ORIGINAL

Dan Harkay

1/30/97

MONROE TOWNSHIP CONTAMINATED SOIL SITE
AND
MALAGA ROAD ASH PILE SITE

POST-EXCAVATION SAMPLE ANALYSIS
FOR METALS USING XRF SPECTROSCOPY
MAY/JUNE 1994

VOLUME 1 OF 2

375711

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TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

TAT-02-F-07437 MEMORANDUM

To: Dan Harkay, OSC
Region II, U.S. EPA

From: Kathy Campbell, TATM
Linda Biebl, TAT QC

Subject: Monroe Township Contaminated Soil Site
Malaga Road Ash Pile Site
PCDD/PCDF Analytical Data Summary
June 1994 Sampling Event

Date: March 2, 1995

BACKGROUND

In October 1993, the Township of Monroe Office of Emergency Management, through the New Jersey Department of Environmental Protection (NJDEP), referred the Monroe Township Contaminated Soil Site and Malaga Road Ash Pile Site (Monroe Burn Sites) to the U.S. EPA Removal Action Branch. The U.S. EPA conducted investigations at the Monroe Burn Sites and determined that the sites are eligible for Comprehensive Environmental Liability, Compensation, and Liability Act (CERCLA) removal action activities. Excavation of the contaminated soil and ash from the burn piles was performed. In May 1994, the Region II Technical Assistance Team (TAT) screened post-excavation samples for target metals using an X-Ray Fluorescence Analyzer (XRF) to define the limits of the excavation. XRF accuracy confirmation samples were also collected and sent to a laboratory for Target Analyte List (TAL) metals analysis.

In May and June 1994, TAT performed post-excavation sampling for polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) analysis. (Attachment A provides Sample Location Maps for these events). A composite soil sampling scheme was developed to reduce the total number of samples necessary to verify the adopted PCDD/PCDF cleanup level of one part per billion (ppb) for the sites. The one ppb cleanup level represents the total of the dioxin and furan congeners, as expressed in terms of the toxicity equivalence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). Each composite sample consisted of soil collected from

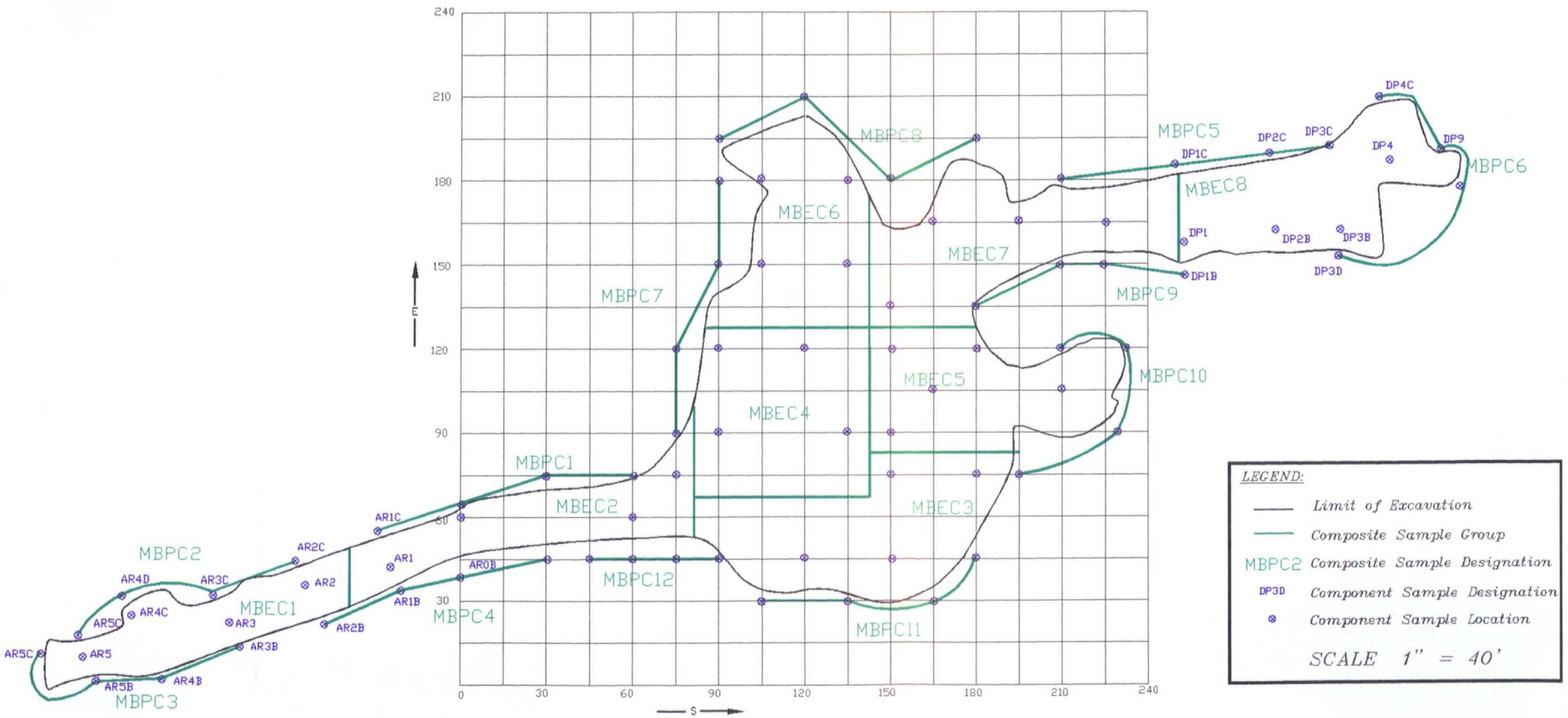
ATTACHMENT A
MONROE TOWNSHIP CONTAMINATED SOIL SITE AND
MALAGA ROAD ASH PILE SITE
SAMPLE LOCATION MAPS
JUNE 1994

CONCLUSIONS

Post-excavation composite soil samples collected in May/June 1994 indicate that the removal of most of the PCDD/PCDF contamination at the Monroe Burn Sites has been successful.

Analytical results for all of the Malaga Road Ash Pile Site post-excavation composite samples indicate that PCDD/PCDF concentrations are less than 1 ppb.

Analytical results for the Monroe Township Contaminated Soil Site post-excavation composite samples indicate that most of the PCDD/PCDF contamination has been removed from the site. Two composite samples were determined to contain PCDD/PCDF concentrations greater than the cleanup level of 1 ppb. The average of the concentrations found in composite sample MBEC8 and its duplicate MBEC9 is 1.19 ppb. Composite sample MBPC6 was found to contain PCDD/PCDF at a concentration of 4.41 ppb. Both of these samples were taken from wetlands located downgradient of the former ash pile location.



POST - EXCAVATION PCDD/PCDF SAMPLING LOCATIONS
MONROE TWP., CONTAMINATED SOIL SITE
MAY 31 - JUNE 23, 1994

US EPA REMOVAL ACTION BRANCH

TECHNICAL ASSISTANCE TEAM CONTRACT
68-WO-0036

four discrete locations. The action level for PCDD/PCDF concentration for the composite samples was established at 0.25 ppb, one-quarter of the cleanup level, to account for the diluting effect of compositing the sample. One field duplicate sample was also collected from each site for PCDD/PCDF analysis. Samples were analyzed for dioxins through the U.S. EPA Contract Laboratory Program (CLP) at a QA Objective Level of QA-2.

OBJECTIVE

The objective of this sampling event was to determine whether established PCDD/PCDF cleanup levels at the Monroe Burn Sites have been attained.

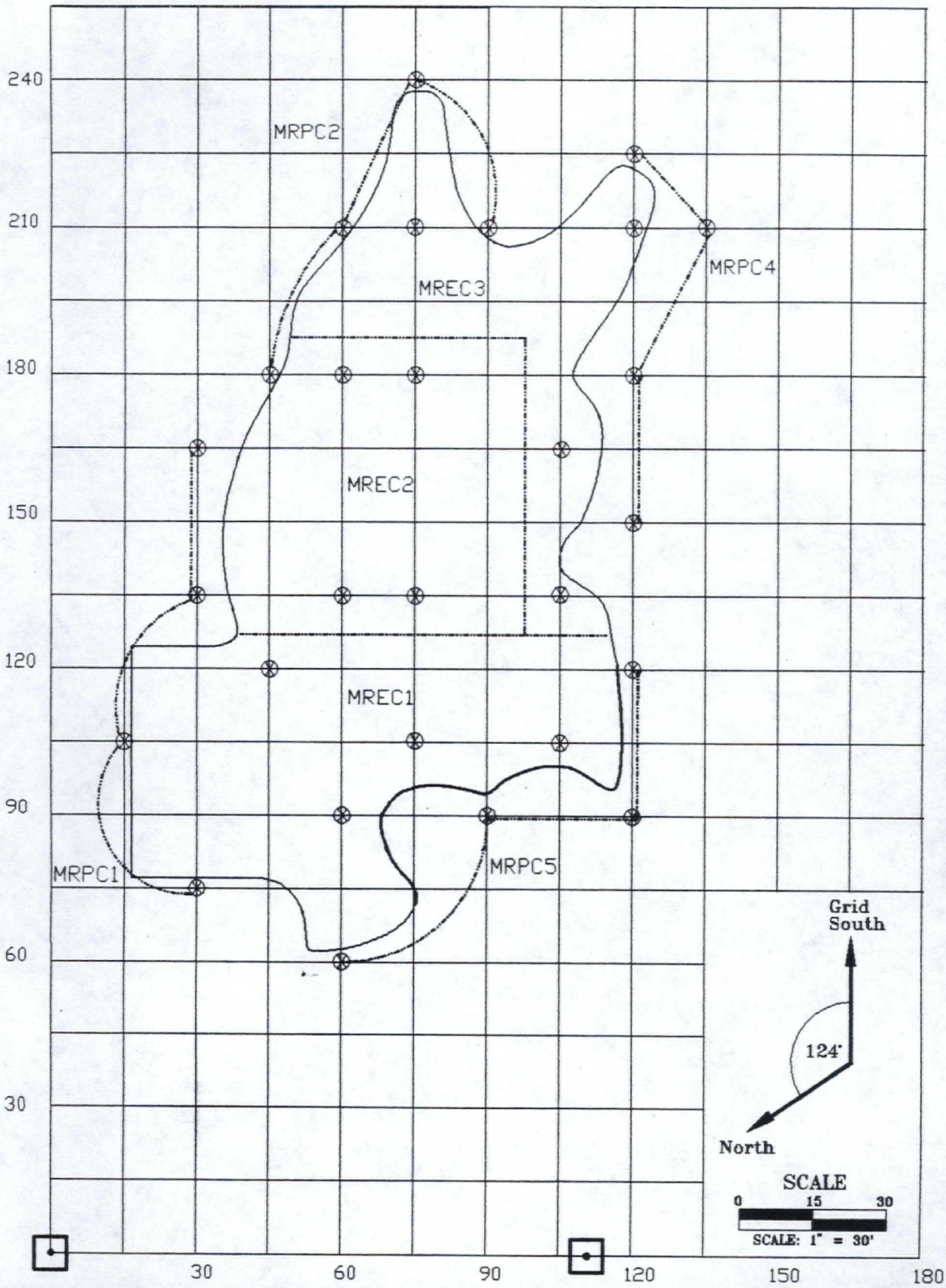
RESULTS

Summary tables of the analytical results for the Monroe Burn Sites are provided in Attachment B. The summary tables present Toxicity Equivalence Factor (TEF) - adjusted data values for total PCDD/PCDF concentrations and estimated maximum component concentrations.

The laboratory data package for PCDD/PCDF analysis of samples collected on May 31, June 13, and June 23, 1994, is included as Attachment C. This data has undergone validation and is usable as qualified. The reader should note that laboratory data and data summary tables are reported in picograms/gram ([pg/g] or parts per trillion [ppt]). Data reported in ppt must be converted to ppb units in order to directly compare data to the established action level (e.g., analytical data that exceed 1,000 pg/g are above the action level).

The analytical results of field duplicate samples (Sample Nos. MBEC8/MBEC9 and MRPC3/MRPC4) are comparable. The TEF-adjusted concentrations of PCDD/PCDF in 93 percent of the samples are less than the established cleanup level of 1 ppb.

It should be noted that all data were initially qualified as "estimated" due to having cooler temperatures above 4°C upon arrival at the laboratory. This criterion was not considered when compiling the data summary, as it was determined that cooling of the samples was not necessary for dioxin sample preservation. Therefore, finalized data that have been qualified as estimated have been marked as such due to validation criteria other than cooler temperature.



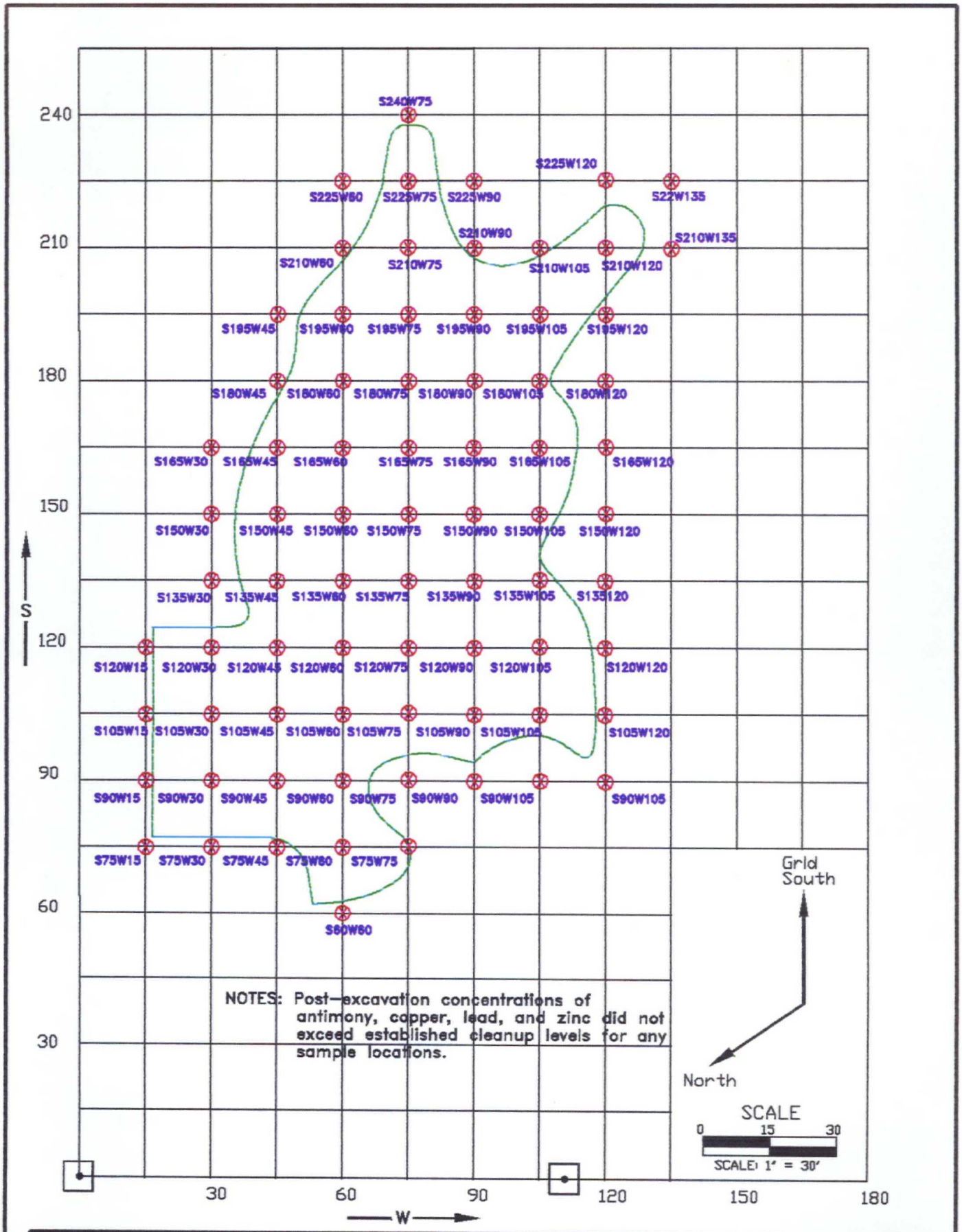
LEGEND:

- Property corner
- MREC1 Composite sample name
- Composite sample group
- Limit of excavation
- Component sample location

POST-EXCAVATION PCDD/PCDF SAMPLING LOCATIONS
MALAGA ROAD ASH PILE SITE; JUNE 13, 1994
MONROE TWP., GLOUCESTER CO., NJ

US EPA REMOVAL ACTION BRANCH

TECHNICAL ASSISTANCE TEAM CONTRACT
68-WO-0036



NOTES: Post-excavation concentrations of antimony, copper, lead, and zinc did not exceed established cleanup levels for any sample locations.

LEGEND:

- Property Corner
- Sample Location
- Limit of Excavation

FIGURE 4 POST EXCAVATION METALS SAMPLE LOCATIONS
MALAGA ROAD ASH PILE SITE MAY / JUNE 1994
MONROE TWP., GLOUCESTER CO., NJ

US EPA REMOVAL ACTION BRANCH

SUPERFUND TECHINICAL ASSESSMENT & RESPONSE TEAM CONTRACT
68-W5-0019

MALMETAL.DWG

ATTACHMENT B
MONROE TOWNSHIP CONTAMINATED SOIL SITE AND MALAGA ROAD ASH PILE SITE
PCDD/PCDF DATA SUMMARY TABLES
JUNE 1994

TABLE 1: PCDD/PCDF ANALYTICAL DATA SUMMARY
MONROE TOWNSHIP CONTAMINATED SOIL SITE
SAMPLING DATES: MAY 31 & JUNE 23, 1994

CLP SAMPLE NUMBER	FIELD DESIGNATION	COMPOSITE STATION LOCATION	TOTAL CONCENTRATION (pg/g)*	ESTIMATED MAXIMUM COMPONENT CONCENTRATION (pg/g)*
SBC972	MBEC1	AR2, AR3, AR4, AR5	8.82 J	35.28
SBC973	MBEC2	AR1, S0E60, S30E60, S60E60	5.36 J	21.44
SBC974	MBEC3	S120E45, S150E45, S150E75, S180E75	3.1 J	12.4
SBC975	MBEC4	S90E90, S90E120, S120E120, S135E90	5.49 J	22.0
SBC976	MBEC5	S150E90, S150E120, S180E120, S210E105	2.4 J	9.6
SBC977	MBEC6	S105E150, S105E180, S135E150, S135E180	8.22 J	32.88
SBC978	MBEC7	S150E135, S165E165, S195E165, S225E165	3.15 J	12.6
SBC979	MBEC8	DP1, DP2B, DP3C, DP4	1662.5 J	6650
SBC980	MBEC9 (Dup. of MBEC8)	DP1, DP2B, DP3C, DP4	721.77	2887.08
SBC981	MBPC1	AR1C, S0E65, S30E60, S60E60	14.07 J	56.28

NOTES:

J= Estimated value

* = Total Concentration and Estimated Maximum Component Concentration values are based on Toxicity Equivalence Factor (TEF)-adjusted data.

TABLE 1: PCDD/PCDF ANALYTICAL DATA SUMMARY (CONT'D.)
MONROE TOWNSHIP CONTAMINATED SOIL SITE
SAMPLING DATES: MAY 31 & JUNE 23, 1994

NUMBER	FIELD DESIGNATION	COMPOSITE STATION LOCATION	TOTAL CONCENTRATION (pg/g)*	ESTIMATED MAXIMUM COMPONENT CONCENTRATION (pg/g)*
SBC982	MBPC2	AR2C, AR3C, AR4D, AR5C	61.31 J	245.24
SBC983	MBPC3	AR3B, AR4B, AR5B, AR6	14.03 J	56.12
SBC984	MBPC4	AR1B, AR2B, S0E40, S30E45	6.13 J	24.52
SBC985	MBPC5	DP1C, DP2C, DP3C, S210E180	22.47 J	89.88
SBC986	MBPC6	DP4C, DP8, DP9, DP3D	4406.74	17626.96
SBC987	MBPC7	S75E90, S75E120, S90E150, S90E180	3.52	14.08
SBC988	MBPC8	S90E195, S120E210, S150E180, S180E195	4.56 J	18.24
SBC989	MBPC9	DP1B, S225E150, S210E150, S180E135	4.05 J	16.2
SBC990	MBPC10	S210E120, S229E120, S227E90, S195E75	2.25 J	9

NOTES:
J= Estimated value
* = Total Concentration and Estimated Maximum Component Concentration values are based on Toxicity Equivalence Factor (TEF)-adjusted data.

TABLE 1: PCDD/PCDF ANALYTICAL DATA SUMMARY (CONT'D.)
MONROE TOWNSHIP CONTAMINATED SOIL SITE
SAMPLING DATES: MAY 31 & JUNE 23, 1994

CLP SAMPLE NUMBER	FIELD DESIGNATION	COMPOSITE STATION LOCATION	TOTAL CONCENTRATION (pg/g)*	ESTIMATED MAXIMUM COMPONENT CONCENTRATION (pg/g)*
SBC991	MBPC11	S180E45, S165E30, S135E30, S105E30	6.96 J	27.84
SBC992	MBPC12	S45E45, S60E45, S75E45, S90E45	7.11 J	28.44
SB8022	N84P93	PE SAMPLE	1316.71 J	N/A
SB8023	0187960	PE SAMPLE	64281.94	N/A
SB8024	T936ED	PE SAMPLE	31.89 J	N/A

NOTES:

J= Estimated value

* = Total Concentration and Estimated Maximum Component Concentration values are based on Toxicity Equivalence Factor (TEF)–adjusted data.

TABLE 2: PCDD/PCDF ANALYTICAL DATA SUMMARY
MALAGA ROAD ASH PILE SITE
SAMPLING DATE: JUNE 13, 1994

CLP SAMPLE NUMBER	FIELD DESIGNATION	COMPOSITE STATION LOCATION	TOTAL CONCENTRATION (pg/g)*	ESTIMATED MAXIMUM COMPONENT CONCENTRATION (pg/g)*
SBD000	MRPC1	S75W30, S105W15, S135W30, S165W30	21.27 J	85.08
SBD001	MRPC2	S180W45, S210W60, S240W75, S210W90	135.97 J	543.88
SBD002	MRPC3	S150W120, S180W120, S210W135, S228W120	10.43 J	41.72
SBD003	MRPC4 (Dup. of MRPC3)	S150W120, S180W120, S210W135, S228W120	12.3 J	49.2
SBD004	MRPC5	S60W60, S90W90, S90W120, S119W120	12.83 J	51.32
SBD005	MREC1	S120W45, S105W75, S90W60, S105W105	6.91 J	27.64
SBD006	MREC2	S135W60, S180W60, S135W75, S180W75	16.5 J	66
SBD007	MREC3	S165W105, S135W105, S210W75, S210W120	11.43 J	45.72

NOTES:
J= Estimated value
* = Total Concentration and Estimated Maximum Component Concentration values are based on Toxicity Equivalence Factor (TEF)-adjusted data.

ATTACHMENT C
MONROE TOWNSHIP CONTAMINATED SOIL SITE AND MALAGA ROAD ASH PILE SITE
PCDD/PCDF ANALYTICAL RESULTS
JUNE 1994

Airbill # 2534522120

RECORD OF COMMUNICATION

TO: Smita Sunbaly Weston - TAT

FROM: Harry J. Ravenel III Region II ESAT, RSCC

DATE: 11/23/94

SUBJECT: QUALITY ASSURED DATA

==========

MESSAGE:

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC - REGION II.

1) Malaga Road Ash Pile 8432-B01 SWRI 325 Dioxin

==========

REPLY BY:

SIGNATURE: DATE:

==========

DATE RECEIVED BY RSCC:

cc: EPA Task Monitor
ESAT Manager
file

PCDFs/PCDDs Data Assessment

CASE NO. 8432B-01 LABORATORY SWRI Site MALAGA ROAD ASH PILE

SAMPLE NO. SDG SBC984 and SBC972

DATA ASSESSMENT:

All data are valid and acceptable except those values which have been qualified R (rejected) r qualified "J" (estimated). Rejected data does not imply the analyte is not present. It eans that due to significant QC problems the analysis is invalid and it provides no nformation as to whether the compound is present or not.

All action is detailed below and on the attached sheets.

Reviewer's Signature: Stelios Gerazounis Date: 11 / 18 / 1994

Verified By: _____ Date: ___/___/19___

Case# 8432 B-01

Site: MALAGA ROAD ASH PILE

Lab: SWRI

Overall Assessment

The data associated with this package was found to be valid and acceptable except for those values which have been qualified R (rejected).

The internal standard recoveries (surrogates) were within the QC limits. All the calibration requirements and criteria were met. The resolution of the TCDD isomers was within the QC limits specified in the method. The lab monitored for polychlorinated diphenyl ethers. A confirmation analysis for 2,3,7,8-TCDF was also performed. Several samples were found to contain 2,3,7,8-TCDF. In certain cases the retention time of the native ions differed by 4 and 5 seconds from the labeled ion. Since the method specifies a maximum of 3 seconds difference for proper identification, the results obtained from the primary column was crossed out and substituted with the data obtained from the confirmation analysis which, in most cases, was considerably lower. A J qualification was applied because of the absence of sufficient QC data. The method blanks were relatively free of contamination.

Three Performance Evaluation Samples (PE) were analyzed with this batch of samples. One PE analyzed was fortified with 2,3,7,8-TCDD at a concentration of <100 pg/g. The laboratory results were above the upper EPA acceptance window. The second PE sample contained PCDDs/PCDFs at concentration suitable for HRGC/LRMS. The results were acceptable even though the extract had to be diluted for High Resolution Mass Spectrometry. The third sample was a blank. The results were within the EPA acceptance window.

The laboratory was asked to reextract and reanalyze the PE sample containing the single 2,3,7,8-TCDD isomer. The results of the reanalysis were within the EPA warning high window, which is acceptable.

Several samples were reported to contain PCDD/PCDFs at concentration of 1-10 pg/g. This data must be used with caution. Although the method blank was relatively free of contamination it is possible that minute cross contamination may have occurred from glassware or "carryover". This concentration of analytes is relatively small but it can be detected by the highly sensitive instrument. We have qualified U (non-detect) all the positive data at <1pg/g.

Case# 8432B-01

Site: Malaga Road Ash Pile

Lab: SWRI

rall Assessment

As per case narrative, the sample cooler for SDG SBC984 had no ice upon receipt by the laboratory. The temperature at SWRI (the analytical laboratory) was 26°C. All the samples in SDG SBC984 were qualified with J. Method 8290 specifies that soil and water samples must be stored at 4°C and in the dark.

The peak area of the recovery standards for all samples was acceptable except for PE sample SB8023RE. The data was qualified J.

All the data for sample SBC986 required J qualification because of high (77%) moisture content.

The recovery of the internal standards 13C2378TCDD, 13C2378TCDF, and 13C12378PeCDF for the PE samples SB8022 and SB8024 was below the QC limits. The associated data was qualified J.

Sample SBD000 - The E qualification was changed to J. There was no dilution analysis.

Sample SBD001 - The dilution results were judged to be of better quality.

Case# ~~[illegible]~~ 8432B-01

Site: MALAGA ROAD ASH PILE

Lab: SWRT

Contract Problems/Non-Compliance

1. The TCDF confirmation analysis was performed on what it appeared to be the same primary column. We observed that the sample analytical sequence, Form 5DFC, listed the GC column as 60M DB-5 ID.32mm, which is the column for the primary analysis. However the lab explained that the GC column description on Form 5DFC is incorrect. Confirmation of 2378-TCDF was performed on a different column, the 60m DB5-MS. This column was not very appropriate for confirmation since, according to the manufacturer, it is very similar to DB5.

2. Several reporting forms and deliverables specified in the SAS Request were missing. The lab delivered after Region II's request.

3. When the internal standard recoveries were below the QC limits, the lab reanalyzed the extract. No re-extraction was performed.

4. Sample SBC979. Incorrect peak areas were used to calculate concentrations for 2378-TCDD, 12378-PeCDF and 12378-PeCDD. The lab resubmitted Form I with the correct concentrations.

5. Sample SBC985. Incorrect peak areas were used to calculate concentrations for 12378-PeCDF (RT37.26), 12378-PeCDD (37.45) and 1234678-HpCDD (46.42). The corresponding labeled internal standards had RT38.55,40.50 and 47.20 respectively. This MMB reviewer recalculated concentrations using the correct peak area. The recalculated values were entered in Form I.

6. The percent relative standard deviation (% RSD) on Form VI-PCDD-1 was calculated using n instead of n-1. The initial calibration curve table however lists the correct % RSD.

7. Samples SBC979and SBC985. The 2378-TCDF Confirmation Analysis acquisition time shown on the Quantitation Report is different from the acquisition time listed on the ion chromatogram. It was observed, however, that the acquisition time shown on the Quan reports is the time of analysis of the first run, the 2378-TCDF verification solution. The time on the ion chromatograms is correct.

Case# 8432B-01

Site: MALAGA ROAD ASH PILE

Lab: SWRI

Contract Problems/Non-Compliance

8. The MS/MSD recoveries and RPD were calculated incorrectly. The lab was asked to recalculate and resubmit the correct results. The resubmitted data was acceptable.

9. Samples SBC986, SBC977, SBC981, SBD001 - Several analytes had concentration exceeding the calibration range. These samples were diluted and reanalyzed. Form I of the primary analysis was marked "Do Not Use. Use Dilution Data".

10. Sample SBC979 - Several analytes had concentration exceeding the calibration range. In this case it was determined that the data of the primary analysis was more accurate. The SBC979RE Form I was crossed out and marked "Do Not Use".

11. Sample SBC985RE - The wrong ion chromatograms were attached to Form I and quantiation report of these samples. The attached chromatogram belonged to sample SBC955DUPRE of Case #22291 (8431B-01).

DPO: [ ] ACTION [ ] FYI

Region 11

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO. 84323-01 LABORATORY SWRI

SDG NO. SBC984, SBC972 DATA USER TATW

SOW METHOD 8290 REVIEW COMPLETION DATE 11/18/94

NO. OF SAMPLES 32 WATER ____ SOIL 32 OTHER

REVIEWER [ ] ESD [ ] ESAT [ ] OTHER, CONTRACT/CONTRACTOR ____

	VOA	BNA	PEST	PCDD/PCDF ~~OTHER~~
1. HOLDING TIMES				M*
2. GC-MS TUNE/ GC PERFORMANCE				O
3. INITIAL CALIBRATIONS				O
4. CONTINUING CALIBRATIONS				O
5. FIELD BLANKS ("F" = not applicable)				F
6. LABORATORY BLANKS				O
7. SURROGATES				O
8. MATRIX SPIKE/DUPLICATES				O
9. REGIONAL QC ("F" = not applicable)				F
10. INTERNAL STANDARDS				X
11. COMPOUND IDENTIFICATION				X
12. COMPOUND QUANTITATION				O
13. SYSTEM PERFORMANCE				O
14. OVERALL ASSESSMENT				O

O = No problems or minor problems that do not affect data usability.
X = No more than *about* 5% of the data points are qualified as either estimated or unusable.
M = More than *about* 5% of the data points are qualified as estimated.
Z = More than *about* 5% of the data points are qualified as unusable.

when receive by the lab

* All the data of SDG984 was qualified J because the temp. of the cooler was 26°C

DPO ACTION ITEMS: There were several problems associated with this data package. ie: missing data, incorrect data submitted, wrong peak identification, transcription mistakes. Lab must review the data before delivery to EPA and the assembling of the

AREAS OF CONCERN: data package must be done with extra care.

REJECTION SUMMARY FORM
(No. of Compounds/No. of Rejections (Samples)

Type of Review: TOTAL - Dioxin (PCDD/PCDF) **Date:** 11/18/94 **Case #:** 8432B-01

Project: Malaga Road Ash Pile **Lab Name:** SWRI

Reviewer's Initials: SG **Number of Samples:** 32

Analytes Rejected Due to Exceeding Review Criteria:

	Surrogates	Holding Time *	Calibration	Contamination	ID	Other	Total # Samples	Total # Rejected/ Total # in all Samples
Acids (15)	Internal Stds.					Recovery Std Avg		
B/N (50)								
VOA (35)								
PEST (20)								
PCB (7)								
TCDD (1) & PCDD/PCDF	-0-	-0-	-0-	-0-	-0-	-0-	32 (41 valid analyses)	0/697 0%

Analytes Estimated Due to Exceeding Review Criteria for:

Acids (15)								
B/N (50)								
VOA (35)								
PEST (20)								
PCB (7)								
TCDD (1) (PCDD/PCDF)	10/3	204/12	-0-	-0-	16/14	17/1	32 (41 valid Analyses)	43/697 = 6 %

204/697 = 29%

204 + 43 = 247/697 = 3

T

* Temp of Cooler was 26°C upon arrival at the lab

10
010001C
8/30/94

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SB8022 FE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724411.LIS
DATE RECEIVED: 06/28/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:21	0.81	1800.3	J	
2378-TCDF	304/306	32:07	0.69	0.5 U	J	
12378-PeCDF	340/342	38:58	1.62	0.1 U	J	
12378-PeCDD	356/358	40:52	1.63	0.1 U	J	
23478-PeCDF	340/342	40:19	1.67	0.1 U	J	
123478-HxCDF	374/376	43:41	1.17	0.3 U	J	
123678-HxCDF	374/376	43:48	1.16	0.2 U	J	
123478-HxCDD	390/392	44:25	1.4	0.1 U	J	
123678-HxCDD	390/392	44:30	1.17	0.2 U	J	
123789-HxCDD	390/392	44:45	1.35	0.3 U	J	
234678-HxCDF	374/376	43:55	1.28	0.0 U	J	
123789-HxCDF	374/376	44:55	0.86 *		U	0.07
1234678-HpCDF	408/410	46:26	1.03	0.6 U	J	
1234678-HpCDD	424/426	47:22	1.11	2.6	J	
1234789-HpCDF	408/410	47:43	1.16	0.1 U	J	
OCDD	458/460	50:18	0.89	25.6	J	
OCDF	442/444	50:26	0.96	0.6 U	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:21	0.76	0.65-0.89	15.8 *	40 - 120
13C-2378-TCDF	316/318	32:06	0.8	0.65-0.89	16.3 *	40 - 120
13C-12378-PeCDF	352/354	38:57	1.65	1.32-1.78	34.2 *	40 - 120
13C-12378-PeCDD	368/370	40:51	1.64	1.32-1.78	49.6	40 - 120
13C-123478-HxCDF	384/386	43:41	0.51	0.43-0.59	62.4	40 - 120
13C-123678-HxCDD	402/404	44:29	1.25	0.43-0.59	73.6	40 - 120
13C-1234678-HpCDF	418/420	46:25	0.46	0.37-0.51	84.3	40 - 120
13C-1234678-HpCDD	436/438	47:21	1.04	0.88 - 1.20	89.1	40 - 120
13C-OCDD	470/472	50:17	0.9	0.76-1.02	90.4	40 - 120
37Cl-2378-TCDD	328	33:21	NA	NA	66.8 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SB8022

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724411.LIS
DATE RECEIVED: 06/28/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	1800.25	X 1.0	1800.25
2378-TCDF	0.49	X 0.1	0.05
12378-PeCDF	0.13	X 0.05	0.01
12378-PeCDD	0.12	X 0.5	0.06
23478-PeCDF	0.10	X 0.5	0.05
123478-HxCDF	0.29	X 0.1	0.03
123678-HxCDF	0.19	X 0.1	0.02
123478-HxCDD	0.09	X 0.1	0.01
123678-HxCDD	0.19	X 0.1	0.02
123789-HxCDD	0.25	X 0.1	0.03
234678-HxCDF	0.01	X 0.1	0.00
123789-HxCDF		X 0.1	0.00
1234678-HpCDF	0.60	X 0.01	0.01
1234678-HpCDD	2.59	X 0.01	0.03
1234789-HpCDF	0.14	X 0.01	0.00
OCDD	25.60	X 0.001	0.03
OCDF	0.62	X 0.001	0.00
		TOTAL =	1800.58

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SB8022

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43835

Case: 8432B-01

Date Recieved: 06/25/94

Lab File Name: A08264U1_

SDG: SBC984

Date Extracted: 07/11/94

Final Extracion Vol: 20 uL

Matrix: L SOIL

Date Analyzed: 08/26/94

Dilution Factor: 1

Sample Wt/Vol: 10 g

Concentration Unit: pg/g

Percent Dry: 100

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF			0.718	1	0.63 *	31:16

100035

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SB8022 RE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: H0807413.LIS
DATE RECEIVED: 06/28/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 08/07/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	30:16	0.76	1316.6 J		
2378-TCDF	304/306	28:58	0.57 *		U J	0.37
12378-PeCDF	340/342	35:58	1.84 *		U J	0.14
12378-PeCDD	356/358	38:03	0.53 *		U J	0.12
23478-PeCDF	340/342	37:21	2.15 *		U J	0.06
123478-HxCDF	374/376	42:05	1.15	0.2 u	J	
123678-HxCDF	374/376	42:11	0.86 *		U	0.10
123478-HxCDD	390/392	42:59	1.70 *		U	0.08
123678-HxCDD	390/392	43:04	1.64 *		U	0.10
123789-HxCDD	390/392	43:21	1.49 *		U	0.15
234678-HxCDF	374/376	42:50	1.16	0.2 u	J	
123789-HxCDF	374/376	43:31	7.43 *		U	0.02
1234678-HpCDF	408/410	44:59	1.07	0.6 u	J	
1234678-HpCDD	424/426	45:50	1.12	2.7 u	J	
1234789-HpCDF	408/410	46:09	0.65 *		U	0.11
OCDD	458/460	48:22	0.87	24.3		
OCDF	442/444	48:28	0.84	0.6 u	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	30:14	0.7	0.65 - 0.89	16.7 *	40 - 120
13C-2378-TCDF	316/318	28:56	0.75	0.65 - 0.89	14.8 *	40 - 120
13C-12378-PeCDF	352/354	35:56	1.59	1.24 - 1.86	28.5 *	40 - 120
13C-12378-PeCDD	368/370	38:02	1.51	1.24 - 1.86	47.2	40 - 120
13C-123478-HxCDF	384/386	42:04	0.54	0.43 - 0.59	63.8	40 - 120
13C-123678-HxCDD	402/404	43:03	1.32	1.05 - 1.43	75.2	40 - 120
13C-1234678-HpCDF	418/420	44:58	0.41	0.37 - 0.51	64.4	40 - 120
13C-1234678-HpCDD	436/438	45:50	1.02	0.88 - 1.20	92.8	40 - 120
13C-OCDD	470/472	48:21	0.9	0.76 - 1.02	91.1	40 - 120
37Cl-2378-TCDD	328	30:16	NA	NA	60.3 *	0 - 0

Column to be used to flag values outside QC limits.

37Cl-2378-TCDD Cleanup Standard is Optional

FORM I PCDD-1

(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SB8022 RE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: H0807413.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94 JG 8/30 1st
DATE ANALYZED: 08/07/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	1316.62	X 1.0	1316.62
2378-TCDF		X 0.1	0.00
12378-PeCDF		X 0.05	0.00
12378-PeCDD		X 0.5	0.00
23478-PeCDF		X 0.5	0.00
123478-HxCDF	0.18	X 0.1	0.02
123678-HxCDF		X 0.1	0.00
123478-HxCDD		X 0.1	0.00
123678-HxCDD		X 0.1	0.00
123789-HxCDD		X 0.1	0.00
234678-HxCDF	0.16	X 0.1	0.02
123789-HxCDF		X 0.1	0.00
1234678-HpCDF	0.59	X 0.01	0.01
1234678-HpCDD	2.73	X 0.01	0.03
1234789-HpCDF		X 0.01	0.00
OCDD	24.34	X 0.001	0.02
OCDF	0.61	X 0.001	0.00
		TOTAL =	1316.71

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SB8023 RE PE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: H0814411.LIS
DATE RECEIVED: 06/28/94 gn 8/30/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 08/14/94
DILUTION FACTOR: 100
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	30:13	0.78	24519.2	J	
2378-TCDF	304/306	28:55	0.76	2248.7		
12378-PeCDF	340/342	35:55	1.52	2511.7		
12378-PeCDD	356/358	38:01	1.51	20490.5		
23478-PeCDF	340/342	37:19	1.51	15938.6		
123478-HxCDF	374/376	42:03	1.31	1829.9		
123678-HxCDF	374/376	42:11	1.2	81661.8		
123478-HxCDD	390/392	42:58	1.22	34477.1		
123678-HxCDD	390/392	43:03	1.23	21788.2		
123789-HxCDD	390/392	43:20	1.18	796.6		
234678-HxCDF	374/376	42:48	1.18	1241.2		
123789-HxCDF	374/376	43:30	1.21	53142.1		
1234678-HpCDF	408/410	44:58	1.02	4063.1		
1234678-HpCDD	424/426	45:49	1.04	29081.2		
1234789-HpCDF	408/410	46:09	1	116123.0	E	
OCDD	458/460	48:21	0.89	63713.6		
OCDF	442/444	48:28	0.86	147636.2	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	30:12	0.67	0.65 - 0.89	67	40 - 120
13C-2378-TCDF	316/318	28:53	0.71	0.65 - 0.89	68.3	40 - 120
13C-12378-PeCDF	352/354	35:54	1.61	1.24 - 1.86	79	40 - 120
13C-12378-PeCDD	368/370	37:60	1.64	1.24 - 1.86	88.7	40 - 120
13C-123478-HxCDF	384/386	42:03	0.57	0.43 - 0.59	93.2	40 - 120
13C-123678-HxCDD	402/404	43:03	1.32	1.05 - 1.43	101.9	40 - 120
13C-1234678-HpCDF	418/420	44:57	0.43	0.37 - 0.51	92.9	40 - 120
13C-1234678-HpCDD	436/438	45:48	1.09	0.88 - 1.20	89.7	40 - 120
13C-OCDD	470/472	48:20	0.89	0.76 - 1.02	90.6	40 - 120
37Cl-2378-TCDD	328	30:13	NA	NA	4437.1 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SB8023 RE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: H0814411.LIS
DATE RECEIVED: 06/28/94 8/30/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 08/14/94
DILUTION FACTOR: 100
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	24519.21	X 1.0	24519.21
2378-TCDF	2248.72	X 0.1	224.87
12378-PeCDF	2511.66	X 0.05	125.58
12378-PeCDD	20490.54	X 0.5	10245.27
23478-PeCDF	15938.58	X 0.5	7969.29
123478-HxCDF	1829.89	X 0.1	182.99
123678-HxCDF	81661.79	X 0.1	8166.18
123478-HxCDD	34477.12	X 0.1	3447.71
123678-HxCDD	21788.20	X 0.1	2178.82
123789-HxCDD	796.63	X 0.1	79.66
234678-HxCDF	1241.20	X 0.1	124.12
123789-HxCDF	53142.06	X 0.1	5314.21
1234678-HpCDF	4063.07	X 0.01	40.63
1234678-HpCDD	29081.24	X 0.01	290.81
1234789-HpCDF	116123.03	X 0.01	1161.23
OCDD	63713.56	X 0.001	63.71
OCDF	147636.21	X 0.001	147.64 J
		TOTAL =	64281.94

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

100114

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SB8024 PE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0725415.LIS
DATE RECEIVED: 06/28/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:19	0.86	24.3 J	J	
2378-TCDF	304/306	32:03	0.8	3.4 J	J	
12378-PeCDF	340/342	38:54	1.45	1.1 J	J	
12378-PeCDD	356/358	40:50	1.57	5.2	J	
23478-PeCDF	340/342	40:16	1.7	2.8 J	J	
123478-HxCDF	374/376	43:40	1.17	0.6 u	J	
123678-HxCDF	374/376	43:46	1.25	13.7	J	
123478-HxCDD	390/392	44:24	1.4	4.5	J	
123678-HxCDD	390/392	44:29	1.27	3.9	J	
123789-HxCDD	390/392	44:45	1.29	0.4 u	J	
234678-HxCDF	374/376	44:16	1.21	0.3 u	J	
123789-HxCDF	374/376	44:55	1.28	7.7	J	
1234678-HpCDF	408/410	46:25	1.11	0.8 u	J	
1234678-HpCDD	424/426	47:20	1	3.0	J	
1234789-HpCDF	408/410	47:43	1.1	10.1	J	
OCDD	458/460	50:16	0.96	7.5	J	
OCDF	442/444	50:24	0.96	14.3		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:17	0.75	0.65-0.89	7.3 *	40 - 120
13C-2378-TCDF	316/318	32:01	0.84	0.65-0.89	5.5 *	40 - 120
13C-12378-PeCDF	352/354	38:53	1.53	1.32-1.78	19.0 *	40 - 120
13C-12378-PeCDD	368/370	40:48	1.66	1.32-1.78	25.3 *	40 - 120
13C-123478-HxCDF	384/386	43:39	0.51	0.43-0.59	59.9	40 - 120
13C-123678-HxCDD	402/404	44:28	1.42	0.43-0.59	59.9	40 - 120
13C-1234678-HpCDF	418/420	46:24	0.44	0.37-0.51	100.7	40 - 120
13C-1234678-HpCDD	436/438	47:20	1.12	0.88 - 1.20	104.6	40 - 120
13C-OCDD	470/472	50:15	0.99	0.76-1.02	93.3	40 - 120
37Cl-2378-TCDD	328	25:58	NA	NA	3.7 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SB8024

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0725415.LIS
DATE RECEIVED: 06/28/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	24.25	X 1.0	24.25
2378-TCDF	3.44	X 0.1	0.34
12378-PeCDF	1.14	X 0.05	0.06
12378-PeCDD	5.18	X 0.5	2.59
23478-PeCDF	2.78	X 0.5	1.39
123478-HxCDF	0.56	X 0.1	0.06
123678-HxCDF	13.66	X 0.1	1.37
123478-HxCDD	4.50	X 0.1	0.45
123678-HxCDD	3.95	X 0.1	0.39
123789-HxCDD	0.40	X 0.1	0.04
234678-HxCDF	0.27	X 0.1	0.03
123789-HxCDF	7.70	X 0.1	0.77
1234678-HpCDF	0.78	X 0.01	0.01
1234678-HpCDD	2.99	X 0.01	0.03
1234789-HpCDF	10.12	X 0.01	0.10
OCDD	7.54	X 0.001	0.01
OCDF	14.31	X 0.001	0.01
		TOTAL =	31.89

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SB8024

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43836

Case: SAS 8432B-01

Date Received: 06/28/94

Lab File Name: A08104U1_5

SDG: SBC984

Date Extracted: 07/11/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/11/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.1 g

Concentration Unit: pg/g

Percent Dry: 100

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	14.2			0.99	0.71	31:06

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC 984

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0723410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/23/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:23	0.84	0.3 u	J	
2378-TCDF	304/306	32:10	0.76	4.0	J	
12378-PeCDF	340/342	39:01	1.58	1.7	J	
12378-PeCDD	356/358	40:55	1.38	0.5 u	J	
23478-PeCDF	340/342	40:21	1.49	1.7	J	
123478-HxCDF	374/376	43:42	1.3	6.0	J	
123678-HxCDF	374/376	43:49	1.3	2.8	J	
123478-HxCDD	390/392	44:26	1.23	0.8 u	J	
123678-HxCDD	390/392	44:31	1.22	1.1	J	
123789-HxCDD	390/392	44:47	1.13	1.1	J	
234678-HxCDF	374/376	44:19	1.21	2.5	J	
123789-HxCDF	374/376	44:58	1.1	0.2 u	J	
1234678-HpCDF	408/410	46:28	1	23.6	J	
1234678-HpCDD	424/426	47:23	1.03	31.9	J	
1234789-HpCDF	408/410	47:45	1.07	2.5	J	
OCDD	458/460	50:19	0.89	2168.7	J	
OCDF	442/444	50:26	0.91	36.9	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:22	0.75	0.65-0.89	75.2	40 - 120
13C-2378-TCDF	316/318	32:07	0.8	0.65-0.89	68.8	40 - 120
13C-12378-PeCDF	352/354	38:60	1.66	1.32-1.78	78	40 - 120
13C-12378-PeCDD	368/370	40:53	1.55	1.32-1.78	73	40 - 120
13C-123478-HxCDF	384/386	43:42	0.51	0.43-0.59	124.7 *	40 - 120
13C-123678-HxCDD	402/404	44:30	1.23	0.43-0.59	111	40 - 120
13C-1234678-HpCDF	418/420	46:27	0.44	0.37-0.51	99.4	40 - 120
13C-1234678-HpCDD	436/438	47:22	1.04	0.88 - 1.20	95	40 - 120
13C-OCDD	470/472	50:18	0.9	0.76-1.02	91.8	40 - 120
37Cl-2378-TCDD	328	33:25	NA	NA	7.9 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC 984

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0723410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/23/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.30	X 1.0	0.30
2378-TCDF	4.01	X 0.1	0.40
12378-PeCDF	1.67	X 0.05	0.08
12378-PeCDD	0.50	X 0.5	0.25
23478-PeCDF	1.74	X 0.5	0.87
123478-HxCDF	6.01	X 0.1	0.60
123678-HxCDF	2.78	X 0.1	0.28
123478-HxCDD	0.76	X 0.1	0.08
123678-HxCDD	1.06	X 0.1	0.11
123789-HxCDD	1.11	X 0.1	0.11
234678-HxCDF	2.46	X 0.1	0.25
123789-HxCDF	0.24	X 0.1	0.02
1234678-HpCDF	23.60	X 0.01	0.24
1234678-HpCDD	31.87	X 0.01	0.32
1234789-HpCDF	2.50	X 0.01	0.03
OCDD	2168.73	X 0.001	2.17
OCDF	36.94	X 0.001	0.04
		TOTAL =	6.13

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC984

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43885

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_13

SDG: SBC984

Date Extracted: 07/11/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.0 g

Concentration Unit: pg/g

Percent Dry: 84

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	4.36			1.19	0.87	31:18

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC985

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0725408.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:20	0.87	1.0 u	J	
2378-TCDF	304/306	32:06	0.83	21.0	J	
12378-PeCDF	340/342	37:26	1.52	~~20.4~~ 9.5	J	
12378-PeCDD	356/358	37:45	1.41	~~7.1~~ 2.04	J	
23478-PeCDF	340/342	38:23	1.49	11.2	J	
123478-HxCDF	374/376	43:39	1.21	29.8	J	
123678-HxCDF	374/376	43:47	1.23	13.5	J	
123478-HxCDD	390/392	44:25	1.2	2.8	J	
123678-HxCDD	390/392	44:29	1.21	3.7	J	
123789-HxCDD	390/392	44:43	1.23	5.3	J	
234678-HxCDF	374/376	44:17	1.18	14.5	J	
123789-HxCDF	374/376	44:55	1.18	1.9	J	
1234678-HpCDF	408/410	46:25	1.03	73.5	J	
1234678-HpCDD	424/426	46:42	1.06	~~48.1~~ 45.3	J	
1234789-HpCDF	408/410	46:39	0.98	11.4	J	
OCDD	458/460	50:17	0.94	589.2	J	
OCDF	442/444	50:25	0.94	59.9	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:19	0.73	0.65-0.89	40.9	40 - 120
13C-2378-TCDF	316/318	32:03	0.86	0.65-0.89	35.8 *	40 - 120
13C-12378-PeCDF	352/354	38:55	1.51	1.32-1.78	55.2	40 - 120
13C-12378-PeCDD	368/370	40:50	1.69	1.32-1.78	61	40 - 120
13C-123478-HxCDF	384/386	43:40	0.49	0.43-0.59	66.2	40 - 120
13C-123678-HxCDD	402/404	44:29	1.32	0.43-0.59	70.4	40 - 120
13C-1234678-HpCDF	418/420	46:25	0.46	0.37-0.51	76.5	40 - 120
13C-1234678-HpCDD	436/438	47:20	1.1	0.88 - 1.20	80.8	40 - 120
13C-OCDD	470/472	50:16	0.96	0.76-1.02	84.4	40 - 120
37Cl-2378-TCDD	328	23:11	NA	NA	14.9 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC985

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0725408.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	1.04	X 1.0	1.04
2378-TCDF	21.03	X 0.1	2.10
12378-PeCDF	20.39	X 0.05	1.02
12378-PeCDD	7.11	X 0.5	3.55
23478-PeCDF	11.25	X 0.5	5.62
123478-HxCDF	29.83	X 0.1	2.98
123678-HxCDF	13.49	X 0.1	1.35
123478-HxCDD	2.84	X 0.1	0.28
123678-HxCDD	3.66	X 0.1	0.37
123789-HxCDD	5.27	X 0.1	0.53
234678-HxCDF	14.46	X 0.1	1.45
123789-HxCDF	1.93	X 0.1	0.19
1234678-HpCDF	73.45	X 0.01	0.73
1234678-HpCDD	48.40	X 0.01	0.48
1234789-HpCDF	11.39	X 0.01	0.11
OCDD	589.23	X 0.001	0.59
OCDF	59.88	X 0.001	0.06
		TOTAL =	22.47

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC985

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43886

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08094U1_8

SDG: SBC984

Date Extracted: 07/11/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/11/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.0 g

Concentration Unit: pg/g

Percent Dry: 75

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	12.0			1.33	0.88	31:11

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC986 RE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: H0815403.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 08/15/94
DILUTION FACTOR: 10
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	30:14	0.76	140.0		
2378-TCDF	304/306	28:58	0.76	6013.6		
12378-PeCDF	340/342	35:56	1.56	1799.1		
12378-PeCDD	356/358	38:01	1.48	484.2		
23478-PeCDF	340/342	37:20	1.55	1923.3		
123478-HxCDF	374/376	42:01	1.23	9227.2		
123678-HxCDF	374/376	42:11	1.23	3407.7		
123478-HxCDD	390/392	42:58	1.21	608.4		
123678-HxCDD	390/392	43:03	1.25	857.9		
123789-HxCDD	390/392	43:20	1.2	1505.1		
234678-HxCDF	374/376	42:48	1.23	4525.8		
123789-HxCDF	374/376	43:30	1.28	240.9		
1234678-HpCDF	408/410	44:58	1.02	19394.2		
1234678-HpCDD	424/426	45:49	1.03	9075.7		
1234789-HpCDF	408/410	46:09	1.08	2328.0		
OCDD	458/460	48:20	0.88	13226.9		
OCDF	442/444	48:27	0.88	13224.5		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	30:12	0.82	0.65 - 0.89	90.9	40 - 120
13C-2378-TCDF	316/318	28:54	0.81	0.65 - 0.89	99.2	40 - 120
13C-12378-PeCDF	352/354	35:55	1.48	1.24 - 1.86	94.4	40 - 120
13C-12378-PeCDD	368/370	38:01	1.6	1.24 - 1.86	95.2	40 - 120
13C-123478-HxCDF	384/386	42:03	0.51	0.43 - 0.59	91.1	40 - 120
13C-123678-HxCDD	402/404	43:02	1.29	1.05 - 1.43	80.1	40 - 120
13C-1234678-HpCDF	418/420	44:58	0.43	0.37 - 0.51	100.5	40 - 120
13C-1234678-HpCDD	436/438	45:49	1.04	0.88 - 1.20	89.5	40 - 120
13C-OCDD	470/472	48:20	0.91	0.76 - 1.02	82.2	40 - 120
37Cl-2378-TCDD	328	30:13	NA	NA	7.5 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC986 RE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01
SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: H0815403.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 08/15/94
DILUTION FACTOR: 10
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	139.97	X 1.0	139.97
2378-TCDF	6013.58	X 0.1	601.36
12378-PeCDF	1799.15	X 0.05	89.96
12378-PeCDD	484.19	X 0.5	242.10
23478-PeCDF	1923.27	X 0.5	961.63
123478-HxCDF	9227.24	X 0.1	922.72
123678-HxCDF	3407.65	X 0.1	340.77
123478-HxCDD	608.38	X 0.1	60.84
123678-HxCDD	857.86	X 0.1	85.79
123789-HxCDD	1505.12	X 0.1	150.51
234678-HxCDF	4525.81	X 0.1	452.58
123789-HxCDF	240.89	X 0.1	24.09
1234678-HpCDF	19394.21	X 0.01	193.94
1234678-HpCDD	9075.65	X 0.01	90.76
1234789-HpCDF	2327.98	X 0.01	23.28
OCDD	13226.91	X 0.001	13.23
OCDF	13224.48	X 0.001	13.22
		TOTAL =	4406.74

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC 987

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724405.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:24	0.46 *		U	0.13
2378-TCDF	304/306	32:09	0.77	~~1.8~~ 1.3 J	J	
12378-PeCDF	340/342	38:59	1.39	0.6 U	J	
12378-PeCDD	356/358	37:47	1.42	0.9 U	J	
23478-PeCDF	340/342	40:20	1.42	0.7 U	J	
123478-HxCDF	374/376	43:41	1.12	2.0	J	
123678-HxCDF	374/376	43:48	1.16	1.1	J	
123478-HxCDD	390/392	44:26	1.08	0.4 U	J	
123678-HxCDD	390/392	44:30	1.23	0.5 U	J	
123789-HxCDD	390/392	44:45	1.2	0.7 U	J	
234678-HxCDF	374/376	44:18	1.13	1.1	J	
123789-HxCDF	374/376	44:56	1.08	0.3 U	J	
1234678-HpCDF	408/410	46:26	1.05	5.1	J	
1234678-HpCDD	424/426	47:22	1.09	16.8	J	
1234789-HpCDF	408/410	47:45	1.08	0.7 U	J	
OCDD	458/460	50:17	0.92	1709.1	J	
OCDF	442/444	50:25	0.97	6.3	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:20	0.75	0.65-0.89	50.3	40 - 120
13C-2378-TCDF	316/318	32:05	0.81	0.65-0.89	50.3	40 - 120
13C-12378-PeCDF	352/354	38:57	1.61	1.32-1.78	68.2	40 - 120
13C-12378-PeCDD	368/370	40:52	1.63	1.32-1.78	66.2	40 - 120
13C-123478-HxCDF	384/386	43:41	0.5	0.43-0.59	68.1	40 - 120
13C-123678-HxCDD	402/404	44:29	1.25	0.43-0.59	67	40 - 120
13C-1234678-HpCDF	418/420	46:25	0.46	0.37-0.51	82	40 - 120
13C-1234678-HpCDD	436/438	47:21	1.04	0.88 - 1.20	72.8	40 - 120
13C-OCDD	470/472	50:16	0.91	0.76-1.02	75	40 - 120
37Cl-2378-TCDD	328	26:02	NA	NA	12.9 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC 987

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01
SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724405.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD		X 1.0	
2378-TCDF	1.81	X 0.1	0.18
12378-PeCDF	0.62	X 0.05	0.03
12378-PeCDD	0.86	X 0.5	0.43
23478-PeCDF	0.66	X 0.5	0.33
123478-HxCDF	2.03	X 0.1	0.20
123678-HxCDF	1.08	X 0.1	0.11
123478-HxCDD	0.39	X 0.1	0.04
123678-HxCDD	0.51	X 0.1	0.05
123789-HxCDD	0.68	X 0.1	0.07
234678-HxCDF	1.12	X 0.1	0.11
123789-HxCDF	0.27	X 0.1	0.03
1234678-HpCDF	5.09	X 0.01	0.05
1234678-HpCDD	16.83	X 0.01	0.17
1234789-HpCDF	0.66	X 0.01	0.01
OCDD	1709.08	X 0.001	1.71
OCDF	6.30	X 0.001	0.01
		TOTAL =	3.52

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC987

Client ID: EPA

Case: 8432B-01

SDG: SBC984

Matrix: L SOIL

Sample Wt/Vol: 10.2 g

Project: 01-6359-028

Date Recieved: 06/25/94

Date Extracted: 07/11/94

Date Analyzed: 08/26/94

Concentration Unit: pg/g

Lab Sample ID: 43888

Lab File Name: A08264U1_

Final Extracion Vol: 20 uL

Dilution Factor: 1

Percent Dry: 92

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	1.3			1.07	0.81	31:18

SAS 8432B-01
SDG SBC984

100429

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC 988

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724406.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:23	0.58 *		U	0.19
2378-TCDF	304/306	32:09	0.78	~~42~~ 3.25		
12378-PeCDF	340/342	38:58	1.55	1.2	J	
12378-PeCDD	356/358	37:46	1.66	2.5	J	
23478-PeCDF	340/342	40:19	1.54	1.2	J	
123478-HxCDF	374/376	43:40	1.16	4.2	J	
123678-HxCDF	374/376	43:49	1.22	1.8	J	
123478-HxCDD	390/392	44:26	1.37	0.6 u	J	
123678-HxCDD	390/392	44:30	1.22	0.9 u	J	
123789-HxCDD	390/392	44:45	1.17	1.1	J	
234678-HxCDF	374/376	44:18	1.15	2.1	J	
123789-HxCDF	374/376	44:57	1.12	0.3 u	J	
1234678-HpCDF	408/410	46:26	1	11.1	J	
1234678-HpCDD	424/426	47:22	1.07	16.6	J	
1234789-HpCDF	408/410	47:44	1.08	1.2	J	
OCDD	458/460	50:17	0.91	803.6	J	
OCDF	442/444	50:25	0.98	13.0	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:21	0.76	0.65-0.89	52.2	40 - 120
13C-2378-TCDF	316/318	32:05	0.8	0.65-0.89	55.5	40 - 120
13C-12378-PeCDF	352/354	38:56	1.62	1.32-1.78	65.4	40 - 120
13C-12378-PeCDD	368/370	40:51	1.64	1.32-1.78	60.8	40 - 120
13C-123478-HxCDF	384/386	43:41	0.51	0.43-0.59	65.3	40 - 120
13C-123678-HxCDD	402/404	44:30	1.26	0.43-0.59	64	40 - 120
13C-1234678-HpCDF	418/420	46:26	0.46	0.37-0.51	77.3	40 - 120
13C-1234678-HpCDD	436/438	47:21	1.03	0.88 - 1.20	71	40 - 120
13C-OCDD	470/472	50:16	0.91	0.76-1.02	67	40 - 120
37Cl-2378-TCDD	328	26:02	NA	NA	17.1 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC 988

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01
SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724406.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD		X 1.0	
2378-TCDF	4.18	X 0.1	0.42
12378-PeCDF	1.21	X 0.05	0.06
12378-PeCDD	2.52	X 0.5	1.26
23478-PeCDF	1.25	X 0.5	0.62
123478-HxCDF	4.16	X 0.1	0.42
123678-HxCDF	1.81	X 0.1	0.18
123478-HxCDD	0.56	X 0.1	0.06
123678-HxCDD	0.90	X 0.1	0.09
123789-HxCDD	1.09	X 0.1	0.11
234678-HxCDF	2.09	X 0.1	0.21
123789-HxCDF	0.28	X 0.1	0.03
1234678-HpCDF	11.15	X 0.01	0.11
1234678-HpCDD	16.59	X 0.01	0.17
1234789-HpCDF	1.21	X 0.01	0.01
OCDD	803.62	X 0.001	0.80
OCDF	12.95	X 0.001	0.01
		TOTAL =	4.56

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC988

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43889

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08094U1_14

SDG: SBC984

Date Extracted: 07/11/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/09/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.1 g

Concentration Unit: pg/g

Percent Dry: 95

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	3.22			1.04	0.77	31:21

100463

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC 989

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.30 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724407.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:22	0.68	0.4 U	J	
2378-TCDF	304/306	32:08	0.79	6.1	J	
12378-PeCDF	340/342	38:58	1.51	2.0	J	
12378-PeCDD	356/358	40:52	1.47	0.5 U	J	
23478-PeCDF	340/342	40:19	1.55	1.7	J	
123478-HxCDF	374/376	43:40	1.22	5.0	J	
123678-HxCDF	374/376	43:48	1.14	2.2	J	
123478-HxCDD	390/392	44:25	1.2	0.7 U	J	
123678-HxCDD	390/392	44:30	1.35	0.9 U	J	
123789-HxCDD	390/392	44:46	1.18	1.2	J	
234678-HxCDF	374/376	44:18	1.15	2.6	J	
123789-HxCDF	374/376	44:57	1.24	0.2 U	J	
1234678-HpCDF	408/410	46:26	0.99	15.6	J	
1234678-HpCDD	424/426	47:22	1.07	13.9	J	
1234789-HpCDF	408/410	47:44	1.01	1.3	J	
OCDD	458/460	50:17	0.9	198.6	J	
OCDF	442/444	50:25	0.92	19.7	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:20	0.75	0.65-0.89	43	40 - 120
13C-2378-TCDF	316/318	32:05	0.8	0.65-0.89	43.3	40 - 120
13C-12378-PeCDF	352/354	38:56	1.61	1.32-1.78	63.5	40 - 120
13C-12378-PeCDD	368/370	40:51	1.65	1.32-1.78	61.4	40 - 120
13C-123478-HxCDF	384/386	43:41	0.51	0.43-0.59	69	40 - 120
13C-123678-HxCDD	402/404	44:30	1.25	0.43-0.59	66.6	40 - 120
13C-1234678-HpCDF	418/420	46:26	0.46	0.37-0.51	76.4	40 - 120
13C-1234678-HpCDD	436/438	47:21	1.04	0.88 - 1.20	72.1	40 - 120
13C-OCDD	470/472	50:16	0.9	0.76-1.02	64.4	40 - 120
37Cl-2378-TCDD	328	26:02	NA	NA	9.7 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC 989

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01
SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.30 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724407.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.42	X 1.0	0.42
2378-TCDF	6.14	X 0.1	0.61
12378-PeCDF	1.99	X 0.05	0.10
12378-PeCDD	0.55	X 0.5	0.27
23478-PeCDF	1.67	X 0.5	0.84
123478-HxCDF	4.98	X 0.1	0.50
123678-HxCDF	2.25	X 0.1	0.22
123478-HxCDD	0.70	X 0.1	0.07
123678-HxCDD	0.87	X 0.1	0.09
123789-HxCDD	1.24	X 0.1	0.12
234678-HxCDF	2.57	X 0.1	0.26
123789-HxCDF	0.20	X 0.1	0.02
1234678-HpCDF	15.56	X 0.01	0.16
1234678-HpCDD	13.93	X 0.01	0.14
1234789-HpCDF	1.34	X 0.01	0.01
OCDD	198.61	X 0.001	0.20
OCDF	19.66	X 0.001	0.02
		TOTAL =	4.05

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC989

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43890

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08094U1_15

SDG: SBC984

Date Extracted: 07/11/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/09/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.3 g

Concentration Unit: pg/g

Percent Dry: 95

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	5.35			1.02	0.84	31:19

100497

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC 990

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724408.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:22	0.75	0.2 U	J	
2378-TCDF	304/306	32:07	0.83	2.8	J	
12378-PeCDF	340/342	38:59	1.41	1.0	J	
12378-PeCDD	356/358	40:53	1.33	0.3 U	J	
23478-PeCDF	340/342	40:20	1.46	0.9 U	J	
123478-HxCDF	374/376	43:41	1.19	2.5	J	
123678-HxCDF	374/376	43:48	1.13	1.2	J	
123478-HxCDD	390/392	44:26	1.4	0.3 U	J	
123678-HxCDD	390/392	44:30	1.25	0.6 U	J	
123789-HxCDD	390/392	44:46	1.35	0.8 U	J	
234678-HxCDF	374/376	44:18	1.21	1.5	J	
123789-HxCDF	374/376	44:57	1.1	0.2 U	J	
1234678-HpCDF	408/410	46:27	1.01	9.2	J	
1234678-HpCDD	424/426	47:22	1.01	8.6	J	
1234789-HpCDF	408/410	47:45	1.01	0.8 U	J	
OCDD	458/460	50:17	0.91	207.0	J	
OCDF	442/444	50:25	0.92	16.8	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:20	0.77	0.65-0.89	31.7 *	40 - 120
13C-2378-TCDF	316/318	32:05	0.81	0.65-0.89	33.0 *	40 - 120
13C-12378-PeCDF	352/354	38:58	1.63	1.32-1.78	57.5	40 - 120
13C-12378-PeCDD	368/370	40:52	1.62	1.32-1.78	60.6	40 - 120
13C-123478-HxCDF	384/386	43:41	0.5	0.43-0.59	70.7	40 - 120
13C-123678-HxCDD	402/404	44:29	1.27	0.43-0.59	73.9	40 - 120
13C-1234678-HpCDF	418/420	46:26	0.45	0.37-0.51	80.2	40 - 120
13C-1234678-HpCDD	436/438	47:21	1.05	0.88 - 1.20	76.2	40 - 120
13C-OCDD	470/472	50:16	0.91	0.76-1.02	70.8	40 - 120
37Cl-2378-TCDD	328	26:02	NA	NA	6.9 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC 990

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724408.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.22	X 1.0	0.22
2378-TCDF	2.75	X 0.1	0.28
12378-PeCDF	0.96	X 0.05	0.05
12378-PeCDD	0.28	X 0.5	0.14
23478-PeCDF	0.91	X 0.5	0.45
123478-HxCDF	2.51	X 0.1	0.25
123678-HxCDF	1.20	X 0.1	0.12
123478-HxCDD	0.31	X 0.1	0.03
123678-HxCDD	0.58	X 0.1	0.06
123789-HxCDD	0.81	X 0.1	0.08
234678-HxCDF	1.48	X 0.1	0.15
123789-HxCDF	0.16	X 0.1	0.02
1234678-HpCDF	9.24	X 0.01	0.09
1234678-HpCDD	8.63	X 0.01	0.09
1234789-HpCDF	0.82	X 0.01	0.01
OCDD	207.02	X 0.001	0.21
OCDF	16.83	X 0.001	0.02
		TOTAL =	2.25

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC990

Client ID: EPA

Case: 8432B-01

SDG: SBC984

Matrix: L SOIL

Sample Wt/Vol: 10 g

Project: 01-6359-028

Date Recieved: 06/25/94

Date Extracted: 07/11/94

Date Analyzed: 08/26/94

Concentration Unit: pg/g

Lab Sample ID: 43891

Lab File Name: A08264U1_

Final Extracion Vol: 20 uL

Dilution Factor: 1

Percent Dry: 96

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	4.00			1.04	0.84	31:19

SAS 8432B-01
SDG SBC984

100557

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC 991

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724409.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:23	0.66	0.4 U	J	
2378-TCDF	304/306	32:08	0.81	7.0	J	
12378-PeCDF	340/342	38:58	1.49	2.3	J	
12378-PeCDD	356/358	40:52	1.55	0.6 U	J	
23478-PeCDF	340/342	40:19	1.54	3.9	J	
123478-HxCDF	374/376	43:40	1.2	8.0	J	
123678-HxCDF	374/376	43:48	1.23	3.0	J	
123478-HxCDD	390/392	44:25	1.35	0.8 U	J	
123678-HxCDD	390/392	44:30	1.39	1.2	J	
123789-HxCDD	390/392	44:46	1.28	1.8	J	
234678-HxCDF	374/376	44:18	1.18	7.1	J	
123789-HxCDF	374/376	44:57	1.18	0.7 U	J	
1234678-HpCDF	408/410	46:26	1.01	19.7	J	
1234678-HpCDD	424/426	47:22	1.02	23.5	J	
1234789-HpCDF	408/410	47:44	1.1	3.2	J	
OCDD	458/460	50:17	0.9	745.6	J	
OCDF	442/444	50:25	0.95	24.9	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:21	0.73	0.65-0.89	16.6 *	40 - 120
13C-2378-TCDF	316/318	32:05	0.83	0.65-0.89	18.1 *	40 - 120
13C-12378-PeCDF	352/354	38:56	1.65	1.32-1.78	37.9 *	40 - 120
13C-12378-PeCDD	368/370	40:51	1.66	1.32-1.78	49.1	40 - 120
13C-123478-HxCDF	384/386	43:41	0.5	0.43-0.59	32.3 *	40 - 120
13C-123678-HxCDD	402/404	44:30	1.27	0.43-0.59	59.2	40 - 120
13C-1234678-HpCDF	418/420	46:26	0.45	0.37-0.51	47.2	40 - 120
13C-1234678-HpCDD	436/438	47:21	1.03	0.88 - 1.20	82.4	40 - 120
13C-OCDD	470/472	50:16	0.91	0.76-1.02	84.9	40 - 120
37Cl-2378-TCDD	328	26:03	NA	NA	4.9 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC 991

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724409.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.43	X 1.0	0.43
2378-TCDF	7.04	X 0.1	0.70
12378-PeCDF	2.29	X 0.05	0.11
12378-PeCDD	0.59	X 0.5	0.29
23478-PeCDF	3.86	X 0.5	1.93
123478-HxCDF	7.97	X 0.1	0.80
123678-HxCDF	2.97	X 0.1	0.30
123478-HxCDD	0.75	X 0.1	0.08
123678-HxCDD	1.24	X 0.1	0.12
123789-HxCDD	1.80	X 0.1	0.18
234678-HxCDF	7.06	X 0.1	0.71
123789-HxCDF	0.65	X 0.1	0.07
1234678-HpCDF	19.68	X 0.01	0.20
1234678-HpCDD	23.54	X 0.01	0.24
1234789-HpCDF	3.18	X 0.01	0.03
OCDD	745.63	X 0.001	0.75
OCDF	24.87	X 0.001	0.02
		TOTAL =	6.96

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC991

Client ID: EPA

Case: 8432B-01

SDG: SBC984

Matrix: L SOIL

Sample Wt/Vol: 10 g

Project: 01-6359-028

Date Recieved: 06/25/94

Date Extracted: 07/11/94

Date Analyzed: 08/26/94

Concentration Unit: pg/g

Lab Sample ID: 43891

Lab File Name: A08264U1_

Final Extracion Vol: 20 uL

Dilution Factor: 1

Percent Dry: 93

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	7.70			1.08	0.67	31:18

SAS 8432B-01
SDG SBC984

100614

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC 992

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:22	0.87	1.5	J	
2378-TCDF	304/306	32:08	0.75	6.4	J	
12378-PeCDF	340/342	39:00	1.53	2.4	J	
12378-PeCDD	356/358	40:53	1.42	0.7 U	J	
23478-PeCDF	340/342	40:21	1.54	2.1	J	
123478-HxCDF	374/376	43:42	1.2	5.9	J	
123678-HxCDF	374/376	43:49	1.17	2.8	J	
123478-HxCDD	390/392	44:26	1.22	0.8 U	J	
123678-HxCDD	390/392	44:30	1.33	1.1	J	
123789-HxCDD	390/392	44:46	1.19	1.5	J	
234678-HxCDF	374/376	44:19	1.17	3.0	J	
123789-HxCDF	374/376	44:57	1.37	0.3 U	J	
1234678-HpCDF	408/410	46:27	1.03	16.6	J	
1234678-HpCDD	424/426	47:23	1.02	31.0	J	
1234789-HpCDF	408/410	47:45	1.05	1.5	J	
OCDD	458/460	50:17	0.91	1460.7	J	
OCDF	442/444	50:25	0.92	20.2	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:21	0.73	0.65-0.89	34.3 *	40 - 120
13C-2378-TCDF	316/318	32:06	0.82	0.65-0.89	34.0 *	40 - 120
13C-12378-PeCDF	352/354	38:58	1.61	1.32-1.78	55.7	40 - 120
13C-12378-PeCDD	368/370	40:52	1.61	1.32-1.78	63.3	40 - 120
13C-123478-HxCDF	384/386	43:42	0.5	0.43-0.59	72.8	40 - 120
13C-123678-HxCDD	402/404	44:30	1.25	0.43-0.59	77.9	40 - 120
13C-1234678-HpCDF	418/420	46:27	0.46	0.37-0.51	85.2	40 - 120
13C-1234678-HpCDD	436/438	47:22	1.02	0.88 - 1.20	81.9	40 - 120
13C-OCDD	470/472	50:16	0.91	0.76-1.02	78.5	40 - 120
37Cl-2378-TCDD	328	26:03	NA	NA	14.5 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

100615

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC 992

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01
SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC984
LAB SAMPLE ID.: A0724410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/11/94
DATE ANALYZED: 07/24/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	1.46	X 1.0	1.46
2378-TCDF	6.38	X 0.1	0.64
12378-PeCDF	2.44	X 0.05	0.12
12378-PeCDD	0.70	X 0.5	0.35
23478-PeCDF	2.07	X 0.5	1.04
123478-HxCDF	5.92	X 0.1	0.59
123678-HxCDF	2.76	X 0.1	0.28
123478-HxCDD	0.78	X 0.1	0.08
123678-HxCDD	1.13	X 0.1	0.11
123789-HxCDD	1.51	X 0.1	0.15
234678-HxCDF	2.97	X 0.1	0.30
123789-HxCDF	0.29	X 0.1	0.03
1234678-HpCDF	16.55	X 0.01	0.17
1234678-HpCDD	30.98	X 0.01	0.31
1234789-HpCDF	1.53	X 0.01	0.02
OCDD	1460.71	X 0.001	1.46
OCDF	20.16	X 0.001	0.02
		TOTAL =	7.11

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC992

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43893

Case: 8432B-01

Date Recieved: 06/25/94

Lab File Name: A08264U1_

SDG: SBC984

Date Extracted: 07/11/94

Final Extracion Vol: 20 uL

Matrix: L SOIL

Date Analyzed: 08/26/94

Dilution Factor: 1

Sample Wt/Vol: 10 g

Concentration Unit: pg/g

Percent Dry: 96

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	9.76			1.04	0.67	31:20

SAS 8432B-01
SDG SBC984

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, USA 78228-0510 • (210) 684-5111 • TELEX 244846

RECEIVED
AUG 31 1994

August 30, 1994

Richard Spear
USEPA Region II, ESD
2890 Woodridge Avenue,
Building 209
Edison, New Jersey 08837

Subject: Sample, Standards and Raw QC Data Packages
Case: SMO SAS No. 8432-B-01 SDG SBC984
Contract Number: 68-D9-0135
SwRI Project Number: 01-6359-019
SwRI Work Order Numbers: 5667 and 5661
VTSR Dates: June 25 and 28, 1994

Dear Mr. Spear:

Enclosed please find the analytical data for the above referenced case.

If you should have any questions, please do not hesitate to call me at 210/522-2169.

Sincerely,

Jo Ann Boyd
Group Leader
Quality Assurance Unit,
Division 01

JAB/sel

TECHNICAL APPROVAL:

Joseph C. Pan

Joseph C. Pan, Ph.D.
Manager

cc: SMO

SwRI Case Narrative
SAS 8432-B-01 SDG SBC984

1. Nine (9) Low Soil Samples for Dioxin Analysis:

System ID	Customer ID	System ID	Customer Id
43885	SBC984	43886	SBC985
43887	SBC986	43888	SBC987
43889	SBC988	43890	SBC989
43891	SBC990	43892	SBC991
43893	SBC992		

Three (3) Soil Samples for Dioxin Analysis:

Sample ID	System ID	Customer ID
N84P93	43835	SB8022
0187960	43834	SB8023
T936ED	43836	SB8024

2. Matrix Spike / Matrix Spike Duplicate Sample Identification:

SBC985 MS/MSD

Duplicate Sample Identification:

SBC985 Dup

2. Samples were received at SwRI on June 25 and 28, 1994, for thirty-five (35) day from the Verified Time of Sample Receipt (VTSR) of the last sample in this study.

4. Reference Log-In Non Conformance date June 25, 1994. Cooler temperature upon receipt at SwRI was 26° C. The cooler was not packed with ice.

   Reference Telephone Conversation Record dated June 25, 1994. SMO, acknowledged receipt of Non-Conformance, and requested SwRI to note the cooler temperature in the Case Narrative.

5. Reference Log-In Non Conformance dated June 28, 1994. No paperwork was included with the PE samples upon arrival at SwRI.

   Reference Telephone Conversation Record dated June 28, 1994. The paperwork was received June 29, 1994, from ICF - Kaiser.

6. Reference Memorandum dated July 20, 1994. SwRI requested an extension for this SAS, due to the samples being very dirty, the instruments requiring extra maintenance, the necessity of additional sequences, and the samples need to be recleaned.

   Reference Telephone Conversation Record dated August 2, 1994. Kathy Pegram, SMO, notified SwRI that the extension was approved.

PCDD / PCDF ANALYSIS

1. The enclosed package contains data of sample analysis for Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran (PCDD/PCDF) following EPA Method 8290 (November 1990). The instrument used was a VG AutoSpec High Resolution Gas Chromatograph/High Resolution Mass Spectrometer (HRGC/HRMS), operated at 10,000 resolution power throughout the analysis.

2. Each sample was spiked with 20 µL of Carbon-13 labeled internal standard mixture at the beginning of extraction. Internal Standard Spiking solution was prepared January 23, 1994. The composition of this PCDD/PCDF internal standard mixture is as follows:

$^{13}C_{12}$-2378-TCDD	50 pg/µL
$^{13}C_{12}$-2378-TCDF	50 pg/µL
$^{13}C_{12}$-12378-PeCDD	50 pg/µL

$^{13}C_{12}$-12378-PeCDF	50 pg/µL
$^{13}C_{12}$-123678-HxCDD	125 pg/µL
$^{13}C_{12}$-123478-HxCDF	125 pg/µL
$^{13}C_{12}$-1234678-HpCDD	125 pg/µL
$^{13}C_{12}$-1234678-HpCDF	125 pg/µL
$^{13}C_{12}$-OCDD	250 pg/µL

3. The sample extract was then put through a series of clean-up processes, which include $H_{cl}A_4$ shake-up, silica gel column chromatography, alumina column chromatography and, activated carbon on silica column chromatography. The final sample extract residue was reconstituted into 20 µL of solution by adding 20 µL of recovery standard mixture. The recovery standard mixture contains $^{13}C_{12}$-1234-TCDD and $^{13}C_{12}$-123789-HxCDD at 50 pg/µL and 125 pg/µL respectively. Two (2) µL of the well mixed final sample extract was then injected into HRGC/HRMS.

4. The total pg of a particular PCDD/PCDF in a sample can be obtained by multiplying the value in the column of pg/µL by 20.

5. For the matrix spike, 10 µL of the spiking solution was spiked to the soil. The Matrix Spike Solution was prepared on January 23, 1994. The contents of the spiking solution are as follows:

2378-TCDD	25 pg/µL
12378-PeCDD	25 pg/µL
123678-HxCDD	25 pg/µL
1234678-HpCDD	25 pg/µL
OCDD	50 pg/µL
2378-TCDF	25 pg/µL
12378-PeCDF	25 pg/µL
123478-HxCDF	25 pg/µL
1234678-HpCDF	25 pg/µL
OCDF	50 pg/µL

6. Due to different software programs used in printing areas on the chromatograms and areas on the quantitation summaries, there may be discrepancies between the two. The peak areas printed on the chromatograms are for the convenience of the analyst. The peak areas on the "Quantitation Summary" and the "Total List" are the ones actually used in concentration calculation.

7. All of the concentration calculations for the target analytes and C-13 labeled internal standards of the samples are based on the mean RRF of the initial calibration.

8. The "Total Result" as well as "Total Tetra-Furans" through "Total Hepta-Dioxins" on "8290 Quantitation Summary 1" do not include 2,3,7,8-Substituted Dioxin/Dibenzofuran. However, the Total Dioxin and Total Dibenzofuran on the "Dioxin/Benzofuran Analysis Report" (Form I) do include the 2,3,7,8-Substituted Dioxins/Dibenzofurans. This was so arranged to work around software deficiencies.

9. The reported PCDD/PCDF concentrations in soils are on a dry weight basis.

10. Sample Formulas:
Relative Response for the Unlabeled PCDD/PCDF (targets) in Calibration Standards

$$\frac{(A_n^1 + A_n^2) \times C_1}{(A_1^1 + A_1^2) \times C_n} = RR$$

Where:

A_n^1 and A_n^2	=	the areas of the primary and secondary m/z's for the unlabeled target analyte
A_1^1 and A_1^2	=	the areas of the primary and secondary m/z's for the labeled Internal Standard
C_1	=	the concentration of the labeled Internal Standard in pg/µL
C_n	=	the concentration of the unlabeled target analyte in pg/µL

Calculation Calibration Standards:

8290CS3 Standard for July 20, 1994 ICAL
1,2,3,7,8-PeCDF

$$\frac{[1.39e6 + 8.71e5] \times 50\ pg/\mu L}{[9.55e6 + 5.30e6] \times 10\ pg/\mu L} =$$

$$\frac{2.26e6 \times 50\ pg/\mu L}{1.46e7 \times 10\ pg/\mu L} = 0.774$$

Reported Value: 0.770

Unlabeled PCDD/PCDF and Total PCDD/PCDF Concentrations in Sample Analysis:

$$\frac{A_n \times C_1}{A_{1s} \times MRR} = \text{Concentration } C\ (pg/\mu L)$$

$$(A_1^1 + A_1^2) = A_n$$

$$(A_{1s}^1 + A_{1s}^2) = A_{1s}$$

Where:

A_n	=	Summed area of both ions of the unlabeled PCDD/PCDF of interest
C_1	=	Concentration (pg/µL) of corresponding C-13-labeled PCDD/PCDF Internal Standard in the final extract
A_{1s}	=	Summed area of both ions of the C-13-labeled PCDD/PCDF Internal Standard
MRR	=	Mean Relative Response for the 2,3,7,8-substituted PCDD/PCDF. The MRR is substituted by AMRR (average MRR) for the non-2,3,7,8-substituted PCDD/PCDF

Calculation Sample SBC984 (07/23/94):
2,3,7,8-TCDF

$$\frac{[3.851e5] \times 50\ pg/\mu L}{[1.493e7] \times 0.766} = 1.684\ pg/\mu L$$

Reported value: 1.683 pg/µL

Percent recoveries of the labeled PCDD/PCDF Surrogates:

$$\frac{A_1 \times C_{1s}}{A_{1s} \times MRF} = \text{Concentration } C\ (pg/\mu L)$$

Where:

A_1 = the summed areas of the primary and secondary m/s's for the surrogate compound. (Note: there is only one m/g for $^{37}Cl_4$-2,3,7,8-TCDD.)

A_{1s} = the summed areas of the primary and secondary m/z's for the corresponding recovery standard

C_{1s} = the concentration of the recovery standard in pg/µL

MRF = the mean response factor for the surrogate from the initial calibration

Calculation Sample SBC984 (07/23/94):
13C-2,3,7,8-TCDF

$$\frac{1.493e7 \times 50\ pg/\mu L}{1.530e7 \times 1.419} = 34.38\ pg/\mu L$$

Reported value: 34.40 pg/µL

Percent recovery:

$$\frac{\text{Conc Found}}{\text{Conc Spiked}} \times 100\ \% = \%\ \text{Recovery}$$

Calculation Sample SBC984 (07/23/94):

$$\frac{34.4}{50\ pg/\mu L} \times 100\ \% = 68.8\ \%$$

Reported value: 68.8 %

Detection Limit:

$$\frac{M \times C_{STD}}{MRF \times A_{STD}} = Detection\ Limit$$

Where:

M	=	the minimum area which could have been detected
	=	minimum height could have been detected x mean area/height ration of standards
	=	Summation [(min s/n) (noise level)] x ½ Summation (response/height) where sum indicates both ions and the min s/n is set = 3
C_{STD}	=	the amount of ^{13}C-labeled standard (internal standards for natives and recovery standards for surrogates)
MRF	=	the mean response factor
A_{STD}	=	$(A_{STD}^{1} + A_{STD}^{2})$

Calculation Sample SBC984(07/23/94):
OCDD

$$\frac{1.172e5 \times 250\ pg/\mu L}{1.112 \times 2.884e7} = 0.913\ pg/\mu L$$

Reported value: 1.21 pg/µL

11. Some samples have one or more internal standards out of the QC limits.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature."

JBoyd 8/30/94

Jo Ann Boyd
Group Leader
Quality Assurance Unit,
Division 01

Date

REQUEST FORM

Performance Evaluation Sample Request Form

021

ICF Technology, Inc.
2700 Chandler Avenue, Building C
Las Vegas, Nevada 89120
Phone: (702) 795-0515 FAX: (702) 795-8210

Date of Request: 6/23/94
Date Needed: 6/25/94

Request Authorized By: Dennis W. Kuhl Region II
SAS/SDG Number: 8432B01

Superfund Site Name: Malaga Road Ash Pile Site Monroe Twp Contaminated Soil Site
For Use With SOW Number: Mellad 8290

Site Specific Acct. No.: Monroe-TFA02DBCP Malaga-TFA02DBCQ
CERCLIS No.: Monroe-NJD000066019 Malaga-NJD000066027

9711

Ship materials, request and chain of custody with sample numbers to:	Send copies of this request and chain of custody with sample numbers to:
Name: Jo Ann Boyd	Name: Dan Harkay
Company: Southwest Research Institute	Company: USEPA Removal Action Branch
Address: 6220 Culebra Road	Address: 2890 Woodbridge Ave, Bldg 209
City: San Antonio State: Tx	City: Edison State: NJ
Zip: 78238 Phone: (210) 522-2169	Zip: 08837 Phone: (908) 321-6614

Sample/Material Catalogue Number	Required Analyte Concentration (if any)	Number Requested	Number Shipped	Sample #	Remarks
QATS-90-007		1	1	[illegible]	
QATS-90-009		1	1	[illegible]	
QATS-90-015		1	1	[illegible]	

RECEIVED JUN 27 1994

Packaged By: L Ponce Shipped By: L Ponce Date Shipped: 6/27/94

Airbill #: [redacted] Chain of Custody #: 2256

ICF Request Log Number
ICFO002523

89120

702/795-0515

ICF TECHNOLOGY INCORPORATED

The enclosed materials are performance evaluation samples or reference materials, shipped by the ICF Technology Quality Assurance Technical Support (QATS) Laboratory under contract to the U.S. Environmental Protection Agency (EPA). Qualitative and quantitative information on these samples is available from the EPA by contacting James Barron at (703) 603-9029.

Due to the toxic nature of the materials shipped by ICF and strict regulations regarding the shipment of these materials, it is necessary that you fill out and sign the enclosed Chain of Custody form and return the yellow copy to ICF using the enclosed self addressed stamped envelope. Please indicate any problems (i.e. damage, leakage, missing samples, etc). If you have any questions regarding the shipment of these materials, please contact Ms. Liz Porreca, the Materials Document Control Officer at the ICF QATS Laboratory at (702) 795-0515.

NOTE: In order to track the data representing the enclosed sample(s), it is necessary that the PES sample identification code(s) and corresponding data accompany each sample through all steps. Please do not remove or cover the label(s) unless prior arrangements have been made with your EPA representative.

2700 Chandler Avenue, Building C
Las Vegas, Nevada
89120

702/795-0515

ICF TECHNOLOGY INCORPORATED

023

ATTENTION

This package contains materials that should be opened in a fume hood by personnel authorized to work with dioxin.

SPECIAL REQUEST

In addition to sending the results on your analysis of these samples to the EPA Regional Office, please send a copy of the report to ICF Technology at the address provided below. These results should be addressed to Liz Porreca, Materials Document Control Officer. Please note, only the copies of final results are required. Full data packages and/or copies of raw data are not necessary.

ICF TECHNOLOGY

2700 CHANDLER AVE., BUILDING C

LAS VEGAS, NEVADA 89120

INSTRUCTIONS FOR PCDD/PCDF ANALYSES

BY HRGC/LRMS PERFORMANCE EVALUATION SAMPLES

Note: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the statement-of-work (SOW), follow the SOW.

APPLICATION: For use with SOW DFLM01 and Revisions.

CAUTION: Read Instructions Carefully Before Opening Bottles.

CAUTION
This sample contains chemicals known or suspected to have serious human health effects.
Material Safety Data Sheets Available Upon Request

(A) SAMPLE DESCRIPTION

Enclosed is a Performance Evaluation Sample for PCDD/PCDF analysis using HRGC/LRMS. This sample consists of 20 to 30 grams of soil/solid material.

This bottle should not be opened until sample preparation/analyses is to occur.

CAUTION: The sample contains compounds which may be light sensitive and should be protected from light during storage.

The sample may be stored at room temperature.

(B) Breakage or Missing Items

Check the contents of the shipment carefully for any breakage or missing items. Refer to enclosed chain-of-custody sheets. Report any problems to Ms. Liz Porreca at ICF Technology (702) 795-0515. Return chain-of-custody sheet with appropriate annotations and signatures to Ms. Porreca at the address provided below.

ICF Technology
2700 Chandler Ave
Las Vegas, NV 89120

(C) Analysis Requirements

Samples are to be analyzed as described in your SOW. These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the SOW, follow the SOW.

(D) General Instructions

This sample is to be handled, prepared, and analyzed exactly as you would samples received from a known or suspected hazardous waste site. Consult your SOW for all details of the amount of sample to extract, the volumes and concentrations of internal standards to add, the details of the extraction and cleanup process, the instrument calibration and analysis procedures, and the reporting requirements.

SOUTHWEST RESEARCH INSTITUTE

TELEPHONE CONVERSATION RECORD

038

Date: August 2, 1994

From: JoAnn Boyd JB

With: Ms. Kathy Pegram, SMO

Spoke with Kathy Pegram, SMO, in reference to the extension of SAS 8432-B-01. The extension was approved by SMO.

TELEPHONE CONVERSATION RECORD

Proposal No.:

Date: 6/28/94 Time:

Project No.: 01-6359-027

Contract No.: 01-6359-028 68-09-0135

Other:

039

With:

Mr./Mrs. Liz Ponneca

Phone No.: 702-795-0515

Organization: ICF - KAISER

Ext.:

Address:

Telephone Charge:

City:

☐ Incoming ☐ Outgoing

Purpose: The PE Samples received 6/27/94 are for SAS 8431-B-01 :

Resume:

		CLP ID
(Dioxin) TAIC893	=	SB8019
0052639	=	SB8020
L93GD8	=	SB8021

The PE Samples received 6/28/94 are for SAS 8432-B-01 :

		CLP ID
(Dioxin) N84P9E	=	SB8022
0187960	=	SB8023
T936EN	=	SB8024

Action to be Taken: We must use the CLP Sample ID's for reporting.

* THESE PE Samples arrived from ICF KAISER for the above referenced SAS's.

Action to be Taken by:

Required Date:

Distribution:

K. Villalobos

J. Pan

FILE ORIGINAL

Signature: S. Gr

(SwR-42)

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, USA 78228-0510 • (210) 684-5111 • TELEX 244846

- cc 8402B-01
8431B-01
8432B-01

040

To: Kathy Pegram, SMO

From: Jo Ann Boyd, SwRI

Re: Request for Extension

Date: July 20, 1994

==========

We request a two week extension for:

SAS8402-B-01 Dioxin Analyses
~~SAS8431-B~~-01 Dioxin Analyses
SAS8432-B-01 Dioxin Analyses

for the following reasons:

1. The samples are very dirty. There are interferences present which are preventing our instruments from meeting criteria. The problem is not from the target compounds, but from other contaminants present in the matrix.

2. Our instruments are requiring extra maintenance. Additional sequences are necessary. The samples are also being recleaned.

For these reasons, we are asking for an extension.

Please advise as soon as possible. I can be reached at 210-522-2169.

cc: J. Pan
File

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FAX NUMBER (210) 522-3649 OR (210) 522-5938

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
BUILDING 70, 149 AVENUE C
TRANSMITTAL SHEET

041

DATE: 6/29/94 NUMBER OF PAGES: 3

TO: KATHY PEGRAM
SMO

OFFICE TELEPHONE:

FAX NUMBER:

FROM: SYDNEY GORTON, QAU

TELEPHONE: 210 - 522 - 2476

NOTE: SAS 8432-B-01
PE SAMPLES
NON-CONFORMANCE

Southwest Research Institute

LOG-IN NON-CONFORMANCE

042

CASE: SA58432-B-01 **SDG:** _____ **VTSR:** 6/28/94

PROBLEMS: PE Samples were received 6/28/94 SMO paper work not included to identify these samples with the SAS.

Paper work was received 6/29/94 from ICF-Kaiser.

SIGNED: S. Gr

DATE: 6/29/94

SOUTHWEST RESEARCH INSTITUTE

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FAX NUMBER (210) 522-3649 OR (210) 522-5938

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
BUILDING 70, 149 AVENUE C
TRANSMITTAL SHEET

043

DATE: 7-1-94 NUMBER OF PAGES: 2

TO: KATHY PEGRAM
SMO

OFFICE TELEPHONE:

FAX NUMBER:

FROM: SYDNEY GORTON, QAU

TELEPHONE: 210 - 522 - 2476

NOTE: SAS 8432 - B-01
LOG-IN NON-CONFORMANCE
VTSR: 6-25-94

Southwest Research Institute

LOG-IN NON-CONFORMANCE

044

CASE: SAS 8432-B-01 **SDG:** SBC 984 **VTSR:** 6/25/94

PROBLEMS:

Cooler temperature upon receipt - 26 °C

Cooler / Samples not packed with ice

THIS WILL BE NOTED IN THE NARRATIVE

SIGNED: [illegible]

DATE: 6/25/94

WO566?

045

Southwest Research Institute

LOG-IN NON-CONFORMANCE

CASE: SAS 5432-B-01 **SDG:** SBC 984 **VTSR:** 6/25/94

PROBLEMS:

Cooler temperature upon receipt - 26°C

Cooler / samples not packed with ice

SIGNED: [signature]

DATE: 6/25/94

SAMPLE DELIVERY GROUP

COVER SHEET

SOUTHWEST RESEARCH INSTITUTE
CONTRACT # 68-D9-0135

PCDD/PCDF - HRMS.....

SAS NUMBER : 8432B-01
SDG: SBC984

SAMPLE NUMBERS

SBC984, SBC985, SBC986, SBC987, SBC988,
SBC989, SBC990, SBC991, SBC992, SB8023,
SB8022, SB8024

9 LOW SOIL SAMPLES FOR DIOXIN ANALYSIS
3 LOW SOIL (PE) SAMPLES FOR DIOXIN ANALYSIS

FIRST SAMPLE IN SDG: SBC984
LAST SAMPLE IN SDG: SB8024

FIRST SAMPLE RECEIVED: JUNE 25, 1994
LAST SAMPLE RECEIVED: JUNE 28, 1994

In Reference to Case No(s):
8432-B01

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of Call: 9/2/94

Laboratory Name: SMO

Lab Contact: Kathy Pegram

Region: II

Regional Contact: Harry J. Ravenel III

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):

All Sample Numbers

Summary of Questions/Issues Discussed:

For SAS 8432-B01, SDG SBC 984, no tags were included with the additional paperwork from ICF to SWRI. Can SMO do anything else for this case?

Summary of Resolution:

If they have the tags, they will be forwarded to us. Lab stated no sample tag #'s nor sample tags were received.

Harry J. Ravenel III
Signature
Date

9/2/94
Date

Distribution: (1) ~~Lab~~ Copy, (2) Region Copy, (3) SMO Copy

020038

SOUTHWEST RESEARCH INSTITUTE

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6220 CULEBRA
SAN ANTONIO, TEXAS 78228-0510

CHEMISTRY & CHEMICAL ENGINEERING DIVISION
BUILDING 201, 109 AVENUE C

FACSIMILE TRANSMITTAL SHEET

DATE: 8/30/94 CHARGE: 01-0756

Number of Pages (including cover sheet) #5

TO: Kathy Pegram
SMO

FAX NUMBER:

FROM: JO ANN BOYD

TELEPHONE: (210) 522-2169

The Southwest Research Institute Quality Assurance telephone number is (210) 522-2169. The fax number is (210) 522-2021.
The machine is a Xerox Telecopier 295.
If you have any questions, please call me at (210) 522-2169.

NOTES: The "C" are Confirmations
SAS's are mixed - please
note Sample ID

Original is filed in
CSF 84328-01/SBD 000
Reviewed By: [illegible]
Date: 8/30/94

Last update: 8-~~18~~ 20-94

QA/QC CHECK REQUIREMENTS FOR SAS 8432B-01/8431B-01

(1)

SEQ NO	SAMPLE NO	DATE/ TIME	FILENAME	13C-1234-TCDD AREA	50-200 DIFF. FROM CONCAL	13C-123789HxCDD AREA	50-200 DIFF FROM CONCAL	RS 50-200	LOCK CHECK	COMMENTS
I	CONCAL	7/20/94	A07204U1_04	1.370E+07	(50-200)	3.750E+07	(50-200)			
I	SBD001 DUP		A07204U1_8	2.140E+07	156.20	5.800E+07	154.67	OK	C	OCDD 1667 pg/uL. OK NOT SATURATED (DIL 2X)
I	SBC980		A07204U1_09	2.030E+07	148.18	5.700E+07	152.00	OK	C	2378-TCDF = 460 pg/uL (8X DIL NEEDED)**** NEEDS RERUN ***** RERUN ON: 8/14/94
I	SBC981		A07204U1_10	2.370E+07	172.99	6.650E+07	177.33	OK	C	OCDD 2074 pg/uL. OK, NOT SATURATED
I	SBD001_MS		A07204U1_11	2.190E+07	159.85	6.100E+07	162.67	OK	X	OCDD 1343 pg/uL. OK, NOT SATURATED (DL 2X).
I	SBD001_MSD		A07204U2_12	2.260E+07	164.98	6.510E+07	173.60	OK	X	OCDD 1322 pg/uL. OK, NOT SATURATED (DL 2X)
	CAL_VER V0720415.LIS		A07204U1_13	1.55E+07	113.14	4.90E+07	130.67	OK		
II	C0721402.LIS CONCAL	7/21/94	A07214U3_2	1.350E+07	(50-200)	4.270E+07	(50-200)			
II	SBD006		A07214U3_4	9.888E+06	73.24	2.792E+07	65.39	OK	C	OCDD 4108 pg/uL. OK, NOT SATURATED
II	SBD007		A07214U3_5	9.956E+06	73.75	2.327E+07	54.50	OK		OCDD 4396 pg/uL. OK, NOT SATURATED
II	SBD972		A07214U3_6	9.587E+06	71.01	2.830E+07	66.28	OK	C	OCDD 2252 pg/uL. OK, NOT SATURATED
II	SBD973		A07214U3_7	9.604E+06	71.14	2.513E+07	58.85	OK	C	OCDD 1256 pg/uL. OK, NOT SATURATED
II	SBD974		A07214U3_8	9.432E+06	69.87	2.844E+07	66.60	OK		OCDD 1332 pg/uL. OK, NOT SATURATED
II	SBD975		A07214U3_9	1.019E+07	75.48	2.602E+07	60.94	OK	C	OCDD 1970 pg/uL. OK, NOT SATURATED
II	SBD976		A07214U3_10	3.851E+06	28.53	4.632E+07	108.48	OUT		OCDD 1034 OK, NOT SATURATED. 13C2378-TCDF 33% - OUT- RERUN ON: 8/07/94
II	SBD977		A07214U3_11	1.580E+07	117.04	6.109E+07	143.07	OK	C	OCDD 1622 pg/ul OK, NOT SATURATED.13C-TCDF 38.5% - OUT RERUN ON: 8/14/94
II	SBD978		A07214U3_12	2.164E+07	160.30	6.277E+07	147.00	OK	C	
II	CAL_VER V0721413.LIS		A07214U3_13	1.670E+07	123.70	5.680E+07	133.02	OK		
III	C0721409.LIS CONCAL	7/21/94	A07214U1_2	1.350E+07	(50-200)	4.270E+07	(50-200)			
III	SBC982		A07214U2_1	2.048E+07	151.70	6.033E+07	141.29	OK	C	OCDD >2000 pg/uL OK, NOT SAT.
III	SBC983		A07214U2_2	2.159E+07	159.93	6.406E+07	150.02	OK	C	OCDD >2000 pg/uL OK, NOT SAT
III	SMB(7/7/94)		A07214U2_3	1.583E+07	117.26	4.657E+07	109.08	OK	X	13C-TCDF out RERUN ON: 8/14/94
III	SBD000		A07214U2_4	1.494E+07	110.67	4.575E+07	107.14	OK	C	OCDD 1362 pg/uL. OK NOT SATURATED
III	SBD001		A07214U2_5	1.421E+07	105.26	4.329E+07	101.38	OK	C	OCDD 1310 pg/uL. OK NOT SATURATED
III	SBD002		A07214U2_6	1.408E+07	104.30	4.363E+07	102.18	OK	C	OCDD 1220 pg/uL. OK NOT SATURATED
III	SBD003		A07214U2_7	1.360E+07	100.74	4.326E+07	101.31	OK	C	OCDD 1184 pg/uL. OK NOT SATURATED
III	SBD004		A07214U2_8	1.362E+07	100.89	4.294E+07	100.56	OK	C	OCDD 1626 pg/uL. OK NOT SATURATED
III	SBD005		A07214U2_9	1.267E+07	93.85	4.010E+07	93.91	OK	C	OCDD 1470 pg/uL. OK NOT SATURATED
III	CAL_VER V0721410.LIS		A07214U2_10	1.670E+07	123.70	5.680E+07	133.02	OK		
	C0228409.LIS									
V	CONCAL	7/23/94	A07234U1_2	3.740E+07	(50-200)	9.480E+07	(50-200)			

020039

(2)

IV	SMB I (7/11/94)		A07234U1_8	2.660E+07	71.12	3.011E+07	31.76	OUT	X	RS AREA LOW FOR 13C-HXCDD **** NEEDS RERUN ******	RERUN ON: 8/14/94
IV	SMB II (7/11/94)		A07234U1_9	1.438E+07	38.45	2.739E+07	28.89	OUT	X	RS AREA LOW FOR13C-TCDD AND 13C-HXCDD **** NEEDS RERUN ******	RERUN ON: 8/15/94 8/14/94
IV	SBC984		A07234U1_10	1.530E+07	40.91	2.498E+07	26.35	OUT	X ✓	RS AREA LOW FOR 13C-HXCDD **** NEEDS RERUN ******	RERUN ON: 8/15/94
IV	SBC985 DUP		A07234U1_11	2.516E+07	67.27	1.001E+08	105.59	OK	C		
IV	SBC986		A07234U1_12	3.880E+07	103.74	1.171E+08	123.52	OK	C	EXCEED CALI CURVE ON MANY TARGETS. **** NEEDS DIL. AND RERUN ****	RERUN ON: 8/15/94
IV	CAL_VER V07234 13.LIS		A07234U1_13								
	C0724402.LIS										
V	CONCAL	7/24/94	A07244U1_1	3.470E+07	(50-200)	1.140E+08	(50-200)				
V	SBC987			3.492E+07	100.63	9.460E+07	82.96	OK	X		
V	SBC988			3.231E+07	93.11	9.545E+07	83.73	OK	C		
V	SBC989			3.334E+07	96.06	9.495E+07	83.29	OK	C		
V	SBC990			3.744E+07	107.90	1.022E+08	89.65	OK	C ✓	13C -TCDD/TCDF LOW	RERUN ON: 8/07/94
V	SBC991			3.326E+07	95.85	9.101E+07	79.83	OK	C ✓	13C-IS REC. LOW	RERUN ON: 8/07/94
V	SBC992			3.844E+07	110.78	9.915E+07	86.97	OK	C ✓	13C -TCDD/TCDF LOW	RERUN ON: 8/07/94
V	SB8022			3.770E+07	108.65	1.008E+08	88.25	OK	X	13C-IS REC. LOW	RERUN ON: 8/07/94
V	SB8023			3.245E+07	93.52	7.070E+07	62.02	OK	C	SATURATED, NEEDS (60 - 100 X) DILUTION !	RERUN ON: 8/14/94
	CAL_VER V07244 13.LIS		A07244U1_13	4.270E+07	123.05	1.110E+08	97.37	OK			
	C0725402.LIS										
VI	CONCAL	7/25/94	A07254U1_1	1.820E+07	(50-200)	4.610E+07	(50-200)				
VI	SBC979			4.180E+07	229.67	9.899E+07	214.73	OUT	C	IS AREA OUT : NEEDS A (6X DIL.)	RERUN ON: 8/18/94
VI	SBC985			3.539E+07	194.45	8.565E+07	185.79	OK	C		
VI	SBC987			4.112E+07	225.93	8.834E+07	191.63	OUT	C	IS AREA OUT	RERUN ON: 8/18/94
VI	SBC988			4.097E+07	221.81	9.618E+07	208.63	OUT	C	IS AREA OUT NEEDS (2X DIL)	RERUN ON: 8/18/94
VI	SBC989			4.086E+07	224.51	9.928E+07	215.36	OUT	C	IS AREA OUT	RERUN ON: 8/18/94
VI	SBC970			4.329E+07	237.86	1.044E+08	226.48	OUT	C ✓	IS AREA OUT	RERUN ON: 8/20/94
VI	CAL_VER V07254 8.LIS			2.910E+07	159.89	7.600E+07	164.86	OK			
	C0725414.LIS										
II	CONCAL	7/25/94	A07254U2_2	3.030E+07	(50-200)	6.840E+07	(50-200)				
II	SMB-I (7/5/94)			3.869E+07	127.69	6.860E+07	100.29	OK	X	13C-1234678-HpCDF 131.7%	RERUN ON: 8/15/94
II	SMB-II (7/5/94)			4.037E+07	133.23	6.140E+07	89.77	OK	X	IS AREAS > 120%	RERUN ON: 8/15/94
II	SB8024			4.985E+07	164.52	9.450E+07	138.16	OUT	C	13-C- TCDF AND TCDD VERY LOW (FRONT END IS LOW)	RERUN ON: 8/15/94
II	SBC985_MS			5.362E+07	176.96	1.217E+08	177.92	OUT	X	13C-TCDF AND TCDD VERY LOW (FRONT END IS LOW)	RERUN ON: 8/15/94
II	SBC985_MSD			6.090E+07	200.99	7.550E+07	110.38	OUT	X	SEVERAL 13C IS TARGETS EXCEED 120% RECOVERY LIMIT.	RURUN ON: 8/15/94
II	SBC954			4.102E+07	135.38	8.030E+07	117.40	OK	C	13C-1234678-HpCDF=120%, OCDD=2101 pg/uL ok not saturated.	RERUN ON: 8/15/94
II	SBC954_DUP			0.000E+00	0.00		0.00	OUT	C	**** SMAEARD ***** TOTALLY UNUSABLE: NEEDS TO RERUN	RERUN ON: 8/15/94
II	SBC956			4.212E+07	139.01	9.020E+07	131.87	OK	C	13C-TCDF= 18%	RERUN ON: 8/15/94
II	SBC958			4.194E+07	138.42	8.260E+07	120.78	OK	C		
II	CAL VER V07254 15.LIS				0.00		0.00				
	C0804402.LIS										
III	CONCAL	08/04/94	H08044H1_2	3.050E+07	(50-200)	1.020E+08	(50 - 200)	OK			

000040

(3)

/III	SBC957		H08044H2_1	3.600E+07	118.03	9.780E+07	95.88	OK	C ✓	13C-TCDD/TCDF OUT RERUN ON: 8/18/94
/III	SBC958		H08044H2_2	4.660E+07	152.79	1.260E+08	123.53	OUT	C ✓	IS AREA OUT RERUN ON: 8/18/94
/III	SBC963		H08044H2_3	4.520E+07	148.20	9.040E+07	88.63	OK	C ✓	OK
/III	SBC964		H08044H2_4	4.460E+07	146.23	9.100E+07	89.22	OK	C ✓	OK
/III	SBC965		H08044H2_5	4.170E+07	136.72	7.180E+07	70.39	OK	✓✓	OUT: LOTS OF 13C IS > 120% DIL RERUN ON: 8/20/94
/III	SBC968		H08044H2_6	4.610E+07	151.15	1.170E+08	114.71	OUT	✓✓	IS AREA OUT RERUN ON:
/III	SBC971		H08044H2_7	4.500E+07	147.54	1.120E+08	109.80	OK	✓✓	OK
/III	SB8020		H08044H2_8	4.350E+07	142.62	6.210E+07	60.49	OK	✓✓	OUT: 13C-HxCDF 190%, 13C-HpCDD 124% EXCEEDS CALI CURVE RERUN ON: 8/21
/III	SB8021		H08044H2_9	4.810E+07	157.70	1.150E+08	112.75	OUT	✓✓	IS AREA OUT RERUN ON: 8/7/94
/III	CAL_VER VO80411.LIS		H08044H2_10	3.300E+07	108.20	1.070E+08	104.90	OK		OK
	CO807402.LIS									
V	CONCAL	08/07/94	H08074H2_2	4.580E+07	(50 - 200)	1.540E+08	(50 - 200)	OK		
V	SB8021 (Re) ✓		H08074H2_4	1.070E+07	23.31	2.880E+07	18.70	OUT	X	IS AREA OUT RERUN ON:
V	SBC964_MS		H08074H2_5	4.260E+07	93.25	1.120E+08	72.73	OK	X	13C-TCDD/TCDF OUT RERUN ON: 8/22
V	SBC964_MSD		H08074H2_6	4.670E+07	108.10	9.940E+07	64.55	OK	X	13C-TCDD/TCDF OUT RERUN ON: 8/22
V	SB8019 27		H08074H2_6	4.820E+07	105.01	8.310E+07	53.98	OK	✓	13C-TCDD/TCDF OUT RERUN ON: 8/21/94
V	SBC976 (Re) ✓		H08074H2_8	2.960E+07	64.49	7.150E+07	46.43	OK		OK
V	SCB977 (Re)		H08074H2_9	2.550E+07	55.56	8.250E+07	53.57	OK		OK
V	SBC980 (RE) ✓		H08074H2_10	3.090E+07	67.32	7.000E+07	45.45	OK		13C-TCDD/TCDF OUT
V	SBC981 (RE) ✓		H08074H2_11	2.300E+07	50.11	7.430E+07	48.25	OK		13C-TCDD/TCDF OUT
V	SBC982 (RE) ✓		H08074H2_12	3.070E+07	66.88	6.160E+07	40.00	OUT		13C-TCDD/TCDF OUT
V	SB8022 (RE) ✓		H08074H2_13	2.660E+07	57.95	7.590E+07	49.29	OK		13C-TCDD/TCDF OUT
V	CAL_VER VO8074-14.LIS		H08074H2_14	6.860E+07	149.46	2.080E+08	135.06	OK		OK
	ICAL_CC3	08/14/94	H08144H1_2	2.330E+07	(50 - 200)	6.720E+07	(50 - 200)	OK		
	SMB(7/7/94) ✓ (Re)		H08144H2_6	1.680E+07	80.69	5.420E+07	80.65	OK		OK
	SMB-I (RE) 7/8/94 ✓		H08144H2_7	1.690E+07	72.53	3.790E+07	56.40	OK		OK
	SMB-II (RE) 7/8/94 ✓		H08144H2_8	1.890E+07	81.12	3.320E+07	49.40	OK		OK
	SBC977 (RE) ✓		H08144H2_9	7.580E+06	32.53	2.200E+07	32.74	OUT		IS AREA OUT
	SBC980 (DL 3X) (RE) ✓		H08144H2_10	4.840E+06	20.77	6.880E+07	102.08	OUT		OUT DUE TO DILUTION
	SB8023 (DL 100X)(RE) ✓		H08144H2_11	1.720E+06	7.38	3.900E+06	5.80	OUT		OUT DUE TO DILUTION
	CAL_VER VO8144 12.LIS		H08144H2_12	2.850E+07	122.32	9.200E+07	136.90	OK		OK
	CO815402.LIS									
I	CONCAL	8/15/94	H08154H1_2	1000			(50 - 200)			
I	SMB-I (914) Re 7/5		H08154H2_1	1000	100.00		ERR			
I	SMB-II (915) Re 7/5		H08154H2_2		0.00		ERR			
I	SBC986(DL 100X)(RE) ✓		H08154H2_3		0.00		ERR			
I	SBC985_MS (RE) ✓		H08154H2_4		0.00		ERR			

100X L.

No cal ver. for 8/15 Power outage caused loss of Run. up to Hexa.

020041

(4)

SBC 985_MSD (RE) ✓		H08154H2_5		0.00		ERR			
SB8024 (RE) ✓		H08154H2_6		0.00		ERR			
SBC984 (RE) ✓		H08154H2_7		0.00		ERR			
SBC954 (RE) ✓		H08154H2_8		0.00		ERR			
SBC954_DUP(RE) ✓		H08154H2_9		0.00		ERR			
SBC955 (RE) ✓		H08154H2_10		0.00		ERR			
CAL_VER		H08154H2_12		0.00		ERR			Ran was lost due to power outage
ICAL CS3	8/18/94	H08184H1_4		(50 - 200)		(50 - 200)			
SBC967 (RE) ✓		H08184H1_8							
SBC968 (RE) (DL 2X) ✓		H08184H1_9							
SBC969 (RE) ✓		H08184H1_10							
SBC979 (RE) (DL 6X) ✓		H08184H1_11							
SBC957 (RE) ✓		H08184H1_12							
SBC958 (RE) ✓		H08184H1_13							
CAL_VER V08184(4.cls)		H08184H1_14							
ICAL: CS3	8/20	H08204H1_4							
SBC965 (RE) (DL 2X) ✓		H08204H1_4							
SBC970 (RE) ✓		H08204H1_4							
CAL_VER		H08204H1_4							

V08204 15.cls

8/21

V08214 09.cls

C0821 402.cls

020042

SEND CONFIRMATION

DATE/TIME	08-30-94 03:23PM
LOCAL I.D.	5125222021
LOCAL NAME	SwRI

*** SEND ***

No.	REMOTE STATION I.D.	START DATE/TIME	DURATION	#PAGES	COMMENT
1	703 683 0378	08-30-94 03:19PM	4'35"	5	COMPLETE

020043

SAMPLE MANAGEMENT OFFICE

Operated by DynCorp Viar, Inc.
under contract # 68-D9-0135
to the U.S. Environmental Protection Agency

020044

FAX COMMUNICATION

Date: 8/26/94

To: **Fax Number:**

Name: JoAnn Boyd

Company:

Address:

Subject: SASS 8432 + 8431-B

From: Kathleen Houle Pegram
SAS Coordinator
(703) 519-1333

Number of Pages, Including This Page: 3

Comments or Special Instructions: JoAnn,
Attached are Region II's criteria to follow for sample dilutions/reanalyses for above SASS.

If you have any questions, please call me.

Kathy

SMO FAX NUMBER - (703) 683-0378
P.O. Box 818, Alexandria, Virginia 22313. Phone: (703) 519-1200

020045

Response to the reanalysis/dilution Requests
Case # SAS84328.01

Sample ID	Response
* SBC 980	Why 3X dilution?
976	Do not reanalyze. Rerun only if Internal Standard recovery is < 25%
977	Same as 976
984	Rerun only if RS area is < 25%
986	Do not dilute if OCDF or OCDD concentration exceeds upper calibration limit but < 100%
990, 991	See 976 above
992	See 976 above
SB8022	See 976 above
023	Dilute
024	See 976 above
SBC 979	Rerun if RC area is < 25%
SBC 985MS	See 976 above
SBC 985MSD	Do not repeat if I.S recovery is < 150%

* Please respond to why 3X dilution, so Region can determine if dilution is wanted.

020046

Response to the reanalyses/dilution requests

Case # SAS 8431B-01

Sample I.D	Response
SBC967	Rerun only if RC area is < 25%
968	Same as 967 above
969	Same " " "
970	Same " " "
934	Do not rerun
954 DUP	What is the problem?
955	Rerun only if 1.S recovery is < 25%.
957	Same as 955 above
958	Same as 967 above
965	Do not repeat if 1.S recovery is < 150%
966	Same as 967
SB8020	Repeat only 1.S recovery is > 150%
021	Same as 967 above
SBC954 MS, SBC954 MSD	Repeat only if 1.S recovery is < 25% ~~and~~ or > 150%
SB8019	Repeat only if 1.S is < 25% ~~and~~ or > 150.

SOUTHWEST RESEARCH INSTITUTE

POST OFFICE DRAWER 28510
6220 CULEBRA
SAN ANTONIO, TEXAS 78228-0510

020047

CHEMISTRY & CHEMICAL ENGINEERING DIVISION
BUILDING 201, 109 AVENUE C

FACSIMILE TRANSMITTAL SHEET

DATE: 8-19-94 CHARGE: 01-0756

Number of Pages (including cover sheet) 43

TO: Kathy Pegram
AMO

FAX NUMBER:

FROM: JO ANN BOYD

TELEPHONE: (210) 522-2169

The Southwest Research Institute Quality Assurance telephone number is (210) 522-2169. The fax number is (210) 522-2021.
The machine is a Xerox Telecopier 295.
If you have any questions, please call me at (210) 522-2169.

NOTES:

020048

SOUTHWEST RESEARCH INSTITUTE MEMORANDUM

August 18, 1994

Kathy Pegram, SMO

RE: 8402B-01, 8432B-01 and 8431B-01

As we discussed on the phone the 8402B-01 had 1 reanalysis for the low resolution method and 14 reanalyses on the high resolution analysis.

I apologize for the delay on the other two cases. Where we stand at this time on them is getting data out to you on August 29, 1994. The problems again are due to the high concentrations of the samples as identified in the first SAS. Both 8432B-01 and 8431B-01 are being run together so it is difficult at this point to separate them in order to complete one and would slow us down. We have done over 90% of the dilutions and reanalysis but due to the levels we have to anticipate possible instrument contamination or carryover and the process slows down. In addition to this the work up of the data and review is very time consuming due to the criteria involved and the need for evaluating each reanalysis performed. We do anticipate getting both Cases out by August 29, 1994.

With this in mind we did not get an extension approved for the 8431B-01 since we were still review the problems. At this time we anticipate 16 reanalyses and would like to have the extension considered on this case as well. 8432B-01 has a total of 14 reanalysis/dilutions at this time.

Any consideration the region can give us on the work involved would be greatly appreciated. Again, we apologize for the inconvenience but we did not anticipate all the cases having the high concentrations involved.

If you have any questions, or need further information, please contact me at 2169.

Jo Ann Boyd, QAU
Group Leader

REANALYSIS REQUIRED

SAS 8432B-01, SwRI 01-6359-028

Sample ID	Reason
SBC980	3X dilution
SBC976	C-13 2378-TCDF %REC OUT (33%)
SBC977	C-13 2378-TCDF %REC OUT (38.5%)
SBC984	C-13 HxCDD RS AREA OUT
SBC986	DILUTION, MANY TARGET CONC EXCEED CALIBRATION RANGE
SBC990	C-13 TCDD & C-13 TCDF %REC LOW
SBC991	C-13 IS %REC LOW
SBC992	C-13 TCDD & C-13 TCDF %REC LOW
SB8022	C-13 IS %REC LOW
SB8023	DETECTOR SATURATED, NEED 60-100X DILUTION
SB8024	C-13 TCDD & C-13 TCDF %REC LOW
SBC979	RS AREA OUT
SBC985 MS	C-13 TCDD & C-13 TCDF %REC LOW
SBC985 MSD	SEVERAL C-13 IS %REC EXCEED 120% REC LIMIT

Total of 14 reanalyses/dilution.

SAS 8431B-01, SwRI 01-6359-027

SBC967	RS AREA OUT
SBC968	RS AREA OUT
SBC969	RS AREA OUT
SBC970	RS AREA OUT
SBC954	C-13 1234678-HpCDF 129% REC
SBC954 DUP	CHROMATOGRAM SMEARED
SBC955	C-13 TCDF LOW %REC
SBC957	C-13 TCDD & C-13 TCDF %REC LOW
SBC958	RS AREA OUT
SBC965	MANY C-13 IS %REC > 120%
SBC966	RS AREA OUT
SB8020	C-13 IS HxCDF & HpCDD %REC >120%
SB8021	RS AREA OUT
SBC954 MS	C-13 TCDD/TCDF %REC OUT
SBC954 MSD	C-13 TCDD/TCDF %REC OUT
SB8019	C-13 TCDD/TCDF %REC OUT

Total of 16 reanalyses.

If in EPA's opinion any or all of the above reanalysis/dilution is unnecessary, SwRI will not proceed. Please let us know ASAP.

020049A

SEND CONFIRMATION

DATE/TIME 08-19-94 02:18PM
LOCAL I.D. 5125222021
LOCAL NAME SwRI

*** SEND ***

No.	REMOTE STATION I.D.	START DATE/TIME	DURATION	#PAGES	COMMENT
1	703 519 8625	08-19-94 02:16PM	1'57"	3	E205 01

DATE/TIME 08-19-94 02:23PM
LOCAL I.D. 5125222021
LOCAL NAME SwRI

*** SEND ***

No.	REMOTE STATION I.D.	START DATE/TIME	DURATION	#PAGES	COMMENT
1	703 519 8625	08-19-94 02:22PM	1'38"	3	COMPLETE

020050

SOUTHWEST RESEARCH INSTITUTE

TELEPHONE CONVERSATION RECORD

Date: August 2, 1994

From: JoAnn Boyd JB

With: Ms. Kathy Pegram, SMO

Spoke with Kathy Pegram, SMO, in reference to the extension of SAS 8402-B-01. The extension was approved by SMO.

020051

SOUTHWEST RESEARCH INSTITUTE

POST OFFICE DRAWER 28510
6220 CULEBRA
SAN ANTONIO, TEXAS 78228-0510

CHEMISTRY & CHEMICAL ENGINEERING DIVISION
BUILDING 201, 109 AVENUE C

FACSIMILE TRANSMITTAL SHEET

DATE: 7-26-94 CHARGE: 01-0756

Number of Pages (including cover sheet) 2

TO: KATHY PEGRAM

FAX NUMBER: SMO

FROM: JO ANN BOYD / Sydney Gorton

TELEPHONE: (210) 522-2169 / 210 522 2476

The Southwest Research Institute Quality Assurance telephone number is (210) 522-2169. The fax number is (210) 522-2021.
The machine is a Xerox Telecopier 295.
If you have any questions, please call me at (210) 522-2169.

NOTES:
- ADDITIONAL INFORMATION
- EXTENSION REQUEST
- SAS 8402-B-01
- 8431-B-01
- 8432-B-01.

SwRI's request for extension for SAS 8402B-01, 8432B-01 and 8431B-01

SAS 8402B-01

Samples re-analysis required due to recovery standard area outside of QC limits (factor of 2) and/or internal standard recovery outside of QC limits (40-120%):

SBC651 DUP
SBC651 MS
SBC651 MSD
SBC656
SBC656 DUP
SBC656 MS
SBC656 MSD
SBC657
SBC658
SBC659
SBC660

SAS 8432B-01

Samples re-analysis required due to recovery standard area outside of QC limits (factor of 2) and/or internal standard recovery outside of QC limits (40-120%):

SBD976
SBD977
SBC984

Samples re-analysis required due to target compound concentration exceeding calibration range:

SBD006
SBD007
SBD972
SBD976
SBC982
SBC983
SBC986

SAS 8431B-01

Due to large number of filthy samples from SAS 8402B-01 and 8432B-01, as well as required re-analysis listed above, the two HRGC/HRMS SwRI has had to undergo extensive maintenance. Out of twenty (20) samples in this SAS, only four (4) samples have been analyzed once so far.

SOUTHWEST RESEARCH INSTITUTE

020054

POST OFFICE DRAWER 28510
6220 CULEBRA
SAN ANTONIO, TEXAS 78228-0510

CHEMISTRY & CHEMICAL ENGINEERING DIVISION
BUILDING 201, 109 AVENUE C

FACSIMILE TRANSMITTAL SHEET

DATE: 7/26/94 CHARGE: 01-0756

Number of Pages (including cover sheet) 3

TO: Kathy Pegram
SMO

FAX NUMBER:

FROM: JO ANN BOYD / Sydney Gontor

TELEPHONE: (210) 522-2169 / 210 522 2476

The Southwest Research Institute Quality Assurance telephone number is (210) 522-2169. The fax number is (210) 522-2021.
The machine is a Xerox Telecopier 295.
If you have any questions, please call me at (210) 522-2169.

NOTES:

UPDATE TO EXTENSION REPORT

SAS 8402-B-01
8431-B-01
8432-B-01

SwRI's request for extension for SAS 8402B-01, 8432B-01 and 8431B-01

SAS 8402B-01

Samples re-analysis required due to recovery standard area outside of QC limits (factor of 2) and/or internal standard recovery outside of QC limits (40-120%):

SBC651 DUP
SBC651 MS
SBC651 MSD
SBC656
SBC656 DUP
SBC656 MS
SBC656 MSD
SBC657
SBC658
SBC659
SBC660

SAS 8432B-01

Samples re-analysis required due to recovery standard area outside of QC limits (factor of 2) and/or internal standard recovery outside of QC limits (40-120%):

SBD976
SBD977
SBC984
SBC990
SBC991
SBC992
SB8022

SwRI's request for extension for SAS 8402B-01, 8432B-01 and 8431B-01 (continued)

SAS 8432B-01 (continued from last page)

Samples re-extraction and/or re-analysis required due to target compound concentration exceeding calibration range:

SBD006
SBD007
SBD972
SBD976
SBC982
SBC983
SBC986
SB8023

SAS 8431B-01

Due to large number of filthy samples from SAS 8402B-01 and 8432B-01, as well as required re-analysis listed above, the two HRGC/HRMS SwRI has had to undergo extensive maintenance. Out of twenty (20) samples in this SAS, only four (4) samples have been analyzed once so far.

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, USA 78228-0510 • (210) 684-5111 • TELEX 244846

- cc 8402B-01 020057
8431B-01
8432B-01

To: Kathy Pegram, SMO

From: Jo Ann Boyd, SwRI

Re: Request for Extension

Date: July 20, 1994

==========

We request a two week extension for:

SAS8402-B-01 Dioxin Analyses
~~SAS8431-B~~-01 Dioxin Analyses
SAS8432-B-01 Dioxin Analyses

for the following reasons:

1. The samples are very dirty. There are interferences present which are preventing our instruments from meeting criteria. The problem is not from the target compounds, but from other contaminants present in the matrix.

2. Our instruments are requiring extra maintenance. Additional sequences are necessary. The samples are also being recleaned.

For these reasons, we are asking for an extension.

Please advise as soon as possible. I can be reached at 210-522-2169.

cc: J. Pan
File

SwRI's request for extension for SAS 8402B-01, 8432B-01 and 8431B-01

SAS 8402B-01

Samples re-analysis required due to recovery standard area outside of QC limits (factor of 2) and/or internal standard recovery outside of QC limits (40-120%):

SBC651 DUP
SBC651 MS
SBC651 MSD
SBC656
SBC656 DUP
SBC656 MS
SBC656 MSD
SBC657
SBC658
SBC659
SBC660

SAS 8432B-01

Samples re-analysis required due to recovery standard area outside of QC limits (factor of 2) and/or internal standard recovery outside of QC limits (40-120%):

SBD976
SBD977
SBC984
SBC990
SBC991
SBC992
SB8022

SwRI's request for extension for SAS 8402B-01, 8432B-01 and 8431B-01 (continued)

SAS 8432B-01 (continued from last page)

Samples re-extraction and/or re-analysis required due to target compound concentration exceeding calibration range:

SBD006
SBD007
SBD972
SBD976
SBC982
SBC983
SBC986
SB8023

SAS 8431B-01

Due to large number of filthy samples from SAS 8402B-01 and 8432B-01, as well as required re-analysis listed above, the two HRGC/HRMS SwRI has had to undergo extensive maintenance. Out of twenty (20) samples in this SAS, only four (4) samples have been analyzed once so far.

020060

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA RD•P.O. DRAWER 28510•SAN ANTONIO, TX 78228-0510•(210) 684-5111•TELEX 244846
FAX NUMBER (210) 522-3649 OR (210) 522-5938

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
BUILDING 70, 149 AVENUE C

TRANSMITTAL SHEET

DATE: 7-1-94 NUMBER OF PAGES: 2

TO: KATHY PEGRAM
SMO

OFFICE TELEPHONE:

FAX NUMBER:

FROM: SYDNEY GORTON, QAU

TELEPHONE: 210 - 522 - 2476

NOTE: SAS 8432 - B-01
LOG-IN NON-CONFORMANCE
VTSR: 6-25-94

020061

Southwest Research Institute

LOG-IN NON-CONFORMANCE

CASE: SAS 8432-B-01 **SDG:** SBC 984 **VTSR:** 6/25/94

PROBLEMS:

COOLER TEMPERATURE upon Receipt - 26°C

COOLER / SAMPLES not packed with ice

THIS WILL BE NOTED IN THE NARRATIVE

SIGNED: [illegible]

DATE: 6/25/94

020062

SEND CONFIRMATION

DATE/TIME 07-01-94 04:08PM
LOCAL I.D. 5125222021
LOCAL NAME SwRI

*** SEND ***

No.	REMOTE STATION I.D.	START DATE/TIME	DURATION	#PAGES	COMMENT
1	703 683 0378	07-01-94 04:07PM	0'55"	2	COMPLETE

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA RD-P.O. DRAWER 28510-SAN ANTONIO, TX 78228-0510-(210) 684-5111-TELEX 244846
FAX NUMBER (210) 522-3649 OR (210) 522-5938

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
BUILDING 70, 149 AVENUE C
TRANSMITTAL SHEET

020063

DATE: 6/29/94 NUMBER OF PAGES: 3

TO: KATHY PEGRAM
SMO

OFFICE TELEPHONE:

FAX NUMBER:

FROM: SYDNEY GORTON, QAU

TELEPHONE: 210 - 522 - 2476

NOTE: SAS 8432-B-01
PE Samples
NON-CONFORMANCE

020064

Southwest Research Institute

LOG-IN NON-CONFORMANCE

CASE: SAS8432-B-01 **SDG:** _____ **VTSR:** 6/28/94

PROBLEMS: PE Samples were received 6/28/94 SMO paper work not included to identify these samples with the SAS.

Paper work was received 6/29/94 from ICF-Kaiser.

SIGNED: S. Gr

DATE: 6/29/94

020066

SEND CONFIRMATION

DATE/TIME 06-29-94 11:17AM
LOCAL I.D. 5125222021
LOCAL NAME SwRI

*** SEND ***

No.	REMOTE STATION I.D.	START DATE/TIME	DURATION	#PAGES	COMMENT
1	703 683 0378	06-29-94 11:14AM	2'36"	3	COMPLETE

TELEPHONE CONVERSATION RECORD

020067

Proposal No.:

Date: 6/28/94 Time:

Project No.: 01-6359-027

Contract No.: 01-6359-028 68-D90135

Other:

With:

Mr./Mrs. Liz Porreca

Phone No.: 702-795-0515

Organization: ICF - KAISER

Ext.:

Address:

Telephone Charge:

City:

☐ Incoming ☐ Outgoing

Purpose: The PE samples received 6/27/94 are for SAS 8431-B-01 :

(Dioxin)

		CLP ID
TAIC893	=	SB8019
0052639	=	SB8020
L93GD8	=	SB8021

Resume:

The PE samples received 6/28/94 are for SAS 8432-B-01 :

(Dioxin)

		CLP ID
N84P9E	=	SB8022
0187960	=	SB8023
T936EA	=	SB8024

Action to be Taken: We must use the CLP sample ID's for reporting.

* THESE PE samples arrived from ICF KAISER for the above referenced SAS's.

Action to be Taken by:

Required Date:

Distribution:

K. Villalobos

J. Pan

FILE ORIGINAL

Signature: S. Gr

(SwR-42)

REQUEST FORM

Performance Evaluation Sample Request Form

ICF Technology, Inc.
2700 Chandler Avenue, Building C
Las Vegas, Nevada 89120
Phone: (702) 795-0515 FAX: (702) 795-8210

Date of Request: 6/23/94
Date Needed: 6/25/94

Request Authorized By: Dennis W. Kuhl REGION II
SAS/SDG Number: 8432B01

Superfund Site Name: Malaga Road Ash Pile Site Monroe Twp Contaminated Soil Site
For Use With SOW Number: Method 8290

Site Specific Acct. No.: Malaga - TFA02DBCP Monroe-TFA02DBCQ
CERCLIS No.: Malaga - NJD000066019 Monroe-NJD000066027

9711

Ship materials, request and chain of custody with sample numbers to:	Send copies of this request and chain of custody with sample numbers to:
Name: Jo Ann Boyd	Name: Dan Harkay
Company: Southwest Research Institute	Company: USEPA Removal Action Branch
Address: 6220 Culebra Road	Address: 2890 Woodbridge Ave, Bldg 209
City: San Antonio State: Tx	City: Edison State: NJ
Zip: 78238 Phone: (210) 522-2169	Zip: 08837 Phone: (908) 321-6614

Sample/Material Catalogue Number	Required Analyte Concentration (if any)	Number Requested	Number Shipped	Sample #	Remarks
QATS-90-007		1	1	[illegible]	
QATS-90-009		1	1	[illegible]	
QATS-90-015		1	1	[illegible]	

RECEIVED JUN 27 1994

Packaged By: L Pouce Shipped By: L Pouce Date Shipped: 6/27/94

Airbill #: [redacted] Chain of Custody #: 2256

ICF Request Log Number
ICFO002523

020069

Chain of Custody Record

Date: 06/27/94

From: ICF Technology, Incorporated
2700 Chandler Avenue, Building C
Las Vegas, Nevada 89120
Phone: (702)795-0515 FAX: (702)795-8210

To: JO ANN BOYD

Company: SOUTHWEST RESEARCH INSTITUTE

Address: 6220 CULEBRA ROAD

City: SAN ANTONIO State: TX Zip: 78228 Phone: (210) 522-2169

Sample ID #	Qty	Description/Remarks
N84P9E	1	2378 TCDD
0187960	1	PCDD PCDF
P936ED	1	BLANK SOIL

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
L Ponce	6.27.94		
Custody seal(s): Present/Absent Intact/Broken	Remarks		
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

White: accompanies shipment
Yellow: return to ICF to confirm receipt of shipment
Pink: ICF file copy

№ 2256

020070

REQUEST FORM

Performance Evaluation Sample Request Form

ICF Technology, Inc.
2700 Chandler Avenue, Building C
Las Vegas, Nevada 89120
Phone: (702) 795-0515 FAX: (702) 795-8210

Date of Request: 6/23/94

Date Needed: 6/25/94

Request Authorized By: Sam W. Kuhl Region II

SAS/SDG Number: 8432B01

9711

Ship materials, request and chain of custody with sample numbers to:	Send copies of this request and chain of custody with sample numbers to:
Name: Jo Ann Boyd	Name: Dan Harkay
Company: Southwest Research Institute	Company: USEPA Removal Action Branch
Address: 6220 Culebra Road	Address: 2890 Woodbridge Ave, Bldg 209
City: San Antonio State: Tx	City: Edison State: NJ
Zip: 78238 Phone: (210) 522-2169	Zip: 08837 Phone: (908) 321-6614

Sample/Material Catalogue Number	Required Analyte Concentration (if any)	Number Requested	Number Shipped	Sample #	Remarks
QATS-90-007		1	[illegible]	[illegible]	[illegible]
QATS-90-009		1	[illegible]	[illegible]	[illegible]
QATS-90-015		1	[illegible]	[illegible]	[illegible]

JUN 27 1994

Packaged By: L Ponce Shipped By: L Ponce Date Shipped: 6/23/94

Airbill #: [redacted] Chain of Custody #: 2256

ICF Request Log Number

ICFO002523

Las Vegas, Nevada
89120

702/795-0515

ICF TECHNOLOGY INCORPORATED

020071

The enclosed materials are performance evaluation samples or reference materials, shipped by the ICF Technology Quality Assurance Technical Support (QATS) Laboratory under contract to the U.S. Environmental Protection Agency (EPA). Qualitative and quantitative information on these samples is available from the EPA by contacting James Barron at (703) 603-9029.

Due to the toxic nature of the materials shipped by ICF and strict regulations regarding the shipment of these materials, it is necessary that you fill out and sign the enclosed Chain of Custody form and return the yellow copy to ICF using the enclosed self addressed stamped envelope. Please indicate any problems (i.e. damage, leakage, missing samples, etc). If you have any questions regarding the shipment of these materials, please contact Ms. Liz Porreca, the Materials Document Control Officer at the ICF QATS Laboratory at (702) 795-0515.

NOTE: In order to track the data representing the enclosed sample(s), it is necessary that the PES sample identification code(s) and corresponding data accompany each sample through all steps. Please do not remove or cover the label(s) unless prior arrangements have been made with your EPA representative.

Revised 7/28/93

2700 Chandler Avenue, Building C
Las Vegas, Nevada
89120

702/795-0515

ICF TECHNOLOGY INCORPORATED

020072

ATTENTION

This package contains materials that should be opened in a fume hood by personnel authorized to work with dioxin.

SPECIAL REQUEST

In addition to sending the results on your analysis of these samples to the EPA Regional Office, please send a copy of the report to ICF Technology at the address provided below. These results should be addressed to Liz Porreca, Materials Document Control Officer. Please note, only the copies of final results are required. Full data packages and/or copies of raw data are not necessary.

ICF TECHNOLOGY

2700 CHANDLER AVE., BUILDING C

LAS VEGAS, NEVADA 89120

INSTRUCTIONS FOR PCDD/PCDF ANALYSES

BY HRGC/LRMS PERFORMANCE EVALUATION SAMPLES

Note: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the statement-of-work (SOW), follow the SOW.

APPLICATION: For use with SOW DFLM01 and Revisions.

CAUTION: Read Instructions Carefully Before Opening Bottles.

CAUTION
This sample contains chemicals known or suspected to have serious human health effects.
Material Safety Data Sheets Available Upon Request

(A) SAMPLE DESCRIPTION

Enclosed is a Performance Evaluation Sample for PCDD/PCDF analysis using HRGC/LRMS. This sample consists of 20 to 30 grams of soil/solid material.

This bottle should not be opened until sample preparation/analyses is to occur.

CAUTION: The sample contains compounds which may be light sensitive and should be protected from light during storage.

The sample may be stored at room temperature.

(B) Breakage or Missing Items

Check the contents of the shipment carefully for any breakage or missing items. Refer to enclosed chain-of-custody sheets. Report any problems to Ms. Liz Porreca at ICF Technology (702) 795-0515. Return chain-of-custody sheet with appropriate annotations and signatures to Ms. Porreca at the address provided below.

ICF Technology
2700 Chandler Ave
Las Vegas, NV 89120

(C) Analysis Requirements

Samples are to be analyzed as described in your SOW. These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the SOW, follow the SOW.

(D) General Instructions

This sample is to be handled, prepared, and analyzed exactly as you would samples received from a known or suspected hazardous waste site. Consult your SOW for all details of the amount of sample to extract, the volumes and concentrations of internal standards to add, the details of the extraction and cleanup process, the instrument calibration and analysis procedures, and the reporting requirements.

2700 Chandler Avenue, Building C
Las Vegas, Nevada
89120

ICF TECHNOLOGY
INCORPORATED

ICF KAISER ENGINEERS
2700 Chandler Ave-Bld C
Las Vegas, NV 89120

29 USA

020075

0100001C

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC972

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721412.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:26	0.8	0.1 U	J	
2378-TCDF	304/306	32:14	0.86	3.0	J	
12378-PeCDF	340/342	39:02	1.59	1.8	J	
12378-PeCDD	356/358	40:57	1.38	0.4 U	J	
23478-PeCDF	340/342	40:23	1.46	1.2	J	
123478-HxCDF	374/376	43:44	1.17	7.8		
123678-HxCDF	374/376	43:50	1.37	3.1	J	
123478-HxCDD	390/392	44:27	1.11	0.7 U	J	
123678-HxCDD	390/392	44:32	1.32	0.9 U	J	
123789-HxCDD	390/392	44:46	1.24	1.2	J	
234678-HxCDF	374/376	44:20	1.22	3.2	J	
123789-HxCDF	374/376	44:59	1.12	0.4 U	J	
1234678-HpCDF	408/410	46:28	1.07	23.1		
1234678-HpCDD	424/426	47:24	1.08	41.5		
1234789-HpCDF	408/410	47:46	0.91	2.8	J	
OCDD	458/460	50:20	0.91	5117.3	E	
OCDF	442/444	50:28	0.94	35.9		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:25	0.72	0.65-0.89	59.8	40 - 120
13C-2378-TCDF	316/318	32:10	0.87	0.65-0.89	48.4	40 - 120
13C-12378-PeCDF	352/354	39:01	1.53	1.32-1.78	73.4	40 - 120
13C-12378-PeCDD	368/370	40:56	1.73	1.32-1.78	71.9	40 - 120
13C-123478-HxCDF	384/386	43:44	0.5	0.43-0.59	84.1	40 - 120
13C-123678-HxCDD	402/404	44:32	1.36	0.43-0.59	88	40 - 120
13C-1234678-HpCDF	418/420	46:28	0.43	0.37-0.51	96.3	40 - 120
13C-1234678-HpCDD	436/438	47:23	1.07	0.88 - 1.20	93.1	40 - 120
13C-OCDD	470/472	50:20	0.93	0.76-1.02	100.2	40 - 120
37Cl-2378-TCDD	328	33:26	NA	NA	0.8 *	0 - 0

Column to be used to flag values outside QC limits.

37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1

(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC972

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721412.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.10	X 1.0	0.10
2378-TCDF	3.05	X 0.1	0.30
12378-PeCDF	1.76	X 0.05	0.09
12378-PeCDD	0.39	X 0.5	0.19
23478-PeCDF	1.17	X 0.5	0.59
123478-HxCDF	7.77	X 0.1	0.78
123678-HxCDF	3.06	X 0.1	0.31
123478-HxCDD	0.67	X 0.1	0.07
123678-HxCDD	0.92	X 0.1	0.09
123789-HxCDD	1.20	X 0.1	0.12
234678-HxCDF	3.22	X 0.1	0.32
123789-HxCDF	0.38	X 0.1	0.04
1234678-HpCDF	23.10	X 0.01	0.23
1234678-HpCDD	41.48	X 0.01	0.41
1234789-HpCDF	2.83	X 0.01	0.03
OCDD	5117.34	X 0.001	5.12
OCDF	35.87	X 0.001	0.04
		TOTAL =	8.82

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC972

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43847

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_8

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.0 g

Concentration Unit: pg/g

Percent Dry: 88

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	1.97			1.14	0.88	31:21

0100034

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC973

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721413.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:25	0.79	0.1 U	J	
2378-TCDF	304/306	32:12	1.00 *	1.7 J	~~U~~	3.7
12378-PeCDF	340/342	38:55	1.71	0.4 U	J	
12378-PeCDD	356/358	40:57	1.47	0.4 U	J	
23478-PeCDF	340/342	40:22	1.33	1.1	J	
123478-HxCDF	374/376	43:42	1.23	6.0	J	
123678-HxCDF	374/376	43:49	1.32	2.4	J	
123478-HxCDD	390/392	44:27	1.3	0.5 U	J	
123678-HxCDD	390/392	44:31	1.31	0.7 U	J	
123789-HxCDD	390/392	44:45	1.11	1.1	J	
234678-HxCDF	374/376	44:19	1.28	2.8	J	
123789-HxCDF	374/376	44:57	1.21	0.2 U	J	
1234678-HpCDF	408/410	46:28	1.04	16.2		
1234678-HpCDD	424/426	47:23	1.05	24.5		
1234789-HpCDF	408/410	47:45	0.99	2.2	J	
OCDD	458/460	50:19	0.89	2671.8	E	
OCDF	442/444	50:27	0.95	19.6		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:24	0.73	0.65-0.89	68.9	40 - 120
13C-2378-TCDF	316/318	32:08	0.87	0.65-0.89	56.8	40 - 120
13C-12378-PeCDF	352/354	38:60	1.55	1.32-1.78	76.1	40 - 120
13C-12378-PeCDD	368/370	40:55	1.75	1.32-1.78	68.9	40 - 120
13C-123478-HxCDF	384/386	43:42	0.49	0.43-0.59	84.2	40 - 120
13C-123678-HxCDD	402/404	44:31	1.35	0.43-0.59	90.9	40 - 120
13C-1234678-HpCDF	418/420	46:27	0.44	0.37-0.51	98.1	40 - 120
13C-1234678-HpCDD	436/438	47:22	1.04	0.88 - 1.20	102.1	40 - 120
13C-OCDD	470/472	50:18	0.92	0.76-1.02	113.9	40 - 120
37Cl-2378-TCDD	328	33:29	NA	NA	1.4 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC973

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721413.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.10	X 1.0	0.10
2378-TCDF		X 0.1	0.00
12378-PeCDF	0.43	X 0.05	0.02
12378-PeCDD	0.40	X 0.5	0.20
23478-PeCDF	1.10	X 0.5	0.55
123478-HxCDF	5.97	X 0.1	0.60
123678-HxCDF	2.41	X 0.1	0.24
123478-HxCDD	0.48	X 0.1	0.05
123678-HxCDD	0.69	X 0.1	0.07
123789-HxCDD	1.12	X 0.1	0.11
234678-HxCDF	2.80	X 0.1	0.28
123789-HxCDF	0.20	X 0.1	0.02
1234678-HpCDF	16.20	X 0.01	0.16
1234678-HpCDD	24.50	X 0.01	0.25
1234789-HpCDF	2.16	X 0.01	0.02
OCDD	2671.84	X 0.001	2.67
OCDF	19.59	X 0.001	0.02
		TOTAL =	5.36

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC973

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43848

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_9

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.0 g

Concentration Unit: pg/g

Percent Dry: 94

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	1.74			1.06	0.76	31:19

0100068

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC974

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721414.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:26	0.53 *		U	0.08
2378-TCDF	304/306	32:12	0.65	0.4	J	
12378-PeCDF	340/342	39:01	2.23 *		U	0.12
12378-PeCDD	356/358	40:56	1.02 *		U	0.09
23478-PeCDF	340/342	40:22	1.54	0.1	J	
123478-HxCDF	374/376	43:42	1.24	0.3	J	
123678-HxCDF	374/376	43:49	1.27	0.1	J	
123478-HxCDD	390/392	44:27	1.29	0.1	J	
123678-HxCDD	390/392	44:32	1.32	0.2	J	
123789-HxCDD	390/392	44:47	1.21	0.2	J	
234678-HxCDF	374/376	44:20	1.39	0.2	J	
123789-HxCDF	374/376	44:56	1.06	0.0	J	
1234678-HpCDF	408/410	46:28	1.16	0.6	J	
1234678-HpCDD	424/426	47:23	1.1	14.5		
1234789-HpCDF	408/410	47:45	0.74 *		U	0.12
OCDD	458/460	50:19	0.9	2746.1	E	
OCDF	442/444	50:20	0.95	1.6	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:24	0.73	0.65-0.89	51.3	40 - 120
13C-2378-TCDF	316/318	32:08	0.88	0.65-0.89	43.3	40 - 120
13C-12378-PeCDF	352/354	38:59	1.58	1.32-1.78	71.4	40 - 120
13C-12378-PeCDD	368/370	40:54	1.76	1.32-1.78	71.5	40 - 120
13C-123478-HxCDF	384/386	43:43	0.49	0.43-0.59	91.2	40 - 120
13C-123678-HxCDD	402/404	44:31	1.35	0.43-0.59	97.9	40 - 120
13C-1234678-HpCDF	418/420	46:27	0.44	0.37-0.51	97.9	40 - 120
13C-1234678-HpCDD	436/438	47:22	1.05	0.88 - 1.20	97.4	40 - 120
13C-OCDD	470/472	50:18	0.92	0.76-1.02	104.5	40 - 120
37Cl-2378-TCDD	328	33:21	NA	NA	0.9 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC974

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01
SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721414.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD		X 1.0	
2378-TCDF	0.36	X 0.1	0.04
12378-PeCDF		X 0.05	0.00
12378-PeCDD		X 0.5	0.00
23478-PeCDF	0.10	X 0.5	0.05
123478-HxCDF	0.28	X 0.1	0.03
123678-HxCDF	0.13	X 0.1	0.01
123478-HxCDD	0.13	X 0.1	0.01
123678-HxCDD	0.19	X 0.1	0.02
123789-HxCDD	0.22	X 0.1	0.02
234678-HxCDF	0.19	X 0.1	0.02
123789-HxCDF	0.04	X 0.1	0.00
1234678-HpCDF	0.62	X 0.01	0.01
1234678-HpCDD	14.49	X 0.01	0.14
1234789-HpCDF		X 0.01	0.00
OCDD	2746.12	X 0.001	2.75
OCDF	1.56	X 0.001	0.00
		TOTAL =	3.10

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC974

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43849

Case: 8432B-01

Date Recieved: 06/25/94

Lab File Name: A08264U1_

SDG: SBC972

Date Extracted: 07/07/94

Final Extracion Vol: 20 uL

Matrix: L SOIL

Date Analyzed: 08/26/94

Dilution Factor: 1

Sample Wt/Vol: 10 g

Concentration Unit: pg/g

Percent Dry: 97

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	0.4 U			1.03	0.87	31:18

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC975

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721415.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:27	2.08 *		U	0.10
2378-TCDF	304/306	32:11	0.78	~~2.1~~	J	2.1
12378-PeCDF	340/342	39:01	1.42	0.6 u	J	
12378-PeCDD	356/358	40:56	1.34	0.2 u	J	
23478-PeCDF	340/342	40:22	1.37	0.5 u	J	
123478-HxCDF	374/376	43:41	1.23	2.4	J	
123678-HxCDF	374/376	43:48	1.31	1.0	J	
123478-HxCDD	390/392	44:26	1.23	0.3 u	J	
123678-HxCDD	390/392	44:30	1.34	0.4 u	J	
123789-HxCDD	390/392	44:47	1.4	0.5 u	J	
234678-HxCDF	374/376	44:18	1.35	1.2	J	
123789-HxCDF	374/376	44:58	1.51 *		U	0.09
1234678-HpCDF	408/410	46:27	1.01	5.1		
1234678-HpCDD	424/426	47:22	1.01	21.5		
1234789-HpCDF	408/410	47:45	1.13	0.6 u	J	
OCDD	458/460	50:19	0.88	4042.2	E	
OCDF	442/444	50:27	1.02	4.8	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:23	0.76	0.65-0.89	56.5	40 - 120
13C-2378-TCDF	316/318	32:07	0.88	0.65-0.89	41.8	40 - 120
13C-12378-PeCDF	352/354	38:59	1.61	1.32-1.78	71.5	40 - 120
13C-12378-PeCDD	368/370	40:55	1.74	1.32-1.78	66.7	40 - 120
13C-123478-HxCDF	384/386	43:42	0.49	0.43-0.59	101	40 - 120
13C-123678-HxCDD	402/404	44:30	1.37	0.43-0.59	112.4	40 - 120
13C-1234678-HpCDF	418/420	46:26	0.44	0.37-0.51	107.8	40 - 120
13C-1234678-HpCDD	436/438	47:22	1.03	0.88 - 1.20	110.4	40 - 120
13C-OCDD	470/472	50:18	0.91	0.76-1.02	116	40 - 120
37Cl-2378-TCDD	328	33:27	NA	NA	2.8 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

0100103

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC975

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm Id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A8721415.L15
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD		X 1.0	
2378-TCDF	2.11	X 0.1	0.21
12378-PeCDF	0.62	X 0.05	0.03
12378-PeCDD	0.20	X 0.5	0.10
23478-PeCDF	0.50	X 0.5	0.25
123478-HxCDF	2.35	X 0.1	0.24
123678-HxCDF	0.99	X 0.1	0.10
123478-HxCDD	0.30	X 0.1	0.03
123678-HxCDD	0.38	X 0.1	0.04
123789-HxCDD	0.49	X 0.1	0.05
234678-HxCDF	1.24	X 0.1	0.12
123789-HxCDF		X 0.1	0.00
1234678-HpCDF	5.09	X 0.01	0.05
1234678-HpCDD	21.48	X 0.01	0.21
1234789-HpCDF	0.57	X 0.01	0.01
OCDD	4042.22	X 0.001	4.04
OCDF	4.78	X 0.001	0.00
		TOTAL =	5.49

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ug/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

0100104

2DF
PCDD/PCDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY

EPA SAMPLE NO.

SBC975

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.30 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/OCont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721416.L18
DATE RECEIVED: 06/16/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/kg)

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
TOTAL TCDD	3	0.4		
TOTAL PeCDD	5	1.7		
TOTAL HxCDD	7	4.2		
TOTAL HpCDD	3	61.9		
FURANS				
TOTAL TCDF	12	5.7		
TOTAL PeCDF	13	8.1		
TOTAL HxCDF	11	8.1		
TOTAL HpCDF	4	7.1		

NOTE: Concentrations, EMPCs, and EDLs are calculated on a wet weight basis. The total congener concentrations do not affect the TEF calculations.

FORM II PCDD
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC975

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43850

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_10

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.2 g

Concentration Unit: pg/g

Percent Dry: 96

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	0.826			1.02	0.69	31:21

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC975

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43850

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_10

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.2 g

Concentration Unit: pg/g

Percent Dry: 96

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	0.826			1.02	0.69	31:21

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC976

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721416.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:26	1.43 *		U	0.14
2378-TCDF	304/306	32:08	0.42 *		U	0.61
12378-PeCDF	340/342	39:02	1.22 *		U	0.24
12378-PeCDD	356/358	40:58	1.30 *		U	0.17
23478-PeCDF	340/342	40:22	0.70 *		U	0.12
123478-HxCDF	374/376	43:43	1.12	0.6 U	J	
123678-HxCDF	374/376	43:49	1.13	0.2 U	J	
123478-HxCDD	390/392	44:27	1.39	0.2 U	J	
123678-HxCDD	390/392	44:32	1.26	0.2 U	J	
123789-HxCDD	390/392	44:48	1.14	0.4 U	J	
234678-HxCDF	374/376	44:19	1.02 *		U	0.26
123789-HxCDF	374/376	44:59	0.72 *		U	0.08
1234678-HpCDF	408/410	46:28	1.03	1.2	J	
1234678-HpCDD	424/426	47:23	1.01	10.4		
1234789-HpCDF	408/410	47:46	1.24 *		U	0.11
OCDD	458/460	50:19	0.91	2112.0	E	
OCDF	442/444	50:27	0.98	2.0	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:24	0.76	0.65-0.89	42.2	40 - 120
13C-2378-TCDF	316/318	32:09	0.84	0.65-0.89	32.8 *	40 - 120
13C-12378-PeCDF	352/354	38:60	1.56	1.32-1.78	76.7	40 - 120
13C-12378-PeCDD	368/370	40:55	1.76	1.32-1.78	102.4	40 - 120
13C-123478-HxCDF	384/386	43:43	0.48	0.43-0.59	64.6	40 - 120
13C-123678-HxCDD	402/404	44:31	1.3	0.43-0.59	58.2	40 - 120
13C-1234678-HpCDF	418/420	46:27	0.44	0.37-0.51	100.6	40 - 120
13C-1234678-HpCDD	436/438	47:23	1.03	0.88 - 1.20	94.4	40 - 120
13C-OCDD	470/472	50:18	0.93	0.76-1.02	123.3 *	40 - 120
37Cl-2378-TCDD	328	33:24	NA	NA	4.1 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC976

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721416.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD		X 1.0	
2378-TCDF		X 0.1	0.00
12378-PeCDF		X 0.05	0.00
12378-PeCDD		X 0.5	0.00
23478-PeCDF		X 0.5	0.00
123478-HxCDF	0.63	X 0.1	0.06
123678-HxCDF	0.25	X 0.1	0.02
123478-HxCDD	0.18	X 0.1	0.02
123678-HxCDD	0.23	X 0.1	0.02
123789-HxCDD	0.43	X 0.1	0.04
234678-HxCDF		X 0.1	0.00
123789-HxCDF		X 0.1	0.00
1234678-HpCDF	1.21	X 0.01	0.01
1234678-HpCDD	10.42	X 0.01	0.10
1234789-HpCDF		X 0.01	0.00
OCDD	2111.97	X 0.001	2.11
OCDF	2.00	X 0.001	0.00
		TOTAL =	2.40

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

0100190

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC977

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721417.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:23	0.75	0.2	J	
2378-TCDF	304/306	32:12	0.85	~~9.3~~ 2.39*		
12378-PeCDF	340/342	39:01	1.58	1.8	J	
12378-PeCDD	356/358	40:55	1.63	0.6 U	J	
23478-PeCDF	340/342	40:21	1.53	2.0	J	
123478-HxCDF	374/376	43:41	1.16	9.0		
123678-HxCDF	374/376	43:49	1.27	3.8	J	
123478-HxCDD	390/392	44:27	1.21	0.7 U	J	
123678-HxCDD	390/392	44:31	1.14	1.2	J	
123789-HxCDD	390/392	44:46	1.24	1.7	J	
234678-HxCDF	374/376	44:19	1.16	4.6	J	
123789-HxCDF	374/376	44:58	1.42	0.2 U	J	
1234678-HpCDF	408/410	46:28	1.03	18.5		
1234678-HpCDD	424/426	47:23	1	24.3		
1234789-HpCDF	408/410	47:45	0.97	1.5	J	
OCDD	458/460	50:19	0.89	3140.2	E	
OCDF	442/444	50:27	0.95	9.7		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:24	0.72	0.65-0.89	46.8	40 - 120
13C-2378-TCDF	316/318	32:08	0.87	0.65-0.89	38.5 *	40 - 120
13C-12378-PeCDF	352/354	38:59	1.53	1.32-1.78	71.3	40 - 120
13C-12378-PeCDD	368/370	40:54	1.77	1.32-1.78	75.1	40 - 120
13C-123478-HxCDF	384/386	43:42	0.49	0.43-0.59	85.5	40 - 120
13C-123678-HxCDD	402/404	44:30	1.36	0.43-0.59	86.1	40 - 120
13C-1234678-HpCDF	418/420	46:27	0.45	0.37-0.51	102.4	40 - 120
13C-1234678-HpCDD	436/438	47:23	1.04	0.88 - 1.20	98	40 - 120
13C-OCDD	470/472	50:18	0.92	0.76-1.02	111.9	40 - 120
37Cl-2378-TCDD	328	33:25	NA	NA	3.0 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard is Optional

* From Confirmation analysis

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC977

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721417.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.20	X 1.0	0.20
2378-TCDF	9.34	X 0.1	0.93
12378-PeCDF	1.80	X 0.05	0.09
12378-PeCDD	0.61	X 0.5	0.31
23478-PeCDF	1.96	X 0.5	0.98
123478-HxCDF	9.04	X 0.1	0.90
123678-HxCDF	3.84	X 0.1	0.38
123478-HxCDD	0.69	X 0.1	0.07
123678-HxCDD	1.18	X 0.1	0.12
123789-HxCDD	1.68	X 0.1	0.17
234678-HxCDF	4.63	X 0.1	0.46
123789-HxCDF	0.18	X 0.1	0.02
1234678-HpCDF	18.46	X 0.01	0.18
1234678-HpCDD	24.26	X 0.01	0.24
1234789-HpCDF	1.54	X 0.01	0.02
OCDD	3140.21	X 0.001	3.14
OCDF	9.68	X 0.001	0.01
		TOTAL =	8.22

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC977

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43852

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_11

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.1 g

Concentration Unit: pg/g

Percent Dry: 96

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	2.39			1.03	0.86	31:19

0100243

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC978

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721418.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:23	0.73	0.1 U	J	
2378-TCDF	304/306	32:11	0.86	~~25~~ 1.08 J *	J	
12378-PeCDF	340/342	38:60	1.71	0.9 U	J	
12378-PeCDD	356/358	40:54	1.37	0.3 U	J	
23478-PeCDF	340/342	40:20	1.61	0.7 U	J	
123478-HxCDF	374/376	43:41	1.14	3.9	J	
123678-HxCDF	374/376	43:49	1.2	1.5	J	
123478-HxCDD	390/392	44:25	1.19	0.4 U	J	
123678-HxCDD	390/392	44:31	1.41	0.6 U	J	
123789-HxCDD	390/392	44:45	1.28	0.8 U	J	
234678-HxCDF	374/376	44:19	1.23	1.8	J	
123789-HxCDF	374/376	44:57	1.09	0.1 U	J	
1234678-HpCDF	408/410	46:27	1.04	9.4		
1234678-HpCDD	424/426	47:23	1.01	13.9		
1234789-HpCDF	408/410	47:45	1.16	1.0	J	
OCDD	458/460	50:18	0.93	1137.3		
OCDF	442/444	50:26	1.01	6.9	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:23	0.76	0.65-0.89	56.5	40 - 120
13C-2378-TCDF	316/318	32:07	0.89	0.65-0.89	50	40 - 120
13C-12378-PeCDF	352/354	38:59	1.49	1.32-1.78	72	40 - 120
13C-12378-PeCDD	368/370	40:52	1.78	1.32-1.78	69.3	40 - 120
13C-123478-HxCDF	384/386	43:42	0.49	0.43-0.59	86.7	40 - 120
13C-123678-HxCDD	402/404	44:30	1.39	0.43-0.59	85.8	40 - 120
13C-1234678-HpCDF	418/420	46:26	0.45	0.37-0.51	99.4	40 - 120
13C-1234678-HpCDD	436/438	47:22	1.03	0.88 - 1.20	93.2	40 - 120
13C-OCDD	470/472	50:17	0.94	0.76-1.02	97.3	40 - 120
37Cl-2378-TCDD	328	33:25	NA	NA	1.2 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

* From confirmation analysis

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

0100244

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC978

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721418.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.09	X 1.0	0.09
2378-TCDF	2.29	X 0.1	0.23
12378-PeCDF	0.94	X 0.05	0.05
12378-PeCDD	0.28	X 0.5	0.14
23478-PeCDF	0.69	X 0.5	0.34
123478-HxCDF	3.89	X 0.1	0.39
123678-HxCDF	1.53	X 0.1	0.15
123478-HxCDD	0.37	X 0.1	0.04
123678-HxCDD	0.63	X 0.1	0.06
123789-HxCDD	0.76	X 0.1	0.08
234678-HxCDF	1.83	X 0.1	0.18
123789-HxCDF	0.15	X 0.1	0.01
1234678-HpCDF	9.37	X 0.01	0.09
1234678-HpCDD	13.93	X 0.01	0.14
1234789-HpCDF	0.98	X 0.01	0.01
OCDD	1137.26	X 0.001	1.14
OCDF	6.91	X 0.001	0.01
		TOTAL =	3.15

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2

(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC978

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43853

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_12

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.1 g

Concentration Unit: pg/g

Percent Dry: 97

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	1.08			1.02	0.85	31:20

100277
Rev. 1

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

Resubmitted use this data

EPA SAMPLE NO.

SBC979

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: a0725407.lis
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:20	0.87	46.5 ✓		
2378-TCDF	304/306	32:07	0.84	~~2687.4~~ 640*	J ~~E~~	
12378-PeCDF	340/342	38:56	1.49	604.9		
12378-PeCDD	356/358	40:51	1.51	194.4		
23478-PeCDF	340/342	40:17	1.48	1029.0	J ~~E~~	
123478-HxCDF	374/376	43:40	1.19	2799.8	J ~~E~~	
123678-HxCDF	374/376	43:47	1.19	1106.0		
123478-HxCDD	390/392	44:25	1.22	204.4		
123678-HxCDD	390/392	44:30	1.23	281.8		
123789-HxCDD	390/392	44:44	1.21	472.7		
234678-HxCDF	374/376	44:17	1.18	1267.2		
123789-HxCDF	374/376	44:56	1.26	71.9		
1234678-HpCDF	408/410	46:27	1.03	5074.5	J ~~E~~	
1234678-HpCDD	424/426	47:22	1.07	2370.5	J ~~E~~	
1234789-HpCDF	408/410	47:44	1.05	527.1		
OCDD	458/460	50:17	0.93	2787.5		
OCDF	442/444	50:25	0.97	2372.4		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:19	0.75	0.65 - 0.89	78.4	40 - 120
13C-2378-TCDF	316/318	32:03	0.88	0.65 - 0.89	69	40 - 120
13C-12378-PeCDF	352/354	38:55	1.5	1.24 - 1.86	78.9	40 - 120
13C-12378-PeCDD	368/370	40:51	1.72	1.24 - 1.86	77.8	40 - 120
13C-123478-HxCDF	384/386	43:40	0.5	0.43 - 0.59	84.1	40 - 120
13C-123678-HxCDD	402/404	44:29	1.32	1.05 - 1.43	82.6	40 - 120
13C-1234678-HpCDF	418/420	46:26	0.46	0.37 - 0.51	86.3	40 - 120
13C-1234678-HpCDD	436/438	47:21	1.07	0.88 - 1.20	87.2	40 - 120
13C-OCDD	470/472	50:17	0.94	0.76 - 1.02	83.3	40 - 120
37Cl-2378-TCDD	328	23:15	NA	NA	3960.1 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

* From confirmation analysis

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

100278

Rev. 1

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC979

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: a0725407.lis
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	46.55	X 1.0	46.55
2378-TCDF	2687.44	X 0.1	268.74
12378-PeCDF	604.92	X 0.05	30.25
12378-PeCDD	194.40	X 0.5	97.20
23478-PeCDF	1029.01	X 0.5	514.50
123478-HxCDF	2799.79	X 0.1	279.98
123678-HxCDF	1105.96	X 0.1	110.60
123478-HxCDD	204.42	X 0.1	20.44
123678-HxCDD	281.82	X 0.1	28.18
123789-HxCDD	472.71	X 0.1	47.27
234678-HxCDF	1267.15	X 0.1	126.72
123789-HxCDF	71.88	X 0.1	7.19
1234678-HpCDF	5074.52	X 0.01	50.75
1234678-HpCDD	2370.55	X 0.01	23.71
1234789-HpCDF	527.06	X 0.01	5.27
OCDD	2787.55	X 0.001	2.79
OCDF	2372.43	X 0.001	2.37
		TOTAL =	1662.50

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2

(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC979

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43854

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08104U1_13

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/11/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.0 g

Concentration Unit: pg/g

Percent Dry: 74

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	640			1.35	0.84	31:07

0100372

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC980 RE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: H0814410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 08/14/94
DILUTION FACTOR: 3
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	30:14	0.74	27.3		
2378-TCDF	304/306	28:57	0.74	~~1111.1~~ 347 *		
12378-PeCDF	340/342	35:55	1.52	311.6		
12378-PeCDD	356/358	38:01	1.55	84.9		
23478-PeCDF	340/342	37:19	1.51	367.0		
123478-HxCDF	374/376	42:01	1.2	1381.8		
123678-HxCDF	374/376	42:10	1.17	473.7		
123478-HxCDD	390/392	42:58	1.34	87.4		
123678-HxCDD	390/392	43:03	1.13	122.8		
123789-HxCDD	390/392	43:19	1.22	219.6		
234678-HxCDF	374/376	42:48	1.18	666.5		
123789-HxCDF	374/376	43:30	1.39	27.3		
1234678-HpCDF	408/410	44:58	1	2597.3		
1234678-HpCDD	424/426	45:49	1.04	1210.5		
1234789-HpCDF	408/410	46:08	0.98	288.5		
OCDD	458/460	48:20	0.87	1616.6		
OCDF	442/444	48:27	0.87	1301.7		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	30:12	0.75	0.65 - 0.89	81.4	40 - 120
13C-2378-TCDF	316/318	28:54	0.8	0.65 - 0.89	73.5	40 - 120
13C-12378-PeCDF	352/354	35:54	1.59	1.24 - 1.86	93.6	40 - 120
13C-12378-PeCDD	368/370	37:60	1.69	1.24 - 1.86	91.1	40 - 120
13C-123478-HxCDF	384/386	42:02	0.49	0.43 - 0.59	94.7	40 - 120
13C-123678-HxCDD	402/404	43:03	1.22	1.05 - 1.43	92.8	40 - 120
13C-1234678-HpCDF	418/420	44:57	0.42	0.37 - 0.51	91.6	40 - 120
13C-1234678-HpCDD	436/438	45:48	1	0.88 - 1.20	92.7	40 - 120
13C-OCDD	470/472	48:19	0.88	0.76 - 1.02	91.8	40 - 120
37Cl-2378-TCDD	328	30:17	NA	NA	16.6 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard is Optional

* From confirmation analysis

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC980 RE

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: H0814410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 08/14/94
DILUTION FACTOR: 3
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	27.26	X 1.0	27.26
2378-TCDF	1111.67	X 0.1	111.17
12378-PeCDF	311.64	X 0.05	15.58
12378-PeCDD	84.90	X 0.5	42.45
23478-PeCDF	367.00	X 0.5	183.50
123478-HxCDF	1381.82	X 0.1	138.18
123678-HxCDF	473.74	X 0.1	47.37
123478-HxCDD	87.41	X 0.1	8.74
123678-HxCDD	122.83	X 0.1	12.28
123789-HxCDD	219.64	X 0.1	21.96
234678-HxCDF	666.50	X 0.1	66.65
123789-HxCDF	27.32	X 0.1	2.73
1234678-HpCDF	2597.33	X 0.01	25.97
1234678-HpCDD	1210.49	X 0.01	12.10
1234789-HpCDF	288.46	X 0.01	2.88
OCDD	1616.63	X 0.001	1.62
OCDF	1301.66	X 0.001	1.30
		TOTAL =	721.77

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

0100395

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC981

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-1
MATRIX: SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-135
SDG NO.: SBC972
LAB SAMPLE ID.: A0720410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/20/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:29	0.67	0.5 u	J	
2378-TCDF	304/306	32:16	0.72	~~13.0~~ 9.08*	J	
12378-PeCDF	340/342	39:05	1.54	4.4		
12378-PeCDD	356/358	40:58	1.72	1.1	J	
23478-PeCDF	340/342	40:25	1.54	4.1		
123478-HxCDF	374/376	43:43	1.19	17.6		
123678-HxCDF	374/376	43:52	1.27	6.7		
123478-HxCDD	390/392	44:29	1.18	1.2	J	
123678-HxCDD	390/392	44:33	1.12	1.8	J	
123789-HxCDD	390/392	44:48	1.17	2.8	J	
234678-HxCDF	374/376	44:21	1.18	7.7		
123789-HxCDF	374/376	44:60	1.1	~~0.6~~ u	J	
1234678-HpCDF	408/410	46:30	0.91	47.7		
1234678-HpCDD	424/426	47:26	1.09	51.0		
1234789-HpCDF	408/410	47:48	0.91	4.6	J	
OCDD	458/460	50:23	0.88	4569.4	E	
OCDF	442/444	50:31	0.95	40.2		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:28	0.77	0.65-0.89	63.4	40 - 120
13C-2378-TCDF	316/318	32:12	0.78	0.65-0.89	56.2	40 - 120
13C-12378-PeCDF	352/354	39:03	1.76	1.32-1.78	77.6	40 - 120
13C-12378-PeCDD	368/370	40:57	1.55	1.32-1.78	92	40 - 120
13C-123478-HxCDF	384/386	43:45	0.5	0.43-0.59	86.9	40 - 120
13C-123678-HxCDD	402/404	44:33	1.18	0.43-0.59	93	40 - 120
13C-1234678-HpCDF	418/420	46:30	0.45	0.37-0.51	88.6	40 - 120
13C-1234678-HpCDD	436/438	47:25	1.08	0.88 - 1.20	101.6	40 - 120
13C-OCDD	470/472	50:22	0.89	0.76-1.02	116.9	40 - 120
37Cl-2378-TCDD	328	33:29	NA	NA	7.9 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard is Optional

* from confirmation

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC981

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-1
CASE NO: SAS 8432B-01
MATRIX: SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sep/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-135
SDG NO.: SBC972
LAB SAMPLE ID.: A0720410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/20/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.47	X 1.0	0.47
2378-TCDF	13.04	X 0.1	1.30
12378-PeCDF	4.39	X 0.05	0.22
12378-PeCDD	1.11	X 0.5	0.55
23478-PeCDF	4.08	X 0.5	2.04
123478-HxCDF	17.58	X 0.1	1.76
123678-HxCDF	6.74	X 0.1	0.67
123478-HxCDD	1.22	X 0.1	0.12
123678-HxCDD	1.82	X 0.1	0.18
123789-HxCDD	2.75	X 0.1	0.28
234678-HxCDF	7.69	X 0.1	0.77
123789-HxCDF	0.61	X 0.1	0.06
1234678-HpCDF	47.75	X 0.01	0.48
1234678-HpCDD	51.00	X 0.01	0.51
1234789-HpCDF	4.60	X 0.01	0.05
OCDD	4569.42	X 0.001	4.57
OCDF	40.22	X 0.001	0.04
		TOTAL =	14.07

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC981

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43856

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08074U1_10

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/07/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.2 g

Concentration Unit: pg/g

Percent Dry: 89

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	9.08			1.10	0.69	31:21

0100429

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC982

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721401.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/20/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:28	0.88	2.6	J	
2378-TCDF	304/306	32:14	0.79	~~37.1~~ 25.6 *	J	
12378-PeCDF	340/342	39:03	1.53	23.2		
12378-PeCDD	356/358	40:57	1.56	9.4		
23478-PeCDF	340/342	40:24	1.51	21.9		
123478-HxCDF	374/376	43:44	1.2	112.1		
123678-HxCDF	374/376	43:50	1.17	49.7		
123478-HxCDD	390/392	44:28	1.36	6.8		
123678-HxCDD	390/392	44:32	1.16	11.8		
123789-HxCDD	390/392	44:47	1.26	19.0		
234678-HxCDF	374/376	44:20	1.2	48.4		
123789-HxCDF	374/376	44:58	1.21	2.9	J	
1234678-HpCDF	408/410	46:29	1	281.0		
1234678-HpCDD	424/426	47:24	1.03	176.5		
1234789-HpCDF	408/410	47:47	1.07	26.8		
OCDD	458/460	50:21	0.92	5969.5	E	
OCDF	442/444	50:29	0.96	232.4		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:26	0.74	0.65-0.89	56.9	40 - 120
13C-2378-TCDF	316/318	32:10	0.83	0.65-0.89	47.1	40 - 120
13C-12378-PeCDF	352/354	39:01	1.52	1.32-1.78	72.5	40 - 120
13C-12378-PeCDD	368/370	40:56	1.7	1.32-1.78	82.7	40 - 120
13C-123478-HxCDF	384/386	43:44	0.5	0.43-0.59	77.3	40 - 120
13C-123678-HxCDD	402/404	44:31	1.27	0.43-0.59	91.8	40 - 120
13C-1234678-HpCDF	418/420	46:28	0.46	0.37-0.51	90	40 - 120
13C-1234678-HpCDD	436/438	47:24	1.09	0.88 - 1.20	100.8	40 - 120
13C-OCDD	470/472	50:20	0.96	0.76-1.02	111.4	40 - 120
37Cl-2378-TCDD	328	33:26	NA	NA	5.1 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

* From confirmation

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC982

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721401.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/20/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	2.64	X 1.0	2.64
2378-TCDF	57.69	X 0.1	5.77
12378-PeCDF	23.22	X 0.05	1.16
12378-PeCDD	9.37	X 0.5	4.68
23478-PeCDF	21.87	X 0.5	10.93
123478-HxCDF	112.13	X 0.1	11.21
123678-HxCDF	49.67	X 0.1	4.97
123478-HxCDD	6.82	X 0.1	0.68
123678-HxCDD	11.82	X 0.1	1.18
123789-HxCDD	19.04	X 0.1	1.90
234678-HxCDF	48.40	X 0.1	4.84
123789-HxCDF	2.88	X 0.1	0.29
1234678-HpCDF	281.04	X 0.01	2.81
1234678-HpCDD	176.45	X 0.01	1.76
1234789-HpCDF	26.82	X 0.01	0.27
OCDD	5969.48	X 0.001	5.97
OCDF	232.36	X 0.001	0.23
		TOTAL =	61.31

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

0100432 9-30-94

Southwest Research Institute

Dioxin/Dibenzofuran Analysis Report

Sample ID

SBC982

Client ID: EPA
Case: SAS 8432B-01
SDG: SBC972
Matrix: L SOIL
Sample Wt/Vol: 10.2 g

Project: 01-6359-028
Date Received: 06/25/94
Date Extracted: 07/07/94
Date Analyzed: 07/21/94
Concentration Unit: pg/g

Lab Sample ID: 43857
Lab File Name: A07214U2_1
Final Extraction Vol: 20 uL
Dilution Factor: 1.0
Percent Dry: 84

CAS No.	ANALYTE	CONC	Q	EMPC	EDL	CRQL	RATIO	RT
1746-01-6	2,3,7,8-TCDD	2.64				1.21	0.880	33:28
40321-76-4	1,2,3,7,8-PeCDD	9.37				1.21	1.56	40:57
39227-28-6	1,2,3,4,7,8-HxCDD	6.82				3.03	1.36	44:28
57653-85-7	1,2,3,6,7,8-HxCDD	11.8				3.03	1.16	44:32
19408-74-3	1,2,3,7,8,9-HxCDD	19.0				3.03	1.26	44:47
35822-46-9	1,2,3,4,6,7,8-HpCDD	176				3.03	1.03	47:24
3268-87-9	OCDD	5970				6.07	0.920	50:21
51207-31-9	2,3,7,8-TCDF	57.7				1.21	0.790	32:14
57117-41-6	1,2,3,7,8-PeCDF	23.2				1.21	1.53	39:03
57117-31-4	2,3,4,7,8-PeCDF	21.9				1.21	1.51	40:24
70648-26-9	1,2,3,4,7,8-HxCDF	112				3.03	1.20	43:44
57117-44-9	1,2,3,6,7,8-HxCDF	49.7				3.03	1.17	43:50
72918-21-9	1,2,3,7,8,9-HxCDF	2.88				3.03	1.21	44:58
60851-34-5	2,3,4,6,7,8-HxCDF	48.4				3.03	1.20	44:20
67562-39-4	1,2,3,4,6,7,8-HpCDF	281				3.03	1.00	46:29
55673-89-7	1,2,3,4,7,8,9-HpCDF	26.8				3.03	1.07	47:47
39001-02-0	OCDF	232				6.07	0.960	50:29

Total Dioxin	CONC	Number	Total Dibenzofuran	CONC	Number
Total Tetra-Dioxins	41.8		Total Tetra-Furans	191	
Total Penta-Dioxins	86.7		Total Penta-Furans	236	
Total Hexa-Dioxins	137		Total Hexa-Furans	360	
Total Hepta-Dioxins	347		Total Hepta-Furans	377	

Internal Standard % Recovery

13C-2,3,7,8-TCDD:	56.9	13C-1,2,3,4,7,8-HxCDF:	77.3	13C-1,2,3,7,8-PeCDF:	72.5
13C-1,2,3,6,7,8-HxCDD:	91.8	13C-1,2,3,7,8-PeCDD:	82.7	13C-1,2,3,4,6,7,8-HpCDF:	90.0
13C-2,3,7,8-TCDF:	47.1	13C-1,2,3,4,6,7,8-HpCDD:	104	13C-OCDD:	111

Clean-Up Standard % Recovery

37Cl-2,3,7,8-TCDD NA

SAS 8432 B 01

SDG 930972

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC982

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43857

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08074U1_11

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/07/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.2 g

Concentration Unit: pg/g

Percent Dry: 84

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	25.6			1.17	0.67	31:24

0100465

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC983

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: C:\QPW\A0721402.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:27	0.77	0.2 u	J	
2378-TCDF	304/306	32:15	0.8	~~8.4~~ 4 ab *	J	
12378-PeCDF	340/342	39:03	1.47	3.6		
12378-PeCDD	356/358	40:57	1.44	0.8 u	J	
23478-PeCDF	340/342	40:24	1.45	3.2		
123478-HxCDF	374/376	43:43	1.22	18.5		
123678-HxCDF	374/376	43:50	1.25	7.2	J	
123478-HxCDD	390/392	44:28	1.24	1.1	J	
123678-HxCDD	390/392	44:33	1.26	1.8	J	
123789-HxCDD	390/392	44:47	1.23	2.5	J	
234678-HxCDF	374/376	44:20	1.17	7.6	J	
123789-HxCDF	374/376	44:59	1.28	0.6 u	J	
1234678-HpCDF	408/410	46:30	1	57.9		
1234678-HpCDD	424/426	47:25	1.02	58.9		
1234789-HpCDF	408/410	47:47	1.01	6.2	J	
OCDD	458/460	50:22	0.92	5536.4	E	
OCDF	442/444	50:30	1	54.6		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:26	0.74	0.65-0.89	65	40 - 120
13C-2378-TCDF	316/318	32:11	0.85	0.65-0.89	55.1	40 - 120
13C-12378-PeCDF	352/354	39:03	1.56	1.32-1.78	73.8	40 - 120
13C-12378-PeCDD	368/370	40:56	1.64	1.32-1.78	84.6	40 - 120
13C-123478-HxCDF	384/386	43:44	0.49	0.43-0.59	73.3	40 - 120
13C-123678-HxCDD	402/404	44:32	1.29	0.43-0.59	88.4	40 - 120
13C-1234678-HpCDF	418/420	46:29	0.46	0.37-0.51	83.8	40 - 120
13C-1234678-HpCDD	436/438	47:24	1.06	0.88 - 1.20	94.7	40 - 120
13C-OCDD	470/472	50:21	0.95	0.76-1.02	103.2	40 - 120
37Cl-2378-TCDD	328	33:25	NA	NA	2.2 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard, is Optional

* From confirmation analysis

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC983

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: C:\QPW\A0721402.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.23	X 1.0	0.23
2378-TCDF	8.39	X 0.1	0.84
12378-PeCDF	3.58	X 0.05	0.18
12378-PeCDD	0.85	X 0.5	0.42
23478-PeCDF	3.24	X 0.5	1.62
123478-HxCDF	18.46	X 0.1	1.85
123678-HxCDF	7.20	X 0.1	0.72
123478-HxCDD	1.08	X 0.1	0.11
123678-HxCDD	1.77	X 0.1	0.18
123789-HxCDD	2.51	X 0.1	0.25
234678-HxCDF	7.55	X 0.1	0.76
123789-HxCDF	0.61	X 0.1	0.06
1234678-HpCDF	57.86	X 0.01	0.58
1234678-HpCDD	58.91	X 0.01	0.59
1234789-HpCDF	6.20	X 0.01	0.06
OCDD	5536.37	X 0.001	5.54
OCDF	54.57	X 0.001	0.05
		TOTAL =	14.03

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

0100468

Southwest Research Institute

Dioxin/Dibenzofuran Analysis Report

Sample ID

SBC983

Client ID: EPA
Case: SAS 8432B-01
SDG: SBC972
Matrix: L SOIL
Sample Wt/Vol: 10.0 g

Project: 01-6359-028
Date Received: 06/25/94
Date Extracted: 07/07/94
Date Analyzed: 07/21/94
Concentration Unit: pg/g

Lab Sample ID: 43858
Lab File Name: A07214U2_2
Final Extraction Vol: 20 uL
Dilution Factor: 1.0
Percent Dry: 87

CAS No.	ANALYTE	CONC	Q	EMPC	EDL	CRQL	RATIO	RT
1746-01-6	2,3,7,8-TCDD	0.234				11.5	0.770	33:27
40321-76-4	1,2,3,7,8-PeCDD	0.846				11.5	1.44	40:57
39227-28-6	1,2,3,4,7,8-HxCDD	1.08				28.7	1.24	44:28
57653-85-7	1,2,3,6,7,8-HxCDD	1.77				28.7	1.26	44:33
19408-74-3	1,2,3,7,8,9-HxCDD	2.51				28.7	1.23	44:47
35822-46-9	1,2,3,4,6,7,8-HpCDD	58.9				28.7	1.02	47:25
3268-87-9	OCDD	5530				57.5	0.920	50:22
51207-31-9	2,3,7,8-TCDF	8.39				11.5	0.800	32:15
57117-41-6	1,2,3,7,8-PeCDF	3.58				11.5	1.47	39:03
57117-31-4	2,3,4,7,8-PeCDF	3.24				11.5	1.45	40:24
70648-26-9	1,2,3,4,7,8-HxCDF	18.4				28.7	1.22	43:43
57117-44-9	1,2,3,6,7,8-HxCDF	7.20				28.7	1.25	43:50
72918-21-9	1,2,3,7,8,9-HxCDF	0.611				28.7	1.28	44:59
60851-34-5	2,3,4,6,7,8-HxCDF	7.55				28.7	1.17	44:20
67562-39-4	1,2,3,4,6,7,8-HpCDF	57.8				28.7	1.00	46:30
55673-89-7	1,2,3,4,7,8,9-HpCDF	6.20				28.7	1.01	47:47
39001-02-0	OCDF	54.6				57.5	1.00	50:30

Total Dioxin	CONC	Number	Total Dibenzofuran	CONC	Number
Total Tetra-Dioxins	4.69		Total Tetra-Furans	30.3	
Total Penta-Dioxins	9.93		Total Penta-Furans	35.8	
Total Hexa-Dioxins	19.3		Total Hexa-Furans	56.9	
Total Hepta-Dioxins	118		Total Hepta-Furans	77.9	

Internal Standard % Recovery

13C-2,3,7,8-TCDD:	65.0	13C-1,2,3,4,7,8-HxCDF:	73.3	13C-1,2,3,7,8-PeCDF:	73.8
13C-1,2,3,6,7,8-HxCDD:	88.4	13C-1,2,3,7,8-PeCDD:	84.6	13C-1,2,3,4,6,7,8-HpCDF:	83.8
13C-2,3,7,8-TCDF:	55.1	13C-1,2,3,4,6,7,8-HpCDD:	94.7	13C-OCDD:	103

Clean-Up Standard % Recovery

37Cl-2,3,7,8-TCDD NA

SAS 8432 B 01

SDG SBC972

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBC983

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43858

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08074U1_12

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/07/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.0 g

Concentration Unit: pg/g

Percent Dry: 87

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	4.96			1.15	0.70	31:23

0100501

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBD000

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: C:\QPW\A0721404.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:29	0.84	0.8 U	J	
2378-TCDF	304/306	32:16	0.74	~~2.5~~ 11.5*	J	
12378-PeCDF	340/342	39:05	1.54	8.4		
12378-PeCDD	356/358	40:59	1.64	1.9	J	
23478-PeCDF	340/342	40:26	1.46	7.2		
123478-HxCDF	374/376	43:44	1.21	39.5		
123678-HxCDF	374/376	43:51	1.18	13.7		
123478-HxCDD	390/392	44:29	1.25	2.3	J	
123678-HxCDD	390/392	44:34	1.16	3.7	J	
123789-HxCDD	390/392	44:49	1.22	5.7	J	
234678-HxCDF	374/376	44:21	1.14	17.2		
123789-HxCDF	374/376	45:00	1.19	1.1	J	
1234678-HpCDF	408/410	46:30	1.01	116.4		
1234678-HpCDD	424/426	47:26	1.06	84.3		
1234789-HpCDF	408/410	47:48	0.99	12.4		
OCDD	458/460	50:22	0.9	2875.9 J	E	
OCDF	442/444	50:30	0.95	102.1		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:28	0.74	0.65-0.89	60.2	40 - 120
13C-2378-TCDF	316/318	32:13	0.83	0.65-0.89	51.7	40 - 120
13C-12378-PeCDF	352/354	39:04	1.53	1.32-1.78	71.7	40 - 120
13C-12378-PeCDD	368/370	40:58	1.69	1.32-1.78	86	40 - 120
13C-123478-HxCDF	384/386	43:45	0.5	0.43-0.59	77.5	40 - 120
13C-123678-HxCDD	402/404	44:33	1.3	0.43-0.59	88.3	40 - 120
13C-1234678-HpCDF	418/420	46:30	0.45	0.37-0.51	89.8	40 - 120
13C-1234678-HpCDD	436/438	47:25	1.05	0.88 - 1.20	96	40 - 120
13C-OCDD	470/472	50:21	0.94	0.76-1.02	105.1	40 - 120
37Cl-2378-TCDD	328	33:30	NA	NA	7.3 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

From confirmation analysis

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBD000

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: C:\QPW\A0721404.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.77	X 1.0	0.77
2378-TCDF	21.53	X 0.1	2.15
12378-PeCDF	8.42	X 0.05	0.42
12378-PeCDD	1.89	X 0.5	0.94
23478-PeCDF	7.16	X 0.5	3.58
123478-HxCDF	39.49	X 0.1	3.95
123678-HxCDF	13.68	X 0.1	1.37
123478-HxCDD	2.27	X 0.1	0.23
123678-HxCDD	3.66	X 0.1	0.37
123789-HxCDD	5.65	X 0.1	0.57
234678-HxCDF	17.17	X 0.1	1.72
123789-HxCDF	1.06	X 0.1	0.11
1234678-HpCDF	116.38	X 0.01	1.16
1234678-HpCDD	84.28	X 0.01	0.84
1234789-HpCDF	12.41	X 0.01	0.12
OCDD	2875.93	X 0.001	2.88
OCDF	102.11	X 0.001	0.10
		TOTAL =	21.27

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

0100504

Southwest Research Institute

Dioxin/Dibenzofuran Analysis Report

Sample ID

SBD000

Client ID: EPA
Case: SAS 8432B-01
SDG: SBC972
Matrix: L SOIL
Sample Wt/Vol: 10 g

Project: 01-6359-028
Date Received: 06/25/94
Date Extracted: 07/07/94
Date Analyzed: 07/21/94
Concentration Unit: pg/g

Lab Sample ID: 43793
Lab File Name: A07214U2_4
Final Extraction Vol: 20 uL
Dilution Factor: 1.0
Percent Dry: 94

CAS No.	ANALYTE	CONC	Q	EMPC	EDL	CRQL	RATIO	RT
1746-01-6	2,3,7,8-TCDD	0.766				1.06	0.840	33:29
40321-76-4	1,2,3,7,8-PeCDD	1.89				1.06	1.64	40:59
39227-28-6	1,2,3,4,7,8-HxCDD	2.27				2.66	1.25	44:29
57653-85-7	1,2,3,6,7,8-HxCDD	3.66				2.66	1.16	44:34
19408-74-3	1,2,3,7,8,9-HxCDD	5.65				2.66	1.22	44:49
35822-46-9	1,2,3,4,6,7,8-HpCDD	84.3				2.66	1.06	47:26
3268-87-9	OCDD	2880				5.32	0.900	50:22
51207-31-9	2,3,7,8-TCDF	21.5				1.06	0.740	32:16
57117-41-6	1,2,3,7,8-PeCDF	8.42				1.06	1.54	39:05
57117-31-4	2,3,4,7,8-PeCDF	7.16				1.06	1.46	40:26
70648-26-9	1,2,3,4,7,8-HxCDF	39.5				2.66	1.21	43:44
57117-44-9	1,2,3,6,7,8-HxCDF	13.7				2.66	1.18	43:51
72918-21-9	1,2,3,7,8,9-HxCDF	1.06				2.66	1.19	45:00
60851-34-5	2,3,4,6,7,8-HxCDF	17.2				2.66	1.14	44:21
67562-39-4	1,2,3,4,6,7,8-HpCDF	116				2.66	1.01	46:30
55673-89-7	1,2,3,4,7,8,9-HpCDF	12.4				2.66	0.990	47:48
39001-02-0	OCDF	102				5.32	0.950	50:30

Total Dioxin	CONC	Number	Total Dibenzofuran	CONC	Number
Total Tetra-Dioxins	19.8		Total Tetra-Furans	85.4	
Total Penta-Dioxins	29.6		Total Penta-Furans	89.2	
Total Hexa-Dioxins	46.9		Total Hexa-Furans	126	
Total Hepta-Dioxins	170		Total Hepta-Furans	161	

Internal Standard % Recovery

13C-2,3,7,8-TCDD:	60.2	13C-1,2,3,4,7,8-HxCDF:	77.5	13C-1,2,3,7,8-PeCDF:	71.7
13C-1,2,3,6,7,8-HxCDD:	88.3	13C-1,2,3,7,8-PeCDD:	86.0	~~13C-1,2,3,4,6,7,8-HpCDF:~~	~~89.8~~
13C-2,3,7,8-TCDF:	51.7	13C-1,2,3,4,6,7,8-HpCDD:	96.0	~~13C-OCDD:~~	105

Clean-Up Standard % Recovery

37Cl-2,3,7,8-TCDD NA

SAS 8432 B 01

SDG SBC972

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBD000

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43793

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08074U1_13

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/07/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.0 g

Concentration Unit: pg/g

Percent Dry: 94

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	11.5			1.06	0.67	31:24

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBD001(DL)

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-1
MATRIX: SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-135
SDG NO.: SBC972
LAB SAMPLE ID.: A0720408.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/20/94
DILUTION FACTOR: 2
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:31	0.88	4.2 *	J	
2378-TCDF	304/306	32:17	0.69	~~142.5~~ 89	J	
12378-PeCDF	340/342	39:05	1.55	65.3		
12378-PeCDD	356/358	40:59	1.76	15.9		
23478-PeCDF	340/342	40:26	1.53	45.7		
123478-HxCDF	374/376	43:46	1.2	219.3		
123678-HxCDF	374/376	43:52	1.22	87.1		
123478-HxCDD	390/392	44:29	1.36	23.4		
123678-HxCDD	390/392	44:34	1.18	104.2		
123789-HxCDD	390/392	44:49	1.17	83.6		
234678-HxCDF	374/376	44:22	1.18	84.2		
123789-HxCDF	374/376	45:00	1.22	5.6	J	
1234678-HpCDF	408/410	46:30	0.92	533.1		
1234678-HpCDD	424/426	47:26	1.07	1235.6		
1234789-HpCDF	408/410	47:49	0.89	61.7		
OCDD	458/460	50:23	0.9	3898.5		
OCDF	442/444	50:31	0.94	470.9		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:29	0.75	0.65-0.89	72.6	40 - 120
13C-2378-TCDF	316/318	32:13	0.78	0.65-0.89	67.4	40 - 120
13C-12378-PeCDF	352/354	39:04	1.76	1.32-1.78	83.4	40 - 120
13C-12378-PeCDD	368/370	40:58	1.58	1.32-1.78	88.9	40 - 120
13C-123478-HxCDF	384/386	43:46	0.5	0.43-0.59	91.1	40 - 120
13C-123678-HxCDD	402/404	44:33	1.2	0.43-0.59	91.8	40 - 120
13C-1234678-HpCDF	418/420	46:30	0.46	0.37-0.51	88.5	40 - 120
13C-1234678-HpCDD	436/438	47:25	1.1	0.88 - 1.20	96.7	40 - 120
13C-OCDD	470/472	50:22	0.92	0.76-1.02	106.1	40 - 120
37Cl-2378-TCDD	328	33:31	NA	NA	9.1 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

* from confirmation analysis

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBD001(DL)

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-1
CASE NO: SAS 8432B-01
MATRIX: SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-135
SDG NO.: SBC972
LAB SAMPLE ID.: A0720408.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/20/94
DILUTION FACTOR: 2
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	4.25	X 1.0	4.25
2378-TCDF	142.46	X 0.1	14.25
12378-PeCDF	65.28	X 0.05	3.26
12378-PeCDD	15.90	X 0.5	7.95
23478-PeCDF	45.71	X 0.5	22.85
123478-HxCDF	219.35	X 0.1	21.93
123678-HxCDF	87.07	X 0.1	8.71
123478-HxCDD	23.36	X 0.1	2.34
123678-HxCDD	104.15	X 0.1	10.42
123789-HxCDD	83.59	X 0.1	8.36
234678-HxCDF	84.19	X 0.1	8.42
123789-HxCDF	5.56	X 0.1	0.56
1234678-HpCDF	533.10	X 0.01	5.33
1234678-HpCDD	1235.59	X 0.01	12.36
1234789-HpCDF	61.67	X 0.01	0.62
OCDD	3898.51	X 0.001	3.90
OCDF	470.91	X 0.001	0.47
		TOTAL =	135.97

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

0100579

Southwest Research Institute

Dioxin/Dibenzofuran Analysis Report

Sample ID

SBD001-1

Client ID: EPA
Case: SAS 8432B-01
SDG: SBC972
Matrix: L SOIL
Sample Wt/Vol: 10 g

Project: 01-6359-028
Date Received: 06/25/94
Date Extracted: 07/07/94
Date Analyzed: 07/20/94
Concentration Unit: pg/g

Lab Sample ID: 43794
Lab File Name: A07204U1_8
Final Extraction Vol: 20 uL
Dilution Factor: 2.0
Percent Dry: 85

CAS No.	ANALYTE	CONC	Q	EMPC	EDL	CRQL	RATIO	RT
1746-01-6	2,3,7,8-TCDD	4.25				1.18	0.880	33:31
40321-76-4	1,2,3,7,8-PeCDD	15.9				1.18	1.76	40:59
39227-28-6	1,2,3,4,7,8-HxCDD	23.4				2.94	1.36	44:29
57653-85-7	1,2,3,6,7,8-HxCDD	104				2.94	1.18	44:34
19408-74-3	1,2,3,7,8,9-HxCDD	83.6				2.94	1.17	44:49
35822-46-9	1,2,3,4,6,7,8-HpCDD	1240				2.94	1.07	47:26
3268-87-9	OCDD	3900				5.88	0.900	50:23
51207-31-9	2,3,7,8-TCDF	142				1.18	0.690	32:17
57117-41-6	1,2,3,7,8-PeCDF	65.3				1.18	1.55	39:05
57117-31-4	2,3,4,7,8-PeCDF	45.7				1.18	1.53	40:26
70648-26-9	1,2,3,4,7,8-HxCDF	219				2.94	1.20	43:46
57117-44-9	1,2,3,6,7,8-HxCDF	87.1				2.94	1.22	43:52
72918-21-9	1,2,3,7,8,9-HxCDF	5.56				2.94	1.22	45:00
60851-34-5	2,3,4,6,7,8-HxCDF	84.2				2.94	1.18	44:22
67562-39-4	1,2,3,4,6,7,8-HpCDF	533				2.94	0.920	46:30
55673-89-7	1,2,3,4,7,8,9-HpCDF	61.7				2.94	0.890	47:49
39001-02-0	OCDF	471				5.88	0.940	50:31

Total Dioxin	CONC	Number	Total Dibenzofuran	CONC	Number
Total Tetra-Dioxins	110		Total Tetra-Furans	516	
Total Penta-Dioxins	202		Total Penta-Furans	619	
Total Hexa-Dioxins	553		Total Hexa-Furans	956	
Total Hepta-Dioxins	1870		Total Hepta-Furans	771	

Internal Standard % Recovery

13C-2,3,7,8-TCDD:	72.6	13C-1,2,3,4,7,8-HxCDF:	91.1	13C-1,2,3,7,8-PeCDF:	~~83.4~~
13C-1,2,3,6,7,8-HxCDD:	91.8	13C-1,2,3,7,8-PeCDD:	~~88.9~~	13C-1,2,3,4,6,7,8-HpCDF:	~~88.5~~
13C-2,3,7,8-TCDF:	67.4	13C-1,2,3,4,6,7,8-HpCDD:	~~96.7~~	13C-OCDD:	106

Clean-Up Standard % Recovery

37Cl-2,3,7,8-TCDD N/A

SAS 8432 B 01

SDG SBC972

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBD001 DUP

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43794

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08074U1_8

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/07/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.0 g

Concentration Unit: pg/g

Percent Dry: 85

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	89.4			1.18	0.67	31:20

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBD002

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721406.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:30	1.32 *		U	0.39
2378-TCDF	304/306	32:15	0.78	11.3		
12378-PeCDF	340/342	39:05	1.38	6.6		
12378-PeCDD	356/358	40:58	1.52	0.9 u	J	
23478-PeCDF	340/342	40:24	1.51	3.1	J	
123478-HxCDF	374/376	43:45	1.19	16.4		
123678-HxCDF	374/376	43:51	1.18	5.9	J	
123478-HxCDD	390/392	44:28	1.25	1.0	J	
123678-HxCDD	390/392	44:33	1.09	1.6	J	
123789-HxCDD	390/392	44:49	1.25	2.2	J	
234678-HxCDF	374/376	44:21	1.15	5.3	J	
123789-HxCDF	374/376	44:60	1.18	0.8 u	J	
1234678-HpCDF	408/410	46:30	0.98	38.8		
1234678-HpCDD	424/426	47:25	1.02	40.5		
1234789-HpCDF	408/410	47:47	1.1	7.1		
OCDD	458/460	50:22	0.89	2745.6	E	
OCDF	442/444	50:30	0.97	46.2		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:28	0.72	0.65-0.89	63.6	40 - 120
13C-2378-TCDF	316/318	32:12	0.86	0.65-0.89	54.6	40 - 120
13C-12378-PeCDF	352/354	39:03	1.6	1.32-1.78	72.2	40 - 120
13C-12378-PeCDD	368/370	40:57	1.77	1.32-1.78	78.5	40 - 120
13C-123478-HxCDF	384/386	43:44	0.48	0.43-0.59	74.8	40 - 120
13C-123678-HxCDD	402/404	44:33	1.29	0.43-0.59	85.7	40 - 120
13C-1234678-HpCDF	418/420	46:29	0.44	0.37-0.51	80	40 - 120
13C-1234678-HpCDD	436/438	47:24	1.1	0.88 - 1.20	86.5	40 - 120
13C-OCDD	470/472	50:21	0.94	0.76-1.02	88.3	40 - 120
37Cl-2378-TCDD	328	33:29	NA	NA	7.1 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBD002

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721406.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD		X 1.0	
2378-TCDF	11.29	X 0.1	1.13
12378-PeCDF	6.57	X 0.05	0.33
12378-PeCDD	0.92	X 0.5	0.46
23478-PeCDF	3.06	X 0.5	1.53
123478-HxCDF	16.44	X 0.1	1.64
123678-HxCDF	5.95	X 0.1	0.59
123478-HxCDD	1.04	X 0.1	0.10
123678-HxCDD	1.58	X 0.1	0.16
123789-HxCDD	2.21	X 0.1	0.22
234678-HxCDF	5.29	X 0.1	0.53
123789-HxCDF	0.78	X 0.1	0.08
1234678-HpCDF	38.75	X 0.01	0.39
1234678-HpCDD	40.51	X 0.01	0.41
1234789-HpCDF	7.12	X 0.01	0.07
OCDD	2745.59	X 0.001	2.75
OCDF	46.22	X 0.001	0.05
		TOTAL =	10.43

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

0100611

Southwest Research Institute

Dioxin/Dibenzofuran Analysis Report

Sample ID

SBD002

Client ID: EPA
Case: SAS 8432B-01
SDG: SBC972
Matrix: L SOIL
Sample Wt/Vol: 10.1

Project: 01-6359-028
Date Received: 06/25/94
Date Extracted: 07/07/94
Date Analyzed: 07/21/94
Concentration Unit: pg/g

Lab Sample ID: 43795
Lab File Name: A07214U2_6
Final Extraction Vol: 20 uL
Dilution Factor: 1.0
Percent Dry: 88

CAS No.	ANALYTE	CONC	Q	EMPC	EDL	CRQL	RATIO	RT
1746-01-6	2,3,7,8-TCDD	ND		0.389		1.15		
40321-76-4	1,2,3,7,8-PeCDD	0.922				1.15	1.52	40:58
39227-28-6	1,2,3,4,7,8-HxCDD	1.04				2.87	1.25	44:28
57653-85-7	1,2,3,6,7,8-HxCDD	1.58				2.87	1.09	44:33
19408-74-3	1,2,3,7,8,9-HxCDD	2.21				2.87	1.25	44:49
35822-46-9	1,2,3,4,6,7,8-HpCDD	40.5				2.87	1.02	47:25
3268-87-9	OCDD	2750				5.74	0.890	50:22
51207-31-9	2,3,7,8-TCDF	11.3				1.15	0.780	32:15
57117-41-6	1,2,3,7,8-PeCDF	6.57				1.15	1.38	39:05
57117-31-4	2,3,4,7,8-PeCDF	3.06				1.15	1.51	40:24
70648-26-9	1,2,3,4,7,8-HxCDF	16.4				2.87	1.19	43:45
57117-44-9	1,2,3,6,7,8-HxCDF	5.94				2.87	1.18	43:51
72918-21-9	1,2,3,7,8,9-HxCDF	0.776				2.87	1.18	44:60
60851-34-5	2,3,4,6,7,8-HxCDF	5.29				2.87	1.15	44:21
67562-39-4	1,2,3,4,6,7,8-HpCDF	38.7				2.87	0.980	46:30
55673-89-7	1,2,3,4,7,8,9-HpCDF	7.11				2.87	1.10	47:47
39001-02-0	OCDF	46.2				5.74	0.970	50:30

Total Dioxin	CONC	Number	Total Dibenzofuran	CONC	Number
Total Tetra-Dioxins	6.02		Total Tetra-Furans	39.1	
Total Penta-Dioxins	14.2		Total Penta-Furans	41.0	
Total Hexa-Dioxins	19.1		Total Hexa-Furans	48.3	
Total Hepta-Dioxins	89.8		Total Hepta-Furans	57.8	

Internal Standard % Recovery

13C-2,3,7,8-TCDD:	63.6	13C-1,2,3,4,7,8-HxCDF:	74.8	13C-1,2,3,7,8-PeCDF:	72.2
13C-1,2,3,6,7,8-HxCDD:	85.7	13C-1,2,3,7,8-PeCDD:	78.5	13C-1,2,3,4,6,7,8-HpCDF:	80.0
13C-2,3,7,8-TCDF:	54.6	13C-1,2,3,4,6,7,8-HpCDD:	86.5	13C-OCDD:	88.3

SAS 8432B 01

Clean-Up Standard % Recovery

SDG SBC972

37Cl-2,3,7,8-TCDD NA

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBD002

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43795

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08074U1_15

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/07/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.1 g

Concentration Unit: pg/g

Percent Dry: 88

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	12.6			1.13	0.69	31:23

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBD003

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721407.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:30	0.68	0.3	J	
2378-TCDF	304/306	32:16	0.81	13.2		
12378-PeCDF	340/342	39:05	1.59	7.6		
12378-PeCDD	356/358	40:59	1.39	1.0	J	
23478-PeCDF	340/342	40:25	1.42	3.8		
123478-HxCDF	374/376	43:46	1.16	20.4		
123678-HxCDF	374/376	43:52	1.11	7.4		
123478-HxCDD	390/392	44:29	1.31	1.1	J	
123678-HxCDD	390/392	44:33	1.19	1.8	J	
123789-HxCDD	390/392	44:48	1.16	2.6	J	
234678-HxCDF	374/376	44:21	1.22	6.9	J	
123789-HxCDF	374/376	44:59	1.34	1.0	J	
1234678-HpCDF	408/410	46:30	0.95	50.8		
1234678-HpCDD	424/426	47:26	1.08	45.1		
1234789-HpCDF	408/410	47:48	0.98	8.9		
OCDD	458/460	50:22	0.94	2691.9	J ~~E~~	
OCDF	442/444	50:30	0.98	60.3		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:28	0.75	0.65-0.89	80.5	40 - 120
13C-2378-TCDF	316/318	32:13	0.85	0.65-0.89	68.6	40 - 120
13C-12378-PeCDF	352/354	39:04	1.55	1.32-1.78	84.9	40 - 120
13C-12378-PeCDD	368/370	40:58	1.63	1.32-1.78	98.2	40 - 120
13C-123478-HxCDF	384/386	43:45	0.49	0.43-0.59	81	40 - 120
13C-123678-HxCDD	402/404	44:33	1.26	0.43-0.59	92.6	40 - 120
13C-1234678-HpCDF	418/420	46:30	0.46	0.37-0.51	86.1	40 - 120
13C-1234678-HpCDD	436/438	47:25	1.08	0.88 - 1.20	98.1	40 - 120
13C-OCDD	470/472	50:21	0.96	0.76-1.02	102.6	40 - 120
37Cl-2378-TCDD	328	33:33	NA	NA	3.8 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBD003

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721407.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.30	X 1.0	0.30
2378-TCDF	13.17	X 0.1	1.32
12378-PeCDF	7.62	X 0.05	0.38
12378-PeCDD	0.97	X 0.5	0.49
23478-PeCDF	3.82	X 0.5	1.91
123478-HxCDF	20.40	X 0.1	2.04
123678-HxCDF	7.40	X 0.1	0.74
123478-HxCDD	1.07	X 0.1	0.11
123678-HxCDD	1.79	X 0.1	0.18
123789-HxCDD	2.56	X 0.1	0.26
234678-HxCDF	6.87	X 0.1	0.69
123789-HxCDF	1.00	X 0.1	0.10
1234678-HpCDF	50.79	X 0.01	0.51
1234678-HpCDD	45.14	X 0.01	0.45
1234789-HpCDF	8.87	X 0.01	0.09
OCDD	2691.86	X 0.001	2.69
OCDF	60.34	X 0.001	0.06
		TOTAL =	12.30

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

0100646

Southwest Research Institute

Dioxin/Dibenzofuran Analysis Report

Sample ID

SBD003

Client ID: EPA
Case: SAS 8432B-01
SDG: SBC972
Matrix: L SOIL
Sample Wt/Vol: 10.0

Project: 01-6359-028
Date Received: 06/25/94
Date Extracted: 07/07/94
Date Analyzed: 07/21/94
Concentration Unit: pg/g

Lab Sample ID: 43796
Lab File Name: A07214U2_7
Final Extraction Vol: 20 uL
Dilution Factor: 1.0
Percent Dry: 88

CAS No.	ANALYTE	CONC	Q	EMPC	EDL	CRQL	RATIO	RT
1746-01-6	2,3,7,8-TCDD	0.302				1.14	0.680	33:30
40321-76-4	1,2,3,7,8-PeCDD	0.973				1.14	1.39	40:59
39227-28-6	1,2,3,4,7,8-HxCDD	1.07				2.84	1.31	44:29
57653-85-7	1,2,3,6,7,8-HxCDD	1.79				2.84	1.19	44:33
19408-74-3	1,2,3,7,8,9-HxCDD	2.56				2.84	1.16	44:48
35822-46-9	1,2,3,4,6,7,8-HpCDD	45.1				2.84	1.08	47:26
3268-87-9	OCDD	2690				5.68	0.940	50:22
51207-31-9	2,3,7,8-TCDF	13.2				1.14	0.810	32:16
57117-41-6	1,2,3,7,8-PeCDF	7.62				1.14	1.59	39:05
57117-31-4	2,3,4,7,8-PeCDF	3.82				1.14	1.42	40:25
70648-26-9	1,2,3,4,7,8-HxCDF	20.4				2.84	1.16	43:46
57117-44-9	1,2,3,6,7,8-HxCDF	7.40				2.84	1.11	43:52
72918-21-9	1,2,3,7,8,9-HxCDF	0.998				2.84	1.34	44:59
60851-34-5	2,3,4,6,7,8-HxCDF	6.87				2.84	1.22	44:21
67562-39-4	1,2,3,4,6,7,8-HpCDF	50.8				2.84	0.950	46:30
55673-89-7	1,2,3,4,7,8,9-HpCDF	8.87				2.84	0.980	47:48
39001-02-0	OCDF	60.3				5.68	0.980	50:30

Total Dioxin	CONC	Number	Total Dibenzofuran	CONC	Number
Total Tetra-Dioxins	9.00		Total Tetra-Furans	52.2	
Total Penta-Dioxins	15.5		Total Penta-Furans	56.8	
Total Hexa-Dioxins	22.0		Total Hexa-Furans	63.3	
Total Hepta-Dioxins	96.6		Total Hepta-Furans	75.2	

Internal Standard % Recovery

13C-2,3,7,8-TCDD:	80.5	13C-1,2,3,4,7,8-HxCDF:	81.0	13C-1,2,3,7,8-PeCDF:	84.9
13C-1,2,3,6,7,8-HxCDD:	92.6	13C-1,2,3,7,8-PeCDD:	98.2	13C-1,2,3,4,6,7,8-HpCDF:	86.1
13C-2,3,7,8-TCDF:	68.6	13C-1,2,3,4,6,7,8-HpCDD:	98.1	13C-OCDD:	103

Clean-Up Standard % Recovery

37Cl-2,3,7,8-TCDD NA

SAS 8432 B 01

SDG SBC972

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBD003

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43796

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_4

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.0 g

Concentration Unit: pg/g

Percent Dry: 88

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	15.2			1.14	0.88	31:22

0100679

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBD004

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721408.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:32	0.82	0.4 UJ	J	
2378-TCDF	304/306	32:15	0.76	10.8		
12378-PeCDF	340/342	39:04	1.56	7.7		
12378-PeCDD	356/358	40:58	1.43	1.0	J	
23478-PeCDF	340/342	40:24	1.47	3.4		
123478-HxCDF	374/376	43:45	1.18	19.0		
123678-HxCDF	374/376	43:51	1.13	6.7	J	
123478-HxCDD	390/392	44:29	1.3	1.5	J	
123678-HxCDD	390/392	44:33	1.07	2.1	J	
123789-HxCDD	390/392	44:49	1.14	2.9	J	
234678-HxCDF	374/376	44:20	1.17	6.7	J	
123789-HxCDF	374/376	44:59	1.08	0.8 UJ	J	
1234678-HpCDF	408/410	46:30	1.01	48.0		
1234678-HpCDD	424/426	47:25	1.07	65.9		
1234789-HpCDF	408/410	47:47	1.03	7.5		
OCDD	458/460	50:22	0.93	3540.4	J E	
OCDF	442/444	50:30	0.98	47.7		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:27	0.75	0.65-0.89	55.4	40 - 120
13C-2378-TCDF	316/318	32:12	0.84	0.65-0.89	46.4	40 - 120
13C-12378-PeCDF	352/354	39:03	1.59	1.32-1.78	71.6	40 - 120
13C-12378-PeCDD	368/370	40:57	1.68	1.32-1.78	85.5	40 - 120
13C-123478-HxCDF	384/386	43:44	0.49	0.43-0.59	76.8	40 - 120
13C-123678-HxCDD	402/404	44:32	1.26	0.43-0.59	88	40 - 120
13C-1234678-HpCDF	418/420	46:29	0.46	0.37-0.51	84	40 - 120
13C-1234678-HpCDD	436/438	47:24	1.1	0.88 - 1.20	90.1	40 - 120
13C-OCDD	470/472	50:21	0.96	0.76-1.02	92.1	40 - 120
37Cl-2378-TCDD	328	33:28	NA	NA	4.6 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBD004

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.10 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721408.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.41	X 1.0	0.41
2378-TCDF	10.80	X 0.1	1.08
12378-PeCDF	7.69	X 0.05	0.38
12378-PeCDD	0.97	X 0.5	0.49
23478-PeCDF	3.39	X 0.5	1.70
123478-HxCDF	18.99	X 0.1	1.90
123678-HxCDF	6.70	X 0.1	0.67
123478-HxCDD	1.52	X 0.1	0.15
123678-HxCDD	2.12	X 0.1	0.21
123789-HxCDD	2.95	X 0.1	0.29
234678-HxCDF	6.68	X 0.1	0.67
123789-HxCDF	0.76	X 0.1	0.08
1234678-HpCDF	47.99	X 0.01	0.48
1234678-HpCDD	65.89	X 0.01	0.66
1234789-HpCDF	7.53	X 0.01	0.08
OCDD	3540.37	X 0.001	3.54
OCDF	47.66	X 0.001	0.05
		TOTAL =	12.83

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBD004

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43797

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_5

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.1 g

Concentration Unit: pg/g

Percent Dry: 91

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	12.6			1.09	0.87	31:22

0100713

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBD005

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721409.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:25	1.47 *		U	0.16
2378-TCDF	304/306	32:16	0.8	~~3.8~~ [illegible]	J	
12378-PeCDF	340/342	39:04	1.37	1.7	J	
12378-PeCDD	356/358	40:58	1.37	0.4 U	J	
23478-PeCDF	340/342	40:25	1.48	1.4	J	
123478-HxCDF	374/376	43:43	1.17	8.6		
123678-HxCDF	374/376	43:51	1.14	3.2	J	
123478-HxCDD	390/392	44:29	1.22	0.6 [illegible]	J	
123678-HxCDD	390/392	44:33	1.25	1.0	J	
123789-HxCDD	390/392	44:48	1.08	1.4	J	
234678-HxCDF	374/376	44:21	1.14	3.9	J	
123789-HxCDF	374/376	44:60	1.12	0.3 U	J	
1234678-HpCDF	408/410	46:30	1.02	28.6		
1234678-HpCDD	424/426	47:25	1.07	25.3		
1234789-HpCDF	408/410	47:47	1.07	2.3	J	
OCDD	458/460	50:22	0.89	3035.0	J ~~E~~	
OCDF	442/444	50:30	0.98	18.2		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:27	0.74	0.65-0.89	49.8	40 - 120
13C-2378-TCDF	316/318	32:12	0.85	0.65-0.89	43.9	40 - 120
13C-12378-PeCDF	352/354	39:03	1.61	1.32-1.78	65.3	40 - 120
13C-12378-PeCDD	368/370	40:57	1.68	1.32-1.78	81.7	40 - 120
13C-123478-HxCDF	384/386	43:44	0.49	0.43-0.59	74.2	40 - 120
13C-123678-HxCDD	402/404	44:33	1.29	0.43-0.59	87.5	40 - 120
13C-1234678-HpCDF	418/420	46:29	0.45	0.37-0.51	87.9	40 - 120
13C-1234678-HpCDD	436/438	47:24	1.07	0.88 - 1.20	94.3	40 - 120
13C-OCDD	470/472	50:21	0.93	0.76-1.02	104.6	40 - 120
37Cl-2378-TCDD	328	33:28	NA	NA	1.3 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard. is Optional

* from confirmation analysis

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBD005

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721409.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD		X 1.0	
2378-TCDF	3.78	X 0.1	0.38
12378-PeCDF	1.75	X 0.05	0.09
12378-PeCDD	0.43	X 0.5	0.21
23478-PeCDF	1.45	X 0.5	0.72
123478-HxCDF	8.59	X 0.1	0.86
123678-HxCDF	3.19	X 0.1	0.32
123478-HxCDD	0.61	X 0.1	0.06
123678-HxCDD	0.97	X 0.1	0.10
123789-HxCDD	1.37	X 0.1	0.14
234678-HxCDF	3.91	X 0.1	0.39
123789-HxCDF	0.26	X 0.1	0.03
1234678-HpCDF	28.56	X 0.01	0.29
1234678-HpCDD	25.25	X 0.01	0.25
1234789-HpCDF	2.30	X 0.01	0.02
OCDD	3035.00	X 0.001	3.04
OCDF	18.23	X 0.001	0.02
		TOTAL =	6.91

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBD005

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43798

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_6

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.2 g

Concentration Unit: pg/g

Percent Dry: 95

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	2.33			1.08	0.78	31:20

0100747

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBD006

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:27	0.86	0.3 U	J	
2378-TCDF	304/306	32:13	0.79	8.5		
12378-PeCDF	340/342	39:03	1.4	3.0		
12378-PeCDD	356/358	40:56	1.47	1.3	J	
23478-PeCDF	340/342	40:23	1.5	3.3		
123478-HxCDF	374/376	43:42	1.18	14.6		
123678-HxCDF	374/376	43:50	1.24	5.4	J	
123478-HxCDD	390/392	44:28	1.25	1.4	J	
123678-HxCDD	390/392	44:32	1.39	1.9	J	
123789-HxCDD	390/392	44:48	1.29	2.7	J	
234678-HxCDF	374/376	44:20	1.15	6.6		
123789-HxCDF	374/376	44:58	1.18	0.5 U	J	
1234678-HpCDF	408/410	46:29	1.04	35.3		
1234678-HpCDD	424/426	47:24	1.02	57.2		
1234789-HpCDF	408/410	47:47	0.9	4.3	J	
OCDD	458/460	50:22	0.92	8565.4	E	
OCDF	442/444	50:30	0.95	28.2		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:26	0.74	0.65-0.89	82.4	40 - 120
13C-2378-TCDF	316/318	32:10	0.87	0.65-0.89	68	40 - 120
13C-12378-PeCDF	352/354	39:02	1.52	1.32-1.78	80.9	40 - 120
13C-12378-PeCDD	368/370	40:55	1.73	1.32-1.78	81.8	40 - 120
13C-123478-HxCDF	384/386	43:44	0.48	0.43-0.59	80.1	40 - 120
13C-123678-HxCDD	402/404	44:31	1.34	0.43-0.59	89.5	40 - 120
13C-1234678-HpCDF	418/420	46:28	0.44	0.37-0.51	85.3	40 - 120
13C-1234678-HpCDD	436/438	47:24	1.05	0.88 - 1.20	89.9	40 - 120
13C-OCDD	470/472	50:21	0.94	0.76-1.02	88.5	40 - 120
37Cl-2378-TCDD	328	33:27	NA	NA	4.2 *	0 - 0

Column to be used to flag values outside QC limits.

37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1

(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBD006

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.20 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721410.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/21/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.34	X 1.0	0.34
2378-TCDF	8.50	X 0.1	0.85
12378-PeCDF	2.97	X 0.05	0.15
12378-PeCDD	1.29	X 0.5	0.64
23478-PeCDF	3.30	X 0.5	1.65
123478-HxCDF	14.61	X 0.1	1.46
123678-HxCDF	5.35	X 0.1	0.54
123478-HxCDD	1.39	X 0.1	0.14
123678-HxCDD	1.91	X 0.1	0.19
123789-HxCDD	2.66	X 0.1	0.27
234678-HxCDF	6.62	X 0.1	0.66
123789-HxCDF	0.50	X 0.1	0.05
1234678-HpCDF	35.25	X 0.01	0.35
1234678-HpCDD	57.24	X 0.01	0.57
1234789-HpCDF	4.34	X 0.01	0.04
OCDD	8565.39	X 0.001	8.57
OCDF	28.18	X 0.001	0.03
		TOTAL =	16.50

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

Southwest Research Institute

2,3,7,8-TCDF CONFIRMATION ANALYSIS REPORT

Sample ID

SBD006

Client ID: EPA

Project: 01-6359-028

Lab Sample ID: 43799

Case: SAS 8432B-01

Date Received: 06/25/94

Lab File Name: A08084U1_7

SDG: SBC972

Date Extracted: 07/07/94

Final Extraction Vol: 20 uL

Matrix: SOIL

Date Analyzed: 08/08/94

Dilution Factor: 1.0

Sample Wt/Vol: 10.2 g

Concentration Unit: pg/g

Percent Dry: 94

ANALYTE	CONC.	Q	EMPC	CRQL	RATIO	RT
2,3,7,8-TCDF	4.21			1.05	0.80	31:20

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBD007

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721411.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:28	0.72	0.1	J	
2378-TCDF	304/306	32:13	0.83	1.3	J	
12378-PeCDF	340/342	39:05	1.71	0.8	J	
12378-PeCDD	356/358	40:57	1.42	0.2	J	
23478-PeCDF	340/342	40:25	1.49	0.6	J	
123478-HxCDF	374/376	43:44	1.26	2.8	J	
123678-HxCDF	374/376	43:50	1.14	1.0	J	
123478-HxCDD	390/392	44:28	1.17	0.5	J	
123678-HxCDD	390/392	44:33	1.1	0.4	J	
123789-HxCDD	390/392	44:47	1.17	0.8	J	
234678-HxCDF	374/376	44:20	1.27	1.1	J	
123789-HxCDF	374/376	44:59	0.80 *		U	0.15
1234678-HpCDF	408/410	46:30	0.97	7.3		
1234678-HpCDD	424/426	47:25	1	48.5		
1234789-HpCDF	408/410	47:47	0.96	1.2	J	
OCDD	458/460	50:21	0.91	9555.5	E	
OCDF	442/444	50:29	0.95	9.3	J	

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:25	0.76	0.65-0.89	72.3	40 - 120
13C-2378-TCDF	316/318	32:11	0.88	0.65-0.89	59.6	40 - 120
13C-12378-PeCDF	352/354	39:03	1.53	1.32-1.78	70.9	40 - 120
13C-12378-PeCDD	368/370	40:56	1.77	1.32-1.78	68.4	40 - 120
13C-123478-HxCDF	384/386	43:44	0.49	0.43-0.59	83.8	40 - 120
13C-123678-HxCDD	402/404	44:32	1.37	0.43-0.59	78	40 - 120
13C-1234678-HpCDF	418/420	46:29	0.44	0.37-0.51	83.7	40 - 120
13C-1234678-HpCDD	436/438	47:24	1.04	0.88 - 1.20	90	40 - 120
13C-OCDD	470/472	50:20	0.94	0.76-1.02	95.8	40 - 120
37Cl-2378-TCDD	328	33:26	NA	NA	1.2 *	0 - 0

Column to be used to flag values outside QC limits.

37Cl-2378-TCDD Cleanup Standard. is Optional

FORM I PCDD-1

(Form Modified for HRMS Method 8290)

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBD007

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: A0721411.LIS
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/22/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.08	X 1.0	0.08
2378-TCDF	1.32	X 0.1	0.13
12378-PeCDF	0.79	X 0.05	0.04
12378-PeCDD	0.18	X 0.5	0.09
23478-PeCDF	0.57	X 0.5	0.29
123478-HxCDF	2.84	X 0.1	0.28
123678-HxCDF	1.04	X 0.1	0.10
123478-HxCDD	0.48	X 0.1	0.05
123678-HxCDD	0.44	X 0.1	0.04
123789-HxCDD	0.76	X 0.1	0.08
234678-HxCDF	1.14	X 0.1	0.11
123789-HxCDF		X 0.1	0.00
1234678-HpCDF	7.27	X 0.01	0.07
1234678-HpCDD	48.47	X 0.01	0.48
1234789-HpCDF	1.25	X 0.01	0.01
OCDD	9555.54	X 0.001	9.56
OCDF	9.33	X 0.001	0.01
		TOTAL =	11.43

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON NJ 08837

&EPA

FACSIMILE REQUEST AND COVER SHEET

PLEASE PRINT IN BLACK INK ONLY

TO

MARIA PADILLA or Joseph Pan

OFFICE/PHONE

522-5896

SUBJECT: Analytical Data - Case # 8432 B-01

REGION/LAB

FROM

STELIOS GERAZOUNIS

PHONE

(908) 321 6718

MAIL CODE

OFFICE

U.S. EPA

DATE

11/8/94

PAGES TO INCLUDE THIS COVER SHEET

?

Resubmitted Data

ESSAGES

EC

VERIFICATION NUMBER

DEX 3200

622

FTS: (908) 906-6165
Comm

VL

(Date)

om)

PAGE ___ OF ___ PAGES

In Reference to Case No(s): 8432B-01

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 11/8/94

Laboratory Name: SWRI
Lab Contact: Maria Padilla
Region: II
Regional Contact: Stelios Gerazounis

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):
SDG SBC 972 and SDG SBC 984

Summary of Questions/Issues Discussed:
The PCDD/PCDF Analytical Sequence Summary, FORM 5DFC, lists GC column 60M DB-5 10.35mm for 2378TCDF confirmation analysis. However, the same GC column was used for primary analysis. Please explain

Summary of Resolution:

Signature Stelios Gerazounis Date 11/8/94

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

MESSAGE CONFIRMATION

DATE:11/08/94 TIME:10:30

ID:EPA EDISON NJ 90

DATE	TIME	TX-TIME	DISTANT STATION ID	MODE	PAGES	RESULT
11/08	10:29	01'01"	5125222021	G3-S	002	OK

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON NJ 08837

EPA

FACSIMILE REQUEST AND COVER SHEET

PLEASE PRINT IN BLACK INK ONLY

TO: MARIA PADILLA

OFFICE/PHONE: 522-5896

SUBJECT: Dioxin
Case # 8432B-01

REGION/LAB:

FROM: STELIOS GERAZOUNIS

PHONE: (908) 321-6718

MAIL CODE:

OFFICE: U.S. EPA Region II

DATE: 11/2/94

NUMBER OF PAGES TO INCLUDE THIS COVER SHEET: 2

Please number all pages

INFORMATION FOR SENDING FACSIMILE MESSAGES

EQUIPMENT	FACSIMILE NUMBER	VERIFICATION NUMBER
DEX 3200	FTS: Comm: (908) 321-6622	FTS: Comm: (908) 906-6165

VERIFICATION:

_____ / _____ / _____
(Date) (Time) (By Whom)

PAGE ___ OF ___ PAGES

In Reference to Case No(s):
8432B-01

SDG SBC972

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 11/2/94

Laboratory Name: SWRI
Lab Contact: Maria Padilla
Region: II
Regional Contact: Stelios Gerazoumis

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):
Sample SBC979RE p. 100310 and SBD001MS, SBD 001MSD
SBC980RE p. 100372
and other dilution data

Summary of Questions/Issues Discussed:
1. We cannot verify concentrations shown on Form I
Did the lab include the dilution factor in the calculation?
2. Matrix spike & Matrix Spike duplicate SBD001MS + MSD
We cannot verify % recoveries (FORM III, p. 0100001 + 01A)
Please let us know as soon as possible
Tel. (908) 321-6718

Summary of Resolution:

Stelios Gerazoumis
Signature

11/2/94
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

MESSAGE CONFIRMATION

DATE:11/02/94 TIME:13:21

ID:EPA EDISON NJ 90

DATE	TIME	TX-TIME	DISTANT STATION ID	MODE	PAGES	RESULT
11/02	13:19	01'04"	5125222021	G3-S	002	OK

MESSAGE CONFIRMATION

DATE:11/02/94 TIME:10:55

ID:EPA EDISON NJ 90

DATE	TIME	TX-TIME	DISTANT STATION ID	MODE	PAGES	RESULT
11/02	10:52	02'00"	5125222021	G3-S	004	OK

SOUTHWEST RESEARCH INSTITUTE
6220 Culebra Road • Post Office Box 28510 • San Antonio, Texas, USA 78228-0510 • (210) 684-5111 • TELEX 244846

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
BUILDING 70, 149 TOM SLICK

TRANSMITTAL SHEET

DATE	11/6/94	CHARGE	OH
NO. OF PAGES (INCLUDING COVER SHEET)	~~13~~ 15		
TO	EPA Region 2 Attn: Mr. Stelios Gerazounis		
OFFICE TELEPHONE			
FAX TELEPHONE	908-417-5727		
FROM	Joseph PAN		
TELEPHONE	(210) 522-5781		

NOTES: Some errors were found in SBC979 original analysis. The corrected Form I and quant reports shall be faxed to you by Monday noon. No errors were found in SBC980 and SBC980RE. New Form IIIs are attached

These are preliminary responses. Hard copies will follow

SOUTHWEST RESEARCH INSTITUTE SWITCHBOARD TELEPHONE IS 210/684-5111. PLEASE SEND RETURN TRANSMISSIONS TO 210/522-3649. THE FAX MACHINE IS A XEROX 7033 AND WILL AUTOMATICALLY RECEIVE 24 HOURS A DAY. FOR MANUAL ASSISTANCE OR VERIFICATION, PLEASE CALL 210/522-2171.

PRELIMINARY RESPONSE

In response to questions/concerns from U.S. EPA Region II for SAS 8432B-01 dated 11/02/94 regarding SBC979RE, SBC980RE, SBD001MS, and SBD001MSD:

Q 1. We cannot verify concentration shown on Form I. Did the lab include the dilution factor in the calculation.

A 1. For all dilution analyses, no additional internal standards were added to the sample extracts. Only more solvent was added to the sample injection vial. For this reason, **one should not take the concentrations from the quantitation reports and multiply them with dilution factors.** For example, the 2378-TCDD concentration for SBC797RE is calculated as follows: 19.945 pg/uL x 20 uL ÷ 10 g ÷ 0.74 (%dry) = 53.9 pg/g which agrees with FORM I on page 100310. The CLP FORM I gives no field for % dry weight information. The % dry weight information can be found in the extraction record. The original analysis results for sample SBC797 had very high concentrations of PCDD/PCDF. As a result, many of the peaks in the original analysis saturated the detector, overloaded the column, and had retention time shifts. The analyst inadvertently submitted the uncorrected data. In this resubmission of Form 1 and quantitation report for SBC979, peak identification and integration errors have been corrected. For data of SBC980 and SBC980 RE, no errors were found. We consider an 18% RPD (22.8 ppt vs 27.3 ppt) for 2378-TCDD concentration is not excessively high considering sample extract being analyzed on different day, different instrument, and at different concentration levels.

FAX by Mon. noon

Q2. Matrix spike/matrix spike duplicate (SBD001MS & MSD). We cannot verify % recovery (FORM III, p. 100001 & 1A).

A 2. All of the FORM IIIs we have submitted were correct. Unfortunately, a simple matter became complicated by the fact that there are sample and sample duplicate, and there are original analysis and reanalysis. The CLP Form III does not provide a place for filename information. As a result, one cannot easily figure out whether the sample or the sample DUP was used, and whether the original analysis or the reanalysis data was used. In the previously submitted Form IIIs, calculations were based on the duplicate sample analysis for MS/MSD %

recovery calculations, and the data are correct.

To make the matter simple, we have decided to use sample data (instead of sample duplicate data) for the "SAMPLE CONCENTRATION", and to use the original analysis data (instead of reanalysis data) to generate the Form IIIs. We have also changed the unit for the "SPIKE ADDED" from "pg" to "PG/G" (on a dry weight basis). The original form showed SPIKE ADDED in (pg) the software internally computed the concentration based on the dry weight to make the correct calculations, this modification should make all the units more consistent . There is a form for sample and duplicate sample summary (FORM III PCDD-2, or 3DFB). There is no CLP Forms for MS/MSD evaluation. However, we figured EPA Region 2 would be interested in seeing PRDs of MS/MSD analyses. We went ahead and created such form for MS/MSD evaluation, and called it "FORM III PCDD-2A". These changes should make it very simple to verify the values.

The new FORM IIIs for SBD001 (and SBD001 MS, MSD) and SBC985 (and SBD985 MS, MSD) are included. We have also included new FORM IIIs for SBC954 (and SBC954 MS, MSD) of SAS 8431B-01.

SOUTHWEST RESEARCH INSTITUTE

6220 Culebra Road • Post Office Box 28510 • San Antonio, Texas, USA 78228-0510 • (210) 684-5111 • TELEX 244846

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
BUILDING 70, 149 TOM SLICK

TRANSMITTAL SHEET

DATE	11-7-94	CHARGE	OH
NO. OF PAGES (INCLUDING COVER SHEET)	14		
TO	EPA Region 2		
	[redacted]		
OFFICE TELEPHONE			
FAX TELEPHONE	908-417-5727		
FROM	Joseph Pax		
TELEPHONE	(210)522-5781		
NOTES: Preliminary Response for Request of 11-2-94			

These are the corrected pages for the original analysis of sample SBC979 (SAS 8432B-01). Page 100281 in the original data package is a duplicate of page 100280. It contains incorrect data and should be removed. All corrected data are in page 100280 which is being submitted. Therefore, page 100281 should be removed without a replacement.

SOUTHWEST RESEARCH INSTITUTE SWITCHBOARD TELEPHONE IS 210/684-5111. PLEASE SEND RETURN TRANSMISSIONS TO 210/522-3649. THE FAX MACHINE IS A XEROX 7033 AND WILL AUTOMATICALLY RECEIVE 24 HOURS A DAY. FOR MANUAL ASSISTANCE OR VERIFICATION, PLEASE CALL 210/522-2171.

100277

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC979

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL.: 10.00 g (g/l.)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 ul.
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: s0725407.ls
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:20	0.87	46.5		
2378-TCDF	304/306	32:07	0.84	2687.4	E	
12378-PeCDF	340/342	38:56	1.49	604.9		
12378-PeCDD	356/358	40:51	1.51	194.4		
23478-PeCDF	340/342	40:17	1.48	1029.0	E	
123478-HxCDF	374/376	43:40	1.19	2799.8	E	
123678-HxCDF	374/376	43:47	1.19	1106.0		
123478-HxCDD	390/392	44:25	1.22	204.4		
123678-HxCDD	390/392	44:30	1.23	281.8		
123789-HxCDD	390/392	44:44	1.21	472.7		
234678-HxCDF	374/376	44:17	1.18	1267.2		
123789-HxCDF	374/376	44:56	1.26	71.9		
1234678-HpCDF	408/410	46:27	1.03	5074.5	E	
1234678-HpCDD	424/426	47:22	1.07	2370.5	E	
1234789-HpCDF	408/410	46:40	1.04	988.4		
OCDD	458/460	50:17	0.93	2787.5		
OCDF	442/444	50:25	0.97	2372.4		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:19	0.75	0.65 - 0.89	78.4	40 - 120
13C-2378-TCDF	316/318	32:03	0.88	0.65 - 0.89	69	40 - 120
13C-12378-PeCDF	352/354	38:55	1.5	1.24 - 1.86	78.9	40 - 120
13C-12378-PeCDD	368/370	40:51	1.72	1.24 - 1.86	77.8	40 - 120
13C-123478-HxCDF	384/386	43:40	0.5	0.43 - 0.59	84.1	40 - 120
13C-123678-HxCDD	402/404	44:29	1.32	1.05 - 1.43	82.6	40 - 120
13C-1234678-HpCDF	418/420	46:26	0.46	0.37 - 0.51	86.3	40 - 120
13C-1234678-HpCDD	436/438	47:21	1.07	0.88 - 1.20	87.2	40 - 120
13C-OCDD	470/472	50:17	0.94	0.76 - 1.02	83.3	40 - 120
37Cl-2378-TCDD	328	23:15	NA	NA	3960.1 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard is Optional

FORM I PCDD-1

(Form Modified for HRMS Method 8290)

100278

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC979

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: a0725407.Ba
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	46.55	X 1.0	46.55
2378-TCDF	2687.44	X 0.1	268.74
12378-PeCDF	604.92	X 0.05	30.25
12378-PeCDD	194.40	X 0.5	97.20
23478-PeCDF	1029.01	X 0.5	514.50
123478-HxCDF	2799.79	X 0.1	279.98
123678-HxCDF	1105.96	X 0.1	110.60
123478-HxCDD	204.42	X 0.1	20.44
123678-HxCDD	281.82	X 0.1	28.18
123789-HxCDD	472.71	X 0.1	47.27
234678-HxCDF	1267.15	X 0.1	126.72
123789-HxCDF	71.88	X 0.1	7.19
1234678-HpCDF	5074.52	X 0.01	50.75
1234678-HpCDD	2370.55	X 0.01	23.71
1234789-HpCDF	988.38	X 0.01	9.88
OCDD	2787.55	X 0.001	2.79
OCDF	2372.43	X 0.001	2.37
		TOTAL =	1667.11

NOTE: Do not include RMPC or EDL values in the TEF-adjusted Concentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2

(Form Modified for HRMS Method 8290)

100279

2DF
PCDD/PCDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY

EPA SAMPLE NO.

SBC979

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sepf/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: a0726407.lls
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
TOTAL TCDD	15	1764.1		
TOTAL PeCDD	12	3366.6		
TOTAL HxCDD	7	2026.4		
TOTAL HpCDD	2	4814.5		
FURANS				
TOTAL TCDF	19	10536.1		
TOTAL PeCDF	14	11394.7		
TOTAL HxCDF	12	10186.2		
TOTAL HpCDF	4	7261.2		

NOTE: Concentrations, EMPCs, and EDLs are calculated on a wet weight basis.
The total congener concentrations do not affect the TEF calculations.

FORM II PCDD
(Form Modified for HRMS Method 8290)

In Reference to Case No(s):
22140, 22141

Other Cases pending:
22292, 8432B-01

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 9/22/94

Laboratory Name: SWRI

Lab Contact: JoAnn Boyd 210-684-5111

Region: II

Regional Contact: Stelios Gerazounis 908-321-6718

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):
Two PCDD/PCDF Cases: 22140 & 22141
And two pending Cases 22292, 8432B-01

Summary of Questions/Issues Discussed:
1. Confirmation Analyses
Missing supporting data ie Calibration, analytical sequence, column performance check.
2. Method 8290 Several forms are missing:
Total homologue, method blank summary, window defining mix summary, resolution summary
SAS states that CLP-like forms must be submitted.

Summary of Resolution:

Stelios Gerazounis
Signature

9/22/94
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

SAS 84313-04

RAS # 22292

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON NJ 08837

EPA

FACSIMILE REQUEST AND COVER SHEET

PLEASE PRINT IN BLACK INK ONLY

TO: Jo Ann Boyd

OFFICE/PHONE: SWRI (210) 684-5111

SUBJECT: DATA VALIDATION CASE # 8432B-01

REGION/LAB:

FROM: Stelios Gerazounis

PHONE: (908) 321-6718

MAIL CODE:

OFFICE: U.S.EPA Region II

DATE: 9/28/94

NUMBER OF PAGES TO INCLUDE THIS COVER SHEET: 2

Please number all pages

INFORMATION FOR SENDING FACSIMILE MESSAGES

EQUIPMENT	FACSIMILE NUMBER	VERIFICATION NUMBER
DEX 3200	FTS: Comm (908) 321-6622	FTS: Comm (908) 906-6165

VERIFICATION:

_____ / _____ / _____
(Date) (Time) (By Whom)

PAGE ___ OF ___ PAGES

In Reference to Case No(s): 8432B-01

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 9/28/94

Laboratory Name: SWRI

Lab Contact: Jo Ann Boyd (210) 684-5111

Region: II

Regional Contact: Stelios Gerazounis

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):

SDGs SBC972 and SBC984

Summary of Questions/Issues Discussed:

Missing Supporting Data

1. Column Performance Check Standard Summary Form V-PCDD-1 Showing RT of first and last eluters
2. The Quan report showing RT, peak areas, height, etc for initial calibration performed on 7/20/94 is missing. The QUAN reports for all Continuing calibrations are missing. Not all the SIM chromatograms show the peak areas. It is not possible to (calculate) verify RRFs.

~~Summary of Resolution:~~

3. In addition to the QUAN report, the SIM chromatograms for Continuing calibration of 7/24/94 at 3:07 are also missing.
4. The analytical Sequence Form V PCDD-3 is missing for all analyse
5. The PCDD/PCDF Blank summary, Form IV-PCDD is also missing.

Stelios Gerazounis
Signature

9/28/94
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

MESSAGE CONFIRMATION

DATE:09/28/94 TIME:12:27

ID:EPA EDISON NJ 90

DATE	TIME	TX-TIME	DISTANT STATION ID	MODE	PAGES	RESULT
09/28	12:25	01'11"	5125222021	G3-S	002	OK

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON NJ 08837

EPA

FACSIMILE REQUEST AND COVER SHEET

PLEASE PRINT IN BLACK INK ONLY

TO: JOSEPH PAN

OFFICE/PHONE: SWR II - Lab.

SUBJECT: Code # 8432B-01 PE SAMPLE

REGION/LAB:

FROM: STELIOS GERAZOUNIS

PHONE: (908) 321 6718

MAIL CODE:

OFFICE: US EPA REGION II

DATE: 9/30/94

NUMBER OF PAGES TO INCLUDE THIS COVER SHEET: 2

Please number all pages

INFORMATION FOR SENDING FACSIMILE MESSAGES

EQUIPMENT	FACSIMILE NUMBER	VERIFICATION NUMBER
DEX 3200	FTS: Comm: (908) 321-6622	FTS: Comm: (908) 906-6165

VERIFICATION:

_____ / _____ / _____
(Date) (Time) (By Whom)

PAGE ___ OF ___ PAGES

In Reference to Case No(s):
8432 B-01

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 9/30/94

Laboratory Name: SWRI (210)
Lab Contact: Joseph Pan 522 5896 5781
Region: II
Regional Contact: Stelios Gerazounis

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):
Sample SB8022

Summary of Questions/Issues Discussed:
The results of PE sample SB8022 were outside the EPA acceptance windows.

Summary of Resolution:
As per telephone conversation please reextract and reanalyze Sample # SB8022

Joe, For your information,
The SAS number for Cases 22140 and 22141 is SAS 8402 B-01.

Stelios Gerazounis
Signature

9/30/94
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

MESSAGE CONFIRMATION

DATE:09/30/94 TIME:12:36

ID:EPA EDISON NJ 90

DATE	TIME	TX-TIME	DISTANT STATION ID	MODE	PAGES	RESULT
09/30	12:35	01'02"	5125222021	G3-S	002	OK

R SM
8402B

In Reference to Case No(s):
22140, 22141

Other Cases pending:
22292, 8432B-01

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 9/22/94

Laboratory Name: SWRI

Lab Contact: JoAnn Boyd 210-684-5111

Region: II

Regional Contact: Stelios Gerazounis 908-321-6718

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):

Two PCDD/PCDF Cases: 22140 + 22141
And two pending Cases 22292, 8432B-01

Summary of Questions/Issues Discussed:

1. Confirmation Analyses
Missing supporting data ie Calibration, analytical sequence, column performance check.
2. Method 8290 Several forms are missing:
Total homologue, method Blank summary, window defining mix summary, resolution summary.
SAS states that CLP-like forms must be submitted.

Summary of Resolution:

Stelios Gerazounis
Signature

9/22/94
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

From: patricia sheridan
To: sgerazou
Date: Thursday, August 25, 1994 1:59 pm
Subject: sas dioxin issues w/swri

Stelios: I spoke with Kathy Pegram this morning regarding the 3 dioxin cases analyzed by SWRI laboratory for Franklin Burn (2 cases) and Malaga Road Ash Pile (1 case). She was wondering what the Region had decided regarding the acceptance of SWRI's reanalysis and dilution costs due to matrix interference associated with all 3 cases. You have a copy of the fax SMO sent me on August 19, 1994. I informed her that it was certainly premature of the Region to make a decision, as we have not completed data review. Besides, I believe only 1 of the 3 cases is here in the Region, the Franklin Burn Case #8402-B-01. I told her that you thought that some of the initial analysis, that information justifying why they should pursue reanalysis/dilutions, was missing. As you told me this morning, ESAT was just given the 2 boxes of data for Case #8402-B-01, and you thought that maybe the reanalysis data was in the 2nd box. Please keep on top of ESAT while they are validating this data. It is important to know the following:

1. Is there reanalysis/dilution data present?

2. If so, is the ESAT data validator using this data for their review?

3. If so, SMO will have to pay SWRI for those reanalysis/dilution costs.

As soon as ESAT completes their review, and you complete your check, the Region needs to inform SMO that the reanalysis/dilution data was used in the review of the data. Thus, justifying payment to SWRI.

Please remember, SWRI is applying this same process to the other 2 cases, Malaga Road /Case #8432B-01 and Franklin Burn/Case #8431B-01. Please review the 2nd page of the fax, as SWRI is justifying why they intend to run reanalyses/dilutions for the samples associated with these 2 cases. Do you agree with what SWRI has outlined, for example, some samples have the percent recovery low, the percent recovery out, RS area out, etc. Please inform Kathy Pegram/SMO is you agree with SWRI in their justification of pursuing reanalysis/diltuions with the samples associated with these 2 cases.

I informed Kathy that you will be the contact on this, as I am on vacation till September 12th. Thanks, Stelios.

P.S. You should contact regarding your PE question..whether SWRI ran acceptable dioxin PEs for Region I.

CC: kkubik

Franklin Burn Site
Case No.SAS 8431B-01 and SAS 8432B-01
Comments from Stelios Gerazounis to the ESAT Reviewer.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON NJ 08837

EPA

FACSIMILE REQUEST AND COVER SHEET

PLEASE PRINT IN BLACK INK ONLY

TO: KATHY HOULE PEGRAM

OFFICE/PHONE: SAS Coordinator

SUBJECT: Reanalyses/Dilutions

REGION/LAB:

FROM: STELIOS GERAZOUNIS - MMB Region II

PHONE: (908) 321 6718

MAIL CODE:

OFFICE: MMB - Region II

DATE: 8/25/94

NUMBER OF PAGES TO INCLUDE THIS COVER SHEET: 3

Please number all pages

INFORMATION FOR SENDING FACSIMILE MESSAGES

EQUIPMENT	FACSIMILE NUMBER	VERIFICATION NUMBER
DEX 3200	FTS: Comm: (908) 321-6622	FTS: Comm: (908) 906-6165

VERIFICATION:

_____ / _____ / _____
(Date) (Time) (By Whom)

PAGE ___ OF ___ PAGES

Response to the reanalyses/dilution Requests
Case # SAS8432B01

Sample ID	Response
SBC980	Why 3X dilution?
976	Do not reanalyze. Rerun only if Internal Standard recovery is < 25%
977	Same as 976
984	Rerun only if RS area is < 25%
986	Do not dilute if OCDF or OCDD concentration exceeded upper calibration limit but < 100%
990, 991	See 976 above
992	See 976 above
SB8022	See 976 above
023	Dilute
024	See 976 above
SBC979	Rerun if RC area is < 25%
SBC985MS	See 976 above
SBC985MSD	Do not repeat if I.S recovery is < 150%

Response to the reanalyses/dilution requests

Case # SAS 8431B-01

Sample I.D	Response
SBC967	Rerun only if RC area is < 25%
968	Same as 967 above
969	Same " " "
970	Same " " "
934	Do not rerun
954 DUP	What is the problem?
955	Rerun only if I.S recovery is < 25%
957	Same as 955 above
958	Same as 967 above
965	Do not repeat ~~if~~ I.S recovery is < 150%
966	Same as 967
SB8020	Repeat only I.S recovery is > 150%
021	Same as 967 above
SBC954 MS, SBC954 MSD	Repeat only if I.S recovery is < 25% ~~and~~ or > 150%
SB8019	Repeat only if I.S is < 25% ~~and~~ or > 150.

REANALYSIS REQUIRED

SAS 8431B-01, SwRI 01-6359-021, CR 1480, Malaga Rd. Ash Pile + Monroe Township

Sample ID	Reason
SBC980	3X dilution
SBC976	C-13 2378-TCDF %REC OUT (33%) No
SBC977	C-13 2378-TCDF %REC OUT (38.5%) No
SBC984	C-13 HxCDD RS AREA OUT
SBC986	DILUTION, MANY TARGET CONC EXCEED CALIBRATION RANGE
SBC990	C-13 TCDD & C-13 TCDF %REC LOW
SBC991	C-13 IS %REC LOW
SBC992	C-13 TCDD & C-13 TCDF %REC LOW
SB8022	C-13 IS %REC LOW
SB8023	DETECTOR SATURATED, NEED 60-100X DILUTION
SB8024	C-13 TCDD & C-13 TCDF %REC LOW
SBC979	RS AREA OUT
SBC985 MS	C-13 TCDD & C-13 TCDF %REC LOW
SBC985 MSD	SEVERAL C-13 IS %REC EXCEED 120% REC LIMIT

* Total of 14 reanalyses/dilution. - Cost = approx. $9,100.00 (Original Project cost = $27,861

SAS 8431B-01, SwRI 01-6359-027, Franklin Burn, CR 1478

SBC967	RS AREA OUT
SBC968	RS AREA OUT
SBC969	RS AREA OUT
SBC970	RS AREA OUT
SBC954	C-13 1234678-HpCDF 129% REC
SBC954 DUP	CHROMATOGRAM SMEARED
SBC955	C-13 TCDF LOW %REC
SBC957	C-13 TCDD & C-13 TCDF %REC LOW
SBC958	RS AREA OUT
SBC965	MANY C-13 IS %REC > 120%
SBC966	RS AREA OUT
SB8020	C-13 IS HxCDF & HpCDD %REC >120%
SB8021	RS AREA OUT
SBC954 MS	C-13 TCDD/TCDF %REC OUT
SBC954 MSD	C-13 TCDD/TCDF %REC OUT
SB8019	C-13 TCDD/TCDF %REC OUT

* Total of 16 reanalyses. - Cost = approx. $11,040.00 (Original Project cost = $16,572.)

If in EPA's opinion any or all of the above reanalysis/dilution is unnecessary, SwRI will not proceed. Please let us know ASAP. Please note, lab is already in process of reanalysis/dilution. Lab has approximately 10% left to do.

Response to the reanalyses/dilution requests.

Case # SAS 8431B-01

Sample I.D	Response
SBC967	Rerun only if RC area is < 25%
968	Same as 967 above
969	Same " " "
970	Same " " "
934	Do not rerun
954 DUP	What is the problem?
955	Rerun only if I.S recovery is < 25%
957	Same as 955 above
958	Same as 967 above
965	Do not repeat if I.S recovery is < 150%
966	Same as 967
SB8020	Repeat only I.S recovery is > 150%
021	Same as 967 above
SBC954 MS } SBC954 MSD }	Repeat only if I.S recovery is < 25% ~~and~~ or > 150%
SB8019	Repeat only if I.S is < 25% ~~and~~ or > 150

Response to the reanalyses/dilution Requests
Case # SAS8432B01

Sample ID	Response
SBC980	Why 3X dilution?
976	Do not reanalyze. Rerun only if Internal Standard recovery is < 25%
977	Same as 976
984	Rerun only if RS area is < 25%
986	Do not dilute if OCDF or OCDD concentration exceeded upper calibration limit but < 100%
990, 991	See 976 above
992	See 976 above
SB8022	See 976 above
023	Dilute
024	See 976 above
SBC979	Rerun if RC area is < 25%
SBC985MS	See 976 above
SBC985MSD	Do not repeat if 1.5 recovery is < 150%

MESSAGE CONFIRMATION

DATE:08/25/94 TIME:15:51

ID:EPA EDISON NJ 90

DATE	TIME	TX-TIME	DISTANT STATION ID	MODE	PAGES	RESULT
08/25	15:49	01'50"	703 683 0378	G3-S	004	OK

MEMORANDUM

DATE: 8-17-94

TO: Kathy Pegram
SAS Coordinator for Region ____

FROM: Jo Ann Boyd
Dwk D

SUBJECT: Request to Proceed with Additional Analyses for SAS Order No.
82048-01 8402-B-01, Cr 1461, Franklin Burn

This memo is to confirm our conversation on 7/22/94 regarding additional analyses for this SAS project. I have attached a summary of our conversation to this memo. We understand that payment for any additional analyses is based on DynCorp Viar's review of these data.

.....
(to be completed by DynCorp Viar only)

Your laboratory is hereby authorized to proceed with no more than:

14 15 additional analyses for

dioxin analysis reanalyzed due to matrix interferences

Jo Ann Boyd
Signature

8/17/94
Date

Attachments

Low res (1 reanalysis x 400) = $400 —
High res (14 x 574) = $8,036 —
Additional cost these reanalyses = $8,436.00
Please note: Data in for this project, samples already reanalyzed.

SAMPLE MANAGEMENT OFFICE

Operated by DynCorp Viar, Inc.
under contract # 68-D9-0135
to the U.S. Environmental Protection Agency

FAX COMMUNICATION

Date: 8/19/94

To: **Fax Number:**

Name: Pat Sheridan

Company:

Address:

Subject: Reanalyses/Dilutions

From: Kathleen Houle Regram
SAS Coordinator
(703) 519-1333

Number of Pages, Including This Page: 3

Comments or Special Instructions: Hi Pat.
Following are some reanalyses/dilution requests from a lab performing dioxin SASs for Region II.
At this time data for 8432-B-01 and 8431-B-01 are outstanding due to matrix interferences.
Please note that in all cases following, that lab has either already reanalyzed + performed dilutions or is in the process of doing so. This does not mean the Region must approve these, we will only ask the lab not to submit this data if appropriate. Please call me with any questions.
Kathy

SMO FAX NUMBER - (703) 683-0378
P.O. Box 818, Alexandria, Virginia 22313. Phone: (703) 519-1200

C21-001-73

SAMPLE MANAGEMENT OFFICE

Operated by DynCorp Viar, Inc.
under contract # 68-D9-0135
to the U.S. Environmental Protection Agency

FAX COMMUNICATION

Date: 8/23/94

To: **Fax Number:** _____

Name: Stelios Gerzounis

Company: _____

Address: _____

_____

Subject: PE information

From: Kathleen Houle Pegram
SAS Coordinator
(703) 519-1333

Number of Pages, Including This Page: 1

Comments or Special Instructions: Stelios,
SWRI performed a PE sample for Region I.
SAS # 8317-A-01, SDG SAC208. Site = Yaworski Lagoon
PE identification 0054800TGC544

Moira Lataille, Reg I TPO, 617-860-4635.

SMO FAX NUMBER - (703) 683-0378
P.O. Box 818, Alexandria, Virginia 22313. Phone: (703) 519-1200

C21-001-71

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, USA 78228-0510 • (512) 684-5111 • TELEX 244846

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S & M BRANCH

November 8, 1994

Lockheed
USEPA REGION II, ESD
2890 Woodridge Ave, Bldg. 209
Edison, NJ 08837

Attention: Stelios Gerazounis

Subject: Response: SAS 8432B-01 SDG SBC972
SAS 8431B-01 SDG SBC954

Dear Mr. Gerazounis:

In response to your fax dated 11/02/94, concerning the above referenced cases, we are submitting the following:

Item 1 (8432B-01 SDG SBC972)

We cannot verify concentration shown of Form I. Did the lab include the dilution factor in the calculation?

Response

For all dilution analyses, no additional internal standards were added to the sample extracts. Only more solvent was added to the sample injection vial. For this reason, one should not take the concentrations from the quantitation reports and multiply them with dilution factors. For example, the 2378-TCDD concentrations for SBC797RE is calculated as follows: 19.945 pg/uL X 20 uL - 10 g - 0.74 (%dry) = 53.9 pg/g which agrees with Form I on page 100310. The CLP FORM I gives no field for % dry weight information. The % dry weight information can be found in the extraction record. The original analysis results for sample SBC797 had very high concentrations of PCDD/PCDF. As a result, many of the peaks in the original analysis saturated the detector, overloaded the column, and had retention time shifts. The analyst inadvertently submitted the uncorrected data. In this resubmission of Form I and quantitation report for SBC979, peak identification and integration errors have been correct. For data of SBC980 and SBC980RE, no errors were found. We consider an 18% RPD (22.8 ppt vs 27.3 ppt) for 2378-TCDD concentration is not excessively high considering sample extract being analyzed on different day, different instrument, and at different concentration levels.

OK

The wrong peaks were used to calculate 2378TCDD

Also
12378 PeCDF
12378 PeCDD

Spl SBC979 data disseminated into the package. SG

SAN ANTONIO, TEXAS
HOUSTON, TEXAS • DETROIT, MICHIGAN • WASHINGTON, DC

Item 2

Matrix spiked, matrix spike duplicate SBD001MS & MSD. We cannot verify % recoveries (Form III, p. 0100001 & 01A).

Response

All of the Form III's we have submitted were correct. Unfortunately, a simple matter became complicated by the fact that there are sample and sample duplicate, and there are original analysis and reanalysis. The CLP Form III does not provide a place for filename information. As result, one cannot easily figure out whether the sample or the sample DUP was used, and whether the original analysis or the reanalysis data was used. In the previously submitted Form III's calculations were based on the duplicate sample analysis for MS/MSD % recovery calculations, and the data are correct.

To make the matter simple, we have decided to use sample data (instead of sample duplicate data) for the "SAMPLE CONCENTRATION", and to use the original analysis data (instead of reanalysis data) to generate the Form III's. We have also changed the unit for the "SPIKE ADDED" from "pg" to "PG/G" (on a dry weight basis). The original form showed SPIKE ADDED in (pg) the software internally computed the concentration based on the dry weight to make the correct calculations, this modification should make all the units more consistent. There is a form for sample and duplicate sample summary (FORM III PCDD-2, or 3DFB). There is no CLP Forms for MS/MSD evaluation. However, we figured EPA Region II would be interested in seeing PRDs of the MS/MSD analyses. We went ahead and created such form for MS/MSD evaluation, and called it "FORM III PCDD-2A". The changes should make it very simple to verify the values.

The new Form III's for SBD001 (and SBD001MS, MSD) and SBC985 (and SBC985MS, MSD) are included. We have also included new Form III's for SBC954 (and SBC954MS, MSD) of SAS 8431B-01.

NOTE:

Corrected pages for the original analysis of sample SBC979 (SAS 8432B-01) are being submitted. Page 100281 in the original data package is a duplicate of page 100280. It contains incorrect data and should be removed. All corrected data are in page 100280 which is being submitted. Therefore, page 100281 should be removed without a replacement.

If you should have any questions, or need additional information, please do not hesitate to call me at (210) 522-2169 or by FAX at (210) 522-2021.

Sincerely,

JBoyd

Jo Ann Boyd
Group Leader, QAU

cc: Region II
SMO

JAB/mjp

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, USA 78228-0510 • (512) 684-5111 • TELEX 244846

Resubmitted data

November 8, 1994

Lockheed
USEPA REGION II, ESD
2890 Woodridge Ave, Bldg. 209
Edison, NJ 08837

Attention: Stelios Gerazounis

Subject: Response: SAS 8432B-01 SDG SBC972
SAS 8431B-01 SDG SBC954

Dear Mr. Gerazounis:

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Item 1 (8432B-01 SDG SBC972)

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Response

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The wrong peaks were used to calculate 2378 TCDD
[illegible]378 PeCDF
12378 PeCDD

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Matrix spiked, matrix spike duplicate SBD001MS & MSD. We cannot verify % recoveries (Form III, p. 0100001 & 01A).

Response

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Sincerely,

Jo Ann Boyd
Group Leader, QAU

cc: Region II
SMO

JAB/mjp

100277
Rev. 1

1DFA
PCDD/PCDF SAMPLE DATA SUMMARY

EPA SAMPLE NO.

SBC979

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI
CASE NO: SAS 8432B-01 SAS NO: 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: a0725407.lis
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322	33:20	0.87	46.5 *		
2378-TCDF	304/306	32:07	0.84	~~2687.4~~ 640	J ~~E~~	
12378-PeCDF	340/342	38:56	1.49	604.9		
12378-PeCDD	356/358	40:51	1.51	194.4		
23478-PeCDF	340/342	40:17	1.48	1029.0	J ~~E~~	
123478-HxCDF	374/376	43:40	1.19	2799.8	J ~~E~~	
123678-HxCDF	374/376	43:47	1.19	1106.0		
123478-HxCDD	390/392	44:25	1.22	204.4		
123678-HxCDD	390/392	44:30	1.23	281.8		
123789-HxCDD	390/392	44:44	1.21	472.7		
234678-HxCDF	374/376	44:17	1.18	1267.2		
123789-HxCDF	374/376	44:56	1.26	71.9		
1234678-HpCDF	408/410	46:27	1.03	5074.5	J ~~E~~	
1234678-HpCDD	424/426	47:22	1.07	2370.5	J ~~E~~	
1234789-HpCDF	408/410	47:44	1.05	527.1		
OCDD	458/460	50:17	0.93	2787.5		
OCDF	442/444	50:25	0.97	2372.4		

INTERNAL STANDARD	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334	33:19	0.75	0.65 - 0.89	78.4	40 - 120
13C-2378-TCDF	316/318	32:03	0.88	0.65 - 0.89	69	40 - 120
13C-12378-PeCDF	352/354	38:55	1.5	1.24 - 1.86	78.9	40 - 120
13C-12378-PeCDD	368/370	40:51	1.72	1.24 - 1.86	77.8	40 - 120
13C-123478-HxCDF	384/386	43:40	0.5	0.43 - 0.59	84.1	40 - 120
13C-123678-HxCDD	402/404	44:29	1.32	1.05 - 1.43	82.6	40 - 120
13C-1234678-HpCDF	418/420	46:26	0.46	0.37 - 0.51	86.3	40 - 120
13C-1234678-HpCDD	436/438	47:21	1.07	0.88 - 1.20	87.2	40 - 120
13C-OCDD	470/472	50:17	0.94	0.76 - 1.02	83.3	40 - 120
37Cl-2378-TCDD	328	23:15	NA	NA	3960.1 *	0 - 0

Column to be used to flag values outside QC limits.
37Cl-2378-TCDD Cleanup Standard is Optional

* From Confirmation analysis

FORM I PCDD-1
(Form Modified for HRMS Method 8290)

100278
Rev. 1

1DFB
PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY

EPA SAMPLE NO.

SBC979

LAB NAME: SOUTHWEST RESEARCH INSTITUTE
LAB CODE: SwRI SAS NO: 8432B-01
CASE NO: SAS 8432B-01
MATRIX: L SOIL (Soil/Water/Ash)
SAMPLE WT/VOL: 10.00 g (g/L)
WATER SAMPLE PREP.: CONT. (Sept/Cont)
CONCENTRATED EXTRACT VOLUME: 20.00 uL
INJECTION VOLUME: 2.0 uL
GC COLUMN: DB-5 60 M X 0.32 mm id. 0.25 u film

CONTRACT: 68-D9-0135
SDG NO.: SBC972
LAB SAMPLE ID.: a0725407.lis
DATE RECEIVED: 06/25/94
DATE EXTRACTED: 07/07/94
DATE ANALYZED: 07/25/94
DILUTION FACTOR: 1
CONCENTRATION UNITS: pg/g (pg/L, pg/g, pg/Kg)

ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	46.55	X 1.0	46.55
2378-TCDF	2687.44	X 0.1	268.74
12378-PeCDF	604.92	X 0.05	30.25
12378-PeCDD	194.40	X 0.5	97.20
23478-PeCDF	1029.01	X 0.5	514.50
123478-HxCDF	2799.79	X 0.1	279.98
123678-HxCDF	1105.96	X 0.1	110.60
123478-HxCDD	204.42	X 0.1	20.44
123678-HxCDD	281.82	X 0.1	28.18
123789-HxCDD	472.71	X 0.1	47.27
234678-HxCDF	1267.15	X 0.1	126.72
123789-HxCDF	71.88	X 0.1	7.19
1234678-HpCDF	5074.52	X 0.01	50.75
1234678-HpCDD	2370.55	X 0.01	23.71
1234789-HpCDF	527.06	X 0.01	5.27
OCDD	2787.55	X 0.001	2.79
OCDF	2372.43	X 0.001	2.37
		TOTAL =	1662.50

NOTE: Do not include EMPC or EDL values in the TEF-adjusted Conentration.

If the Total Toxic Equivalent Concentration of the sample is greater than 7 ng/L for an aqueous sample, greater than 0.7 ug/Kg for any solid matrix, or greater than 7 ug/Kg for a chemical waste sample, then second column confirmation of the results may be required.

FORM I PCDD-2
(Form Modified for HRMS Method 8290)

SOUTHWEST RESEARCH INSTITUTE
6220 Culebra Road • Post Office Box 28510 • San Antonio, Texas, USA 78228-0510 • (210) 684-5111 • TELEX 244846

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
BUILDING 70, 149 TOM SLICK

TRANSMITTAL SHEET

DATE	11-8-94	CHARGE	OH
NO. OF PAGES (INCLUDING COVER SHEET)	2		
TO	EPA Region 2 Attn: Mr. Stelios Gerazounis		
OFFICE TELEPHONE			
FAX TELEPHONE	908-417-5727		
FROM	Joseph PAN		
TELEPHONE	(210) 522-5781		

NOTES:

SOUTHWEST RESEARCH INSTITUTE SWITCHBOARD TELEPHONE IS 210/684-5111. PLEASE SEND RETURN TRANSMISSIONS TO 210/522-3649. THE FAX MACHINE IS A XEROX 7033 AND WILL AUTOMATICALLY RECEIVE 24 HOURS A DAY. FOR MANUAL ASSISTANCE OR VERIFICATION, PLEASE CALL 210/522-2171.

PRELIMINARY RESPONSE FOR 8432B-01 REQUESTED ON 11/8/94

Q. The PCDD/PCDF analytical sequence summary form 5DFC lists GC column 60M DB-5, ID .35mm for 2378-TCDF confirmation analysis. However, the same GC column was used for primary analysis. Please explain.

A. The column description on Form 5DFCs are incorrect. Confirmation for 2378-TCDF was performed on a 60M DB-5MS column. Different columns were used for primary and confirmation analyses. Here is the proof.

For nearly all PCDD/PCDFs, the target compounds elute 2 seconds after the corresponding C-13 labeled PCDD/PCDFs. For example, 2,3,7,8-TCDF and C-13 2,3,7,8-TCDF elute at 32:11 and 32:09, respectively (SDG SBC972 page 100832) on a DB-5 column. On sample primary analysis which was performed on a DB-5 column, for most samples apparently 2,3,7,8-TCDF is interfered by other TCDF. This is evidenced by a four second difference between 2,3,7,8-TCDF and C-13 2,3,7,8-TCDF. For example, 2,3,7,8-TCDF and C-13 2,3,7,8-TCDF of sample SBC981 elute at 32:16 and 32:12, respectively (page 100395).

On confirmation analysis (60M DB-5MS column), again 2,3,7,8-TCDF elutes two seconds after C-13 2,3,7,8-TCDF. For example, 2,3,7,8-TCDF and C-13 2,3,7,8-TCDF elute at 31:20 and 31:18, respectively on a calibration analysis (SDG SBC972 page 101241). On the confirmation analysis of SBC981, 2,3,7,8-TCDF does elude two seconds after C-13 2,3,7,8-TCDF (31:21 vs 31:19 on page 100064).

Further more, if one compares the mass chromatograms of 303.9016 of the primary analysis (page 100412) with that of the confirmation analysis (page 100427), one will find they look quite different.

The corrected Form 5DFCs will be submitted.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON NJ 08837

EPA

FACSIMILE REQUEST AND COVER SHEET

PLEASE PRINT IN BLACK INK ONLY

)

MARIA PADILLA or Joseph Pan

ICE/PHONE

522-5896

SUBJECT: Analytical Data - Case # 8432 B-01

SION/LAB

ROM

STELIOS GERAZOUNIS

ONE

(908) 321 6718

MAIL CODE

ACE

U.S. EPA

TE

11/8/94

NUMBER OF PAGES TO INCLUDE THIS COVER SHEET

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Please number all pages

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PAGE ___ OF ___ PAGES

In Reference to Case No(s): 8432B-01

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 11/8/94

Laboratory Name: SWRI

Lab Contact: Maria Padilla

Region: II

Regional Contact: Stelios Gerazounis

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):

SDG SBC 972 and SDG SBC984

Summary of Questions/Issues Discussed:

The PCDD/PCDF Analytical Sequence Summary, Form 5DFC, lists GC column 60M DB-5 10.35mm for 2378TCDF confirmation analysis. However, the same GC column was used for primary analysis. Please explain.

Summary of Resolution:

Signature Stelios Gerazounis Date 11/8/94

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

SOUTHWEST RESEARCH INSTITUTE

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November 14, 1994

Lockheed
USEPA REGION II, ESD
2890 Woodridge Ave, Bldg. 209
Edison, NJ 08837

Attention: Stelios Gerazounis

Subject: Response: SAS 8432B-01 SDG SBC972 and SBC984

Dear Mr. Gerazounis:

In response to your fax dated 11/08/94, concerning the above referenced cases, we are submitting the following:

Item 1 SAS 8432B-01 SDG: SBC972, 984

The PCDD/PCDF analytical sequence summary, Form 5DFC, lists GC column 60 m DB-5 10.35mm for 2378TCDF confirmation analysis. However, the same GC column was used for primary analysis. Please explain.

Response

see faxed response

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The corrected form is being submitted.

If you should have any questions, or need additional information, please do not hesitate to call me at (210) 522-2169 or by FAX at (210) 522-2021.

Sincerely,

Jo Ann Boyd
Group Leader, QAU

cc: SMO
Region II

JAB/mjp

PRELIMINARY RESPONSE FOR 8432B-01 REQUESTED ON 11/8/94

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FROM	[redacted]		
TELEPHONE	(210) 522-5181		
NOTES:			

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		TOTAL	0:01'16"	2		

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PG : POLLING A REMOTE
EC : ERROR CORRECT
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MP : MULTI-POLLING
G2 : G2 COMMUNICATION
RS : RELAY STATION
RM : RECEIVE TO MEMORY

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SOUTHWEST RESEARCH INSTITUTE SWITCHBOARD TELEPHONE IS 210/684-5111. PLEASE SEND RETURN TRANSMISSIONS TO 210/522-3649. THE FAX MACHINE IS A XEROX 7033 AND WILL AUTOMATICALLY RECEIVE 24 HOURS A DAY. FOR MANUAL ASSISTANCE OR VERIFICATION, PLEASE CALL 210/522-2171.

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November 14, 1994

Lockheed
USEPA REGION II, ESD
2890 Woodridge Ave. Bldg. 209
Edison, NJ 08837

Attention: Stelios Gerazounis

Subject: SAS Case: SAS 8431B-01 SDG SBC954
SwRI Project Number:01-6359-019

Dear Mr. Gerazounis:

In response to your Fax dated 10/28/94, concerning the above referenced case, we are submitting the following:

Item 1

Need particular forms such as; resolution, method blank summary, sequence, window defining mix, the primary column, and the confirmation column. I will need sequence, performance check.

Response

On the first response that was sent out, it was stated that the sequence, column performance check will follow. However, SwRI achieved 25% or better resolution for 2378-TCDD on the initial analyses (primary column). Confirmation analysis performed for 2378-TCDF only. There is no performance check form to be filled out for 2378-TCDF confirmation analysis.

If you should have any questions, or need additional information, please do not hesitate to call me at (210) 522-2169 or by FAX at (210) 522-2021.

Sincerely,

Maria Padilla
for Jo Ann Boyd
Group Leader, QAU

cc: Region II
SMO
JAB/mjp

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November 14, 1994

Lookheed
USEPA REGION II, ESD
2890 WOODRIDGE AVE. BLDG 209
EDISON, NJ 08837

Attention: Stelios Gerazounis

Subject: Response for SAS 8402B-03
Contract 68-D9-0135
SwRI Project Number: 01-6359-015

Dear Mr. Gerazounis:

In response to the Fax dated 9/22/94, concerning the above referenced case, we are submitting the following:

Item 1

Confirmation Analysis
Missing supporting data ie; calibration, analytical sequence, column performance check;

Response

The above data is being submitted.

Item 2

Method 8290 Several forms are missing:
Total homologue, method blank summary; window defining mix summary, resolution summary.

Response

The above data is being submitted.

If you should have any questions, or need additional information, please do not hesitate to call me at (210) 522-2169 or by FAX at (210) 522-2021.

Sincerely,

Jo Ann Boyd
Group Leader, QAU

cc: Kathy Pegram / SMO
JAB/jp

SAN ANTONIO, TEXAS
HOUSTON, TEXAS • DETROIT, MICHIGAN • WASHINGTON, DC

SwRI Case Narrative
SAS 8432-B-01 SDG SBC972

1. Twenty (20) Low Soil Samples for Dioxin Analysis:

System ID	Customer ID	System ID	Customer ID
43847	SBC972	43848	SBC973
43849	SBC974	43850	SBC975
43851	SBC976	43852	SBC977
43853	SBC978	43854	SBC979
43855	SBC980	43856	SBC981
43857	SBC982	43858	SBC983
43793	SBD000	43794	SBD001
43795	SBD002	43796	SBD003
43797	SBD004	43798	SBD005
43799	SBD006	43800	SBD007

2. Matrix Spike / Matrix Spike Duplicate Sample Identification:

   SBD001 MS/MSD

   Duplicate Sample Identification:

   SBD001 Dup

3. Samples were received at SwRI on June 25, 1994, for thirty-five (35) day from the Verified Time of Sample Receipt (VTSR) of the last sample in this study.

4. An extension was requested and approved by SMO.

PCDD / PCDF ANALYSIS

1. The enclosed package contains data of sample analysis for Polychlorinated Dibenzo-p-dioxin and Polychlorinated Dibenzofuran (PCDD/PCDF) following EPA Method 8290 (November 1990). The instrument used was a VG AutoSpec High Resolution Gas Chromatograph/High Resolution Mass Spectrometer (HRGC/HRMS), operated at 10,000 resolution power throughout the analysis.

2. Each sample was spiked with 20 µL of Carbon-13 labeled internal standard mixture at the beginning of extraction. Internal Standard Spiking solution was prepared January 23, 1994. The composition of this PCDD/PCDF internal standard mixture is as follows:

$^{13}C_{12}$-2378-TCDD	50 pg/µL
$^{13}C_{12}$-2378-TCDF	50 pg/µL
$^{13}C_{12}$-12378-PeCDD	50 pg/µL
$^{13}C_{12}$-12378-PeCDF	50 pg/µL
$^{13}C_{12}$-123678-HxCDD	125 pg/µL
$^{13}C_{12}$-123478-HxCDF	125 pg/µL
$^{13}C_{12}$-1234678-HpCDD	125 pg/µL
$^{13}C_{12}$-1234678-HpCDF	125 pg/µL
$^{13}C_{12}$-OCDD	250 pg/µL

3. The sample extract was then put through a series of clean-up processes, which include H_{cIA4} shake-up, silica gel column chromatography, alumina column chromatography, and, activated carbon on silica column chromatography. The final sample extract residue was reconstituted into 20 µL of solution by adding 20 µL of recovery standard mixture. The recovery standard mixture contains $^{13}C_{12}$-1234-TCDD and $^{13}C_{12}$-123789-HxCDD at 50 pg/µL and 125 pg/µL respectively. Two µL of the well mixed final sample extract was then injected into HRGC/HRMS.

4. The total pg of a particular PCDD/PCDF in a sample can be obtained simply by multiplying the value in the column of pg/µL by 20. The concentration values can be obtained by dividing this value with sample weight/volume and percent dry weight.

5. For the matrix spike, 10 µL of the spiking solution was spiked to the soil. The Matrix Spike Solution was prepared on January 23, 1994. The contents of the spiking solution are as follows:

2378-TCDD	25 pg/µL
12378-PeCDD	25 pg/µL
123678-HxCDD	25 pg/µL
1234678-HpCDD	25 pg/µL
OCDD	50 pg/µL
2378-TCDF	25 pg/µL
12378-PeCDF	25 pg/µL
123478-HxCDF	25 pg/µL
1234678-HpCDF	25 pg/µL
OCDF	50 pg/µL

6. Due to different software programs used in printing areas on the chromatograms and areas on the quantitation summaries, there may be discrepancies between the two. The peak areas printed on the chromatograms are for the convenience of the analyst. The peak areas on the "Quantitation Summary" and the "Total List" are the ones actually used in concentration calculation.

7. All of the concentration calculations for the target analytes and C-13 labeled internal standards of the samples are based on the mean RRF of the initial calibration.

8. The "Total Result" as well as "Total Tetra-Furans" through "Total Hepta-Dioxins" on "8290 Quantitation Summary 1" do not include 2,3,7,8-Substituted Dioxin/Dibenzofuran. However, the Total Dioxin and Total Dibenzofuran on the "Dioxin/Benzofuran Analysis Report" (Form I) do include the 2,3,7,8-Substituted Dioxins/Dibenzofurans. This was so arranged to work around software deficiencies.

9. The reported PCDD/PCDF concentrations in soils are on a dry weight basis.

10. Sample Formulas:
Relative Response for the Unlabeled PCDD/PCDF (targets) in Calibration Standards

$$\frac{(A_n^1 + A_n^2) \times C_1}{(A_1^1 + A_1^2) \times C_n} = RR$$

Where:

A_n^1 and A_n^2	=	the areas of the primary and secondary m/z's for the unlabeled target analyte
A_1^1 and A_1^2	=	the areas of the primary and secondary m/z's for the labeled Internal Standard
C_1	=	the concentration of the labeled Internal Standard in pg/µL
C_n	=	the concentration of the unlabeled target analyte in pg/µL

Calculation Calibration Standards:
8290CS3 Standard for July 20, 1994 ICAL
1,2,3,7,8-PeCDF

$$\frac{[1.39e6 + 8.71e5] \times 50\ pg/\mu L}{[9.35e6 + 5.30e6] \times 10\ pg/\mu L} =$$

$$\frac{2.26e6 \times 50\ pg/\mu L}{1.46e7 \times 10\ pg/\mu L} = 0.774$$

Reported Value: 0.770

Unlabeled PCDD/PCDF and Total PCDD/PCDF Concentrations in Sample Analysis:

$$\frac{A_n \times C_1}{A_{1s} \times MRR} = \text{Concentration } C \ (pg/\mu L)$$

$$(A_1^1 + A_1^2) = A_n$$

$$(A_{1s}^1 + A_{1s}^2) = A_{1s}$$

Where:

A_n	=	Summed area of both ions of the unlabeled PCDD/PCDF of interest
C_1	=	Concentration (pg/µL) of corresponding C-13-labeled PCDD/PCDF Internal Standard in the final extract
A_{1s}	=	Summed area of both ions of the C-13-labeled PCDD/PCDF Internal Standard
MRR	=	Mean Relative Response for the 2,3,7,8-substituted PCDD/PCDF. The MRR is substituted by AMRR (average MRR) for the non-2,3,7,8-substituted PCDD/PCDF

Calculation Sample SBC972 (07/21/94):
2,3,7,8-TCDF

$$\frac{[1.352e5] \times 50 \ pg/\mu L}{[6.584e6] \times 0.766} = 1.340 \ pg/\mu L$$

Reported value: 1.340 pg/µL

Percent recoveries of the labeled PCDD/PCDF Surrogates:

$$\frac{A_1 \times C_{is}}{A_{is} \times MRF} = \text{Concentration } C \ (pg/\mu L)$$

Where:

A_1 = the summed areas of the primary and secondary m/s's for the surrogate compound. (Note: there is only one m/g for $^{37}C1_4$-2,3,7,8-TCDD.)

A_{is} = the summed areas of the primary and secondary m/z's for the corresponding recovery standard

C_{is} = the concentration of the recovery standard in pg/µL

MRF = the mean response factor for the surrogate from the initial calibration

Calculation Sample SBC972 (07/21/94):
13C-2,3,7,8-TCDF

$$\frac{6.584e6 \times 50 \ pg/\mu L}{9.587e6 \times 1.419} = 24.20 \ pg/\mu L$$

Reported value: 24.20 pg/µL

Percent recovery:

$$\frac{\text{Conc Found}}{\text{Conc Spiked}} \times 100\ \% = \%\ \text{Recovery}$$

Calculation Sample SBC972 (07/21/94):

$$\frac{24.2}{50 \ pg/\mu L} \times 100\ \% = 48.4\ \%$$

Reported value: 48.4 %

Detection Limit:

$$\frac{M \times C_{STD}}{MRF \times A_{STD}} = \text{Detection Limit}$$

Where:

M = the minimum area which could have been detected
= minimum height could have been detected x mean area/height ration of standards
= Summation (min s/n) (noise level)] x ½ Summation (response/height) where sum indicates both ions and the min s/n is set = 3

C_{STD} = the amount of ^{13}C-labeled standard (internal standards for natives and recovery standards for surrogates)

MRF = the mean response factor

A_{STD} = $(A_{STD}^{1} + A_{STD}^{2})$

Calculation Sample SBC972 (07/21/94):
OCDD

$$\frac{1.44e5 \times 250\ pg/\mu L}{1.112 \times 3.566e7} = 0.91\ pg/\mu L$$

Reported value: 0.46 pg/µL

11. Some samples have one or more internal standards out of the QC limits.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature."

JBoyd 8/30/94

Jo Ann Boyd, Date
Group Leader
Quality Assurance Unit, Division 01

SOUTHWEST RESEARCH INSTITUTE

TELEPHONE CONVERSATION RECORD

Date: August 2, 1994

From: JoAnn Boyd JB

With: Ms. Kathy Pegram, SMO

Spoke with Kathy Pegram, SMO, in reference to the extension of SAS 8432-B-01. The extension was approved by SMO.

020043A

SOUTHWEST RESEARCH INSTITUTE

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SAN ANTONIO, TEXAS 78228-0510

CHEMISTRY & CHEMICAL ENGINEERING DIVISION
BUILDING 201, 109 AVENUE C

FACSIMILE TRANSMITTAL SHEET

DATE: 8/30/94 CHARGE: 01-0756

Number of Pages (including cover sheet) #5

TO: Kathy Pegram
SMO

FAX NUMBER:

FROM: JO ANN BOYD

TELEPHONE: (210) 522-2169

The Southwest Research Institute Quality Assurance telephone number is (210) 522-2169. The fax number is (210) 522-2021.
The machine is a Xerox Telecopier 295.
If you have any questions, please call me at (210) 522-2169.

NOTES: The "C" are Confirmations
SAS's are mixed - please
note sample ID

...al is filed in
... 8432B-01/SBD 000
...ewed By: [signature]
... 8/30/94

Last update: 8-~~19~~ 20-94

QA/QC CHECK REQUIREMENTS FOR SAS 8432B-01/8431B-01

(1)

SEQ NO	SAMPLE NO	DATE/ TIME	FILENAME	13C-1234-TCDD AREA	50-200 DIFF. FROM CONCAL	13C-123789HxCDD AREA	50-200 DIFF FROM CONCAL	RS 50-200	LOCK CHECK	COMMENTS
I	CONCAL	7/20/94	A07204U1_04	1.370E+07	(50-200)	3.750E+07	(50-200)			
I	SBD001 DUP		A07204U1_8	2.140E+07	156.20	5.800E+07	154.67	OK	C	OCDD 1657 pg/uL. OK NOT SATURATED (DIL 2X)
I	SBC980		A07204U1_09	2.030E+07	148.18	5.700E+07	152.00	OK	C	2378-TCDF = 460 pg/uL (5X DIL NEEDED)**** NEEDS RERUN ***** RERUN ON 8/14/94
I	SBC981		A07204U1_10	2.370E+07	172.99	6.650E+07	177.33	OK	C	OCDD 2074 pg/uL. OK, NOT SATURATED
I	SBD001_MS		A07204U1_11	2.190E+07	159.85	6.100E+07	162.67	OK	X	OCDD 1343 pg/uL. OK, NOT SATURATED (DL 2X)
I	SBD001_MSD		A07204U2_12	2.260E+07	164.96	6.510E+07	173.60	OK	X	OCDD 1322 pg/uL. OK, NOT SATURATED (DL 2X)
	CAL_VER V07204U3.213		A07204U1_13	1.55E+07	113.14	4.90E+07	130.67	OK		
II	C07214U2.213 CONCAL	7/21/94	A07214U3_2	1.350E+07	(50-200)	4.270E+07	(50-200)			
II	SBD006		A07214U3_4	9.888E+06	73.24	2.792E+07	65.39	OK	C	OCDD 4108 pg/uL. OK, NOT SATURATED
II	SBD007		A07214U3_5	9.958E+06	73.75	2.327E+07	54.50	OK		OCDD 4398 pg/uL. OK, NOT SATURATED
II	SBD972		A07214U3_6	9.587E+06	71.01	2.830E+07	66.26	OK	C	OCDD 2252 pg/uL. OK, NOT SATURATED
II	SBD973		A07214U3_7	9.604E+06	71.14	2.513E+07	58.85	OK	C	OCDD 1258 pg/uL. OK, NOT SATURATED
II	SBD974		A07214U3_8	9.432E+06	69.87	2.844E+07	66.60	OK		OCDD 1332 pg/uL. OK, NOT SATURATED
II	SBD975		A07214U3_9	1.019E+07	75.48	2.602E+07	60.94	OK	C	OCDD 1979 pg/uL. OK, NOT SATURATED
II	SBD976		A07214U3_10	3.851E+06	28.53	4.632E+07	108.48	OUT		OCDD 1034 OK, NOT SATURATED. 13C2378-TCDF 33% - OUT- RERUN ON 8/07/94
II	SBD977		A07214U3_11	1.580E+07	117.04	6.109E+07	143.07	OK	C	OCDD 1622 pg/uL OK, NOT SATURATED 13C-TCDF 38.5% - OUT RERUN ON. 8/14/94
II	SBD978		A07214U3_12	2.184E+07	160.30	6.277E+07	147.00	OK	C	
II	CAL_VER V07214U3.213		A07214U3_13	1.670E+07	123.70	5.680E+07	133.02	OK		
III	C07214U1.213 CONCAL	7/21/94	A07214U1_2	1.350E+07	(50-200)	4.270E+07	(50-200)			
III	SBC982		A07214U2_1	2.048E+07	151.70	6.033E+07	141.29	OK	C	OCDD >2000 pg/uL OK, NOT SAT.
III	SBC983		A07214U2_2	2.159E+07	159.93	6.406E+07	150.02	OK	C	OCDD >2000 pg/uL OK, NOT SAT
III	SMB(7/7/94)		A07214U2_3	1.583E+07	117.26	4.657E+07	109.06	OK	X	13C-TCDF out RERUN ON: 8/14/94
III	SBD000		A07214U2_4	1.494E+07	110.67	4.575E+07	107.14	OK	C	OCDD 1352 pg/uL. OK NOT SATURATED
III	SBD001		A07214U2_5	1.421E+07	105.26	4.329E+07	101.38	OK	C	OCDD 1310 pg/uL. OK NOT SATURATED
III	SBD002		A07214U2_6	1.406E+07	104.30	4.363E+07	102.18	OK	C	OCDD 1220 pg/uL OK NOT SATURATED
III	SBD003		A07214U2_7	1.360E+07	100.74	4.326E+07	101.31	OK	C	OCDD 1184 pg/uL. OK NOT SATURATED
III	SBD004		A07214U2_8	1.362E+07	100.89	4.294E+07	100.58	OK	C	OCDD 1826 pg/uL. OK NOT SATURATED
III	SBD005		A07214U2_9	1.267E+07	93.85	4.010E+07	93.91	OK	C	OCDD 1470 pg/uL OK NOT SATURATED
III	CAL_VER V07214U2.213		A07214U2_10	1.670E+07	123.70	5.680E+07	133.02	OK		
	C07224U1.213									
IV	CONCAL	7/23/94	A07234U1_2	3.740E+07	(50-200)	9.480E+07	(50-200)			

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(2)

V	SMB I (7/11/94)		A07234U1_8	2 660E+07	71 12	3 011E+07	31.76	OUT	X	RS AREA LOW FOR 13C-HXCDD **** NEEDS RERUN ****** RERUN ON 8/14/94
V	SMB II (7/11/94)		A07234U1_9	1 436E+07	38 45	2 739E+07	28 89	OUT	X	RS AREA LOW FOR13C-TCDD AND 13C-HXCDD **** NEEDS RERUN ****** RERUN ON 8/15/94 8/14/94
V	SBC984		A07234U1_10	1.530E+07	40 91	2 498E+07	26 35	OUT	X✓	RS AREA LOW FOR 13C-HXCDD **** NEEDS RERUN ****** RERUN ON 8/15/94
V	SBC985 DUP		A07234U1_11	2 516E+07	67 27	1 001E+08	105 59	OK	C	
V	SBC986		A07234U1_12	3 860E+07	103 74	1 171E+08	123 52	OK	C	EXCEED CALI CURVE ON MANY TARGETS. **** NEEDS DIL AND RERUN **** RERUN ON 8/15/94
V	CAL_VER V07234 13.LIS		A07234U1_13							
	C07244 02.LIS									
V	CONCAL	7/24/94	A07244U1_4	3 470E+07	(50-200)	1 140E+08	(50-200)			
V	SBC987			3.492E+07	100 63	9 460E+07	82 98	OK	X	
V	SBC988			3.231E+07	93 11	9 545E+07	83 73	OK	C	
V	SBC989			3 334E+07	96 06	9.495E+07	83.29	OK	C	
V	SBC990			3.744E+07	107 90	1.022E+08	89 65	OK	C ✓	13C -TCDD/TCDF LOW RERUN ON: 8/07/94
V	SBC991			3.326E+07	95 85	9 101E+07	79 83	OK	C ✓	13C-IS REC. LOW RERUN ON: 8/07/94
V	SBC992			3.844E+07	110.78	9 915E+07	86 97	OK	C ✓	13C -TCDD/TCDF LOW RERUN ON: 8/07/94
V	SB8022			3.770E+07	108 65	1.008E+08	88.25	OK	X	13C-IS REC. LOW RERUN ON: 8/07/94
V	SB8023			3 245E+07	93 52	7.070E+07	62 02	OK	C	SATURATED, NEEDS (60 - 100 X) DILUTION ! RERUN ON: 8/14/94
	CAL_VER V07244 13.LIS		A07244U1_13	4.270E+07	123 05	1.110E+08	97.37	OK		
	C07254 01.LIS									
I	CONCAL	7/25/94	A07254U1_4	1.820E+07	(50-200)	4.610E+07	(50-200)			
I	SBC979			4 180E+07	229 67	9 899E+07	214 73	OUT	C	IS AREA OUT : NEEDS A (6X DIL) RERUN ON: 8/18/94
I	SBC985			3.539E+07	194 45	8.565E+07	185 79	OK	C	
I	SBC987			4 112E+07	225 93	8 834E+07	191 63	OUT	C	IS AREA OUT RERUN ON: 8/18/94
I	SBC988			4.037E+07	221.81	9 618E+07	208.63	OUT	C	IS AREA OUT NEEDS (2X DIL) RERUN ON: 8/18/94
I	SBC989			4 066E+07	224.51	9 926E+07	215 36	OUT	a	IS AREA OUT RERUN ON: 8/18/94
I	SBC970			4.329E+07	237.86	1 044E+08	226 46	OUT	C ✓	IS AREA OUT RERUN ON: 8/20/94
I	CAL_VER V07254 18.LIS			2 910E+07	159 89	7 600E+07	164 86	OK		
	C07254 14.LIS									
	CONCAL	7/25/94	A07254U2_2	3 030E+07	(50-200)	8 840E+07	(50-200)			
	SMB-I (7/5/94)			3.869E+07	127 69	8 860E+07	100.29	OK	X	13C-1234678-HpCDF 131.7% RERUN ON: 8/15/94
	SMB-II (7/5/94)			4.037E+07	133.23	8.140E+07	89.77	OK	X	IS AREAS > 120% RERUN ON: 8/15/94
	SB8024			4.985E+07	164 52	9 450E+07	136.16	OUT	C	13-C- TCDP AND TCDD VERY LOW (FRONT END IS LOW) RERUN ON: 8/15/94
	SBC985_MS			5.362E+07	176 96	1.217E+08	177.92	OUT	X	13C-TCDF AND TCDD VERY LOW (FRONT END IS LOW) RERUN ON: 8/15/94
	SBC985_MSD			6.090E+07	200.99	7.550E+07	110.38	OUT	X	SEVERAL 13C IS TARGETS EXCEED 120% RECOVERY LIMIT. RURUN ON: 8/15/94
	SBC954			4.102E+07	135 38	8 030E+07	117.40	OK	C	13C-1234678-HpCDF=120%, OCDD=2101 pg/uL ok not saturated. RERUN ON: 8/15/94
	SBC954_DUP			0 000E+00	0 00		0 00	OUT	C	**** SMAEARD ***** TOTALLY UNUSABLE: NEEDS TO RERUN RERUN ON: 8/15/94
	SBC955			4 212E+07	139 01	9 020E+07	131 87	OK	C	13C-TCDF= 16% RERUN ON: 8/15/94
	SBC956			4 194E+07	138 42	8.260E+07	120.76	OK	C	
	CAL VER V07254 15.LIS				0 00		0 00			
	08044 02.LIS									
I	CONCAL	08/04/94	H08044H1_2	3 050E+07	(50-200)	1 020E+08	(50 - 200)	OK		

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SBC957		H08044H2_1	3.600E+07	118.03	9.780E+07	95.88	OK	C	13C-TCDD/TCDF OUT	RERUN ON: 8/18/94
SBC958		H08044H2_2	4.660E+07	152.79	1.260E+08	123.53	OUT	C	IS AREA OUT	RERUN ON: 8/18/94
SBC963		H08044H2_3	4.520E+07	148.20	9.040E+07	88.63	OK	C	OK	
SBC964		H08044H2_4	4.460E+07	146.23	9.100E+07	89.22	OK	C	OK	
SBC965		H08044H2_5	4.170E+07	136.72	7.180E+07	70.39	OK		OUT: LOTS OF 13C IS > 120%	B/L RERUN ON: 8/20/94
SBC966		H08044H2_6	4.610E+07	151.15	1.170E+08	114.71	OUT		IS AREA OUT	~~RERUN ON:~~
SBC971		H08044H2_7	4.500E+07	147.54	1.120E+08	109.80	OK		OK	
SB8020		H08044H2_8	4.350E+07	142.62	8.210E+07	80.49	OK		OUT: 13C-HxCDF 130%, 13C-HpCDD 124% EXCEEDS CALI CURVE	RERUN ON 8/21
SB8021		H08044H2_9	4.810E+07	157.70	1.150E+08	112.75	OUT		IS AREA OUT	RERUN ON: 8/7/94
CAL_VER VO8044 11.LIS		H08044H2_10	3.300E+07	108.20	1.070E+08	104.90	OK		OK	
C08074 02.LIS										
CONCAL	08/07/94	H08074H2_2	4.590E+07	(50 - 200)	1.540E+08	(50 - 200)	OK			
SB8021 (Re)		H08074H2_4	1.070E+07	23.31	2.880E+07	18.70	OUT	X	IS AREA OUT	RERUN ON:
SBC954_MS		H08074H2_5	4.260E+07	93.25	1.120E+08	72.73	OK	X	13C-TCDD/TCDF OUT	RERUN ON: 8/22
SBC954_MSD		H08074H2_6	4.870E+07	106.10	9.940E+07	64.55	OK	X	13C-TCDD/TCDF OUT	RERUN ON: 8/22
SB8019 27		H08074H2_6	4.820E+07	105.01	8.310E+07	53.96	OK		13C-TCDD/TCDF OUT	RERUN ON: 8/21/94
SBC976 (Re)		H08074H2_8	2.960E+07	64.49	7.150E+07	46.43	OK		OK	
SCB977 (Re)		H08074H2_9	2.550E+07	55.58	8.250E+07	53.57	OK		OK	
SBC980 (RE)		H08074H2_10	3.090E+07	67.32	7.000E+07	45.45	OK		13C-TCDD/TCDF OUT	
SBC981 (RE)		H08074H2_11	2.300E+07	50.11	7.430E+07	48.25	OK		13C-TCDD/TCDF OUT	
SBC982 (RE)		H08074H2_12	3.070E+07	66.88	6.160E+07	40.00	OUT		13C-TCDD/TCDF OUT	
SB8022 (RE)		H08074H2_13	2.660E+07	57.95	7.590E+07	49.29	OK		13C-TCDD/TCDF OUT	
CAL_VER VO8074 14.LIS		H08074H2_14	6.860E+07	149.46	2.080E+08	135.06	OK		OK	
ICAL CC3	08/14/94	H08144H1_2	2.330E+07	(50 - 200)	6.720E+07	(50 - 200)	OK			
SMB(7/7/94) (Re)		H08144H2_6	1.880E+07	80.69	5.420E+07	80.65	OK		OK	
SMB-I (RE) 7/8/94		H08144H2_7	1.690E+07	72.53	3.790E+07	56.40	OK		OK	
SMB-II (RE) 7/8/94		H08144H2_8	1.890E+07	81.12	3.320E+07	49.40	OK		OK	
SBC977 (RE)		H08144H2_9	7.580E+06	32.53	2.200E+07	32.74	OUT		IS AREA OUT	
SBC980 (DL 3X) (RE)		H08144H2_10	4.840E+06	20.77	6.860E+07	102.08	OUT		OUT DUE TO DILUTION	
SB8023 (DL 100X)(RE)		H08144H2_11	1.720E+06	7.38	3.900E+06	5.80	OUT		OUT DUE TO DILUTION	
CAL_VER VO8144 12.LIS		H08144H2_12	2.850E+07	122.32	9.200E+07	136.80	OK		OK	
C08154 02.LIS										
CONCAL	8/15/94	H08154H1_2	1000			(50 - 200)				
SMB-I (914) Re 7/5		H08154H2_1	1000	100.00		ERR				
SMB-II (915) Re 7/5		H08154H2_2		0.00		ERR				
SBC986(DL 100X)(RE)		H08154H2_3		0.00		ERR				
SBC985_MS (RE)		H08154H2_4		0.00		ERR				

No Cal Ver. for 8/15 Power outage caused loss of Run. up to Hexa.

100X

SB:: 985_MSD (RE) ✓		H08154H2_5		0.00		ERR			
SB8024 (RE) ✓		H08154H2_6		0.00		ERR			
SBC984 (RE) ✓		H08154H2_7		0.00		ERR			
SBC954 (RE) ✓		H08154H2_8		0.00		ERR			
SBC954_DUP(RE) ✓		H08154H2_9		0.00		ERR			
SBC955 (RE) ✓		H08154H2_10		0.00		ERR			
CAL_VER		H08154H2_12		0.00		ERR			Run was lost due to power outage
ICAL CS3	8/18/94	H08184H1_4		(50 - 200)		(50 - 200)			
SBC967 (RE) ✓		H08184H1_8							
SBC968 (RE) (DL 2X) ✓		H08184H1_9							
SBC969 (RE) ✓		H08184H1_10							
SBC979 (RE) (DL 6X) ✓		H08184H1_11							
SBC957 (RE) ✓		H08184H1_12							
SBC958 (RE) ✓		H08184H1_13							
CAL_VER V08184(4.LIS		H08184H1_14							
ICAL: CS3	8/20	H08204H1_4							
SBC965 (RE) (DL 2X) ✓		H08204H1_4							
SBC970 (RE) ✓		H08204H1_4							
CAL_VER		H08204H1_4							

V08204 15.LIS

8/21

V08214 09.LIS

C0821 402.LIS

02004 30

SEND CONFIRMATION

DATE/TIME 08-30-94 03:23PM
LOCAL I.D. 5125222021
LOCAL NAME SwRI

*** SEND ***

No.	REMOTE STATION I.D.	START DATE/TIME	DURATION	#PAGES	COMMENT
1	703 683 0378	08-30-94 03:19PM	4'35"	5	COMPLETE

TELEPHONE CONVERSATION RECORD

020044

Proposal No.: NA cs 8/29/94

Date: Aug 29, 1994 Time:

Project No.: ~~01-46~~ 01-6359-028

Contract No.: 68-D7-0135

Other: NA

With:

Mr./Mrs. Kathy (SMO)

Organization: 300 NORTH LEE ST.

Address: ALEXANDRIA, Virginia

City:

Phone No.:

Ext.:

Telephone Charge:

☑ Incoming ☐ Outgoing

Purpose: 8432 B-01 Sample SBC980 3x Dilution

SDG: SBC 972

Resume: 2,3,7,8-TCDF high conc. of 460 pg/uL

Calib high conc. is 200 pg/uL

Per Joe Pan

Action to be Taken: OK By Kathy

Action to be Taken by:

Required Date:

Distribution:

Signature: Jeanette Garcia

(SwR-42)

SAMPLE MANAGEMENT OFFICE

Operated by DynCorp Viar, Inc.
under contract # 68-D9-0135
to the U.S. Environmental Protection Agency

020045

FAX COMMUNICATION

Date: 8/26/94

To:

Fax Number:

Name: JoAnn Byd

Company:

Address:

Subject: SASS 8432 + 8431-B

From: Kathleen Houle Pegram
SAS Coordinator
(703) 519-1333

Number of Pages, Including This Page: 3

Comments or Special Instructions: JoAnn,
Attached are Region II's criteria to follow for sample dilutions/reanalyses for above SASS.

If you have any questions, please call me.

Kathy

SMO FAX NUMBER - (703) 683-0378
P.O. Box 818, Alexandria, Virginia 22313. Phone: (703) 519-1200

C21-001-73

020046

Response to the reanalyses/dilution Requests
Case # SAS843280 1

Sample ID	Response
* SBC980	Why 3X dilution?
976	Do not reanalyze. Rerun only if Internal Standard recovery is < 25%
977	Same as 976
984	Rerun only if RS area is < 25%
986	Do not dilute if OCDF or OCDD concentration exceeds upper calibration limit but < 100%
990, 991	See 976 above
992	See 976 above
SB8022	See 976 above
023	Dilute
024	See 976 above
SBC979	Rerun if RC area is < 25%
SBC985MS	See 976 above
SBC985MSD	Do not repeat if I.S recovery is < 150%

* Please respond to why 3X dilution, so Region can determine if dilution is wanted.

Response to the reanalyses/dilution requests

Case # SAS 8431B-01

Sample I.D	Response
SBC967	Rerun only if RC area is < 25%
968	Same as 967 above
969	Same " " "
970	Same " " "
934	Do not rerun
954 DUP	What is the problem?
955	Rerun only if 1.5 recovery is < 25%
957	Same as 955 above
958	Same as 967 above
965	Do not repeat if 1.5 recovery is < 150%
966	Same as 967
SB8020	Repeat only 1.5 recovery is > 150%
021	Same as 967 above
SBC954 MS, SBC954 MSD	Repeat only if 1.5 recovery is < 25% ~~and~~ or > 150%
SB8019	Repeat only if 1.5 is < 25% ~~and~~ or > 150.

SOUTHWEST RESEARCH INSTITUTE
TELEPHONE CONVERSATION

020048

DATE: 8/24/94

WITH: Kathy Pegram
SMO

RE: 8432B-01

MESSAGE: Om 8432B-01 SBC980

why was there a 3x dilution?

J Boyd
Jo Ann Boyd, Supervisor/QAU

cc Pan
Gorton
~~File~~
Maria

SOUTHWEST RESEARCH INSTITUTE

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6220 CULEBRA
SAN ANTONIO, TEXAS 78228-0510

CHEMISTRY & CHEMICAL ENGINEERING DIVISION
BUILDING 201, 109 AVENUE C

020049

FACSIMILE TRANSMITTAL SHEET

DATE: 8-19-94 CHARGE: 01-0756

Number of Pages (including cover sheet) 43

TO: Kathy Pegram
AMO

FAX NUMBER:

FROM: JO ANN BOYD

TELEPHONE: (210) 522-2169

The Southwest Research Institute Quality Assurance telephone number is (210) 522-2169. The fax number is (210) 522-2021.
The machine is a Xerox Telecopier 295.
If you have any questions, please call me at (210) 522-2169.

NOTES:

020050

SOUTHWEST RESEARCH INSTITUTE MEMORANDUM

August 18, 1994

Kathy Pegram, SMO

RE: 8402B-01, 8432B-01 and 8431B-01

As we discussed on the phone the 8402B-01 had 1 reanalysis for the low resolution method and 14 reanalyses on the high resolution analysis.

I apologize for the delay on the other two cases. Where we stand at this time on them is getting data out to you on August 29, 1994. The problems again are due to the high concentrations of the samples as identified in the first SAS. Both 8432B-01 and 8431B-01 are being run together so it is difficult at this point to separate them in order to complete one and would slow us down. We have done over 90% of the dilutions and reanalysis but due to the levels we have to anticipate possible instrument contamination or carryover and the process slows down. In addition to this the work up of the data and review is very time consuming due to the criteria involved and the need for evaluating each reanalysis performed. We do anticipate getting both Cases out by August 29, 1994.

With this in mind we did not get an extension approved for the 8431B-01 since we were still review the problems. At this time we anticipate 16 reanalyses and would like to have the extension considered on this case as well. 8432B-01 has a total of 14 reanalysis/dilutions at this time.

Any consideration the region can give us on the work involved would be greatly appreciated. Again, we apologize for the inconvenience but we did not anticipate all the cases having the high concentrations involved.

If you have any questions, or need further information, please contact me at 2169.

Boyd

Jo Ann Boyd, QAU
Group Leader

REANALYSIS REQUIRED

SAS 8432B-01, SwRI 01-6359-028

Sample ID	Reason
SBC980	3X dilution
SBC976	C-13 2378-TCDF %REC OUT (33%)
SBC977	C-13 2378-TCDF %REC OUT (38.5%)
SBC984	C-13 HxCDD RS AREA OUT
SBC986	DILUTION, MANY TARGET CONC EXCEED CALIBRATION RANGE
SBC990	C-13 TCDD & C-13 TCDF %REC LOW
SBC991	C-13 IS %REC LOW
SBC992	C-13 TCDD & C-13 TCDF %REC LOW
SB8022	C-13 IS %REC LOW
SB8023	DETECTOR SATURATED, NEED 60-100X DILUTION
SB8024	C-13 TCDD & C-13 TCDF %REC LOW
SBC979	RS AREA OUT
SBC985 MS	C-13 TCDD & C-13 TCDF %REC LOW
SBC985 MSD	SEVERAL C-13 IS %REC EXCEED 120% REC LIMIT

Total of 14 reanalyses/dilution.

SAS 8431B-01, SwRI 01-6359-027

SBC967	RS AREA OUT
SBC968	RS AREA OUT
SBC969	RS AREA OUT
SBC970	RS AREA OUT
SBC954	C-13 1234678-HpCDF 129% REC
SBC954 DUP	CHROMATOGRAM SMEARED
SBC955	C-13 TCDF LOW %REC
SBC957	C-13 TCDD & C-13 TCDF %REC LOW
SBC958	RS AREA OUT
SBC965	MANY C-13 IS %REC > 120%
SBC966	RS AREA OUT
SB8020	C-13 IS HxCDF & HpCDD %REC >120%
SB8021	RS AREA OUT
SBC954 MS	C-13 TCDD/TCDF %REC OUT
SBC954 MSD	C-13 TCDD/TCDF %REC OUT
SB8019	C-13 TCDD/TCDF %REC OUT

Total of 16 reanalyses.

If in EPA's opinion any or all of the above reanalysis/dilution is unnecessary, SwRI will not proceed. Please let us know ASAP.

020052

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SAN ANTONIO, TEXAS 78228-0510

CHEMISTRY & CHEMICAL ENGINEERING DIVISION
BUILDING 201, 109 AVENUE C

FACSIMILE TRANSMITTAL SHEET

DATE: 8-18-94 CHARGE: 01-0756

Number of Pages (including cover sheet) 2

TO: KATHY PEGRAM
SMO

FAX NUMBER:

FROM: JO ANN BOYD

TELEPHONE: (210) 522-2169

The Southwest Research Institute Quality Assurance telephone number is (210) 522-2169. The fax number is (210) 522-2021.
The machine is a Xerox Telecopier 295.
If you have any questions, please call me at (210) 522-2169.

NOTES:

SAS 8432-B-01
SAS 8431-B-01

DILUTION/RE-ANALYSIS REQUEST

020058

IRMATION

DATE/TIME 08-19-94 02:25PM
LOCAL I.D. 5125222021
LOCAL NAME SwRI

*** SEND ***

No.	REMOTE STATION I.D.	START DATE/TIME	DURATION	#PAGES	COMMENT
1	703 519 8625	08-19-94 02:24PM	0'36"	1	COMPLETE

SOUTHWEST RESEARCH INSTITUTE

020054

TELEPHONE CONVERSATION RECORD

Date: August 2, 1994

From: JoAnn Boyd JB

With: Ms. Kathy Pegram, SMO

Spoke with Kathy Pegram, SMO, in reference to the extension of SAS 8432-B-01. The extension was approved by SMO.

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, USA 78228-0510 • (210) 684-5111 • TELEX 244846

020055

To: Kathy Pegram, SMO

From: Jo Ann Boyd, SwRI

Re: Request for Extension

Date: July 20, 1994

==========

We request a two week extension for:

SAS8402-B-01 Dioxin Analyses
SAS8431-B-01 Dioxin Analyses
SAS8432-B-01 Dioxin Analyses

for the following reasons:

1. The samples are very dirty. There are interferences present which are preventing our instruments from meeting criteria. The problem is not from the target compounds, but from other contaminants present in the matrix.

2. Our instruments are requiring extra maintenance. Additional sequences are necessary. The samples are also being recleaned.

For these reasons, we are asking for an extension.

Please advise as soon as possible. I can be reached at 210-522-2169.

cc: J. Pan
File

SAN ANTONIO, TEXAS
HOUSTON, TEXAS • DETROIT, MICHIGAN • WASHINGTON, DC

020056

SEND CONFIRMATION

DATE/TIME	07-20-94 08:57AM
LOCAL I.D.	5125222021
LOCAL NAME	SwRI

*** SEND ***

No.	REMOTE STATION I.D.	START DATE/TIME	DURATION	#PAGES	COMMENT
1	703 683 0378	07-20-94 08:56AM	0'36"	1	COMPLETE

020057

SOUTHWEST RESEARCH INSTITUTE

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6220 CULEBRA
SAN ANTONIO, TEXAS 78228-0510

CHEMISTRY & CHEMICAL ENGINEERING DIVISION
BUILDING 201, 109 AVENUE C

FACSIMILE TRANSMITTAL SHEET

DATE: 6/27/94 CHARGE: 01-0756

Number of Pages (including cover sheet) 25

TO: SMO

FAX NUMBER:

FROM: JO ANN BOYD

TELEPHONE: (210) 522-2169

The Southwest Research Institute Quality Assurance telephone number is (210) 522-2169. The fax number is (210) 522-2021.
The machine is a Xerox Telecopier 295.
If you have any questions, please call me at (210) 522-2169.

NOTES:
COC
8402B-04 - 22146
8402B-01 - 22144
8413B-01 - 22198
8402B-01 - 22141
8431B-01
8432B-01
8402B-03 - 22154

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RECEIVED
OCT 25 1994
S & M BRANCH

October 24, 1994

Lockheed
USEPA REGION II, ESD
2890 Woodridge Ave, Bldg. 209
Edison, NJ 08837

Attention: Stelios Gerazounis

Subject: SAS Case: SAS 8432B-01 SDG SBC972 and SBC984
SwRI Project Number:

Dear Mr. Gerazounis:

In response to your Faxes dated 9/22/94, and 9/28/94, concerning the above referenced cases, we are submitting the following:

Item 1 Questions faxed (9/22/94)
Confirmation Analysis

Missing supporting data ie. Calibration, analytical sequence, column performance check.

Response

The supporting data can be found in the data package pages 101330 - 101353.

Item 2
Method 8290: Several forms are missing

Total homologue, method Blank summary, window defining mix summary, resolution summary. SAS states that CLP like forms must be submitted.

Response

Total homologue was found for every sample in the data package. Please check your data package for the Total homologue data.

Method Blank summary, window defining mix summary, resolution summary have been generated and are being resubmitted.

Item 1 Questions faxed (9/28/94)
Missing supporting Data

Column performance check standard summary Form V-PCDD-1 showing RT of first and last eluters.

Response

Column performance check standard summary Form V-PCDD-1 showing RT of first and last eluters has been generated and is being submitted.

Item 2

The Quan report showing RT, peak areas, height etc, for initial calibration performed on 7/20/94 is missing. The Quan reports for all continuing calibrations are missing. Not all the SIM chromatogram show the peak areas. It is not possible to (calculate) verify RRFs.

Response

The above missing data has been generated and is being submitted.

Item 3

In addition to the Quan report, the SIM chromatogram for continuing calibration of 7/24/94 at 3:07 are also missing.

Response

The Quan report, the SIM chromatogram for continuing calibration of 7/24/94 at 3:07 nc be found on page 101146A. However, and extra one is being submitted.

Item 4

The analytical sequence, Form V PCDD-3 is missing for all samples.

Response

The analytical sequence, Form V PCDD-3 are being submitted for all samples.

Item 5

The PCDD/PCDF Blank summary, Form IV-PCDD is also missing.

Response

The PCDD/PCDF Blank summary, Form IV-PCDD are being submitted.

If you should have any questions, or need additional information, please do not hesitate to call me at (210) 522-2169 or by FAX at (210) 522-2021.

Sincerely,

Jo Ann Boyd
Group Leader, QAU

cc: SMO
JAB/mjp

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, USA 78228-0510 • (210) 684-5111 • TELEX 244846

October 24, 1994

Lockheed
USEPA REGION II, ESD
2890 Woodridge Ave, Bldg. 209
Edison, NJ 08837

Attention: Stelios Gerazounis

Subject: SAS Case: SAS 8432B-01 SDG SBC972 and SBC984
SwRI Project Number:

Dear Mr. Gerazounis:

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Confirmation Analysis

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Response

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Response

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Item 3

In addition to the Quan report, the SIM chromatogram for continuing calibration of 7/24/94 at 3:07 are also missing. ✓

Response

The Quan report, the SIM chromatogram for continuing calibration of 7/24/94 at 3:07 be found on page 101146A. However, and extra one is being submitted. mc ✓

Item 4

The analytical sequence, Form V PCDD-3 is missing for all samples.

Response

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Item 5

The PCDD/PCDF Blank summary, Form IV-PCDD is also missing.

Response

The PCDD/PCDF Blank summary, Form IV-PCDD are being submitted.

If you should have any questions, or need additional information, please do not hesitate to call me at (210) 522-2169 or by FAX at (210) 522-2021.

Sincerely,

Jo Ann Boyd
Group Leader, QAU

cc: SMO
JAB/mjp