8,9-HxCDF	*	0.10	5.00
2,3,4,6,7,8-HxCDF	0.26 ~	0.20	5.00
1,2,3,4,6,7,8-HpCDF	*	0.16	5.00
1,2,3,4,7,8,9-HpCDF	*	0.08	5.00
OCDF	*	0.31	10.00
Total Tetra-Furans	*		
Total Tetra-Dioxins	0.38		
Total Penta-Furans	*	0.40	
Total Penta-Dioxins	*	0.32	
Total Hexa-Furans	0.52		
Total Hexa-Dioxins	0.34		
Total Hepta-Furans	*	0.18	
Total Hepta-Dioxins	0.60		

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 19-DEC-95 Time 12 06 56

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-6, S08

Sample Wt/Vol 8 3373 units g

Initial Calibration Date 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename: A037905

Blank Data Filename A037903

Cal Ver Data Filename A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	152		120
1,2,3,7,8-PeCDD	141 ~	039	600
1,2,3,4,7,8-HxCDD	112 ~	016	600
1,2,3,6,7,8-HxCDD	146 ~	020	600
1,2,3,7,8,9-HxCDD	343 ~	023	600
1,2,3,4,6,7,8-HpCDD	1547		600
OCDD	31242		1199
2,3,7,8-TCDF#	076 ~	034	120
1,2,3,7,8-PeCDF	124 ~	031	600
2,3,4,7,8-PeCDF	213 ~	036	600
1,2,3,4,7,8-HxCDF	^	042	600
1,2,3,6,7,8-HxCDF	171 ~	032	600
1,2,3,7,8,9-HxCDF	*	013	600
2,3,4,6,7,8-HxCDF	165 ~	025	600
1,2,3,4,6,7,8-HpCDF	611		600
1,2,3,4,7,8,9-HpCDF	049 ~	011	600
OCDF	236 ~	035	1199
Total Tetra-Furans	1396		
Total Tetra-Dioxins	746		
Total Penta-Furans	1561		
Total Penta-Dioxins	141		
Total Hexa-Furans	937		
Total Hexa-Dioxins	2071		
Total Hepta-Furans	660		
Total Hepta-Dioxins	3811		

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-06-95
 Ext Date 12-07-95
 Analysis Date 19-DEC-95 Time 13 14 56
 Extract Volume (uL) 20
 Injection Volume (uL) 1
 Dilution Factor NONE

Lab Sample ID: 47482-6-7, S09
 Sample Wt/Vol: 7.5058 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A037906
 Blank Data Filename: A037903
 Cal Ver Data Filename: A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	0.49 ~	0.36	1.33
1,2,3,7,8-PeCDD	1.69 ~	0.61	6.66
1,2,3,4,7,8-HxCDD	1.53 ~	0.20	6.66
1,2,3,6,7,8-HxCDD	1.79 ~	0.26	6.66
1,2,3,7,8,9-HxCDD	2.85 ~	0.28	6.66
1,2,3,4,6,7,8-HpCDD	16.64		6.66
OCDD	81.49		13.32
2,3,7,8-TCDF#	*	3.21"	1.33
1,2,3,7,8-PeCDF	1.61 ~	0.43	6.66
2,3,4,7,8-PeCDF	2.51 ~	0.38	6.66
1,2,3,4,7,8-HxCDF	^	0.58	6.66
1,2,3,6,7,8-HxCDF	2.57 ~	0.45	6.66
1,2,3,7,8,9-HxCDF	*	0.19	6.66
2,3,4,6,7,8-HxCDF	2.62 ~	0.33	6.66
1,2,3,4,6,7,8-HpCDF	11.54		6.66
1,2,3,4,7,8,9-HpCDF	0.73 ~	0.12	6.66
OCDF	6.76 ~	0.42	13.32
Total Tetra-Furans	21.67		
Total Tetra-Dioxins	11.70		
Total Penta-Furans	21.46		
Total Penta-Dioxins	7.85		
Total Hexa-Furans	15.29		
Total Hexa-Dioxins	22.15		
Total Hepta-Furans	17.56		
Total Hepta-Dioxins	31.68		

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

" Sample limit of detection (LOD) is based on the instrument limit of detection (LOD) of 0.001 ug/g for all PCDD/PCDF congeners.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 19-DEC-95 Time 14 23 23

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-20, S09, Duplicate

Sample Wt/Vol 7.5170 units g

Initial Calibration Date: 04-13-95

Instrument ID Autospec

GC Column ID: 60M DB5

Sample Data Filename: A037907

Blank Data Filename: A037903

Cal Ver Data Filename A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	0.54 ~	0.26	1.33
1,2,3,7,8-PeCDD	2.41 ~	0.46	6.65
1,2,3,4,7,8-HxCDD	2.00 ~	0.17	6.65
1,2,3,6,7,8-HxCDD	2.33 ~	0.22	6.65
1,2,3,7,8,9-HxCDD	4.16 ~	0.24	6.65
1,2,3,4,6,7,8-HpCDD	19.71		6.65
OCDD	89.99		13.30
2,3,7,8-TCDF#	2.03		1.33
1,2,3,7,8-PeCDF	1.73 ~	0.33	6.65
2,3,4,7,8-PeCDF	3.70 ~	0.31	6.65
1,2,3,4,7,8-HxCDF	^	0.45	6.65
1,2,3,6,7,8-HxCDF	3.89 ~	0.34	6.65
1,2,3,7,8,9-HxCDF	0.36 ~	0.13	6.65
2,3,4,6,7,8-HxCDF	3.36 ~	0.26	6.65
1,2,3,4,6,7,8-HpCDF	13.82		6.65
1,2,3,4,7,8,9-HpCDF	1.04 ~	0.10	6.65
OCDF	7.87 ~	0.37	13.30
Total Tetra-Furans	27.12		
Total Tetra-Dioxins	11.34		
Total Penta-Furans	35.16		
Total Penta-Dioxins	3.57		
Total Hexa-Furans	19.55		
Total Hexa-Dioxins	28.40		
Total Hepta-Furans	21.69		
Total Hepta-Dioxins	36.35		

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 19-DEC-95 Time 16:36:31

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor 12

Lab Sample ID: 47482-6-18, S03

Sample Wt/Vol: 6.6061 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A037909

Blank Data Filename: A037903

Cal. Ver. Data Filename: A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	*	2.27	6.06
1,2,3,7,8-PeCDD	*	1.95	30.28
1,2,3,4,7,8-HxCDD	1.48 ~	0.83	30.28
1,2,3,6,7,8-HxCDD	1.67 ~	1.06	30.28
1,2,3,7,8,9-HxCDD	2.00 ~	1.18	30.28
1,2,3,4,6,7,8-HpCDD	28.00 ~	2.17	30.28
OCDD	285.65		60.55
2,3,7,8-TCDF#	1.60 ~	1.05	6.06
1,2,3,7,8-PeCDF	1.97 ~	1.82	30.28
2,3,4,7,8-PeCDF	*	3.94	30.28
1,2,3,4,7,8-HxCDF	^	2.52	30.28
1,2,3,6,7,8-HxCDF	*	1.79	30.28
1,2,3,7,8,9-HxCDF	*	0.70	30.28
2,3,4,6,7,8-HxCDF	*	1.42	30.28
1,2,3,4,6,7,8-HpCDF	7.40 ~	1.00	30.28
1,2,3,4,7,8,9-HpCDF	1.38 ~	0.49	30.28
OCDF	18.28 ~	1.77	60.55
Total Tetra-Furans	2.06		
Total Tetra-Dioxins	*	2.09	
Total Penta-Furans	*	4.35	
Total Penta-Dioxins	*	1.75	
Total Hexa-Furans	*	1.94	
Total Hexa-Dioxins	6.25		
Total Hepta-Furans	20.63		
Total Hepta-Dioxins	64.01		

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 19-DEC-95 Time 17 52 10

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor 12

Lab Sample ID 47482-6-19, S03, DL Spike

Sample Wt/Vol 6.6138 units: g

Initial Calibration Date: 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename A037910

Blank Data Filename A037903

Cal Ver Data Filename A037902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	9.64		6.05
1,2,3,7,8-PeCDD	46.40		30.24
1,2,3,4,7,8-HxCDD	40.54		30.24
1,2,3,6,7,8-HxCDD	35.90		30.24
1,2,3,7,8,9-HxCDD	39.03		30.24
1,2,3,4,6,7,8-HpCDD	60.44		30.24
OCDD	270.77		60.48
2,3,7,8-TCDF	9.82		6.05
1,2,3,7,8-PeCDF	40.52		30.24
2,3,4,7,8-PeCDF	43.62		30.24
1,2,3,4,7,8-HxCDF	40.79		30.24
1,2,3,6,7,8-HxCDF	42.32		30.24
1,2,3,7,8,9-HxCDF	42.32		30.24
2,3,4,6,7,8-HxCDF	40.64		30.24
1,2,3,4,6,7,8-HpCDF	38.85		30.24
1,2,3,4,7,8,9-HpCDF	40.83		30.24
OCDF	87.91		60.48
Total Tetra-Furans	9.82		
Total Tetra-Dioxins	9.64		
Total Penta-Furans	86.18		
Total Penta-Dioxins	46.40		
Total Hexa-Furans	169.51		
Total Hexa-Dioxins	115.47		
Total Hepta-Furans	79.68		
Total Hepta-Dioxins	89.91		

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 19-DEC-95 Time 18 58 11

Extract Volume (uL) 20

Injection Volume (uL) 10

Dilution Factor NONE

Lab Sample ID: 47482-6-17, S02, SRM

Sample Wt/Vol: 10.0000 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A037911

Blank Data Filename: A037903

Cal. Ver. Data Filename: A037902

ANALYTE	CONC. FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	486.79		1.00
1,2,3,7,8-PeCDD	1072.82		5.00
1,2,3,4,7,8-HxCDD	941.48		5.00
1,2,3,6,7,8-HxCDD	864.45		5.00
1,2,3,7,8,9-HxCDD	926.91		5.00
1,2,3,4,6,7,8-HpCDD	1450.53		5.00
OCDD	3086.77		10.00
2,3,7,8-TCDF	467.75		1.00
1,2,3,7,8-PeCDF	925.28		5.00
2,3,4,7,8-PeCDF	972.43		5.00
1,2,3,4,7,8-HxCDF	965.78		5.00
1,2,3,6,7,8-HxCDF	942.33		5.00
1,2,3,7,8,9-HxCDF	1010.55		5.00
2,3,4,6,7,8-HxCDF	936.04		5.00
1,2,3,4,6,7,8-HpCDF	1332.23		5.00
1,2,3,4,7,8,9-HpCDF	1414.48		5.00
OCDF	2348.15		10.00
Total Tetra-Furans	467.75		
Total Tetra-Dioxins	486.79		
Total Penta-Furans	1897.71		
Total Penta-Dioxins	1072.82		
Total Hexa-Furans	3854.70		
Total Hexa-Dioxins	2732.84		
Total Hepta-Furans	2746.71		
Total Hepta-Dioxins	1464.93		

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 15-JAN-96 Time 11 10 41

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-8, S10

Sample Wt/Vol 6 8140 units g

Initial Calibration Date 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename A038904

Blank Data Filename A038903

Cal Ver Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	0.74 ~	0.15	1.47
1,2,3,7,8-PeCDD	2.42 ~	0.29	7.34
1,2,3,4,7,8-HxCDD	3.76 ~	0.35	7.34
1,2,3,6,7,8-HxCDD	5.69 ~	0.21	7.34
1,2,3,7,8,9-HxCDD	8.85		7.34
1,2,3,4,6,7,8-HpCDD	145.09		7.34
OCDD	1204.99		14.68
2,3,7,8-TCDF	(13.82)		1.47
1,2,3,7,8-PeCDF	1.95 ~	0.25	7.34
2,3,4,7,8-PeCDF	4.55 ~	0.21	7.34
1,2,3,4,7,8-HxCDF	^	0.21	7.34
1,2,3,6,7,8-HxCDF	3.39 ~	0.32	7.34
1,2,3,7,8,9-HxCDF	*	0.13	7.34
2,3,4,6,7,8-HxCDF	3.43 ~	0.09	7.34
1,2,3,4,6,7,8-HpCDF	37.32		7.34
1,2,3,4,7,8,9-HpCDF	2.51 ~	0.78	7.34
OCDF	81.41		14.68
Total Tetra-Furans	78.74		
Total Tetra-Dioxins	8.25		
Total Penta-Furans	50.94		
Total Penta-Dioxins	2.42		
Total Hexa-Furans	43.33		
Total Hexa-Dioxins	55.54		
Total Hepta-Furans	104.54		
Total Hepta-Dioxins	256.53		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-
~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection ()
^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-06-95
Ext Date 12-07-95
Analysis Date 15-JAN-96 Time 12 39 50
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID: 47482-6-9, S11
Sample Wt/Vol: 7.5250 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A038905
Blank Data Filename: A038903
Cal Ver: Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	0.79 ~	0.12	1.33
1,2,3,7,8-PeCDD	2.84 ~	0.23	6.64
1,2,3,4,7,8-HxCDD	2.95 ~	0.26	6.64
1,2,3,6,7,8-HxCDD	3.37 ~	0.16	6.64
1,2,3,7,8,9-HxCDD	6.71		6.64
1,2,3,4,6,7,8-HpCDD	31.22		6.64
OCDD	124.76 (7.27)		13.29 1.33
2,3,7,8-TCDF	2.15 ~	0.19	6.64
1,2,3,7,8-PeCDF	3.88 ~	0.17	6.64
1,2,3,4,7,8-HxCDF	^	0.17	6.64
1,2,3,6,7,8-HxCDF	4.00 ~	0.25	6.64
1,2,3,7,8,9-HxCDF	*	0.10	6.64
2,3,4,6,7,8-HxCDF	4.49 ~	0.07	6.64
1,2,3,4,6,7,8-HpCDF	23.83		6.64
1,2,3,4,7,8,9-HpCDF	1.59 ~	0.58	6.64
OCDF	32.95		13.29
Total Tetra-Furans	37.50		
Total Tetra-Dioxins	10.80		
Total Penta-Furans	45.76		
Total Penta-Dioxins	22.37		
Total Hexa-Furans	23.95		
Total Hexa-Dioxins	40.95		
Total Hepta-Furans	36.08		
Total Hepta-Dioxins	57.44		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-
~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection ()
^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.
* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-06-95
Ext Date 12-07-95
Analysis Date 15-JAN 96 Time 13 48 39
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID 47482-6-10, S12
Sample Wt/Vol 7.6567 units g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A038906
Blank Data Filename: A038903
Cal Ver Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	0.54 ~	0.20	1.31
1,2,3,7,8-PeCDD	2.06 ~	0.41	6.53
1,2,3,4,7,8-HxCDD	2.20 ~	0.42	6.53
1,2,3,6,7,8-HxCDD	2.49 ~	0.25	6.53
1,2,3,7,8,9-HxCDD	2.75 ~	0.34	6.53
1,2,3,4,6,7,8-HpCDD	24.99		6.53
OCDD	142.08		13.06
2,3,7,8-TCDF	(4.35)		1.31
1,2,3,7,8-PeCDF	2.24 ~	0.33	6.53
2,3,4,7,8-PeCDF	2.88 ~	0.27	6.53
1,2,3,4,7,8-HxCDF	^	0.28	6.53
1,2,3,6,7,8-HxCDF	3.33 ~	0.42	6.53
1,2,3,7,8,9-HxCDF	*	0.16	6.53
2,3,4,6,7,8-HxCDF	3.33 ~	0.12	6.53
1,2,3,4,6,7,8-HpCDF	14.29		6.53
1,2,3,4,7,8,9-HpCDF	1.04 ~	1.00	6.53
OCDF	13.10		13.06
Total Tetra-Furans	17.02		
Total Tetra-Dioxins	3.60		
Total Penta-Furans	30.25		
Total Penta-Dioxins	7.82		
Total Hexa-Furans	21.30		
Total Hexa-Dioxins	18.87		
Total Hepta-Furans	22.99		
Total Hepta-Dioxins	46.84		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-
~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection ()
^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.
* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-07-95
 Ext Date 12-07-95
 Analysis Date 15-JAN-96 Time 14 57 09
 Extract Volume (uL) 20
 Injection Volume (uL) 1
 Dilution Factor NONE

Lab Sample ID: 47482-6-11, S13
 Sample Wt/Vol: 8 0366 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A038907
 Blank Data Filename: A038903
 Cal Ver. Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	0.67 ~	0.14	1.24
1,2,3,7,8-PeCDD	3.41 ~	0.28	6.22
1,2,3,4,7,8-HxCDD	3.23 ~	0.34	6.22
1,2,3,6,7,8-HxCDD	3.81 ~	0.20	6.22
1,2,3,7,8,9-HxCDD	5.21 ~	0.27	6.22
1,2,3,4,6,7,8-HpCDD	29.20		6.22
OCDD	126.12		12.44
2,3,7,8-TCDF	(7.42)		1.24
1,2,3,7,8-PeCDF	2.73 ~	0.23	6.22
2,3,4,7,8-PeCDF	4.92 ~	0.21	6.22
1,2,3,4,7,8-HxCDF	4.91 ~	0.23	6.22
1,2,3,6,7,8-HxCDF	4.91 ~	0.33	6.22
1,2,3,7,8,9-HxCDF	4.91 ~	0.12	6.22
2,3,4,6,7,8-HxCDF	4.80 ~	0.09	6.22
1,2,3,4,6,7,8-HpCDF	20.96		6.22
1,2,3,4,7,8,9-HpCDF	1.59 ~	0.77	6.22
OCDF	11.18 ~	0.55	12.44
Total Tetra-Furans	40.17		
Total Tetra-Dioxins	15.71		
Total Penta-Furans	50.32		
Total Penta-Dioxins	20.64		
Total Hexa-Furans	24.82		
Total Hexa-Dioxins	44.22		
Total Hepta-Furans	32.65		
Total Hepta-Dioxins	55.01		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-07-95
Analysis Date 15-JAN-96 Time 16:06:00
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID 47482-6-12, S14
Sample Wt/Vol 7.2963 units. g
Initial Calibration Date 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename A038908
Blank Data Filename A038903
Cal Ver Data Filename A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	10.91		1.37
1,2,3,7,8-PeCDD	4.08 ~	0.29	6.85
1,2,3,4,7,8-HxCDD	3.90 ~	0.32	6.85
1,2,3,6,7,8-HxCDD	7.34		6.85
1,2,3,7,8,9-HxCDD	5.93 ~	0.26	6.85
1,2,3,4,6,7,8-HpCDD	127.53		6.85
OCDD	997.01		13.71
2,3,7,8-TCDF	(13.50)		1.37
1,2,3,7,8-PeCDF	4.14 ~	0.25	6.85
2,3,4,7,8-PeCDF	5.79 ~	0.21	6.85
1,2,3,4,7,8-HxCDF	^	0.23	6.85
1,2,3,6,7,8-HxCDF	5.04 ~	0.34	6.85
1,2,3,7,8,9-HxCDF	^	0.13	6.85
2,3,4,6,7,8-HxCDF	4.76 ~	0.10	6.85
1,2,3,4,6,7,8-HpCDF	30.87		6.85
1,2,3,4,7,8,9-HpCDF	1.70 ~	0.83	6.85
OCDF	31.49		13.71
Total Tetra-Furans	86.66		
Total Tetra-Dioxins	32.32		
Total Penta-Furans	63.76		
Total Penta-Dioxins	4.08		
Total Hexa-Furans	42.85		
Total Hexa-Dioxins	62.86		
Total Hepta-Furans	64.79		
Total Hepta-Dioxins	230.85		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

• Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-06-95

Ext Date 12-07-95

Analysis Date 15-JAN-96 Time 17 12 38

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID: 47482-6-21, S04, MS

Sample Wt/Vol: 6.5583 units g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A038909

Blank Data Filename: A038903

Cal. Ver. Data Filename: A038902

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	37.23		1.52
1,2,3,7,8-PeCDD	193.83		7.62
1,2,3,4,7,8-HxCDD	168.85		7.62
1,2,3,6,7,8-HxCDD	147.66		7.62
1,2,3,7,8,9-HxCDD	160.72		7.62
1,2,3,4,6,7,8-HpCDD	191.35		7.62
OCDD	544.99		15.25
2,3,7,8-TCDF	35.49		1.52
1,2,3,7,8-PeCDF	167.14		7.62
2,3,4,7,8-PeCDF	169.57		7.62
1,2,3,4,7,8-HxCDF	172.18		7.62
1,2,3,6,7,8-HxCDF	172.44		7.62
1,2,3,7,8,9-HxCDF	179.73		7.62
2,3,4,6,7,8-HxCDF	169.94		7.62
1,2,3,4,6,7,8-HpCDF	158.59		7.62
1,2,3,4,7,8,9-HpCDF	171.61		7.62
OCDF	359.45		15.25
Total Tetra-Furans	36.31		
Total Tetra-Dioxins	37.23		
Total Penta-Furans	336.70		
Total Penta-Dioxins	193.83		
Total Hexa-Furans	694.29		
Total Hexa-Dioxins	477.23		
Total Hepta-Furans	340.29		
Total Hepta-Dioxins	218.67		

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-06-95
 Ext Date 12-07-95
 Analysis Date 15-JAN-96 Time 18 19 06
 Extract Volume (uL) 20
 Injection Volume (uL) 1
 Dilution Factor NONE

Lab Sample ID 47482-6-23, S04, MSD
 Sample Wt/Vol 6.5930 units g
 Initial Calibration Date 04-13-95
 Instrument ID Autospec
 GC Column ID 60M DB5
 Sample Data Filename A038910
 Blank Data Filename A038903
 Cal Ver Data Filename: A038902

ANALYTE	CONC FOUND	SAMPLE LIMIT OF DETECTION	INSTRUMENT LIMIT OF QUANTITATION
	pg/g dry	pg/g dry	pg/g dry
2,3,7,8-TCDD	36.00		1.52
1,2,3,7,8-PeCDD	193.90		7.58
1,2,3,4,7,8-HxCDD	173.60		7.58
1,2,3,6,7,8-HxCDD	140.62		7.58
1,2,3,7,8,9-HxCDD	159.06		7.58
1,2,3,4,6,7,8-HpCDD	197.31		7.58
OCDD	568.12		15.17
2,3,7,8-TCDF	34.94		1.52
1,2,3,7,8-PeCDF	162.82		7.58
2,3,4,7,8-PeCDF	169.29		7.58
1,2,3,4,7,8-HxCDF	170.26		7.58
1,2,3,6,7,8-HxCDF	167.91		7.58
1,2,3,7,8,9-HxCDF	176.07		7.58
2,3,4,6,7,8-HxCDF	165.92		7.58
1,2,3,4,6,7,8-HpCDF	158.11		7.58
1,2,3,4,7,8,9-HpCDF	169.34		7.58
OCDF	336.43		15.17
Total Tetra-Furans	35.71		
Total Tetra-Dioxins	36.00		
Total Penta-Furans	332.11		
Total Penta-Dioxins	193.90		
Total Hexa-Furans	680.17		
Total Hexa-Dioxins	477.83		
Total Hepta-Furans	338.67		
Total Hepta-Dioxins	233.51		

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-07-95
Analysis Date 16-JAN-96 Time 11 20 42
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor: NONE

Lab Sample ID: 47482-6-13, S15
Sample Wt/Vol 7 9766 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A039004
Blank Data Filename: A039003
Cal. Ver. Data Filename: A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	3 46		1 25
1,2,3,7,8-PeCDD	9 79		6 27
1,2,3,4,7,8-HxCDD	9 95		6 27
1,2,3,6,7,8-HxCDD	31 83		6 27
1,2,3,7,8,9-HxCDD	19 18		6 27
1,2,3,4,6,7,8-HpCDD	572 53		6 27
OCDD	3994.50 (17 91)		12.54
2,3,7,8-TCDF			1 25
1,2,3,7,8-PeCDF	7 52		6 27
2,3,4,7,8-PeCDF	8 21		6 27
1,2,3,4,7,8-HxCDF	^	0 34	6 27
1,2,3,6,7,8-HxCDF	8 82		6 27
1,2,3,7,8,9-HxCDF	*	1 01	6 27
2,3,4,6,7,8-HxCDF	7 98		6 27
1,2,3,4,6,7,8-HpCDF	75 66		6 27
1,2,3,4,7,8,9-HpCDF	3 82 ~	0 43	6 27
OCDF	74.74		12.54
Total Tetra-Furans	89.94		
Total Tetra-Dioxins	51.87		
Total Penta-Furans	113.25		
Total Penta-Dioxins	39.58		
Total Hexa-Furans	105.07		
Total Hexa-Dioxins	205.82		
Total Hepta-Furans	170.54		
Total Hepta-Dioxins	1028.51		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-07-95

Analysis Date 16-JAN-96 Time 12 27 46

Extract Volume (uL) 20

Injection Volume (uL) 1

Dilution Factor NONE

Lab Sample ID 47482-6-14, S16
Sample Wt/Vol 8 0213 units g
Initial Calibration Date: 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename: A039005
Blank Data Filename: A039003
Cal Ver Data Filename A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	3 33		1 25
1,2,3,7,8-PeCDD	8 81		6 23
1,2,3,4,7,8-HxCDD	9 07		6 23
1,2,3,6,7,8-HxCDD	32 10		6 23
1,2,3,7,8,9-HxCDD	17 64		6 23
1,2,3,4,6,7,8-HpCDD	591 09		6 23
OCDD	4300 91		12 47
2,3,7,8-TCDF	(16 92)		1 25
1,2,3,7,8-PeCDF	8 14		6 23
2,3,4,7,8-PeCDF	9 35		6 23
1,2,3,4,7,8-HxCDF	^	0 34	6 23
1,2,3,6,7,8-HxCDF	8 23		6 23
1,2,3,7,8,9-HxCDF	*	1 02	6 23
2,3,4,6,7,8-HxCDF	7 91		6 23
1,2,3,4,6,7,8-HpCDF	84 56		6 23
1,2,3,4,7,8,9-HpCDF	3 48 ~	0 45	6 23
OCDF	83 05		12 47
Total Tetra-Furans	121 64		
Total Tetra-Dioxins	44 78		
Total Penta-Furans	118 08		
Total Penta-Dioxins	56 27		
Total Hexa-Furans	115 03		
Total Hexa-Dioxins	200 08		
Total Hepta-Furans	192 32		
Total Hepta-Dioxins	1041 07		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to interference from other compounds

SET #2

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-12-95
Analysis Date 16-JAN-96 Time 13:36:12
Extract Volume (uL) 20
Injection Volume (uL) 1
Dilution Factor NONE

Lab Sample ID 47482-10-2, S18
Sample Wt/Vol 8.4973 units g
Initial Calibration Date 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename AU390006
Blank Data Filename A0390003
Cal Ver Data Filename A0390002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	*	0.40	1.18
1,2,3,7,8-PeCDD	4.80 ~	0.36	5.88
1,2,3,4,7,8-HxCDD	6.31		5.88
1,2,3,6,7,8-HxCDD	16.17		5.88
1,2,3,7,8,9-HxCDD	9.88		5.88
1,2,3,4,6,7,8-HpCDD	312.06		5.88
OCDD	2275.10		11.77
2,3,7,8-TCDF	(7.62)		1.18
1,2,3,7,8-PeCDF	2.99 ~	0.35	5.88
2,3,4,7,8-PeCDF	4.09 ~	0.49	5.88
1,2,3,4,7,8-HxCDF	^	0.22	5.88
1,2,3,6,7,8-HxCDF	3.97 ~	0.17	5.88
1,2,3,7,8,9-HxCDF	*	0.72	5.88
2,3,4,6,7,8-HxCDF	3.61 ~	0.36	5.88
1,2,3,4,6,7,8-HpCDF	34.78		5.88
1,2,3,4,7,8,9-HpCDF	1.90 ~	0.33	5.88
OCDF	48.78		11.77
Total Tetra-Furans	36.32		
Total Tetra-Dioxins	25.78		
Total Penta-Furans	45.76		
Total Penta-Dioxins	22.41		
Total Hexa-Furans	47.36		
Total Hexa-Dioxins	101.42		
Total Hepta-Furans	96.64		
Total Hepta-Dioxins	561.94		

() Insufficient funds to perform second column confirmation 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.
~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)
^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.
* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTLELLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-12-95

Analysis Date 16-JAN-96 Time 14 42 05

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-3, S19

Sample Wt/Vol: 8 8356 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039007

Blank Data Filename: A039003

Cal Ver. Data Filename: A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	0.93 ~	0.30	2.26
1,2,3,7,8-PeCDD	2.69 ~	0.71	11.32
1,2,3,4,7,8-HxCDD	2.26 ~	0.38	11.32
1,2,3,6,7,8-HxCDD	3.74 ~	0.28	11.32
1,2,3,7,8,9-HxCDD	3.86 ~	0.53	11.32
1,2,3,4,6,7,8-HpCDD	58.39		11.32
OCDD	615.85		22.64
2,3,7,8-TCDF	(5.62)		2.26
1,2,3,7,8-PeCDF	2.22 ~	0.68	11.32
2,3,4,7,8-PeCDF	3.53 ~	1.03	11.32
1,2,3,4,7,8-HxCDF	^	0.39	11.32
1,2,3,6,7,8-HxCDF	3.34 ~	0.29	11.32
1,2,3,7,8,9-HxCDF	*	1.12	11.32
2,3,4,6,7,8-HxCDF	3.05 ~	0.55	11.32
1,2,3,4,6,7,8-HpCDF	21.82		11.32
1,2,3,4,7,8,9-HpCDF	1.62 ~	0.48	11.32
OCDF	22.73		22.64
Total Tetra-Furans	30.61	0.38	
Total Tetra-Dioxins	12.73	0.49	
Total Penta-Furans	32.72	0.70	
Total Penta-Dioxins	18.49	0.55	
Total Hexa-Furans	28.14	0.53	
Total Hexa-Dioxins	32.93	0.42	
Total Hepta-Furans	49.68	0.35	
Total Hepta-Dioxins	107.20	0.60	

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTIELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-12-95
Analysis Date 16-JAN-96 Time 15:48:21
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor NONE

Lab Sample ID 47482-10-19, S34
Sample Wt/Vol 7.6565 units g
Initial Calibration Date 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename A039008
Blank Data Filename A039003
Cal Ver Data Filename A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	14.62		2.61
1,2,3,7,8-PeCDD	84.78		13.06
1,2,3,4,7,8-HxCDD	71.47		13.06
1,2,3,6,7,8-HxCDD	64.68		13.06
1,2,3,7,8,9-HxCDD	96.10		13.06
1,2,3,4,6,7,8-HpCDD	411.19		13.06
OCDD	773.32		26.12
2,3,7,8-TCDF#	41.85		2.61
1,2,3,7,8-PeCDF	70.83		13.06
2,3,4,7,8-PeCDF	99.65		13.06
1,2,3,4,7,8-HxCDF	^	0.81	13.06
1,2,3,6,7,8-HxCDF	105.99		13.06
1,2,3,7,8,9-HxCDF	5.37 ~	2.30	13.06
2,3,4,6,7,8-HxCDF	77.02		13.06
1,2,3,4,6,7,8-HpCDF	344.45		13.06
1,2,3,4,7,8,9-HpCDF	29.80		13.06
OCDF	87.93		26.12
Total Tetra-Furans	786.22		
Total Tetra-Dioxins	425.73		
Total Penta-Furans	1010.97		
Total Penta-Dioxins	632.56		
Total Hexa-Furans	537.05		
Total Hexa-Dioxins	748.54		
Total Hepta-Furans	494.36		
Total Hepta-Dioxins	716.51		

2,3,7,8-TCDF value from second column confirmation

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-12-95

Analysis Date 16-JAN-96 Time 16 55 40

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID 47482-10-20, S34, MS

Sample Wt/Vol: 7.6950 units. g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039009

Blank Data Filename: A039003

Cal Ver Data Filename: A039002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	45.57		2.60
1,2,3,7,8-PeCDD	233.48		13.00
1,2,3,4,7,8-HxCDD	212.73		13.00
1,2,3,6,7,8-HxCDD	201.38		13.00
1,2,3,7,8,9-HxCDD	313.61		13.00
1,2,3,4,6,7,8-HpCDD	597.88		13.00
OCDD	1058.34		25.99
2,3,7,8-TCDF	202.97		2.60
1,2,3,7,8-PeCDF	174.41		13.00
2,3,4,7,8-PeCDF	228.11		13.00
1,2,3,4,7,8-HxCDF	244.72		13.00
1,2,3,6,7,8-HxCDF	241.33		13.00
1,2,3,7,8,9-HxCDF	149.02		13.00
2,3,4,6,7,8-HxCDF	212.90		13.00
1,2,3,4,6,7,8-HpCDF	510.32		13.00
1,2,3,4,7,8,9-HpCDF	164.88		13.00
OCDF	332.72		25.99
Total Tetra-Furans	977.98		
Total Tetra-Dioxins	523.46		
Total Penta-Furans	1269.31		
Total Penta-Dioxins	987.36		
Total Hexa-Furans	1242.53		
Total Hexa-Dioxins	1351.72		
Total Hepta-Furans	811.74		
Total Hepta-Dioxins	950.77		

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTIELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-12-95
Analysis Date 16-JAN-96 Time 18:01:38
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor NONE

Lab Sample ID 47482-10-21, S34, MSD
Sample Wt/Vol 7.6564 units g
Initial Calibration Date 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename A0390010
Blank Data Filename A0390003
Cal Ver Data Filename A0390002

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	46.33		2.61
1,2,3,7,8-PeCDD	255.46		13.06
1,2,3,4,7,8-HxCDD	209.34		13.06
1,2,3,6,7,8-HxCDD	172.39		13.06
1,2,3,7,8,9-HxCDD	281.64		13.06
1,2,3,4,6,7,8-HpCDD	591.83		13.06
OCDD	1145.12		26.12
2,3,7,8-TCDF	186.98		2.61
1,2,3,7,8-PeCDF	181.54		13.06
2,3,4,7,8-PeCDF	231.60		13.06
1,2,3,4,7,8-HxCDF	246.72		13.06
1,2,3,6,7,8-HxCDF	261.15		13.06
1,2,3,7,8,9-HxCDF	153.39		13.06
2,3,4,6,7,8-HxCDF	224.36		13.06
1,2,3,4,6,7,8-HpCDF	490.06		13.06
1,2,3,4,7,8,9-HpCDF	162.78		13.06
OCDF	331.61		26.12
Total Tetra-Furans	903.60		0.79
Total Tetra-Dioxins	491.90		0.74
Total Penta-Furans	1158.30		1.57
Total Penta-Dioxins	884.17		1.50
Total Hexa-Furans	1269.46		1.20
Total Hexa-Dioxins	1214.11		1.26
Total Hepta-Furans	780.94		*
Total Hepta-Dioxins	917.13		1.09

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-07-95
Ext Date 12-12-95
Analysis Date 17-JAN-96 Time 11 33 14
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor 1 2

Lab Sample ID 47482-10-22, METHOD BLANK
Sample Wt/Vol 10 0000 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID 60M DB5
Sample Data Filename: A039105
Blank Data Filename: A039103
Cal Ver. Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	*	1 08	4 00
1,2,3,7,8-PeCDD	*	1 34	20 00
1,2,3,4,7,8-HxCDD	*	1 68	20 00
1,2,3,6,7,8-HxCDD	*	1 61	20 00
1,2,3,7,8,9-HxCDD	*	1 57	20 00
1,2,3,4,6,7,8-HpCDD	*	3 73	20 00
OCDD	*	45 49"	40 00
2,3,7,8-TCDF	*	4 81"	4 00
1,2,3,7,8-PeCDF	*	1 62	20 00
2,3,4,7,8-PeCDF	*	*	20 00
1,2,3,4,7,8-HxCDF	*	1 57	20 00
1,2,3,6,7,8-HxCDF	*	2 59	20 00
1,2,3,7,8,9-HxCDF	*	1 40	20 00
2,3,4,6,7,8-HxCDF	*	1 92	20 00
1,2,3,4,6,7,8-HpCDF	*	1 98	20 00
1,2,3,4,7,8,9-HpCDF	*	1 14	20 00
OCDF	*	1 74	40 00
Total Tetra-Furans	*	2 84	
Total Tetra-Dioxins	*	2 00	
Total Penta-Furans	*	2 44	
Total Penta-Dioxins	*	1 48	
Total Hexa-Furans	*	1 26	
Total Hexa-Dioxins	*	1 78	
Total Hepta-Furans	*	1 52	
Total Hepta-Dioxins	*	2 36	

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-12-95

Analysis Date 17-JAN-96 Time 12 43 14

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID 47482-10-4, S20

Sample Wt/Vol 8.7148 units g

Initial Calibration Date 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename A039106

Blank Data Filename A039103

Cal Ver Data Filename A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	31.06		2.29
1,2,3,7,8-PeCDD	84.70		11.47
1,2,3,4,7,8-HxCDD	14.51		11.47
1,2,3,6,7,8-HxCDD	74.43		11.47
1,2,3,7,8,9-HxCDD	169.09		11.47
1,2,3,4,6,7,8-HpCDD	878.03		11.47
OCDD	9005.18		22.95
2,3,7,8-TCDF	(5.27)		2.29
1,2,3,7,8-PeCDF	*	2.04	11.47
2,3,4,7,8-PeCDF	*	2.96	11.47
1,2,3,4,7,8-HxCDF	^	2.10	11.47
1,2,3,6,7,8-HxCDF	4.04 ~	3.47	11.47
1,2,3,7,8,9-HxCDF	*	1.67	11.47
2,3,4,6,7,8-HxCDF	3.64 ~	2.30	11.47
1,2,3,4,6,7,8-HpCDF	37.16		11.47
1,2,3,4,7,8,9-HpCDF	2.66 ~	1.44	11.47
OCDF	79.09		22.95
Total Tetra-Furans	16.91		
Total Tetra-Dioxins	78.00		
Total Penta-Furans	73.89		
Total Penta-Dioxins	287.85		
Total Hexa-Furans	58.48		
Total Hexa-Dioxins	1473.65		
Total Hepta-Furans	110.03		
Total Hepta-Dioxins	2200.80		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-07-95

Ext Date 12-12-95

Analysis Date 17-JAN-96 Time 13 51 19

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-5, S21

Sample Wt/Vol: 7.5419 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039107

Blank Data Filename: A039103

Cal. Ver. Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	*	0.46	2.65
1,2,3,7,8-PeCDD	1.67 ~	0.97	13.26
1,2,3,4,7,8-HxCDD	1.68 ~	1.09	13.26
1,2,3,6,7,8-HxCDD	1.62 ~	1.06	13.26
1,2,3,7,8,9-HxCDD	3.31 ~	1.02	13.26
1,2,3,4,6,7,8-HpCDD	14.48		13.26
OCDD	76.61		26.52
2,3,7,8-TCDF	(3.85)		2.65
1,2,3,7,8-PeCDF	1.84 ~	1.03	13.26
2,3,4,7,8-PeCDF	2.49 ~	1.34	13.26
1,2,3,4,7,8-HxCDF	^	1.09	13.26
1,2,3,6,7,8-HxCDF	2.32 ~	1.74	13.26
1,2,3,7,8,9-HxCDF	*	0.93	13.26
2,3,4,6,7,8-HxCDF	2.42 ~	1.17	13.26
1,2,3,4,6,7,8-HpCDF	9.28 ~	1.46	13.26
1,2,3,4,7,8,9-HpCDF	*	0.77	13.26
OCDF	5.03 ~	1.14	26.52
Total Tetra-Furans	16.57		
Total Tetra-Dioxins	5.29		
Total Penta-Furans	21.38		
Total Penta-Dioxins	5.66		
Total Hexa-Furans	6.78		
Total Hexa-Dioxins	14.54		
Total Hepta-Furans	11.36		
Total Hepta-Dioxins	27.92		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-07-95
 Ext Date 12-12-95
 Analysis Date 17-JAN-96 Time 14 58 33
 Extract Volume (ul) 20
 Injection Volume (ul) 0.5
 Dilution Factor NONE

Lab Sample ID: 47482-10-6, S22
 Sample Wt/Vol 7.8343 units g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A039108
 Blank Data Filename: A039103
 Cal Ver. Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	1.76 ~	0.25	2.55
1,2,3,7,8-PeCDD	2.85 ~	0.75	12.76
1,2,3,4,7,8-HxCDD	2.73 ~	0.67	12.76
1,2,3,6,7,8-HxCDD	5.24 ~	0.68	12.76
1,2,3,7,8,9-HxCDD	4.10 ~	0.64	12.76
1,2,3,4,6,7,8-HpCDD	76.76		12.76
OCDD	572.75		25.53
2,3,7,8-TCDF	(6.30)		2.55
1,2,3,7,8-PeCDF	2.51 ~	0.72	12.76
2,3,4,7,8-PeCDF	3.84 ~	1.01	12.76
1,2,3,4,7,8-HxCDF	^	0.70	12.76
1,2,3,6,7,8-HxCDF	3.96 ~	1.17	12.76
1,2,3,7,8,9-HxCDF	*	0.61	12.76
2,3,4,6,7,8-HxCDF	3.36 ~	0.73	12.76
1,2,3,4,6,7,8-HpCDF	20.18		12.76
1,2,3,4,7,8,9-HpCDF	1.13 ~	0.48	12.76
OCDF	11.78 ~	0.70	25.53
Total Tetra-Furans	34.57		
Total Tetra-Dioxins	16.54		
Total Penta-Furans	42.43		
Total Penta-Dioxins	11.69		
Total Hexa-Furans	27.88		
Total Hexa-Dioxins	41.02		
Total Hepta-Furans	40.11		
Total Hepta-Dioxins	138.28		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TC
 ~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-07-95
 Ext Date 12-12-95
 Analysis Date 17-JAN-96 Time 16 04 48
 Extract Volume (uL) 20
 Injection Volume (uL) 0.5
 Dilution Factor 12

Lab Sample ID 47482-10-7, S23
 Sample Wt/Vol 7.6321 units: g
 Initial Calibration Date 04-13-95
 Instrument ID Autospec
 GC Column ID 60M DB5
 Sample Data Filename A039109
 Blank Data Filename A039103
 Cal. Ver Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	6	3.00	5.24
1,2,3,7,8-PeCDD	*	6.55	26.21
1,2,3,4,7,8-HxCDD	30.41		26.21
1,2,3,6,7,8-HxCDD	24.49 ~	4.23	26.21
1,2,3,7,8,9-HxCDD	29.66		26.21
1,2,3,4,6,7,8-HpCDD	1174.14		26.21
OCDD	18875.28		52.41
2,3,7,8-TCDF	*	53.63"	5.24
1,2,3,7,8-PeCDF	*	6.59	26.21
2,3,4,7,8-PeCDF	*	7.95	26.21
1,2,3,4,7,8-HxCDF	^	5.67	26.21
1,2,3,6,7,8-HxCDF	*	9.28	26.21
1,2,3,7,8,9-HxCDF	*	3.16	26.21
2,3,4,6,7,8-HxCDF	*	7.21	26.21
1,2,3,4,6,7,8-HpCDF	226.39		26.21
1,2,3,4,7,8,9-HpCDF	19.26 ~	2.75	26.21
OCDF	422.85		52.41
Total Tetra-Furans	198.25		
Total Tetra-Dioxins	*	5.56	
Total Penta-Furans	323.36		
Total Penta-Dioxins	*	7.24	
Total Hexa-Furans	201.39		
Total Hexa-Dioxins	575.90		
Total Hepta-Furans	882.00		
Total Hepta-Dioxins	2449.77		

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date: 12-08-95

Ext Date 12-12-95

Analysis Date 17-JAN-96 Time 17 10 51

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-8, S24
Sample Wt/Vol: 7.2232 units/g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A039110
Blank Data Filename: A039103
Cal Ver Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	1.82 ~	0.55	2.77
1,2,3,7,8-PeCDD	2.17 ~	1.50	13.84
1,2,3,4,7,8-HxCDD	1.76 ~	1.25	13.84
1,2,3,6,7,8-HxCDD	6.56 ~	1.32	13.84
1,2,3,7,8,9-HxCDD	4.93 ~	1.23	13.84
1,2,3,4,6,7,8-HpCDD	147.41		13.84
OCDD	1892.40		27.69
2,3,7,8-TCDF	(4.46)		2.77
1,2,3,7,8-PeCDF	*	1.53	13.84
2,3,4,7,8-PeCDF	*	2.32	13.84
1,2,3,4,7,8-HxCDF	^	1.43	13.84
1,2,3,6,7,8-HxCDF	*	2.42	13.84
1,2,3,7,8,9-HxCDF	*	1.11	13.84
2,3,4,6,7,8-HxCDF	2.58 ~	1.63	13.84
1,2,3,4,6,7,8-HpCDF	13.53 ~	1.80	13.84
1,2,3,4,7,8,9-HpCDF	0.98 ~	0.93	13.84
OCDF	13.16 ~	1.25	27.69
Total Tetra-Furans	18.32		
Total Tetra-Dioxins	12.98		
Total Penta-Furans	24.64		
Total Penta-Dioxins	7.23		
Total Hexa-Furans	19.92		
Total Hexa-Dioxins	53.06		
Total Hepta-Furans	29.86		
Total Hepta-Dioxins	262.01		

() Insufficient funds to perform second column confirmation 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL

Sample Receipt Date 12-08-95

Ext Date 12-12-95

Analysis Date 17-JAN-96 Time 18 20 42

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-9, S25
Sample Wt/Vol: 8.1293 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A039111
Blank Data Filename: A039103
Cal Ver. Data Filename: A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	3.37		2.46
1,2,3,7,8-PeCDD	11.53 ~	1.03	12.30
1,2,3,4,7,8-HxCDD	10.34 ~	0.87	12.30
1,2,3,6,7,8-HxCDD	13.67		12.30
1,2,3,7,8,9-HxCDD	17.81		12.30
1,2,3,4,6,7,8-HpCDD	154.90		12.30
OCDD	1075.87		24.60
2,3,7,8-TCDF	(24.36)		2.46
1,2,3,7,8-PeCDF	10.31 ~	0.95	12.30
2,3,4,7,8-PeCDF	14.27		12.30
1,2,3,4,7,8-HxCDF	^A	0.88	12.30
1,2,3,6,7,8-HxCDF	17.64		12.30
1,2,3,7,8,9-HxCDF	1.07 ~	0.77	12.30
2,3,4,6,7,8-HxCDF	14.49		12.30
1,2,3,4,6,7,8-HpCDF	74.88		12.30
1,2,3,4,7,8,9-HpCDF	5.95 ~	0.58	12.30
OCDF	48.85		24.60
Total Tetra-Furans	120.59		
Total Tetra-Dioxins	61.09		
Total Penta-Furans	146.88		
Total Penta-Dioxins	12.37		
Total Hexa-Furans	91.20		
Total Hexa-Dioxins	139.43		
Total Hepta-Furans	127.28		
Total Hepta-Dioxins	284.29		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^A Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-08-95

Ext Date 12-12-95

Analysis Date 17-JAN-96 Time 19:26:41

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID 47482-10-10, S26

Sample Wt/Vol 6.5986 units g

Initial Calibration Date 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename A039112

Blank Data Filename A039103

Cal Ver Data Filename A039102

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	6.86		3.03
1,2,3,7,8-PeCDD	17.31		15.15
1,2,3,4,7,8-HxCDD	15.18		15.15
1,2,3,6,7,8-HxCDD	40.17		15.15
1,2,3,7,8,9-HxCDD	36.59		15.15
1,2,3,4,6,7,8-HpCDD	902.55		15.15
OCDD	6995.43		30.31
2,3,7,8-TCDF	(32.38)		3.03
1,2,3,7,8-PeCDF	15.48		15.15
2,3,4,7,8-PeCDF	19.38		15.15
1,2,3,4,7,8-HxCDF	^	1.80	15.15
1,2,3,6,7,8-HxCDF	21.26		15.15
1,2,3,7,8,9-HxCDF	*		15.15
2,3,4,6,7,8-HxCDF	18.87		15.15
1,2,3,4,6,7,8-HpCDF	115.09		15.15
1,2,3,4,7,8,9-HpCDF	15.05 ~	1.16	15.15
OCDF	127.34		30.31
Total Tetra-Furans	102.95		
Total Tetra-Dioxins	180.85		
Total Penta-Furans	207.96		
Total Penta-Dioxins	*	2.33	
Total Hexa-Furans	125.37		
Total Hexa-Dioxins	44.32		
Total Hepta-Furans	274.56		
Total Hepta-Dioxins	1664.02		

() Insufficient funds to perform second column confirmation. 2,3,7,8-TCDF value may include contribution from non-2,3,7,8-TCDF

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTLE
Matrix SOIL
Sample Receipt Date 12-08-95
Ext Date 12-12-95
Analysis Date 18-JAN-96 Time 11 30 40
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor NONE

Lab Sample ID: 47482-10-11, S27
Sample Wt/Vol: 7.4562 units: g
Initial Calibration Date: 04-13-95
Instrument ID: Autospec
GC Column ID: 60M DB5
Sample Data Filename: A039204
Blank Data Filename: A039203
Cal Ver Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	6	1.52	2.68
1,2,3,7,8-PeCDD	16.91		13.41
1,2,3,4,7,8-HxCDD	14.76		13.41
1,2,3,6,7,8-HxCDD	19.47		13.41
1,2,3,7,8,9-HxCDD	21.65		13.41
1,2,3,4,6,7,8-HpCDD	298.28		13.41
OCDD	2690.97		26.82
2,3,7,8-TCDF#	10.35		2.68
1,2,3,7,8-PeCDF	14.15		13.41
2,3,4,7,8-PeCDF	23.17		13.41
1,2,3,4,7,8-HxCDF	^	0.62	13.41
1,2,3,6,7,8-HxCDF	25.99		13.41
1,2,3,7,8,9-HxCDF	1.42 ~	0.74	13.41
2,3,4,6,7,8-HxCDF	20.79		13.41
1,2,3,4,6,7,8-HpCDF	95.99		13.41
1,2,3,4,7,8,9-HpCDF	7.05 ~	0.54	13.41
OCDF	61.79		26.82
Total Tetra-Furans	156.51		
Total Tetra-Dioxins	48.78		
Total Penta-Furans	202.33		
Total Penta-Dioxins	57.25		
Total Hexa-Furans	127.49		
Total Hexa-Dioxins	183.13		
Total Hepta-Furans	168.95		
Total Hepta-Dioxins	525.38		

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to dibenyl ether interference per EPA Method 8290, Section 7.8.4.4.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-08-95
Ext Date 12-12-95
Analysis Date 18-JAN-96 Time 12:37:55
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor NONE

Lab Sample ID 47482-10-12, S28
Sample Wt/Vol 8.4043 units: g
Initial Calibration Date 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename: A039205
Blank Data Filename: A039203
Cal Ver: Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	4.71		2.38
1,2,3,7,8-PeCDD	24.62		11.90
1,2,3,4,7,8-HxCDD	21.94		11.90
1,2,3,6,7,8-HxCDD	29.91		11.90
1,2,3,7,8,9-HxCDD	36.29		11.90
1,2,3,4,6,7,8-HpCDD	482.26		11.90
OCDD	4811.18		23.80
2,3,7,8-TCDF#	10.66		2.38
1,2,3,7,8-PeCDF	18.51		11.90
2,3,4,7,8-PeCDF	26.61		11.90
1,2,3,4,7,8-HxCDF	^	0.34	11.90
1,2,3,6,7,8-HxCDF	28.13		11.90
1,2,3,7,8,9-HxCDF	1.98 ~	0.44	11.90
2,3,4,6,7,8-HxCDF	20.43		11.90
1,2,3,4,6,7,8-HpCDF	138.76		11.90
1,2,3,4,7,8,9-HpCDF	11.10 ~	0.32	11.90
OCDF	199.37		23.80
Total Tetra-Furans	244.29		
Total Tetra-Dioxins	115.10		
Total Penta-Furans	278.91		
Total Penta-Dioxins	161.29		
Total Hexa-Furans	188.32		
Total Hexa-Dioxins	278.57		
Total Hepta-Furans	322.68		
Total Hepta-Dioxins	843.23		

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

A Analyte not confirmed by GC/MS.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-08-95
 Ext. Date: 12-12-95
 Analysis Date: 18-JAN-96 Time: 13:49:28
 Extract Volume (uL): 20
 Injection Volume (uL): 0.5
 Dilution Factor: NONE

Lab Sample ID: 47482-10-13, S29
 Sample Wt/Vol: 8.2512 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: 60M DB5
 Sample Data Filename: A039206
 Blank Data Filename: A039203
 Cal Ver: Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	38.27		2.42
1,2,3,7,8-PeCDD	220.55		12.12
1,2,3,4,7,8-HxCDD	179.48		12.12
1,2,3,6,7,8-HxCDD	172.87		12.12
1,2,3,7,8,9-HxCDD	260.79		12.12
1,2,3,4,6,7,8-HpCDD	1001.35		12.12
OCDD	1973.49		24.24
2,3,7,8-TCDF#	105.66		2.42
1,2,3,7,8-PeCDF	168.48		12.12
2,3,4,7,8-PeCDF	239.20		12.12
1,2,3,4,7,8-HxCDF	^	0.36	12.12
1,2,3,6,7,8-HxCDF	261.58		12.12
1,2,3,7,8,9-HxCDF	14.88		12.12
2,3,4,6,7,8-HxCDF	195.87		12.12
1,2,3,4,6,7,8-HpCDF	772.00		12.12
1,2,3,4,7,8,9-HpCDF	68.64		12.12
OCDF	297.35		24.24
Total Tetra-Furans	2171.82		
Total Tetra-Dioxins	1101.21		
Total Penta-Furans	2304.49		
Total Penta-Dioxins	1825.92		
Total Hexa-Furans	1078.75		
Total Hexa-Dioxins	1893.64		
Total Hepta-Furans	1184.23		
Total Hepta-Dioxins	1779.71		

2,3,7,8-TCDF value from second column confirmation.

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL

Sample Receipt Date 12-08-95

Ext Date 12-12-95

Analysis Date 18-JAN-96 Time 14:55:00

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID 47482-10-14, S30

Sample Wt/Vol 8.0175

Initial Calibration Date 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename A039207

Blank Data Filename A039203

Cal Ver Data Filename A039202

units g

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	56.99		2.49
1,2,3,7,8-PeCDD	393.18		12.47
1,2,3,4,7,8-HxCDD	297.59		12.47
1,2,3,6,7,8-HxCDD	295.49		12.47
1,2,3,7,8,9-HxCDD	422.85		12.47
1,2,3,4,6,7,8-HpCDD	1508.86		12.47
OCDD	2581.50		24.95
2,3,7,8-TCDF#	184.66		2.49
1,2,3,7,8-PeCDF	298.89		12.47
2,3,4,7,8-PeCDF	434.37		12.47
1,2,3,4,7,8-HxCDF	^	0.41	12.47
1,2,3,6,7,8-HxCDF	437.19		12.47
1,2,3,7,8,9-HxCDF	24.16		12.47
2,3,4,6,7,8-HxCDF	327.62		12.47
1,2,3,4,6,7,8-HpCDF	1340.60		12.47
1,2,3,4,7,8,9-HpCDF	123.81		12.47
OCDF	307.96		24.95
Total Tetra-Furans	3517.40		
Total Tetra-Dioxins	1839.01		
Total Penta-Furans	4422.76		
Total Penta-Dioxins	3037.44		
Total Hexa-Furans	2024.89		
Total Hexa-Dioxins	3078.33		
Total Hepta-Furans	1927.79		
Total Hepta-Dioxins	2683.34		

2,3,7,8-TCDF value from second column confirmation.

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4

• Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTIELLE

Matrix SOIL

Sample Receipt Date 12-08-95

Ext Date 12-12-95

Analysis Date 18-JAN-96 Time 16:01:00

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID 47482-10-15, S31

Sample Wt/Vol. 8.1683 units g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID 60M DB5

Sample Data Filename: A039208

Blank Data Filename: A039203

Cal Ver. Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	72.54		2.45
1,2,3,7,8-PeCDD	405.88		12.24
1,2,3,4,7,8-HxCDD	358.99		12.24
1,2,3,6,7,8-HxCDD	305.24		12.24
1,2,3,7,8,9-HxCDD	462.25		12.24
1,2,3,4,6,7,8-HpCDD	1634.40		12.24
OCDD	2662.38		24.48
2,3,7,8-TCDF#	208.93		2.45
1,2,3,7,8-PeCDF	337.39		12.24
2,3,4,7,8-PeCDF	486.79		12.24
1,2,3,4,7,8-HxCDF	^	0.44	12.24
1,2,3,6,7,8-HxCDF	530.30		12.24
1,2,3,7,8,9-HxCDF	26.25		12.24
2,3,4,6,7,8-HxCDF	375.89		12.24
1,2,3,4,6,7,8-HpCDF	1435.59		12.24
1,2,3,4,7,8,9-HpCDF	130.35		12.24
OCDF	300.56		24.48
Total Tetra-Furans	4219.69		
Total Tetra-Dioxins	2034.88		
Total Penta-Furans	4797.72		
Total Penta-Dioxins	2530.19		
Total Hexa-Furans	2635.91		
Total Hexa-Dioxins	3495.62		
Total Hepta-Furans	2036.93		
Total Hepta-Dioxins	2834.56		

2,3,7,8-TCDF value from second column confirmation.

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
Matrix SOIL
Sample Receipt Date 12-08-95
Ext Date 12-12-95
Analysis Date 18-JAN-96 Time 17 11 56
Extract Volume (uL) 20
Injection Volume (uL) 0.5
Dilution Factor NONE

Lab Sample ID 47482-10-16, S32
Sample Wt/Vol 10.0644 units g
Initial Calibration Date 04-13-95
Instrument ID Autospec
GC Column ID 60M DB5
Sample Data Filename A039209
Blank Data Filename A039203
Cal Ver. Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITAION pg/g dry
2,3,7,8-TCDD	*	0.57	1.99
1,2,3,7,8-PeCDD	*	1.25	9.94
1,2,3,4,7,8-HxCDD	*	0.52	9.94
1,2,3,6,7,8-HxCDD	*	0.34	9.94
1,2,3,7,8,9-HxCDD	*	0.41	9.94
1,2,3,4,6,7,8-HpCDD	*	0.96	9.94
OCDD	*	28.06 "	19.87
2,3,7,8-TCDF	*	0.30	1.99
1,2,3,7,8-PeCDF	*	1.67	9.94
2,3,4,7,8-PeCDF	*	0.95	9.94
1,2,3,4,7,8-HxCDF	*	0.46	9.94
1,2,3,6,7,8-HxCDF	*	0.41	9.94
1,2,3,7,8,9-HxCDF	*	0.54	9.94
2,3,4,6,7,8-HxCDF	*	0.77	9.94
1,2,3,4,6,7,8-HpCDF	*	0.74	9.94
1,2,3,4,7,8,9-HpCDF	*	0.41	9.94
OCDF	*	0.91	19.87
Total Tetra-Furans	*	0.62	
Total Tetra-Dioxins	*	0.55	
Total Penta-Furans	*	1.20	
Total Penta-Dioxins	*	1.51	
Total Hexa-Furans	*	0.58	
Total Hexa-Dioxins	*	0.61	
Total Hepta-Furans	*	0.85	
Total Hepta-Dioxins	*	0.96	

" Sample limit of detection (LOD) higher than instrument limit of quantitaion (LOQ) due to sample matrix effects

* Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-08-95

Ext Date 12-12-95

Analysis Date 18-JAN-96 Time 18 17 54

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID: 47482-10-17, S33

Sample Wt/Vol: 7.9871 units: g

Initial Calibration Date: 04-13-95

Instrument ID: Autospec

GC Column ID: 60M DB5

Sample Data Filename: A039210

Blank Data Filename: A039203

Cal. Ver Data Filename: A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	4 20		2.50
1,2,3,7,8-PeCDD	21 52		12 52
1,2,3,4,7,8-HxCDD	20 61		12 52
1,2,3,6,7,8-HxCDD	18 15		12 52
1,2,3,7,8,9-HxCDD	26 69		12 52
1,2,3,4,6,7,8-HpCDD	139 24		12 52
OCDD	653 25		25.04
2,3,7,8-TCDF#	11 40		2.50
1,2,3,7,8-PeCDF	20 11		12 52
2,3,4,7,8-PeCDF	26 55		12 52
1,2,3,4,7,8-HxCDF	^	0.61	12 52
1,2,3,6,7,8-HxCDF	31 68		12 52
1,2,3,7,8,9-HxCDF	1 79 ~	0.73	12 52
2,3,4,6,7,8-HxCDF	26 13		12 52
1,2,3,4,6,7,8-HpCDF	106 75		12 52
1,2,3,4,7,8,9-HpCDF	9.30 ~	0.59	12 52
OCDF	44.74		25.04
Total Tetra-Furans	195.62		
Total Tetra-Dioxins	105.97		
Total Penta-Furans	254.09		
Total Penta-Dioxins	134.88		
Total Hexa-Furans	142.44		
Total Hexa-Dioxins	215.79		
Total Hepta-Furans	165.87		
Total Hepta-Dioxins	255.32		

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD).

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

• Analyte not detected.

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE

Matrix SOIL

Sample Receipt Date 12-08-95

Ext Date 12-12-95

Analysis Date 18-JAN-96 Time 19:24:45

Extract Volume (uL) 20

Injection Volume (uL) 0.5

Dilution Factor NONE

Lab Sample ID 47482-10-18, S33, Duplicate

Sample Wt/Vol 8.0124 units g

Initial Calibration Date 04-13-95

Instrument ID Autospec

GC Column ID 60M DB5

Sample Data Filename A039211

Blank Data Filename A039203

Cal Ver Data Filename A039202

ANALYTE	CONC FOUND pg/g dry	SAMPLE LIMIT OF DETECTION pg/g dry	INSTRUMENT LIMIT OF QUANTITATION pg/g dry
2,3,7,8-TCDD	4.15		2.50
1,2,3,7,8-PeCDD	21.02		12.48
1,2,3,4,7,8-HxCDD	18.30		12.48
1,2,3,6,7,8-HxCDD	17.54		12.48
1,2,3,7,8,9-HxCDD	26.64		12.48
1,2,3,4,6,7,8-HpCDD	130.35		12.48
OCDD	668.85		24.96
2,3,7,8-TCDF#	11.24		2.50
1,2,3,7,8-PeCDF	17.66		12.48
2,3,4,7,8-PeCDF	23.94		12.48
1,2,3,4,7,8-HxCDF	^	0.53	12.48
1,2,3,6,7,8-HxCDF	29.92		12.48
1,2,3,7,8,9-HxCDF	1.74 ~	0.63	12.48
2,3,4,6,7,8-HxCDF	22.72		12.48
1,2,3,4,6,7,8-HpCDF	98.58		12.48
1,2,3,4,7,8,9-HpCDF	8.79 ~	0.48	12.48
OCDF	42.12		24.96
Total Tetra-Furans	195.58		
Total Tetra-Dioxins	87.06		
Total Penta-Furans	238.88		
Total Penta-Dioxins	119.68		
Total Hexa-Furans	149.99		
Total Hexa-Dioxins	192.53		
Total Hepta-Furans	150.98		
Total Hepta-Dioxins	236.82		

2,3,7,8-TCDF value from second column confirmation.

~ Concentration reported is below the instrument limit of quantitation (LOQ) but above the sample limit of detection (LOD)

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

* Analyte not detected.

APPENDIX C

ANALYSIS DATA SHEETS FOR
2.3.7.8-TCDF SECOND COLUMN CONFIRMATION
OF PHASE I SOILS

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE

Matrix: SOIL

Sample Receipt Date: 12-06-95

Ext. Date: 12-07-95

Analysis Date: 12-JAN-96 Time 11:26 21

Extract Volume (uL): 20

Injection Volume (uL): 0.5

Dilution Factor: NONE

Lab Sample ID: 47492-6-2, S04

Sample Wt/Vol: 6.5575 units: g

Initial Calibration Date: 04-13-95

Instrument ID: AutoSpec

GC Column ID: DBDIOXIN

Sample Data Filename: A038804

Blank Data Filename: A038803

Cal. Ver. Data Filename: A038802

Concentration Units: pg/g dry

Concentration Units (pg)

ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC. FOUND	I (%)	ION RATIO
2,3,7,8-TCDD	*	1.235	*	*	13C-2,3,7,8-TCDD	2000	1219	61	0.79
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*	*	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*	*	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*	*	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*	*	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*	*	*
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	1284	64	0.80
2,3,7,8-TCDF	0.493	1.968	0.76	0.0493	13C-1,2,3,7,8-PeCDF	2000	*	*	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*	*	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*	*	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*	*	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*	*	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*	*	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*	*	*
1,2,3,4,6,7,8,9-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*	*	*
OCDF	*	*	*	*					
Total Tetra-Furans	*	1.968	*		CLEANUP STANDARD				
Total Tetra-Dioxins	*	1.235	*		37Cl-2,3,7,8-TCDD	200	159	80	
Total Penta-Furans	*	*	*						
Total Penta-Dioxins	*	*	*						
Total Hexa-Furans	*	*	*						
Total Hexa-Dioxins	*	*	*						
Total Hepta-Furans	*	*	*						
Total Hepta-Dioxins	*	*	*						

Total TEQ

0.0493

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-06-95
 Ext. Date: 12-07-95
 Analysis Date: 12-JAN-96 Time: 12:37:14
 Extract Volume (uL): 20
 Injection Volume (uL): 1
 Dilution Factor: NONE

Lab Sample ID: 47462-6-5, S07
 Sample Wt/Vol: 7.4596 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A038805
 Blank Data Filename: A038803
 Cal. Ver. Data Filename: A038802

Concentration Units: pg/g dry

Concentration Units (pg)

ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC. FOUND	ION RATIO
2,3,7,8-TCDD	*	0.465	*	*	13C-2,3,7,8-TCDD	2000	1243	0.80
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*	*
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	1343	0.78
2,3,7,8-TCDF	0.778	0.662	0.82	0.0778	13C-1,2,3,7,8-PeCDF	2000	*	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*	*
OCDF	*	*	*	*				
Total Tetra-Furans	2.617	0.662	*		CLEANUP STANDARD	200	163	82
Total Tetra-Dioxins	0.316	0.465	0.88		37Cl-2,3,7,8-TCDD			
Total Penta-Furans	*	*	*					
Total Penta-Dioxins	*	*	*					
Total Hexa-Furans	*	*	*					
Total Hexa-Dioxins	*	*	*					
Total Hepta-Furans	*	*	*					
Total Hepta-Dioxins	*	*	*					
Total TEQ				0.0778				

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-06-95
 Ext. Date: 12-07-95
 Analysis Date: 12-JAN-96 Time: 13:36:04
 Extract Volume (uL): 20
 Injection Volume (uL): 1
 Dilution Factor: NONE

Lab Sample ID: 47482-6-6, S08
 Sample Wt/Vol: 8.3373 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A038806
 Blank Data Filename: A038803
 Cal. Ver. Data Filename: A038802

Concentration Units: pg/g dry

Concentration Units (pg)

ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC FOUND	F (%)	ION RATIO
2,3,7,8-TCDD	*	0.411	*	*	13C-2,3,7,8-TCDD	2000	1422	71	0.79
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*	*	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*	*	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*	*	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*	*	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*	*	*
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	1558	78	0.77
2,3,7,8-TCDF	0.761	0.335	0.84	0.0761	13C-1,2,3,7,8-PeCDF	2000	*	*	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*	*	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*	*	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*	*	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*	*	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*	*	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*	*	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*	*	*
OCDF	*	*	*	*					

Total Tetra-Furans 3.935
 Total Tetra-Dioxins 0.335
 Total Penta-Furans 0.411
 Total Penta-Dioxins *
 Total Hexa-Furans *
 Total Hexa-Dioxins *
 Total Hepta-Furans *
 Total Hepta-Dioxins *

Total TEQ

0.0761

CLEANUP STANDARD
 37Cl-2,3,7,8-TCDD 200

187

93

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTLE
 Matrix: SOIL
 Sample Receipt Date: 12-06-95
 Ext. Date: 12-07-95
 Analysis Date: 12-JAN-96 Time: 14:36:01
 Extract Volume (uL): 20
 Injection Volume (uL): 1
 Dilution Factor: NONE

Lab Sample ID: 47482-6-7, 509
 Sample Wt/Vol: 7.5058 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A038807
 Blank Data Filename: A038803
 Cal. Ver. Data Filename: A038802

Concentration Units: pg/g dry		Concentration Units (pg)					
ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	ION F.I.T.O
2,3,7,8-TCDD	*	0.391	*	*	13C-2,3,7,8-TCDD	2000	0.79
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	0.79
2,3,7,8-TCDF	1.390	3.205	0.85	0.1390	13C-1,2,3,7,8-PeCDF	1102	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*
1,2,3,4,7,8,9-HpCDF	*	*	*	*			
OCDF	*	*	*	*			
Total Tetra-Furans	*	3.205	*		CLEANUP STANDARD		
Total Tetra-Dioxins	*	0.391	*		37Cl-2,3,7,8-TCDD	200	
Total Penta-Furans	*	*	*			138	69
Total Penta-Dioxins	*	*	*				
Total Hexa-Furans	*	*	*				
Total Hexa-Dioxins	*	*	*				
Total Hepta-Furans	*	*	*				
Total Hepta-Dioxins	*	*	*				

Total TEQ 0.1390

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-06-95
 Ext. Date: 12-07-95
 Analysis Date: 12-JAN-96 Time: 15:35:29
 Extract Volume (uL): 20
 Injection Volume (uL): 1
 Dilution Factor: NONE

Lab Sample ID: 47482-6-20, S09, Duplicate
 Sample Wt/Vol: 7.5170 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A038808
 Blank Data Filename: A038803
 Cal. Ver. Data Filename: A038802

Concentration Units: pg/g dry									
ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC FOUND	ION RATIO	
2,3,7,8-TCDD	*	0.356	*	*	13C-2,3,7,8-TCDD	2000	1302	0.79	
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*	*	
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*	*	
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*	*	
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,7,8,9-HxCDD	2000	*	*	
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*	*	
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	1218	0.83	
2,3,7,8-TCDF	2.034	0.335	0.83	0.2034	13C-1,2,3,7,8-PeCDF	2000	*	*	
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*	*	
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*	*	
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*	*	
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*	*	
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*	*	
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*	*	
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*	*	
1,2,3,4,7,8,9-HpCDF	*	*	*	*					
OCDF	*	*	*	*					
Total Tetra-Furans	9.356	0.335	0.71		CLEANUP STANDARD	200	164	82	
Total Tetra-Dioxins	0.860	0.356	0.67		37Cl-2,3,7,8-TCDD				
Total Penta-Furans	*	*	*						
Total Penta-Dioxins	*	*	*						
Total Hexa-Furans	*	*	*						
Total Hexa-Dioxins	*	*	*						
Total Hepta-Furans	*	*	*						
Total Hepta-Dioxins	*	*	*						

Total TEQ

0.2034

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-06-95
 Ext. Date: 12-07-95
 Analysis Date: 12-JAN-96 Time: 16:34:59
 Extract Volume (uL): 20
 Injection Volume (uL): 1
 Dilution Factor: 1:2

Lab Sample ID: 47482-6-18, S03
 Sample Wt/Vol: 6.6061 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: Autospec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A038809
 Blank Data Filename: A038803
 Cal. Ver. Data Filename: A038802

Concentration Units: pg/g dry		Concentration Units (pg)									
ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC. FOUND	ION RATIO	ION RATIO	CONC. FOUND	ION RATIO
2,3,7,8-TCDD	*	*	*	*	13C-2,3,7,8-TCDD	2000	642	*	0.78	*	*
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*	*	*	*	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*	*	*	*	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*	*	*	*	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*	*	*	*	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*	*	*	*	*
OCDD	1.604	1.046	0.78	0.1604	13C-2,3,7,8-TCDF	2000	1180	59	0.79	*	*
2,3,7,8-TCDF	*	*	*	*	13C-1,2,3,7,8-PeCDF	2000	*	*	*	*	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*	*	*	*	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*	*	*	*	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*	*	*	*	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*	*	*	*	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HpCDF	2000	*	*	*	*	*
2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*	*	*	*	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*							
OCDF	*	*	*	*							
Total Tetra-Furans	1.604	1.046	*		CLEANUP STANDARD	200	86			43	
Total Tetra-Dioxins	*	*	*		37Cl-2,3,7,8-TCDD						
Total Penta-Furans	*	*	*								
Total Penta-Dioxins	*	*	*								
Total Hexa-Furans	*	*	*								
Total Hexa-Dioxins	*	*	*								
Total Hepta-Furans	*	*	*								
Total Hepta-Dioxins	*	*	*								
Total TEQ				0.1604							

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-08-95
 Ext Date: 12-12-95
 Analysis Date: 24-JAN-96 Time: 14 12 52
 Extract Volume (uL): 20
 Injection Volume (uL): 0.5
 Dilution Factor: NONE

Lab Sample ID: 47482-10-11, S27
 Sample Wt/Vol: 7 4562 units g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A039611
 Blank Data Filename: A039610
 Cal. Ver. Data Filename: A039609

Concentration Units: pg/g dry		Concentration Units (pg)							
ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC FOUND		
2,3,7,8-TCDD	*	*	*	*	13C-2,3,7,8-TCDD	2000	889		
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*		
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*		
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*		
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*		
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*		
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	1029		
2,3,7,8-TCDF	10.347	4.441	0.77	1.0347	13C-1,2,3,7,8-PeCDF	2000	*		
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*		
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*		
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*		
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*		
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*		
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*		
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*		
1,2,3,4,7,8,9-HpCDF	*	*	*	*			*		
OCDF	*	*	*	*			*		
Total Tetra-Furans	45.074	4.441	0.78		CLEANUP STANDARD	200	97		
Total Tetra-Dioxins	*	*	*		37Cl-2,3,7,8-TCDD		48		
Total Penta-Furans	*	*	*						
Total Penta-Dioxins	*	*	*						
Total Hexa-Furans	*	*	*						
Total Hexa-Dioxins	*	*	*						
Total Hepta-Furans	*	*	*						
Total Hepta-Dioxins	*	*	*						

Total TEQ

1.0347

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-08-95
 Ext Date: 12-12-95
 Analysis Date: 24-JAN-96 Time: 15:14:14
 Extract Volume (uL): 20
 Injection Volume (uL): 0.5
 Dilution Factor: NONE

Lab Sample ID: 47482-10-12, S28
 Sample Wt/Vol: 8.4043 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A039612
 Blank Data Filename: A039610
 Cal. Ver. Data Filename: A039609

Concentration Units: pg/g dry

Concentration Units (pg)

ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC FOUND	
2,3,7,8-TCDD	*	*	*	*	13C-2,3,7,8-TCDD	2000	1546	1
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*	*
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	1556	77
2,3,7,8-TCDF	10.658	3.221	0.82	1.0658	13C-1,2,3,7,8-PeCDF	2000	*	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*	*
1,2,3,4,7,8,9-HpCDF	*	*	*	*				
OCDF	*	*	*	*				
Total Tetra-Furans	119.111	3.221	0.80		CLEANUP STANDARD	200	214	107
Total Tetra-Dioxins	*	*	*		37Cl-2,3,7,8-TCDD			
Total Penta-Furans	*	*	*					
Total Penta-Dioxins	*	*	*					
Total Hexa-Furans	*	*	*					
Total Hexa-Dioxins	*	*	*					
Total Hepta-Furans	*	*	*					
Total Hepta-Dioxins	*	*	*					

Total TEQ

1.0658

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name: BATTELLE
 Matrix: SCIL
 Sample Receipt Date: 12-08-95
 Ext Date: 12-12-95
 Analysis Date: 24-JAN-96
 Time: 16 18 53
 Extract Volume (uL): 20
 Injection Volume (uL): 0.5
 Dilution Factor: NONE
 Lab Sample ID: 47482-10-13, S29
 Sample Wt/Vol: 8.2512 units/g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A039613
 Blank Data Filename: A039610
 Cal Ver. Data Filename: A039609

Concentration Units: pg/g dry

Concentration Units (pg)

ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC. FOUND	TEQ
2,3,7,8-TCDD	*	*	*	*	13C-2,3,7,8-TCDD	2000	1566	7
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*	*
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	1567	79
2,3,7,8-TCDF	105.659	5.949	0.78	10.56*	13C-1,2,3,7,8-PeCDF	2000	*	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*	*
OCDF	*	*	*	*				
Total Tetra-Furans	1449.662	5.949	0.77		CLEANUP STANDARD	200	228	114
Total Tetra-Dioxins	*	*	*		37Cl-2,3,7,8-TCDD			
Total Penta-Furans	*	*	*					
Total Penta-Dioxins	*	*	*					
Total Hexa-Furans	*	*	*					
Total Hexa-Dioxins	*	*	*					
Total Hepta-Furans	*	*	*					
Total Hepta-Dioxins	*	*	*					

Total TEQ

10.56*

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-08-95
 Ext. Date 12-12-95
 Analysis Date: 24-JAN-96 Time: 17:18:03
 Extract Volume (uL): 20
 Injection Volume (uL): 0.5
 Dilution Factor: NONE

Lab Sample ID: 47482-10-14, S30
 Sample Wt/Vol: 8 0175 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A039614
 Blank Data Filename: A039610
 Cal. Ver. Data Filename: A039609

Concentration Units: pg/g dry		Concentration Units (pg)							
ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC FOUND		
2,3,7,8-TCDD	*	*	*	*	* 13C-2,3,7,8-TCDD	2000	1590	*	*
1,2,3,7,8-PeCDD	*	*	*	*	* 13C-1,2,3,7,8-PeCDD	2000	*	*	*
1,2,3,4,7,8-HxCDD	*	*	*	*	* 13C-1,2,3,4,7,8-HxCDD	2000	*	*	*
1,2,3,6,7,8-HxCDD	*	*	*	*	* 13C-1,2,3,6,7,8-HxCDD	2000	*	*	*
1,2,3,7,8,9-HxCDD	*	*	*	*	* 13C-1,2,3,4,6,7,8-HpCDD	2000	*	*	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	* 13C-OCDD	4000	*	*	*
OCDD	*	*	*	*	* 13C-2,3,7,8-TCDF	2000	1588	79	(78
2,3,7,8-TCDF	184.664	9.545	0.75	18.46	* 13C-1,2,3,7,8-PeCDF	2000	*	*	*
1,2,3,7,8-PeCDF	*	*	*	*	* 13C-2,3,4,7,8-PeCDF	2000	*	*	*
2,3,4,7,8-PeCDF	*	*	*	*	* 13C-1,2,3,4,7,8-HxCDF	2000	*	*	*
1,2,3,4,7,8-HxCDF	*	*	*	*	* 13C-1,2,3,6,7,8-HxCDF	2000	*	*	*
1,2,3,6,7,8-HxCDF	*	*	*	*	* 13C-1,2,3,7,8,9-HxCDF	2000	*	*	*
1,2,3,7,8,9-HxCDF	*	*	*	*	* 13C-2,3,4,6,7,8-HxCDF	2000	*	*	*
2,3,4,6,7,8-HxCDF	*	*	*	*	* 13C-1,2,3,4,6,7,8-HpCDF	2000	*	*	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	* 13C-1,2,3,4,7,8,9-HpCDF	2000	*	*	*
1,2,3,4,7,8,9-HpCDF	*	*	*	*					
OCDF	*	*	*	*					
Total Tetra-Furans	2607.219	9.545	0.77		CLEANUP STANDARD	200	239	119	
Total Tetra-Dioxins	*	*	*		37Cl-2,3,7,8-TCDD				
Total Penta-Furans	*	*	*						
Total Penta-Dioxins	*	*	*						
Total Hexa-Furans	*	*	*						
Total Hexa-Dioxins	*	*	*						
Total Hepta-Furans	*	*	*						
Total Hepta-Dioxins	*	*	*						

Total TEQ

18.46

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SCIL
 Sample Receipt Date 12-08-95
 Ext Date 12-12-95
 Analysis Date 24-JAN-96 Time 19 22:41
 Extract Volume (uL) 20
 Injection Volume (uL) 0.5
 Dilution Factor: NONE

Lab Sample ID: 47482-10-17, S33
 Sample Wt/Vol: 7.9871 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A039616
 Blank Data Filename: A039610
 Cal. Ver. Data Filename: A039609

Concentration Units: pg/g dry		Concentration Units (pg)							
ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC FOUND		
2,3,7,8-TCDD ⁶	*	*	*	*	13C-2,3,7,8-TCDD	2000	972	79	*
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*	*	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*	*	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*	*	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*	*	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*	*	*
OCDD	11.395	2.429	0.82	1.1395	13C-2,3,7,8-TCDF	2000	1040	52	78
2,3,7,8-TCDF	*	*	*	*	13C-1,2,3,7,8-PeCDF	2000	*	*	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*	*	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*	*	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*	*	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*	*	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*	*	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*	*	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*	*	*
1,2,3,4,7,8,9-HpCDF	*	*	*	*					
OCDF									
Total Tetra-Furans	112.111	2.429	0.87		CLEANUP STANDARD	200	143	71	
Total Tetra-Dioxins	*	*	*		37Cl-2,3,7,8-TCDD				
Total Penta-Furans	*	*	*						
Total Penta-Dioxins	*	*	*						
Total Hexa-Furans	*	*	*						
Total Hexa-Dioxins	*	*	*						
Total Hepta-Furans	*	*	*						
Total Hepta-Dioxins	*	*	*						

Total TEQ 1.1395

PCDD/FCDF ANALYSIS DATA SHEET

Lab Name: BATTLE
 Matrix: SCIL
 Sample Receipt Date: 12-08-95
 Ext Date: 12-12-95
 Analysis Date: 24-JAN-96 Time: 20 22 21
 Extract Volume (uL): 20
 Injection Volume (uL): 0.5
 Dilution Factor: NONE

Lab Sample ID: 47482-10-18, S33, Duplicate
 Sample Wt/Vol: 8 0124 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A039617
 Blank Data Filename: A039610
 Cal. Ver. Data Filename: A039609

Concentration Units: pg/g dry

Concentration Units (pg)

ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC. FOUND	
2,3,7,8-TCDD	*	*	*	*	13C-2,3,7,8-TCDD	2000	1562	*
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*	*
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	1584	79
2,3,7,8-TCDF	11.238	1.648	0.79	1.1238	13C-1,2,3,7,8-PeCDF	2000	*	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*	*
OCDF	*	*	*	*				
Total Tetra-Furans	119.927	1.648	0.81		CLEANUP STANDARD			
Total Tetra-Dioxins	*	*	*		37Cl-2,3,7,8-TCDD	200	220	110
Total Penta-Furans	*	*	*					
Total Penta-Dioxins	*	*	*					
Total Hexa-Furans	*	*	*					
Total Hexa-Dioxins	*	*	*					
Total Hepta-Furans	*	*	*					
Total Hepta-Dioxins	*	*	*					

Total TEQ

1.1238

PCDD/PCDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix: SOIL
 Sample Receipt Date: 12-08-95
 Ext. Date: 12-12-95
 Analysis Date: 24-JAN-96 Time 21:22:44
 Extract Volume (uL): 20
 Injection Volume (uL): 0.5
 Dilution Factor: NONE

Lab Sample ID: 47482-10-19, S34
 Sample Wt/Vol: 7.6565 units: g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A039618
 Blank Data Filename: A039610
 Cal. Ver. Data Filename: A039609

Concentration Units: pg/g dry		Concentration Units (pg)					
ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC FOUND
2,3,7,8-TCDD	*	*	*	*	13C-2,3,7,8-TCDD	2000	1505
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	1430
2,3,7,8-TCDF	41.847	6.406	0.73	4.1847	13C-1,2,3,7,8-PeCDF	2000	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HxCDF	2000	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*
OCDF	*	*	*	*			
Total Tetra-Furans	469.311	6.406	0.73		CLEANUP STANDARD	200	212
Total Tetra-Dioxins	*	*	*		37Cl-2,3,7,8-TCDD		106
Total Penta-Furans	*	*	*				
Total Penta-Dioxins	*	*	*				
Total Hexa-Furans	*	*	*				
Total Hexa-Dioxins	*	*	*				
Total Hepta-Furans	*	*	*				
Total Hepta-Dioxins	*	*	*				

Total TEQ

4.1847

PCDD/F/CDF ANALYSIS DATA SHEET

Lab Name BATTELLE
 Matrix SOIL
 Sample Receipt Date 12-08-95
 Ext Date 12-12-95
 Analysis Date 24-JAN-96 Time 22 22 32
 Extract Volume (uL) 20
 Injection Volume (uL) 0.5
 Dilution Factor: 1.2

Lab Sample ID: 47482-10-7, S23
 Sample Wt/Vol: 7.6321 units/g
 Initial Calibration Date: 04-13-95
 Instrument ID: AutoSpec
 GC Column ID: DBDIOXIN
 Sample Data Filename: A039619
 Blank Data Filename: A039610
 Cal. Ver. Data Filename: A039609

Concentration Units: pg/g dry				Concentration Units (pg)			
ANALYTE	CONC. FOUND	DETECTION LIMIT	ION RATIO	TEQ	LABELLED COMPOUNDS	SPIKE CONC.	CONC FOUND
2,3,7,8-TCDD	*	*	*	*	13C-2,3,7,8-TCDD	2000	465
1,2,3,7,8-PeCDD	*	*	*	*	13C-1,2,3,7,8-PeCDD	2000	*
1,2,3,4,7,8-HxCDD	*	*	*	*	13C-1,2,3,4,7,8-HxCDD	2000	*
1,2,3,6,7,8-HxCDD	*	*	*	*	13C-1,2,3,6,7,8-HxCDD	2000	*
1,2,3,7,8,9-HxCDD	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDD	2000	*
1,2,3,4,6,7,8-HpCDD	*	*	*	*	13C-OCDD	4000	*
OCDD	*	*	*	*	13C-2,3,7,8-TCDF	2000	349
2,3,7,8-TCDF	27.082	53.627	0.76	2.7082	13C-1,2,3,7,8-PeCDF	2000	*
1,2,3,7,8-PeCDF	*	*	*	*	13C-2,3,4,7,8-PeCDF	2000	*
2,3,4,7,8-PeCDF	*	*	*	*	13C-1,2,3,4,7,8-HxCDF	2000	*
1,2,3,4,7,8-HxCDF	*	*	*	*	13C-1,2,3,6,7,8-HxCDF	2000	*
1,2,3,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,7,8,9-HxCDF	2000	*
1,2,3,7,8,9-HxCDF	*	*	*	*	13C-2,3,4,6,7,8-HpCDF	2000	*
2,3,4,6,7,8-HxCDF	*	*	*	*	13C-1,2,3,4,6,7,8-HpCDF	2000	*
1,2,3,4,6,7,8-HpCDF	*	*	*	*	13C-1,2,3,4,7,8,9-HpCDF	2000	*
1,2,3,4,7,8,9-HpCDF	*	*	*	*			
OCDF	*	*	*	*			
Total Tetra-Furane	174.877	53.627	0.83		CLEANUP STANDARD	200	69
Total Tetra-Dioxins	*	*	*		37Cl-2,3,7,8-TCDD		34
Total Penta-Furane	*	*	*				
Total Penta-Dioxins	*	*	*				
Total Hexa-Furane	*	*	*				
Total Hexa-Dioxins	*	*	*				
Total Hepta-Furane	*	*	*				
Total Hepta-Dioxins	*	*	*				
Total TEQ				2.7082			

APPENDIX D

QUALITY CONTROL SAMPLE RESULTS
FOR PHASE I SOILS

Matrix Spike/Matrix Spike Duplicate Results for S04:

Analyte	S04 conc. found (pg/g)	S04 MS conc. found (pg/g)	S04 MS Dup conc. found (pg/g)	MS Spike conc. (pg/g)	MSD Spike conc. (pg/g)	S04 MS % REC	S04 MSD % REC	MS/MSD RPD
2378-TCDD	*	37.2	36.0	30.5	30.3	122.1	118.7	3.35
12378-PeCDD	*	193.8	193.9	152.5	151.7	127.1	127.8	0.04
123478-HxCDD	0.7	168.9	173.6	152.5	151.7	110.3	114.0	2.78
123678-HxCDD	1.4	147.7	140.6	152.5	151.7	95.9	91.8	4.88
123789-HxCDD	2.1	160.7	159.1	152.5	151.7	104.0	103.5	1.04
1234678-HpCD	31.6	191.3	197.3	152.5	151.7	104.8	109.3	3.07
OCDD	298.3	545.0	568.1	305.0	303.4	80.9	88.9	4.16
2378-TCDF	*	35.5	34.9	30.5	30.3	116.4	115.2	1.58
12378-PeCDF	*	167.1	162.8	152.5	151.7	109.6	107.3	2.62
23478-PeCDF	*	169.6	169.3	152.5	151.7	111.2	111.6	0.16
123478-HxCDF	^	172.2	170.3	152.5	151.7	112.9	112.3	1.12
123678-HxCDF	^	172.4	167.9	152.5	151.7	113.1	110.7	2.66
123789-HxCDF	*	179.7	176.1	152.5	151.7	117.9	116.1	2.06
234678-HxCDF	0.9	169.9	165.9	152.5	151.7	110.9	108.8	2.39
1234678-HpCD	6.5	158.6	158.1	152.5	151.7	99.8	100.0	0.31
1234789-HpCD	*	171.6	169.3	152.5	151.7	112.5	111.6	1.34
OCDF	18.0	359.5	336.4	305.0	303.4	112.0	105.0	6.62

* Analyte peak not detected.

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

Matrix Spike/Matrix Spike Duplicate Results for S34:

Analyte	S34 conc. found (pg/g)	S34 MS conc. found (pg/g)	S34 MS Dup conc. found (pg/g)	MS Spike conc. (pg/g)	MSD Spike conc. (pg/g)	S34 MS % REC #	S34 MSD % REC #	MS/MSD RPD
2378-TCDD	14.6	45.6	46.3	26.0	26.1	112.2	113.7	1.66
12378-PeCDF	84.8	233.5	255.5	130.0	130.6	108.7	118.6	8.99
123478-HxCDD	71.5	212.7	209.3	130.0	130.6	105.6	103.6	1.61
123678-HxCDD	64.7	201.4	172.4	130.0	130.6	103.5	88.3	15.51
123789-HxCDD	96.1	313.6	281.6	130.0	130.6	138.7	124.2	10.74
1234678-HpCD	411.2	597.9	591.8	130.0	130.6	110.5	109.2	1.02
OCDD	773.3	1058.3	1145.1	259.9	261.2	102.4	110.7	7.88
2378-TCDF	152.3	203.0	187.0	26.0	26.1	113.8	104.8	8.20
12378-PeCDF	70.8	174.4	181.5	130.0	130.6	86.9	90.1	4.01
23478-PeCDF	99.7	228.1	231.6	130.0	130.6	99.4	100.6	1.51
123478-HxCDF	^	244.7	246.7	130.0	130.6	188.3	188.9	0.82
123678-HxCDF	106.0	241.3	261.1	130.0	130.6	102.3	110.4	7.89
123789-HxCDF	5.4	149.0	153.4	130.0	130.6	110.1	112.8	2.89
234678-HxCDF	77.0	212.9	224.4	130.0	130.6	102.9	108.1	5.24
1234678-HpCD	344.4	510.3	490.1	130.0	130.6	107.6	103.2	4.05
1234789-HpCD	29.8	164.9	162.8	130.0	130.6	103.2	101.5	1.28
OCDF	87.9	332.7	331.6	259.9	261.2	95.7	95.0	0.33

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

Percent recovery calculated using the equation:

$$\% \text{ REC} = 100 (\text{MS conc. found}) / (\text{Spike conc.} + \text{Background conc.})$$

Soil SRM (Sample S02) Recovery Results:

Analyte	Soil SRM Target conc. (pg/g)	S02 conc. found (pg/g)	S02 % REC
2378-TCDD	500	487	97.4
12378-PeCDD	1000	1072	107.2
123478-HxCDD	1000	941	94.1
123678-HxCDD	1000	864	86.4
123789-HxCDD	1000	927	92.7
1234678-HpCD	1500	1451	96.7
OCDD	2500	3087	123.5
2378-TCDF	500	468	93.6
12378-PeCDF	1000	925	92.5
23478-PeCDF	1000	972	97.2
123478-HxCDF	1000	966	96.6
123678-HxCDF	1000	942	94.2
123789-HxCDF	1000	1011	101.1
234678-HxCDF	1000	936	93.6
1234678-HpCD	1500	1332	88.8
1234789-HpCD	1500	1414	94.3
OCDF	2500	2348	93.9

Detection Limit (DL) Results for S03:

Analyte	S03 conc. found (pg/g)	S03 DL conc. found (pg/g)	DL Spike conc. (pg/g)	S03 DL % REC #
2378-ICDD	*	9.6	7.6	127.5
12378-PeCDD	*	46.4	37.8	122.8
123478-HxCDD	1.5	40.5	37.8	103.2
123678-HxCDD	1.7	35.9	37.8	91.0
123789-HxCDD	2.0	39.0	37.8	98.1
1234678-HpCD	28.0	60.4	37.8	91.9
OCDD	285.7	270.8	75.6	75.0
2378-TCDF	1.6	9.8	7.6	107.2
12378-PeCDF	2.0	40.5	37.8	101.9
23478-PeCDF	*	43.6	37.8	115.4
123478-HxCDF	^	40.8	37.8	107.9
123678-HxCDF	1.3	42.3	37.8	108.2
123789-HxCDF	*	42.3	37.8	112.0
234678-HxCDF	*	40.6	37.8	107.5
1234678-HpCD	7.4	38.9	37.8	86.0
1234789-HpCD	1.4	40.8	37.8	104.2
OCDF	18.3	87.9	75.6	93.6

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.

Percent recovery calculated using the equation:

$$\% \text{ REC} = 100 (\text{MS conc. found}) / (\text{Spike conc.} + \text{Background conc.})$$

Handwritten notes:
 1. 123478-HxCDD
 2. 123678-HxCDD
 3. 123789-HxCDD
 4. 1234678-HpCD
 5. 1234789-HpCD
 6. OCDD
 7. OCDF

Duplicate Sample Results for S09:

Analyte	S09 conc. found (pg/g)	S09 Dup conc. found (pg/g)	RPD (%)
2378-TCDD	0.5	0.5	9.6
12378-PeCDD	1.7	2.4	35.2
123478-HxCDD	1.5	2.0	26.5
123678-HxCDD	1.8	2.3	26.4
123789-HxCDD	2.9	4.2	37.3
1234678-HpCDD	16.6	19.7	16.9
OCDD	81.5	90.0	9.9
2378-TCDF	*	2.0	NC
12378-PeCDF	1.6	1.7	7.1
23478-PeCDF	2.5	3.7	38.3
123478-HxCDF	^	^	*
123678-HxCDF	2.6	3.9	40.9
123789-HxCDF	*	0.4	NC
234678-HxCDF	2.6	3.4	24.8
1234678-HpCDF	11.5	13.8	18.0
1234789-HpCDF	0.7	1.0	35.4
OCDF	6.8	7.9	15.2

* Analyte peak not detected.

RPD outside 25% control limit but measurement made at or below the instrument limit of quantitation

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

NC - % RPD not calculated due to a non-detect for this analyte in S09.

Duplicate Sample Results for S33:

Analyte	S33 conc. found (pg/g)	S33 Dup conc. found (pg/g)	RPD (%)
2378-TCDD	4.2	4.2	1.2
12378-PeCDD	21.5	21.0	2.4
123478-HxCDD	20.6	18.3	11.9
123678-HxCDD	18.2	17.5	3.4
123789-HxCDD	26.7	26.6	0.2
1234678-HpCDD	139.2	130.3	6.6
OCDD	653.3	668.9	2.4
2378-TCDF	11.4	11.2	1.4
12378-PeCDF	20.1	17.7	13.0
23478-PeCDF	26.6	23.9	10.3
123478-HxCDF	^	^	*
123678-HxCDF	31.7	29.9	5.7
123789-HxCDF	1.8	1.7	2.8
234678-HxCDF	26.1	22.7	14.0
1234678-HpCDF	106.8	98.6	8.0
1234789-HpCDF	9.3	8.8	5.6
OCDF	44.7	42.1	6.0

* Analyte peak not detected.

^ Analyte peak not quantified due to diphenyl ether interference per EPA Method 8290, Section 7.8.4.4.

Soil Standard Reference Material Control Chart Information (Cambridge Isotope Laboratories EDF-2513)
Percent Recovery Compared to Target Levels

Extraction Date	7-16-92	11-06-92	09-23-93	10-07-93	02-22-94	07-21-94	08-10-94	08-22-94	10-10-94	10-26-94	11-07-94	06-20-95
2378-TCDD	88	97	93	85	84	102	92	107	102	99	88	87
12378-PeCDD	90	98	99	89	87	102	91	103	107	112	103	96
123478-HxCDD	91	89	96	88	87	95	80	94	80	110	97	85
123678-HxCDD	83	80	91	80	84	95	82	95	78	96	86	81
123789-HxCDD	97	90	100	90	87	111	90	107	80	104	99	85
1234678-HpCDD	94	88	103	100	95	95	82	97	103	106	97	89
OCDD	99	91	90	86	82	83	77	87	88	94	83	77
2378-TCDF	83	87	85	76	73	99	83	96	95	106	85	86
12378-PeCDF	86	91	98	83	84	93	75	94	101	108	93	83
23478-PeCDF	82	83	94	83	76	88	75	91	103	109	98	87
123478-HxCDF	87	97	100	97	86	94	78	95	93	105	92	86
123678-HxCDF	86	93	92	86	85	97	80	97	90	101	93	89
123789-HxCDF	84	94	93	86	85	90	78	93	116	104	93	87
234678-HxCDF	86	96	103	94	87	92	78	93	90	100	92	86
1234678-HpCDF	84	81	90	83	82	89	75	89	96	100	89	83
1234789-HpCDF	93	93	106	96	97	96	80	98	103	107	96	88
OCDF	100	94	94	87	85	82	72	83	71	83	78	84

METHOD DETECTION LIMIT VERIFICATION SET (pg/g dry) - SEDIMENTS

11-106-07

ANALYTE	Target Spike Level	Background 47109-60-14	Spike 1 47109-60-15	Spike 2 47109-60-16	Spike 3 47109-60-17	Spike 4 47109-60-18	Spike Avg	SD	% RSD	% Recovery	MDL
2378-TCDD	5.0	0.0	5.7	6.6	5.8	5.5	5.9	0.5	8.5	118.1	2.3
12378-PeCDD	25.0	0.0	30.0	31.2	30.9	30.5	30.6	0.5	1.6	122.6	2.2
123478-HxCDD	25.0	0.0	24.2	25.9	25.9	26.0	25.5	0.9	3.4	101.8	4.0
123678-HxCDD	25.0	0.0	24.2	24.1	23.9	24.0	24.0	0.2	0.7	96.1	0.7
123789-HxCDD	25.0	0.0	25.2	26.5	24.5	25.0	25.3	0.8	3.3	101.3	3.8
1234678-HpCDD	25.0	1.3	27.1	28.0	27.7	27.5	27.6	0.4	1.4	104.9	1.8
OCDD	50.0	10.5	58.6	60.0	59.1	57.0	58.7	1.3	2.1	96.9	5.7
2378-TCDF	5.0	0.0	6.0	5.9	5.8	6.1	5.9	0.1	2.4	118.9	0.7
12378-PeCDF	25.0	0.0	25.8	27.1	26.7	25.6	26.3	0.7	2.7	105.2	3.2
23478-PeCDF	25.0	0.0	27.2	26.9	26.2	26.5	26.7	0.4	1.6	106.8	2.0
123478-HxCDF	25.0	0.0	25.6	27.1	26.7	24.8	26.1	1.0	4.0	104.2	4.8
123678-HxCDF	25.0	0.2	27.2	27.5	27.7	25.9	27.1	0.8	3.0	107.6	3.7
123789-HxCDF	25.0	0.0	28.3	27.5	27.5	26.8	27.5	0.6	2.3	110.1	2.9
234678-HxCDF	25.0	0.0	24.3	25.6	26.5	25.2	25.4	0.9	3.6	101.5	4.2
1234678-HpCDF	25.0	0.0	25.0	25.0	25.0	24.8	24.9	0.1	0.4	99.7	0.4
1234789-HpCDF	25.0	0.0	26.6	27.2	27.0	26.8	26.9	0.3	1.0	107.7	1.3
OCDF	50.0	0.8	51.6	53.8	50.6	48.8	51.2	2.1	4.0	100.7	9.4

%Recovery is calculated as (spike avg/(target + background))*100.

MDL is calculated as 4.541*SD.