Batch 04

ORGANIC QA CHECKLIST

Site VERTAC

Contract No. SAS#- 3354F

Case No. SAS# 3354F

Contractor Chemwest Anal Labs

Reviewed By Melvin Ritter

Matrix Duck Tissue (Dioxins)

Date 12/16/87

Acct. # 8TFAJN57 SF TFAU04

Sample No. Batch 04 of duck samples analyzed for total tetra-octa chloro-dibenzodioxins/furans: Sample numbers SAS# 3354F-61-F1 to SAS# 3354F-78-F.

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OVERALL COMMENTS (To Be Completed By EPA PERSONNEL)

	VOA	B/N	A	Pest	Other
1. Holding Times					A
2. Tuning/Performance					A
3. Calibrations					A
4. Blanks					A
5. Surrogates					A
6. Matrix Spike/Dup					A
7. Compound Identity					A
8. Case Assessment					A - Dioxins P - % Lipid

COMMENTS OR CLARIFICATIONS (See Attached)

A - Acceptable - All items delivered; all criteria met.

P - Provisional - Data usable; some non-essential review items missing or criteria were not met.

U - Unacceptable - Data unusable; essential review items missing or criteria not met.

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COMMENTS/CLARIFICATIONS
REGION VI CLP QA REVIEW

CASE SAS# 3354F SITE VERTAC LAB Chemwest

The following is a summary of sample qualifiers used by Region VI in reporting this CLP Case data:

No.	Acceptable	Provisional	Unacceptable
VOA			
BNA			
PEST			
OTHER Dioxin	18	78 (Lipids)	

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COMMENTS:

Data package for Batch 04 of duck tissue dioxins is provisional due to the lack or omission of lipid data for these tissue samples. No evidence of % lipids, to be determined by the method specified in the SAS, was present in the data package for Batch 04. This provisional rating applies to all duck tissue dioxins data submitted by Chemwest for SAS# 3354F. Since this was a deliverable, SMO was informed of the problem (c/o Tony Neske) in an effort to contact the lab. Several minor problems were noticed with this data, like those expressed in CLP/QA reviews of Batches 01-03, i.e., Form I and IV have results for matrix spike/duplicate as total nanograms, not as ppb.

Problems with package include:

1. Narrative refers to samples reported as F-51-E2 to F-78-F (page 05) and should be F-61-F1 to F-78-F.
2. Form I results sample F-62-F3 should be F-67-F3 (page 09).
3. Form I results for F-66-F2 for 2,3,7,8-TCDF should be 0.0027 ppb.
4. Form I recoveries for F-62-F3 should be F-67-F3 (page 10).
5. Form I results and recoveries for F-77-F (Y0087) shoulbe F-78-F (p.13
6. Time given for daily cal done 11/11 should be T=1702, not T=1758(p.16
7. Form IV QC report results given as total ng, not as ppb, as header indicates.
8. No report of % lipids-this is a deliverable. Case data provisional pending resolution of this item.

ORGANIC CLP/QA REVIEW
CONTINUATION PAGE

CASE NO. SAS# 3354F SITE VERTAC

COMMENTS:

EVALUATION OF Batch 04 PACKAGE:

1. Holding Times-Acceptable.
2. Tuning/Performance-Acceptable.
3. Calibrations-Acceptable.
4. Blanks- Acceptable. Although low recoveries were found for some of the samples for 13C-OCDD internal standard, all method blanks had internal standards and surrogates recoveries within QC limits of Method 8280.
5. Surrogates and Internal Standards Recoveries-Acceptable. Recoveries for 37CL-TCDD met all requirements, but the two hepta surrogates sometimes had high (> 140%) recoveries due to the low internal standard absolute recoveries of 13C-OCDD, from which the hepta surrogates were calculated. Internal standards 13C-2,3,7,8-TCDD and 13C-2,3,7,8-TCDF met all QC requirements for recovery. All method blanks had acceptable recoveries for surrogates and internal standards. For the matrix spike/duplicate sample, F-69-F3, all recoveries for surrogates and standards met QC limits.
6. Matrix spike/Duplicate- Acceptable. Sample F-69-F3 was the QC sample for this set and recoveries for the spike compounds were good-see narrative for problems with penta-CDD in the spikes. Amounts reported for the spikes in Form I and Form IV were in total nanograms, not as ppb, as the table header s indicated. The lab has been requested to correct this inconsistenc
7. Compound Identity/Results- Acceptable. No dioxins or furans were found in these samples except for F-76-ABCD; here the Method 8280 gave a possible hit for TCDDs, but no confirmation was found on the specific 2,3,7,8-TCDD column by the Dioxin IFB WA86-K537. The ion ratio for 320/322 was outside of the 0.67-0.90 limit.

   Results for %Lipids are missing and data package is provisional pending clarification of this item.
8. Case Assessment- Acceptable for dioxins samples; provisional over all due t lack of submission of % lipids.

MC Patton
6E Hr

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CHEMWEST
ANALYTICAL LABORATORIES, INC.

Date Reported: 11/23/87
ChemWest Id's: Y0010 thru Y0087
Date Received: 10/11/87
Case/SAS No: 3354F

Mr. Richard Thacker
HWI/Sample Management Office
209 Madison Street, Suite 200
Alexandria, VA 22314

0169889

Dear Mr. Thacker:

The technical staff at CHEMWEST is pleased to provide the following summaries and documentation for SAS 3354F received October 10, 1987. The low concentration wood duck tissue samples were analyzed for 2,3,7,8-TCDD, and Total tetra thru octa dioxins and furans using EPA Method 8280. The cross correlation of ID's is shown below:

ChemWest ID	EPA ID
Y0010	3354F-01-A1
Y0011	3354F-02-A1
Y0012	3354F-03-A1
Y0013	3354F-04-A2
Y0014	3354F-05-A2
Y0015	3354F-06-A2
Y0016	3354F-07-A3
Y0017	3354F-08-A3
Y0018	3354F-09-A3
Y0019	3354F-10-A4
Y0020	3354F-11-A4
Y0021	3354F-12-A4
Y0022	3354F-13-A5
Y0023	3354F-14-A5
Y0024	3354F-15-A5
Y0025	3354F-16-B1
Y0026	3354F-17-B1
Y0027	3354F-18-B1
Y0028	3354F-19-B2
Y0029	3354F-20-B2
Y0030	3354F-21-B2
Y0031	3354F-22-B3
Y0032	3354F-23-B3
Y0033	3354F-24-B3
Y0034	3354F-25-C1
Y0035	3354F-26-C1
Y0036	3354F-27-C1
Y0037	3354F-28-C2

ChemWest ID	EPA ID
Y0038	3354F-29-C2
Y0039	3354F-30-C2
Y0040	3354F-31-C3
Y0041	3354F-32-C3
Y0042	3354F-33-C3
Y0043	3354F-34-C4
Y0044	3354F-35-C4
Y0045	3354F-36-C4
Y0046	3354F-37-C5
Y0047	3354F-38-C5
Y0048	3354F-39-C5
Y0049	3354F-40-C6
Y0050	3354F-41-C6
Y0051	3354F-42-C6
Y0052	3354F-43-D1
Y0053	3354F-44-D1
Y0054	3354F-45-D1
Y0055	3354F-46-E1
Y0056	3354F-47-E1
Y0057	3354F-48-E1
Y0058	3354F-49-E2
Y0059	3354F-50-E2
Y0060	3354F-51-E2
Y0061	3354F-52-E3
Y0062	3354F-53-E3
Y0063	3354F-54-E3
Y0064	3354F-55-E4
Y0065	3354F-56-E4
Y0066	3354F-57-E4
Y0067	3354F-58-E5
Y0068	3354F-59-E5
Y0069	3354F-60-E5
Y0070	3354F-61-F1
Y0071	3354F-62-F1
Y0072	3354F-63-F1
Y0073	3354F-64-F2
Y0074	3354F-65-F2
Y0075	3354F-66-F2
Y0076	3354F-67-F3
Y0077	3354F-68-F3
Y0078	3354F-69-F3

Y0079	3354F-70-F4
Y0080	3354F-71-F4
Y0081	3354F-72-F4
Y0082	3354F-73-F5
Y0083	3354F-74-F5
Y0084	3354F-75-F5
Y0085	3354F-76-ABCD
Y0086	3354F-77-E
Y0087	3354F-78-F

During the course of the analysis of the samples for this SAS ChemWest had three telephone conversations with Mel Ritter of Region 6. Several issues were discussed and for the purposes of documentation they are addressed below.

During the first conversation instrumental calibration procedure and acceptance criteria for tetra thru octa dioxin and furan analysis were mutually agreed upon. These are:

1. Run Brehm mix (window defining mixture of isomers) once during the case.
2. Run a 5 point calibration curve not a 15 point curve.
3. 15% RSD for the initial calibration is acceptable.
4. A continuing calibration must be run at the end of each 12 hour period. The measured relative response factors of the analytes, surrogates and internal standards must be within +/- 30% of the mean values established during initial calibration. If the ending standard fails any criteria the positive samples must be re-injected.
5. A set of 4 groups of ions are used to monitor any overlapping elution between tetra and penta, penta and hexa, hexa and hepta, and hepta and octa isomers.

In the second conversation GPC, disk deliverables, form formats for the pesticides, and a problem with one of the spiking compounds for the dioxins were discussed.

1. ChemWest is using a nonautomated GPC system which elutes from top to bottom but yields comparable results to the automated system described in the IFB-J001. As long as the IFB criteria for the calibration are met this system is acceptable.
2. ChemWest has CompuChem's software for the HP-1000 which automatically generates most of the required forms for the pesticide deliverables. However, these forms are slightly different in format than those in the IFB-J001. Since Mel Ritter was familiar with CompuChem's forms, it was agreed that these would be acceptable.
3. When the matrix spike and matrix spike duplicate for one set of samples was examined it was discovered that all target analytes were acceptably recovered and met RPD criteria accept the TCDD's. Because the original sample was positive approximately 6 ppb and the sample was spiked with only 1 ppb the RPD criteria for the tetra spike recovery (after subtraction) was not met. However if one compared the total amount of TCDD in the spike and spike duplicate the RPD criteria was met. This approach was agreed to be reasonable and re-extractions for these samples are not required.

The third conversation dealt with a problem encountered with several of the dioxin and furan samples. The absolute recovery for the ^{13}C-OCDD internal standard was less than 40% in several samples while all other internal and surrogate recoveries were in excess of 70%. This OCDD recovery was outside the criteria stated in Method 8280 - May 1986 (40 - 120%) for soil samples. These samples however were duck samples and a hard and fast criteria has never been set. The ^{13}C-OCDD peaks in these cases were well shaped, met chlorine cluster ratio criteria and had signal to noise ratios of greater than 10 to 1. But since the two hepta surrogates were quantitated using the ^{13}C-OCDD which were not recovered well and the two surrogates themselves were recovered well (greater than 70%) the calculated surrogates percent accuracies were skewed on the high side, i.e. greater than 140% (acceptable range 60-140%). Since all criteria for an acceptable sample were not met technically a re-extraction was required. Mel Ritter, however, felt that if the samples were flagged and the above explanation was given the re-extraction was

3354F-61-F1
MLR 6/6/88

not necessary.

It was agreed that all of these items would be included in the cover letter accompanying the case.

This report applies to samples 3354F-51-E2 through 3354F-78-F, ChemWest ID's (Y0070 thru Y0087).

Sample 3354F-69-F3, (Y0078) was analyzed as a sample, matrix spike and matrix spike duplicate.

The matrix spike sample and matrix spike duplicate were spiked with one native 2,3,7,8 isomer representing each dioxin and furan congener group. Recoveries of Internal Standard and native compounds all fell within acceptable ranges, 40-120% for Internal Standards for Internal Standards, 60-140% for native 2,3,7,8-TCDD and 2,3,7,8-TCDF, and 40-160% for all other native spike compounds except the Penta CDD in the MSD. Due to interferences noted for the 356 ion, the quantitation was performed on the 358 ion using a response factor of 0.54 (RRF) based on standard ST187116A.

All of the samples in this part of the SAS were found to contain no dioxin or furan isomers. One sample SAS3354F-76-ABCD (Y0085) however exhibited peaks in the 2,3,7,8-TCDD region. The sample was analyzed according to Dioxin IFB WA86-K357 was confirmation was not obtained. The 320/322 ion ratio was not within 0.67 to 0.90, (1.1) so an MPC was reported 0.018 ppb.

Several of the samples had low ^{13}C-OCDD recovery which skewed the two hepta surrogate percent accuracies to the high side. Please see above comments. None of these samples were re-extracted per Mel Ritter of Region 6 EPA. Low levels of OCDD were noted in some of the samples but not in any of the method blanks which were free of contamination.

Routine calibration consisted of running a 0.15 sensitivity standard and a shift standard where the measured RRF's for all analytes were within +/- 30% of the mean values established during initial calibration.

In addition to the analysis of the GC window defining mixture at the beginning of the project the ions in the descriptors were combined such that any region of congener overlap (i.e. tetradioxin/pentafuran) was simultaneously monitored for both congener groups.

Before any samples were analyzed, standards were run at five different concentrations (200, 500, 1000, 2000, 5000 pg/ul) and mean response factors were obtained. A relative standard deviation of less than 15% was obtained. All sample calculations are based on an average multipoint response factor. The following table provides a reference for compounds and their appropriate Internal Standard.

INTERNAL STANDARD	COMPOUND/SURROGATE
^{13}C-2,3,7,8-TCDD	ALL NATIVE TETRADIOXIN ISOMERS
	ALL NATIVE PENTADIOXIN ISOMERS
	ALL NATIVE HEXADIOXIN ISOMERS
	^{37}Cl-2378-TCDD
SURROGATE	
^{13}C-2,3,7,8-TCDF	ALL NATIVE TETRAFURAN ISOMERS
	ALL NATIVE PENTAFURAN ISOMERS
	ALL NATIVE HEXAFURAN ISOMERS
^{13}C-OCDD	ALL NATIVE HEPTADIOXIN/FURAN ISOMERS
	ALL NATIVE OCTADIOXIN/FURAN ISOMERS
	^{13}C-HpCDD and ^{13}C-HpCDF SURROGATES

Interferences were noted from the ^{13}C-2,3,7,8-TCDF in the tetradioxin regions of the chromatograms as the ^{13}C carbon labeled material contains the same ion present in the native dioxin. These interferences were noted on all chromatograms and were not counted as true interferences for use in detection limit calculations.

Extraction procedures were those outlined in the EPA 8280 soil method and the methods provided with the SAS.

The report is divided into the following sections:

1. Cover letter
2. Form-(n) Summary Reports
3. Multipoint Chromatograms
4. Sample Data
5. Shift Standards and 75pg Standards (where applicable)
6. GC/MS Run Log Pages
7. "Cookbook" style step-by-step method including instrument/ conditions, type and source of reagents
8. Extraction flow chart, analyst bench records describing dilutions, weighings, sample size, and final extract volumes
9. Example Calculations

Should you have questions concerning this data report or the analytical methods employed, please do not hesitate to contact me at 916-923-0840.

Sincerely,

Jill B Henes

Jill B. Henes, Ph.D.
Vice President of Technical Services

cc: Joel Bird, President
EPA Region 6 Attn: Mr. Mel Ritter

Enclosures

SECTION 2

FORM-(n) SUMMARY REPORTS

L66910

FORM 1 - QUANTITATION REPORT

DATE: 11/20/87

LABORATORY: CHEMWEST

CASE: SAS 3354-F

CLIENT ID.	CW#	DATE	TIME	INST. ID.	TOTAL ANALYTE QUANTITY FOUND (ppb) 2,3,7,8-TCDD	TCDD	PeCDD	HxCDD	HpCDD	OCDD	2,3,7,8-TCDF	TCDF	PeCDF	HxCDF	HpCDF	OCDF
Method Blank	Y0066MB	11/11/87	12:04	CW-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.0035	0.0029	0.0041	0.0028	0.0069	0.0057	0.0025	0.0023	0.0020	0.0015	0.0047	0.0068
53354F-61-F1	Y0070RI	11/13/87	10:44	CW-1	ND	ND	ND	ND	ND	~~8 ND~~	ND	ND	ND	ND	ND	ND
Detection Limit					0.0048	0.0063	0.0081	0.0067	0.021	0.18	0.0047	0.0036	0.0036	0.0039	0.017	0.024
SAS3354F-62-F1	Y0071	11/13/87	12:14	CW-1	ND	ND	ND	ND	ND	~~8 ND~~	ND	ND	ND	ND	ND	ND
Detection Limit					0.016	0.015	0.020	0.018	0.096	0.3400	0.0094	0.010	0.011	0.011	0.071	0.077
SAS3354F-63-F1	Y0072	11/12/87	12:50	CW-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.0020	0.0023	0.0025	0.0026	0.023	0.023	0.0016	0.0014	0.0014	0.0014	0.011	0.017
SAS3354F-64-F2	Y0073	11/12/87	13:24	CW-1	ND	ND	ND	ND	ND	8 ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.080	0.10	0.13	0.099	0.51	1.48	0.049	0.055	0.055	0.056	0.36	0.42
SAS3354F-65-F2	Y0074	11/12/87	13:59	CW-1	ND	ND	ND	ND	ND	~~8 ND~~	ND	ND	ND	ND	ND	ND
Detection Limit					0.027	0.040	0.054	0.045	0.18	0.73	0.019	0.023	0.024	0.022	0.11	0.16
SAS3354F-66-F2	Y0075	11/12/87	14:34	CW-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tection Limit					0.0019	0.0027	0.0038	0.0031	0.015	0.086	0.0018	0.0018	0.0018	0.0019	0.011	0.011
SAS3354F-67-F3	Y0076	11/12/87	15:09	CW-1	ND	ND	ND	ND	8 ND	2.89	ND	ND	ND	ND	ND	ND
Detection Limit					0.011	0.0097	0.013	0.10	0.051	0.060	0.0058	0.0059	0.0057	0.0058	0.033	0.053

0.0027

8: Maximum possible concentration.

sample here F-67-F3

MCR

MCR
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SURROGATE AND INTERNAL STANDARD RECOVERIES

DATE: 11/20/87

LABORATORY: CHEMWEST

CASE: SAS 3354-F

CLIENT ID.	CW#	DATE	TIME	INST. ID.	ABSOLUTE % RECOVERY of INTERNAL STANDARDS			ABSOLUTE % RECOVERY of SURROGATE		
					*C-TCDD	*C-TCDF	*C-OCDD	*37Cl-TCDD	*13C-HpCDD	*13C-HpCDF
Method Blank	Y0066MB	11/11/87	12:04	CW-1	95	101	57	133	121	125
Detection Limit										
SAS3354F-61-F1	Y0070R1	11/13/87	10:44	CW-1	93	102	42	131	151	145
Detection Limit										
SAS3354F-62-F1	Y0071	11/13/87	12:14	CW-1	91	98	28	127	153	158
Detection Limit										
SAS3354F-63-F1	Y0072	11/12/87	12:50	CW-1	82	91	27	129	156	167
Detection Limit										
SAS3354F-64-F2	Y0073	11/12/87	13:24	CW-1	92	99	35	125	152	157
Detection Limit										
SAS3354F-65-F2	Y0074	11/12/87	13:59	CW-1	91	96	37	123	136	142
Detection Limit										
SAS3354F-66-F2	Y0075	11/12/87	14:34	CW-1	90	96	32	126	142	142
Detection Limit										
SAS3354F-67-F3	Y0076	11/12/87	15:09	CW-1	92	96	38	126	135	137
Detection Limit										

F-67-F3 MWR

*C-TCDD: Carbon 13 labeled 2,3,7,8-tetrachlorodibenzodioxin
*C-TCDF: Carbon 13 labeled 2,3,7,8-tetrachlorodibenzofuran
*13C-HpCDD: Carbon 13 labeled 1,2,3,4,6,7,8-heptachlorodibenzodioxin
*13C-HpCDF: Carbon 13 labeled 1,2,3,4,6,7,8-heptachlorodibenzofuran

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FORM 1 - QUANTITATION REPORT

DATE: 11/20/87

LABORATORY: CHEMWEST

CASE: SAS 3354F

CLIENT ID.	CW#	DATE	TIME	INST. ID.	TOTAL ANALYTE QUANTITY FOUND (ppb) 2,3,7,8-TCDD	TCDD	PeCDD	HxCDD	HpCDD	OCDD	2,3,7,8,-TCDF	TCDF	PeCDF	HxCDF	HpCDF	OCDF
Method Blank	Y0077MB	11/12/87	16:21	CW-1	ND	ND	ND	ND	ND	@ ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.0036	0.0038	0.0039	0.0037	0.010	0.011	0.0023	0.0022	0.0028	0.0018	0.0070	0.008
SAS3354F-68-F3	Y0077	11/12/87	15:45	CW-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.018	0.015	0.024	0.018	0.090	0.34	0.0086	0.011	0.012	0.011	0.051	0.070
SAS3354F-69-F3	Y0078	11/16/87	10:43	CW-1	ND	ND	ND	ND	ND	0.092	ND	ND	ND	ND	ND	ND
Detection Limit					0.0033	0.0032	0.0047	0.0038	0.020		0.0023	0.0022	0.0025	0.0024	0.0065	0.012
SAS3354F-69-F3	Y0078MS	11/16/87	12:21	CW-1	1.15	1.15	7.99	4.44	5.67	11.9	1.01	1.01	4.55	4.51	4.27	9.81
Detection Limit																
SAS3354F-69-F3	Y0078MSD	11/16/87	12:21	CW-1	1.17	1.17	4.65	4.90	5.48	11.1	1.11	1.11	4.61	4.73	4.89	9.73
Detection Limit																
SAS3354F-70-F4	Y0079	11/14/87	11:04	CW-1	ND	ND	ND	ND	ND	@ ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.0036	0.0035	0.0043	0.0035	0.011	0.012	0.0017	0.0018	0.0020	0.0020	0.0075	0.010
SAS3354F-71-F4	Y0080	11/14/87	11:39	CW-1	ND	ND	ND	ND	ND	@ ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.0093	0.0080	0.011	0.0097	0.025	0.072	0.0062	0.0045	0.0050	0.0050	0.017	0.021
SAS3354F-72-F4	Y0081	11/14/87	12:17	CW-1	ND	ND	ND	ND	ND	@ ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.0026	0.0028	0.0038	0.0033	0.012	0.044	0.0016	0.0015	0.0018	0.0017	0.0067	0.0097

@: Maximum possible concentration.

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CLIENT ID.	CW#	DATE	TIME	INST. ID.	ABSOLUTE % RECOVERY of INTERNAL STANDARDS			ABSOLUTE % RECOVERY of SURROGATE		
					*C-TCDD	*C-TCDF	*C-OCDD	*37Cl-TCDD	*13C-HpCDD	*13C-HpCDF
Method Blank	Y0077MB	11/12/87	16:21	CW-1	95	99	58	128	114	115
Detection Limit										
SAS3354F-68-F3	Y0077	11/12/87	15:45	CW-1	95	99	43	129	128	134
Detection Limit										
SAS3354F-69-F3	Y0078	11/16/87	10:43	CW-1	91	94	63	128	124	123
Detection Limit										
SAS3354F-69-F3	Y0078MS	11/16/87	12:21	CW-1	100	105	80	130	133	127
Detection Limit										
SAS3354F-69-F3	Y0078MSD	11/16/87	12:21	CW-1	94	99	80	134	133	130
Detection Limit										
SAS3354F-70-F4	Y0079	11/14/87	11:04	CW-1	90	94	46	135	138	141
Detection Limit										
SAS3354F-71-F4	Y0080	11/14/87	11:39	CW-1	94	100	52	130	122	114
Detection Limit										
SAS3354F-72-F4	Y0081	11/14/87	12:17	CW-1	91	96	47	136	129	122
Detection Limit										

*C-TCDD: Carbon 13 labeled 2,3,7,8-tetrachlorodibenzodioxin
*C-TCDF: Carbon 13 labeled 2,3,7,8-tetrachlorodibenzofuran
*13C-HpCDD: Carbon 13 labeled 1,2,3,4,6,7,8-heptachlorodibenzodioxin

FORM 1 - QUANTITATION REPORT

DATE: 11/20/87

LABORATORY: CHEMWEST

CASE: SAS 3354-F

CLIENT ID.	CW#	DATE	TIME	INST. ID.	TOTAL ANALYTE QUANTITY FOUND (ppb) 2,3,7,8-TCDD	TCDD	PeCDD	HxCDD	HpCDD	OCDD	2,3,7,8-TCDF	TCDF	PeCDF	HxCDF	HpCDF	OCDF
SAS3354F-73-F5	Y0082	11/14/87	12:52	CW-1	ND	ND	ND	ND	ND	@ ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.014	0.016	0.019	0.018	0.068	0.068	0.0065	0.0092	0.010	0.0098	0.042	0.062
3354F-74-F5	Y0083	11/14/87	13:26	CW-1	ND	ND	ND	ND	ND	@ ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.022	0.023	0.030	0.026	0.066	0.16	0.016	0.013	0.014	0.013	0.042	0.051
SAS3354F-75-F5	Y0084	11/15/87	13:27	CW-1	ND	ND	ND	ND	ND	0.030	ND	ND	ND	ND	ND	ND
Detection Limit					0.0022	0.0028	0.0044	0.0036	0.0080	--	0.0022	0.0020	0.0024	0.0022	0.0062	0.0077
SAS3354F-76-ABCD	Y0085	11/15/87	14:03	CW-1	~~@ ND~~	~~@ ND~~	ND	ND	ND	0.102	0.032	0.094	ND	ND	ND	ND
Detection Limit					0.014	0.040	0.0051	0.0036	0.010	--	--	--	0.0024	0.0023	0.0059	0.0060
SAS3354F-77-F	Y0086	11/15/87	14:40	CW-1	ND	ND	ND	ND	ND	@ ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.0025	0.0027	0.0050	0.0039	0.0087	0.063	0.0029	0.0023	0.0023	0.0022	0.0082	0.0099
SAS3354F-77-F	Y0087	11/15/87	15:16	CW-1	ND	ND	ND	ND	ND	@ ND	ND	ND	ND	ND	ND	ND
Detection Limit					0.0043	0.0050	0.0060	0.0061	0.015	0.049	0.0027	0.0023	0.0026	0.0026	0.0079	0.010

SAS 3354F-78-F

MUR 6EML

@: Maximum possible concentration.

SURROGATE AND INTERNAL STANDARD RECOVERIES

DATE: 11/20/87

LABORATORY: CHEMMEST

CASE: SAS 3354-F

CLIENT ID.	CW#	DATE	TIME	INST. ID.	ABSOLUTE % RECOVERY of INTERNAL STANDARDS *C-TCDD	*C-TCDF	*C-OCDD	ABSOLUTE % RECOVERY of SURROGATE *37Cl-TCDD	*13C-HpCDD	*13C-HpCDF
SAS3354F-73-F5 Detection Limit	Y0082	11/14/87	12:52	CW-1	88	93	42	132	145	139
SAS3354F-74-F5 Detection Limit	Y0083	11/14/87	13:26	CW-1	89	96	56	134	119	115
SAS3354F-75-F5 Detection Limit	Y0084	11/15/87	13:27	CW-1	93	97	80	132	120	117
SAS3354F-76-ABCD Detection Limit	Y0085	11/15/87	14:03	CW-1	95	105	84	130	107	106
SAS3354F-77-F Detection Limit	Y0086	11/15/87	14:40	CW-1	94	100	65	132	125	117
SAS3354F-77-F Detection Limit	Y0087	11/15/87	15:16	CW-1	91	100	76	129	103	101

F-78-F

*C-TCDD: Carbon 13 labeled 2,3,7,8-tetrachlorodibenzodioxin

*C-TCDF: Carbon 13 labeled 2,3,7,8-tetrachlorodibenzofuran

*13C-HpCDD: Carbon 13 labeled 1,2,3,4,6,7,8-heptachlorodibenzodioxin

017003

FORM 2 - MULTIPOINT CALIBRATION SUMMARY

INST.	DATE	TIME	STD. ID.	TARGET COMPOUND RESPONSE FACTORS										INTERNAL STANDARD RESPONSE FACTORS				
				TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDD	*C-OCDD
CW-1	11-06-87	11:33	200	0.77	0.77	0.62	1.05	1.06	0.89	0.97	0.83	1.91	1.15	1.48	1.79	1.00	1.57	0.98
CW-1	11-06-87	10:54	500	0.79	0.80	0.60	1.08	0.99	0.95	0.91	0.85	1.76	1.05	1.39	1.72	1.03	1.53	0.54
CW-1	11-06-87	12:11	1000	0.80	0.79	0.64	1.11	1.02	1.00	0.98	0.94	1.90	1.10	1.42	1.67	1.03	1.54	0.54
CW-1	11-06-87	13:35	2000	0.74	0.77	0.65	1.13	1.02	0.92	0.90	0.89	1.85	1.07	1.52	1.84	1.05	1.56	0.61
CW-1	11-06-87	14:19	5000	0.76	0.76	0.58	1.08	1.02	0.87	0.90	0.80	1.81	1.10	1.31	1.62	1.05	1.52	0.47
MEAN RESPONSE FACTORS				0.77	0.78	0.62	1.09	1.02	0.93	0.93	0.86	1.85	1.09	1.42	1.73	1.03	1.54	0.55
STANDARD DEVIATION				0.02	0.02	0.03	0.03	0.02	0.05	0.04	0.05	0.06	0.04	0.08	0.09	0.02	0.02	0.05
RSD				3.1	2.1	4.6	2.8	2.4	5.5	4.3	6.3	3.4	3.5	5.7	5.1	2.0	1.3	9.6

SD ID	STANDARDS	CONCENTRATION (pg/ul)
*C-TCDD	*13C12-2,3,7,8-TCDD	500
*C-TCDF	*13C12-2,3,7,8-TCDF	500
*C-HpCDD	*13C12-1,2,3,4,6,7,8-HpCDD	1000
*C-HpCDF	*13C12-1,2,3,4,6,7,8-HpCDF	
*C-OCDD	*13C12-1,2,3,4,5,6,7,8-OCDD	

	SHIFT STANDARD COMPOUNDS *	
SD 200	2,3,7,8-TCDD, 2,3,7,8-TCDF	200
SD 500	1,2,3,7,8-PeCDD, 1,2,3,7,8-PeCDF	500
SD 1000	1,2,3,4,7,8-HxCDD, 1,2,3,4,7,8-HxCDF	1000
SD 2000	1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF	2000
SD 5000	1,2,3,4,5,6,7,8-OCDD, 1,2,3,4,5,6,7,8-OCDF	5000

FORM 3 CONTINUING CALIBRATION SUMMARY

TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
0.77	0.78	0.62	1.09	1.02	0.93	0.93	0.86	1.85	1.09	1.42	1.73	1.03	1.54	0.55

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-11-87	11:14	SD 500	RF	0.8	0.86	0.66	1.41	1.2	0.94	1.04	0.96	2.38	1.2	1.45	1.78	1.2	1.85	0.48
			RPD	3.8	9.8	6.3	25.6	16.2	1.1	11.2	11.0	25.1	9.6	2.1	2.8	15.2	18.3	13.6

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-11-87	17:58	SD 500	RF	0.79	0.63	0.5	1.13	1.13	0.9	0.8	0.64	1.94	1.06	1.43	1.91	1.05	1.59	0.42
			RPD	2.6	21.3	21.4	3.6	10.2	3.3	15.0	29.3	4.7	2.8	0.7	9.9	1.9	3.2	26.8

T=17:02
MLR

FORM 3 - CONTINUING CALIBRATION SUMMARY

TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
0.77	0.78	0.62	1.09	1.02	0.93	0.93	0.86	1.85	1.09	1.42	1.73	1.03	1.54	0.55

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-12-87	09:36	SD 500	RF	0.79	0.71	0.51	1.31	1.06	0.91	0.86	0.73	2.19	1.08	1.41	1.8	1.17	1.79	0.41
			RPD	2.6	9.4	19.5	18.3	3.8	2.2	7.8	16.4	16.8	0.9	0.7	4.0	12.7	15.0	29.2

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-12-87	17:49	SD 500	RF	0.8	0.71	0.49	1.16	1.15	0.88	0.83	0.68	1.9	1.09	1.41	1.78	1.06	1.6	0.41
			RPD	3.8	9.4	23.4	6.2	12.0	5.5	11.4	23.4	2.7	0.0	0.7	2.8	2.9	3.8	29.2

900410

FORM 3 - CONTINUING CALIBRATION SUMMARY

TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
0.77	0.78	0.62	1.09	1.02	0.93	0.93	0.86	1.85	1.09	1.42	1.73	1.03	1.54	0.55

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-13-87	09:51	SD 500	RF	0.79	0.84	0.64	1.11	1.06	0.94	0.98	0.88	1.92	1.06	1.4	1.82	1.07	1.58	0.58
			RPD	2.6	7.4	3.2	1.8	3.8	1.1	5.2	2.3	3.7	2.8	1.4	5.1	3.8	2.6	5.3

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-13-87	16:12	SD 500	RF	0.78	0.82	0.62	1.21	1	0.9	0.98	0.85	2.12	1.09	1.42	1.82	1.16	1.72	0.49
			RPD	1.3	5.0	0.0	10.4	2.0	3.3	5.2	1.2	13.6	0.0	0.0	5.1	11.9	11.0	11.5

FORM 3 - CONTINUING CALIBRATION SUMMARY

TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
0.77	0.78	0.62	1.09	1.02	0.93	0.93	0.86	1.85	1.09	1.42	1.73	1.03	1.54	0.55

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-14-87	10:10	SD 500	RF	0.83	0.77	0.59	1.08	1.07	0.9	0.87	0.77	1.8	1.01	1.43	1.92	0.96	1.43	0.58
			RPD	7.5	1.3	5.0	0.9	4.8	3.3	6.7	11.0	2.7	7.6	0.7	10.4	7.0	7.4	5.3

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-14-87	14:05	SD 500	RF	0.78	0.74	0.56	1.01	1.06	0.89	0.89	0.73	1.8	1.03	1.43	1.81	0.97	1.48	0.53
			RPD	1.3	5.3	10.2	7.6	3.8	4.4	4.4	16.4	2.7	5.7	0.7	4.5	6.0	4.0	3.7

800710

FORM 3 - CONTINUING CALIBRATION SUMMARY

TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
0.77	0.78	0.62	1.09	1.02	0.93	0.93	0.86	1.85	1.09	1.42	1.73	1.03	1.54	0.55

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-15-87	12:35	SD 500	RF	0.79	0.8	0.64	1.05	1.04	0.93	0.98	0.87	1.66	1.06	1.44	1.85	1.01	1.44	0.65
			RPD	2.6	2.5	3.2	3.7	1.9	0.0	5.2	1.2	10.8	2.8	1.4	6.7	2.0	6.7	16.7

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-15-87	15:51	SD 500	RF	0.78	0.77	0.61	1.02	1.05	0.91	0.84	0.76	1.67	1.01	1.37	1.82	1.03	1.47	0.58
			RPD	1.3	1.3	1.6	6.6	2.9	2.2	10.2	12.3	10.2	7.6	3.6	5.1	0.0	4.7	5.3

6004/10 FORM 3 CONTINUING CALIBRATION SUMMARY

TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
0.77	0.78	0.62	1.09	1.02	0.93	0.93	0.86	1.85	1.09	1.42	1.73	1.03	1.54	0.55

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-16-87	08:59	SD 500	RF	0.79	0.81	0.62	1.08	1.06	0.95	0.92	0.86	1.78	1.02	1.44	1.85	1.01	1.44	0.65
			RPD	2.6	3.8	0.0	0.9	3.8	2.1	1.1	0.0	3.9	6.6	1.4	6.7	2.0	6.7	16.7

DATE	TIME	STD ID.		TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF	*C-TCDD	*C-TCDF	*C-HpCDD	*C-HpCDF	*C-OCDD
11-16-87	17:20	SD 500	RF	0.79	0.79	0.61	1.29	1.03	0.9	0.91	0.85	2.16	1.15	1.37	1.74	1.17	1.78	0.46
			RPD	2.6	1.3	1.6	16.8	1.0	3.3	2.2	1.2	15.5	5.4	3.6	0.6	12.7	14.5	17.8

FORM 4 - QUALITY CONTROL REPORT

CASE: SAS 3354-F

MATRIX SPIKE RESULTS

CLIENT ID: SAS3354F-69-F3 CW#: Y0078MS

COMPOUND	RESULTS (ppb)	% RATIO SPIKE/IS	
2,3,7,8-TCDD	1.2	115%	
1,2,3,7,8-PeCDD	8.0	103%	*
1,2,3,4,7,8-HxCDD	4.4	111%	
1,2,3,4,6,7,8-HpCDD	5.7	133%	
1,2,3,4,6,7,8,9-OCDD	11.9	142%	
2,3,7,8-TCDF	1.0	118%	
1,2,3,7,8-PeCDF	4.6	114%	
1,2,3,4,7,8-HxCDF	4.5	113%	
1,2,3,4,6,7,8-HpCDF	4.3	107%	
1,2,3,4,6,7,8,9-OCDD	9.8	98%	

CLIENT ID: SAS3354F-69-F3 CW#: Y0078MSD

COMPOUND	RESULTS (ppb)	% RATIO SPIKE/IS
2,3,7,8-TCDD	1.2	117%
1,2,3,7,8-PeCDD	4.7	116%
1,2,3,4,7,8-HxCDD	4.9	123%
1,2,3,4,6,7,8-HpCDD	5.5	137%
1,2,3,4,6,7,8,9-OCDD	11.1	110%
2,3,7,8-TCDF	1.1	111%
1,2,3,7,8-PeCDF	4.6	115%
1,2,3,4,7,8-HxCDF	4.7	118%
1,2,3,4,6,7,8-HpCDF	4.9	122%
1,2,3,4,6,7,8,9-OCDD	9.7	97%

	TCDD	PeCDD	HxCDD	HpCDD	OCDD	TCDF	PeCDF	HxCDF	HpCDF	OCDF
Y0078MS	1.2	8.0	4.4	5.7	11.9	1.0	4.6	4.5	4.3	9.8
Y0078MSD	1.2	4.7	4.9	5.5	11.1	1.1	4.6	4.7	4.9	9.7
RPD (%)	0	52	10.7	3.4	7.0	9.5	0	4.3	13	1.1

* Interferences in the 356 ion. The 358 ion was used to quantitate the PeCDD RRF(0.54) based on ST187116A.

0170010

METHOD 8280 SAMPLE SHEET

DATE : 11-1-88

COLUMN: DB-5

INJ TIME : 12:04

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0066MB

CURVE : ST187106 C,D,E,F,G

SAMPLE ID : Method Blank

COMMENTS :

SAMPLE SIZE : (20.00g)

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL	
13C-2378-TCDD	1039	(332)	430162	(334)	162967 / 555045	0.78	1.42	10	952	17011
13C-1234-TCDD	1030	(332)	330632	(334)	409747	0.81		10		
37CL-2378-TCDD	1040			(328)	456586		0.87	4	1332 ****	
2378-TCDD		(320)		(322)	Ht= 872		0.77		0.0035 / 0.0029	
TCDD		(320)		(322)	731		0.77		0.0597	
PeCDD		(358)		(356)	Ht=1054		0.78		0.0041	
HxCDD		(392)		(390)	Ht= 550		0.0		0.0028	
13C-1234678-HpCDD	1744	(438)	290106	(436)	320804	0.90	1.03	20	1212 ***	
HpCDD		(426)		(424)	Ht= 480		1.09		0.0069 ***	
OCDD		(458)		(460)	375		1.02		0.0057 ***	
13C-OCDD	1962	(470)	299133	(472)	80327 / 322226	0.93	0.55	25	57%	
13C-2378-TCDF	1004	(316)	584056	(318)	24112 / 716809	0.81	1.73	10	1012	
2378-TCDF		(304)		(306)	Ht=979		0.93		0.0025 **	
TCDF		(304)		(306)	Ht=927		0.93		0.0023 **	
PeCDF		(342)		(340)	Ht= 807		0.93		0.0020 **	
HxCDF		(376)		(374)	Ht= 562		0.86		0.0015 **	
13C-1234678-HpCDF	1668	(422)	459208	(420)	494350	0.92	1.54	20	1253 ***	
HpCDF		(410)		(408)	Ht= 502		1.95		0.0047 ***	
OCDF		(442)		(444)	Ht= 474		1.09		0.0068 ***	

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

METHOD 8280 SAMPLE SHEET

DATE : 11-13-87

COLUMN: DB-5

INJ TIME : 10:44

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0070RI

CURVE : ST187106 C,D,E,F,G

SAMPLE ID : SAS3354F-61-F1

COMMENTS :

SAMPLE SIZE : 9.09g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1040	(332)	341375	(334)	128315 / 433071	0.79	1.42	10	93%
13C-1234-TCDD	1031	(332)	266011	(334)	327499	0.81		10	
37CL-2378-TCDD	1041			(328)	351911		0.87	4	131%****
2378-TCDD		(320)		(322)	Ht=430		0.77		0.0048
TCDD		(320)		(322)	566		0.77		0.0063
PeCDD		(358)		(356)	Ht=735		0.78		0.0081
HxCDD		(392)		(390)	Ht=483		0.82		0.0067
13C-1234678-HpCDD	1749	(438)	216542	(436)	234818	0.92	1.23	20	151%***
HpCDD		(426)		(424)	417		1.09		0.021***
OCDD	1968	(458)	130 40	(460)	12770	1.02	1.02	0.18	***MPC
13C-OCDD	1967	(470)	166415	(472)	50382 / 188486	0.88	0.55	25	42%
13C-2378-TCDF	1006	(316)	456056	(318)	165694 / 575160	0.79	1.73	10	102%
2378-TCDF		(304)		(306)	Ht=652		0.93		0.0047**
TCDF		(304)		(306)	Ht=511		0.93		0.0036**
PeCDF		(342)		(340)	Ht=502		0.93		0.0036**
HxCDF		(376)		(374)	Ht=501		0.86		0.0036**
13C-1234678-HpCDF	1673	(422)	316954	(420)	336106	0.94	1.54	20 / 25	145%***
HpCDF		(410)		(408)	Ht=567		1.85		0.017***
OCDF		(442)		(444)	490		1.09		0.024***

017012

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

METHOD 8280 SAMPLE SHEET

DATE : 11-12-87

COLUMN: DB-5

INJ TIME : 12:14

INSTRUMENT ID : CW-1

CHEMWEST ID : Y007-1

CURVE : ST187106 C,D,E,F,G

SAMPLE ID : SAS3354F-62-F1

COMMENTS :

SAMPLE SIZE : 3.11 g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1042	(332)	395635	(334)	148792 / 489240	0.81 / 0.80	1.42	10	91%
13C-1234-TCDD	1033	(332)	300720	(334)	380118	0.79		10	
37CL-2378-TCDD	1043			(328)	392020		0.87	4	127% ****
2378-TCDD		(320)		(322)	Ht= 549		0.97		0.016
TCDD		(320)		(322)	521		0.77		0.015
PeCDD		(358)		(356)	Ht= 719		0.78		0.020
HxCDD		(392)		(390)	497		0.82		0.018
13C-1234678-HpCDD	1748	(438)	162823	(436)	187876	0.97	1.03	20	153% ***
HpCDD		(426)		(424)	Ht= 497		1.09		0.096 ***
OCDD	1966	(458)	62355	(460)	Ht=71 6392 / 37997	0.99	1.02	0.34	0.34 ***
13C-OCDD	1966	(470)	139774	(472)	148857	0.94	0.55	25	28%
13C-2378-TCDF	1008	(316)	526446	(318)	189085 / 643354	0.82	1.73	10	98%
2378-TCDF		(304)		(306)	Ht= 515		0.93		0.0094 **
TCDF		(304)		(306)	Ht= 557		0.93		0.010 **
PeCDF		(342)		(340)	Ht= 600		0.93		0.011 **
HxCDF		(376)		(374)	Ht= 574		0.86		0.011 **
13C-1234678-HpCDF	1672	(422)	269620	(420)	289430	0.93	1.54	20	158% ***
HpCDF		(410)		(408)	Ht= 623		1.85		0.071 ***
OCDF		(442)		(444)	Ht= 396		1.09		0.077 ***

0.34 MPC 0.109

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

0170113

METHOD 8280 SAMPLE SHEET

DATE : 11-12-87

COLUMN: DB-5

INJ TIME : 12:50

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0072

CURVE : 871871106 C,D,E,F,G

SAMPLE ID : SA33354F-63-F1

COMMENTS :

SAMPLE SIZE : 20.03 g

	SCAN#	AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1039	(332) 360934	(334)	139088 451078	0.82	1.42	10	827
13C-1234-TCDD	1029	(332) 296793	(334)	388244	0.76		10	
37CL-2378-TCDD	1039		(328)	365756		0.87	4	1292 ****
2378-TCDD	ND	(320)	(322)	424		0.77		0.0020
TCDD		(320)	(322)	488		0.77		0.0023
PeCDD	ND	(358)	(356)	542		0.78		0.0025
HxCDD	ND	(392)	(390)	455		0.80		0.0026
13C-1234678-HpCDD	1750	(438) 173476 135626	(436)	135626	0.93	1.03	20	1562 ***
HpCDD	ND	(426)	(424)	962 647		1.09		0.0057 0.015 ***
OCDD	1969	(458) 2940	(460)	2278		1.02		0.025 ***
13C-OCDD	165968	(470) 129991	(472)	35122 144762	0.90	0.55	25	272 *
13C-2378-TCDF	1004	(316) 483548	(318)	197498 608050	0.80	1.73	10	912
2378-TCDF	ND	(304)	(306)	577		0.93		0.0016 **
TCDF		(304)	(306)	512		0.93		0.0014 **
PeCDF	ND	(342)	(340)	529		0.93		0.0014 **
HxCDF	ND	(376)	(374)	486		0.86		0.0014 **
13C-1234678-HpCDF	1674	(422) 262764	(420)	295669	0.89	1.54	20	1672 ***
HpCDF	ND	(410)	(408)	552		1.85		0.011 ***
OCDF	ND	(442)	(444)	534		1.09		0.017 ***

017014

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

METHOD 8280 SAMPLE SHEET

DATE : 11-12-87

COLUMN: DB-5

INJ TIME : 13:24

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0073

CURVE : ST1871106C,D,E,F,G

SAMPLE ID : SA53354F-64-F2

COMMENTS :

SAMPLE SIZE : 0.60g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1038	(332)	339079	(334)	128791 / 440272	0.77	1.42	10	~~137%~~ 92%
13C-1234-TCDD	1029	(332)	271031	(334)	335800	0.81		10	
37CL-2378-TCDD	1039			(328)	339574		0.87	4	125% ****
2378-TCDD		(320)		(322)	Ht= 478		0.77		.080
TCDD		(320)		(322)	598		0.77		0.10
PeCDD		(358)		(356)	Ht= 802		0.78		.133
HxCDD		(392)		(390)	Ht= 473		0.82		.099
13C-1234678-HpCDD	1743	(438)	193420	(436)	203024	0.95	1.03	20	152% ***
HpCDD		(426)		(424)	Ht= 544		1.09		.512***
OCDD		(458)		(460)	Ht= 1474 / ~~373~~		1.02		1.40 / ~~.375~~ ***
13C-OCDD	1961	(470)	152198	(472)	40645 / 161985	0.94	0.55	25	352
13C-2378-TCDF	1003	(316)	458129	(318)	168854 / 577087	0.79	1.73	10	99%
2378-TCDF		(304)		(306)	Ht= 457		0.93		.049 **
TCDF		(304)		(306)	Ht= 515		0.93		.055 **
PeCDF		(342)		(340)	Ht= 516		0.93		.055 **
HxCDF		(376)		(374)	Ht= 488		0.86		.056**
13C-1234678-HpCDF	1667	(422)	288700	(420)	313957	0.95	1.54	20 / 25	157% ***
HpCDF		(410)		(408)	Ht= 654		1.85		.362 ***
OCDF		(442)		(444)	Ht= 447		1.09		.420***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

OK

METHOD 8280 SAMPLE SHEET

DATE : 11-12-87

COLUMN: DB-5

INJ TIME : 13:59

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0074

CURVE : 871871106 C,D,E,F,G

SAMPLE ID : SAS3354F-65-F2

COMMENTS :

SAMPLE SIZE : 1.22g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1036	(332)	393183	(334)	157438 508421	0.77	1.42	10	7%
13C-1234-TCDD	1027	(332)	305253	(334)	395074	0.77		10	
37CL-2378-TCDD	1037			(328)	384401		0.87	4	12% ****
2378-TCDD		(320)		(322)	Ht= 388		0.77		.027
TCDD		(320)		(322)	575		0.77		0.040
PeCDD		(358)		(356)	Ht= 777		0.78		.054
HxCDD		(392)		(390)	Ht= 513		0.82		.045
13C-1234678-HpCDD	1742	(438)	205717	(436)	223625	0.92	1.23	20	18% ***
HpCDD		(426)		(424)	Ht= 504		1.09		.193 ***
OCDD	1960 1960	(458)	6621	(460)	Ht= 7298 7244	0.91	1.02	0.73	.23 *** MPC
13C-OCDD	~~463729~~	(470)	183722	(472)	51704 199100	0.92	0.55	25	37%
13C-2378-TCDF	1001	(316)	509988	(318)	203870 695464	0.78	1.73	10	9%
2378-TCDF		(304)		(306)	Ht= 448		0.93		.019 **
TCDF		(304)		(306)	Ht= 530		0.93		.023 **
PeCDF		(342)		(340)	Ht= 544		0.93		.024 **
HxCDF		(376)		(374)	Ht= 479		0.86		.022 **
13C-1234678-HpCDF	1666	(422)	316632	(420)	349462	0.91	1.54	20 25	14% ***
HpCDF		(410)		(408)	Ht= 527		1.95		.113 ***
OCDF		(442)		(444)	Ht= 448		1.09		.163 ***

0017016

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

METHOD 8280 SAMPLE SHEET

DATE : 11-12-87

COLUMN: DB-5

INJ TIME : 14:34

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0075

CURVE : ST1871106 C,D,E,F,G

SAMPLE ID : SAS3354F-66-F2

COMMENTS : _____

SAMPLE SIZE : 17.93g

	SCAN#	AREA	AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1037	(332) 372586	(334) 144653 467024	0.80	1.42	10	90%
13C-1234-TCDD	1027	(332) 285247	(334) 365803	0.78		10	
37CL-2378-TCDD	1038		(328) 366805		0.87	4	126% ****
2378-TCDD	ND	(320)	(322) 387		0.77		.0019 .002
TCDD		(320)	(322) 544		0.77		0.0027
PeCDD	ND	(358)	(356) 763		0.78		.0038 .004
HxCDD	ND	(392)	(390) 501		0.8		.0031
13C-1234678-HpCDD	1746	(438) 174988	(436) 185706	0.94	1.03	20	142% ***
HpCDD	ND	(426)	(424) 345 475		1.09		0.015 .011 ***
OCDD	1914	(458) HT 2434	(460) HT 2631		1.02		.086 ***
13C-OCDD	1964	(470) 144083	(472) 158611 41570	0.91	0.55	25	32%
13C-2378-TCDF	1002	(316) 486159	(318) 608500 178118	0.80	1.73	10	96%
2378-TCDF	ND	(304)	(306) 805		0.93		.0027 .005 **
TCDF	ND	(304)	(306) 530		0.93		.0018 .003 **
PeCDF	ND	(342)	(340) 548		0.93		.0018 .003 **
HxCDF	ND	(376)	(374) 529		0.86		.0019 .003 **
13C-1234678-HpCDF	1670	(422) ~~27 251236~~	(420) 277759	0.90	1.54	20 ~~25~~	142% ***
HpCDF	ND	(410)	(408) 625		1.85		.011 ***
OCDF	ND	(442)	(444) 374		1.09		.011 ***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

0170177

1930L

METHOD 8280 SAMPLE SHEET

DATE : 11-12-87

COLUMN: DB-5

INJ TIME : 15:09

INSTRUMENT ID : CW-1

CHEMWEST ID : 40076

CURVE : 871871106 C,D,E,F,G

SAMPLE ID : SAS3354F-67-F3

COMMENTS :

SAMPLE SIZE : 5.35g

67F3

	SCAN#	AREA	AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1038	(332) 370139	(334) 136960 475996	0.78	1.42	10	92?
13C-1234-TCDD	1029	(332) 272745	(334) 362536	0.75		10	
37CL-2378-TCDD	1039		(328) 371304		0.87	4	962 ****
2378-TCDD		(320)	(322) Ht= 605		0.97		.011
TCDD		(320)	(322) 546		0.77		0.0097
PeCDD		(358)	(356) Ht= 743		0.78		.013
HxCDD		(392)	(390) Ht= 474		0.82		.010
13C-123467B-HpCDD	1744	(438) ~~208958~~ 195549	(436) 208958 195549	0.94	1.03	20	1352 ***
HpCDD		(426)	(424) Ht= 540		1.09		.051 ***
OCDD		(458)	(460) Ht= 596		1.02		.060 ***
13C-OCDD	1962	(470) 170235	(472) 45483 187929	0.91	0.55	25	382
13C-2378-TCDF	1003	(316) 480487	(318) 184823 602606	0.80	1.73	10	962
2378-TCDF		(304)	(306) Ht= 532		0.93		.0058 **
TCDF		(304)	(306) Ht= ~~410~~ 539		0.93		~~.010~~ 0.0059 ** MPC 1
PeCDF		(342)	(340) Ht= 524		0.93		.0057 **
HxCDF		(376)	(374) Ht= 497		0.86		~~.005~~ **
13C-123467B-HpCDF	1669	(422) 291768	(420) 316632	0.92	1.54	20 ~~25~~	1372 ***
HpCDF		(410)	(408) Ht= 596		1.05		.033 ***
OCDF		(442)	(444) Ht= 760		1.09		.053 ***

017018

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

OK

METHOD 8280 SAMPLE SHEET

DATE : 11-12-87

COLUMN: DB-5

INJ TIME : 16:21

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0077MB

CURVE : ST1871106 C,D,E,F,G

SAMPLE ID : Method Blank

COMMENTS :

SAMPLE SIZE : (20.00g)

	SCAN#	AREA	AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1038	(332) 326794	(334) 123286 426167	0.77	1.42	10	95%
13C-1234-TCDD	1029	(332) 242954	(334) 315164	0.77		10	
37CL-2378-TCDD	1039		(328) 336584		0.87	4	128% ****
2378-TCDD		(320)	(322) Ht= 690		0.77		0.0036
TCDD		(320)	(322) 712		0.77		0.0038
PeCDD		(358)	(356) Ht= 751		0.78		0.0037
HxCDD		(392)	(390) Ht= 578		0.9		0.0037
13C-1234678-HpCDD	1745	(438) 216441 ~~276339~~	(436) 233954	0.93	1.03	20	114% ***
HpCDD		(426)	(424) Ht= 559		1.09		0.010 ***
OCDD		(458)	(460) Ht= 540 62509		1.02		0.011 ***
13C-OCDD	1963	(470) 231347	(472) 249575	0.93	0.55	25	58%
13C-2378-TCDF	1003	(316) 431770	(318) 163516 538506	0.80	1.73	10	99%
2378-TCDF		(304)	(306) Ht= 696		0.93		0.0028 **
TCDF		(304)	(306) Ht= 658		0.93		0.0092 **
PeCDF		(342)	(340) Ht= 698		0.93		0.0023 **
HxCDF		(376)	(374) Ht= 514		0.86		0.0018 **
13C-1234678-HpCDF	1670	(422) 324468	(420) 354522	0.92	1.54	20 20	115% ***
HpCDF		(410)	(408) Ht= 647		1.85		0.0070 ***
OCDF		(442)	(444) Ht= 459 54094		1.09		0.0084 ***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

0170 19

METHOD 8280 SAMPLE SHEET

DATE : 11-12-87

COLUMN: DB-5

INJ TIME : 15:45

INSTRUMENT ID : CW-1

CHEMWEST ID : 40072

CURVE : ST187-106 C,D,E,F,G

SAMPLE ID : SAS3354F-68-F3

COMMENTS :

SAMPLE SIZE : 2.86g

	SCAN#	AREA	AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1058	(332) 374080	(334) 140573 769600	0.80	1.42	10	95%
13C-1234-TCDD	1028	(332) 276346	(334) 348550	0.79		10	
37CL-2378-TCDD	1039		(328) 379970		0.87	4	12% ****
2378-TCDD		(320)	(322) Ht=553		0.77		0.018
TCDD		(320)	(322) 466		0.77		0.015
PeCDD		(358)	(356) Ht=737		0.78		0.024
HxCDD		(392)	(390) Ht=459		0.82		0.018
13C-123467B-HpCDD	1749	(438) 209114	(436) 247144	0.96	1.03	20	128% ***
HpCDD	1967 %	(426)	(424) 596		1.09		0.090 ***
OCDD	1967	(458) 5520	(460) 8240	0.67	1.02	0.37 0.34	0.34 *** MPC
13C-OCDD	1967	(470) 189858	(472) 53214 205256	0.93	0.55	25	45%
13C-2378-TCDF	1003	(316) 490796	(318) 172858 598461	0.82	1.73	10	99%
2378-TCDF		(304)	(306) Ht=395		0.93		0.0086 **
TCDF	1029%	(304)	(306) Ht=1066 521 98		0.93		0.011 0.0082 ** MPC %
PeCDF		(342)	(340) Ht=529		0.93		0.012 **
HxCDF		(376)	(374) Ht=449		0.86		0.011 **
13C-123467B-HpCDF	1693	(422) 308392	(420) 337778	0.91	1.54	20 29	13% ***
HpCDF		(410)	(408) Ht=576		1.85		0.057 ***
OCDF		(442)	(444) Ht=466		1.09		0.070 ***

017020

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

METHOD 8280 SAMPLE SHEET

DATE : 11-16-87

COLUMN: DB-5

INJ TIME : 10:43

INSTRUMENT ID : CW-1

CHEMEST ID : Y0078

CURVE : ST1671106 C,D,E,F,G

SAMPLE ID : S153354F-69-F3

COMMENTS :

SAMPLE SIZE : 20.29g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1041	(332)	280836	(334)	104029 345107	0.81	1.42	10	912
13C-1234-TCDD	1031	(332)	214248	(334)	265836	0.81		10	
37CL-2378-TCDD	1042			(328)	278044		0.87	4	1282****
2378-TCDD		(320)		(322)	538		0.77		0.0033
TCDD		(320)		(322)	512		0.77		0.0032
PeCDD		(358)		(356)	772		0.78		0.0047
HxCDD		(392)		(390)	492		0.9		0.0038
13C-1234678-HpCDD	1743	(438)	218684	(436)	233012	0.93	1.23	20	1247***
HpCDD		(426)		(424)	969		1.09		0.020***
OCDD	1959	(458)	66228	(460)	17364 54958	0.93	1.02	0.092	0.104***
13C-OCDD	1958	(470)	206592	(472)	228522	0.90	0.55	25	632
13C-2378-TCDF	1006	(316)	339226	(318)	129336 432566	0.78	1.73	10	942
2378-TCDF		(304)		(306)	553		0.93		0.0023 0.0023**
TCDF		(304)		(306)	532		0.93		0.0022**
PeCDF		(342)		(340)	601		0.93		0.0025**
HxCDF		(376)		(374)	542		0.86		0.0024**
13C-1234678-HpCDF	1668	(422)	329881	(420)	347168	0.95	1.54	20 29	1232***
HpCDF		(410)		(408)	533		1.95		0.0665***
OCDF		(442)		(444)	825		1.09		0.017***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

0170021

METHOD 8280 SAMPLE SHEET

DATE : 11-16-87

COLUMN: DB-5

INJ TIME : 12:21

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0078MS

CURVE : ST1871106C,D,E,F,G

SAMPLE ID : SAS3354F-69-F3 MS

COMMENTS :

SAMPLE SIZE : 20.28g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL	
13C-2378-TCDD	1041	(332)	230758	(334)	291310	0.79	1.42	10	100%	
13C-1234-TCDD	1032	(332)	164662	(334)	206044	0.80	____	10	____	
37CL-2378-TCDD	1042			(328)	236042	____	0.87	4	130%****	
2378-TCDD	1042	(320)	23106	(322)	25680	0.89	0.77	1.15	115%	
TCDD	____	(320)	____	(322)	____	____	0.77	____	____	Interfere in 356 is Δ4.1 103
PeCDD	1283	(358)	64944	(356)	181633	0.36	0.78	2.00	200%	
HxCDD	1507	(392)	69280	(390)	80108	0.86	0.8	4.44	111%	
13C-1234678-HpCDD	1745	(438)	234360	(436)	247792	0.95	1.23	20	133%***	
HpCDD	1746	(426)	54997	(424)	55800	0.99	1.09	5.67	142%***	
OCDD	1964	(458)	94480	(460)	109304	0.86	1.02	11.9	118%***	
13C-OCDD	210004	(470)	~~225723~~ 210004	(472)	225723	0.93	0.55	25	80%	
13C-2378-TCDF	1006	(316)	296052	(318)	374618	0.79	1.73	10	105%	
2378-TCDF	1007	(304)	28004	(306)	35334	0.79	0.93	1.01	101%**	
TCDF	____	(304)	____	(306)	____	____	0.93	____	____**	
PeCDF	1215	(342)	96927	(340)	158392	0.61	0.93	4.55	114%**	
HxCDF	1450	(376)	104726	(374)	145296	0.72	0.86	4.51	113%**	
13C-1234678-HpCDF	1669	(422)	332317	(420)	353576	0.94	1.54	20 29	127%***	
HpCDF	1670	(410)	74706	(408)	71404	1.06	1.85	4.27	107%***	
OCDF	1970	(442)	94654	(444)	96561	0.98	1.09	9.81	98%***	

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

Δ used 358 ion + ground TCDD RRF 0.54 based on ST1871116A

0170228

28

METHOD 8280 SAMPLE SHEET

DATE : 11-16-87

COLUMN: DB-5

INJ TIME : 13:41

INSTRUMENT ID : CW-1

CHEMEST ID : Y0078 MSD

CURVE : ST1871106 C,D,E,F,G

SAMPLE ID : SA83354F-69-F3 M.S.D.

COMMENTS :

SAMPLE SIZE : 20.19g

	SCAN#	AREA		AREA*		RATIO	RRF	AMT	DL
13C-2378-TCDD	1040	(332)	217633	(334)	279692	0.78	1.42	10	94%
13C-1234-TCDD	1031	(332)	163792	(334)	209811	0.78	____	10	____
37CL-2378-TCDD	1041			(328)	232024	____	0.87	4	134%****
2378-TCDD	1041	(320)	18844	(322)	25192	0.75	0.77	1.17	117%
TCDD	____	(320)	____	(322)	____	____	0.77	____	____
PeCDD	1282	(358)	64042	(356)	101543	0.63	0.78	4.65	116% Δ 4.24 106%
HxCDD	1506	(392)	64884	(390)	84966	0.76	0.82	4.90	123%
13C-1234678-HpCDD	1744	(438)	233376	(436)	250875	0.93	1.23	20	133%***
HpCDD	1745	(426)	55572	(424)	54868	1.01	1.09	5.48	137%***
OCDD	1963	(458)	95429	(460)	103582	0.92	1.02	11.1	~~144%~~ 110%***
13C-OCDD	1962	(470)	203032	(472)	229542	0.88	0.55	25	80%
13C-2378-TCDF	1005	(316)	277408	(318)	358060	0.77	1.73	10	99%
2378-TCDF	1006	(304)	28196	(306)	36953	0.76	0.93	1.11	111%**
TCDF	____	(304)	____	(306)	____	____	0.93	____	____**
PeCDF	1215	(342)	96708	(340)	153364	0.63	0.93	4.61	115%**
HxCDF	1449	(376)	113502	(374)	145799	0.78	0.86	4.73	118%**
13C-1234678-HpCDF	1669	(422)	343730	(420)	366908	0.94	1.54	20 25	130%***
HpCDF	1669	(410)	75244	(408)	83062	0.91	1.85	4.89	122%***
OCDF	1969	(442)	96909	(444)	97328	1.00	1.09	9.73	97%***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

Δ used 358 ion to quant PeCDD RRF 0.54 based on ST1871116A

0170273

305

METHOD 8280 SAMPLE SHEET

DATE : 11-14-87

COLUMN: DB-5

INJ TIME : 11:04

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0079

CURVE : ST1874106 C,D,E,F,G

SAMPLE ID : S4S3354F-70-F4

COMMENTS :

SAMPLE SIZE : 20.65g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1041	(332)	309494	(334)	113961 / 389632	0.78	1.42	10	90%
13C-1234-TCDD	1031	(332)	238676	(334)	304058	0.79		10	
37CL-2378-TCDD	1042			(328)	325164		0.87	4	135% ****
2378-TCDD		(320)		(322)	Ht=652		0.77		0.0036
TCDD		(320)		(322)	637		0.77		0.0035
PeCDD		(358)		(356)	Ht=787		0.78		0.0043
HxCDD		(392)		(390)	Ht=512		0.0		0.0036
13C-1234678-HpCDD	1745	(438)	203834	(436)	216360	0.94	1.03	20	138% ***
HpCDD		(426)		(424)	518		1.09		0.011 ***
OCDD	1964	(458)	~~28637~~	(460)	525 / ~~44178~~		1.02		0.012 *** MPC + too close to limit
13C-OCDD	1963	(470)	181229	(472)	53339 / 190660	0.95	0.55	25	46%
13C-2378-TCDF	1006	(316)	399844	(318)	152290 / 494340	0.81	1.73	10	94%
2378-TCDF		(304)		(306)	Ht=501		0.93		0.0017 **
TCDF		(304)		(306)	Ht=535		0.93		0.0018 **
PeCDF		(342)		(340)	Ht=599		0.93		0.0020 **
HxCDF		(376)		(374)	Ht=536		0.86		0.0020 **
13C-1234678-HpCDF	1670	(422)	313388	(420)	330678	0.95	1.54	20 ~~25~~	141% ***
HpCDF		(410)		(408)	Ht=610		1.85		0.0075 ***
OCDF		(442)		(444)	Ht=490		1.09		0.0102 ***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

017024

METHOD 8280 SAMPLE SHEET

DATE : 11-14-87

COLUMN: DB-5

INJ TIME : 11:39

INSTRUMENT ID : CW-1

CHEMEST ID : Y0080

CURVE : ST1871106 C,D,E,F,G

SAMPLE ID : SAS3354F-71-F4

COMMENTS :

SAMPLE SIZE : 7.09

	SCAN#	AREA	AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1042	(332) 330522	(334) 429570 (128529)	0.77	1.42	10	94%
13C-1234-TCDD	1033	(332) 256956	(334) 323033	0.80		10	
37CL-2378-TCDD	1043		(328) 343582		0.87	4	130% ****
2378-TCDD		(320)	(322) Ht= 652		0.77		.0093
TCDD		(320)	(322) 562		0.77		0.0080
PeCDD		(358)	(356) Ht= 805		0.78		0.011 .0113 **
HxCDD		(392)	(390) Ht=546		0.8		.0097
13C-123467B-HpCDD	1746	(438) 222232	(436) 230958	0.96	1.23	20	122% ***
HpCDD		(426)	(424) 466		1.09		0.025 ***
OCDD		(458)	(460) 1253 60673		1.02		0.072 UMPC ***
13C-OCDD	1964	(470) 219156	(472) 238025	0.95	0.55	25	52%
13C-2378-TCDF	1007	(316) 444836	(318) 556708 (168806)	0.80	1.73	10	100%
2378-TCDF		(304)	(306) Ht= 687		0.93		.0062**
TCDF		(304)	(306) Ht= 499		0.93		.0046**
PeCDF		(342)	(340) Ht= 561		0.93		.0050**
HxCDF		(376)	(374) Ht= 510		0.86		.0050**
13C-123467B-HpCDF	1671	(422) 322121	(420) 323712	1.00	1.54	20 25	142% ***
HpCDF		(410)	(408) Ht= 525		1.85		0.017 .0165 *** **
OCDF		(442)	(444) Ht=387		1.09		.021 ***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

017025

METHOD 8280 SAMPLE SHEET

DATE : 11-14-82

COLUMN: DB-5

INJ TIME : 12:17

INSTRUMENT ID : CW-1

CHEMWEST ID : YD081

CURVE : ST1871106 C,D,E,F,G

SAMPLE ID : SAS3554F-72-F4

COMMENTS :

SAMPLE SIZE : 20.34 g

	SCAN#	AREA	AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1042	(332) 339092	(334) 131448 427681	0.79	1.42	10	91%
13C-1234-TCDD	1032	(332) 265411	(334) 329953	0.80		10	
37CL-2378-TCDD	1043		(328) 361988		0.87	4	136% ****
2378-TCDD		(320)	(322) 528		0.77		0.0026
TCDD		(320)	(322) 580		0.77		0.0028
PeCDD		(358)	(356) 784		0.78		0.0038
HxCDD		(392)	(390) 553		0.82		0.0033
13C-123478-HpCDD	1746	(438) 207655	(436) ~~228662~~ 228662	0.91	1.03	20	129% ***
HpCDD		(426)	(424) 604		1.09		0.012 ***
OCDD		(458)	(460) 2012		1.02		0.044 *** MPC
13C-OCDD	1963	(470) 185334	(472) 25040 215092	0.86	0.55	25	47%
13C-2378-TCDF	1007	(316) 436432	(318) 17847 549014	0.79	1.73	10	96%
2378-TCDF		(304)	(306) 504		0.93		0.0016 **
TCDF		(304)	(306) 494		0.93		0.0015 **
PeCDF		(342)	(340) 570		0.93		0.0018 **
HxCDF		(376)	(374) 517		0.86		0.0017 **
13C-123478-HpCDF	1670	(422) 306413	(420) 322718	0.95	1.54	20 20	122% ***
HpCDF		(410)	(408) 559		1.95		0.0067 ***
OCDF		(442)	(444) 472		1.09		0.0092 ***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

017026

METHOD 8280 SAMPLE SHEET

DATE : 11-14-87

COLUMN: DB-5

INJ TIME : 1252

INSTRUMENT ID : CW-1

CHEMWEST ID : 40082

CURVE : ST187106 C,D,E,F,G

SAMPLE ID : SAS3354F-73-FC

COMMENTS :

SAMPLE SIZE : 4.15g

	SCAN#	AREA	AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1041	(332) 344328	(334) 436142	0.79	1.42	10	8%
13C-1234-TCDD	1032	(332) 272700	(334) 348074	0.78		10	78%
37CL-2378-TCDD	1042		(328) 359248		0.87	4	132%****
2378-TCDD		(320)	(322) 581		0.77		0.014
TCDD		(320)	(322) 654		0.77		0.016
PeCDD		(358)	(356) 803		0.78		0.019
HxCDD		(392)	(390) 596		0.0		0.018
13C-1234678-HpCDD	1746	(438) 225000	(436) 239099	0.94	1.23	20	1452***
HpCDD		(426)	(424) 623		1.09		0.068***
OCDD		(458)	(460) 582		1.02		0.06%***
13C-OCDD	1964	(470) 180298	(472) 200508	0.90	0.55	25	42%
13C-2378-TCDF	1006	(316) 458576	(318) 560621	0.82	1.73	10	93%
2378-TCDF		(304)	(306) 412		0.93		0.0065**
TCDF		(304)	(306) 583		0.93		0.0092**
PeCDF		(342)	(340) 642		0.93		0.010**
HxCDF		(376)	(374) 574		0.86		0.0098**
13C-1234678-HpCDF	1670	(422) 331108	(420) 344446	0.96	1.54	20	1392***
HpCDF		(410)	(408) 651		1.05		0.042***
OCDF		(442)	(444) 567		1.09		0.062***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

017027

METHOD 8280 SAMPLE SHEET

DATE : 11-14-87

COLUMN: DB-5

INJ TIME : 13:26

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0083

CURVE : 871871106 C,D,E,F,G

SAMPLE ID : SAS3354F-74-FS

COMMENTS :

SAMPLE SIZE : 2.74g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1042	(332)	350679	(334)	131560 / 435220	0.81	1.42	10	892
13C-1234-TCDD	1032	(332)	262845	(334)	342966	0.77		10	
37CL-2378-TCDD	1043			(328)	366144		0.87	4	1342 ****
2378-TCDD		(320)		(322)	605		0.77		0.022
TCDD		(320)		(322)	641		0.77		0.023
PeCDD		(358)		(356)	855		0.78		0.030
HxCDD		(392)		(390)	589		0.82		0.026
13C-123467B-HpCDD	1246	(438)	239703	(436)	295972	0.94	1.03	20	1192 ***
HpCDD		(426)		(424)	544		1.09		0.066 ***
OCDD		(458)		(460)	1267		1.02		0.16 ***
13C-OCDD	1964	(470)	236901	(472)	69619 / 261866	0.90	0.55	25	562
13C-2378-TCDF	1007	(316)	461360	(318)	175771 / 572230	0.81	1.73	10	967
2378-TCDF		(304)		(306)	703		0.93		0.016 **
TCDF		(304)		(306)	595		0.93		0.013 **
PeCDF		(342)		(340)	638		0.93		0.014 **
HxCDF		(376)		(374)	519		0.86		0.013 **
13C-123467B-HpCDF	1670	(422)	356454	(420)	369724	0.96	1.54	20 / 25	1152 ***
HpCDF		(410)		(408)	590		1.85		0.042 ***
OCDF		(442)		(444)	418		1.09		0.051 ***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

MPC

017028

METHOD 8280 SAMPLE SHEET

DATE : 4-15-87

COLUMN: DB-5

INJ TIME : 13:27

INSTRUMENT ID : CW-1

CHEMEST ID : 40084

CURVE : ST1871106C,D,E,F,G

SAMPLE ID : SAS3354F-75-FS

COMMENTS :

SAMPLE SIZE : 20.19g

	SCAN#	AREA		AREA*		RATIO	RRF	AMT	DL
13C-2378-TCDD	1021	(332) 290582	(334)	110153 / 364604		0.80	1.42	10	93%
13C-1234-TCDD	1022	(332) 216266	(334)	275091		0.79		10	
37CL-2378-TCDD	1022		(328)	300704			0.87	4	132****
2378-TCDD		(320)	(322)	370			0.77		0.0022
TCDD		(320)	(322)	485			0.77		0.0028
PeCDD		(358)	(356)	765			0.78		0.0044
HxCDD		(392)	(390)	502			0.82		0.0036
13C-123478-HpCDD	1725	(438) 281488	(436)	299052		0.94	1.23	20	120***
HpCDD		(426)	(424)	544			1.09		0.0080***
OCDD	1943	(458) 5931	(460)	7408		0.80	1.02	0.030	0.032***
13C-OCDD	1943	(470) 272351	(472)	77131 / 302161		0.90	0.55	25	80%
13C-2378-TCDF	987	(316) 369664	(318)	140268 / 461587		0.80	1.73	10	97%
2378-TCDF		(304)	(306)	588			0.93		0.0022**
TCDF		(304)	(306)	520			0.93		0.0020**
PeCDF		(342)	(340)	583			0.93		0.0024**
HxCDF		(376)	(374)	525			0.86		0.0022**
13C-123478-HpCDF	1649	(422) 411132	(420)	433899		0.95	1.54	20	117***
HpCDF		(410)	(408)	720			1.85		0.0062***
OCDF		(442)	(444)	520			1.09		0.0077***

017029

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

METHOD 8280 SAMPLE SHEET

DATE : 11-15-87

COLUMN: DB-5

INJ TIME : 14:03

INSTRUMENT ID : CW-1

CHEMWEST ID : Y0085

CURVE : 871871106 C,D,E,F,G

SAMPLE ID : SAS3354F-76-ABCD

COMMENTS :

SAMPLE SIZE : 16.46g

	SCAN#	AREA	AREA*	RATIO	RRF	AMT	DL	
13C-2378-TCDD	1021	(332) 345560	(334) 425768 (28620)	0.81	1.42	10	95%	
13C-1234-TCDD	1011	(332) 262032	(334) 315916	0.83		10		
37CL-2378-TCDD	1021		(328) 349285		0.87	4	130%	****
2378-TCDD	1022	(320) 6076	(322) 7555	0.80	0.77	0.014	0.0	MPC
TCDD	911-1022	(320) 15752	(322) 21536	0.73	0.77	0.039		MPC
PeCDD		(358)	(356) 838		0.78		0.0051	
HxCDD		(392)	(390) 475		0.82		0.0036	
13C-123467B-HpCDD	1726	(438) 299868	(436) 320983	0.93	1.03	20	107%	***
HpCDD		(426)	(424) 638		1.09		0.0070 0.0047	***
OCDD	1945	(458) 23951	(460) 25068	0.96	1.02	0.102	0.103	***
13C-OCDD	1945	(470) 340157	(472) 365044 (88452)	0.93	0.55	25	84%	
13C-2378-TCDF	986	(316) 453328	(318) 573026 (164911)	0.79	1.73	10	105%	
2378-TCDF	989	(304) 21210	(306) 28099	0.75	0.93	0.032		**
TCDF	986-989	(304) 63345	(306) 82378	0.77	0.93	0.094		**
PeCDF		(342)	(340) 599		0.93		0.0024	**
HxCDF		(376)	(374) 534		0.86		0.0023	**
13C-123467B-HpCDF	1650	(422) 434072	(420) 476360	0.91	1.54	20 25	106%	***
HpCDF		(410)	(408) 634		1.85		0.0059 0.0056	**
OCDF		(442)	(444) 378		1.09		0.0060	***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

017030

METHOD 8280 SAMPLE SHEET

DATE : 11-15-87

COLUMN: DB-5

INJ TIME : 14:40

INSTRUMENT ID : CW-1

CHEMTEST ID : Y0086

CURVE : 871871106C,D,E,F,G

SAMPLE ID : SAS3354F-77-F

COMMENTS :

SAMPLE SIZE : 18.65g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1020	(332)	291155	(334)	109982 353174	2.82	1.42	10	942
13C-1234-TCDD	1011	(332)	218844	(334)	263259	0.83		10	
37CL-2378-TCDD	1021			(328)	294868		0.87	4	1322 ****
2378-TCDD		(320)		(322)	401		0.92		0.0025
TCDD		(320)		(322)	433		0.77		0.0027
PeCDD		(358)		(356)	295		0.78		0.0050
HxCDD		(392)		(390)	493		0.0		0.0039
13C-123467B-HpCDD	1725	(438)	215899	(436)	239777	0.90	1.03	20	1232 ***
HpCDD		(426)		(424)	430		1.09		0.0057 ***
OCDD		(458)		(460)	2924		1.02		0.063 *** MPC
13C-OCDD	1943	(470)	217794	(472)	60610 236554	0.92	0.55	25	652
13C-2378-TCDF	986	(316)	363561	(318)	140563 455972	0.80	1.73	10	1002
2378-TCDF		(304)		(306)	698		0.93		0.0029 **
TCDF		(304)		(306)	564		0.93		0.0023 **
PeCDF		(342)		(340)	571		0.93		0.0023 **
HxCDF		(376)		(374)	494		0.86		0.0022 **
13C-123467B-HpCDF	1649	(422)	313040	(420)	340242	0.92	1.54	20 25	1172 ***
HpCDF		(410)		(408)	689		1.85		0.0052 ***
OCDF		(442)		(444)	486		1.09		0.0099 ***

0170031

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

METHOD 8290 SAMPLE SHEET

DATE : 11-15-87

COLUMN: DB-5

INJ TIME : 15:16

INSTRUMENT ID : CW-1

CHEMEST ID : Y0087

CURVE : ST187106C,D,E,F,G

SAMPLE ID : SAS3354F-78-F

COMMENTS :

SAMPLE SIZE : 21.46g

	SCAN#		AREA		AREA*	RATIO	RRF	AMT	DL
13C-2378-TCDD	1620	(332)	197763	(334)	68992 244084	0.81	1.42	10	912
13C-1234-TCDD	1611	(332)	150201	(334)	189660	0.79		10	
37CL-2378-TCDD	1621			(328)	198718		0.87	4	1292 ****
2378-TCDD		(320)		(322)	491		0.97		0.0043
TCDD		(320)		(322)	574		0.79		0.0050
PeCDD		(358)		(356)	696		0.78		0.0060
HxCDD		(392)		(390)	558		0.82		0.0061
13C-123467B-HpCDD	1731	(438)	~~167~~ 159572	(436)	167020	0.96	1.03	20	1052 ***
HpCDD		(426)		(424)	698		1.09		~~0.0059~~ 0.015 ***
OCDD		(458)		(460)	2167 50884		1.02		0.049 ***
13C-OCDD	1949	(470)	181898	(472)	196830	0.92	0.85	25	762
13C-2378-TCDF	986	(316)	252168	(318)	101382 327281	0.77	1.73	10	1002
2378-TCDF		(304)		(306)	553		0.93		0.0027 **
TCDF		(304)		(306)	458		0.93		0.0023 **
PeCDF		(342)		(340)	516		0.93		0.0026 **
HxCDF		(376)		(374)	486		0.86		0.0026 **
13C-123467B-HpCDF	1655	(422)	224921	(420)	244366	0.92	1.54	20 25	1012 ***
HpCDF		(410)		(408)	641		1.85		0.0079 ***
OCDF		(442)		(444)	497		1.09		0.010 ***

* Area of ion used for quantitation.
** Internal standard used to calculate RRF is 13C-2378-TCDF.
*** Internal standard used to calculate RRF is 13C-OCDD.
**** 37CL-2378-TCDD RRF calculated using IFB method.
Internal standard RRF's calculated using 1234-TCDD as internal standard.
All other native PCDD RRF's calculated using 13C-2378-TCDD for internal standard.

WPC

017032