A COMPARISON OF DIOXIN LEVELS FOUND IN RESIDENTIAL SOILS OF DAVIS COUNTY UTAH WITH THOSE FOUND IN RESIDENTIAL SOILS IN THE DENVER FRONT RANGE

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INTRODUCTION

1.1 Overview of the Issue

Dioxins can be formed and released into the environment from multiple sources including, but not limited to, the combustion of municipal and medical waste, combustion of coal and wood from power plants, combustion of petroleum-based compounds, wood burning furnaces, uncontrolled burning of waste, forest and brush fires, structural fires, cement kilns, metals processing, and chemical manufacturing. Dioxins can be found in soils and other environmental media after atmospheric transport and deposition. Dioxins are a potential health concern because they may increase risk of cancer and other adverse health effects at very low exposure levels. Dioxins are persistent environmental chemicals that accumulate in the food chain because of their hydrophobic and lipophilic nature and resistance to metabolism.

It is desirable to measure ambient concentrations of dioxins in soil and other environmental media to allow comparison of these levels with dioxin levels from sites with regulatory or health concerns. A comprehensive study to characterize dioxins, furans and PCBs in soil samples from the Denver Front Range area was funded by the U.S. EPA and completed in July 2001. The study was performed to establish typical ambient concentrations of these chemicals in soils in and around Denver for comparison with soil samples collected at the Rocky Mountain Arsenal.

For the study, samples of soils were collected in five basic land use categories: Agricultural, Commercial, Industrial, Open Space and Residential. The soils were analyzed for the 29 congeners in the polychlorinated dioxin/furan/biphenyl group that bind to the aryl hydrocarbon (Ah) receptor and possess toxic characteristics similar to 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). TCDD toxicity equivalents (TEQs) for the samples were calculated using the concentrations of the congeners in the samples and the corresponding toxicity equivalent factors (TEFs) for the congeners. TEQs were calculated for both the sums of the 29 dioxin-like congeners (17 dioxins and furans plus 12 PCBs) as well as just the 17 dioxin and furan congeners (PCBs not included). In addition, since binding of dioxins to soil particles is a physical process that might be expected to depend on the total organic carbon (TOC) content of the soil and soil particle sizes, these data were also obtained. The sample results were entered into a database, analyzed using various comparative statistical methods and compared to various risk-based screening levels. The sampling results provided a reliable set of ambient dioxin measurements in a variety of soil-sampling locations in the Denver Front Range area.

A portion of the sampling effort described in the Denver study was repeated in Davis County, Utah. Residential soil samples were collected in Davis County Utah, analyzed for dioxin content and compared to the results of the residential soil samples collected from the Denver Front Range. This report details the results of the Davis County sampling.

1.2 Definition of Dioxins

In this study the term "dioxins" is used to denote a set of 17 chemically related congeners in the dioxin/furan group that bind to the aryl hydrocarbon (Ah) receptor in some cells and possess toxic characteristics similar to 2,3,7,8 tetrachlorodibenzo-*p*-dioxin (TCDD), the most toxic of the dioxin congeners. TCDD and the other dioxins are a potential health concern because they may pose an increased risk of cancer and other adverse health effects at very low exposure levels.[1]

Additional 12 congeners from the polychlorinated biphenyl (PCB) group are often included with the 17 dioxin/furan congeners resulting in a total of 29 dioxin/furan/PCB congeners that are collectively referred to as "dioxins". This study does not include analysis of the PCB congeners because the current USEPA soil screening levels for dioxins are based only upon the 17 dioxin/furan congeners. [2]

1.3 Calculation of TCDD Equivalents in Soil

Not all dioxin congeners are equally toxic. The relative toxicity of a congener, compared to that of TCDD is expressed in terms of Toxicity Equivalency Factor (TEF). Table 1 lists the consensus mammalian (including human) TEF values for the 17 dioxin/furan congeners, developed by a panel of experts assembled by the World Health Organization (WHO). Note that TEFs are often based on limited data, and so they are only an *order of magnitude* approximation of the relative toxicity of each congener.[3]

Table 1: List of Analytes and TEFs[3]

Class	Target Analyte	TEF for Mammals
Dibenzo-*p*-dioxins (PCDDs)	2,3,7,8-TCDD	1
	1,2,3,7,8-PeCDD	1
	1,2,3,4,7,8-HxCDD	0.1
	1,2,3,6,7,8-HxCDD	0.1
	1,2,3,7,8,9-HxCDD	0.1
	1,2,3,4,6,7,8-HpCDD	0.01
	OCDD	0.0001
Dibenzofurans (PCDFs)	2,3,7,8-TCDF	0.1
	1,2,3,7,8-PeCDF	0.05
	2,3,4,7,8-PeCDF	0.5
	1,2,3,4,7,8-HxCDF	0.1
	1,2,3,6,7,8-HxCDF	0.1
	1,2,3,7,8,9-HxCDF	0.1
	2,3,4,6,7,8-HxCDF	0.1
	1,2,3,4,7,8,9-HpCDF	0.01
	1,2,3,4,6,7,8-HpCDF	0.01
	OCDF	0.0001

The aggregate toxicity of different dioxins in an exposure medium (soil, food, etc.) is a function of the concentration of each congener in the medium, the intake of the medium, the toxicokinetics (absorption, distribution, metabolism and elimination) of the congeners, the relative biological potency of the congeners, and the congener-specific TEF values. However, for the purposes of screening-level evaluations of dioxin concentrations in soil samples, it is usually most convenient to calculate the concentration of TCDD-Equivalents (TEQs) present in soil as shown below in equation 1:

$$TEQ_{(D/F)} = \sum_{i=1}^{17} (C_i * TEF_i) \quad (1)$$

Where: C_i is the concentration of the specific congener in the exposure medium and TEF_i is the respective Toxicity Equivalency Factor for that congener.[3]

The application of TEF values to the calculation of soil TEQ values is only appropriately used for screening purposes. This is because TEFs are derived from, and thus should only be applied to, biological endpoints (e.g., embryotoxicity). The soil TEQ approach does not account for the potential influences of differential absorption, metabolism, distribution, and excretion of different congeners from soil, and risk assessors should account for these uncertainties in the interpretation of the soil TEQ values.[1]

1.4 Purpose of This Study

The current study focuses on the concentration of the17 dioxin/furan congeners found in residential soils of Davis County. The results of 22 surface soil samples taken throughout the county are compared to the results of 38 samples that the United States Environmental Protection Agency (EPA) obtained in residential surface soils during their Denver Front Range study. Statistical analysis, consisting of a variance test followed by a two-tailed t-test to compare the means of the EPA data to the Davis County data, was performed to compare the residential surface soil dioxin levels in Davis County and those found in the Denver Front Range study.

MATERIALS AND METHODS

2.1 Study Area

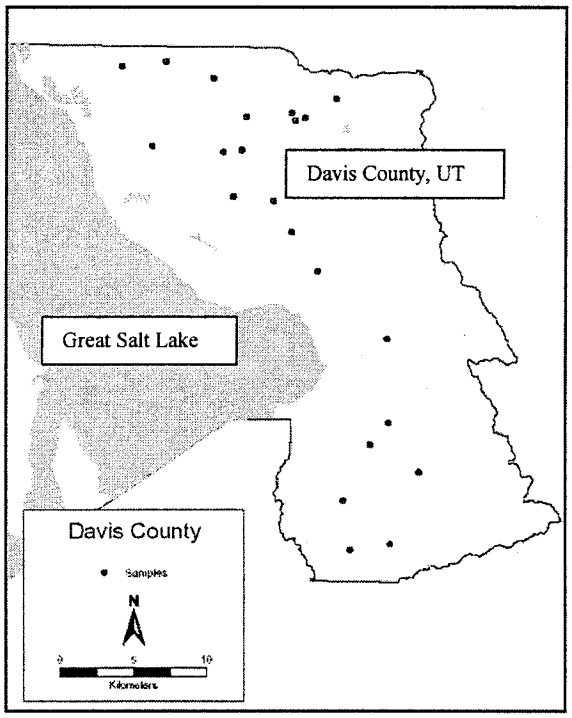
There has recently been much concern about dioxins in Davis County due to the presence of a municipal waste combustor within the county. Davis County is located between Salt Lake and Weber counties in the heart of the Salt Lake/Ogden metropolitan area and contains 15 cities. Davis County consists of 630 square miles and has the smallest land area of the 29 Utah counties. Only 223 square miles is actual developable land. The remainder is part of the Great Salt Lake. The population of the county was

87,641 in 1990 and has increased to an estimated 2001 population of 250,000. Most of the population increase occupies land that was previously agricultural.[4]

Sample sites were chosen that met the EPA's definition of residential land use areas. The EPA defined residential land as land that is within 200 feet and adjacent to residential development. This land may include public parks, neighborhood greenbelts and trails, and street medians. Schools and playgrounds are not included.[1]

All of the soil samples were collected within the current boundaries of Davis County. A total of 22 sample locations in residential areas were designated and evenly distributed over the spatial area of the county. Figure 1 is a map of Davis County that contains the sampling locations.

Figure 1: Sampling Locations in Davis County



2.2 Sampling Procedure

All efforts were taken to insure that the sample collection methods used for this study were equivalent to those used by the EPA during their study of the Denver Front Range. Samples were collected from relatively natural, undisturbed areas; away from potential contamination point sources not related to this investigation (i.e., railroad ties, residential shops and garages, industrial facilities, etc.); and from locations that are easily accessible and that can be readily identified in the future (i.e., near semi-permanent physical features). A global positioning satellite (GPS) device accurate to within ~ 30 feet was used to identify the UTM coordinates of each sampling location.

Thus, surface soil was the exposure medium of chief concern for human receptors and all soil samples collected for this study were grab samples collected at 0-2 inches in depth. Samples were collected as single point grab samples using a new, clean stainless steel trowel. The trowels were graduated in inches to ensure the proper sampling depth is obtained for each sample. All surface soil sampling equipment was disposed of following the collection of each sample, eliminating the need for equipment decontamination, and reducing the potential for cross-contamination. Each sample was collected in clean, laboratory supplied glass jars, labeled, and stored in a cooler with ice. Sample jars were completely filled and tightly capped. Two jars were filled at each of the locations so three random samples could be chosen for duplicates.

2.3 Sample Analysis

All soil samples were submitted to Columbia Analytical Services (CAS) of Houston, TX for sample preparation. Each sample was air dried, weighed and coarse sieved through a #10 (2 millimeter) stainless steel screen. The fraction passing through the screen is referred to as the "bulk" fraction. A portion of this fraction was stored in a clean amber glass jar for possible future use. The remainder of the bulk fraction was further sieved through a 60-mesh (250 micrometer) stainless steel screen to isolate the "fine" fraction. The fine sieved soils were placed in new clean amber jars each containing similar weights of soils that were intended to be as identical as possible.

The "fine" fraction was isolated for chemical analysis because it is believed that fine soil particles electrostatically adhere to skin, are more likely to be ingested by hand to mouth contact than course particles, and is the most relevant media for determining human health risks. In addition, the fines were analyzed during the Denver Front Range Study and similar sample handling methods were used to allow comparison of sample results.

After consultation with CAS, the soil samples were analyzed for dioxins in accordance with EPA Method 1613. Method 1613 provides procedures for the detection and quantitative measurement of polychlorinated dibenzo-*p*-dioxins (tetra- through octachlorinated homologues; PCDDs), and polychlorinated dibenzofurans (tetra- through octachlorinated homologues; PCDFs) in a variety of environmental matrices and at part-per-trillion (ppt) to part-per-quadrillion (ppq) concentrations. The analytical method calls for the use of high-resolution gas chromatography and high resolution mass spectrometry (HRGC/HRMS) on purified sample extracts and can obtain a lower detection level and better resolution compared to EPA Method 8290 for dioxins.

2.4 Quality Assurance

Numerous steps were taken in this study to obtain data that would allow an assessment of the quality and reliability of the data collected. This was done so that the usability of the data could be defended.

Duplicates

A duplicate is a second sample of soil that is collected simultaneously and with the same sampling method as with the first sample at the same location. Duplicates were collected at each of the 22 sample locations and three were randomly chosen for analysis. Analysis of these samples provided data on the variability within and between related samples.

Independent Data Validation

An independent validation of the CAS data was performed by an independent contract chemist (ChemVal Consulting) with expertise in validation of PCDD and PCDF analytical results. The data validation process involves two basic lines of inquiry. First, the data is evaluated to determine if the laboratory followed in detail the method that is referenced on the report. Second, the data is evaluated to determine if the samples were amenable to analysis by the referenced method.

Instrumental parameters including tuning, performance checks and calibration are investigated, as well as quality control parameters for method, laboratory, and sample effects. Calculations are spot-checked for both accuracy and transcription errors. Spike recoveries and blank results are verified and compared to acceptance limits. Positive results in samples are checked for confirmation or correct spectral data and are also checked for calculation and reporting errors. When all of the checks have been performed, exceptions to quality control and quality assurance parameters are evaluated for their effect on the reliability of the reported results. These evaluations may result in flagging of the data to communicate a higher degree of variability than expected by the analytical method used. A final report was generated to explain the specific results and finding of the validation process.

RESULTS AND DISCUSSION

The results of the Davis County sampling are discussed below. Detailed dioxin and TOC laboratory analytical reports for each field sample, including duplicates, are presented in Appendix A. A detailed map showing sample locations and descriptions is included in Appendix B. Spreadsheets showing the calculation of the TEQs for the Davis County and Denver residential samples are contained in Appendix C.

3.1 Data Validation Results

Full validation of the data collected during this study found the analytical results for all samples to be usable, as qualified with the appropriate data quality flags.

3.2 TEQ Values in Field Sample and Comparison to Denver Front Range

The analytical results obtained were treated in the same manner as the results that the EPA determined in their Denver Front Range study. The data flags from the two respective labs were compared and the data was treated accordingly. Most of the data points were used as reported; the exception would be those analytes for which the lab reported "non-detects". For those analytes a concentration of one-half the method detection limit was applied. The results for each of the 17 analytes (congeners) for each sample were multiplied by their respective TEF value and to obtain a TEQ value for the congener. The individual congener TEQs were then summed to obtain the sample TEQ. The sample results for both Davis County and the Denver Front Range residential soils were then rank ordered and presented below in Table 2.

Table 2: Residential Soil Dioxin Concentrations

Sample Rank Order	Davis County TEQ Concentration (ppt)	Denver Front Range TEQ Concentration (ppt)
1	0.323	0.213
2	0.399	0.525
3	0.425	0.879
4	0.436	0.885
5	0.490	1.103
6	0.575	1.112
7	0.601	1.148
8	0.615	1.273
9	0.673	1.275
10	0.687	1.283
11	0.727	1.425
12	1.067	1.507
13	1.140	1.571
14	1.177	1.749
15	1.241	1.779
16	1.396	1.797
17	1.833	1.871
18	2.223	1.994
19	2.445	2.114
20	2.819	2.290
21	3.727	2.328
22	4.466	3.054
23		3.578
24		3.817
25		4.420
26		5.634
27		6.714
28		7.540
29		7.984
30		8.340
31		9.371
32		11.340
33		16.806
34		22.478
35		26.929
36		27.956
37		30.254
38		42.880

The sample TEQ concentrations in Table 2 were then plotted against the sample rank order number. The graph for the Denver Front Range is presented as Figure 2 and the graph for Davis County is presented as Figure 3.

Figure 2: Denver Front Range Data Plot

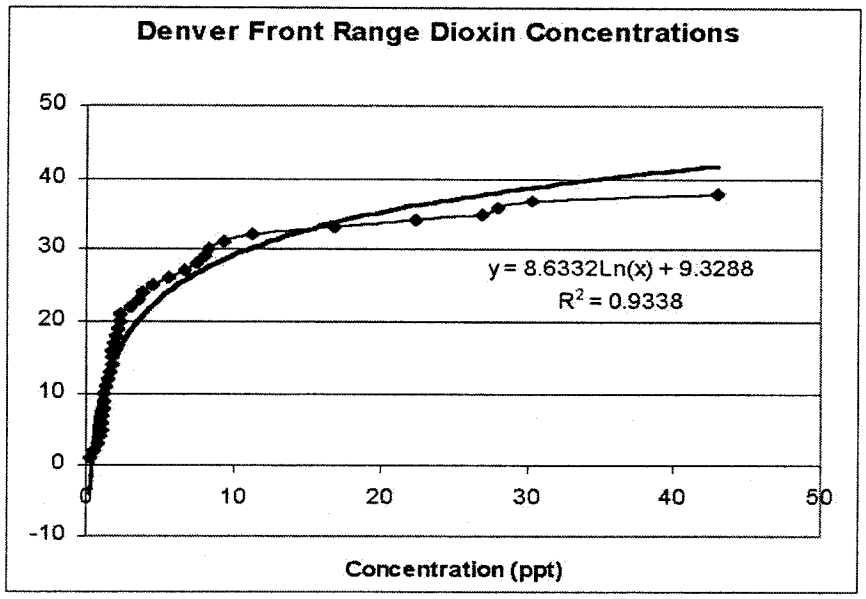
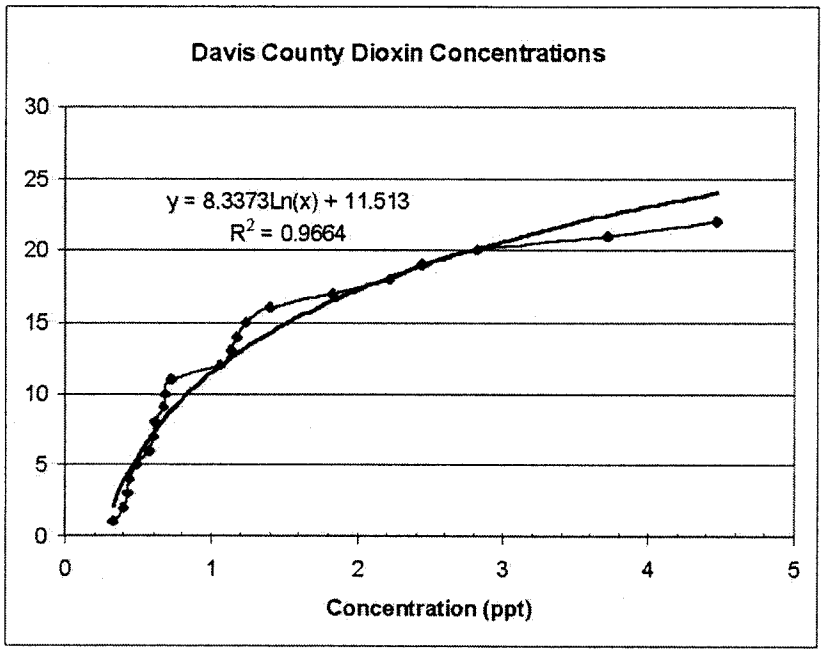


Figure 3: Davis County Data Plot



Both sets of data appeared to be logarithmically distributed so logarithmic regression was applied to each data set. The logarithmic regressions yielded R^2 values of 0.934 for the Denver Front Range data and 0.966 for the Davis County data. These R^2 values

demonstrate a nearly linear relationship for the log-transformed data. Figures 4 and 5 are graphs of the logarithmically transformed data.

Figure 4: Log Transformed Plot of Denver Front Range Data

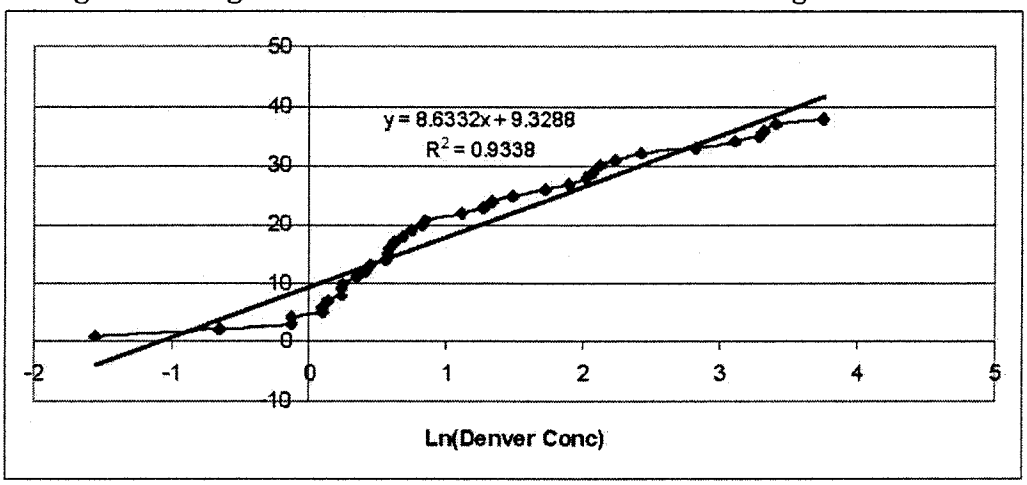
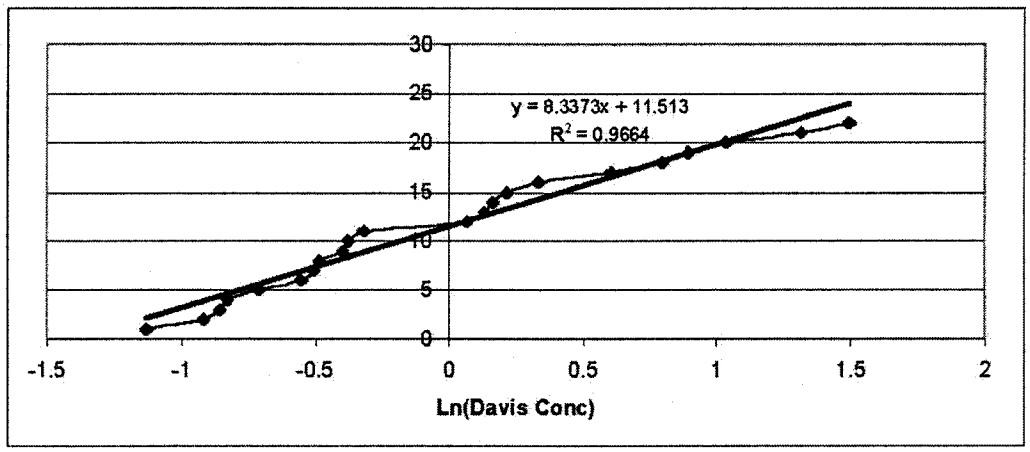


Figure 5: Log Transformed Plot of Davis County Data



Geometric numerical summary measures were then computed for each of the two data sets presented in Table 2. Those results are shown below in Table 3.

Table 3: Summary of Statistical Data

Data Set	Observations	TEQ Range (ppt)	Geometric Mean	95% Confidence Interval
Davis County Residential Soils	22	0.323-4.466	0.998	0.711-1.402
Denver Front Range Residential Soils	38	0.213-42.88	3.248	2.158-4.889

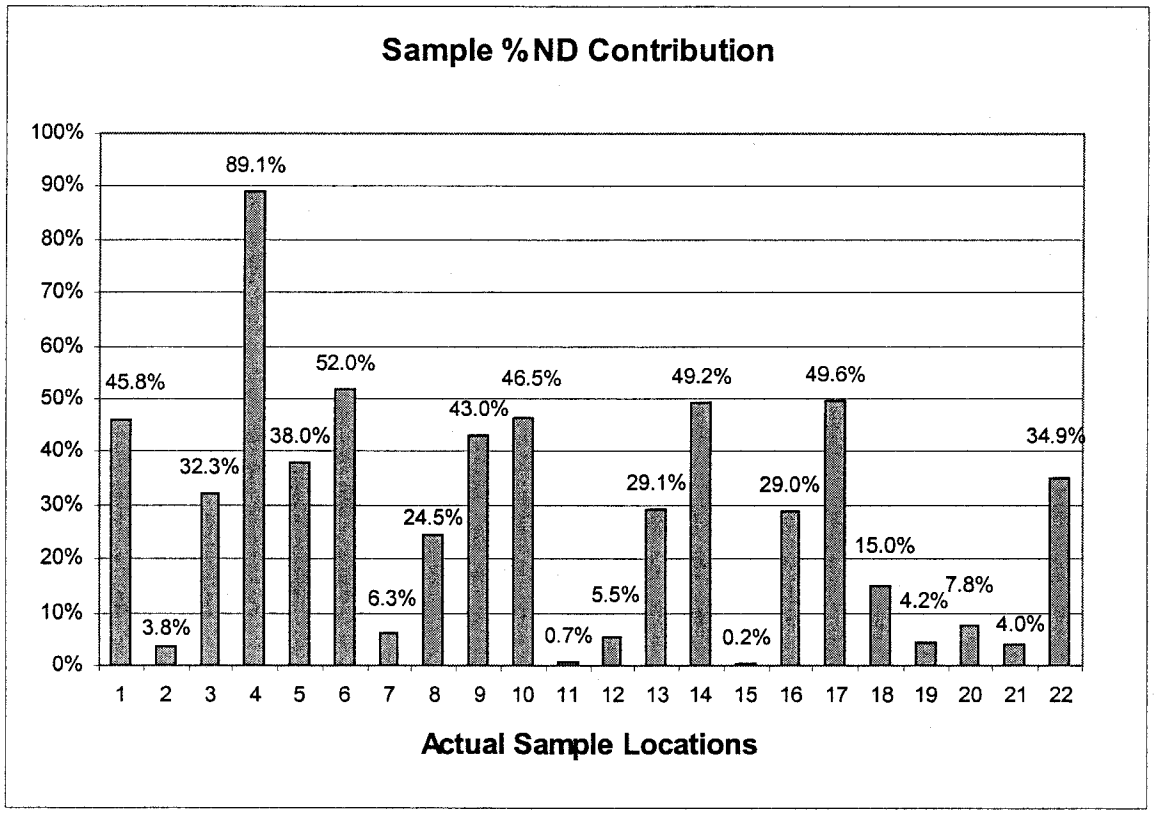
The logarithmically transformed data for Davis County and the Denver Front Range were then subjected to an equal variance test to determine which type of t-test was required to compare the means of the two data sets. The test yielded p=0.0152, which

demonstrated that the two data sets had unequal variances. An unequal variances, unpaired two-sample t-test was then applied to the two data sets to compare the means of those sets. The results of the test were p=0.0000 which lead to the conclusion that the geometric mean residential dioxin soil concentration in the Denver Front Range was statistically greater than the geometric mean residential soil dioxin concentration in Davis County Utah.

3.3 Contribution of Congeners Below the Quantitation Limit (Non-Detects)

As noted above, in the calculation of the TEQ value for a sample, all congener concentrations that were below the MDL (signal/noise ratio < 2.5) were assumed to have a concentration equal to ½ the detection limit. Figure 6 is a graphical representation that each non-detected congener made to the overall TEQ concentration at each sample location. Appendix D contains the spreadsheets with the supporting calculations.

Figure 6: Contribution of Non-Detected Congeners



Treatment of non-detected congeners in a sample is an important consideration when comparing dioxin TEQ concentrations in different data sets . In this study non-detects contributed between 0.2-89.1% of the overall sample TEQ concentration, with the largest contributions occurring on the samples with the lowest dioxin concentrations. Therefore, in order to compare dioxin concentrations between studies, treatment of the non-detects must be identical.

3.4 Contribution of Specific Congeners

The contribution of individual congeners to the overall TEQ concentration may provide information that would lead to the source of the dioxin contamination. It can also reveal which congeners are contributing the majority of the risk. Table 4 compares individual the congener contribution to the overall TEQ concentration for the Davis County samples with the reported mean contribution for that congener from the Denver Front Range study. Although the individual congener contribution to the overall TEQ was different for the two data sets, it should be noted that the top five contributors for each data set are the same.

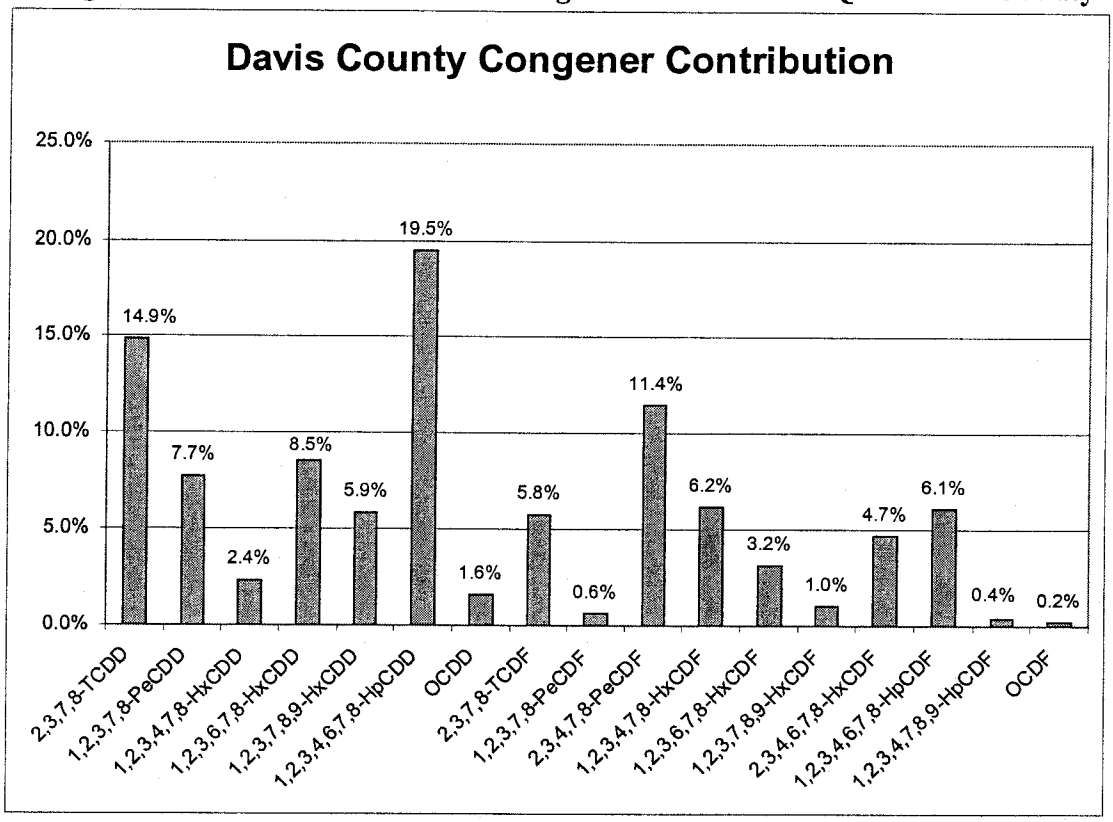
Table 4: Davis County and Denver Front Range % Contribution to Overall TEQ by Congener (Residential Soils)

Congener	Davis County Overall % Contribution	Denver Front Range EPA Reported Mean % Contribution
2,3,7,8-TCDD	14.9%	9.0%
1,2,3,7,8-PeCDD	7.7%	23.9%
1,2,3,4,7,8-HxCDD	2.4%	3.7%
1,2,3,6,7,8-HxCDD	8.5%	7.9%
1,2,3,7,8,9-HxCDD	5.9%	5.0%
1,2,3,4,6,7,8-HpCDD	19.5%	21.7%
OCDD	1.6%	1.5%
2,3,7,8-TCDF	5.8%	0.6%
1,2,3,7,8-PeCDF	0.6%	0.6%
2,3,4,7,8-PeCDF	11.4%	10.7%
1,2,3,4,7,8-HxCDF	6.2%	2.7%
1,2,3,6,7,8-HxCDF	3.2%	2.3%
1,2,3,7,8,9-HxCDF	1.0%	2.6%
2,3,4,6,7,8-HxCDF	4.7%	3.4%
1,2,3,4,6,7,8-HpCDF	6.1%	3.7%
1,2,3,4,7,8,9-HpCDF	0.4%	0.4%
OCDF	0.2%	0.1%

*NOTE: Shaded denotes top five

The data in Table 4 are also presented graphically in Figure 7.

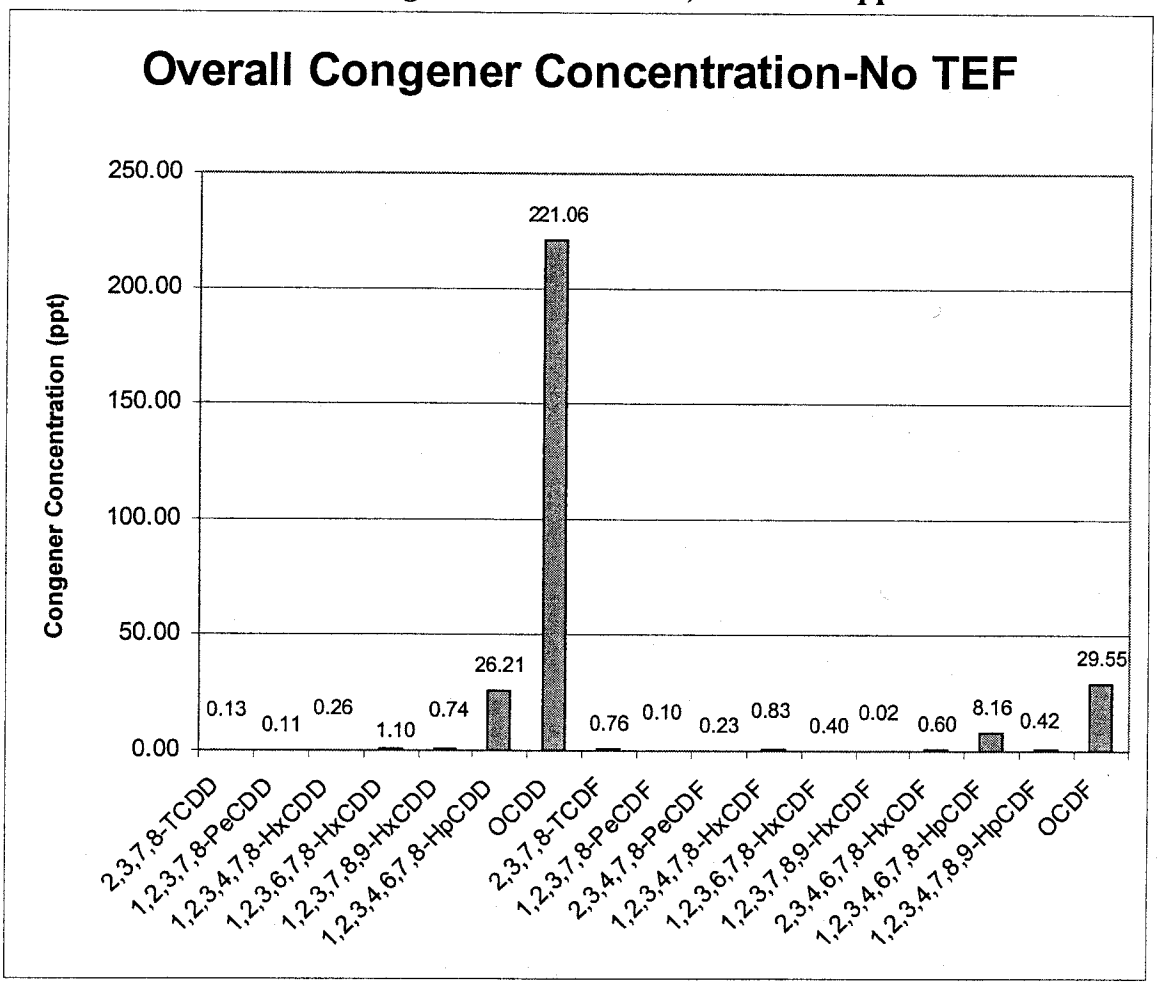
Figure 7: Contribution of Each Congener to Overall TEQ in Davis County



Appendix E contains a set of graphs for each sample collected in Davis County. Each graph shows the individual congener contribution to the TEQ value for that sample These graphs vary greatly and indicate that the dioxin congener profile in the residential soils throughout the county is not uniform. These data suggests that "fingerprinting" a single source of dioxin in Davis County would not be possible.

An analysis of the individual congener contribution to the overall concentration without applying the TEF multipliers was also performed. The results are presented in Figure 8. This analysis was performed to determine which congener contributed most to the overall dioxin concentration on a weight basis. As can be seen from the figure, OCDD is by far the most prevalent congener.

Figure 8: Individual Congener Concentration, No TEFs Applied



3.5 Quality Control Samples

Quality control samples that were analyzed as part of this study indicate that the data are reliable and accurate, as described below.

Duplicates

At each of the 22 sample locations a field duplicate was collected and three were randomly chosen to be analyzed. The results from the duplicate analysis were compared to the analytical results from the other sample collected at the same location. Since the TEQ concentrations for all of the samples were less than 25 ppt, the average absolute difference between the sample pairs was used to determine acceptability of the data. The EPA used this absolute difference analysis to determine acceptability of duplicate analyses with TEQ values less than 25 ppt from the Denver study.

The criterion for acceptance of the paired duplicate data was an absolute difference in the paired samples of less than 1 Method Quantification Limit (MQL). The MQL is

defined as ten times the signal noise. The MQL is a unique value for each of the congeners in each of the samples. The individual congener MQLs were calculated for each congener in each sample then summed to obtain the overall sample MQL or MQL_{TEF}. The overall difference between the sample pairs was compared to the lowest MQL_{TEF} of the pair. These results are presented in Table 5.

Table 5 : Analysis of Duplicates

	C_{sample}	$C_{duplicate}$	$\Delta_{(sample-duplicate)}$	Lowest MQL_{TEF}
Sample Location 3:	0.490	0.327	0.163	1.216
Sample Location 9:	0.687	0.471	0.216	1.153
Sample Location 18:	1.396	0.536	0.860	0.891

The absolute differences between the sample pairs ranged from 0.163 and 0.860 ppt TEQ and within the acceptability criterion of 1 MQL for the sample pair. Therefore, the duplicate analyses met the QC requirements that the EPA used in the Denver study.

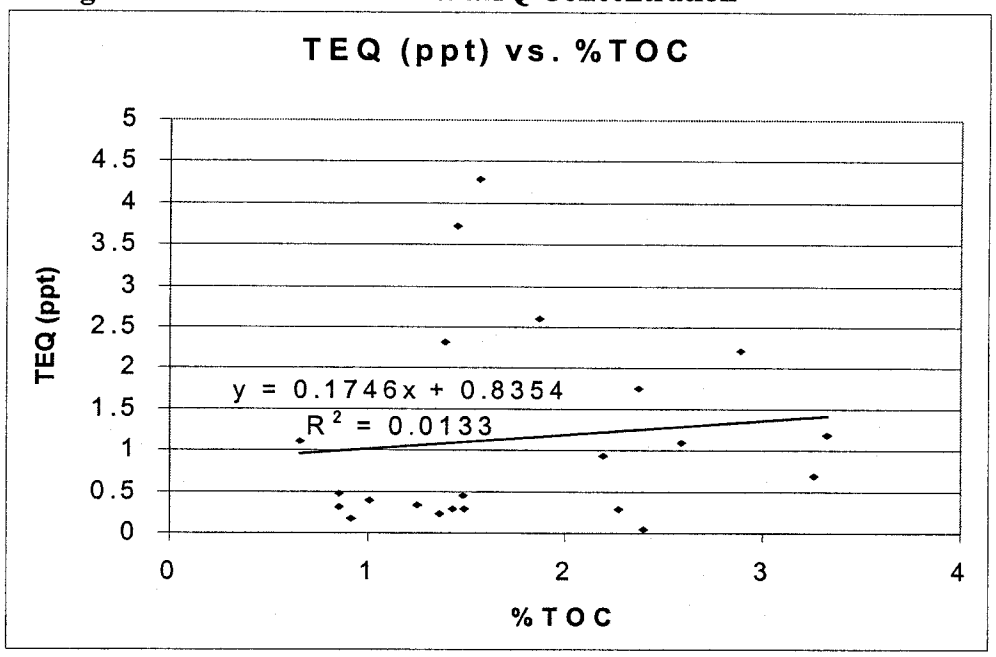
Data Validation

Full validation of the data collected during this study found the analytical results for all samples to be usable, as qualified with the appropriate data quality flags. Therefore the results from this study are believed to provide a reliable estimate of ambient dioxin soil concentrations in the study area. The full data validation report is attached in Appendix F.

3.6 Evaluation of Potential Confounders

Binding of dioxins to soil particles is a physical process that might be expected to depend on the total organic carbon (TOC) content of the soil. Figure 8 shows the relationship between soil TOC and TEQ. The TOC levels in the samples ranged from 0.66% to 3.33%. The slope of the best fit is different from zero, but the coefficient of determination is low ($R^2 = 0.013$). This suggest that the TEQ value for a sample may depend in part on the TOC content of the soil, but that it is not the main determinant of the TEQ value.

Figure 8: Soil TOC Level vs. TEQ Concentration



3.7 Comparison to Human Health-Based Guidelines

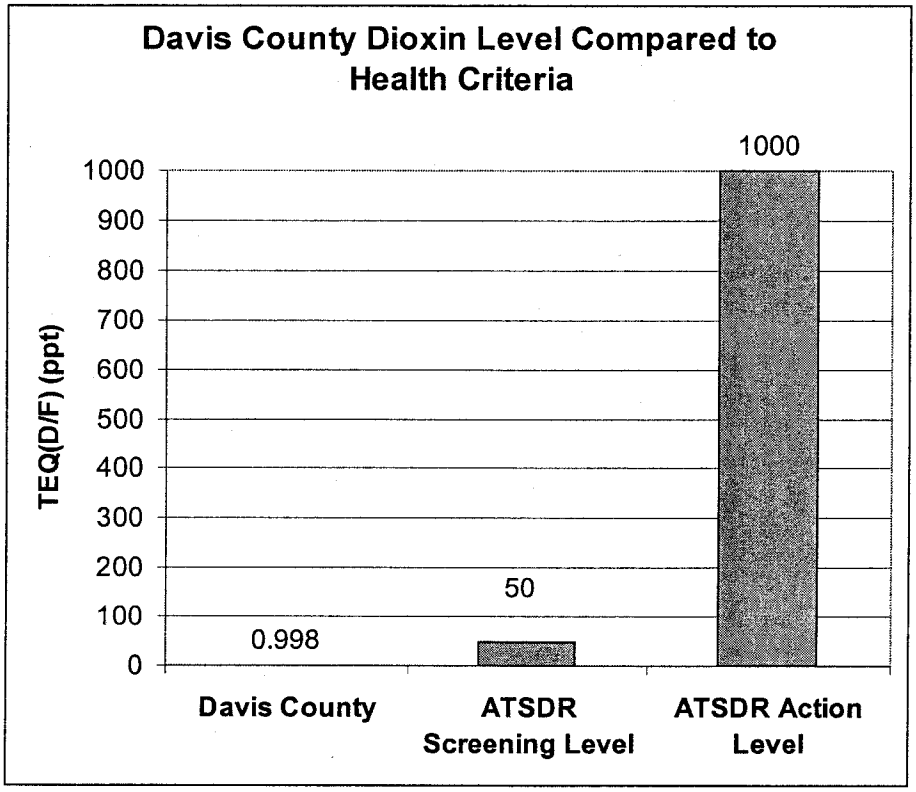
Although the basic purpose of this study was to characterize the distribution of dioxin levels in residential soils of Davis County and compare them to the Denver Front Range, it may be of some use to provide a health-based frame of reference by which the distributions may be placed in context.

The EPA has currently established a default concentration value of 1,000 parts per trillion (ppt) TEQ in surface soil as a concentration that is not of cancer or non-cancer concern for lifetime exposure of residents.[1] These concentrations are based only upon the 17 TCDD-like PCDDs and PCDFs (which were evaluated in this study), calculated using the TEFs for mammals recommended by WHO.[3]

The Agency for Toxic Substances and Disease Registry (ATSDR) has also established a guideline for human exposure (residential) to dioxins in soil.[5] ATSDR identifies a concentration of 50 ppt TEQ in soil as a "screening level," below which no further investigation will usually be required. ATSDR identifies 1000 ppt TEQ as an "action level," which indicates that public heath actions should be considered. These actions include surveillance, research, health studies, and community education or exposure investigations. Figure 9 compares these levels to the level of dioxin that was found in Davis County. None of the individual soil samples in Davis County exceeded the ATSDR's screening level (or even approached it). In consideration of these factors it

can be determined that the dioxin levels in Davis County residential soil samples taken during this study are not of significant human health concern.

Figure 9: Davis County Dioxin Level Compared to Health Criteria



CONCLUSIONS

This study compares the concentration of dioxin in residential soils of Davis County to those found by the EPA in the Denver Front Range. All efforts were made to duplicate the sampling methodology and treatment of the analytical data used by the EPA in their study. The hypothesis of this study was not supported by the data. The geometric mean concentration of dioxin in Davis County soil was found to be 0.998 ppt and in the Denver Front Range it was found to be 3.248 ppt.

The levels of dioxin found in the residential soils of Davis County are far below the 50 ppt screening level established by the Agency for Toxic Substance and Disease Registry (ATSDR). The screening level defines chemicals of concern to human health which are then taken forward in the health assessment process for further evaluation. These levels are also substantially lower than the ATSDR's action level of 1000 part per trillion. The action level is defined as the concentration at which consideration of action to interdict exposure occurs.[5] The dioxin levels in Davis County residential soil samples taken during this study are not of significant human health concern.

There are numerous factors that could contribute to the difference in the soil dioxin levels found in Davis County as compared to those found in the Denver Front Range. Geographical features may play a role. Davis County has a mountain range directly to its east and the Denver Front Range has a mountain range to its west. Differences in weather patterns would also play a role in deposition of dioxins from the atmosphere. One significant source of dioxin is from uncontrolled combustion of biomass (i.e. forest fires). The Denver Front Range may be downwind from more forest fires and thus may be subjected to more significant dioxin deposition. Davis County has historically been the "bread basket" of Utah and has only recently seen a significant increase in population. There are only limited areas of the county that could be considered industrial. Most of the county is residential or agricultural.

Other studies could be undertaken to investigate the dioxin concentrations found in other land-use area types or other Utah counties to compare to the results of this study.

REFERENCES

1. United States Environmental Protection Agency, *Denver Front Range Study Dioxins in Surface Soils. Study 1: Characterization of Dioxins Furans, and PCBs in Soil Samples Collected from the Denver Front Range Area;* Region 8, July, 2001.

2. United States Environmental Protection Agency, *Approach for Addressing Dioxins in Soil at CERCLA and RCRA Sites*; OSWER Directive 9200.4-26. 1998a.

3. Van den Berg M, Birnbaum L, Bosveld ATC, Brunström B, Cook P, Feeley M, Giesy JP, Hanberg A, Hasegawa R, Kennedy SW, Kubiak T, Larsen JC, van Leeuwen FXR, Liem AKD, Nolt C, Peterson RE, Poellinger L, Safe S, Schrenk D, Tillitt D, Tysklind M, Younes M, Wærn F, Zacharewski T. 1998. *Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife*; Environmental Health Perspectives 106:775-792.

4. http://www.co.davis.ut.us/discoverdavis/

5. De Rosa CT, Brown D, Dhara R, Garrett W, Hansen H, Holler J, Jones D, Jordan-Izaguirre D, O'Conner R, Pohl H, Xintaras C. 1997. *Dioxin and Dioxin-Like Compounds in Soil, Part 1: ATSDR Interim Policy Guideline*; Toxicol. Ind. Health 13:759-768.

APPENDIX A: Laboratory Analytical Reports

Table 5. Definition, Application, and Uses of Data Flags

Validation Flags	Meaning of Flags for Dioxin Analyses in Soils and Tissues by the MRI Lab	Data Usability (a): Full data set used (*semi-quantitative*)	Data Usability (a): Quantitative (qualified sub-set used)
E	Estimated Maximum Potential Concentration; the relative ion abundance ratios did not meet the acceptance limits.	use value	use ½ value
D	EMPC is caused by polychlorinated Diphenyl Ether interference.	use ½ value	don't use
B	Analyte was detected in associated Method Blank, sample concentration <5x MB concentration.	use value	use ½ value
C	Concentration is above upper Calibration Standard; result is an estimate. flagged C by lab and J added by validator.	use value	use value
I	Recovery of 13C-labeled Isotopic analyte outside of criteria	use value	use value
J	Estimated: e.g., isotopic standard is outside CCAL range, native analyte recovery in LCS is outside criteria, etc.	use value	use ½ value
NJ	Presumptive evidence for the presence of an analyte with an estimated value; if used for 2378-TCDF, see "U" below.	use ½ value	don't use
S	Peak is Saturated; result, if calculated, is flagged by the validator as an estimate – "J".	use value	use value
U	Unconfirmed: column is not specific for 2,3,7,8-TCDF; confirmation not requested. Validator now uses "NJ" flag.	use value	use ½ value
R	Rejected: result is invalid and not usable.	use ½ MDL	don't use
use of MRI Laboratory's reported "LT" (less than) values <MQL (10 x Signal:Noise)			
LT *applied first to data, then apply flags!*	"LT" is not a true "flag", but if a LT result is a "detect" above the MDL (2.5 x Signal:Noise = lab EDL), then	use value	use ½ value
	"LT" is not a true "flag", but if a LT result is a "non-detect" below the MDL (2.5 x Signal:Noise = lab EDL), then	use ½ EDL	don't use

(a) In accord with concepts in the 1992 USEPA Data Usability for Risk Assessment in Superfund guidance (USEPA 1992), data quality flags are used to produce two data-sets: 1) a "Full" set of semi-quantitative results with an actual or a proxy value for each of the measured congeners; and 2) a more "Quantitative" but limited set of results that has more certain identification and more accurate quantities of congeners which have no disqualifying flags (D, NJ, R or LT), but can use limited proxies (E, B, J or U). This distinction is made to better understand and limit artifactual impacts of the *less certain estimated values* on TEQs. analyzing the degree of this sensitivity to trace-level "noise" by comparing TEQs from these two data sets. In addition, congener profile pattern analysis should only use the analytes that are quantifiable (above the MQL).

K
K
B
E
Y
J
C

Data Qualifier Flags

[*CAS/Houston* data qualifiers - adapted from EPA's Contract Laboratory Program data qualifiers]

- **B** Used when the analyte is found in the associated blank, as well as in the sample
- **C** Indicates the value for the TCDF analyte was obtained by analysis using a DB-225 confirmation column
- **E** Indicates an estimated value
  Used when the analyte concentration exceeds the upper end of the linear calibration range
- **J** Indicates an estimated value
  Used when the analyte concentration is below the method reporting limit (MRL) and above non-detect.
- K EMPC; estimated maxiumum possible concentration
- U Indicates the compound was analyzed and not detected.
- X User defined; see case narrative for detailed explanation
- Y Indicates the recovery of labeled standard is outside the established method control limits

COLUMBIA ANALYTICAL

7137841152

04/03/2003 12:39

Columbia Analytical Services INC.
An Employee - Owned Company
10655 Richmond Ave., Ste 130A • Houston, TX 77042 • (713) 266-1599 • FAX (713) 266-0130

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 3/17/03 PAGE 1 OF 3

PROJECT NAME Davis County Soil Dioxins

PROJECT #

COMPANY/ADDRESS University of Utah (RMCOEH) 75 South 2000 East Salt Lake City, UT 84112 PHONE (801) 581-7763

REPORT TO: Frank DeRosso

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	Dioxins by 1613	TOC by ASTM D419-22M	REMARKS
1A10312			Soil	1	✓	✓	
2A20312				1	✓	✓	
03B20312				1	✓	✓	
7B30312				1	✓	✓	
19C30312				1	✓	✓	
20C30312				1	✓	✓	
21C30312				1	✓	✓	
22C30312				1	✓	✓	
4C20312				1	✓	✓	
8C30312			✓	1	✓	✓	

RELINQUISHED BY:
Signature: Frank DeRosso
Printed Name: Frank DeRosso
Firm: RMCOEH
Date/Time: 3/17/03 9:35AM

RECEIVED BY:
Signature: [illegible]
Printed Name: Melanie Dial
Firm: CAS
Date/Time: 3/18/03 10:00

TURNAROUND REQUIREMENTS (in working days)
RUSH .....5 Days
RUSH .....10 Days
STD .....15 DAYS

DELIVERABLES
✓ I. Analytical Report
✓ II. Analytical Report Plus MS/MSD
✓ III. Data Validation Report (includes All Raw Data)

INVOICE INFORMATION:
P.O.#
Bill To Same

SAMPLE RECEIPT:
Shipping VIA:
Shipping to:
Condition:
Lab No:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
Sieve samples per previous conversations & perform analysis on fines. Retain bulk sample for possible future analysis.

SAMPLER'S SIGNATURE Frank DeRosso

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

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CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 3/17/03 PAGE 2 OF 3

PROJECT NAME Davis County Soil Dioxins
PROJECT #
COMPANY/ADDRESS University of Utah/RMCOEH
75 South 2000 East
Salt Lake City, UT 84112 PHONE (801) 581-9363
REPORT TO: Frank DeRosso

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	Dioxins by 1613	Moisture ASTM D2216-92M	REMARKS
5D20312			Soil	1	✓	✓	
6D30312				1	✓	✓	
17D10312				1	✓	✓	
18D20312				1	✓	✓	
9D40314				1	✓	✓	
12D50314				1	✓	✓	
14D60314				1	✓	✓	
15D70314				1	✓	✓	
10E40314				1	✓	✓	
13E60314				1	✓	✓	

RELINQUISHED BY:
Signature: Frank DeRosso
Printed Name: Frank DeRosso
Firm: RMCOEH
Date/Time: 3/17/03 9:35AM

RECEIVED BY:
Signature: [illegible]
Printed Name: Rolando Diaz
Firm: CAS
Date/Time: 3/18/03 10:00

TURNAROUND REQUIREMENTS (in working days)
RUSH ..... 5 Days
RUSH ..... 10 Days
STD ..... 15 DAYS

DELIVERABLES
✓ I. Analytical Report
✓ II. Analytical Report Plus MS/MSD
✓ III. Data Validation Report (includes All Raw Data)

INVOICE INFORMATION:
P.O.#
Bill To: Same

SAMPLE RECEIPT:
Shipping VIA:
Shipping to:
Condition:
Lab No:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
Sieve samples per previous conversations & perform analyses on fines. Retain bulk portion for possible future analyses

SAMPLER'S SIGNATURE: Frank DeRosso

DISTRIBUTION: WHITE - return to originator, YELLOW - lab, PINK - retained by [illegible]

COLUMBIA ANALYTICAL

04/03/2003 12:39 7137841152

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CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 3/17/03 PAGE 3 OF 3

PROJECT NAME Davis County Soil Dioxins

PROJECT #

COMPANY/ADDRESS University of Utah / RMCOEH
75 South 2000 East
Salt Lake City, UT 84112 PHONE (801) 581-7363

REPORT TO: Frank DeRosso

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	Dioxins per 1613	Dioxins per ASTM8290-8290	REMARKS
11E50314	3/17/03		Soil	1	✓	✓	
16E70314	↓		↓	1	✓	✓	
03B20312D				1	✓	✓	
18D20312D				1	✓	✓	
9D40314D	↓		↓	1	✓	✓	

RELINQUISHED BY:
Signature: Frank DeRosso
Printed Name: Frank DeRosso
Firm: RMCOEH
Date/Time: 3/17/03 9:35AM

RECEIVED BY:
Signature: Rolanda Diaz
Printed Name: CAS
Firm:
Date/Time: 3/18/03 10:00

TURNAROUND REQUIREMENTS (in working days)
RUSH .....5 Days
RUSH .....10 Days
STD .....15 DAYS

DELIVERABLES
✓ I. Analytical Report
✓ II. Analytical Report Plus MS/MSD
✓ III. Data Validation Report (includes All Raw Data)

INVOICE INFORMATION:
P.O.#
Bill To: Same

SAMPLE RECEIPT:
Shipping VIA:
Shipping to:
Condition:
Lab No:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
Sieve samples per previous conversations & perform analysis on fines & bulk portion for POS future analysis.

SAMPLER'S SIGNATURE Frank DeRosso

Track: 790237655515
Mode: FedEx Express Priority
Date: 03/20/2003
Weight: 35.00
COD: 0.00
DV: 0.00
Shipping:
Special:
Handling:
Total: 0.00
Invoice:
Customer: KELSO
Dept:

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

X	X	X					

Service Request #: E2300153

RUSH: ☐

Project Chemist: Xiangqiu Liang
Customer Name: University of Utah
Customer Phone: 801-581-7363
Project Name: Davis County Soils Dioxins
Project Number: RMCOEH_03/17/03
Reviewed by: *Jane Freemyer* 3/20/3 JF

Sample Recipient: Rolando Diaz
Date Received: 3/18/03 Time Received: 10:00
Date Required: 4/15/03
Internal Due Date: 4/15/03
Report To: Frank DeRosso
Fax Number: 801-581-7224

Tier: IV EDD (y/n): N ARF (y/n): N TAT: 21 days Other:

Chain of Custody: Yes: X No:

Samples Stored:
A ___ 2 X C ___
D ___ E ___

Comments:
TOC test shipped to CAS-Kelso on 03/20/03jf

Bottles Received			
1-L Amber		White plastic	
500 Amber		Red plastic	
16 oz glass		Yellow plastic	
9 oz glass	25	Green plastic	
4 oz glass		500 ml Poly	
2 oz glass		Brass Sleeves	
VOA soil			
VOA vial sets			

1 1613 PCDD/PCDF	9	17
2. TOC	10	18
3	11	19
4	12	20
5	13	21
6	14	22
7	15	23
8	16	24

Hazardous Samples
None
Some (Circle Lab Code)
All
Intended Disposal Date: __/__/__
Approval from Client:

Sample ID	Lab Code	Test(s) Required	Time Collected	Date Collected	Holding Time	Matrix
1A10312	E2300153-001	1,2	*	*	30 DAYS	SOIL
2A20312	E2300153-002	1,2	*	*	30 DAYS	SOIL
03B20312	E2300153-003	1,2	*	*	30 DAYS	SOIL
7B30312	E2300153-004	1,2	*	*	30 DAYS	SOIL
19C30312	E2300153-005	1,2	*	*	30 DAYS	SOIL
20C30312	E2300153-006	1,2	*	*	30 DAYS	SOIL
21C30312	E2300153-007	1,2	*	*	30 DAYS	SOIL
22C30312	E2300153-008	1,2	*	*	30 DAYS	SOIL
4C20312	E2300153-009	1,2	*	*	30 DAYS	SOIL
8C30312	E2300153-010	1,2	*	*	30 DAYS	SOIL
5D20312	E2300153-011	1,2	*	*	30 DAYS	SOIL
6D30312	E2300153-012	1,2	*	*	30 DAYS	SOIL
17D10312	E2300153-013	1,2	*	*	30 DAYS	SOIL
18D20312	E2300153-014	1,2	*	*	30 DAYS	SOIL
9D40314	E2300153-015	1,2	*	*	30 DAYS	SOIL
12D50314	E2300153-016	1,2	*	*	30 DAYS	SOIL
14D60314	E2300153-017	1,2	*	*	30 DAYS	SOIL
15D70314	E2300153-018	1,2	*	*	30 DAYS	SOIL
10E40314	E2300153-019	1,2	*	*	30 DAYS	SOIL
13E60314	E2300153-020	1,2	*	*	30 DAYS	SOIL
11E50314	E2300153-021	1,2	*	03/17/2003	30 DAYS	SOIL
16E70314	E2300153-022	1,2	*	03/17/2003	30 DAYS	SOIL
B20312D	E2300153-023	1,2	*	03/17/2003	30 DAYS	SOIL
18D20312D	E2300153-024	1,2	*	03/17/2003	30 DAYS	SOIL
9D40314D	E2300153-025	1,2	*	03/17/2003	30 DAYS	SOIL

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation From

Client: University of Utah Work order: [illegible]
Project: Davis County Soils Dioxins/RMCOEH_03/17/03
Cooler received on: [illegible] and opened on [illegible] by [illegible]lo Diaz

		Yes	No	N/A
1	Were custody seals on outside of cooler?	☒	☐	☐
	If yes, how many and where? One outside cooler.			
	Were signature and date correct?	☒	☐	☐
2	Were custody papers properly filled out (ink, signed, etc....)?	☒	☐	☐
3	Did all bottles arrive in good condition (unbroken, etc....)?	☒	☐	☐
4	Were all bottle labels correct (analysis, preservation, etc....)?	☒	☐	☐
5	Did all bottle labels and tags agree with custody papers?	☒	☐	☐
6	Were correct bottles used for test indicated?	☒	☐	☐
7	Were VOA vials checked for absence of air bubbles, and noted?	☐	☐	☒
8	Temperature of cooler upon receipt	5 Degrees C		

Explain any discrepancies:

		Yes	No
pH	Reagent	x	
12	NaOH	x	
2	HNO_3	x	
2	H_2SO_4	x	

Yes = all samples OK
No = Samples were preserved at lab as listed

Comments:

Sample I.D.	Reagen	Vol.

SPIKES

E2300153-001 MS_MSD

3DFA
PCDD/PCDF SPIKED SAMPLE SUMMARY

CLIENT ID
1A10312
MS&MSD

Lab Name: COLUMBIA ANALYTICAL SERVICES
Lab Code: CAS LAB. ID: E2300153-001MSMSD
Matrix: Solid (Solid, Aqueous, Ash, Waste)

SDG #: _____

CONCENTRATION UNITS: (pg/L or ng/Kg): ng/Kg

ANALYTE	SPIKE ADDED (PG)	1A10312 MS SAMPLE CONC.	1A10312 MSD SAMPLE CONC.	1A10312 NATIVE CONC.	1A10312 MS% RECOV. #	1A10312 MSD% RECOV. #	RPD %	QC LIMITS
2378-TCDD	200	17.821	19.238	0.000	84.4	90.0	7.65	70-130
12378-PeCDD	1000	99.447	101.695	0.000	94.2	95.1	2.24	70-130
123478-HxCDD	1000	93.479	95.897	0.000	88.5	89.7	2.55	70-130
123678-HxCDD	1000	106.544	109.403	0.000	100.9	102.3	2.65	70-130
123789-HxCDD	1000	97.168	96.542	0.000	92.0	90.3	0.65	70-130
1234678-HpCDD	1000	99.410	102.600	5.000	89.4	91.3	3.16	70-130
OCDD	2000	235.121	243.551	48.823	88.2	91.0	3.52	70-130
2378-TCDF	200	24.521	26.281	0.241	115.0	121.8	6.93	70-130
12378-PeCDF	1000	101.990	105.438	0.000	96.6	98.6	3.32	70-130
23478-PeCDF	1000	101.962	104.863	0.000	96.6	98.1	2.81	70-130
123478-HxCDF	1000	100.501	106.991	0.571	94.6	99.5	6.26	70-130
123678-HxCDF	1000	100.856	99.792	0.000	95.5	93.3	1.06	70-130
123789-HxCDF	1000	93.470	93.194	0.000	88.5	87.1	0.30	70-130
234678-HxCDF	1000	99.96	104.743	0.000	94.7	97.9	4.67	70-130
1234678-HpCDF	1000	116.564	122.343	3.727	106.9	110.9	4.84	70-130
1234789-HpCDF	1000	107.296	110.781	0.000	101.6	103.6	3.20	70-130
OCDF	2000	221.46	221.569	16.053	97.3	96.1	0.05	70-130

SPIKES

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
1A10312 MS

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-001MS

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.256 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11219#3

Analysis Date: 27-MAR-03 Time: 15:06:12 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 92.35

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
,3,7,8-TCDD	17.821	0.070		0.72	1.001	1.04
,2,3,7,8-PeCDD	99.447	0.089		1.58	1.001	1.12
1,2,3,4,7,8-HxCDD	93.479	0.102		1.22	1.000	1.17
1,2,3,6,7,8-HxCDD	106.544	0.116		1.21	1.000	1.01
1,2,3,7,8,9-HxCDD	97.168	0.106		1.23	1.008	1.11
1,2,3,4,6,7,8-HpCDD	99.410	0.190		1.09	1.000	1.03
OCDD	235.121	0.311		0.86	1.000	1.08
2,3,7,8-TCDF	24.521	0.106		0.80	1.001	1.05
1,2,3,7,8-PeCDF	101.990	0.079		1.56	1.001	1.03
2,3,4,7,8-PeCDF	101.962	0.088		1.56	1.001	1.12
1,2,3,4,7,8-HxCDF	100.501	0.127		1.27	1.000	1.39
1,2,3,6,7,8-HxCDF	100.856	0.120		1.27	1.000	1.34
1,2,3,7,8,9-HxCDF	93.470	0.169		1.29	1.000	1.43
2,3,4,6,7,8-HxCDF	99.960	0.144		1.28	1.000	1.28
1,2,3,4,6,7,8-HpCDF	116.563	0.179		1.03	1.000	1.44
1,2,3,4,7,8,9-HpCDF	107.296	0.311		1.01	1.000	1.34
OCDF	221.460	0.401		0.90	1.005	1.37
Total Tetra-Dioxins	17.920	0.070				
Total Penta-Dioxins	99.447	0.089				
Total Hexa-Dioxins	297.191	0.116				
Total Hepta-Dioxins	103.241	0.190				
Total Tetra-Furans	26.199	0.106				
Total Penta-Furans	207.518	0.088				
Total Hexa-Furans	396.120	0.120				
Total Hepta-Furans	227.236	0.179				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

SPIKES

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
1A10312 MSD

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-001MSD

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.126 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11219#4

Analysis Date: 27-MAR-03 Time: 15:58:35 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 92.35

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	19.238	0.065		0.76	1.001	1.04
1,2,3,7,8-PeCDD	101.695	0.102		1.59	1.001	1.12
1,2,3,4,7,8-HxCDD	95.898	0.111		1.21	1.000	1.17
1,2,3,6,7,8-HxCDD	109.403	0.132		1.21	1.000	1.01
1,2,3,7,8,9-HxCDD	96.542	0.119		1.22	1.009	1.11
1,2,3,4,6,7,8-HpCDD	102.600	0.226		1.06	1.000	1.03
OCDD	243.551	0.364		0.87	1.000	1.08
2,3,7,8-TCDF	26.281	0.098		0.79	1.001	1.05
1,2,3,7,8-PeCDF	105.437	0.071		1.55	1.001	1.03
2,3,4,7,8-PeCDF	104.863	0.079		1.56	1.001	1.12
1,2,3,4,7,8-HxCDF	106.991	0.095		1.27	1.000	1.39
1,2,3,6,7,8-HxCDF	99.792	0.092		1.28	1.000	1.34
1,2,3,7,8,9-HxCDF	93.194	0.136		1.27	1.000	1.43
2,3,4,6,7,8-HxCDF	104.743	0.112		1.25	1.000	1.28
1,2,3,4,6,7,8-HpCDF	122.343	0.182		1.04	1.000	1.44
1,2,3,4,7,8,9-HpCDF	110.781	0.310		1.05	1.000	1.34
OCDF	221.569	0.403		0.89	1.005	1.37
Total Tetra-Dioxins	19.238	0.065				
Total Penta-Dioxins	101.695	0.102				
Total Hexa-Dioxins	301.843	0.132				
Total Hepta-Dioxins	106.533	0.226				
Total Tetra-Furans	27.312	0.098				
Total Penta-Furans	214.127	0.079				
Total Hexa-Furans	406.774	0.092				
Total Hepta-Furans	236.780	0.182				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Method 8290/Dioxins & Furans
Method Reporting Limits
(last updated 09/26/02)

Congener	CAS RN	Water (pg/L, ppq)	Soil/Tissue (ng/Kg, ppt)
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	10	1.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxins (PeCDD)	40321-76-4	25	2.5
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	25	2.5
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	25	2.5
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	25	2.5
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-39-4	25	2.5
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	50	5.0
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	10	1.0
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	25	2.5
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	25	2.5
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	25	2.5
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	25	2.5
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	25	2.5
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	25	2.5
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	25	2.5
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	25	2.5
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	50	5.0

NOTE:
Soil samples are reported on a dry-weight basis and tissue samples are reported on a wet-weight basis.

Data Qualifier Flags

[*CAS/Houston* data qualifiers - adapted from EPA's Contract Laboratory Program data qualifiers]

EPA

B	❖ **B**	Used when the analyte is found in the associated blank, as well as in the sample
	❖ **C**	Indicates the value for the TCDF analyte was obtained by analysis using a DB-225 confirmation column
C or J	❖ **E**	Indicates an estimated value Used when the analyte concentration exceeds the upper end of the linear calibration range
J or C	❖ **J**	Indicates an estimated value Used when the analyte concentration is below the method reporting limit (MRL) and above non-detect.
E	❖ **K**	EMPC; estimated maxiumum possible concentration
U	❖ **U**	Indicates the compound was analyzed and not detected.
	❖ ~~**X**~~	User defined; see case narrative for detailed explanation
I	❖ **Y**	Indicates the recovery of the labeled standard is outside the established control limits

NJ = G

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
1A10312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-001

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.208 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11219#2

Analysis Date: 27-MAR-03 Time: 14:13:50 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 92.35

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.086	U	*	*	1.04
1,2,3,7,8-PeCDD	*	0.125	U	*	*	1.12
1,2,3,4,7,8-HxCDD	*	0.140	U	*	*	1.17
1,2,3,6,7,8-HxCDD	*	0.159	U	*	*	1.01
1,2,3,7,8,9-HxCDD	*	0.146	U	*	*	1.11
1,2,3,4,6,7,8-HpCDD	5.000	0.163	B	1.12	1.000	1.03
OCDD	48.823	0.434	B	0.84	1.000	1.08
2,3,7,8-TCDF	0.241	0.103	CJ	0.64	1.001	1.05
1,2,3,7,8-PeCDF	*	0.111	U	*	*	1.03
2,3,4,7,8-PeCDF	*	0.115	U	*	*	1.12
1,2,3,4,7,8-HxCDF	0.571	0.097	BJ	1.25	1.000	1.39
1,2,3,6,7,8-HxCDF	*	0.094	U	*	*	1.34
1,2,3,7,8,9-HxCDF	*	0.140	U	*	*	1.43
2,3,4,6,7,8-HxCDF	*	0.107	U	*	*	1.28
1,2,3,4,6,7,8-HpCDF	3.727	0.335	B	1.01	1.000	1.44
1,2,3,4,7,8,9-HpCDF	*	0.578	U	*	*	1.34
OCDF	16.053	0.438	B	0.85	1.004	1.37
Total Tetra-Dioxins	*	0.086	U			
Total Penta-Dioxins	*	0.125	U			
Total Hexa-Dioxins	1.144	0.159				
Total Hepta-Dioxins	9.709	0.163				
Total Tetra-Furans	0.320	0.103				
Total Penta-Furans	0.986	0.115				
Total Hexa-Furans	2.528	0.094				
Total Hepta-Furans	7.730	0.335				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
1A10312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-001

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.208 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11219#2

Analysis Date: 27-MAR-03 Time: 14:13:50 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 92.35

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
,3,7,8-TCDD	*	X 1.0	*
,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	5.00	X 0.01	5.00e-02
OCDD	48.82	X 0.001	4.88e-02
2,3,7,8-TCDF	0.24	X 0.1	2.41e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.57	X 0.1	5.71e-02
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	3.73	X 0.01	3.73e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	16.05	X 0.001	1.61e-02

Total: 2.334e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
2A20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-002

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 9.537 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11219#5

Analysis Date: 27-MAR-03 Time: 16:50:58 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 84.56

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
,3,7,8-TCDD	*	0.060	U	*	*	1.04
-,2,3,7,8-PeCDD	0.281	0.128	J	1.61	1.001	1.12
1,2,3,4,7,8-HxCDD	0.411	0.135	J	1.41	1.000	1.17
1,2,3,6,7,8-HxCDD	1.032	0.161	J	1.32	1.000	1.01
1,2,3,7,8,9-HxCDD	0.790	0.145	J	1.42	1.009	1.11
1,2,3,4,6,7,8-HpCDD	23.274	0.280	B	1.08	1.000	1.03
OCDD	218.335	0.702	B	0.85	1.000	1.08
2,3,7,8-TCDF	0.600	0.140	CJ	0.82	1.002	1.05
1,2,3,7,8-PeCDF	*	0.071	U	*	*	1.03
2,3,4,7,8-PeCDF	0.413	0.072	JK	1.46	1.001	1.12
1,2,3,4,7,8-HxCDF	0.473	0.108	BJ	1.00	1.000	1.39
1,2,3,6,7,8-HxCDF	0.402	0.110	J	1.34	1.001	1.34
1,2,3,7,8,9-HxCDF	*	0.156	U	*	*	1.43
2,3,4,6,7,8-HxCDF	0.542	0.133	J	1.38	1.000	1.28
1,2,3,4,6,7,8-HpCDF	6.834	0.365	B	1.03	1.000	1.44
1,2,3,4,7,8,9-HpCDF	*	0.641	U	*	*	1.34
OCDF	20.925	0.755	B	0.86	1.005	1.37
Total Tetra-Dioxins	*	0.060	U			
Total Penta-Dioxins	0.573	0.128				
Total Hexa-Dioxins	6.898	0.161				
Total Hepta-Dioxins	65.241	0.280				
Total Tetra-Furans	1.382	0.140				
Total Penta-Furans	4.002	0.072				
Total Hexa-Furans	7.468	0.110				
Total Hepta-Furans	17.629	0.365				

Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.

(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
2A20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-002

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 9.537 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11219#5

Analysis Date: 27-MAR-03 Time: 16:50:58 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 84.56

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	0.28	X 0.5	1.41e-01
1,2,3,4,7,8-HxCDD	0.41	X 0.1	4.11e-02
1,2,3,6,7,8-HxCDD	1.03	X 0.1	1.03e-01
1,2,3,7,8,9-HxCDD	0.79	X 0.1	7.90e-02
1,2,3,4,6,7,8-HpCDD	23.27	X 0.01	2.33e-01
OCDD	218.33	X 0.001	2.18e-01
2,3,7,8-TCDF	0.60	X 0.1	6.00e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	0.41	X 0.5	2.07e-01
1,2,3,4,7,8-HxCDF	0.47	X 0.1	4.73e-02
1,2,3,6,7,8-HxCDF	0.40	X 0.1	4.02e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.54	X 0.1	5.42e-02
1,2,3,4,6,7,8-HpCDF	6.83	X 0.01	6.83e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	20.92	X 0.001	2.09e-02

Total: 1.312e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
03B20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-003

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.208 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11220#1

Analysis Date: 27-MAR-03 Time: 18:00:57 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 84.12

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.106	U	*	*	1.04
1,2,3,7,8-PeCDD	*	0.142	U	*	*	1.12
1,2,3,4,7,8-HxCDD	*	0.120	U	*	*	1.17
1,2,3,6,7,8-HxCDD	1.797	0.145	~~B~~ J	0.95	1.002	1.01
1,2,3,7,8,9-HxCDD	*	0.129	U	*	*	1.11
1,2,3,4,6,7,8-HpCDD	2.649	0.283	B~~J~~	1.12	1.000	1.03
OCDD	18.024	0.512	B	0.88	1.000	1.08
2,3,7,8-TCDF	0.531	0.115	CJ	0.72	1.001	1.05
1,2,3,7,8-PeCDF	*	0.122	U	*	*	1.03
2,3,4,7,8-PeCDF	*	0.131	U	*	*	1.12
1,2,3,4,7,8-HxCDF	0.334	0.107	BJ	1.49	1.000	1.39
1,2,3,6,7,8-HxCDF	*	0.102	U	*	*	1.34
1,2,3,7,8,9-HxCDF	*	0.157	U	*	*	1.43
2,3,4,6,7,8-HxCDF	*	0.124	U	*	*	1.28
1,2,3,4,6,7,8-HpCDF	3.614	0.265	BK	1.58	1.000	1.44
1,2,3,4,7,8,9-HpCDF	*	0.444	U	*	*	1.34
OCDF	10.034	0.574	B	0.91	1.004	1.37
Total Tetra-Dioxins	*	0.106	U			
Total Penta-Dioxins	*	0.142	U			
Total Hexa-Dioxins	1.105	0.145				
Total Hepta-Dioxins	5.454	0.283				
Total Tetra-Furans	1.621	0.115				
Total Penta-Furans	1.613	0.131				
Total Hexa-Furans	1.129	0.102				
Total Hepta-Furans	2.645	0.265				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
03B20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-003

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.208 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11220#1

Analysis Date: 27-MAR-03 Time: 18:00:57 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 84.12

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	1.80	X 0.1	1.80e-01
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	2.65	X 0.01	2.65e-02
OCDD	18.02	X 0.001	1.80e-02
2,3,7,8-TCDF	0.53	X 0.1	5.31e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.33	X 0.1	3.34e-02
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	3.61	X 0.01	3.61e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	10.03	X 0.001	1.00e-02

Total: 3.569e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
4C20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-009

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.280 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#6

Analysis Date: 27-MAR-03 Time: 16:18:53 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 90.02

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.288	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.299	U	*	*	1.03
1,2,3,4,7,8-HxCDD	*	0.313	U	*	*	1.07
1,2,3,6,7,8-HxCDD	*	0.363	U	*	*	0.95
1,2,3,7,8,9-HxCDD	*	0.320	U	*	*	1.06
1,2,3,4,6,7,8-HpCDD	2.642	0.403	~~J~~	1.06	1.000	0.97
OCDD	18.801	1.039	~~J~~	0.79	1.001	0.98
2,3,7,8-TCDF	*	0.303	U	*	*	1.01
1,2,3,7,8-PeCDF	*	0.200	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.221	U	*	*	0.97
1,2,3,4,7,8-HxCDF	*	0.193	U	*	*	1.25
1,2,3,6,7,8-HxCDF	*	0.182	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.246	U	*	*	1.29
2,3,4,6,7,8-HxCDF	*	0.220	U	*	*	1.16
1,2,3,4,6,7,8-HpCDF	1.853	0.320	J	1.06	1.000	1.30
1,2,3,4,7,8,9-HpCDF	*	0.497	U	*	*	1.26
OCDF	7.805	1.435	~~J~~	0.89	1.005	1.23
Total Tetra-Dioxins	*	0.288	U			
Total Penta-Dioxins	*	0.299	U			
Total Hexa-Dioxins	1.308	0.363				
Total Hepta-Dioxins	5.788	0.403				
Total Tetra-Furans	*	0.303	U			
Total Penta-Furans	1.458	0.221				
Total Hexa-Furans	0.725	0.182				
Total Hepta-Furans	1.853	0.320				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
4C20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-009

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.280 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#6

Analysis Date: 27-MAR-03 Time: 16:18:53 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 90.02

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	2.64	X 0.01	2.64e-02
OCDD	18.80	X 0.001	1.88e-02
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	1.85	X 0.01	1.85e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	7.80	X 0.001	7.81e-03

Total: 7.155e-02

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
5D20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-011

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.140 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#8

Analysis Date: 27-MAR-03 Time: 18:02:51 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 82.94

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.207	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.239	U	*	*	1.03
1,2,3,4,7,8-HxCDD	*	0.272	U	*	*	1.07
1,2,3,6,7,8-HxCDD	*	0.314	U	*	*	0.95
1,2,3,7,8,9-HxCDD	*	0.277	U	*	*	1.06
1,2,3,4,6,7,8-HpCDD	17.481	0.481		1.12	1.000	0.97
OCDD	166.357	1.050		0.89	1.000	0.98
2,3,7,8-TCDF	0.629	0.216	CJ	1.05	1.001	1.01
1,2,3,7,8-PeCDF	*	0.188	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.201	U	*	*	0.97
1,2,3,4,7,8-HxCDF	0.608	0.181	J	1.13	1.000	1.25
1,2,3,6,7,8-HxCDF	0.259	0.175	JK	0.89	1.001	1.23
1,2,3,7,8,9-HxCDF	*	0.252	U	*	*	1.29
2,3,4,6,7,8-HxCDF	0.378	0.209	JK	0.97	1.000	1.16
1,2,3,4,6,7,8-HpCDF	6.964	0.314		1.15	1.000	1.30
1,2,3,4,7,8,9-HpCDF	*	0.516	U	*	*	1.26
OCDF	24.260	1.445		0.84	1.005	1.23
Total Tetra-Dioxins	1.102	0.207				
Total Penta-Dioxins	0.538	0.239				
Total Hexa-Dioxins	3.778	0.314				
Total Hepta-Dioxins	40.297	0.481				
Total Tetra-Furans	1.025	0.216				
Total Penta-Furans	3.013	0.201				
Total Hexa-Furans	4.852	0.175				
Total Hepta-Furans	17.080	0.314				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
5D20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-011

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.140 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#8

Analysis Date: 27-MAR-03 Time: 18:02:51 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 82.94

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	17.48	X 0.01	1.75e-01
OCDD	166.36	X 0.001	1.66e-01
2,3,7,8-TCDF	0.63	X 0.1	6.29e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.61	X 0.1	6.08e-02
1,2,3,6,7,8-HxCDF	0.26	X 0.1	2.59e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.38	X 0.1	3.78e-02
1,2,3,4,6,7,8-HpCDF	6.96	X 0.01	6.96e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	24.26	X 0.001	2.43e-02

Total: 6.225e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
6D30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-012

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.118 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#9

Analysis Date: 27-MAR-03 Time: 18:54:50 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 76.55

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.219	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.263	U	*	*	1.03
1,2,3,4,7,8-HxCDD	*	0.311	U	*	*	1.07
1,2,3,6,7,8-HxCDD	*	0.351	U	*	*	0.95
1,2,3,7,8,9-HxCDD	*	0.313	U	*	*	1.06
1,2,3,4,6,7,8-HpCDD	5.708	0.533		1.04	1.000	0.97
OCDD	28.964	1.511		0.82	1.000	0.98
2,3,7,8-TCDF	1.257	0.242	C	0.82	1.002	1.01
1,2,3,7,8-PeCDF	*	0.161	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.180	U	*	*	0.97
1,2,3,4,7,8-HxCDF	0.639	0.208	J	1.25	1.000	1.25
1,2,3,6,7,8-HxCDF	*	0.199	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.284	U	*	*	1.29
2,3,4,6,7,8-HxCDF	*	0.235	U	*	*	1.16
1,2,3,4,6,7,8-HpCDF	3.801	0.413		1.04	1.000	1.30
1,2,3,4,7,8,9-HpCDF	*	0.723	U	*	*	1.26
OCDF	11.756	2.304		0.93	1.005	1.23
Total Tetra-Dioxins	8.847	0.219				
Total Penta-Dioxins	*	0.263	U			
Total Hexa-Dioxins	3.312	0.351				
Total Hepta-Dioxins	13.645	0.533				
Total Tetra-Furans	7.983	0.242				
Total Penta-Furans	3.987	0.180				
Total Hexa-Furans	2.611	0.199				
Total Hepta-Furans	6.911	0.413				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
6D30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-012

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.118 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#9

Analysis Date: 27-MAR-03 Time: 18:54:50 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 76.55

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	5.71	X 0.01	5.71e-02
OCDD	28.96	X 0.001	2.90e-02
2,3,7,8-TCDF	1.26	X 0.1	1.26e-01
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.64	X 0.1	6.39e-02
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	3.80	X 0.01	3.80e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	11.76	X 0.001	1.18e-02

Total: 3.255e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
7B30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-004

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.220 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11220#2

Analysis Date: 27-MAR-03 Time: 18:53:20 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 75.73

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.081	U	*	*	1.04
1,2,3,7,8-PeCDD	0.310	0.128	JK	1.98	1.001	1.12
1,2,3,4,7,8-HxCDD	0.252	0.133	JK	1.05	1.001	1.17
1,2,3,6,7,8-HxCDD	1.533	0.163	J	1.22	1.000	1.01
1,2,3,7,8,9-HxCDD	0.710	0.145	JK	1.50	1.009	1.11
1,2,3,4,6,7,8-HpCDD	27.718	0.306	B	1.11	1.000	1.03
OCDD	201.630	0.628	B	0.86	1.000	1.08
2,3,7,8-TCDF	0.647	0.101	CJ	0.81	1.001	1.05
1,2,3,7,8-PeCDF	*	0.079	U	*	*	1.03
2,3,4,7,8-PeCDF	*	0.092	U	*	*	1.12
1,2,3,4,7,8-HxCDF	1.100	0.122	BJ	1.45	1.000	1.39
1,2,3,6,7,8-HxCDF	0.557	0.120	J	1.06	1.000	1.34
1,2,3,7,8,9-HxCDF	*	0.174	U	*	*	1.43
2,3,4,6,7,8-HxCDF	0.687	0.138	J	1.30	1.000	1.28
1,2,3,4,6,7,8-HpCDF	9.477	0.166	B	1.01	1.000	1.44
1,2,3,4,7,8,9-HpCDF	0.518	0.309	J	1.13	1.000	1.34
OCDF	16.977	0.690	B	0.83	1.005	1.37
Total Tetra-Dioxins	0.256	0.081				
Total Penta-Dioxins	*	0.128	U			
Total Hexa-Dioxins	6.738	0.163				
Total Hepta-Dioxins	49.021	0.306				
Total Tetra-Furans	1.569	0.101				
Total Penta-Furans	3.545	0.092				
Total Hexa-Furans	12.335	0.120				
Total Hepta-Furans	23.916	0.166				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
7B30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-004

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.220 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11220#2

Analysis Date: 27-MAR-03 Time: 18:53:20 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 75.73

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	0.31	X 0.5	1.55e-01
1,2,3,4,7,8-HxCDD	0.25	X 0.1	2.52e-02
1,2,3,6,7,8-HxCDD	1.53	X 0.1	1.53e-01
1,2,3,7,8,9-HxCDD	0.71	X 0.1	7.10e-02
1,2,3,4,6,7,8-HpCDD	27.72	X 0.01	2.77e-01
OCDD	201.63	X 0.001	2.02e-01
2,3,7,8-TCDF	0.65	X 0.1	6.47e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	1.10	X 0.1	1.10e-01
1,2,3,6,7,8-HxCDF	0.56	X 0.1	5.57e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.69	X 0.1	6.87e-02
1,2,3,4,6,7,8-HpCDF	9.48	X 0.01	9.48e-02
1,2,3,4,7,8,9-HpCDF	0.52	X 0.01	5.18e-03
OCDF	16.98	X 0.001	1.70e-02

Total: 1.299e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
8C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-010

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.228 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/003 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#7

Analysis Date: 27-MAR-03 Time: 17:10:53 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 94.30

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.281	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.305	U	*	*	1.03
1,2,3,4,7,8-HxCDD	0.616	0.286	J	1.07	1.000	1.07
1,2,3,6,7,8-HxCDD	2.067	0.324	J	1.38	1.000	0.95
1,2,3,7,8,9-HxCDD	0.931	0.289	J	1.16	1.009	1.06
1,2,3,4,6,7,8-HpCDD	26.627	0.464		1.05	1.000	0.97
OCDD	178.011	1.696		0.86	1.000	0.98
2,3,7,8-TCDF	*	0.260	U	*	*	1.01
1,2,3,7,8-PeCDF	*	0.195	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.202	U	*	*	0.97
1,2,3,4,7,8-HxCDF	0.661	0.286	J	1.32	1.000	1.25
1,2,3,6,7,8-HxCDF	0.355	0.273	JK	1.51	1.000	1.23
1,2,3,7,8,9-HxCDF	*	0.380	U	*	*	1.29
2,3,4,6,7,8-HxCDF	0.852	0.327	J	1.25	1.000	1.16
1,2,3,4,6,7,8-HpCDF	9.158	0.330		0.96	1.000	1.30
1,2,3,4,7,8,9-HpCDF	0.981	0.617	J	1.03	1.000	1.26
OCDF	27.935	2.300		0.82	1.005	1.23
Total Tetra-Dioxins	0.679	0.281				
Total Penta-Dioxins	*	0.305	U			
Total Hexa-Dioxins	9.684	0.324				
Total Hepta-Dioxins	50.661	0.464				
Total Tetra-Furans	*	0.260	U			
Total Penta-Furans	6.976	0.202				
Total Hexa-Furans	11.934	0.273				
Total Hepta-Furans	23.994	0.330				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
8C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-010

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.228 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/003 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#7

Analysis Date: 27-MAR-03 Time: 17:10:53 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 94.30

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	0.62	X 0.1	6.16e-02
1,2,3,6,7,8-HxCDD	2.07	X 0.1	2.07e-01
1,2,3,7,8,9-HxCDD	0.93	X 0.1	9.31e-02
1,2,3,4,6,7,8-HpCDD	26.63	X 0.01	2.66e-01
OCDD	178.01	X 0.001	1.78e-01
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.66	X 0.1	6.61e-02
1,2,3,6,7,8-HxCDF	0.36	X 0.1	3.55e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.85	X 0.1	8.52e-02
1,2,3,4,6,7,8-HpCDF	9.16	X 0.01	9.16e-02
1,2,3,4,7,8,9-HpCDF	0.98	X 0.01	9.81e-03
OCDF	27.94	X 0.001	2.79e-02

Total: 1.122e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
9D40314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-015

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.133 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#3

Analysis Date: 28-MAR-03 Time: 14:24:38 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 78.63

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.256	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.244	U	*	*	1.03
1,2,3,4,7,8-HxCDD	*	0.283	U	*	*	1.07
1,2,3,6,7,8-HxCDD	0.680	0.319	J	1.25	1.000	0.95
1,2,3,7,8,9-HxCDD	0.608	0.285	J	1.18	1.009	1.06
1,2,3,4,6,7,8-HpCDD	11.022	0.491		1.05	1.000	0.97
OCDD	112.157	0.831		0.84	1.000	0.98
2,3,7,8-TCDF	0.480	0.237	CJ	1.10	1.002	1.01
1,2,3,7,8-PeCDF	*	0.210	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.219	U	*	*	0.97
1,2,3,4,7,8-HxCDF	0.642	0.183	J	1.19	1.000	1.25
1,2,3,6,7,8-HxCDF	*	0.169	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.237	U	*	*	1.29
2,3,4,6,7,8-HxCDF	*	0.199	U	*	*	1.16
1,2,3,4,6,7,8-HpCDF	2.693	0.304	K	1.28	1.000	1.30
1,2,3,4,7,8,9-HpCDF	*	0.429	U	*	*	1.26
OCDF	18.268	1.236		0.83	1.005	1.23
Total Tetra-Dioxins	*	0.256	U			
Total Penta-Dioxins	*	0.244	U			
Total Hexa-Dioxins	3.468	0.319				
Total Hepta-Dioxins	28.577	0.491				
Total Tetra-Furans	*	0.237	U			
Total Penta-Furans	0.712	0.219				
Total Hexa-Furans	3.434	0.169				
Total Hepta-Furans	3.313	0.304				

Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.

(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
9D40314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-015

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.133 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#3

Analysis Date: 28-MAR-03 Time: 14:24:38 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 78.63

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	0.68	X 0.1	6.80e-02
1,2,3,7,8,9-HxCDD	0.61	X 0.1	6.08e-02
1,2,3,4,6,7,8-HpCDD	11.02	X 0.01	1.10e-01
OCDD	112.16	X 0.001	1.12e-01
2,3,7,8-TCDF	0.48	X 0.1	4.80e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.64	X 0.1	6.42e-02
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	2.69	X 0.01	2.69e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	18.27	X 0.001	1.83e-02

Total: 5.085e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
10E40314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-019

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.187 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#7

Analysis Date: 28-MAR-03 Time: 17:52:57 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 86.28

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.123	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.166	U	*	*	1.03
1,2,3,4,7,8-HxCDD	*	0.199	U	*	*	1.07
1,2,3,6,7,8-HxCDD	*	0.225	U	*	*	0.95
1,2,3,7,8,9-HxCDD	*	0.201	U	*	*	1.06
1,2,3,4,6,7,8-HpCDD	9.817	0.315		1.03	1.000	0.97
OCDD	81.536	0.826		0.82	1.000	0.98
2,3,7,8-TCDF	0.209	0.154	CJ	0.78	1.001	1.01
1,2,3,7,8-PeCDF	*	0.138	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.145	U	*	*	0.97
1,2,3,4,7,8-HxCDF	0.546	0.126	J	1.38	1.000	1.25
1,2,3,6,7,8-HxCDF	*	0.127	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.175	U	*	*	1.29
2,3,4,6,7,8-HxCDF	*	0.143	U	*	*	1.16
1,2,3,4,6,7,8-HpCDF	4.365	0.150		1.01	1.000	1.30
1,2,3,4,7,8,9-HpCDF	*	0.269	U	*	*	1.26
OCDF	15.391	1.131		0.83	1.005	1.23
Total Tetra-Dioxins	*	0.123	U			
Total Penta-Dioxins	*	0.166	U			
Total Hexa-Dioxins	0.839	0.225				
Total Hepta-Dioxins	18.576	0.315				
Total Tetra-Furans	0.552	0.154				
Total Penta-Furans	0.718	0.145				
Total Hexa-Furans	3.880	0.127				
Total Hepta-Furans	10.180	0.150				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
10E40314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-019

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.187 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#7

Analysis Date: 28-MAR-03 Time: 17:52:57 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 86.28

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	9.82	X 0.01	9.82e-02
OCDD	81.54	X 0.001	8.15e-02
2,3,7,8-TCDF	0.21	X 0.1	2.09e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.55	X 0.1	5.46e-02
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	4.36	X 0.01	4.36e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	15.39	X 0.001	1.54e-02

Total: 3.143e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
11E50314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-021

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.121 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#6

Analysis Date: 31-MAR-03 Time: 15:31:24 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 90.02

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	0.257	0.075	JK	0.65	1.001	1.04
1,2,3,7,8-PeCDD	0.508	0.107	JK	1.13	1.001	1.12
1,2,3,4,7,8-HxCDD	0.687	0.146	J	1.42	1.000	1.17
1,2,3,6,7,8-HxCDD	2.566	0.175		1.36	1.000	1.01
1,2,3,7,8,9-HxCDD	2.116	0.157	J	1.29	1.009	1.11
1,2,3,4,6,7,8-HpCDD	54.295	0.294	B	1.07	1.000	1.03
OCDD	409.042	0.552	B	0.86	1.000	1.08
2,3,7,8-TCDF	0.887	0.083	CJ	0.73	1.002	1.05
1,2,3,7,8-PeCDF	0.202	0.088	J	1.41	1.001	1.03
2,3,4,7,8-PeCDF	0.284	0.094	JK	1.30	1.001	1.12
1,2,3,4,7,8-HxCDF	0.792	0.117	J	1.29	1.000	1.39
1,2,3,6,7,8-HxCDF	0.487	0.113	JK	1.44	1.000	1.34
1,2,3,7,8,9-HxCDF	*	0.155	U	*	*	1.43
2,3,4,6,7,8-HxCDF	0.713	0.125	J	1.20	1.000	1.28
1,2,3,4,6,7,8-HpCDF	12.182	0.215		1.01	1.000	1.44
1,2,3,4,7,8,9-HpCDF	0.998	0.388	J	1.09	1.000	1.34
OCDF	35.289	0.646		0.86	1.005	1.37

Total Tetra-Dioxins	0.700	0.075
Total Penta-Dioxins	1.842	0.107
Total Hexa-Dioxins	17.031	0.175
Total Hepta-Dioxins	106.119	0.294
Total Tetra-Furans	2.934	0.083
Total Penta-Furans	5.611	0.094
Total Hexa-Furans	11.943	0.113
Total Hepta-Furans	34.339	0.215

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
11E50314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-021

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.121 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#6

Analysis Date: 31-MAR-03 Time: 15:31:24 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 90.02

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	0.26	X 1.0	2.57e-01
1,2,3,7,8-PeCDD	0.51	X 0.5	2.54e-01
1,2,3,4,7,8-HxCDD	0.69	X 0.1	6.87e-02
1,2,3,6,7,8-HxCDD	2.57	X 0.1	2.57e-01
1,2,3,7,8,9-HxCDD	2.12	X 0.1	2.12e-01
1,2,3,4,6,7,8-HpCDD	54.30	X 0.01	5.43e-01
OCDD	409.04	X 0.001	4.09e-01
2,3,7,8-TCDF	0.89	X 0.1	8.87e-02
1,2,3,7,8-PeCDF	0.20	X 0.05	1.01e-02
2,3,4,7,8-PeCDF	0.28	X 0.5	1.42e-01
1,2,3,4,7,8-HxCDF	0.79	X 0.1	7.92e-02
1,2,3,6,7,8-HxCDF	0.49	X 0.1	4.87e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.71	X 0.1	7.13e-02
1,2,3,4,6,7,8-HpCDF	12.18	X 0.01	1.22e-01
1,2,3,4,7,8,9-HpCDF	1.00	X 0.01	9.98e-03
OCDF	35.29	X 0.001	3.53e-02

Total: 2.608e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
12D50314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-016

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.162 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#4

Analysis Date: 28-MAR-03 Time: 15:16:44 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 79.34

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
,3,7,8-TCDD	0.525	0.237	JK	0.58	1.001	0.98
1,2,3,7,8-PeCDD	*	0.207	U	*	*	1.03
1,2,3,4,7,8-HxCDD	0.554	0.271	JK	1.64	1.000	1.07
1,2,3,6,7,8-HxCDD	2.066	0.306	J	1.32	1.000	0.95
1,2,3,7,8,9-HxCDD	1.536	0.273	J	1.40	1.009	1.06
1,2,3,4,6,7,8-HpCDD	67.437	0.623		1.01	1.000	0.97
OCDD	547.854	1.873		0.88	1.000	0.98
2,3,7,8-TCDF	0.734	0.221	CJ	0.96	1.002	1.01
1,2,3,7,8-PeCDF	*	0.253	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.254	U	*	*	0.97
1,2,3,4,7,8-HxCDF	1.202	0.214	JK	1.03	1.000	1.25
1,2,3,6,7,8-HxCDF	0.858	0.205	J	1.33	1.000	1.23
1,2,3,7,8,9-HxCDF	*	0.278	U	*	*	1.29
2,3,4,6,7,8-HxCDF	1.146	0.238	J	1.27	1.000	1.16
1,2,3,4,6,7,8-HpCDF	22.812	0.410		1.05	1.000	1.30
1,2,3,4,7,8,9-HpCDF	1.136	0.665	J	1.07	1.000	1.26
OCDF	67.523	1.892		0.86	1.005	1.23
Total Tetra-Dioxins	1.087	0.237				
Total Penta-Dioxins	0.927	0.207				
Total Hexa-Dioxins	14.774	0.306				
Total Hepta-Dioxins	141.145	0.623				
Total Tetra-Furans	1.426	0.221				
Total Penta-Furans	7.426	0.254				
Total Hexa-Furans	18.552	0.205				
Total Hepta-Furans	60.845	0.410				

Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.

(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
12D50314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-016

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.162 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#4

Analysis Date: 28-MAR-03 Time: 15:16:44 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 79.34

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
,3,7,8-TCDD	0.53	X 1.0	5.25e-01
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	0.55	X 0.1	5.54e-02
1,2,3,6,7,8-HxCDD	2.07	X 0.1	2.07e-01
1,2,3,7,8,9-HxCDD	1.54	X 0.1	1.54e-01
1,2,3,4,6,7,8-HpCDD	67.44	X 0.01	6.74e-01
OCDD	547.85	X 0.001	5.48e-01
2,3,7,8-TCDF	0.73	X 0.1	7.34e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	1.20	X 0.1	1.20e-01
1,2,3,6,7,8-HxCDF	0.86	X 0.1	8.58e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	1.15	X 0.1	1.15e-01
1,2,3,4,6,7,8-HpCDF	22.81	X 0.01	2.28e-01
1,2,3,4,7,8,9-HpCDF	1.14	X 0.01	1.14e-02
OCDF	67.52	X 0.001	6.75e-02

Total: 2.864e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
13E60314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-020

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.134 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#8

Analysis Date: 28-MAR-03 Time: 18:45:01 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 81.35

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
,3,7,8-TCDD	*	0.166	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.155	U	*	*	1.03
1,2,3,4,7,8-HxCDD	*	0.140	U	*	*	1.07
1,2,3,6,7,8-HxCDD	0.841	0.162	JK	0.99	1.000	0.95
1,2,3,7,8,9-HxCDD	0.739	0.143	J	1.33	1.008	1.06
1,2,3,4,6,7,8-HpCDD	16.633	0.325		1.01	1.000	0.97
OCDD	146.272	0.729		0.85	1.000	0.98
2,3,7,8-TCDF	*	0.139	U	*	*	1.01
1,2,3,7,8-PeCDF	*	0.129	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.130	U	*	*	0.97
1,2,3,4,7,8-HxCDF	0.497	0.190	J	1.35	1.000	1.25
1,2,3,6,7,8-HxCDF	*	0.172	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.258	U	*	*	1.29
2,3,4,6,7,8-HxCDF	0.459	0.214	J	1.06	1.000	1.16
1,2,3,4,6,7,8-HpCDF	4.063	0.330		1.06	1.000	1.30
1,2,3,4,7,8,9-HpCDF	*	0.570	U	*	*	1.26
OCDF	18.890	0.707		0.79	1.005	1.23
Total Tetra-Dioxins	0.515	0.166				
Total Penta-Dioxins	*	0.155	U			
Total Hexa-Dioxins	2.824	0.162				
Total Hepta-Dioxins	32.043	0.325				
Total Tetra-Furans	1.546	0.139				
Total Penta-Furans	4.632	0.130				
Total Hexa-Furans	5.033	0.172				
Total Hepta-Furans	9.779	0.330				

Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.

(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
13E60314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-020

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.134 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#8

Analysis Date: 28-MAR-03 Time: 18:45:01 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 81.35

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	0.84	X 0.1	8.41e-02
1,2,3,7,8,9-HxCDD	0.74	X 0.1	7.39e-02
1,2,3,4,6,7,8-HpCDD	16.63	X 0.01	1.66e-01
OCDD	146.27	X 0.001	1.46e-01
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.50	X 0.1	4.97e-02
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.46	X 0.1	4.59e-02
1,2,3,4,6,7,8-HpCDF	4.06	X 0.01	4.06e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	18.89	X 0.001	1.89e-02

Total: 6.258e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
14D60314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-017

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.270 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#5

Analysis Date: 28-MAR-03 Time: 16:08:47 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 82.79

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.215	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.267	U	*	*	1.03
1,2,3,4,7,8-HxCDD	*	0.279	U	*	*	1.07
1,2,3,6,7,8-HxCDD	*	0.306	U	*	*	0.95
1,2,3,7,8,9-HxCDD	*	0.277	U	*	*	1.06
1,2,3,4,6,7,8-HpCDD	10.998	0.351		1.07	1.000	0.97
OCDD	199.877	0.878		0.84	1.000	0.98
2,3,7,8-TCDF	0.631	0.194	CJ	0.80	1.003	1.01
1,2,3,7,8-PeCDF	*	0.223	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.226	U	*	*	0.97
1,2,3,4,7,8-HxCDF	0.523	0.187	JK	1.73	1.000	1.25
1,2,3,6,7,8-HxCDF	0.322	0.174	J	1.11	1.000	1.23
1,2,3,7,8,9-HxCDF	*	0.251	U	*	*	1.29
2,3,4,6,7,8-HxCDF	*	0.213	U	*	*	1.16
1,2,3,4,6,7,8-HpCDF	2.812	0.288		1.13	1.001	1.30
1,2,3,4,7,8,9-HpCDF	0.531	0.448	J	1.00	1.000	1.26
OCDF	15.181	1.381		0.88	1.004	1.23
Total Tetra-Dioxins	0.847	0.215				
Total Penta-Dioxins	*	0.267	U			
Total Hexa-Dioxins	0.906	0.306				
Total Hepta-Dioxins	23.784	0.351				
Total Tetra-Furans	1.575	0.194				
Total Penta-Furans	0.788	0.226				
Total Hexa-Furans	2.131	0.174				
Total Hepta-Furans	6.541	0.288				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
14D60314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-017

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.270 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#5

Analysis Date: 28-MAR-03 Time: 16:08:47 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 82.79

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	11.00	X 0.01	1.10e-01
OCDD	199.88	X 0.001	2.00e-01
2,3,7,8-TCDF	0.63	X 0.1	6.31e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.52	X 0.1	5.23e-02
1,2,3,6,7,8-HxCDF	0.32	X 0.1	3.22e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	2.81	X 0.01	2.81e-02
1,2,3,4,7,8,9-HpCDF	0.53	X 0.01	5.31e-03
OCDF	15.18	X 0.001	1.52e-02

Total: 5.061e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
15D70314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-018

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.141 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#6

Analysis Date: 28-MAR-03 Time: 17:00:51 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 82.36

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	0.959	0.181	J	0.84	1.001	0.98
1,2,3,7,8-PeCDD	0.484	0.187	J	1.42	1.001	1.03
1,2,3,4,7,8-HxCDD	0.557	0.257	JK	1.62	1.000	1.07
1,2,3,6,7,8-HxCDD	1.947	0.276	J	1.31	1.000	0.95
1,2,3,7,8,9-HxCDD	1.288	0.252	JK	0.99	1.009	1.06
1,2,3,4,6,7,8-HpCDD	42.234	0.510		1.09	1.000	0.97
OCDD	356.259	1.229		0.87	1.000	0.98
2,3,7,8-TCDF	1.429	0.160	C	0.69	1.002	1.01
1,2,3,7,8-PeCDF	0.703	0.136	J	1.34	1.000	0.90
2,3,4,7,8-PeCDF	1.162	0.132	J	1.58	1.001	0.97
1,2,3,4,7,8-HxCDF	2.908	0.123		1.23	1.000	1.25
1,2,3,6,7,8-HxCDF	1.483	0.115	J	1.42	1.000	1.23
1,2,3,7,8,9-HxCDF	*	0.178	U	*	*	1.29
2,3,4,6,7,8-HxCDF	2.857	0.142		1.28	1.000	1.16
1,2,3,4,6,7,8-HpCDF	18.351	0.310		1.03	1.000	1.30
1,2,3,4,7,8,9-HpCDF	0.823	0.567	J	1.10	1.000	1.26
OCDF	40.179	1.720		0.81	1.004	1.23
Total Tetra-Dioxins	2.128	0.181				
Total Penta-Dioxins	1.877	0.187				
Total Hexa-Dioxins	12.513	0.276				
Total Hepta-Dioxins	86.639	0.510				
Total Tetra-Furans	14.513	0.160				
Total Penta-Furans	60.350	0.132				
Total Hexa-Furans	40.836	0.115				
Total Hepta-Furans	34.009	0.310				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
15D70314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-018

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.141 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#6

Analysis Date: 28-MAR-03 Time: 17:00:51 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 82.36

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
,3,7,8-TCDD	0.96	X 1.0	9.59e-01
1,2,3,7,8-PeCDD	0.48	X 0.5	2.42e-01
1,2,3,4,7,8-HxCDD	0.56	X 0.1	5.57e-02
1,2,3,6,7,8-HxCDD	1.95	X 0.1	1.95e-01
1,2,3,7,8,9-HxCDD	1.29	X 0.1	1.29e-01
1,2,3,4,6,7,8-HpCDD	42.23	X 0.01	4.22e-01
OCDD	356.26	X 0.001	3.56e-01
2,3,7,8-TCDF	1.43	X 0.1	1.43e-01
1,2,3,7,8-PeCDF	0.70	X 0.05	3.52e-02
2,3,4,7,8-PeCDF	1.16	X 0.5	5.81e-01
1,2,3,4,7,8-HxCDF	2.91	X 0.1	2.91e-01
1,2,3,6,7,8-HxCDF	1.48	X 0.1	1.48e-01
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	2.86	X 0.1	2.86e-01
1,2,3,4,6,7,8-HpCDF	18.35	X 0.01	1.84e-01
1,2,3,4,7,8,9-HpCDF	0.82	X 0.01	8.23e-03
OCDF	40.18	X 0.001	4.02e-02

Total: 4.075e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
16E70314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-022

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.235 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#7

Analysis Date: 31-MAR-03 Time: 16:23:39 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 82.35

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION. ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.071	U	*	*	1.04
1,2,3,7,8-PeCDD	*	0.117	U	*	*	1.12
1,2,3,4,7,8-HxCDD	*	0.116	U	*	*	1.17
1,2,3,6,7,8-HxCDD	0.362	0.132	J	1.31	1.000	1.01
1,2,3,7,8,9-HxCDD	*	0.121	U	*	*	1.11
1,2,3,4,6,7,8-HpCDD	10.848	0.191	B	1.06	1.000	1.03
OCDD	109.745	0.416	B	0.84	1.000	1.08
2,3,7,8-TCDF	0.359	0.073	CJ	0.82	1.002	1.05
1,2,3,7,8-PeCDF	*	0.086	U	*	*	1.03
2,3,4,7,8-PeCDF	*	0.099	U	*	*	1.12
1,2,3,4,7,8-HxCDF	0.363	0.081	J	1.33	1.000	1.39
1,2,3,6,7,8-HxCDF	0.147	0.074	JK	1.64	1.000	1.34
1,2,3,7,8,9-HxCDF	*	0.115	U	*	*	1.43
2,3,4,6,7,8-HxCDF	*	0.090	U	*	*	1.28
1,2,3,4,6,7,8-HpCDF	3.990	0.199		1.05	1.000	1.44
1,2,3,4,7,8,9-HpCDF	*	0.346	U	*	*	1.34
OCDF	9.021	0.414		0.92	1.005	1.37
Total Tetra-Dioxins	0.799	0.071				
Total Penta-Dioxins	*	0.117	U			
Total Hexa-Dioxins	2.383	0.132				
Total Hepta-Dioxins	22.289	0.191				
Total Tetra-Furans	1.151	0.073				
Total Penta-Furans	1.090	0.099				
Total Hexa-Furans	3.355	0.074				
Total Hepta-Furans	8.999	0.199				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
16E70314

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-022

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.235 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#7

Analysis Date: 31-MAR-03 Time: 16:23:39 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 82.35

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	0.36	X 0.1	3.62e-02
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	10.85	X 0.01	1.08e-01
OCDD	109.75	X 0.001	1.10e-01
2,3,7,8-TCDF	0.36	X 0.1	3.59e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.36	X 0.1	3.63e-02
1,2,3,6,7,8-HxCDF	0.15	X 0.1	1.47e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	3.99	X 0.01	3.99e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	9.02	X 0.001	9.02e-03

Total: 3.902e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
17D10312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-013

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.190 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#10

Analysis Date: 27-MAR-03 Time: 19:46:48 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 78.19

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.157	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.281	U	*	*	1.03
1,2,3,4,7,8-HxCDD	*	0.289	U	*	*	1.07
1,2,3,6,7,8-HxCDD	*	0.332	U	*	*	0.95
1,2,3,7,8,9-HxCDD	*	0.294	U	*	*	1.06
1,2,3,4,6,7,8-HpCDD	5.291	0.633		1.05	1.001	0.97
OCDD	40.398	1.326		0.88	1.000	0.98
2,3,7,8-TCDF	*	0.206	U	*	*	1.01
1,2,3,7,8-PeCDF	*	0.204	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.229	U	*	*	0.97
1,2,3,4,7,8-HxCDF	0.637	0.215	J	1.39	1.000	1.25
1,2,3,6,7,8-HxCDF	0.294	0.193	J	1.33	1.000	1.23
1,2,3,7,8,9-HxCDF	*	0.276	U	*	*	1.29
2,3,4,6,7,8-HxCDF	0.555	0.246	J	1.20	1.000	1.16
1,2,3,4,6,7,8-HpCDF	8.124	0.464		1.05	1.000	1.30
1,2,3,4,7,8,9-HpCDF	*	0.822	U	*	*	1.26
OCDF	31.304	1.624		0.88	1.005	1.23
Total Tetra-Dioxins	*	0.157	U			
Total Penta-Dioxins	0.622	0.281				
Total Hexa-Dioxins	2.920	0.332				
Total Hepta-Dioxins	19.812	0.633				
Total Tetra-Furans	*	0.206	U			
Total Penta-Furans	1.113	0.229				
Total Hexa-Furans	5.256	0.193				
Total Hepta-Furans	20.163	0.464				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
17D10312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-013

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.190 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol (ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#10

Analysis Date: 27-MAR-03 Time: 19:46:48 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 78.19

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	5.29	X 0.01	5.29e-02
OCDD	40.40	X 0.001	4.04e-02
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.64	X 0.1	6.37e-02
1,2,3,6,7,8-HxCDF	0.29	X 0.1	2.94e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.56	X 0.1	5.55e-02
1,2,3,4,6,7,8-HpCDF	8.12	X 0.01	8.12e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	31.30	X 0.001	3.13e-02

Total: 3.544e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
18D20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-014

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.255 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#2

Analysis Date: 28-MAR-03 Time: 13:32:39 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 94.78

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
,3,7,8-TCDD	*	0.248	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.276	U	*	*	1.03
1,2,3,4,7,8-HxCDD	0.559	0.255	J	1.29	1.001	1.07
1,2,3,6,7,8-HxCDD	0.832	0.285	J	1.27	1.000	0.95
1,2,3,7,8,9-HxCDD	0.645	0.256	JK	0.95	1.008	1.06
1,2,3,4,6,7,8-HpCDD	5.802	0.428		1.12	1.000	0.97
OCDD	33.890	0.736		0.83	1.000	0.98
2,3,7,8-TCDF	1.485	0.277	C	0.66	1.003	1.01
1,2,3,7,8-PeCDF	0.644	0.266	J	1.09	1.001	0.90
2,3,4,7,8-PeCDF	0.924	0.285	J	1.32	1.000	0.97
1,2,3,4,7,8-HxCDF	0.987	0.244	JK	1.03	1.000	1.25
1,2,3,6,7,8-HxCDF	0.686	0.223	J	1.31	1.000	1.23
1,2,3,7,8,9-HxCDF	*	0.326	U	*	*	1.29
2,3,4,6,7,8-HxCDF	0.686	0.274	J	1.26	1.000	1.16
1,2,3,4,6,7,8-HpCDF	3.137	0.289		1.04	1.000	1.30
1,2,3,4,7,8,9-HpCDF	0.699	0.422	J	0.96	1.000	1.26
OCDF	46.627	0.983		0.82	1.005	1.23

Total Tetra-Dioxins	*	0.248	U
Total Penta-Dioxins	*	0.276	U
Total Hexa-Dioxins	2.312	0.285	
Total Hepta-Dioxins	12.746	0.428	
Total Tetra-Furans	1.485	0.277	
Total Penta-Furans	3.736	0.285	
Total Hexa-Furans	3.906	0.223	
Total Hepta-Furans	6.279	0.289	

Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.

(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
18D20312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-014

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.255 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19176#2

Analysis Date: 28-MAR-03 Time: 13:32:39 Blank Data Filename: A19176#1

Dilution Factor: 1 Cal. Ver. Data Filename: A19175#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 94.78

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
1,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	0.56	X 0.1	5.59e-02
1,2,3,6,7,8-HxCDD	0.83	X 0.1	8.32e-02
1,2,3,7,8,9-HxCDD	0.65	X 0.1	6.45e-02
1,2,3,4,6,7,8-HpCDD	5.80	X 0.01	5.80e-02
OCDD	33.89	X 0.001	3.39e-02
2,3,7,8-TCDF	1.49	X 0.1	1.49e-01
1,2,3,7,8-PeCDF	0.64	X 0.05	3.22e-02
2,3,4,7,8-PeCDF	0.92	X 0.5	4.62e-01
1,2,3,4,7,8-HxCDF	0.99	X 0.1	9.87e-02
1,2,3,6,7,8-HxCDF	0.69	X 0.1	6.86e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.69	X 0.1	6.86e-02
1,2,3,4,6,7,8-HpCDF	3.14	X 0.01	3.14e-02
1,2,3,4,7,8,9-HpCDF	0.70	X 0.01	6.99e-03
OCDF	46.63	X 0.001	4.66e-02

Total: 1.259e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
19C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-005

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.271 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11220#3

Analysis Date: 27-MAR-03 Time: 19:45:41 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 91.76

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.072	U	*	*	1.04
1,2,3,7,8-PeCDD	*	0.113	U	*	*	1.12
1,2,3,4,7,8-HxCDD	0.438	0.149	J	1.25	1.001	1.17
1,2,3,6,7,8-HxCDD	2.016	0.179	J	1.23	1.000	1.01
1,2,3,7,8,9-HxCDD	1.606	0.160	J	1.23	1.008	1.11
1,2,3,4,6,7,8-HpCDD	62.575	0.395	B	1.08	1.000	1.03
OCDD	509.967	0.648	B	0.85	1.000	1.08
2,3,7,8-TCDF	1.350	0.119	C	0.79	1.002	1.05
1,2,3,7,8-PeCDF	*	0.076	U	*	*	1.03
2,3,4,7,8-PeCDF	0.470	0.084	J	1.60	1.000	1.12
1,2,3,4,7,8-HxCDF	0.762	0.161	BJ	1.49	1.000	1.39
1,2,3,6,7,8-HxCDF	0.381	0.158	J	1.25	1.000	1.34
1,2,3,7,8,9-HxCDF	*	0.230	U	*	*	1.43
2,3,4,6,7,8-HxCDF	0.601	0.185	J	1.42	1.000	1.28
1,2,3,4,6,7,8-HpCDF	11.622	0.185	B	1.04	1.000	1.44
1,2,3,4,7,8,9-HpCDF	0.814	0.363	J	1.15	1.000	1.34
OCDF	34.769	0.820	B	0.93	1.005	1.37
Total Tetra-Dioxins	0.377	0.072				
Total Penta-Dioxins	0.992	0.113				
Total Hexa-Dioxins	17.985	0.179				
Total Hepta-Dioxins	144.278	0.395				
Total Tetra-Furans	4.012	0.119				
Total Penta-Furans	6.155	0.084				
Total Hexa-Furans	11.849	0.158				
Total Hepta-Furans	35.516	0.185				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
19C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-005

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.271 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11220#3

Analysis Date: 27-MAR-03 Time: 19:45:41 Blank Data Filename: C11219#1

Dilution Factor: 1 Cal. Ver. Data Filename: C11218#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 91.76

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	0.44	X 0.1	4.38e-02
1,2,3,6,7,8-HxCDD	2.02	X 0.1	2.02e-01
1,2,3,7,8,9-HxCDD	1.61	X 0.1	1.61e-01
1,2,3,4,6,7,8-HpCDD	62.57	X 0.01	6.26e-01
OCDD	509.97	X 0.001	5.10e-01
2,3,7,8-TCDF	1.35	X 0.1	1.35e-01
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	0.47	X 0.5	2.35e-01
1,2,3,4,7,8-HxCDF	0.76	X 0.1	7.62e-02
1,2,3,6,7,8-HxCDF	0.38	X 0.1	3.81e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.60	X 0.1	6.01e-02
1,2,3,4,6,7,8-HpCDF	11.62	X 0.01	1.16e-01
1,2,3,4,7,8,9-HpCDF	0.81	X 0.01	8.14e-03
OCDF	34.77	X 0.001	3.48e-02

Total: 2.245e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
20C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-006

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.229 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#3

Analysis Date: 27-MAR-03 Time: 13:43:00 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 91.68

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	1.039	0.351		0.85	1.000	0.98
1,2,3,7,8-PeCDD	*	0.508	U	*	*	1.03
1,2,3,4,7,8-HxCDD	0.557	0.391	J	1.19	1.000	1.07
1,2,3,6,7,8-HxCDD	1.784	0.435	J	1.30	1.000	0.95
1,2,3,7,8,9-HxCDD	1.663	0.391	J	1.11	1.009	1.06
1,2,3,4,6,7,8-HpCDD	55.521	0.712		1.06	1.000	0.97
OCDD	481.962	1.118		0.86	1.000	0.98
2,3,7,8-TCDF	1.011	0.485	C	0.71	1.001	1.01
1,2,3,7,8-PeCDF	0.679	0.344	JK	1.28	1.001	0.90
2,3,4,7,8-PeCDF	*	0.372	U	*	*	0.97
1,2,3,4,7,8-HxCDF	1.048	0.201	J	1.24	1.000	1.25
1,2,3,6,7,8-HxCDF	0.608	0.192	JK	0.92	1.000	1.23
1,2,3,7,8,9-HxCDF	0.469	0.254	JK	1.57	1.000	1.29
2,3,4,6,7,8-HxCDF	0.982	0.234	J	1.18	1.000	1.16
1,2,3,4,6,7,8-HpCDF	9.811	0.469		1.05	1.000	1.30
1,2,3,4,7,8,9-HpCDF	0.941	0.737	J	0.95	1.000	1.26
OCDF	32.294	1.155		0.91	1.005	1.23
Total Tetra-Dioxins	1.039	0.351				
Total Penta-Dioxins	*	0.508	U			
Total Hexa-Dioxins	6.961	0.435				
Total Hepta-Dioxins	101.979	0.712				
Total Tetra-Furans	1.011	0.485				
Total Penta-Furans	4.327	0.372				
Total Hexa-Furans	8.288	0.192				
Total Hepta-Furans	28.084	0.469				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
20C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-006

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.229 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#3

Analysis Date: 27-MAR-03 Time: 13:43:00 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 91.68

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	1.04	X 1.0	1.04e+00
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	0.56	X 0.1	5.57e-02
1,2,3,6,7,8-HxCDD	1.78	X 0.1	1.78e-01
1,2,3,7,8,9-HxCDD	1.66	X 0.1	1.66e-01
1,2,3,4,6,7,8-HpCDD	55.52	X 0.01	5.55e-01
OCDD	481.96	X 0.001	4.82e-01
2,3,7,8-TCDF	1.01	X 0.1	1.01e-01
1,2,3,7,8-PeCDF	0.68	X 0.05	3.40e-02
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	1.05	X 0.1	1.05e-01
1,2,3,6,7,8-HxCDF	0.61	X 0.1	6.08e-02
1,2,3,7,8,9-HxCDF	0.47	X 0.1	4.69e-02
2,3,4,6,7,8-HxCDF	0.98	X 0.1	9.82e-02
1,2,3,4,6,7,8-HpCDF	9.81	X 0.01	9.81e-02
1,2,3,4,7,8,9-HpCDF	0.94	X 0.01	9.41e-03
OCDF	32.29	X 0.001	3.23e-02

Total: 3.062e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
21C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-007

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 9.738 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/14/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#4

Analysis Date: 27-MAR-03 Time: 14:34:57 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 84.31

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.300	U	*	*	0.98
1,2,3,7,8-PeCDD	0.900	0.448	J	1.55	1.000	1.03
1,2,3,4,7,8-HxCDD	0.996	0.370	J	1.32	1.000	1.07
1,2,3,6,7,8-HxCDD	3.369	0.424		1.14	1.000	0.95
1,2,3,7,8,9-HxCDD	2.441	0.376	J	1.28	1.009	1.06
1,2,3,4,6,7,8-HpCDD	100.790	0.841		1.04	1.001	0.97
OCDD	894.182	2.726		0.89	1.000	0.98
2,3,7,8-TCDF	2.804	0.441	C	0.85	1.001	1.01
1,2,3,7,8-PeCDF	*	0.334	U	*	*	0.90
2,3,4,7,8-PeCDF	1.867	0.356	J	1.34	1.001	0.97
1,2,3,4,7,8-HxCDF	1.966	0.265	JK	1.45	1.000	1.25
1,2,3,6,7,8-HxCDF	1.495	0.254	J	1.28	1.000	1.23
1,2,3,7,8,9-HxCDF	*	0.377	U	*	*	1.29
2,3,4,6,7,8-HxCDF	2.076	0.300	JK	1.50	1.000	1.16
1,2,3,4,6,7,8-HpCDF	26.315	0.452		1.04	1.000	1.30
1,2,3,4,7,8,9-HpCDF	1.636	0.743	J	1.07	1.000	1.26
OCDF	141.634	2.477		0.87	1.005	1.23

Total Tetra-Dioxins	0.853	0.300
Total Penta-Dioxins	2.369	0.448
Total Hexa-Dioxins	19.743	0.424
Total Hepta-Dioxins	192.787	0.841
Total Tetra-Furans	8.409	0.441
Total Penta-Furans	20.420	0.356
Total Hexa-Furans	23.168	0.254
Total Hepta-Furans	73.534	0.452

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
21C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-007

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 9.738 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 07/10/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/14/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#4

Analysis Date: 27-MAR-03 Time: 14:34:57 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 84.31

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	0.90	X 0.5	4.50e-01
1,2,3,4,7,8-HxCDD	1.00	X 0.1	9.96e-02
1,2,3,6,7,8-HxCDD	3.37	X 0.1	3.37e-01
1,2,3,7,8,9-HxCDD	2.44	X 0.1	2.44e-01
1,2,3,4,6,7,8-HpCDD	100.79	X 0.01	1.01e+00
OCDD	894.18	X 0.001	8.94e-01
2,3,7,8-TCDF	2.80	X 0.1	2.80e-01
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	1.87	X 0.5	9.33e-01
1,2,3,4,7,8-HxCDF	1.97	X 0.1	1.97e-01
1,2,3,6,7,8-HxCDF	1.49	X 0.1	1.49e-01
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	2.08	X 0.1	2.08e-01
1,2,3,4,6,7,8-HpCDF	26.32	X 0.01	2.63e-01
1,2,3,4,7,8,9-HpCDF	1.64	X 0.01	1.64e-02
OCDF	141.63	X 0.001	1.42e-01

Total: 5.222e+00

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
22C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-008

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.248 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 05/23/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#5

Analysis Date: 27-MAR-03 Time: 15:26:56 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 91.77

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.339	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.337	U	*	*	1.03
1,2,3,4,7,8-HxCDD	*	0.344	U	*	*	1.07
1,2,3,6,7,8-HxCDD	1.206	0.405	J	1.18	1.000	0.95
1,2,3,7,8,9-HxCDD	1.185	0.354	J	1.28	1.009	1.06
1,2,3,4,6,7,8-HpCDD	8.810	0.543		1.12	1.000	0.97
OCDD	32.511	1.188		0.82	1.000	0.98
2,3,7,8-TCDF	1.351	0.393	C	0.86	1.002	1.01
1,2,3,7,8-PeCDF	*	0.288	U	*	*	0.90
2,3,4,7,8-PeCDF	*	0.301	U	*	*	0.97
1,2,3,4,7,8-HxCDF	0.903	0.229	J	1.15	1.000	1.25
1,2,3,6,7,8-HxCDF	0.458	0.222	J	1.23	1.000	1.23
1,2,3,7,8,9-HxCDF	*	0.319	U	*	*	1.29
2,3,4,6,7,8-HxCDF	0.656	0.257	JK	1.55	1.000	1.16
1,2,3,4,6,7,8-HpCDF	2.714	0.329	J	0.96	1.000	1.30
1,2,3,4,7,8,9-HpCDF	*	0.560	U	*	*	1.26
OCDF	4.247	1.552	J	0.78	1.005	1.23
Total Tetra-Dioxins	0.748	0.339				
Total Penta-Dioxins	3.831	0.337				
Total Hexa-Dioxins	13.692	0.405				
Total Hepta-Dioxins	18.018	0.543				
Total Tetra-Furans	4.437	0.393				
Total Penta-Furans	3.489	0.301				
Total Hexa-Furans	3.146	0.222				
Total Hepta-Furans	3.812	0.329				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
22C30312

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-008

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.248 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 05/23/01

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/24/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: A19171#5

Analysis Date: 27-MAR-03 Time: 15:26:56 Blank Data Filename: A19171#2

Dilution Factor: 1 Cal. Ver. Data Filename: A19171#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 91.77

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	1.21	X 0.1	1.21e-01
1,2,3,7,8,9-HxCDD	1.19	X 0.1	1.19e-01
1,2,3,4,6,7,8-HpCDD	8.81	X 0.01	8.81e-02
OCDD	32.51	X 0.001	3.25e-02
2,3,7,8-TCDF	1.35	X 0.1	1.35e-01
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.90	X 0.1	9.03e-02
1,2,3,6,7,8-HxCDF	0.46	X 0.1	4.58e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.66	X 0.1	6.56e-02
1,2,3,4,6,7,8-HpCDF	2.71	X 0.01	2.71e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	4.25	X 0.001	4.25e-03

Total: 7.279e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
03B20312D

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-023

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.202 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#8

Analysis Date: 31-MAR-03 Time: 17:15:53 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 85.43

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.076	U	*	*	1.04
1,2,3,7,8-PeCDD	*	0.139	U	*	*	1.12
1,2,3,4,7,8-HxCDD	*	0.137	U	*	*	1.17
1,2,3,6,7,8-HxCDD	*	0.160	U	*	*	1.01
1,2,3,7,8,9-HxCDD	*	0.145	U	*	*	1.11
1,2,3,4,6,7,8-HpCDD	3.280	0.211	B	0.97	1.000	1.03
OCDD	30.195	0.585	B	0.88	1.000	1.08
2,3,7,8-TCDF	0.340	0.104	CJ	0.86	1.002	1.05
1,2,3,7,8-PeCDF	0.145	0.089	JK	0.99	1.001	1.03
2,3,4,7,8-PeCDF	*	0.104	U	*	*	1.12
1,2,3,4,7,8-HxCDF	0.265	0.084	JK	1.75	1.000	1.39
1,2,3,6,7,8-HxCDF	0.117	0.080	JK	0.89	1.001	1.34
1,2,3,7,8,9-HxCDF	0.282	0.126	J	1.30	1.000	1.43
2,3,4,6,7,8-HxCDF	0.151	0.096	JK	0.84	1.000	1.28
1,2,3,4,6,7,8-HpCDF	4.420	0.238		1.00	1.000	1.44
1,2,3,4,7,8,9-HpCDF	*	0.433	U	*	*	1.34
OCDF	9.782	0.575		0.89	1.005	1.37
Total Tetra-Dioxins	0.335	0.076				
Total Penta-Dioxins	*	0.139	U			
Total Hexa-Dioxins	1.242	0.160				
Total Hepta-Dioxins	6.733	0.211				
Total Tetra-Furans	0.340	0.104				
Total Penta-Furans	1.801	0.104				
Total Hexa-Furans	2.532	0.080				
Total Hepta-Furans	7.466	0.238				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
03B20312D

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-023

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.202 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#8

Analysis Date: 31-MAR-03 Time: 17:15:53 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 85.43

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	3.28	X 0.01	3.28e-02
OCDD	30.20	X 0.001	3.02e-02
2,3,7,8-TCDF	0.34	X 0.1	3.40e-02
1,2,3,7,8-PeCDF	0.14	X 0.05	7.25e-03
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.26	X 0.1	2.65e-02
1,2,3,6,7,8-HxCDF	0.12	X 0.1	1.17e-02
1,2,3,7,8,9-HxCDF	0.28	X 0.1	2.82e-02
2,3,4,6,7,8-HxCDF	0.15	X 0.1	1.51e-02
1,2,3,4,6,7,8-HpCDF	4.42	X 0.01	4.42e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	9.78	X 0.001	9.78e-03

Total: 2.396e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
09D40314D

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-025

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.170 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#9

Analysis Date: 31-MAR-03 Time: 18:08:06 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 78.45

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.072	U	*	*	1.04
1,2,3,7,8-PeCDD	*	0.109	U	*	*	1.12
1,2,3,4,7,8-HxCDD	*	0.128	U	*	*	1.17
1,2,3,6,7,8-HxCDD	0.659	0.150	J	1.32	1.000	1.01
1,2,3,7,8,9-HxCDD	0.374	0.136	J	1.12	1.009	1.11
1,2,3,4,6,7,8-HpCDD	11.238	0.340	B	1.07	1.000	1.03
OCDD	125.854	0.536	B	0.86	1.000	1.08
2,3,7,8-TCDF	0.235	0.084	CJ	0.77	1.001	1.05
1,2,3,7,8-PeCDF	*	0.088	U	*	*	1.03
2,3,4,7,8-PeCDF	*	0.105	U	*	*	1.12
1,2,3,4,7,8-HxCDF	0.341	0.101	J	1.13	1.000	1.39
1,2,3,6,7,8-HxCDF	0.177	0.094	J	1.38	1.001	1.34
1,2,3,7,8,9-HxCDF	*	0.150	U	*	*	1.43
2,3,4,6,7,8-HxCDF	0.230	0.111	J	1.56	1.000	1.28
1,2,3,4,6,7,8-HpCDF	3.628	0.210		1.09	1.000	1.44
1,2,3,4,7,8,9-HpCDF	*	0.377	U	*	*	1.34
OCDF	8.058	0.556		0.90	1.004	1.37
Total Tetra-Dioxins	0.259	0.072				
Total Penta-Dioxins	0.257	0.109				
Total Hexa-Dioxins	2.618	0.150				
Total Hepta-Dioxins	25.325	0.340				
Total Tetra-Furans	0.552	0.084				
Total Penta-Furans	*	0.105	U			
Total Hexa-Furans	3.970	0.094				
Total Hepta-Furans	10.123	0.210				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

CLIENT ID.

09D40314D

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-025

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.170 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#9

Analysis Date: 31-MAR-03 Time: 18:08:06 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 78.45

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	0.66	X 0.1	6.59e-02
1,2,3,7,8,9-HxCDD	0.37	X 0.1	3.74e-02
1,2,3,4,6,7,8-HpCDD	11.24	X 0.01	1.12e-01
OCDD	125.85	X 0.001	1.26e-01
2,3,7,8-TCDF	0.24	X 0.1	2.35e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.34	X 0.1	3.41e-02
1,2,3,6,7,8-HxCDF	0.18	X 0.1	1.77e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.23	X 0.1	2.30e-02
1,2,3,4,6,7,8-HpCDF	3.63	X 0.01	3.63e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	8.06	X 0.001	8.06e-03

Total: 4.841e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
18D20312D

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-024

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.872 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#10

Analysis Date: 31-MAR-03 Time: 19:00:19 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 96.70

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.055	U	*	*	1.04
1,2,3,7,8-PeCDD	*	0.077	U	*	*	1.12
1,2,3,4,7,8-HxCDD	*	0.104	U	*	*	1.17
1,2,3,6,7,8-HxCDD	0.443	0.124	JK	0.97	1.000	1.01
1,2,3,7,8,9-HxCDD	0.561	0.111	J	1.36	1.009	1.11
1,2,3,4,6,7,8-HpCDD	5.142	0.215	B	1.07	1.000	1.03
OCDD	30.181	0.457	B	0.82	1.000	1.08
2,3,7,8-TCDF	0.618	0.081	CJ	0.85	1.001	1.05
1,2,3,7,8-PeCDF	*	0.060	U	*	*	1.03
2,3,4,7,8-PeCDF	0.276	0.067	J	1.54	1.000	1.12
1,2,3,4,7,8-HxCDF	0.466	0.096	J	1.30	1.000	1.39
1,2,3,6,7,8-HxCDF	0.234	0.086	J	1.21	1.001	1.34
1,2,3,7,8,9-HxCDF	*	0.136	U	*	*	1.43
2,3,4,6,7,8-HxCDF	0.229	0.100	J	1.16	1.000	1.28
1,2,3,4,6,7,8-HpCDF	2.543	0.234		0.90	1.000	1.44
1,2,3,4,7,8,9-HpCDF	*	0.425	U	*	*	1.34
OCDF	5.050	0.464		0.97	1.004	1.37
Total Tetra-Dioxins	0.530	0.055				
Total Penta-Dioxins	1.215	0.077				
Total Hexa-Dioxins	4.209	0.124				
Total Hepta-Dioxins	11.755	0.215				
Total Tetra-Furans	2.000	0.081				
Total Penta-Furans	2.012	0.067				
Total Hexa-Furans	2.363	0.086				
Total Hepta-Furans	4.469	0.234				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
18D20312D

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E2300153-024

Client Name: UNIVERSITY OF UTAH Sample Wt/Vol: 10.872 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 03/07/02

Sample Receipt Date: 03/18/03 Instrument ID: 70S

Ext. Date: 03/25/03 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C11226#10

Analysis Date: 31-MAR-03 Time: 19:00:19 Blank Data Filename: C11226#4

Dilution Factor: 1 Cal. Ver. Data Filename: C11226#3

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 96.70

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	0.44	X 0.1	4.43e-02
1,2,3,7,8,9-HxCDD	0.56	X 0.1	5.61e-02
1,2,3,4,6,7,8-HpCDD	5.14	X 0.01	5.14e-02
OCDD	30.18	X 0.001	3.02e-02
2,3,7,8-TCDF	0.62	X 0.1	6.18e-02
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	0.28	X 0.5	1.38e-01
1,2,3,4,7,8-HxCDF	0.47	X 0.1	4.66e-02
1,2,3,6,7,8-HxCDF	0.23	X 0.1	2.34e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	0.23	X 0.1	2.29e-02
1,2,3,4,6,7,8-HpCDF	2.54	X 0.01	2.54e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	5.05	X 0.001	5.05e-03

Total: 5.051e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs) and 1989 Udate(EPA/625/3-89/016, March 1989.)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : RMCOEH/University of Utah
Project Name : Davis County Soil Dioxins
Project Number : NA
Sample Matrix : Soil

Service Request : K2302179
Date Collected : NA
Date Received : 03/18/03

Carbon, Total Organic

Units : Percent
Basis : Dry

Analysis Method : ASTM D4129-82M
Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
1A10312	K2302179-001	0.05	0.02	1	03/29/03	0.92	
2A20312	K2302179-002	0.05	0.02	1	03/29/03	1.49	
03B20312	K2302179-003	0.05	0.02	1	03/29/03	1.36	
7B303122	K2302179-004	0.05	0.02	1	03/29/03	2.40	
19C30312	K2302179-005	0.05	0.02	1	03/29/03	1.25	
20C30312	K2302179-006	0.05	0.02	1	03/29/03	1.43	
21C30312	K2302179-007	0.05	0.02	1	03/29/03	2.27	
22C30312	K2302179-008	0.05	0.02	1	03/29/03	0.86	
4C20312	K2302179-009	0.05	0.02	1	03/29/03	0.86	
8C20312	K2302179-010	0.05	0.02	1	03/29/03	1.01	
5D20312	K2302179-011	0.05	0.02	1	03/29/03	1.48	
6[illegible]312	K2302179-012	0.05	0.02	1	03/29/03	3.26	
[illegible]12	K2302179-013	0.05	0.02	1	03/29/03	2.59	
18D20312	K2302179-014	0.05	0.02	1	03/29/03	0.66	
9D40314	K2302179-015	0.05	0.02	1	03/29/03	2.19	
12D50314	K2302179-016	0.05	0.02	1	03/29/03	3.33	
14D60314	K2302179-017	0.05	0.02	1	03/29/03	2.37	
15D70314	K2302179-018	0.05	0.02	1	03/29/03	2.89	
10E40314	K2302179-019	0.05	0.02	1	03/29/03	1.39	
13E60314	K2302179-020	0.05	0.02	1	03/29/03	1.87	
11E50314	K2302179-021	0.05	0.02	1	03/29/03	1.45	
16E70314	K2302179-022	0.05	0.02	1	03/29/03	1.56	
03B20312D	K2302179-023	0.05	0.02	1	03/29/03	1.79	
18D20312D	K2302179-024	0.05	0.02	1	03/29/03	0.61	
9D40314DD	K2302179-025	0.05	0.02	1	03/29/03	2.07	
Method Blank	K2302179-MB	0.05	0.02	1	03/29/03	ND	
Method Blank	K2302179-MB	0.05	0.02	1	03/29/03	ND	

Approved By _____ Date : 4/11/03

Report By:PWiest

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : RMCOEH/University of Utah
Project Name : Davis County Soil Dioxins
Project Number : NA
Sample Matrix : Soil

Service Request : K2302179
Date Collected : NA
Date Received : 03/18/03
Date Extracted : NA
Date Analyzed : 03/29/03

Duplicate Summary
Inorganic Parameters

Sample Name : 19C30312
Lab Code : K2302179-005DUP
Test Notes :

Units : Percent
Basis : Dry

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	1.25	1.27	1.26	2	

Approved By _____ Date : 4/11/03

Report By:PWiest

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

C[illegible] : RMCOEH/University of Utah
Pr[illegible] Name : Davis County Soil Dioxins
Project Number : NA
Sample Matrix : Soil

Service Request : K2302179
Date Collected : NA
Date Received : 03/18/03
Date Extracted : NA
Date Analyzed : 03/29/03

Duplicate Summary
Inorganic Parameters

Sample Name : 13E60314
Lab Code : K2302179-020DUP
Test Notes :

Units : Percent
Basis : Dry

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	1.87	1.81	1.84	3	

Approved By [signature] Date : 4/11/03

Report By:PWiest

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

C[illegible] :	RMCOEH/University of Utah	**Service Request :**	K2302179
Pr[illegible] Name :	Davis County Soil Dioxins	**Date Collected :**	NA
Project Number :	NA	**Date Received :**	03/18/03
Sample Matrix :	Soil	**Date Extracted :**	NA
		Date Analyzed :	03/29/03

Matrix Spike Summary
Inorganic Parameters

Sample Name : 19C30312
Lab Code : K2302179-005MS
Test Notes :

Units : Percent
Basis : Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	4.74	1.25	5.91	98	75-125	

Approved By _____ Date : 4/15/03

Report By: JCaulfie

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

C[illegible]: RMCOEH/University of Utah
Pr[illegible] Name: Davis County Soil Dioxins
Project Number: NA
Sample Matrix: Soil

Service Request: K2302179
Date Collected: NA
Date Received: 03/18/03
Date Extracted: NA
Date Analyzed: 03/29/03

Matrix Spike Summary
Inorganic Parameters

Sample Name: 13E60314
Lab Code: K2302179-020MS
Test Notes:

Units: Percent
Basis: Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	6.35	1.87	8.12	98	75-125	

Approved By _____ Date: 4/15/03

Report By: JCaulfie

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

C[illegible] :	RMCOEH/University of Utah	**Service Request :**	K2302179
P[illegible] Name :	Davis County Soil Dioxins	**Date Collected :**	NA
Project Number :	NA	**Date Received :**	NA
Sample Matrix :	Soil	**Date Extracted :**	NA
		Date Analyzed :	03/29/03

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name : Laboratory Control Sample
Lab Code : K2302179-LCS
Test Notes :

Basis : Dry

Analyte	Units	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	Percent	ASTM D4129-82M	0.57	0.57	100	85-115	
Carbon, Total Organic	Percent	ASTM D4129-82M	0.57	0.63	111	85-115	

Approved By [signature] Date : 4/11/03

Report By:PWiest

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: RMCOEH/University of Utah
Project: Davis County Soil Dioxins

Service Request: K2302179
Date Collected: NA
Date Received: NA
Date Analyzed: 03/29/03

Carbon, Total Organic
ASTM D4129-82M
Units: PERCENT

CONTINUING CALIBRATION VERIFICATION (CCV)

	True Value	Measured Value	Percent Recovery
CCV 1 Result	20.0	19.1	96
CCV 2 Result	20.0	20.2	101
CCV 3 Result	20.0	19.8	99
CCV 4 Result	20.0	20.5	103
CCV 5 Result	20.0	20.0	100

CONTINUING CALIBRATION BLANK (CCB)

	MRL	Blank Value
CCB 1 Result	0.05	ND
CCB 2 Result	0.05	ND
CCB 3 Result	0.05	ND
CCB 4 Result	0.05	ND
CCB 5 Result	0.05	ND

Approved By: _____ Date: 4/11/03

COMBOOCD/042695

Original

Work Request #: (2749)

Tier: III

Date Analyzed: 3-29-03

Analyst: J. Johnson

Analysis: TOC/Soils

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no/NA
a.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
b.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
c.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
d.	Are results for methods blanks all ND?	yes/no/NA
e.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
f.	Are all exceptions explained?	yes/no/NA
6.	Are all service requests that apply attached?	yes/no/NA
7.	Are all samples labelled correctly?	yes/no/NA
8.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample)	yes/no/NA
9.	Are detection limits and units reported correctly?	yes/no/NA
10.	Are proper Analysis/Extraction stickers included on report?	yes/no/NA
11.	Is the unused space on the benchsheet crossed out?	yes/no/NA
12.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

Final Approved by: [illegible] Date: 4/1/03

DQREPORT

Columbia Analytical Services, Inc.

Analytical Batch KA0300893

Service Request #: 2179

Analysis For: Total Organic Carbon (TOC)

Method: ASTM D4129-82 (Combustion/Coulometric)

Matrix: Soil / Dry Weight Basis

Sample Number	mg Sample Injected	Sample Reading, µg C	Baseline Reading, µg C	Net µg C	% Carbon
CCV-1	10.7	2057.0	10.2	2046.8	19.1
CCB-1	50.0	13.2	10.2	3.0	< 0.05
LCS	51.5	306.1	10.2	295.9	0.57
MB	50.0	12.1	10.2	1.9	< 0.05
2179-1	17.2	168.4	10.2	158.2	0.92
2179-2	18.3	283.4	10.2	273.2	1.49
2179-3	15.2	216.4	10.2	206.2	1.36
2179-4	17.1	421.4	10.2	411.2	2.40
2179-5	51.1	647.1	10.2	636.9	1.25
2179-5d	51.7	668.0	10.2	657.8	1.27
2179-5ms	28.7	1706.2	10.2	1696.0	5.91
2179-6	48.2	701.8	10.2	691.6	1.43
CCV-2	9.9	2012.8	10.2	2002.6	20.2
CCB-2	50.0	10.3	10.2	0.1	< 0.05
2179-7	17.3	402.1	10.2	391.9	2.27
2179-8	50.4	445.4	10.2	435.2	0.86
2179-9	51.1	449.2	10.2	439.0	0.86
2179-10	51.5	531.4	10.2	521.2	1.01
2179-11	17.9	275.3	10.2	265.1	1.48
2179-12	17.2	571.4	10.2	561.2	3.26
2179-13	49.3	1284.9	10.2	1274.7	2.59
2179-14	18.6	132.5	10.2	122.3	0.66
2179-15	16.2	364.6	10.2	354.4	2.19
2179-16	17.1	580.1	10.2	569.9	3.33
CCV-3	11.9	2371.0	10.2	2360.8	19.8
CCB-3	50.0	10.8	10.2	0.6	< 0.05
2179-17	15.7	382.2	10.2	372.0	2.37
2179-18	48.8	1419.5	10.2	1409.3	2.89

Acid Purge Time: 1 minute **Reading Time:** 5 minutes

TOC % = $\frac{\text{(Net Reading)(µg 0.1)}}{\text{mg Sample Injected}}$

CCV : Urea Baker (lot #N45640) ID#: TOCS/1-10-F TV = 20.0%C

CCV1 = 96% CCV2 = 101% CCV3 = 99% CCV4 = 103% CCV5 = 100%

LCS: ERA Cat#: 542 Lot#: 1109 ID#: TOCS/1-10-H TV = 0.57%C %Rec = 100% 111%

Comments :

2179-5ms = 6.8mg x 20 / 28.7mg = 4.74 x = 1.26 RPD = 2 REC = 98%

2179-20ms = 8.1mg x 20 / 25.5mg = 6.35 x = 1.84 RPD = 3 REC = 98%

Analyzed By: Date: 3-29-03 1245

Reveiwed By: Date:

Columbia Analytical Services, Inc.

Service Request #: 2179

Analysis For: Total Organic Carbon (TOC)

Method: ASTM D4129-82 (Combustion/Coulometric)

Matrix: Soil / Dry Weight Basis

Sample Number	mg Sample Injected	Sample Reading, µg C	Baseline Reading, µg C	Net µg C	% Carbon
2179-19	46.9	662.9	10.2	652.7	1.39
2179-20	49.1	929.8	10.2	919.6	1.87
2179-20d	49.4	905.2	10.2	895.0	1.81
2179-20ms	25.5	2080.5	10.2	2070.3	8.12
LCS-2	48.6	316.8	10.2	306.6	0.63
MB-2	50.0	16.4	10.2	6.2	< 0.05
2179-21	49.5	730.3	10.2	720.1	1.45
2179-22	48.8	772.5	10.2	762.3	1.56
CCV-4	10.7	2204.9	10.2	2194.7	20.5
CCB-4	50.0	17.9	10.2	7.7	< 0.05
2179-23	49.8	901.5	10.2	891.3	1.79
2179-24	47.1	296.1	10.2	285.9	0.61
2179-25	49.0	1024.9	10.2	1014.7	2.07
CCV-5	10.5	2114.9	10.2	2104.7	20.0
CCB-5	50.0	20.1	10.2	9.9	< 0.05

Acid Purge Time: 1 minute **Reading Time:** 5 minutes **TOC % =** $\frac{\text{(Net Reading)(µg 0.1)}}{\text{mg Sample Injected}}$

CCV : Urea Fisher (lot #0953513) ID#: TOCS/1-10-B TV = 20.0%C

Comments :

Analyzed By:	Date: 3-29-03 12:15
Reveiwed By:	Date: 4/1/03

TOC Soil Benchsheet

Sample #	mg Sample	Reading	Date Baked	Baseline
CCV-1	10.7	2057.0		10.9
CCB-1	50.0	13.2		10.6
LCS	51.5	306.1		9.2
MB	50.0	12.1		Avg
2179-1	17.2	168.4	3-28 70C 1250	10.2
2179-2	18.3	283.4	3-28 70C 1250	
2179-3	15.2	216.4	3-28 70C 1250	
2179-4	17.1	421.4	3-28 70C 1250	
2179-5	51.1	647.1	3-28 70C 1250	
2179-5d	51.7	668.0	3-28 70C 1250	
2179-5ms	28.7	1706.2	3-28 70C 1250	
2179-6	48.2	701.8	3-28 70C 1250	
CCV-2	9.9	2012.8		
CCB-2	50.0	10.3		
2179-7	17.3	402.1	3-28 70C 1250	
2179-8	50.4	445.4	3-28 70C 1250	
2179-9	51.1	449.2	3-28 70C 1250	
2179-10	51.5	531.4	3-28 70C 1250	
2179-11	17.9	275.3	3-28 70C 1250	
2179-12	17.2	571.4	3-28 70C 1250	
2179-13	49.3	1284.9	3-28 70C 1250	
2179-14	18.6	132.5	3-28 70C 1250	
2179-15	16.2	364.6	3-28 70C 1250	
2179-16	17.1	580.1	3-28 70C 1250	
CCV-3	11.9	2371.0		
CCB-3	50.0	10.8		
2179-17	15.7	382.2	3-28 70C 1250	
2179-18	48.8	1419.5	3-28 70C 1250	
2179-19	46.9	662.9	3-28 70C 1250	
2179-20	49.1	929.8	3-28 70C 1250	
2179-20d	49.4	905.2	3-28 70C 1250	
2179-20ms	25.5	2080.5	3-28 70C 1250	
LCS-2	48.6	316.8		
MB-2	50.0	16.4		
2179-21	49.5	730.3	3-28 70C 1250	
2179-22	48.8	772.5	3-28 70C 1250	
CCV-4	10.7	2204.9		
CCB-4	50.0	17.9		
2179-23	49.8	901.5	3-28 70C 1250	
2179-24	47.1	296.1	3-28 70C 1250	
2179-25	49.0	1024.9	3-28 70C 1250	
CCV-5	10.5	2114.9		
CCB-5	50.0	20.1		

3-29-03

TOC Soil Benchsheet

Sample #	mg Sample	Reading	Date Baked	Baseline
CCV-1	10.7	2657.0		10.9
CCB-1	50.0	13.2		10.6
LCS	51.5	306.1		9.2
MB	50.0	12.1		Avg
2179 -1	17.2	168.4	3-25 70°C 12:50	10.7
-2	18.3	283.4		
-3	15.2	216.4		
-4	17.1	421.4		
-5	51.1 (1.25)	427.1		
-5d	51.7 (1.27)	468.0		
-5ms	26.7	1706.2		
-6	48.2	761.8		
CCV-2	9.9	2012.8		
CCB-2	50.0	10.3		
2179 -7	17.3	402.1		
-8	50.4	445.4		
-9	51.1	449.2		
-10	51.5	531.4		
-11	17.9	275.3		
-12	17.2	571.4		
-13	49.3	1284.9		
-14	18.6	137.5		
-15	16.2	364.6		
-16	17.1	580.1		
CCV-3	11.9	2371.0		
CCB-3	50.0	10.8		
2179 -17	15.7	382.2		
-18	24.8	1419.5		
-19	26.9	662.9		
-20	49.1 (1.87)	929.8		
-20d	49.4 (1.81)	905.2		
-20ms	25.5	2080.3		
LCS-2	48.6	316.8		
MB-2	50.0	16.4		
2179 -21	49.5	730.3		
-22	48.8	772.5		
CCV-4	10.7	2204.9		
CCB-4	50.0	17.9		
2179 -23	49.8	901.5		
-24	47.1	296.1		
-25	49.0	1024.9		
CCV-5	10.5	2114.9		
CCB-5	50.0	20.1		
CCV-5				
CCB-5				

CCV-1 = 96%
CCB-1 = <0.05
LCS-1 = 101%
MB-1 = <0.05

2179-5ms = 6.8 mg/gdry 25.4
4.74
$\bar{x}$ = 1.26
RPD = 2
Rec = 98%
%C = 5.91

CCV-2 = 101%
CCB-2 = <0.05

CCV-3 = 99%
CCB-3 = <0.05

2179-20ms = 8.1 mg/25.5 = 6.35
$\bar{x}$ = 1.84
RPD = 3
Rec = 98%
%C = 8.12

LCS-2 = 111%
MB-2 = <0.05
CCV-4 = 103%
CCB-4 = <0.05

CCV-5 = 100%
CCB-5 = <0.05

3-29-03 [illegible] 10:00

APPENDIX C: Calculation of TEQ Values for Davis County and Denver Front Range

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
1	1A10312	10.208	1	2,3,7,8-TCDD		U	0.086	0.043	1	0.043
1	1A10312	10.208	2	1,2,3,7,8-PeCDD		U	0.125	0.063	0.5	0.03125
1	1A10312	10.208	3	1,2,3,4,7,8-HxCDD		U	0.140	0.070	0.1	0.007
1	1A10312	10.208	4	1,2,3,6,7,8-HxCDD		U	0.159	0.080	0.1	0.00795
1	1A10312	10.208	5	1,2,3,7,8,9-HxCDD		U	0.146	0.073	0.1	0.0073
1	1A10312	10.208	6	1,2,3,4,6,7,8-HpCDD	5.000	B	0.163		0.01	0.05
1	1A10312	10.208	7	OCDD	48.820	B	0.434		0.0001	0.004882
1	1A10312	10.208	8	2,3,7,8-TCDF	0.240	CJ	0.103		0.1	0.024
1	1A10312	10.208	9	1,2,3,7,8-PeCDF		U	0.111	0.056	0.05	0.002775
1	1A10312	10.208	10	2,3,4,7,8-PeCDF		U	0.115	0.058	0.5	0.02875
1	1A10312	10.208	11	1,2,3,4,7,8-HxCDF	0.570	BJ	0.097		0.1	0.057
1	1A10312	10.208	12	1,2,3,6,7,8-HxCDF		U	0.094	0.047	0.1	0.0047
1	1A10312	10.208	13	1,2,3,7,8,9-HxCDF		U	0.140	0.070	0.1	0.007
1	1A10312	10.208	14	2,3,4,6,7,8-HxCDF		U	0.107	0.054	0.1	0.00535
1	1A10312	10.208	15	1,2,3,4,6,7,8-HpCDF	3.730	B	0.335		0.01	0.0373
1	1A10312	10.208	16	1,2,3,4,7,8,9-HpCDF		U	0.578	0.289	0.01	0.00289
1	1A10312	10.208	17	OCDF	16.050	B	0.438		0.0001	0.001605
Σ TEQ:										**0.322752**
2	2A20312	9.537	1	2,3,7,8-TCDD		U	0.060	0.030	1	0.03
2	2A20312	9.537	2	1,2,3,7,8-PeCDD	0.281	J	0.128		0.5	0.1405
2	2A20312	9.537	3	1,2,3,4,7,8-HxCDD	0.411	J	0.135		0.1	0.0411
2	2A20312	9.537	4	1,2,3,6,7,8-HxCDD	1.032	J	0.161		0.1	0.1032
2	2A20312	9.537	5	1,2,3,7,8,9-HxCDD	0.790	J	0.145		0.1	0.079
2	2A20312	9.537	6	1,2,3,4,6,7,8-HpCDD	23.274	B	0.280		0.01	0.23274
2	2A20312	9.537	7	OCDD	218.335	B	0.702		0.0001	0.021834
2	2A20312	9.537	8	2,3,7,8-TCDF	0.600	CJ	0.140		0.1	0.06
2	2A20312	9.537	9	1,2,3,7,8-PeCDF		U	0.071	0.036	0.05	0.001775
2	2A20312	9.537	10	2,3,4,7,8-PeCDF	0.413	JK	0.072		0.5	0.2065
2	2A20312	9.537	11	1,2,3,4,7,8-HxCDF	0.473	BJ	0.108		0.1	0.0473
2	2A20312	9.537	12	1,2,3,6,7,8-HxCDF	0.402	J	0.110		0.1	0.0402
2	2A20312	9.537	13	1,2,3,7,8,9-HxCDF		U	0.156	0.078	0.1	0.0078
2	2A20312	9.537	14	2,3,4,6,7,8-HxCDF	0.542	J	0.133		0.1	0.0542
2	2A20312	9.537	15	1,2,3,4,6,7,8-HpCDF	6.834	B	0.365		0.01	0.06834
2	2A20312	9.537	16	1,2,3,4,7,8,9-HpCDF		U	0.641	0.321	0.01	0.003205
2	2A20312	9.537	17	OCDF	20.925	B	0.755		0.0001	0.002093
Σ TEQ:										**1.139786**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
3	3B20312	10.208	1	2,3,7,8-TCDD		U	0.106	0.053	1	0.053
3	3B20312	10.208	2	1,2,3,7,8-PeCDD		U	0.142	0.071	0.5	0.0355
3	3B20312	10.208	3	1,2,3,4,7,8-HxCDD		U	0.120	0.060	0.1	0.006
3	3B20312	10.208	4	1,2,3,6,7,8-HxCDD	1.797	J	0.145		0.1	0.1797
3	3B20312	10.208	5	1,2,3,7,8,9-HxCDD		U	0.129	0.065	0.1	0.00645
3	3B20312	10.208	6	1,2,3,4,6,7,8-HpCDD	2.649	B	0.283		0.01	0.02649
3	3B20312	10.208	7	OCDD	18.024	B	0.512		0.0001	0.001802
3	3B20312	10.208	8	2,3,7,8-TCDF	0.531	CJ	0.115		0.1	0.0531
3	3B20312	10.208	9	1,2,3,7,8-PeCDF		U	0.122	0.061	0.05	0.00305
3	3B20312	10.208	10	2,3,4,7,8-PeCDF		U	0.131	0.066	0.5	0.03275
3	3B20312	10.208	11	1,2,3,4,7,8-HxCDF	0.334	BJ	0.107		0.1	0.0334
3	3B20312	10.208	12	1,2,3,6,7,8-HxCDF		U	0.102	0.051	0.1	0.0051
3	3B20312	10.208	13	1,2,3,7,8,9-HxCDF		U	0.157	0.079	0.1	0.00785
3	3B20312	10.208	14	2,3,4,6,7,8-HxCDF		U	0.124	0.062	0.1	0.0062
3	3B20312	10.208	15	1,2,3,4,6,7,8-HpCDF	3.614	BK	0.265		0.01	0.03614
3	3B20312	10.208	16	1,2,3,4,7,8,9-HpCDF		U	0.444	0.222	0.01	0.00222
3	3B20312	10.208	17	OCDF	10.034	B	0.574		0.0001	0.001003
Σ TEQ:										**0.489756**
4	4C20312	10.280	1	2,3,7,8-TCDD		U	0.288	0.144	1	0.144
4	4C20312	10.280	2	1,2,3,7,8-PeCDD		U	0.299	0.150	0.5	0.07475
4	4C20312	10.280	3	1,2,3,4,7,8-HxCDD		U	0.313	0.157	0.1	0.01565
4	4C20312	10.280	4	1,2,3,6,7,8-HxCDD		U	0.363	0.182	0.1	0.01815
4	4C20312	10.280	5	1,2,3,7,8,9-HxCDD		U	0.320	0.160	0.1	0.016
4	4C20312	10.280	6	1,2,3,4,6,7,8-HpCDD	2.642		0.403		0.01	0.02642
4	4C20312	10.280	7	OCDD	18.801		1.039		0.0001	0.00188
4	4C20312	10.280	8	2,3,7,8-TCDF		U	0.303	0.152	0.1	0.01515
4	4C20312	10.280	9	1,2,3,7,8-PeCDF		U	0.200	0.100	0.05	0.005
4	4C20312	10.280	10	2,3,4,7,8-PeCDF		U	0.221	0.111	0.5	0.05525
4	4C20312	10.280	11	1,2,3,4,7,8-HxCDF		U	0.193	0.097	0.1	0.00965
4	4C20312	10.280	12	1,2,3,6,7,8-HxCDF		U	0.182	0.091	0.1	0.0091
4	4C20312	10.280	13	1,2,3,7,8,9-HxCDF		U	0.246	0.123	0.1	0.0123
4	4C20312	10.280	14	2,3,4,6,7,8-HxCDF		U	0.220	0.110	0.1	0.011
4	4C20312	10.280	15	1,2,3,4,6,7,8-HpCDF	1.853	J	0.320		0.01	0.01853
4	4C20312	10.280	16	1,2,3,4,7,8,9-HpCDF		U	0.497	0.249	0.01	0.002485
4	4C20312	10.280	17	OCDF	7.805		1.435		0.0001	0.000781
Σ TEQ:										**0.436096**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
5	5D20312	10.140	1	2,3,7,8-TCDD		U	0.207	0.104	1	0.1035
5	5D20313	10.140	2	1,2,3,7,8-PeCDD		U	0.239	0.120	0.5	0.05975
5	5D20314	10.140	3	1,2,3,4,7,8-HxCDD		U	0.272	0.136	0.1	0.0136
5	5D20315	10.140	4	1,2,3,6,7,8-HxCDD		U	0.314	0.157	0.1	0.0157
5	5D20316	10.140	5	1,2,3,7,8,9-HxCDD		U	0.277	0.139	0.1	0.01385
5	5D20317	10.140	6	1,2,3,4,6,7,8-HpCDD	17.481		0.481		0.01	0.17481
5	5D20318	10.140	7	OCDD	166.357		1.050		0.0001	0.016636
5	5D20319	10.140	8	2,3,7,8-TCDF	0.629	CJ	0.216		0.1	0.0629
5	5D20320	10.140	9	1,2,3,7,8-PeCDF		U	0.188	0.094	0.05	0.0047
5	5D20321	10.140	10	2,3,4,7,8-PeCDF		U	0.201	0.101	0.5	0.05025
5	5D20322	10.140	11	1,2,3,4,7,8-HxCDF	0.608	J	0.181		0.1	0.0608
5	5D20323	10.140	12	1,2,3,6,7,8-HxCDF	0.259	JK	0.175		0.1	0.0259
5	5D20324	10.140	13	1,2,3,7,8,9-HxCDF		U	0.252	0.126	0.1	0.0126
5	5D20325	10.140	14	2,3,4,6,7,8-HxCDF	0.378	JK	0.209		0.1	0.0378
5	5D20326	10.140	15	1,2,3,4,6,7,8-HpCDF	6.964		0.314		0.01	0.06964
5	5D20327	10.140	16	1,2,3,4,7,8,9-HpCDF		U	0.516	0.258	0.01	0.00258
5	5D20328	10.140	17	OCDF	24.260		1.445		0.0001	0.002426
Σ TEQ:										**0.727442**
6	6D30312	10.118	1	2,3,7,8-TCDD		U	0.219	0.110	1	0.1095
6	6D30312	10.118	2	1,2,3,7,8-PeCDD		U	0.263	0.132	0.5	0.06575
6	6D30312	10.118	3	1,2,3,4,7,8-HxCDD		U	0.311	0.156	0.1	0.01555
6	6D30312	10.118	4	1,2,3,6,7,8-HxCDD		U	0.351	0.176	0.1	0.01755
6	6D30312	10.118	5	1,2,3,7,8,9-HxCDD		U	0.313	0.157	0.1	0.01565
6	6D30312	10.118	6	1,2,3,4,6,7,8-HpCDD	5.708		0.533		0.01	0.05708
6	6D30312	10.118	7	OCDD	28.964		1.511		0.0001	0.002896
6	6D30312	10.118	8	2,3,7,8-TCDF	1.257	C	0.242		0.1	0.1257
6	6D30312	10.118	9	1,2,3,7,8-PeCDF		U	0.161	0.081	0.05	0.004025
6	6D30312	10.118	10	2,3,4,7,8-PeCDF		U	0.180	0.090	0.5	0.045
6	6D30312	10.118	11	1,2,3,4,7,8-HxCDF	0.639	J	0.208		0.1	0.0639
6	6D30312	10.118	12	1,2,3,6,7,8-HxCDF		U	0.199	0.100	0.1	0.00995
6	6D30312	10.118	13	1,2,3,7,8,9-HxCDF		U	0.284	0.142	0.1	0.0142
6	6D30312	10.118	14	2,3,4,6,7,8-HxCDF		U	0.235	0.118	0.1	0.01175
6	6D30312	10.118	15	1,2,3,4,6,7,8-HpCDF	3.801		0.413		0.01	0.03801
6	6D30312	10.118	16	1,2,3,4,7,8,9-HpCDF		U	0.723	0.362	0.01	0.003615
6	6D30312	10.118	17	OCDF	11.756		2.304		0.0001	0.001
Σ TEQ:										**0.601302**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
7	7B30312	10.220	1	2,3,7,8-TCDD		U	0.081	0.041	1	0.0405
7	7B30312	10.220	2	1,2,3,7,8-PeCDD	0.310	JK	0.128		0.5	0.155
7	7B30312	10.220	3	1,2,3,4,7,8-HxCDD	0.252	JK	0.133		0.1	0.0252
7	7B30312	10.220	4	1,2,3,6,7,8-HxCDD	1.533	J	0.163		0.1	0.1533
7	7B30312	10.220	5	1,2,3,7,8,9-HxCDD	0.710	JK	0.145		0.1	0.071
7	7B30312	10.220	6	1,2,3,4,6,7,8-HpCDD	27.718	B	0.306		0.01	0.27718
7	7B30312	10.220	7	OCDD	201.630	B	0.628		0.0001	0.020163
7	7B30312	10.220	8	2,3,7,8-TCDF	0.647	CJ	0.101		0.1	0.0647
7	7B30312	10.220	9	1,2,3,7,8-PeCDF		U	0.079	0.040	0.05	0.001975
7	7B30312	10.220	10	2,3,4,7,8-PeCDF		U	0.092	0.046	0.5	0.023
7	7B30312	10.220	11	1,2,3,4,7,8-HxCDF	1.100	BJ	0.122		0.1	0.11
7	7B30312	10.220	12	1,2,3,6,7,8-HxCDF	0.557	J	0.120		0.1	0.0557
7	7B30312	10.220	13	1,2,3,7,8,9-HxCDF		U	0.174	0.087	0.1	0.0087
7	7B30312	10.220	14	2,3,4,6,7,8-HxCDF	0.687	J	0.138		0.1	0.0687
7	7B30312	10.220	15	1,2,3,4,6,7,8-HpCDF	9.477	B	0.166		0.01	0.09477
7	7B30312	10.220	16	1,2,3,4,7,8,9-HpCDF	0.518	J	0.309		0.01	0.00518
7	7B30312	10.220	17	OCDF	16.977	B	0.690		0.0001	0.001698
Σ TEQ:										**1.176766**
8	8C30312	10.228	1	2,3,7,8-TCDD		U	0.281	0.141	1	0.1405
8	8C30312	10.228	2	1,2,3,7,8-PeCDD		U	0.305	0.153	0.5	0.07625
8	8C30312	10.228	3	1,2,3,4,7,8-HxCDD	0.616	J	0.286		0.1	0.0616
8	8C30312	10.228	4	1,2,3,6,7,8-HxCDD	2.067	J	0.324		0.1	0.2067
8	8C30312	10.228	5	1,2,3,7,8,9-HxCDD	0.931	J	0.289		0.1	0.0931
8	8C30312	10.228	6	1,2,3,4,6,7,8-HpCDD	26.627		0.464		0.01	0.26627
8	8C30312	10.228	7	OCDD	178.011		1.696		0.0001	0.017801
8	8C30312	10.228	8	2,3,7,8-TCDF		U	0.260	0.130	0.1	0.013
8	8C30312	10.228	9	1,2,3,7,8-PeCDF		U	0.195	0.098	0.05	0.004875
8	8C30312	10.228	10	2,3,4,7,8-PeCDF		U	0.202	0.101	0.5	0.0505
8	8C30312	10.228	11	1,2,3,4,7,8-HxCDF	0.661	J	0.286		0.1	0.0661
8	8C30312	10.228	12	1,2,3,6,7,8-HxCDF	0.355	JK	0.273		0.1	0.0355
8	8C30312	10.228	13	1,2,3,7,8,9-HxCDF		U	0.380	0.190	0.1	0.019
8	8C30312	10.228	14	2,3,4,6,7,8-HxCDF	0.852	J	0.327		0.1	0.0852
8	8C30312	10.228	15	1,2,3,4,6,7,8-HpCDF	9.158		0.330		0.01	0.09158
8	8C30312	10.228	16	1,2,3,4,7,8,9-HpCDF	0.981	J	0.617		0.01	0.00981
8	8C30312	10.228	17	OCDF	27.935		2.300		0.0001	0.002794
Σ TEQ:										**1.24058**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
9	9D40314	10.133	1	2,3,7,8-TCDD		U	0.256	0.128	1	0.128
9	9D40314	10.133	2	1,2,3,7,8-PeCDD		U	0.244	0.122	0.5	0.061
9	9D40314	10.133	3	1,2,3,4,7,8-HxCDD		U	0.283	0.142	0.1	0.01415
9	9D40314	10.133	4	1,2,3,6,7,8-HxCDD	0.680	J	0.319		0.1	0.068
9	9D40314	10.133	5	1,2,3,7,8,9-HxCDD	0.608	J	0.285		0.1	0.0608
9	9D40314	10.133	6	1,2,3,4,6,7,8-HpCDD	11.022		0.491		0.01	0.11022
9	9D40314	10.133	7	OCDD	112.157		0.831		0.0001	0.011216
9	9D40314	10.133	8	2,3,7,8-TCDF	0.480	CJ	0.237		0.1	0.048
9	9D40314	10.133	9	1,2,3,7,8-PeCDF		U	0.210	0.105	0.05	0.00525
9	9D40314	10.133	10	2,3,4,7,8-PeCDF		U	0.219	0.110	0.5	0.05475
9	9D40314	10.133	11	1,2,3,4,7,8-HxCDF	0.642	J	0.183		0.1	0.0642
9	9D40314	10.133	12	1,2,3,6,7,8-HxCDF		U	0.169	0.085	0.1	0.00845
9	9D40314	10.133	13	1,2,3,7,8,9-HxCDF		U	0.237	0.119	0.1	0.01185
9	9D40314	10.133	14	2,3,4,6,7,8-HxCDF		U	0.199	0.100	0.1	0.00995
9	9D40314	10.133	15	1,2,3,4,6,7,8-HpCDF	2.693	K	0.304		0.01	0.02693
9	9D40314	10.133	16	1,2,3,4,7,8,9-HpCDF		U	0.429	0.215	0.01	0.002145
9	9D40314	10.133	17	OCDF	18.268		1.236		0.0001	0.001827
Σ TEQ:										**0.686738**
10	10E40314	10.187	1	2,3,7,8-TCDD		U	0.123	0.062	1	0.0615
10	10E40314	10.187	2	1,2,3,7,8-PeCDD		U	0.166	0.083	0.5	0.0415
10	10E40314	10.187	3	1,2,3,4,7,8-HxCDD		U	0.199	0.100	0.1	0.00995
10	10E40314	10.187	4	1,2,3,6,7,8-HxCDD		U	0.225	0.113	0.1	0.01125
10	10E40314	10.187	5	1,2,3,7,8,9-HxCDD		U	0.201	0.101	0.1	0.01005
10	10E40314	10.187	6	1,2,3,4,6,7,8-HpCDD	9.817		0.315		0.01	0.09817
10	10E40314	10.187	7	OCDD	81.536		0.826		0.0001	0.008154
10	10E40314	10.187	8	2,3,7,8-TCDF	0.209	CJ	0.154		0.1	0.0209
10	10E40314	10.187	9	1,2,3,7,8-PeCDF		U	0.138	0.069	0.05	0.00345
10	10E40314	10.187	10	2,3,4,7,8-PeCDF		U	0.145	0.073	0.5	0.03625
10	10E40314	10.187	11	1,2,3,4,7,8-HxCDF	0.546	J	0.126		0.1	0.0546
10	10E40314	10.187	12	1,2,3,6,7,8-HxCDF		U	0.127	0.064	0.1	0.00635
10	10E40314	10.187	13	1,2,3,7,8,9-HxCDF		U	0.175	0.088	0.1	0.00875
10	10E40314	10.187	14	2,3,4,6,7,8-HxCDF		U	0.143	0.072	0.1	0.00715
10	10E40314	10.187	15	1,2,3,4,6,7,8-HpCDF	4.365		0.150		0.01	0.04365
10	10E40314	10.187	16	1,2,3,4,7,8,9-HpCDF		U	0.269	0.135	0.01	0.001345
10	10E40314	10.187	17	OCDF	15.391		1.131		0.0001	0.001539
Σ TEQ:										**0.424558**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
11	11E50314	10.121	1	2,3,7,8-TCDD	0.257	JK	0.075		1	0.257
11	11E50314	10.121	2	1,2,3,7,8-PeCDD	0.508	JK	0.107		0.5	0.254
11	11E50314	10.121	3	1,2,3,4,7,8-HxCDD	0.687	J	0.146		0.1	0.0687
11	11E50314	10.121	4	1,2,3,6,7,8-HxCDD	2.566		0.175		0.1	0.2566
11	11E50314	10.121	5	1,2,3,7,8,9-HxCDD	2.116	J	0.157		0.1	0.2116
11	11E50314	10.121	6	1,2,3,4,6,7,8-HpCDD	54.295	B	0.294		0.01	0.54295
11	11E50314	10.121	7	OCDD	409.042	B	0.552		0.0001	0.040904
11	11E50314	10.121	8	2,3,7,8-TCDF	0.887	CJ	0.083		0.1	0.0887
11	11E50314	10.121	9	1,2,3,7,8-PeCDF	0.202	J	0.088		0.05	0.0101
11	11E50314	10.121	10	2,3,4,7,8-PeCDF	0.284	JK	0.094		0.5	0.142
11	11E50314	10.121	11	1,2,3,4,7,8-HxCDF	0.792	J	0.117		0.1	0.0792
11	11E50314	10.121	12	1,2,3,6,7,8-HxCDF	0.487	JK	0.113		0.1	0.0487
11	11E50314	10.121	13	1,2,3,7,8,9-HxCDF		U	0.155	0.078	0.1	0.0155
11	11E50314	10.121	14	2,3,4,6,7,8-HxCDF	0.713	J	0.125		0.1	0.0713
11	11E50314	10.121	15	1,2,3,4,6,7,8-HpCDF	12.182		0.215		0.01	0.12182
11	11E50314	10.121	16	1,2,3,4,7,8,9-HpCDF	0.998	J	0.388		0.01	0.00998
11	11E50314	10.121	17	OCDF	35.289		0.646		0.0001	0.003529
Σ TEQ:										**2.222583**
12	12D50314	10.162	1	2,3,7,8-TCDD	0.525	JK	0.237		1	0.525
12	12D50314	10.162	2	1,2,3,7,8-PeCDD		U	0.207	0.104	0.5	0.05175
12	12D50314	10.162	3	1,2,3,4,7,8-HxCDD	0.554	JK	0.271		0.1	0.0554
12	12D50314	10.162	4	1,2,3,6,7,8-HxCDD	2.066	J	0.306		0.1	0.2066
12	12D50314	10.162	5	1,2,3,7,8,9-HxCDD	1.536	J	0.273		0.1	0.1536
12	12D50314	10.162	6	1,2,3,4,6,7,8-HpCDD	67.437		0.623		0.01	0.67437
12	12D50314	10.162	7	OCDD	547.854		1.873		0.0001	0.054785
12	12D50314	10.162	8	2,3,7,8-TCDF	0.734	CJ	0.221		0.1	0.0734
12	12D50314	10.162	9	1,2,3,7,8-PeCDF		U	0.253	0.127	0.05	0.006325
12	12D50314	10.162	10	2,3,4,7,8-PeCDF		U	0.254	0.127	0.5	0.0635
12	12D50314	10.162	11	1,2,3,4,7,8-HxCDF	1.202	JK	0.214		0.1	0.1202
12	12D50314	10.162	12	1,2,3,6,7,8-HxCDF	0.858	J	0.205		0.1	0.0858
12	12D50314	10.162	13	1,2,3,7,8,9-HxCDF		U	0.278	0.139	0.1	0.0139
12	12D50314	10.162	14	2,3,4,6,7,8-HxCDF	1.146	J	0.238		0.1	0.1146
12	12D50314	10.162	15	1,2,3,4,6,7,8-HpCDF	22.812		0.410		0.01	0.22812
12	12D50314	10.162	16	1,2,3,4,7,8,9-HpCDF	1.136	J	0.665		0.01	0.01136
12	12D50314	10.162	17	OCDF	67.523		1.892		0.0001	0.006752
Σ TEQ:										**2.445463**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
13	13E60314	10.134	1	2,3,7,8-TCDD		U	0.166	0.083	1	0.083
13	13E60314	10.134	2	1,2,3,7,8-PeCDD		U	0.155	0.078	0.5	0.03875
13	13E60314	10.134	3	1,2,3,4,7,8-HxCDD		U	0.140	0.070	0.1	0.007
13	13E60314	10.134	4	1,2,3,6,7,8-HxCDD	0.841	JK	0.162		0.1	0.0841
13	13E60314	10.134	5	1,2,3,7,8,9-HxCDD	0.739	J	0.143		0.1	0.0739
13	13E60314	10.134	6	1,2,3,4,6,7,8-HpCDD	16.633		0.325		0.01	0.16633
13	13E60314	10.134	7	OCDD	146.272		0.729		0.0001	0.014627
13	13E60314	10.134	8	2,3,7,8-TCDF		U	0.139	0.070	0.1	0.00695
13	13E60314	10.134	9	1,2,3,7,8-PeCDF		U	0.129	0.065	0.05	0.003225
13	13E60314	10.134	10	2,3,4,7,8-PeCDF		U	0.130	0.065	0.5	0.0325
13	13E60314	10.134	11	1,2,3,4,7,8-HxCDF	0.497	J	0.190		0.1	0.0497
13	13E60314	10.134	12	1,2,3,6,7,8-HxCDF		U	0.172	0.086	0.1	0.0086
13	13E60314	10.134	13	1,2,3,7,8,9-HxCDF		U	0.258	0.129	0.1	0.0129
13	13E60314	10.134	14	2,3,4,6,7,8-HxCDF	0.459	J	0.214		0.1	0.0459
13	13E60314	10.134	15	1,2,3,4,6,7,8-HpCDF	4.063		0.330		0.01	0.04063
13	13E60314	10.134	16	1,2,3,4,7,8,9-HpCDF		U	0.570	0.285	0.01	0.00285
13	13E60314	10.134	17	OCDF	18.890		0.707		0.0001	0.001889
Σ TEQ:										**0.672851**
14	14D60314	10.270	1	2,3,7,8-TCDD		U	0.215	0.108	1	0.1075
14	14D60314	10.270	2	1,2,3,7,8-PeCDD		U	0.267	0.134	0.5	0.06675
14	14D60314	10.270	3	1,2,3,4,7,8-HxCDD		U	0.279	0.140	0.1	0.01395
14	14D60314	10.270	4	1,2,3,6,7,8-HxCDD		U	0.306	0.153	0.1	0.0153
14	14D60314	10.270	5	1,2,3,7,8,9-HxCDD		U	0.277	0.139	0.1	0.01385
14	14D60314	10.270	6	1,2,3,4,6,7,8-HpCDD	10.998		0.351		0.01	0.10998
14	14D60314	10.270	7	OCDD	199.877		0.878		0.0001	0.019988
14	14D60314	10.270	8	2,3,7,8-TCDF	0.631	CJ	0.194		0.1	0.0631
14	14D60314	10.270	9	1,2,3,7,8-PeCDF		U	0.223	0.112	0.05	0.005575
14	14D60314	10.270	10	2,3,4,7,8-PeCDF		U	0.226	0.113	0.5	0.0565
14	14D60314	10.270	11	1,2,3,4,7,8-HxCDF	0.523	JK	0.187		0.1	0.0523
14	14D60314	10.270	12	1,2,3,6,7,8-HxCDF	0.322	J	0.174		0.1	0.0322
14	14D60314	10.270	13	1,2,3,7,8,9-HxCDF		U	0.251	0.126	0.1	0.01255
14	14D60314	10.270	14	2,3,4,6,7,8-HxCDF		U	0.213	0.107	0.1	0.01065
14	14D60314	10.270	15	1,2,3,4,6,7,8-HpCDF	2.812		0.288		0.01	0.02812
14	14D60314	10.270	16	1,2,3,4,7,8,9-HpCDF	0.531	J	0.448		0.01	0.00531
14	14D60314	10.270	17	OCDF	15.181		1.381		0.0001	0.001518
Σ TEQ:										**0.615141**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
15	15D70314	10.141	1	2,3,7,8-TCDD	0.959	J	0.181		1	0.959
15	15D70314	10.141	2	1,2,3,7,8-PeCDD	0.484	J	0.187		0.5	0.242
15	15D70314	10.141	3	1,2,3,4,7,8-HxCDD	0.557	JK	0.257		0.1	0.0557
15	15D70314	10.141	4	1,2,3,6,7,8-HxCDD	1.947	J	0.276		0.1	0.1947
15	15D70314	10.141	5	1,2,3,7,8,9-HxCDD	1.288	JK	0.252		0.1	0.1288
15	15D70314	10.141	6	1,2,3,4,6,7,8-HpCDD	42.234		0.510		0.01	0.42234
15	15D70314	10.141	7	OCDD	356.259		1.229		0.0001	0.035626
15	15D70314	10.141	8	2,3,7,8-TCDF	1.429	C	0.160		0.1	0.1429
15	15D70314	10.141	9	1,2,3,7,8-PeCDF	0.703	J	0.136		0.05	0.03515
15	15D70314	10.141	10	2,3,4,7,8-PeCDF	1.162	J	0.132		0.5	0.581
15	15D70314	10.141	11	1,2,3,4,7,8-HxCDF	2.908		0.123		0.1	0.2908
15	15D70314	10.141	12	1,2,3,6,7,8-HxCDF	1.483	J	0.115		0.1	0.1483
15	15D70314	10.141	13	1,2,3,7,8,9-HxCDF		U	0.178	0.089	0.1	0.0089
15	15D70314	10.141	14	2,3,4,6,7,8-HxCDF	2.857		0.142		0.1	0.2857
15	15D70314	10.141	15	1,2,3,4,6,7,8-HpCDF	18.351		0.310		0.01	0.18351
15	15D70314	10.141	16	1,2,3,4,7,8,9-HpCDF	0.823	J	0.567		0.01	0.00823
15	15D70314	10.141	17	OCDF	40.179		1.720		0.0001	0.004018
Σ TEQ:										**3.726674**
16	16E70314	10.235	1	2,3,7,8-TCDD		U	0.071	0.036	1	0.0355
16	16E70314	10.235	2	1,2,3,7,8-PeCDD		U	0.117	0.059	0.5	0.02925
16	16E70314	10.235	3	1,2,3,4,7,8-HxCDD		U	0.116	0.058	0.1	0.0058
16	16E70314	10.235	4	1,2,3,6,7,8-HxCDD	0.362	J	0.132		0.1	0.0362
16	16E70314	10.235	5	1,2,3,7,8,9-HxCDD		U	0.121	0.061	0.1	0.00605
16	16E70314	10.235	6	1,2,3,4,6,7,8-HpCDD	10.848	B	0.191		0.01	0.10848
16	16E70314	10.235	7	OCDD	109.745	B	0.416		0.0001	0.010975
16	16E70314	10.235	8	2,3,7,8-TCDF	0.359	CJ	0.073		0.1	0.0359
16	16E70314	10.235	9	1,2,3,7,8-PeCDF		U	0.086	0.043	0.05	0.00215
16	16E70314	10.235	10	2,3,4,7,8-PeCDF		U	0.099	0.050	0.5	0.02475
16	16E70314	10.235	11	1,2,3,4,7,8-HxCDF	0.363	J	0.081		0.1	0.0363
16	16E70314	10.235	12	1,2,3,6,7,8-HxCDF	0.147	JK	0.074		0.1	0.0147
16	16E70314	10.235	13	1,2,3,7,8,9-HxCDF		U	0.115	0.058	0.1	0.00575
16	16E70314	10.235	14	2,3,4,6,7,8-HxCDF		U	0.090	0.045	0.1	0.0045
16	16E70314	10.235	15	1,2,3,4,6,7,8-HpCDF	3.990		0.199		0.01	0.0399
16	16E70314	10.235	16	1,2,3,4,7,8,9-HpCDF		U	0.346	0.173	0.01	0.00173
16	16E70314	10.235	17	OCDF	9.021		0.414		0.0001	0.000902
Σ TEQ:										**0.398837**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
17	17D10312	10.190	1	2,3,7,8-TCDD		U	0.157	0.079	1	0.0785
17	17D10312	10.190	2	1,2,3,7,8-PeCDD		U	0.281	0.141	0.5	0.07025
17	17D10312	10.190	3	1,2,3,4,7,8-HxCDD		U	0.289	0.145	0.1	0.01445
17	17D10312	10.190	4	1,2,3,6,7,8-HxCDD		U	0.332	0.166	0.1	0.0166
17	17D10312	10.190	5	1,2,3,7,8,9-HxCDD		U	0.294	0.147	0.1	0.0147
17	17D10312	10.190	6	1,2,3,4,6,7,8-HpCDD	5.291		0.633		0.01	0.05291
17	17D10312	10.190	7	OCDD	40.398		1.326		0.0001	0.00404
17	17D10312	10.190	8	2,3,7,8-TCDF		U	0.206	0.103	0.1	0.0103
17	17D10312	10.190	9	1,2,3,7,8-PeCDF		U	0.204	0.102	0.05	0.0051
17	17D10312	10.190	10	2,3,4,7,8-PeCDF		U	0.229	0.115	0.5	0.05725
17	17D10312	10.190	11	1,2,3,4,7,8-HxCDF	0.637	J	0.215		0.1	0.0637
17	17D10312	10.190	12	1,2,3,6,7,8-HxCDF	0.294	J	0.193		0.1	0.0294
17	17D10312	10.190	13	1,2,3,7,8,9-HxCDF		U	0.276	0.138	0.1	0.0138
17	17D10312	10.190	14	2,3,4,6,7,8-HxCDF	0.555	J	0.246		0.1	0.0555
17	17D10312	10.190	15	1,2,3,4,6,7,8-HpCDF	8.124		0.464		0.01	0.08124
17	17D10312	10.190	16	1,2,3,4,7,8,9-HpCDF		U	0.822	0.411	0.01	0.00411
17	17D10312	10.190	17	OCDF	31.304		1.624		0.0001	0.00313
Σ TEQ:										**0.57498**
18	18D20312	10.255	1	2,3,7,8-TCDD		U	0.248	0.124	1	0.124
18	18D20312	10.255	2	1,2,3,7,8-PeCDD		U	0.276	0.138	0.5	0.069
18	18D20312	10.255	3	1,2,3,4,7,8-HxCDD	0.559	J	0.255		0.1	0.0559
18	18D20312	10.255	4	1,2,3,6,7,8-HxCDD	0.832	J	0.285		0.1	0.0832
18	18D20312	10.255	5	1,2,3,7,8,9-HxCDD	0.645	JK	0.256		0.1	0.0645
18	18D20312	10.255	6	1,2,3,4,6,7,8-HpCDD	5.802		0.428		0.01	0.05802
18	18D20312	10.255	7	OCDD	33.890		0.736		0.0001	0.003389
18	18D20312	10.255	8	2,3,7,8-TCDF	1.485	C	0.277		0.1	0.1485
18	18D20312	10.255	9	1,2,3,7,8-PeCDF	0.644	J	0.266		0.05	0.0322
18	18D20312	10.255	10	2,3,4,7,8-PeCDF	0.924	J	0.285		0.5	0.462
18	18D20312	10.255	11	1,2,3,4,7,8-HxCDF	0.987	JK	0.244		0.1	0.0987
18	18D20312	10.255	12	1,2,3,6,7,8-HxCDF	0.686	J	0.223		0.1	0.0686
18	18D20312	10.255	13	1,2,3,7,8,9-HxCDF		U	0.326	0.163	0.1	0.0163
18	18D20312	10.255	14	2,3,4,6,7,8-HxCDF	0.686	J	0.274		0.1	0.0686
18	18D20312	10.255	15	1,2,3,4,6,7,8-HpCDF	3.137		0.289		0.01	0.03137
18	18D20312	10.255	16	1,2,3,4,7,8,9-HpCDF	0.699	J	0.422		0.01	0.00699
18	18D20312	10.255	17	OCDF	46.627		0.983		0.0001	0.004663
Σ TEQ:										**1.395932**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
19	19C30312	10.271	1	2,3,7,8-TCDD		U	0.072	0.036	1	0.036
19	19C30312	10.271	2	1,2,3,7,8-PeCDD		U	0.113	0.057	0.5	0.02825
19	19C30312	10.271	3	1,2,3,4,7,8-HxCDD	0.438	J	0.149		0.1	0.0438
19	19C30312	10.271	4	1,2,3,6,7,8-HxCDD	2.016	J	0.179		0.1	0.2016
19	19C30312	10.271	5	1,2,3,7,8,9-HxCDD	1.606	J	0.160		0.1	0.1606
19	19C30312	10.271	6	1,2,3,4,6,7,8-HpCDD	62.575	B	0.395		0.01	0.62575
19	19C30312	10.271	7	OCDD	509.967	B	0.648		0.0001	0.050997
19	19C30312	10.271	8	2,3,7,8-TCDF	1.350	C	0.119		0.1	0.135
19	19C30312	10.271	9	1,2,3,7,8-PeCDF		U	0.076	0.038	0.05	0.0019
19	19C30312	10.271	10	2,3,4,7,8-PeCDF	0.470	J	0.084		0.5	0.235
19	19C30312	10.271	11	1,2,3,4,7,8-HxCDF	0.762	BJ	0.161		0.1	0.0762
19	19C30312	10.271	12	1,2,3,6,7,8-HxCDF	0.381	J	0.158		0.1	0.0381
19	19C30312	10.271	13	1,2,3,7,8,9-HxCDF		U	0.230	0.115	0.1	0.0115
19	19C30312	10.271	14	2,3,4,6,7,8-HxCDF	0.601	J	0.185		0.1	0.0601
19	19C30312	10.271	15	1,2,3,4,6,7,8-HpCDF	11.622	B	0.185		0.01	0.11622
19	19C30312	10.271	16	1,2,3,4,7,8,9-HpCDF	0.814	J	0.363		0.01	0.00814
19	19C30312	10.271	17	OCDF	34.769	B	0.820		0.0001	0.003477
Σ TEQ:										**1.832634**
20	20C30312	10.229	1	2,3,7,8-TCDD	1.039		0.351		1	1.039
20	20C30312	10.229	2	1,2,3,7,8-PeCDD		U	0.508	0.254	0.5	0.127
20	20C30312	10.229	3	1,2,3,4,7,8-HxCDD	0.557	J	0.391		0.1	0.0557
20	20C30312	10.229	4	1,2,3,6,7,8-HxCDD	1.784	J	0.435		0.1	0.1784
20	20C30312	10.229	5	1,2,3,7,8,9-HxCDD	1.663	J	0.391		0.1	0.1663
20	20C30312	10.229	6	1,2,3,4,6,7,8-HpCDD	55.521		0.712		0.01	0.55521
20	20C30312	10.229	7	OCDD	481.962		1.118		0.0001	0.048196
20	20C30312	10.229	8	2,3,7,8-TCDF	1.011	C	0.485		0.1	0.1011
20	20C30312	10.229	9	1,2,3,7,8-PeCDF	0.679	JK	0.344		0.05	0.03395
20	20C30312	10.229	10	2,3,4,7,8-PeCDF		U	0.372	0.186	0.5	0.093
20	20C30312	10.229	11	1,2,3,4,7,8-HxCDF	1.048	J	0.201		0.1	0.1048
20	20C30312	10.229	12	1,2,3,6,7,8-HxCDF	0.608	JK	0.192		0.1	0.0608
20	20C30312	10.229	13	1,2,3,7,8,9-HxCDF	0.469	JK	0.254		0.1	0.0469
20	20C30312	10.229	14	2,3,4,6,7,8-HxCDF	0.982	J	0.234		0.1	0.0982
20	20C30312	10.229	15	1,2,3,4,6,7,8-HpCDF	9.811		0.469		0.01	0.09811
20	20C30312	10.229	16	1,2,3,4,7,8,9-HpCDF	0.941	J	0.737		0.01	0.00941
20	20C30312	10.229	17	OCDF	32.294		1.155		0.0001	0.003229
Σ TEQ:										**2.819306**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
21	21C30312	9.738	1	2,3,7,8-TCDD		U	0.300	0.150	1	0.15
21	21C30312	9.738	2	1,2,3,7,8-PeCDD	0.900	J	0.448		0.5	0.45
21	21C30312	9.738	3	1,2,3,4,7,8-HxCDD	0.996	J	0.370		0.1	0.0996
21	21C30312	9.738	4	1,2,3,6,7,8-HxCDD	3.369		0.424		0.1	0.3369
21	21C30312	9.738	5	1,2,3,7,8,9-HxCDD	2.441	J	0.376		0.1	0.2441
21	21C30312	9.738	6	1,2,3,4,6,7,8-HpCDD	100.790		0.841		0.01	1.0079
21	21C30312	9.738	7	OCDD	894.182		2.726		0.0001	0.089418
21	21C30312	9.738	8	2,3,7,8-TCDF	2.804	C	0.441		0.1	0.2804
21	21C30312	9.738	9	1,2,3,7,8-PeCDF		U	0.334	0.167	0.05	0.00835
21	21C30312	9.738	10	2,3,4,7,8-PeCDF	1.867	J	0.356		0.5	0.9335
21	21C30312	9.738	11	1,2,3,4,7,8-HxCDF	1.966	JK	0.265		0.1	0.1966
21	21C30312	9.738	12	1,2,3,6,7,8-HxCDF	1.495	J	0.254		0.1	0.1495
21	21C30312	9.738	13	1,2,3,7,8,9-HxCDF		U	0.377	0.189	0.1	0.01885
21	21C30312	9.738	14	2,3,4,6,7,8-HxCDF	2.076	JK	0.300		0.1	0.2076
21	21C30312	9.738	15	1,2,3,4,6,7,8-HpCDF	26.315		0.452		0.01	0.26315
21	21C30312	9.738	16	1,2,3,4,7,8,9-HpCDF	1.636	J	0.743		0.01	0.01636
21	21C30312	9.738	17	OCDF	141.634		2.477		0.0001	0.014163
Σ TEQ:										**4.466392**
22	22C30312	10.248	1	2,3,7,8-TCDD		U	0.339	0.170	1	0.1695
22	22C30312	10.248	2	1,2,3,7,8-PeCDD		U	0.337	0.169	0.5	0.08425
22	22C30312	10.248	3	1,2,3,4,7,8-HxCDD		U	0.344	0.172	0.1	0.0172
22	22C30312	10.248	4	1,2,3,6,7,8-HxCDD	1.206	J	0.405		0.1	0.1206
22	22C30312	10.248	5	1,2,3,7,8,9-HxCDD	1.185	J	0.354		0.1	0.1185
22	22C30312	10.248	6	1,2,3,4,6,7,8-HpCDD	8.810		0.543		0.01	0.0881
22	22C30312	10.248	7	OCDD	32.511		1.188		0.0001	0.003251
22	22C30312	10.248	8	2,3,7,8-TCDF	1.351	C	0.393		0.1	0.1351
22	22C30312	10.248	9	1,2,3,7,8-PeCDF		U	0.288	0.144	0.05	0.0072
22	22C30312	10.248	10	2,3,4,7,8-PeCDF		U	0.301	0.151	0.5	0.07525
22	22C30312	10.248	11	1,2,3,4,7,8-HxCDF	0.903	J	0.229		0.1	0.0903
22	22C30312	10.248	12	1,2,3,6,7,8-HxCDF	0.458	J	0.222		0.1	0.0458
22	22C30312	10.248	13	1,2,3,7,8,9-HxCDF		U	0.319	0.160	0.1	0.01595
22	22C30312	10.248	14	2,3,4,6,7,8-HxCDF	0.656	JK	0.257		0.1	0.0656
22	22C30312	10.248	15	1,2,3,4,6,7,8-HpCDF	2.714		0.329		0.01	0.02714
22	22C30312	10.248	16	1,2,3,4,7,8,9-HpCDF		U	0.560	0.280	0.01	0.0028
22	22C30312	10.248	17	OCDF	4.247	J	1.552		0.0001	0.000425
Σ TEQ:										**1.066966**

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full
3	3B20312	10.208	1	2,3,7,8-TCDD		U	0.106	0.053	1	0.053	3B20312D	10.202	1	2,3,7,8-TCDD		U	0.076	0.038	1	0.038
3	3B20312	10.208	2	1,2,3,7,8-PeCDD		U	0.142	0.071	0.5	0.0355	3B20312D	10.202	2	1,2,3,7,8-PeCDD		U	0.139	0.0695	0.5	0.03475
3	3B20312	10.208	3	1,2,3,4,7,8-HxCDD		U	0.120	0.060	0.1	0.006	3B20312D	10.202	3	1,2,3,4,7,8-HxCDD		U	0.137	0.0685	0.1	0.00685
3	3B20312	10.208	4	1,2,3,6,7,8-HxCDD	1.797	J	0.145		0.1	0.1797	3B20312D	10.202	4	1,2,3,6,7,8-HxCDD		U	0.160	0.08	0.1	0.008
3	3B20312	10.208	5	1,2,3,7,8,9-HxCDD		U	0.129	0.065	0.1	0.00645	3B20312D	10.202	5	1,2,3,7,8,9-HxCDD		U	0.145	0.0725	0.1	0.00725
3	3B20312	10.208	6	1,2,3,4,6,7,8-HpCDD	2.649	B	0.283		0.01	0.02649	3B20312D	10.202	6	1,2,3,4,6,7,8-HpCDD	3.280	B	0.211		0.01	0.0328
3	3B20312	10.208	7	OCDD	18.024	B	0.512		0.0001	0.001802	3B20312D	10.202	7	OCDD	30.195	B	0.585		0.0001	0.00302
3	3B20312	10.208	8	2,3,7,8-TCDF	0.531	CJ	0.115		0.1	0.0531	3B20312D	10.202	8	2,3,7,8-TCDF	0.340	CJ	0.104		0.1	0.034
3	3B20312	10.208	9	1,2,3,7,8-PeCDF		U	0.122	0.061	0.05	0.00305	3B20312D	10.202	9	1,2,3,7,8-PeCDF	0.145	JK	0.089		0.05	0.00725
3	3B20312	10.208	10	2,3,4,7,8-PeCDF		U	0.131	0.066	0.5	0.03275	3B20312D	10.202	10	2,3,4,7,8-PeCDF		U	0.104	0.052	0.5	0.026
3	3B20312	10.208	11	1,2,3,4,7,8-HxCDF	0.334	BJ	0.107		0.1	0.0334	3B20312D	10.202	11	1,2,3,4,7,8-HxCDF	0.265	JK	0.084		0.1	0.0265
3	3B20312	10.208	12	1,2,3,6,7,8-HxCDF		U	0.102	0.051	0.1	0.0051	3B20312D	10.202	12	1,2,3,6,7,8-HxCDF	0.117	JK	0.080		0.1	0.0117
3	3B20312	10.208	13	1,2,3,7,8,9-HxCDF		U	0.157	0.079	0.1	0.00785	3B20312D	10.202	13	1,2,3,7,8,9-HxCDF	0.282	J	0.126		0.1	0.0282
3	3B20312	10.208	14	2,3,4,6,7,8-HxCDF		U	0.124	0.062	0.1	0.0062	3B20312D	10.202	14	2,3,4,6,7,8-HxCDF	0.151	JK	0.096		0.1	0.0151
3	3B20312	10.208	15	1,2,3,4,6,7,8-HpCDF	3.614	BK	0.265		0.01	0.03614	3B20312D	10.202	15	1,2,3,4,6,7,8-HpCDF	4.420		0.238		0.01	0.0442
3	3B20312	10.208	16	1,2,3,4,7,8,9-HpCDF		U	0.444	0.222	0.01	0.00222	3B20312D	10.202	16	1,2,3,4,7,8,9-HpCDF		U	0.433	0.2165	0.01	0.002165
3	3B20312	10.208	17	OCDF	10.034	B	0.574		0.0001	0.001003	3B20312D	10.202	17	OCDF	9.782		0.575		0.0001	0.000978
Σ TEQ:										**0.489756**										**0.326763**
9	9D40314	10.133	1	2,3,7,8-TCDD		U	0.256	0.128	1	0.128	9D40314D	10.170	1	2,3,7,8-TCDD		U	0.072	0.036	1	0.036
9	9D40314	10.133	2	1,2,3,7,8-PeCDD		U	0.244	0.122	0.5	0.061	9D40314D	10.170	2	1,2,3,7,8-PeCDD		U	0.109	0.0545	0.5	0.02725
9	9D40314	10.133	3	1,2,3,4,7,8-HxCDD		U	0.283	0.142	0.1	0.01415	9D40314D	10.170	3	1,2,3,4,7,8-HxCDD		U	0.128	0.064	0.1	0.0064
9	9D40314	10.133	4	1,2,3,6,7,8-HxCDD	0.680	J	0.319		0.1	0.068	9D40314D	10.170	4	1,2,3,6,7,8-HxCDD	0.659	J	0.150		0.1	0.0659
9	9D40314	10.133	5	1,2,3,7,8,9-HxCDD	0.608	J	0.285		0.1	0.0608	9D40314D	10.170	5	1,2,3,7,8,9-HxCDD	0.374	J	0.136		0.1	0.0374
9	9D40314	10.133	6	1,2,3,4,6,7,8-HpCDD	11.022		0.491		0.01	0.11022	9D40314D	10.170	6	1,2,3,4,6,7,8-HpCDD	11.238	B	0.340		0.01	0.11238
9	9D40314	10.133	7	OCDD	112.157		0.831		0.0001	0.011216	9D40314D	10.170	7	OCDD	125.854	B	0.536		0.0001	0.012585
9	9D40314	10.133	8	2,3,7,8-TCDF	0.480	CJ	0.237		0.1	0.048	9D40314D	10.170	8	2,3,7,8-TCDF	0.235	CJ	0.084		0.1	0.0235
9	9D40314	10.133	9	1,2,3,7,8-PeCDF		U	0.210	0.105	0.05	0.00525	9D40314D	10.170	9	1,2,3,7,8-PeCDF		U	0.088	0.044	0.05	0.0022
9	9D40314	10.133	10	2,3,4,7,8-PeCDF		U	0.219	0.110	0.5	0.05475	9D40314D	10.170	10	2,3,4,7,8-PeCDF		U	0.105	0.0525	0.5	0.02625
9	9D40314	10.133	11	1,2,3,4,7,8-HxCDF	0.642	J	0.183		0.1	0.0642	9D40314D	10.170	11	1,2,3,4,7,8-HxCDF	0.341	J	0.101		0.1	0.0341
9	9D40314	10.133	12	1,2,3,6,7,8-HxCDF		U	0.169	0.085	0.1	0.00845	9D40314D	10.170	12	1,2,3,6,7,8-HxCDF	0.177	J	0.094		0.1	0.0177
9	9D40314	10.133	13	1,2,3,7,8,9-HxCDF		U	0.237	0.119	0.1	0.01185	9D40314D	10.170	13	1,2,3,7,8,9-HxCDF		U	0.150	0.075	0.1	0.0075
9	9D40314	10.133	14	2,3,4,6,7,8-HxCDF		U	0.199	0.100	0.1	0.00995	9D40314D	10.170	14	2,3,4,6,7,8-HxCDF	0.230	J	0.111		0.1	0.023
9	9D40314	10.133	15	1,2,3,4,6,7,8-HpCDF	2.693	K	0.304		0.01	0.02693	9D40314D	10.170	15	1,2,3,4,6,7,8-HpCDF	3.628		0.210		0.01	0.03628
9	9D40314	10.133	16	1,2,3,4,7,8,9-HpCDF		U	0.429	0.215	0.01	0.002145	9D40314D	10.170	16	1,2,3,4,7,8,9-HpCDF		U	0.377	0.1885	0.01	0.001885
9	9D40314	10.133	17	OCDF	18.268		1.236		0.0001	0.001827	9D40314D	10.170	17	OCDF	8.058		0.556		0.0001	0.000806
Σ TEQ:										**0.686738**										**0.471136**
18	18D20312	10.255	1	2,3,7,8-TCDD		U	0.248	0.124	1	0.124	18D20312D	10.872	1	2,3,7,8-TCDD		U	0.055	0.0275	1	0.0275
18	18D20312	10.255	2	1,2,3,7,8-PeCDD		U	0.276	0.138	0.5	0.069	18D20312D	10.872	2	1,2,3,7,8-PeCDD		U	0.077	0.0385	0.5	0.01925
18	18D20312	10.255	3	1,2,3,4,7,8-HxCDD	0.559	J	0.255		0.1	0.0559	18D20312D	10.872	3	1,2,3,4,7,8-HxCDD		U	0.104	0.052	0.1	0.0052
18	18D20312	10.255	4	1,2,3,6,7,8-HxCDD	0.832	J	0.285		0.1	0.0832	18D20312D	10.872	4	1,2,3,6,7,8-HxCDD	0.443	JK	0.124		0.1	0.0443
18	18D20312	10.255	5	1,2,3,7,8,9-HxCDD	0.645	JK	0.256		0.1	0.0645	18D20312D	10.872	5	1,2,3,7,8,9-HxCDD	0.561	J	0.111		0.1	0.0561
18	18D20312	10.255	6	1,2,3,4,6,7,8-HpCDD	5.802		0.428		0.01	0.05802	18D20312D	10.872	6	1,2,3,4,6,7,8-HpCDD	5.142	B	0.215		0.01	0.05142
18	18D20312	10.255	7	OCDD	33.890		0.736		0.0001	0.003389	18D20312D	10.872	7	OCDD	30.181	B	0.457		0.0001	0.003018
18	18D20312	10.255	8	2,3,7,8-TCDF	1.485	C	0.277		0.1	0.1485	18D20312D	10.872	8	2,3,7,8-TCDF	0.618	CJ	0.081		0.1	0.0618
18	18D20312	10.255	9	1,2,3,7,8-PeCDF	0.644	J	0.266		0.05	0.0322	18D20312D	10.872	9	1,2,3,7,8-PeCDF		U	0.060	0.03	0.05	0.0015
18	18D20312	10.255	10	2,3,4,7,8-PeCDF	0.924	J	0.285		0.5	0.462	18D20312D	10.872	10	2,3,4,7,8-PeCDF	0.276	J	0.067		0.5	0.138
18	18D20312	10.255	11	1,2,3,4,7,8-HxCDF	0.987	JK	0.244		0.1	0.0987	18D20312D	10.872	11	1,2,3,4,7,8-HxCDF	0.466	J	0.096		0.1	0.0466
18	18D20312	10.255	12	1,2,3,6,7,8-HxCDF	0.686	J	0.223		0.1	0.0686	18D20312D	10.872	12	1,2,3,6,7,8-HxCDF	0.234	J	0.086		0.1	0.0234
18	18D20312	10.255	13	1,2,3,7,8,9-HxCDF		U	0.326	0.163	0.1	0.0163	18D20312D	10.872	13	1,2,3,7,8,9-HxCDF		U	0.136	0.068	0.1	0.0068
18	18D20312	10.255	14	2,3,4,6,7,8-HxCDF	0.686	J	0.274		0.1	0.0686	18D20312D	10.872	14	2,3,4,6,7,8-HxCDF	0.229	J	0.100		0.1	0.0229
18	18D20312	10.255	15	1,2,3,4,6,7,8-HpCDF	3.137		0.289		0.01	0.03137	18D20312D	10.872	15	1,2,3,4,6,7,8-HpCDF	2.543		0.234		0.01	0.02543
18	18D20312	10.255	16	1,2,3,4,7,8,9-HpCDF	0.699	J	0.422		0.01	0.00699	18D20312D	10.872	16	1,2,3,4,7,8,9-HpCDF		U	0.425	0.2125	0.01	0.002125
18	18D20312	10.255	17	OCDF	46.627		0.983		0.0001	0.004663	18D20312D	10.872	17	OCDF	5.050		0.464		0.0001	0.000505
Σ TEQ:										**1.395932**										**0.535848**

Location Number	Sample ID	Analyte	Detect Limit (EDL)	MQL=4*EDL	WHO TEFs Human	MQL_{TEF}	Sample ID	Analyte	Detect Limit (EDL)	MQL=4*EDL	WHO TEFs Human	MQL_{TEF}
3	3B20312	2,3,7,8-TCDD	0.106	0.424	1	0.424	3B20312D	2,3,7,8-TCDD	0.076	0.304	1	0.304
3	3B20312	1,2,3,7,8-PeCDD	0.142	0.568	0.5	0.284	3B20312D	1,2,3,7,8-PeCDD	0.139	0.556	0.5	0.278
3	3B20312	1,2,3,4,7,8-HxCDD	0.120	0.48	0.1	0.048	3B20312D	1,2,3,4,7,8-HxCDD	0.137	0.548	0.1	0.0548
3	3B20312	1,2,3,6,7,8-HxCDD	0.145	0.58	0.1	0.058	3B20312D	1,2,3,6,7,8-HxCDD	0.160	0.64	0.1	0.064
3	3B20312	1,2,3,7,8,9-HxCDD	0.129	0.516	0.1	0.0516	3B20312D	1,2,3,7,8,9-HxCDD	0.145	0.58	0.1	0.058
3	3B20312	1,2,3,4,6,7,8-HpCDD	0.283	1.132	0.01	0.01132	3B20312D	1,2,3,4,6,7,8-HpCDD	0.211	0.844	0.01	0.00844
3	3B20312	OCDD	0.512	2.048	0.0001	0.000205	3B20312D	OCDD	0.585	2.34	0.0001	0.000234
3	3B20312	2,3,7,8-TCDF	0.115	0.46	0.1	0.046	3B20312D	2,3,7,8-TCDF	0.104	0.416	0.1	0.0416
3	3B20312	1,2,3,7,8-PeCDF	0.122	0.488	0.05	0.0244	3B20312D	1,2,3,7,8-PeCDF	0.089	0.356	0.05	0.0178
3	3B20312	2,3,4,7,8-PeCDF	0.131	0.524	0.5	0.262	3B20312D	2,3,4,7,8-PeCDF	0.104	0.416	0.5	0.208
3	3B20312	1,2,3,4,7,8-HxCDF	0.107	0.428	0.1	0.0428	3B20312D	1,2,3,4,7,8-HxCDF	0.084	0.336	0.1	0.0336
3	3B20312	1,2,3,6,7,8-HxCDF	0.102	0.408	0.1	0.0408	3B20312D	1,2,3,6,7,8-HxCDF	0.080	0.32	0.1	0.032
3	3B20312	1,2,3,7,8,9-HxCDF	0.157	0.628	0.1	0.0628	3B20312D	1,2,3,7,8,9-HxCDF	0.126	0.504	0.1	0.0504
3	3B20312	2,3,4,6,7,8-HxCDF	0.124	0.496	0.1	0.0496	3B20312D	2,3,4,6,7,8-HxCDF	0.096	0.384	0.1	0.0384
3	3B20312	1,2,3,4,6,7,8-HpCDF	0.265	1.06	0.01	0.0106	3B20312D	1,2,3,4,6,7,8-HpCDF	0.238	0.952	0.01	0.00952
3	3B20312	1,2,3,4,7,8,9-HpCDF	0.444	1.776	0.01	0.01776	3B20312D	1,2,3,4,7,8,9-HpCDF	0.433	1.732	0.01	0.01732
3	3B20312	OCDF	0.574	2.296	0.0001	0.00023	3B20312D	OCDF	0.575	2.3	0.0001	0.00023
MQL_{TEQ}:						**1.434**						**1.216**
9	9D40314	2,3,7,8-TCDD	0.256	1.024	1	1.024	9D40314D	2,3,7,8-TCDD	0.072	0.288	1	0.288
9	9D40314	1,2,3,7,8-PeCDD	0.244	0.976	0.5	0.488	9D40314D	1,2,3,7,8-PeCDD	0.109	0.436	0.5	0.218
9	9D40314	1,2,3,4,7,8-HxCDD	0.283	1.132	0.1	0.1132	9D40314D	1,2,3,4,7,8-HxCDD	0.128	0.512	0.1	0.0512
9	9D40314	1,2,3,6,7,8-HxCDD	0.319	1.276	0.1	0.1276	9D40314D	1,2,3,6,7,8-HxCDD	0.150	0.6	0.1	0.06
9	9D40314	1,2,3,7,8,9-HxCDD	0.285	1.14	0.1	0.114	9D40314D	1,2,3,7,8,9-HxCDD	0.136	0.544	0.1	0.0544
9	9D40314	1,2,3,4,6,7,8-HpCDD	0.491	1.964	0.01	0.01964	9D40314D	1,2,3,4,6,7,8-HpCDD	0.340	1.36	0.01	0.0136
9	9D40314	OCDD	0.831	3.324	0.0001	0.000332	9D40314D	OCDD	0.536	2.144	0.0001	0.000214
9	9D40314	2,3,7,8-TCDF	0.237	0.948	0.1	0.0948	9D40314D	2,3,7,8-TCDF	0.084	0.336	0.1	0.0336
9	9D40314	1,2,3,7,8-PeCDF	0.210	0.84	0.05	0.042	9D40314D	1,2,3,7,8-PeCDF	0.088	0.352	0.05	0.0176
9	9D40314	2,3,4,7,8-PeCDF	0.219	0.876	0.5	0.438	9D40314D	2,3,4,7,8-PeCDF	0.105	0.42	0.5	0.21
9	9D40314	1,2,3,4,7,8-HxCDF	0.183	0.732	0.1	0.0732	9D40314D	1,2,3,4,7,8-HxCDF	0.101	0.404	0.1	0.0404
9	9D40314	1,2,3,6,7,8-HxCDF	0.169	0.676	0.1	0.0676	9D40314D	1,2,3,6,7,8-HxCDF	0.094	0.376	0.1	0.0376
9	9D40314	1,2,3,7,8,9-HxCDF	0.237	0.948	0.1	0.0948	9D40314D	1,2,3,7,8,9-HxCDF	0.150	0.6	0.1	0.06
9	9D40314	2,3,4,6,7,8-HxCDF	0.199	0.796	0.1	0.0796	9D40314D	2,3,4,6,7,8-HxCDF	0.111	0.444	0.1	0.0444
9	9D40314	1,2,3,4,6,7,8-HpCDF	0.304	1.216	0.01	0.01216	9D40314D	1,2,3,4,6,7,8-HpCDF	0.210	0.84	0.01	0.0084
9	9D40314	1,2,3,4,7,8,9-HpCDF	0.429	1.716	0.01	0.01716	9D40314D	1,2,3,4,7,8,9-HpCDF	0.377	1.508	0.01	0.01508
9	9D40314	OCDF	1.236	4.944	0.0001	0.000494	9D40314D	OCDF	0.556	2.224	0.0001	0.000222
MQL_{TEQ}:						**2.807**						**1.153**
18	18D20312	2,3,7,8-TCDD	0.248	0.992	1	0.992	18D20312D	2,3,7,8-TCDD	0.055	0.22	1	0.22
18	18D20312	1,2,3,7,8-PeCDD	0.276	1.104	0.5	0.552	18D20312D	1,2,3,7,8-PeCDD	0.077	0.308	0.5	0.154
18	18D20312	1,2,3,4,7,8-HxCDD	0.255	1.02	0.1	0.102	18D20312D	1,2,3,4,7,8-HxCDD	0.104	0.416	0.1	0.0416
18	18D20312	1,2,3,6,7,8-HxCDD	0.285	1.14	0.1	0.114	18D20312D	1,2,3,6,7,8-HxCDD	0.124	0.496	0.1	0.0496
18	18D20312	1,2,3,7,8,9-HxCDD	0.256	1.024	0.1	0.1024	18D20312D	1,2,3,7,8,9-HxCDD	0.111	0.444	0.1	0.0444
18	18D20312	1,2,3,4,6,7,8-HpCDD	0.428	1.712	0.01	0.01712	18D20312D	1,2,3,4,6,7,8-HpCDD	0.215	0.86	0.01	0.0086
18	18D20312	OCDD	0.736	2.944	0.0001	0.000294	18D20312D	OCDD	0.457	1.828	0.0001	0.000183
18	18D20312	2,3,7,8-TCDF	0.277	1.108	0.1	0.1108	18D20312D	2,3,7,8-TCDF	0.081	0.324	0.1	0.0324
18	18D20312	1,2,3,7,8-PeCDF	0.266	1.064	0.05	0.0532	18D20312D	1,2,3,7,8-PeCDF	0.060	0.24	0.05	0.012
18	18D20312	2,3,4,7,8-PeCDF	0.285	1.14	0.5	0.57	18D20312D	2,3,4,7,8-PeCDF	0.067	0.268	0.5	0.134
18	18D20312	1,2,3,4,7,8-HxCDF	0.244	0.976	0.1	0.0976	18D20312D	1,2,3,4,7,8-HxCDF	0.096	0.384	0.1	0.0384
18	18D20312	1,2,3,6,7,8-HxCDF	0.223	0.892	0.1	0.0892	18D20312D	1,2,3,6,7,8-HxCDF	0.086	0.344	0.1	0.0344
18	18D20312	1,2,3,7,8,9-HxCDF	0.326	1.304	0.1	0.1304	18D20312D	1,2,3,7,8,9-HxCDF	0.136	0.544	0.1	0.0544
18	18D20312	2,3,4,6,7,8-HxCDF	0.274	1.096	0.1	0.1096	18D20312D	2,3,4,6,7,8-HxCDF	0.100	0.4	0.1	0.04
18	18D20312	1,2,3,4,6,7,8-HpCDF	0.289	1.156	0.01	0.01156	18D20312D	1,2,3,4,6,7,8-HpCDF	0.234	0.936	0.01	0.00936
18	18D20312	1,2,3,4,7,8,9-HpCDF	0.422	1.688	0.01	0.01688	18D20312D	1,2,3,4,7,8,9-HpCDF	0.425	1.7	0.01	0.017
18	18D20312	OCDF	0.983	3.932	0.0001	0.000393	18D20312D	OCDF	0.464	1.856	0.0001	0.000186
MQL_{TEQ}:						**3.069**						**0.891**

$$RPD = \frac{(C_1 - C_2)}{(C_1 + C_2)/2} \times 100\%$$

where: RPD = relative percent difference
C_1 = larger of the two observed values
C_2 = smaller of the two observed values

	C_1	C_2	C_{ave}	RPD	$\Delta_{(1-2)}$
Sample Location 3:	0.490	0.327	0.408	39.9%	0.163
Sample Location 9:	0.687	0.471	0.579	37.2%	0.216
Sample Location 18:	1.396	0.536	0.966	89.0%	0.860

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
123	20.19	1	2,3,7,8-TCDF	0.286	NJ	0.0259	0.24764735	0.1036	0.286			0.286				0.1	0.286	0.286	0.143		0.0143	
123	20.19	2	2,3,7,8-TCDD		--	0.0268	0.24764735	0.1072	LT	0.2		LT	0.1072			1	0.0134	0	0.0134		0.0134	
123	20.19	3	1,2,3,7,8-PeCDF		E	0.211	1.238236751	0.844	LT	1.2		LT	0.844			0.05	0.1055	0	0.1055		0.005275	
123	20.19	4	2,3,4,7,8-PeCDF		E	0.303	1.238236751	1.212	LT	1.2		LT	1.212			0.5	0.1515	0	0.1515		0.07575	
123	20.19	5	1,2,3,7,8-PeCDD	0.621	--	0.0176	1.238236751	0.0704	LT	1.2		0.621				1	0.621	0.621	0.621	0.621	0.621	0.621
123	20.19	6	1,2,3,4,7,8-HxCDF	0.459	--	0.0166	1.238236751	0.0664	LT	1.2		0.459				0.1	0.459	0.459	0.459	0.459	0.0459	0.0459
123	20.19	7	1,2,3,6,7,8-HxCDF		DE	0.808	1.238236751	3.232	LT	1.2		LT	3.232	>ML		0.1	0.404	0	0.202		0.0202	
123	20.19	8	2,3,4,6,7,8-HxCDF	0.455	--	0.0233	1.238236751	0.0932	LT	1.2		0.455				0.1	0.455	0.455	0.455	0.455	0.0455	0.0455
123	20.19	9	1,2,3,7,8,9-HxCDF	0.371	--	0.0372	1.238236751	0.1488	LT	1.2		0.371				0.1	0.371	0.371	0.371	0.371	0.0371	0.0371
123	20.19	10	1,2,3,4,7,8-HxCDD	0.694	--	0.0286	1.238236751	0.1144	LT	1.2		0.694				0.1	0.694	0.694	0.694	0.694	0.0694	0.0694
123	20.19	11	1,2,3,6,7,8-HxCDD	1.09	--	0.0241	1.238236751	0.0964	LT	1.2		1.09				0.1	1.09	1.09	1.09	1.09	0.109	0.109
123	20.19	12	1,2,3,7,8,9-HxCDD	1.24	J	0.0247	1.238236751	0.0988	1.24			1.24				0.1	1.24	1.24	1.24	0.62	0.124	0.062
123	20.19	13	1,2,3,4,6,7,8-HpCDF		D	7.46	1.238236751	29.84	LT	7.46	>ML	LT	29.84	>ML		0.01	3.73	0	1.865		0.01865	
123	20.19	14	1,2,3,4,7,8,9-HpCDF		--	0.158	1.238236751	0.632	LT	1.2		LT	0.632			0.01	0.079	0	0.079		0.00079	
123	20.19	15	1,2,3,4,6,7,8-HpCDD	28.1	--	0.122	1.238236751	0.488	28.1			28.1				0.01	28.1	28.1	28.1	28.1	0.281	0.281
123	20.19	16	OCDF	12.5	J	0.0506	2.476473502	0.2024	12.5			12.5				0.0001	12.5	12.5	12.5	6.25	0.00125	0.000625
123	20.19	17	OCDD	244	--	0.1	2.476473502	0.4	244			244				0.0001	244	244	244	244	0.0244	0.0244
164	19.44	1	2,3,7,8-TCDF	0.413	NJ	0.129	0.257201646	0.516	0.413			LT	0.516	>ML		0.1	0.413	0.2065	0.2065		0.02065	
164	19.44	2	2,3,7,8-TCDD	0.679	--	0.0327	0.257201646	0.1308	0.679			0.679				1	0.679	0.679	0.679	0.679	0.679	0.679
164	19.44	3	1,2,3,7,8-PeCDF	1.02	--	0.0802	1.28600823	0.3208	LT	1.3		1.02				0.05	1.02	1.02	1.02	1.02	0.051	0.051
164	19.44	4	2,3,4,7,8-PeCDF	1.5	--	0.0737	1.28600823	0.2948	1.5			1.5				0.5	1.5	1.5	1.5	1.5	0.75	0.75
164	19.44	5	1,2,3,7,8-PeCDD	4.42	--	0.0542	1.28600823	0.2168	4.42			4.42				1	4.42	4.42	4.42	4.42	4.42	4.42
164	19.44	6	1,2,3,4,7,8-HxCDF	5.57	--	0.387	1.28600823	1.548	5.57			5.57				0.1	5.57	5.57	5.57	5.57	0.557	0.557
164	19.44	7	1,2,3,6,7,8-HxCDF		D	10.7	1.28600823	42.8	LT	10.7	>ML	LT	42.8	>ML		0.1	5.35	0	2.675		0.2675	
164	19.44	8	2,3,4,6,7,8-HxCDF	5.65	--	0.429	1.28600823	1.716	5.65			5.65				0.1	5.65	5.65	5.65	5.65	0.565	0.565
164	19.44	9	1,2,3,7,8,9-HxCDF	0.887	--	0.479	1.28600823	1.916	LT	1.3		LT	1.916	>ML		0.1	0.887	0.4435	0.887	0.4435	0.0887	0.04435
164	19.44	10	1,2,3,4,7,8-HxCDD	10.7	--	0.0567	1.28600823	0.2268	10.7			10.7				0.1	10.7	10.7	10.7	10.7	1.07	1.07
164	19.44	11	1,2,3,6,7,8-HxCDD	30.1	--	0.0501	1.28600823	0.2004	30.1			30.1				0.1	30.1	30.1	30.1	30.1	3.01	3.01
164	19.44	12	1,2,3,7,8,9-HxCDD	18.2	J	0.0579	1.28600823	0.2316	18.2			18.2				0.1	18.2	18.2	18.2	9.1	1.82	0.91
164	19.44	13	1,2,3,4,6,7,8-HpCDF		D	94.9	1.28600823	379.6	LT	94.9	>ML	LT	379.6	>ML		0.01	47.45	0	23.725		0.23725	
164	19.44	14	1,2,3,4,7,8,9-HpCDF	6.56	--	0.134	1.28600823	0.536	6.56			6.56				0.01	6.56	6.56	6.56	6.56	0.0656	0.0656
164	19.44	15	1,2,3,4,6,7,8-HpCDD	1290	--	0.0505	1.28600823	0.202	1290			1290				0.01	1290	1290	1290	1290	12.9	12.9
164	19.44	16	OCDF	74.3	--	0.103	2.572016461	0.412	74.3			74.3				0.0001	74.3	74.3	74.3	74.3	0.00743	0.00743
164	19.44	17	OCDD	4200	SJ	0.0757	2.572016461	0.3028	4200			4200				0.0001	4200	4200	4200	2100	0.42	0.21
208	20.71	1	2,3,7,8-TCDF	0.411	NJ	0.0592	0.241429261	0.2368	0.411			0.411				0.1	0.411	0.411	0.2055		0.02055	
208	20.71	2	2,3,7,8-TCDD	0.255	--	0.00629	0.241429261	0.02516	0.255			0.255				1	0.255	0.255	0.255	0.255	0.255	0.255
208	20.71	3	1,2,3,7,8-PeCDF	0.511	--	0.0282	1.207146306	0.1128	LT	1.2		0.511				0.05	0.511	0.511	0.511	0.511	0.02555	0.02555
208	20.71	4	2,3,4,7,8-PeCDF	0.768	--	0.0242	1.207146306	0.0968	LT	1.2		0.768				0.5	0.768	0.768	0.768	0.768	0.384	0.384
208	20.71	5	1,2,3,7,8-PeCDD	1.25	--	0.0174	1.207146306	0.0696	1.25			1.25				1	1.25	1.25	1.25	1.25	1.25	1.25
208	20.71	6	1,2,3,4,7,8-HxCDF	1.63	--	0.0688	1.207146306	0.2752	1.63			1.63				0.1	1.63	1.63	1.63	1.63	0.163	0.163
208	20.71	7	1,2,3,6,7,8-HxCDF	1.07	--	0.0585	1.207146306	0.234	LT	1.2		1.07				0.1	1.07	1.07	1.07	1.07	0.107	0.107
208	20.71	8	2,3,4,6,7,8-HxCDF		--	0.0793	1.207146306	0.3172	LT	1.2		LT	0.3172		<5x*B	0.1	0.03965	0	0.0397		0.003965	
208	20.71	9	1,2,3,7,8,9-HxCDF	0.638	B	0.0948	1.207146306	0.3792	LT	1.2		0.638			<5x*B	0.1	0.638	0.638	0.638	0.319	0.0638	0.0319
208	20.71	10	1,2,3,4,7,8-HxCDD	1.91	--	0.0333	1.207146306	0.1332	1.91			1.91				0.1	1.91	1.91	1.91	1.91	0.191	0.191
208	20.71	11	1,2,3,6,7,8-HxCDD	4.62	--	0.0293	1.207146306	0.1172	4.62			4.62				0.1	4.62	4.62	4.62	4.62	0.462	0.462
208	20.71	12	1,2,3,7,8,9-HxCDD	2.68	J	0.0322	1.207146306	0.1288	2.68			2.68				0.1	2.68	2.68	2.68	1.34	0.268	0.134
208	20.71	13	1,2,3,4,6,7,8-HpCDF		D	28.1	1.207146306	112.4	LT	28.1	>ML	LT	112.4	>ML		0.01	14.05	0	7.025		0.07025	
208	20.71	14	1,2,3,4,7,8,9-HpCDF		E	1.23	1.207146306	4.92	LT	1.23	>ML	LT	4.92	>ML		0.01	0.615	0	0.615		0.00615	
208	20.71	15	1,2,3,4,6,7,8-HpCDD	106	--	0.0544	1.207146306	0.2176	106			106				0.01	106	106	106	106	1.06	1.06
208	20.71	16	OCDF	45.2	--	0.0186	2.414292612	0.0744	45.2			45.2				0.0001	45.2	45.2	45.2	45.2	0.00452	0.00452
208	20.71	17	OCDD	857	--	0.0171	2.414292612	0.0684	857			857				0.0001	857	857	857	857	0.0857	0.0857
213	13.73	1	2,3,7,8-TCDF	0.281	BNJ	0.161	0.36416606	0.644	LT	0.4		LT	0.644	>ML	<5x*B	0.1	0.281	0.1405	0.1405		0.01405	
213	13.73	2	2,3,7,8-TCDD	0.122	--	0.0641	0.36416606	0.2564	LT	0.4		LT	0.2564			1	0.122	0.061	0.122	0.061	0.122	0.061
213	13.73	3	1,2,3,7,8-PeCDF	0.829	--	0.166	1.820830299	0.664	LT	1.8		0.829				0.05	0.829	0.829	0.829	0.829	0.04145	0.04145
213	13.73	4	2,3,4,7,8-PeCDF	0.471	--	0.135	1.820830299	0.54	LT	1.8		LT	0.54			0.5	0.471	0.2355	0.471	0.2355	0.2355	0.11775
213	13.73	5	1,2,3,7,8-PeCDD	0.499	--	0.291	1.820830299	1.164	LT	1.8		LT	1.164			1	0.499	0.2495	0.499	0.2495	0.499	0.2495
213	13.73	6	1,2,3,4,7,8-HxCDF	0.503	--	0.132	1.820830299	0.528	LT	1.8		LT	0.528			0.1	0.503	0.2515	0.503	0.2515	0.0503	0.02515
213	13.73	7	1,2,3,6,7,8-HxCDF	0.315	BE	0.117	1.820830299	0.468	LT	1.8		LT	0.468		<5x*B	0.1	0.315	0.1575	0.315	0.07875	0.0315	0.007875
213	13.73	8	2,3,4,6,7,8-HxCDF	2.08	--	0.136	1.820830299	0.544	2.08			2.08				0.1	2.08	2.08	2.08	2.08	0.208	0.208

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
213	13.73	9	1,2,3,7,8,9-HxCDF	2.4	--	0.136	1.820830299	0.544	2.4			2.4				0.1	2.4	2.4	2.4	2.4	0.24	0.24
213	13.73	10	1,2,3,4,7,8-HxCDD	0.505	--	0.0763	1.820830299	0.3052	LT	1.8		0.505				0.1	0.505	0.505	0.505	0.505	0.0505	0.0505
213	13.73	11	1,2,3,6,7,8-HxCDD	0.585	--	0.0635	1.820830299	0.254	LT	1.8		0.585				0.1	0.585	0.585	0.585	0.585	0.0585	0.0585
213	13.73	12	1,2,3,7,8,9-HxCDD	0.495	--	0.0617	1.820830299	0.2468	LT	1.8		0.495				0.1	0.495	0.495	0.495	0.495	0.0495	0.0495
213	13.73	13	1,2,3,4,6,7,8-HpCDF		D	1.74	1.820830299	6.96	LT	1.8		LT	6.96		<5x*B	0.01	0.87	0	0.435		0.00435	
213	13.73	14	1,2,3,4,7,8,9-HpCDF	2	--	0.0951	1.820830299	0.3804	2			2				0.01	2	2	2	2	0.02	0.02
213	13.73	15	1,2,3,4,6,7,8-HpCDD	11.6	--	0.0456	1.820830299	0.1824	11.6			11.6				0.01	11.6	11.6	11.6	11.6	0.116	0.116
213	13.73	16	OCDF	4.51	--	0.0825	3.641660597	0.33	4.51			4.51				0.0001	4.51	4.51	4.51	4.51	0.000451	0.000451
213	13.73	17	OCDD	80.3	--	0.0729	3.641660597	0.2916	80.3			80.3				0.0001	80.3	80.3	80.3	80.3	0.00803	0.00803
225	20.9	1	2,3,7,8-TCDF	1.85	NJ	0.0723	0.23923445	0.2892	1.85			1.85				0.1	1.85	1.85	0.925		0.0925	
225	20.9	2	2,3,7,8-TCDD	0.528	--	0.0376	0.23923445	0.1504	0.528			0.528				1	0.528	0.528	0.528	0.528	0.528	0.528
225	20.9	3	1,2,3,7,8-PeCDF	3.5	--	0.083	1.196172249	0.332	3.5			3.5				0.05	3.5	3.5	3.5	3.5	0.175	0.175
225	20.9	4	2,3,4,7,8-PeCDF	1.62	--	0.0748	1.196172249	0.2992	1.62			1.62				0.5	1.62	1.62	1.62	1.62	0.81	0.81
225	20.9	5	1,2,3,7,8-PeCDD	1.69	B	0.105	1.196172249	0.42	1.69			1.69			<5x*B	1	1.69	1.69	1.69	0.845	1.69	0.845
225	20.9	6	1,2,3,4,7,8-HxCDF	4.19	--	0.199	1.196172249	0.796	4.19			4.19				0.1	4.19	4.19	4.19	4.19	0.419	0.419
225	20.9	7	1,2,3,6,7,8-HxCDF	2.08	--	0.17	1.196172249	0.68	2.08			2.08				0.1	2.08	2.08	2.08	2.08	0.208	0.208
225	20.9	8	2,3,4,6,7,8-HxCDF	1.88	--	0.205	1.196172249	0.82	1.88			1.88				0.1	1.88	1.88	1.88	1.88	0.188	0.188
225	20.9	9	1,2,3,7,8,9-HxCDF	0.96	--	0.237	1.196172249	0.948	LT	1.2		0.96				0.1	0.96	0.96	0.96	0.96	0.096	0.096
225	20.9	10	1,2,3,4,7,8-HxCDD		E	2.24	1.196172249	8.96	LT	2.24	>ML	LT	8.96	>ML	<5x*B	0.1	1.12	0	1.12		0.112	
225	20.9	11	1,2,3,6,7,8-HxCDD	7.78	--	0.19	1.196172249	0.76	7.78			7.78				0.1	7.78	7.78	7.78	7.78	0.778	0.778
225	20.9	12	1,2,3,7,8,9-HxCDD	5.17	--	0.196	1.196172249	0.784	5.17			5.17				0.1	5.17	5.17	5.17	5.17	0.517	0.517
225	20.9	13	1,2,3,4,6,7,8-HpCDF	33.2	--	0.093	1.196172249	0.372	33.2			33.2				0.01	33.2	33.2	33.2	33.2	0.332	0.332
225	20.9	14	1,2,3,4,7,8,9-HpCDF	3.53	--	0.136	1.196172249	0.544	3.53			3.53				0.01	3.53	3.53	3.53	3.53	0.0353	0.0353
225	20.9	15	1,2,3,4,6,7,8-HpCDD	184	--	0.0735	1.196172249	0.294	184			184				0.01	184	184	184	184	1.84	1.84
225	20.9	16	OCDF	66.2	--	0.0621	2.392344498	0.2484	66.2			66.2				0.0001	66.2	66.2	66.2	66.2	0.00662	0.00662
225	20.9	17	OCDD	1570	--	0.0486	2.392344498	0.1944	1570			1570				0.0001	1570	1570	1570	1570	0.157	0.157
230	19.98	1	2,3,7,8-TCDF		E	0.192	0.25025025	0.768	LT	0.3		LT	0.768	>ML		0.1	0.096	0	0.096		0.0096	
230	19.98	2	2,3,7,8-TCDD		--	0.0373	0.25025025	0.1492	LT	0.3		LT	0.1492			1	0.01865	0	0.0187		0.01865	
230	19.98	3	1,2,3,7,8-PeCDF		E	0.278	1.251251251	1.112	LT	1.3		LT	1.112			0.05	0.139	0	0.139		0.00695	
230	19.98	4	2,3,4,7,8-PeCDF		E	0.591	1.251251251	2.364	LT	1.3		LT	2.364	>ML		0.5	0.2955	0	0.2955		0.14775	
230	19.98	5	1,2,3,7,8-PeCDD		E	0.913	1.251251251	3.652	LT	1.3		LT	3.652	>ML		1	0.4565	0	0.4565		0.4565	
230	19.98	6	1,2,3,4,7,8-HxCDF		E	0.651	1.251251251	2.604	LT	1.3		LT	2.604	>ML		0.1	0.3255	0	0.3255		0.03255	
230	19.98	7	1,2,3,6,7,8-HxCDF		D	2.11	1.251251251	8.44	LT	2.11	>ML	LT	8.44	>ML		0.1	1.055	0	0.5275		0.05275	
230	19.98	8	2,3,4,6,7,8-HxCDF	0.929	--	0.0942	1.251251251	0.3768	LT	1.3		0.929				0.1	0.929	0.929	0.929	0.929	0.0929	0.0929
230	19.98	9	1,2,3,7,8,9-HxCDF		--	0.203	1.251251251	0.812	LT	1.3		LT	0.812			0.1	0.1015	0	0.1015		0.01015	
230	19.98	10	1,2,3,4,7,8-HxCDD	0.998	--	0.034	1.251251251	0.136	LT	1.3		0.998				0.1	0.998	0.998	0.998	0.998	0.0998	0.0998
230	19.98	11	1,2,3,6,7,8-HxCDD	2.24	--	0.0301	1.251251251	0.1204	2.24			2.24				0.1	2.24	2.24	2.24	2.24	0.224	0.224
230	19.98	12	1,2,3,7,8,9-HxCDD	1.07	J	0.0301	1.251251251	0.1204	LT	1.3		1.07				0.1	1.07	1.07	1.07	0.535	0.107	0.0535
230	19.98	13	1,2,3,4,6,7,8-HpCDF		D	16.6	1.251251251	66.4	LT	16.6	>ML	LT	66.4	>ML		0.01	8.3	0	4.15		0.0415	
230	19.98	14	1,2,3,4,7,8,9-HpCDF		--	0.291	1.251251251	1.164	LT	1.3		LT	1.164			0.01	0.1455	0	0.1455		0.001455	
230	19.98	15	1,2,3,4,6,7,8-HpCDD	51.5	--	0.167	1.251251251	0.668	51.5			51.5				0.01	51.5	51.5	51.5	51.5	0.515	0.515
230	19.98	16	OCDF	26.3	IJ	0.149	2.502502503	0.596	26.3			26.3				0.0001	26.3	26.3	26.3	13.15	0.00263	0.001315
230	19.98	17	OCDD	519	I	0.0745	2.502502503	0.298	519			519				0.0001	519	519	519	519	0.0519	0.0519
274	20.33	1	2,3,7,8-TCDF		--	14.2	0.245941958	56.8	LT	14.2	>ML	LT	56.8	>ML		0.1	7.1	0	7.1		0.71	
274	20.33	2	2,3,7,8-TCDD	19.3	--	0.663	0.245941958	2.652	19.3			19.3				1	19.3	19.3	19.3	19.3	19.3	19.3
274	20.33	3	1,2,3,7,8-PeCDF		--	7.78	1.229709788	31.12	LT	7.78	>ML	LT	31.12	>ML		0.05	3.89	0	3.89		0.1945	
274	20.33	4	2,3,4,7,8-PeCDF	5.73	--	5.47	1.229709788	21.88	5.73			LT	21.88	>ML		0.5	5.73	2.865	5.73	2.865	2.865	1.4325
274	20.33	5	1,2,3,7,8-PeCDD		E	7.29	1.229709788	29.16	LT	7.29	>ML	LT	29.16	>ML		1	3.645	0	3.645		3.645	
274	20.33	6	1,2,3,4,7,8-HxCDF	6.94	--	1.63	1.229709788	6.52	6.94			6.94				0.1	6.94	6.94	6.94	6.94	0.694	0.694
274	20.33	7	1,2,3,6,7,8-HxCDF	4.45	--	1.03	1.229709788	4.12	4.45			4.45				0.1	4.45	4.45	4.45	4.45	0.445	0.445
274	20.33	8	2,3,4,6,7,8-HxCDF	5.76	--	1.33	1.229709788	5.32	5.76			5.76				0.1	5.76	5.76	5.76	5.76	0.576	0.576
274	20.33	9	1,2,3,7,8,9-HxCDF	2.29	B	1.47	1.229709788	5.88	2.29			LT	5.88	>ML	<5x*B	0.1	2.29	1.145	2.29	0.5725	0.229	0.05725
274	20.33	10	1,2,3,4,7,8-HxCDD	6.97	--	0.445	1.229709788	1.78	6.97			6.97				0.1	6.97	6.97	6.97	6.97	0.697	0.697
274	20.33	11	1,2,3,6,7,8-HxCDD	28.5	--	0.344	1.229709788	1.376	28.5			28.5				0.1	28.5	28.5	28.5	28.5	2.85	2.85
274	20.33	12	1,2,3,7,8,9-HxCDD	17.9	J	0.399	1.229709788	1.596	17.9			17.9				0.1	17.9	17.9	17.9	8.95	1.79	0.895
274	20.33	13	1,2,3,4,6,7,8-HpCDF	114	--	0.515	1.229709788	2.06	114			114				0.01	114	114	114	114	1.14	1.14
274	20.33	14	1,2,3,4,7,8,9-HpCDF	6.75	--	0.666	1.229709788	2.664	6.75			6.75				0.01	6.75	6.75	6.75	6.75	0.0675	0.0675
274	20.33	15	1,2,3,4,6,7,8-HpCDD	715	CJ	0.261	1.229709788	1.044	715			715				0.01	715	715	715	357.5	7.15	3.575
274	20.33	16	OCDF	240	J	0.359	2.459419577	1.436	240			240				0.0001	240	240	240	120	0.024	0.012

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
274	20.33	17	OCDD	5030	SJ	1.16	2.459419577	4.64	5030			5030				0.0001	5030	5030	5030	2515	0.503	0.2515
275	20.54	1	2,3,7,8-TCDF	0.313	BNJ	0.0382	0.243427459	0.1528	0.313			0.313			<5x*B	0.1	0.313	0.313	0.1565		0.01565	
275	20.54	2	2,3,7,8-TCDD	0.0751	--	0.0417	0.243427459	0.1668	LT	0.2		LT	0.1668			1	0.0751	0.03755	0.0751	0.03755	0.0751	0.03755
275	20.54	3	1,2,3,7,8-PeCDF	0.153	--	0.161	1.217137293	0.644	LT	1.2		LT	0.644			0.05	0.0805	0	0.0805		0.004025	
275	20.54	4	2,3,4,7,8-PeCDF	0.228	--	0.129	1.217137293	0.516	LT	1.2		LT	0.516			0.5	0.228	0.114	0.228	0.114	0.114	0.057
275	20.54	5	1,2,3,7,8-PeCDD	0.411	--	0.1	1.217137293	0.4	LT	1.2		0.411				1	0.411	0.411	0.411	0.411	0.411	0.411
275	20.54	6	1,2,3,4,7,8-HxCDF	0.341	--	0.0949	1.217137293	0.3796	LT	1.2		LT	0.3796			0.1	0.341	0.1705	0.341	0.1705	0.0341	0.01705
275	20.54	7	1,2,3,6,7,8-HxCDF	0.568	BD	0.0839	1.217137293	0.3356	LT	1.2		0.568			<5x*B	0.1	0.568	0.568	0.284		0.0284	
275	20.54	8	2,3,4,6,7,8-HxCDF	0.399	B	0.109	1.217137293	0.436	LT	1.2		LT	0.436		<5x*B	0.1	0.399	0.1995	0.399	0.09975	0.0399	0.009975
275	20.54	9	1,2,3,7,8,9-HxCDF	0.318	B	0.123	1.217137293	0.492	LT	1.2		LT	0.492		<5x*B	0.1	0.318	0.159	0.318	0.0795	0.0318	0.00795
275	20.54	10	1,2,3,4,7,8-HxCDD	0.576	--	0.128	1.217137293	0.512	LT	1.2		0.576				0.1	0.576	0.576	0.576	0.576	0.0576	0.0576
275	20.54	11	1,2,3,6,7,8-HxCDD	0.961	--	0.108	1.217137293	0.432	LT	1.2		0.961				0.1	0.961	0.961	0.961	0.961	0.0961	0.0961
275	20.54	12	1,2,3,7,8,9-HxCDD	0.791	--	0.104	1.217137293	0.416	LT	1.2		0.791				0.1	0.791	0.791	0.791	0.791	0.0791	0.0791
275	20.54	13	1,2,3,4,6,7,8-HpCDF		D	5.26	1.217137293	21.04	LT	5.26	>ML	LT	21.04		<5x*B	0.01	2.63	0	1.315		0.01315	
275	20.54	14	1,2,3,4,7,8,9-HpCDF	0.359	--	0.1	1.217137293	0.4	LT	1.2		LT	0.4			0.01	0.359	0.1795	0.359	0.1795	0.00359	0.001795
275	20.54	15	1,2,3,4,6,7,8-HpCDD	24.9	--	0.0506	1.217137293	0.2024	24.9			24.9				0.01	24.9	24.9	24.9	24.9	0.249	0.249
275	20.54	16	OCDF	10.9	--	0.071	2.434274586	0.284	10.9			10.9				0.0001	10.9	10.9	10.9	10.9	0.00109	0.00109
275	20.54	17	OCDD	212	--	0.063	2.434274586	0.252	212			212				0.0001	212	212	212	212	0.0212	0.0212
331	10.82	1	2,3,7,8-TCDF	0.29	NJ	0.092	0.462107209	0.368	LT	0.5		LT	0.368			0.1	0.29	0.145	0.145		0.0145	
331	10.82	2	2,3,7,8-TCDD		--	0.117	0.462107209	0.468	LT	0.5		LT	0.468	>ML		1	0.0585	0	0.0585		0.0585	
331	10.82	3	1,2,3,7,8-PeCDF	0.319	B	0.301	2.310536044	1.204	LT	2.3		LT	1.204		<5x*B	0.05	0.319	0.1595	0.319	0.07975	0.01595	0.0039875
331	10.82	4	2,3,4,7,8-PeCDF	0.506	--	0.244	2.310536044	0.976	LT	2.3		LT	0.976			0.5	0.506	0.253	0.506	0.253	0.253	0.1265
331	10.82	5	1,2,3,7,8-PeCDD		E	0.454	2.310536044	1.816	LT	2.3		LT	1.816		<5x*B	1	0.227	0	0.227		0.227	
331	10.82	6	1,2,3,4,7,8-HxCDF	0.493	--	0.112	2.310536044	0.448	LT	2.3		0.493				0.1	0.493	0.493	0.493	0.493	0.0493	0.0493
331	10.82	7	1,2,3,6,7,8-HxCDF	0.653	B	0.1	2.310536044	0.4	LT	2.3		0.653			<5x*B	0.1	0.653	0.653	0.653	0.3265	0.0653	0.03265
331	10.82	8	2,3,4,6,7,8-HxCDF		E	0.721	2.310536044	2.884	LT	2.3		LT	2.884	>ML	<5x*B	0.1	0.3605	0	0.3605		0.03605	
331	10.82	9	1,2,3,7,8,9-HxCDF	0.607	B	0.155	2.310536044	0.62	LT	2.3		LT	0.62		<5x*B	0.1	0.607	0.3035	0.607	0.15175	0.0607	0.015175
331	10.82	10	1,2,3,4,7,8-HxCDD	0.467	J	0.0825	2.310536044	0.33	LT	2.3		0.467				0.1	0.467	0.467	0.467	0.2335	0.0467	0.02335
331	10.82	11	1,2,3,6,7,8-HxCDD	0.937	--	0.0719	2.310536044	0.2876	LT	2.3		0.937				0.1	0.937	0.937	0.937	0.937	0.0937	0.0937
331	10.82	12	1,2,3,7,8,9-HxCDD		EJ	0.591	2.310536044	2.364	LT	2.3		LT	2.364	>ML	<5x*B	0.1	0.2955	0	0.2955		0.02955	
331	10.82	13	1,2,3,4,6,7,8-HpCDF	4.83	--	0.132	2.310536044	0.528	4.83			4.83				0.01	4.83	4.83	4.83	4.83	0.0483	0.0483
331	10.82	14	1,2,3,4,7,8,9-HpCDF	0.371	--	0.223	2.310536044	0.892	LT	2.3		LT	0.892			0.01	0.371	0.1855	0.371	0.1855	0.00371	0.001855
331	10.82	15	1,2,3,4,6,7,8-HpCDD	25.5	--	0.0994	2.310536044	0.3976	25.5			25.5				0.01	25.5	25.5	25.5	25.5	0.255	0.255
331	10.82	16	OCDF	12.6	--	0.104	4.621072089	0.416	12.6			12.6				0.0001	12.6	12.6	12.6	12.6	0.00126	0.00126
331	10.82	17	OCDD	240	--	0.147	4.621072089	0.588	240			240				0.0001	240	240	240	240	0.024	0.024
344	20.92	1	2,3,7,8-TCDF		--	0.043	0.239005736	0.172	LT	0.2		LT	0.172			0.1	0.0215	0	0.0215		0.00215	
344	20.92	2	2,3,7,8-TCDD		E	0.174	0.239005736	0.696	LT	0.2		LT	0.696	>ML		1	0.087	0	0.087		0.087	
344	20.92	3	1,2,3,7,8-PeCDF		--	0.083	1.195028681	0.332	LT	1.2		LT	0.332			0.05	0.0415	0	0.0415		0.002075	
344	20.92	4	2,3,4,7,8-PeCDF		EI	0.537	1.195028681	2.148	LT	1.2		LT	2.148	>ML		0.5	0.2685	0	0.2685		0.13425	
344	20.92	5	1,2,3,7,8-PeCDD	0.613	--	0.0623	1.195028681	0.2492	LT	1.2		0.613				1	0.613	0.613	0.613	0.613	0.613	0.613
344	20.92	6	1,2,3,4,7,8-HxCDF	0.515	--	0.17	1.195028681	0.68	LT	1.2		LT	0.68			0.1	0.515	0.2575	0.515	0.2575	0.0515	0.02575
344	20.92	7	1,2,3,6,7,8-HxCDF	0.432	--	0.147	1.195028681	0.588	LT	1.2		LT	0.588			0.1	0.432	0.216	0.432	0.216	0.0432	0.0216
344	20.92	8	2,3,4,6,7,8-HxCDF	0.673	--	0.191	1.195028681	0.764	LT	1.2		LT	0.764			0.1	0.673	0.3365	0.673	0.3365	0.0673	0.03365
344	20.92	9	1,2,3,7,8,9-HxCDF	0.43	B	0.222	1.195028681	0.888	LT	1.2		LT	0.888		<5x*B	0.1	0.43	0.215	0.43	0.1075	0.043	0.01075
344	20.92	10	1,2,3,4,7,8-HxCDD	0.716	B	0.066	1.195028681	0.264	LT	1.2		0.716			<5x*B	0.1	0.716	0.716	0.716	0.358	0.0716	0.0358
344	20.92	11	1,2,3,6,7,8-HxCDD	1.71	--	0.0546	1.195028681	0.2184	1.71			1.71				0.1	1.71	1.71	1.71	1.71	0.171	0.171
344	20.92	12	1,2,3,7,8,9-HxCDD	1.32	J	0.0614	1.195028681	0.2456	1.32			1.32				0.1	1.32	1.32	1.32	0.66	0.132	0.066
344	20.92	13	1,2,3,4,6,7,8-HpCDF		D	14.7	1.195028681	58.8	LT	14.7	>ML	LT	58.8	>ML	<5x*B	0.01	7.35	0	3.675		0.03675	
344	20.92	14	1,2,3,4,7,8,9-HpCDF	0.599	--	0.206	1.195028681	0.824	LT	1.2		LT	0.824			0.01	0.599	0.2995	0.599	0.2995	0.00599	0.002995
344	20.92	15	1,2,3,4,6,7,8-HpCDD	48.4	--	0.0702	1.195028681	0.2808	48.4			48.4				0.01	48.4	48.4	48.4	48.4	0.484	0.484
344	20.92	16	OCDF	23.3	J	0.0922	2.390057361	0.3688	23.3			23.3				0.0001	23.3	23.3	23.3	11.65	0.00233	0.001165
344	20.92	17	OCDD	473	--	0.106	2.390057361	0.424	473			473				0.0001	473	473	473	473	0.0473	0.0473
388	20.42	1	2,3,7,8-TCDF	0.188	NJ	0.0658	0.244857982	0.2632	LT	0.2		LT	0.2632	>ML		0.1	0.188	0.094	0.094		0.0094	
388	20.42	2	2,3,7,8-TCDD		--	0.0757	0.244857982	0.3028	LT	0.2		LT	0.3028	>ML		1	0.03785	0	0.0379		0.03785	
388	20.42	3	1,2,3,7,8-PeCDF	0.163	--	0.153	1.224289912	0.612	LT	1.2		LT	0.612			0.05	0.163	0.0815	0.163	0.0815	0.00815	0.004075
388	20.42	4	2,3,4,7,8-PeCDF		I	0.764	1.224289912	3.056	LT	1.2		LT	3.056	>ML		0.5	0.382	0	0.382		0.191	
388	20.42	5	1,2,3,7,8-PeCDD		J	0.594	1.224289912	2.376	LT	1.2		LT	2.376	>ML		1	0.297	0	0.297		0.297	
388	20.42	6	1,2,3,4,7,8-HxCDF	0.304	B	0.131	1.224289912	0.524	LT	1.2		LT	0.524		<5x*B	0.1	0.304	0.152	0.304	0.076	0.0304	0.0076
388	20.42	7	1,2,3,6,7,8-HxCDF		D	0.547	1.224289912	2.188	LT	1.2		LT	2.188	>ML		0.1	0.2735	0	0.1368		0.013675	

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
388	20.42	8	2,3,4,6,7,8-HxCDF	0.485	--	0.141	1.224289912	0.564	LT	1.2		LT	0.564			0.1	0.485	0.2425	0.485	0.2425	0.0485	0.02425
388	20.42	9	1,2,3,7,8,9-HxCDF	0.274	B	0.154	1.224289912	0.616	LT	1.2		LT	0.616		<5x*B	0.1	0.274	0.137	0.274	0.0685	0.0274	0.00685
388	20.42	10	1,2,3,4,7,8-HxCDD	0.504	--	0.0966	1.224289912	0.3864	LT	1.2		0.504				0.1	0.504	0.504	0.504	0.504	0.0504	0.0504
388	20.42	11	1,2,3,6,7,8-HxCDD	0.76	--	0.0826	1.224289912	0.3304	LT	1.2		0.76				0.1	0.76	0.76	0.76	0.76	0.076	0.076
388	20.42	12	1,2,3,7,8,9-HxCDD	0.713	--	0.0789	1.224289912	0.3156	LT	1.2		0.713				0.1	0.713	0.713	0.713	0.713	0.0713	0.0713
388	20.42	13	1,2,3,4,6,7,8-HpCDF	5.67	J	0.101	1.224289912	0.404	5.67			5.67				0.01	5.67	5.67	5.67	2.835	0.0567	0.02835
388	20.42	14	1,2,3,4,7,8,9-HpCDF	0.3	--	0.128	1.224289912	0.512	LT	1.2		LT	0.512			0.01	0.3	0.15	0.3	0.15	0.003	0.0015
388	20.42	15	1,2,3,4,6,7,8-HpCDD	17.9	--	0.0656	1.224289912	0.2624	17.9			17.9				0.01	17.9	17.9	17.9	17.9	0.179	0.179
388	20.42	16	OCDF	8.72	--	0.126	2.448579824	0.504	8.72			8.72				0.0001	8.72	8.72	8.72	8.72	0.000872	0.000872
388	20.42	17	OCDD	110	--	0.0586	2.448579824	0.2344	110			110				0.0001	110	110	110	110	0.011	0.011
432	20.4	1	2,3,7,8-TCDF	1.27	NJ	0.19	0.245098039	0.76	1.27			1.27				0.1	1.27	1.27	0.635		0.0635	
432	20.4	2	2,3,7,8-TCDD		E	0.587	0.245098039	2.348	LT	0.587	>ML	LT	2.348	>ML		1	0.2935	0	0.2935		0.2935	
432	20.4	3	1,2,3,7,8-PeCDF		E	1.09	1.225490196	4.36	LT	1.2		LT	4.36	>ML		0.05	0.545	0	0.545		0.02725	
432	20.4	4	2,3,4,7,8-PeCDF	9.34	--	0.843	1.225490196	3.372	9.34			9.34				0.5	9.34	9.34	9.34	9.34	4.67	4.67
432	20.4	5	1,2,3,7,8-PeCDD	4.48	--	0.188	1.225490196	0.752	4.48			4.48				1	4.48	4.48	4.48	4.48	4.48	4.48
432	20.4	6	1,2,3,4,7,8-HxCDF	6.2	--	1.89	1.225490196	7.56	6.2			LT	7.56	>ML		0.1	6.2	3.1	6.2	3.1	0.62	0.31
432	20.4	7	1,2,3,6,7,8-HxCDF	4.89	--	1.72	1.225490196	6.88	4.89			LT	6.88	>ML		0.1	4.89	2.445	4.89	2.445	0.489	0.2445
432	20.4	8	2,3,4,6,7,8-HxCDF	66.2	D	2.97	1.225490196	11.88	66.2			66.2				0.1	66.2	66.2	33.1		3.31	
432	20.4	9	1,2,3,7,8,9-HxCDF	1.79	--	0.1728	1.225490196	0.6912	1.79			1.79				0.1	1.79	1.79	1.79	1.79	0.179	0.179
432	20.4	10	1,2,3,4,7,8-HxCDD	10.1	--	1.04	1.225490196	4.16	10.1			10.1				0.1	10.1	10.1	10.1	10.1	1.01	1.01
432	20.4	11	1,2,3,6,7,8-HxCDD	19.9	--	0.858	1.225490196	3.432	19.9			19.9				0.1	19.9	19.9	19.9	19.9	1.99	1.99
432	20.4	12	1,2,3,7,8,9-HxCDD	9.11	J	0.816	1.225490196	3.264	9.11			9.11				0.1	9.11	9.11	9.11	4.555	0.911	0.4555
432	20.4	13	1,2,3,4,6,7,8-HpCDF	119	--	0.492	1.225490196	1.968	119			119				0.01	119	119	119	119	1.19	1.19
432	20.4	14	1,2,3,4,7,8,9-HpCDF	9.54	--	1.13	1.225490196	4.52	9.54			9.54				0.01	9.54	9.54	9.54	9.54	0.0954	0.0954
432	20.4	15	1,2,3,4,6,7,8-HpCDD	784	--	0.246	1.225490196	0.984	784			784				0.01	784	784	784	784	7.84	7.84
432	20.4	16	OCDF	591	IJ	0.846	2.450980392	3.384	591			591				0.0001	591	591	591	295.5	0.0591	0.02955
432	20.4	17	OCDD	7280	CIJ	0.743	2.450980392	2.972	7280			7280				0.0001	7280	7280	7280	3640	0.728	0.364
520	20.95	1	2,3,7,8-TCDF		E	0.199	0.238663484	0.796	LT	0.2		LT	0.796	>ML		0.1	0.0995	0	0.0995		0.00995	
520	20.95	2	2,3,7,8-TCDD	0.143	--	0.00321	0.238663484	0.01284	LT	0.2		0.143				1	0.143	0.143	0.143	0.143	0.143	0.143
520	20.95	3	1,2,3,7,8-PeCDF	0.269	--	0.0459	1.193317422	0.1836	LT	1.2		0.269				0.05	0.269	0.269	0.269	0.269	0.01345	0.01345
520	20.95	4	2,3,4,7,8-PeCDF	0.321	I	0.0263	1.193317422	0.1052	LT	1.2		0.321				0.5	0.321	0.321	0.321	0.321	0.1605	0.1605
520	20.95	5	1,2,3,7,8-PeCDD	0.444	I	0.0512	1.193317422	0.2048	LT	1.2		0.444				1	0.444	0.444	0.444	0.444	0.444	0.444
520	20.95	6	1,2,3,4,7,8-HxCDF	0.489	--	0.169	1.193317422	0.676	LT	1.2		LT	0.676			0.1	0.489	0.2445	0.489	0.2445	0.0489	0.02445
520	20.95	7	1,2,3,6,7,8-HxCDF		--	0.139	1.193317422	0.556	LT	1.2		LT	0.556			0.1	0.0695	0	0.0695		0.00695	
520	20.95	8	2,3,4,6,7,8-HxCDF		--	0.177	1.193317422	0.708	LT	1.2		LT	0.708			0.1	0.0885	0	0.0885		0.00885	
520	20.95	9	1,2,3,7,8,9-HxCDF	0.43	B	0.198	1.193317422	0.792	LT	1.2		LT	0.792		<5x*B	0.1	0.43	0.215	0.43	0.1075	0.043	0.01075
520	20.95	10	1,2,3,4,7,8-HxCDD	0.44	B	0.0509	1.193317422	0.2036	LT	1.2		0.44			<5x*B	0.1	0.44	0.44	0.44	0.22	0.044	0.022
520	20.95	11	1,2,3,6,7,8-HxCDD	1.25	--	0.0449	1.193317422	0.1796	1.25			1.25				0.1	1.25	1.25	1.25	1.25	0.125	0.125
520	20.95	12	1,2,3,7,8,9-HxCDD		EJ	0.806	1.193317422	3.224	LT	1.2		LT	3.224	>ML		0.1	0.403	0	0.403		0.0403	
520	20.95	13	1,2,3,4,6,7,8-HpCDF		D	11.2	1.193317422	44.8	LT	11.2	>ML	LT	44.8	>ML	<5x*B	0.01	5.6	0	2.8		0.028	
520	20.95	14	1,2,3,4,7,8,9-HpCDF	0.676	--	0.178	1.193317422	0.712	LT	1.2		LT	0.712			0.01	0.676	0.338	0.676	0.338	0.00676	0.00338
520	20.95	15	1,2,3,4,6,7,8-HpCDD	39.8	--	0.0991	1.193317422	0.3964	39.8			39.8				0.01	39.8	39.8	39.8	39.8	0.398	0.398
520	20.95	16	OCDF	32.9	J	0.0553	2.386634845	0.2212	32.9			32.9				0.0001	32.9	32.9	32.9	16.45	0.00329	0.001645
520	20.95	17	OCDD	467	--	0.0877	2.386634845	0.3508	467			467				0.0001	467	467	467	467	0.0467	0.0467
530	16.31	1	2,3,7,8-TCDF	1.18	NJ	0.135	0.306560392	0.54	1.18			1.18				0.1	1.18	1.18	0.59		0.059	
530	16.31	2	2,3,7,8-TCDD	0.616	--	0.0491	0.306560392	0.1964	0.616			0.616				1	0.616	0.616	0.616	0.616	0.616	0.616
530	16.31	3	1,2,3,7,8-PeCDF	1.09	--	0.0683	1.532801962	0.2732	LT	1.5		1.09				0.05	1.09	1.09	1.09	1.09	0.0545	0.0545
530	16.31	4	2,3,4,7,8-PeCDF	3.8	--	0.0387	1.532801962	0.1548	3.8			3.8				0.5	3.8	3.8	3.8	3.8	1.9	1.9
530	16.31	5	1,2,3,7,8-PeCDD	2.94	--	0.078	1.532801962	0.312	2.94			2.94				1	2.94	2.94	2.94	2.94	2.94	2.94
530	16.31	6	1,2,3,4,7,8-HxCDF	2.84	--	0.155	1.532801962	0.62	2.84			2.84				0.1	2.84	2.84	2.84	2.84	0.284	0.284
530	16.31	7	1,2,3,6,7,8-HxCDF	2.01	--	0.133	1.532801962	0.532	2.01			2.01				0.1	2.01	2.01	2.01	2.01	0.201	0.201
530	16.31	8	2,3,4,6,7,8-HxCDF	4.55	--	0.176	1.532801962	0.704	4.55			4.55				0.1	4.55	4.55	4.55	4.55	0.455	0.455
530	16.31	9	1,2,3,7,8,9-HxCDF	0.998	B	0.18	1.532801962	0.72	LT	1.5		0.998			<5x*B	0.1	0.998	0.998	0.998	0.499	0.0998	0.0499
530	16.31	10	1,2,3,4,7,8-HxCDD	3.31	--	0.158	1.532801962	0.632	3.31			3.31				0.1	3.31	3.31	3.31	3.31	0.331	0.331
530	16.31	11	1,2,3,6,7,8-HxCDD	8.63	--	0.134	1.532801962	0.536	8.63			8.63				0.1	8.63	8.63	8.63	8.63	0.863	0.863
530	16.31	12	1,2,3,7,8,9-HxCDD	8.54	J	0.149	1.532801962	0.596	8.54			8.54				0.1	8.54	8.54	8.54	4.27	0.854	0.427
530	16.31	13	1,2,3,4,6,7,8-HpCDF		D	53.9	1.532801962	215.6	LT	53.9	>ML	LT	215.6	>ML	<5x*B	0.01	26.95	0	13.475		0.13475	
530	16.31	14	1,2,3,4,7,8,9-HpCDF	2.43	--	0.672	1.532801962	2.688	2.43			LT	2.688	>ML		0.01	2.43	1.215	2.43	1.215	0.0243	0.01215
530	16.31	15	1,2,3,4,6,7,8-HpCDD	233	--	0.268	1.532801962	1.072	233			233				0.01	233	233	233	233	2.33	2.33

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
530	16.31	16	OCDF	94.4	J	0.15	3.065603924	0.6	94.4			94.4				0.0001	94.4	94.4	94.4	47.2	0.00944	0.00472
530	16.31	17	OCDD	1840	CJ	0.238	3.065603924	0.952	1840			1840				0.0001	1840	1840	1840	920	0.184	0.092
540	20.91	1	2,3,7,8-TCDF	0.883	NJ	0.0531	0.239120038	0.2124	0.883			0.883				0.1	0.883	0.883	0.4415		0.04415	
540	20.91	2	2,3,7,8-TCDD		E	0.35	0.239120038	1.4	LT	0.35	>ML	LT	1.4	>ML		1	0.175	0	0.175		0.175	
540	20.91	3	1,2,3,7,8-PeCDF		--	0.0596	1.195600191	0.2384	LT	1.2		LT	0.2384			0.05	0.0298	0	0.0298		0.00149	
540	20.91	4	2,3,4,7,8-PeCDF	2.97	--	0.0376	1.195600191	0.1504	2.97			2.97				0.5	2.97	2.97	2.97	2.97	1.485	1.485
540	20.91	5	1,2,3,7,8-PeCDD	1.41	--	0.0726	1.195600191	0.2904	1.41			1.41				1	1.41	1.41	1.41	1.41	1.41	1.41
540	20.91	6	1,2,3,4,7,8-HxCDF	2.3	--	0.152	1.195600191	0.608	2.3			2.3				0.1	2.3	2.3	2.3	2.3	0.23	0.23
540	20.91	7	1,2,3,6,7,8-HxCDF	2.19	--	0.125	1.195600191	0.5	2.19			2.19				0.1	2.19	2.19	2.19	2.19	0.219	0.219
540	20.91	8	2,3,4,6,7,8-HxCDF	4.17	--	0.172	1.195600191	0.688	4.17			4.17				0.1	4.17	4.17	4.17	4.17	0.417	0.417
540	20.91	9	1,2,3,7,8,9-HxCDF	0.81	B	0.199	1.195600191	0.796	LT	1.2		0.81			<5x*B	0.1	0.81	0.81	0.81	0.405	0.081	0.0405
540	20.91	10	1,2,3,4,7,8-HxCDD	2.65	--	0.108	1.195600191	0.432	2.65			2.65				0.1	2.65	2.65	2.65	2.65	0.265	0.265
540	20.91	11	1,2,3,6,7,8-HxCDD	5.99	--	0.112	1.195600191	0.448	5.99			5.99				0.1	5.99	5.99	5.99	5.99	0.599	0.599
540	20.91	12	1,2,3,7,8,9-HxCDD	4	J	0.114	1.195600191	0.456	4			4				0.1	4	4	4	2	0.4	0.2
540	20.91	13	1,2,3,4,6,7,8-HpCDF	54.3	--	0.108	1.195600191	0.432	54.3			54.3				0.01	54.3	54.3	54.3	54.3	0.543	0.543
540	20.91	14	1,2,3,4,7,8,9-HpCDF	2.46	--	0.185	1.195600191	0.74	2.46			2.46				0.01	2.46	2.46	2.46	2.46	0.0246	0.0246
540	20.91	15	1,2,3,4,6,7,8-HpCDD	151	--	0.202	1.195600191	0.808	151			151				0.01	151	151	151	151	1.51	1.51
540	20.91	16	OCDF	104	J	0.135	2.391200383	0.54	104			104				0.0001	104	104	104	52	0.0104	0.0052
540	20.91	17	OCDD	1250	CJ	0.16	2.391200383	0.64	1250			1250				0.0001	1250	1250	1250	625	0.125	0.0625
543	21.09	1	2,3,7,8-TCDF		E	1.37	0.237079184	5.48	LT	1.37	>ML	LT	5.48	>ML		0.1	0.685	0	0.685		0.0685	
543	21.09	2	2,3,7,8-TCDD	0.464	--	0.039	0.237079184	0.156	0.464			0.464				1	0.464	0.464	0.464	0.464	0.464	0.464
543	21.09	3	1,2,3,7,8-PeCDF	5.43	--	0.116	1.185395922	0.464	5.43			5.43				0.05	5.43	5.43	5.43	5.43	0.2715	0.2715
543	21.09	4	2,3,4,7,8-PeCDF		E	2.33	1.185395922	9.32	LT	2.33	>ML	LT	9.32	>ML		0.5	1.165	0	1.165		0.5825	
543	21.09	5	1,2,3,7,8-PeCDD	1.47	B	0.0534	1.185395922	0.2136	1.47			1.47			<5x*B	1	1.47	1.47	1.47	0.735	1.47	0.735
543	21.09	6	1,2,3,4,7,8-HxCDF	7.79	--	0.539	1.185395922	2.156	7.79			7.79				0.1	7.79	7.79	7.79	7.79	0.779	0.779
543	21.09	7	1,2,3,6,7,8-HxCDF	3.86	--	0.458	1.185395922	1.832	3.86			3.86				0.1	3.86	3.86	3.86	3.86	0.386	0.386
543	21.09	8	2,3,4,6,7,8-HxCDF		E	2.27	1.185395922	9.08	LT	2.27	>ML	LT	9.08	>ML		0.1	1.135	0	1.135		0.1135	
543	21.09	9	1,2,3,7,8,9-HxCDF	1.38	--	0.618	1.185395922	2.472	1.38			LT	2.472	>ML		0.1	1.38	0.69	1.38	0.69	0.138	0.069
543	21.09	10	1,2,3,4,7,8-HxCDD	5.62	--	0.185	1.185395922	0.74	5.62			5.62				0.1	5.62	5.62	5.62	5.62	0.562	0.562
543	21.09	11	1,2,3,6,7,8-HxCDD	6.88	--	0.226	1.185395922	0.904	6.88			6.88				0.1	6.88	6.88	6.88	6.88	0.688	0.688
543	21.09	12	1,2,3,7,8,9-HxCDD	3.5	--	0.208	1.185395922	0.832	3.5			3.5				0.1	3.5	3.5	3.5	3.5	0.35	0.35
543	21.09	13	1,2,3,4,6,7,8-HpCDF	48.2	--	0.087	1.185395922	0.348	48.2			48.2				0.01	48.2	48.2	48.2	48.2	0.482	0.482
543	21.09	14	1,2,3,4,7,8,9-HpCDF	5.64	--	0.129	1.185395922	0.516	5.64			5.64				0.01	5.64	5.64	5.64	5.64	0.0564	0.0564
543	21.09	15	1,2,3,4,6,7,8-HpCDD	175	--	0.0594	1.185395922	0.2376	175			175				0.01	175	175	175	175	1.75	1.75
543	21.09	16	OCDF	106	--	0.0663	2.370791844	0.2652	106			106				0.0001	106	106	106	106	0.0106	0.0106
543	21.09	17	OCDD	1680	--	0.042	2.370791844	0.168	1680			1680				0.0001	1680	1680	1680	1680	0.168	0.168
552	21.01	1	2,3,7,8-TCDF		--	0.0457	0.237981913	0.1828	LT	0.2		LT	0.1828			0.1	0.02285	0	0.0229		0.002285	
552	21.01	2	2,3,7,8-TCDD		--	0.0233	0.237981913	0.0932	LT	0.2		LT	0.0932			1	0.01165	0	0.0117		0.01165	
552	21.01	3	1,2,3,7,8-PeCDF		--	0.0252	1.189909567	0.1008	LT	1.2		LT	0.1008			0.05	0.0126	0	0.0126		0.00063	
552	21.01	4	2,3,4,7,8-PeCDF	0.244	--	0.0224	1.189909567	0.0896	LT	1.2		0.244				0.5	0.244	0.244	0.244	0.244	0.122	0.122
552	21.01	5	1,2,3,7,8-PeCDD		E	0.306	1.189909567	1.224	LT	1.2		LT	1.224	>ML	<5x*B	1	0.153	0	0.153		0.153	
552	21.01	6	1,2,3,4,7,8-HxCDF		E	0.273	1.189909567	1.092	LT	1.2		LT	1.092			0.1	0.1365	0	0.1365		0.01365	
552	21.01	7	1,2,3,6,7,8-HxCDF	0.288	B	0.0305	1.189909567	0.122	LT	1.2		0.288			<5x*B	0.1	0.288	0.288	0.288	0.144	0.0288	0.0144
552	21.01	8	2,3,4,6,7,8-HxCDF	0.322	--	0.0371	1.189909567	0.1484	LT	1.2		0.322				0.1	0.322	0.322	0.322	0.322	0.0322	0.0322
552	21.01	9	1,2,3,7,8,9-HxCDF	0.345	--	0.0421	1.189909567	0.1684	LT	1.2		0.345				0.1	0.345	0.345	0.345	0.345	0.0345	0.0345
552	21.01	10	1,2,3,4,7,8-HxCDD	0.76	B	0.0525	1.189909567	0.21	LT	1.2		0.76			<5x*B	0.1	0.76	0.76	0.76	0.38	0.076	0.038
552	21.01	11	1,2,3,6,7,8-HxCDD	0.93	--	0.0642	1.189909567	0.2568	LT	1.2		0.93				0.1	0.93	0.93	0.93	0.93	0.093	0.093
552	21.01	12	1,2,3,7,8,9-HxCDD		E	0.565	1.189909567	2.26	LT	1.2		LT	2.26	>ML		0.1	0.2825	0	0.2825		0.02825	
552	21.01	13	1,2,3,4,6,7,8-HpCDF	5.43	--	0.0564	1.189909567	0.2256	5.43			5.43				0.01	5.43	5.43	5.43	5.43	0.0543	0.0543
552	21.01	14	1,2,3,4,7,8,9-HpCDF		E	0.367	1.189909567	1.468	LT	1.2		LT	1.468	>ML		0.01	0.1835	0	0.1835		0.001835	
552	21.01	15	1,2,3,4,6,7,8-HpCDD	20.8	--	0.0678	1.189909567	0.2712	20.8			20.8				0.01	20.8	20.8	20.8	20.8	0.208	0.208
552	21.01	16	OCDF	13.8	--	0.0639	2.379819134	0.2556	13.8			13.8				0.0001	13.8	13.8	13.8	13.8	0.00138	0.00138
552	21.01	17	OCDD	175	--	0.0902	2.379819134	0.3608	175			175				0.0001	175	175	175	175	0.0175	0.0175
559	20.56	1	2,3,7,8-TCDF	1.24	NJ	1.23	0.243190661	4.92	1.24			LT	4.92	>ML		0.1	1.24	0.62	0.62		0.062	
559	20.56	2	2,3,7,8-TCDD	11.6	--	0.0851	0.243190661	0.3404	11.6			11.6				1	11.6	11.6	11.6	11.6	11.6	11.6
559	20.56	3	1,2,3,7,8-PeCDF	0.906	B	0.273	1.215953307	1.092	LT	1.2		LT	1.092		<5x*B	0.05	0.906	0.453	0.906	0.2265	0.0453	0.011325
559	20.56	4	2,3,4,7,8-PeCDF	1.3	--	0.199	1.215953307	0.796	1.3			1.3				0.5	1.3	1.3	1.3	1.3	0.65	0.65
559	20.56	5	1,2,3,7,8-PeCDD		E	0.607	1.215953307	2.428	LT	1.2		LT	2.428	>ML	<5x*B	1	0.3035	0	0.3035		0.3035	
559	20.56	6	1,2,3,4,7,8-HxCDF	1.98	--	0.242	1.215953307	0.968	1.98			1.98				0.1	1.98	1.98	1.98	1.98	0.198	0.198

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
559	20.56	7	1,2,3,6,7,8-HxCDF	3.37	--	0.205	1.215953307	0.82	3.37			3.37				0.1	3.37	3.37	3.37	3.37	0.337	0.337
559	20.56	8	2,3,4,6,7,8-HxCDF	3.88	--	0.259	1.215953307	1.036	3.88			3.88				0.1	3.88	3.88	3.88	3.88	0.388	0.388
559	20.56	9	1,2,3,7,8,9-HxCDF	0.712	--	0.278	1.215953307	1.112	LT	1.2		LT	1.112			0.1	0.712	0.356	0.712	0.356	0.0712	0.0356
559	20.56	10	1,2,3,4,7,8-HxCDD		E	0.598	1.215953307	2.392	LT	1.2		LT	2.392	>ML		0.1	0.299	0	0.299		0.0299	
559	20.56	11	1,2,3,6,7,8-HxCDD	3.16	--	0.0521	1.215953307	0.2084	3.16			3.16				0.1	3.16	3.16	3.16	3.16	0.316	0.316
559	20.56	12	1,2,3,7,8,9-HxCDD	1.27	--	0.0515	1.215953307	0.206	1.27			1.27				0.1	1.27	1.27	1.27	1.27	0.127	0.127
559	20.56	13	1,2,3,4,6,7,8-HpCDF	180	--	0.104	1.215953307	0.416	180			180				0.01	180	180	180	180	1.8	1.8
559	20.56	14	1,2,3,4,7,8,9-HpCDF	1.3	--	0.166	1.215953307	0.664	1.3			1.3				0.01	1.3	1.3	1.3	1.3	0.013	0.013
559	20.56	15	1,2,3,4,6,7,8-HpCDD	80.3	--	0.119	1.215953307	0.476	80.3			80.3				0.01	80.3	80.3	80.3	80.3	0.803	0.803
559	20.56	16	OCDF	113	--	0.0823	2.431906615	0.3292	113			113				0.0001	113	113	113	113	0.0113	0.0113
559	20.56	17	OCDD	504	--	0.0935	2.431906615	0.374	504			504				0.0001	504	504	504	504	0.0504	0.0504
574	20.24	1	2,3,7,8-TCDF	0.146	NJ	0.0384	0.247035573	0.1536	LT	0.2		LT	0.1536			0.1	0.146	0.073	0.073		0.0073	
574	20.24	2	2,3,7,8-TCDD		--	0.0215	0.247035573	0.086	LT	0.2		LT	0.086			1	0.01075	0	0.0108		0.01075	
574	20.24	3	1,2,3,7,8-PeCDF	0.349	--	0.0483	1.235177866	0.1932	LT	1.2		0.349				0.05	0.349	0.349	0.349	0.349	0.01745	0.01745
574	20.24	4	2,3,4,7,8-PeCDF	0.384	--	0.0433	1.235177866	0.1732	LT	1.2		0.384				0.5	0.384	0.384	0.384	0.384	0.192	0.192
574	20.24	5	1,2,3,7,8-PeCDD	1.09	--	0.0173	1.235177866	0.0692	LT	1.2		1.09				1	1.09	1.09	1.09	1.09	1.09	1.09
574	20.24	6	1,2,3,4,7,8-HxCDF	2.6	--	0.0742	1.235177866	0.2968	2.6			2.6				0.1	2.6	2.6	2.6	2.6	0.26	0.26
574	20.24	7	1,2,3,6,7,8-HxCDF	1.8	--	0.0657	1.235177866	0.2628	1.8			1.8				0.1	1.8	1.8	1.8	1.8	0.18	0.18
574	20.24	8	2,3,4,6,7,8-HxCDF		D	10.9	1.235177866	43.6	LT	10.9	>ML	LT	43.6	>ML	<5x*B	0.1	5.45	0	2.725		0.2725	
574	20.24	9	1,2,3,7,8,9-HxCDF	0.552	B	0.107	1.235177866	0.428	LT	1.2		0.552			<5x*B	0.1	0.552	0.552	0.552	0.276	0.0552	0.0276
574	20.24	10	1,2,3,4,7,8-HxCDD	2.42	--	0.0622	1.235177866	0.2488	2.42			2.42				0.1	2.42	2.42	2.42	2.42	0.242	0.242
574	20.24	11	1,2,3,6,7,8-HxCDD	6.1	--	0.0562	1.235177866	0.2248	6.1			6.1				0.1	6.1	6.1	6.1	6.1	0.61	0.61
574	20.24	12	1,2,3,7,8,9-HxCDD	5.41	--	0.0594	1.235177866	0.2376	5.41			5.41				0.1	5.41	5.41	5.41	5.41	0.541	0.541
574	20.24	13	1,2,3,4,6,7,8-HpCDF	144	--	0.0928	1.235177866	0.3712	144			144				0.01	144	144	144	144	1.44	1.44
574	20.24	14	1,2,3,4,7,8,9-HpCDF	6.67	--	0.179	1.235177866	0.716	6.67			6.67				0.01	6.67	6.67	6.67	6.67	0.0667	0.0667
574	20.24	15	1,2,3,4,6,7,8-HpCDD	156	--	0.0808	1.235177866	0.3232	156			156				0.01	156	156	156	156	1.56	1.56
574	20.24	16	OCDF	515	J	0.0737	2.470355731	0.2948	515			515				0.0001	515	515	515	257.5	0.0515	0.02575
574	20.24	17	OCDD	1180	--	0.0804	2.470355731	0.3216	1180			1180				0.0001	1180	1180	1180	1180	0.118	0.118
583	20.8701	1	2,3,7,8-TCDF		E	0.175	0.239577194	0.7	LT	0.2		LT	0.7	>ML		0.1	0.0875	0	0.0875		0.00875	
583	20.8701	2	2,3,7,8-TCDD		--	0.0245	0.239577194	0.098	LT	0.2		LT	0.098			1	0.01225	0	0.0123		0.01225	
583	20.8701	3	1,2,3,7,8-PeCDF	0.309	--	0.0366	1.197885971	0.1464	LT	1.2		0.309				0.05	0.309	0.309	0.309	0.309	0.01545	0.01545
583	20.8701	4	2,3,4,7,8-PeCDF	0.357	--	0.0316	1.197885971	0.1264	LT	1.2		0.357				0.5	0.357	0.357	0.357	0.357	0.1785	0.1785
583	20.8701	5	1,2,3,7,8-PeCDD	0.555	--	0.0254	1.197885971	0.1016	LT	1.2		0.555				1	0.555	0.555	0.555	0.555	0.555	0.555
583	20.8701	6	1,2,3,4,7,8-HxCDF	0.515	--	0.0916	1.197885971	0.3664	LT	1.2		0.515				0.1	0.515	0.515	0.515	0.515	0.0515	0.0515
583	20.8701	7	1,2,3,6,7,8-HxCDF	0.766	B	0.131	1.197885971	0.524	LT	1.2		0.766			<5x*B	0.1	0.766	0.766	0.766	0.383	0.0766	0.0383
583	20.8701	8	2,3,4,6,7,8-HxCDF	0.666	--	0.059	1.197885971	0.236	LT	1.2		0.666				0.1	0.666	0.666	0.666	0.666	0.0666	0.0666
583	20.8701	9	1,2,3,7,8,9-HxCDF	0.54	B	0.0971	1.197885971	0.3884	LT	1.2		0.54			<5x*B	0.1	0.54	0.54	0.54	0.27	0.054	0.027
583	20.8701	10	1,2,3,4,7,8-HxCDD	0.727	--	0.0303	1.197885971	0.1212	LT	1.2		0.727				0.1	0.727	0.727	0.727	0.727	0.0727	0.0727
583	20.8701	11	1,2,3,6,7,8-HxCDD	1.63	I	0.0279	1.197885971	0.1116	1.63			1.63				0.1	1.63	1.63	1.63	1.63	0.163	0.163
583	20.8701	12	1,2,3,7,8,9-HxCDD	0.681	JI	0.0315	1.197885971	0.126	LT	1.2		0.681				0.1	0.681	0.681	0.681	0.3405	0.0681	0.03405
583	20.8701	13	1,2,3,4,6,7,8-HpCDF	5.67	--	0.048	1.197885971	0.192	5.67			5.67				0.01	5.67	5.67	5.67	5.67	0.0567	0.0567
583	20.8701	14	1,2,3,4,7,8,9-HpCDF	0.524	--	0.128	1.197885971	0.512	LT	1.2		0.524				0.01	0.524	0.524	0.524	0.524	0.00524	0.00524
583	20.8701	15	1,2,3,4,6,7,8-HpCDD	38	--	0.112	1.197885971	0.448	38			38				0.01	38	38	38	38	0.38	0.38
583	20.8701	16	OCDF	11.8	B	0.0757	2.395771942	0.3028	11.8			11.8			<5x*B	0.0001	11.8	11.8	11.8	5.9	0.00118	0.00059
583	20.8701	17	OCDD	312	--	0.122	2.395771942	0.488	312			312				0.0001	312	312	312	312	0.0312	0.0312
599	20.38	1	2,3,7,8-TCDF		--	0.2	0.245338567	0.8	LT	0.2		LT	0.8	>ML		0.1	0.1	0	0.1		0.01	
599	20.38	2	2,3,7,8-TCDD		--	0.037	0.245338567	0.148	LT	0.2		LT	0.148			1	0.0185	0	0.0185		0.0185	
599	20.38	3	1,2,3,7,8-PeCDF		E	0.373	1.226692836	1.492	LT	1.2		LT	1.492	>ML		0.05	0.1865	0	0.1865		0.009325	
599	20.38	4	2,3,4,7,8-PeCDF	0.333	--	0.0629	1.226692836	0.2516	LT	1.2		0.333				0.5	0.333	0.333	0.333	0.333	0.1665	0.1665
599	20.38	5	1,2,3,7,8-PeCDD	0.638	--	0.0712	1.226692836	0.2848	LT	1.2		0.638				1	0.638	0.638	0.638	0.638	0.638	0.638
599	20.38	6	1,2,3,4,7,8-HxCDF		E	0.445	1.226692836	1.78	LT	1.2		LT	1.78	>ML		0.1	0.2225	0	0.2225		0.02225	
599	20.38	7	1,2,3,6,7,8-HxCDF		D	1	1.226692836	4	LT	1.2		LT	4	>ML		0.1	0.5	0	0.25		0.025	
599	20.38	8	2,3,4,6,7,8-HxCDF	0.557	--	0.144	1.226692836	0.576	LT	1.2		LT	0.576			0.1	0.557	0.2785	0.557	0.2785	0.0557	0.02785
599	20.38	9	1,2,3,7,8,9-HxCDF		E	0.619	1.226692836	2.476	LT	1.2		LT	2.476	>ML		0.1	0.3095	0	0.3095		0.03095	
599	20.38	10	1,2,3,4,7,8-HxCDD		E	0.485	1.226692836	1.94	LT	1.2		LT	1.94	>ML		0.1	0.2425	0	0.2425		0.02425	
599	20.38	11	1,2,3,6,7,8-HxCDD	1.02	--	0.0758	1.226692836	0.3032	LT	1.2		1.02				0.1	1.02	1.02	1.02	1.02	0.102	0.102
599	20.38	12	1,2,3,7,8,9-HxCDD	0.849	J	0.0753	1.226692836	0.3012	LT	1.2		0.849				0.1	0.849	0.849	0.849	0.4245	0.0849	0.04245
599	20.38	13	1,2,3,4,6,7,8-HpCDF		D	6.96	1.226692836	27.84	LT	6.96	>ML	LT	27.84	>ML		0.01	3.48	0	1.74		0.0174	
599	20.38	14	1,2,3,4,7,8,9-HpCDF		I	0.547	1.226692836	2.188	LT	1.2		LT	2.188	>ML		0.01	0.2735	0	0.2735		0.002735	

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
599	20.38	15	1,2,3,4,6,7,8-HpCDD	20.1	--	0.303	1.226692836	1.212	20.1			20.1				0.01	20.1	20.1	20.1	20.1	0.201	0.201
599	20.38	16	OCDF	6.79	IJ	0.357	2.453385672	1.428	6.79			6.79				0.0001	6.79	6.79	6.79	3.395	0.000679	0.0003395
599	20.38	17	OCDD	154	I	0.194	2.453385672	0.776	154			154				0.0001	154	154	154	154	0.0154	0.0154
600	20.69	1	2,3,7,8-TCDF	0.164	NJ	0.0399	0.241662639	0.1596	LT	0.2		0.164				0.1	0.164	0.164	0.082		0.0082	
600	20.69	2	2,3,7,8-TCDD		--	0.00244	0.241662639	0.00976	LT	0.2		LT	0.00976			1	0.00122	0	0.0012		0.00122	
600	20.69	3	1,2,3,7,8-PeCDF	0.198	--	0.0109	1.208313195	0.0436	LT	1.2		0.198				0.05	0.198	0.198	0.198	0.198	0.0099	0.0099
600	20.69	4	2,3,4,7,8-PeCDF	0.28	--	0.00936	1.208313195	0.03744	LT	1.2		0.28				0.5	0.28	0.28	0.28	0.28	0.14	0.14
600	20.69	5	1,2,3,7,8-PeCDD		E	0.439	1.208313195	1.756	LT	1.2		LT	1.756	>ML		1	0.2195	0	0.2195		0.2195	
600	20.69	6	1,2,3,4,7,8-HxCDF		E	0.393	1.208313195	1.572	LT	1.2		LT	1.572	>ML	<5x*B	0.1	0.1965	0	0.1965		0.01965	
600	20.69	7	1,2,3,6,7,8-HxCDF		E	0.407	1.208313195	1.628	LT	1.2		LT	1.628	>ML		0.1	0.2035	0	0.2035		0.02035	
600	20.69	8	2,3,4,6,7,8-HxCDF		--	0.0347	1.208313195	0.1388	LT	1.2		LT	0.1388			0.1	0.01735	0	0.0174		0.001735	
600	20.69	9	1,2,3,7,8,9-HxCDF		E	0.301	1.208313195	1.204	LT	1.2		LT	1.204			0.1	0.1505	0	0.1505		0.01505	
600	20.69	10	1,2,3,4,7,8-HxCDD		E	0.625	1.208313195	2.5	LT	1.2		LT	2.5	>ML		0.1	0.3125	0	0.3125		0.03125	
600	20.69	11	1,2,3,6,7,8-HxCDD	1.53	--	0.0103	1.208313195	0.0412	1.53			1.53				0.1	1.53	1.53	1.53	1.53	0.153	0.153
600	20.69	12	1,2,3,7,8,9-HxCDD	1.13	J	0.0108	1.208313195	0.0432	LT	1.2		1.13				0.1	1.13	1.13	1.13	0.565	0.113	0.0565
600	20.69	13	1,2,3,4,6,7,8-HpCDF	7.07	--	0.0775	1.208313195	0.31	7.07			7.07				0.01	7.07	7.07	7.07	7.07	0.0707	0.0707
600	20.69	14	1,2,3,4,7,8,9-HpCDF	0.529	--	0.111	1.208313195	0.444	LT	1.2		0.529				0.01	0.529	0.529	0.529	0.529	0.00529	0.00529
600	20.69	15	1,2,3,4,6,7,8-HpCDD	31.6	--	0.0156	1.208313195	0.0624	31.6			31.6				0.01	31.6	31.6	31.6	31.6	0.316	0.316
600	20.69	16	OCDF	17.4	J	0.0284	2.41662639	0.1136	17.4			17.4				0.0001	17.4	17.4	17.4	8.7	0.00174	0.00087
600	20.69	17	OCDD	215	--	0.0246	2.41662639	0.0984	215			215				0.0001	215	215	215	215	0.0215	0.0215
624	20.78	1	2,3,7,8-TCDF	0.361	NJ	0.0207	0.240615977	0.0828	0.361			0.361				0.1	0.361	0.361	0.1805		0.01805	
624	20.78	2	2,3,7,8-TCDD		--	0.00859	0.240615977	0.03436	LT	0.2		LT	0.03436			1	0.0043	0	0.0043		0.004295	
624	20.78	3	1,2,3,7,8-PeCDF		E	0.448	1.203079885	1.792	LT	1.2		LT	1.792	>ML		0.05	0.224	0	0.224		0.0112	
624	20.78	4	2,3,4,7,8-PeCDF	0.741	--	0.0294	1.203079885	0.1176	LT	1.2		0.741				0.5	0.741	0.741	0.741	0.741	0.3705	0.3705
624	20.78	5	1,2,3,7,8-PeCDD	0.652	--	0.0157	1.203079885	0.0628	LT	1.2		0.652				1	0.652	0.652	0.652	0.652	0.652	0.652
624	20.78	6	1,2,3,4,7,8-HxCDF	0.66	B	0.0436	1.203079885	0.1744	LT	1.2		0.66			<5x*B	0.1	0.66	0.66	0.66	0.33	0.066	0.033
624	20.78	7	1,2,3,6,7,8-HxCDF	0.525	--	0.0375	1.203079885	0.15	LT	1.2		0.525				0.1	0.525	0.525	0.525	0.525	0.0525	0.0525
624	20.78	8	2,3,4,6,7,8-HxCDF		D	1.15	1.203079885	4.6	LT	1.2		LT	4.6	>ML	<5x*B	0.1	0.575	0	0.2875		0.02875	
624	20.78	9	1,2,3,7,8,9-HxCDF		E	0.429	1.203079885	1.716	LT	1.2		LT	1.716	>ML	<5x*B	0.1	0.2145	0	0.2145		0.02145	
624	20.78	10	1,2,3,4,7,8-HxCDD		E	0.93	1.203079885	3.72	LT	1.2		LT	3.72	>ML		0.1	0.465	0	0.465		0.0465	
624	20.78	11	1,2,3,6,7,8-HxCDD	1.18	--	0.0267	1.203079885	0.1068	LT	1.2		1.18				0.1	1.18	1.18	1.18	1.18	0.118	0.118
624	20.78	12	1,2,3,7,8,9-HxCDD	1.24	--	0.0272	1.203079885	0.1088	1.24			1.24				0.1	1.24	1.24	1.24	1.24	0.124	0.124
624	20.78	13	1,2,3,4,6,7,8-HpCDF		D	5.24	1.203079885	20.96	LT	5.24	>ML	LT	20.96	>ML		0.01	2.62	0	1.31		0.0131	
624	20.78	14	1,2,3,4,7,8,9-HpCDF	0.721	--	0.0821	1.203079885	0.3284	LT	1.2		0.721				0.01	0.721	0.721	0.721	0.721	0.00721	0.00721
624	20.78	15	1,2,3,4,6,7,8-HpCDD	22.8	--	0.0386	1.203079885	0.1544	22.8			22.8				0.01	22.8	22.8	22.8	22.8	0.228	0.228
624	20.78	16	OCDF	7.84	J	0.0241	2.406159769	0.0964	7.84			7.84				0.0001	7.84	7.84	7.84	3.92	0.000784	0.000392
624	20.78	17	OCDD	171	--	0.0323	2.406159769	0.1292	171			171				0.0001	171	171	171	171	0.0171	0.0171
629	20.4	1	2,3,7,8-TCDF		--	0.0846	0.245098039	0.3384	LT	0.2		LT	0.3384	>ML		0.1	0.0423	0	0.0423		0.00423	
629	20.4	2	2,3,7,8-TCDD		--	0.0193	0.245098039	0.0772	LT	0.2		LT	0.0772			1	0.00965	0	0.0097		0.00965	
629	20.4	3	1,2,3,7,8-PeCDF		--	0.106	1.225490196	0.424	LT	1.2		LT	0.424			0.05	0.053	0	0.053		0.00265	
629	20.4	4	2,3,4,7,8-PeCDF		--	0.0733	1.225490196	0.2932	LT	1.2		LT	0.2932			0.5	0.03665	0	0.0367		0.018325	
629	20.4	5	1,2,3,7,8-PeCDD	0.279	--	0.124	1.225490196	0.496	LT	1.2		LT	0.496			1	0.279	0.1395	0.279	0.1395	0.279	0.1395
629	20.4	6	1,2,3,4,7,8-HxCDF		EI	0.237	1.225490196	0.948	LT	1.2		LT	0.948			0.1	0.1185	0	0.1185		0.01185	
629	20.4	7	1,2,3,6,7,8-HxCDF		I	0.0873	1.225490196	0.3492	LT	1.2		LT	0.3492		<5x*B	0.1	0.04365	0	0.0437		0.004365	
629	20.4	8	2,3,4,6,7,8-HxCDF		E	0.269	1.225490196	1.076	LT	1.2		LT	1.076			0.1	0.1345	0	0.1345		0.01345	
629	20.4	9	1,2,3,7,8,9-HxCDF		E	0.372	1.225490196	1.488	LT	1.2		LT	1.488	>ML	<5x*B	0.1	0.186	0	0.186		0.0186	
629	20.4	10	1,2,3,4,7,8-HxCDD	0.317	--	0.0629	1.225490196	0.2516	LT	1.2		0.317				0.1	0.317	0.317	0.317	0.317	0.0317	0.0317
629	20.4	11	1,2,3,6,7,8-HxCDD	0.419	I	0.0501	1.225490196	0.2004	LT	1.2		0.419				0.1	0.419	0.419	0.419	0.419	0.0419	0.0419
629	20.4	12	1,2,3,7,8,9-HxCDD		I	0.0572	1.225490196	0.2288	LT	1.2		LT	0.2288			0.1	0.0286	0	0.0286		0.00286	
629	20.4	13	1,2,3,4,6,7,8-HpCDF	1.52	--	0.11	1.225490196	0.44	1.52			1.52				0.01	1.52	1.52	1.52	1.52	0.0152	0.0152
629	20.4	14	1,2,3,4,7,8,9-HpCDF		--	0.21	1.225490196	0.84	LT	1.2		LT	0.84			0.01	0.105	0	0.105		0.00105	
629	20.4	15	1,2,3,4,6,7,8-HpCDD	6.56	--	0.133	1.225490196	0.532	6.56			6.56				0.01	6.56	6.56	6.56	6.56	0.0656	0.0656
629	20.4	16	OCDF		E	3.64	2.450980392	14.56	LT	3.64	>ML	LT	14.56	>ML	<5x*B	0.0001	1.82	0	1.82		0.000182	
629	20.4	17	OCDD	40.6	--	0.365	2.450980392	1.46	40.6			40.6				0.0001	40.6	40.6	40.6	40.6	0.00406	0.00406
640	20.98	1	2,3,7,8-TCDF	0.476	NJ	0.0658	0.238322212	0.2632	0.476			0.476				0.1	0.476	0.476	0.238		0.0238	
640	20.98	2	2,3,7,8-TCDD		E	0.75	0.238322212	3	LT	0.75	>ML	LT	3	>ML		1	0.375	0	0.375		0.375	
640	20.98	3	1,2,3,7,8-PeCDF		E	0.509	1.191611058	2.036	LT	1.2		LT	2.036	>ML		0.05	0.2545	0	0.2545		0.012725	
640	20.98	4	2,3,4,7,8-PeCDF	1.94	--	0.0365	1.191611058	0.146	1.94			1.94				0.5	1.94	1.94	1.94	1.94	0.97	0.97
640	20.98	5	1,2,3,7,8-PeCDD	3.56	--	0.0512	1.191611058	0.2048	3.56			3.56				1	3.56	3.56	3.56	3.56	3.56	3.56

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
640	20.98	6	1,2,3,4,7,8-HxCDF	4.59	--	0.185	1.191611058	0.74	4.59			4.59				0.1	4.59	4.59	4.59	4.59	0.459	0.459
640	20.98	7	1,2,3,6,7,8-HxCDF	1.97	--	0.162	1.191611058	0.648	1.97			1.97				0.1	1.97	1.97	1.97	1.97	0.197	0.197
640	20.98	8	2,3,4,6,7,8-HxCDF	4.6	--	0.217	1.191611058	0.868	4.6			4.6				0.1	4.6	4.6	4.6	4.6	0.46	0.46
640	20.98	9	1,2,3,7,8,9-HxCDF	0.842	B	0.275	1.191611058	1.1	LT	1.2		LT	1.1		<5x*B	0.1	0.842	0.421	0.842	0.2105	0.0842	0.02105
640	20.98	10	1,2,3,4,7,8-HxCDD	11	--	0.127	1.191611058	0.508	11			11				0.1	11	11	11	11	1.1	1.1
640	20.98	11	1,2,3,6,7,8-HxCDD	22.5	--	0.117	1.191611058	0.468	22.5			22.5				0.1	22.5	22.5	22.5	22.5	2.25	2.25
640	20.98	12	1,2,3,7,8,9-HxCDD	13.1	J	0.126	1.191611058	0.504	13.1			13.1				0.1	13.1	13.1	13.1	6.55	1.31	0.655
640	20.98	13	1,2,3,4,6,7,8-HpCDF		D	167	1.191611058	668	LT	167	>ML	LT	668	>ML	<5x*B	0.01	83.5	0	41.75		0.4175	
640	20.98	14	1,2,3,4,7,8,9-HpCDF	8.05	--	0.2	1.191611058	0.8	8.05			8.05				0.01	8.05	8.05	8.05	8.05	0.0805	0.0805
640	20.98	15	1,2,3,4,6,7,8-HpCDD	1830	CJ	0.0606	1.191611058	0.2424	1830			1830				0.01	1830	1830	1830	915	18.3	9.15
640	20.98	16	OCDF	666	J	0.122	2.383222116	0.488	666			666				0.0001	666	666	666	333	0.0666	0.0333
640	20.98	17	OCDD	5880	SJ	0.121	2.383222116	0.484	5880			5880				0.0001	5880	5880	5880	2940	0.588	0.294
648	19.99	1	2,3,7,8-TCDF		E	0.2	0.250125063	0.8	LT	0.3		LT	0.8	>ML		0.1	0.1	0	0.1		0.01	
648	19.99	2	2,3,7,8-TCDD	0.176	--	0.0454	0.250125063	0.1816	LT	0.3		LT	0.1816			1	0.176	0.088	0.176	0.088	0.176	0.088
648	19.99	3	1,2,3,7,8-PeCDF	0.296	--	0.147	1.250625313	0.588	LT	1.3		LT	0.588			0.05	0.296	0.148	0.296	0.148	0.0148	0.0074
648	19.99	4	2,3,4,7,8-PeCDF	0.426	--	0.124	1.250625313	0.496	LT	1.3		LT	0.496			0.5	0.426	0.213	0.426	0.213	0.213	0.1065
648	19.99	5	1,2,3,7,8-PeCDD	0.54	--	0.121	1.250625313	0.484	LT	1.3		0.54				1	0.54	0.54	0.54	0.54	0.54	0.54
648	19.99	6	1,2,3,4,7,8-HxCDF	0.895	--	0.0898	1.250625313	0.3592	LT	1.3		0.895				0.1	0.895	0.895	0.895	0.895	0.0895	0.0895
648	19.99	7	1,2,3,6,7,8-HxCDF		D	1.48	1.250625313	5.92	LT	1.48	>ML	LT	5.92	>ML		0.1	0.74	0	0.37		0.037	
648	19.99	8	2,3,4,6,7,8-HxCDF	0.814	--	0.101	1.250625313	0.404	LT	1.3		0.814				0.1	0.814	0.814	0.814	0.814	0.0814	0.0814
648	19.99	9	1,2,3,7,8,9-HxCDF	0.473	B	0.11	1.250625313	0.44	LT	1.3		0.473			<5x*B	0.1	0.473	0.473	0.473	0.2365	0.0473	0.02365
648	19.99	10	1,2,3,4,7,8-HxCDD	0.689	--	0.0818	1.250625313	0.3272	LT	1.3		0.689				0.1	0.689	0.689	0.689	0.689	0.0689	0.0689
648	19.99	11	1,2,3,6,7,8-HxCDD	1.55	--	0.0709	1.250625313	0.2836	1.55			1.55				0.1	1.55	1.55	1.55	1.55	0.155	0.155
648	19.99	12	1,2,3,7,8,9-HxCDD	1.1	--	0.0676	1.250625313	0.2704	LT	1.3		1.1				0.1	1.1	1.1	1.1	1.1	0.11	0.11
648	19.99	13	1,2,3,4,6,7,8-HpCDF	11	J	3.13	1.250625313	12.52	11			LT	12.52	>ML		0.01	11	5.5	11	2.75	0.11	0.0275
648	19.99	14	1,2,3,4,7,8,9-HpCDF		--	4.84	1.250625313	19.36	LT	4.84	>ML	LT	19.36	>ML		0.01	2.42	0	2.42		0.0242	
648	19.99	15	1,2,3,4,6,7,8-HpCDD	40.5	--	0.103	1.250625313	0.412	40.5			40.5				0.01	40.5	40.5	40.5	40.5	0.405	0.405
648	19.99	16	OCDF	16.2	--	0.081	2.501250625	0.324	16.2			16.2				0.0001	16.2	16.2	16.2	16.2	0.00162	0.00162
648	19.99	17	OCDD	305	--	0.0829	2.501250625	0.3316	305			305				0.0001	305	305	305	305	0.0305	0.0305
680	19.99	1	2,3,7,8-TCDF	0.529	NJ	0.0669	0.250125063	0.2676	0.529			0.529				0.1	0.529	0.529	0.2645		0.02645	
680	19.99	2	2,3,7,8-TCDD		E	0.126	0.250125063	0.504	LT	0.3		LT	0.504	>ML		1	0.063	0	0.063		0.063	
680	19.99	3	1,2,3,7,8-PeCDF	0.589	--	0.0861	1.250625313	0.3444	LT	1.3		0.589				0.05	0.589	0.589	0.589	0.589	0.02945	0.02945
680	19.99	4	2,3,4,7,8-PeCDF	0.655	--	0.0634	1.250625313	0.2536	LT	1.3		0.655				0.5	0.655	0.655	0.655	0.655	0.3275	0.3275
680	19.99	5	1,2,3,7,8-PeCDD	0.923	--	0.0944	1.250625313	0.3776	LT	1.3		0.923				1	0.923	0.923	0.923	0.923	0.923	0.923
680	19.99	6	1,2,3,4,7,8-HxCDF	0.955	--	0.0913	1.250625313	0.3652	LT	1.3		0.955				0.1	0.955	0.955	0.955	0.955	0.0955	0.0955
680	19.99	7	1,2,3,6,7,8-HxCDF	0.781	--	0.0802	1.250625313	0.3208	LT	1.3		0.781				0.1	0.781	0.781	0.781	0.781	0.0781	0.0781
680	19.99	8	2,3,4,6,7,8-HxCDF		D	2.9	1.250625313	11.6	LT	2.9	>ML	LT	11.6	>ML		0.1	1.45	0	0.725		0.0725	
680	19.99	9	1,2,3,7,8,9-HxCDF	0.618	--	0.1194	1.250625313	0.4776	LT	1.3		0.618				0.1	0.618	0.618	0.618	0.618	0.0618	0.0618
680	19.99	10	1,2,3,4,7,8-HxCDD	1.22	--	0.0868	1.250625313	0.3472	LT	1.3		1.22				0.1	1.22	1.22	1.22	1.22	0.122	0.122
680	19.99	11	1,2,3,6,7,8-HxCDD	3.02	--	0.0801	1.250625313	0.3204	3.02			3.02				0.1	3.02	3.02	3.02	3.02	0.302	0.302
680	19.99	12	1,2,3,7,8,9-HxCDD	1.5	J	0.073	1.250625313	0.292	1.5			1.5				0.1	1.5	1.5	1.5	0.75	0.15	0.075
680	19.99	13	1,2,3,4,6,7,8-HpCDF	10.8	--	0.172	1.250625313	0.688	10.8			10.8				0.01	10.8	10.8	10.8	10.8	0.108	0.108
680	19.99	14	1,2,3,4,7,8,9-HpCDF	0.885	--	0.331	1.250625313	1.324	LT	1.3		LT	1.324	>ML		0.01	0.885	0.4425	0.885	0.4425	0.00885	0.004425
680	19.99	15	1,2,3,4,6,7,8-HpCDD	63.6	--	0.104	1.250625313	0.416	63.6			63.6				0.01	63.6	63.6	63.6	63.6	0.636	0.636
680	19.99	16	OCDF	27.7	J	0.118	2.501250625	0.472	27.7			27.7				0.0001	27.7	27.7	27.7	13.85	0.00277	0.001385
680	19.99	17	OCDD	468	--	0.154	2.501250625	0.616	468			468				0.0001	468	468	468	468	0.0468	0.0468
687	15.29	1	2,3,7,8-TCDF		--	0.0181	0.327011118	0.0724	LT	0.3		LT	0.0724			0.1	0.00905	0	0.0091		0.000905	
687	15.29	2	2,3,7,8-TCDD		--	0.0141	0.327011118	0.0564	LT	0.3		LT	0.0564			1	0.00705	0	0.0071		0.00705	
687	15.29	3	1,2,3,7,8-PeCDF	0.103	--	0.0288	1.635055592	0.1152	LT	1.6		LT	0.1152			0.05	0.103	0.0515	0.103	0.0515	0.00515	0.002575
687	15.29	4	2,3,4,7,8-PeCDF		E	0.053	1.635055592	0.212	LT	1.6		LT	0.212			0.5	0.0265	0	0.0265		0.01325	
687	15.29	5	1,2,3,7,8-PeCDD		E	0.184	1.635055592	0.736	LT	1.6		LT	0.736			1	0.092	0	0.092		0.092	
687	15.29	6	1,2,3,4,7,8-HxCDF		E	0.0748	1.635055592	0.2992	LT	1.6		LT	0.2992		<5x*B	0.1	0.0374	0	0.0374		0.00374	
687	15.29	7	1,2,3,6,7,8-HxCDF		E	0.168	1.635055592	0.672	LT	1.6		LT	0.672			0.1	0.084	0	0.084		0.0084	
687	15.29	8	2,3,4,6,7,8-HxCDF		--	0.0215	1.635055592	0.086	LT	1.6		LT	0.086		<5x*B	0.1	0.01075	0	0.0108		0.001075	
687	15.29	9	1,2,3,7,8,9-HxCDF	0.365	B	0.0249	1.635055592	0.0996	LT	1.6		0.365			<5x*B	0.1	0.365	0.365	0.365	0.1825	0.0365	0.01825
687	15.29	10	1,2,3,4,7,8-HxCDD	0.14	--	0.0104	1.635055592	0.0416	LT	1.6		0.14				0.1	0.14	0.14	0.14	0.14	0.014	0.014
687	15.29	11	1,2,3,6,7,8-HxCDD		E	0.142	1.635055592	0.568	LT	1.6		LT	0.568			0.1	0.071	0	0.071		0.0071	
687	15.29	12	1,2,3,7,8,9-HxCDD		E	0.148	1.635055592	0.592	LT	1.6		LT	0.592			0.1	0.074	0	0.074		0.0074	
687	15.29	13	1,2,3,4,6,7,8-HpCDF		D	0.333	1.635055592	1.332	LT	1.6		LT	1.332			0.01	0.1665	0	0.0833		0.0008325	

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
687	15.29	14	1,2,3,4,7,8,9-HpCDF		--	0.0104	1.635055592	0.0416	LT	1.6		LT	0.0416			0.01	0.0052	0	0.0052		0.000052	
687	15.29	15	1,2,3,4,6,7,8-HpCDD	1.41	B	0.0068	1.635055592	0.0272	LT	1.6		1.41			<5x*B	0.01	1.41	1.41	1.41	0.705	0.0141	0.00705
687	15.29	16	OCDF	0.623	BJ	0.0273	3.270111184	0.1092	LT	3.3		0.623			<5x*B	0.0001	0.623	0.623	0.623	0.3115	0.0000623	0.00003115
687	15.29	17	OCDD	17.1	B	0.0288	3.270111184	0.1152	17.1			17.1			<5x*B	0.0001	17.1	17.1	17.1	8.55	0.00171	0.000855
697	20.85	1	2,3,7,8-TCDF		--	0.0424	0.239808153	0.1696	LT	0.2		LT	0.1696			0.1	0.0212	0	0.0212		0.00212	
697	20.85	2	2,3,7,8-TCDD		E	0.277	0.239808153	1.108	LT	0.277	>ML	LT	1.108	>ML		1	0.1385	0	0.1385		0.1385	
697	20.85	3	1,2,3,7,8-PeCDF	0.144	--	0.0196	1.199040767	0.0784	LT	1.2		0.144				0.05	0.144	0.144	0.144	0.144	0.0072	0.0072
697	20.85	4	2,3,4,7,8-PeCDF		E	0.215	1.199040767	0.86	LT	1.2		LT	0.86			0.5	0.1075	0	0.1075		0.05375	
697	20.85	5	1,2,3,7,8-PeCDD	0.477	--	0.041	1.199040767	0.164	LT	1.2		0.477				1	0.477	0.477	0.477	0.477	0.477	0.477
697	20.85	6	1,2,3,4,7,8-HxCDF	0.24	--	0.0502	1.199040767	0.2008	LT	1.2		0.24				0.1	0.24	0.24	0.24	0.24	0.024	0.024
697	20.85	7	1,2,3,6,7,8-HxCDF		E	0.23	1.199040767	0.92	LT	1.2		LT	0.92			0.1	0.115	0	0.115		0.0115	
697	20.85	8	2,3,4,6,7,8-HxCDF	0.323	--	0.0574	1.199040767	0.2296	LT	1.2		0.323				0.1	0.323	0.323	0.323	0.323	0.0323	0.0323
697	20.85	9	1,2,3,7,8,9-HxCDF	0.365	B	0.0576	1.199040767	0.2304	LT	1.2		0.365			<5x*B	0.1	0.365	0.365	0.365	0.1825	0.0365	0.01825
697	20.85	10	1,2,3,4,7,8-HxCDD	0.488	B	0.0727	1.199040767	0.2908	LT	1.2		0.488			<5x*B	0.1	0.488	0.488	0.488	0.244	0.0488	0.0244
697	20.85	11	1,2,3,6,7,8-HxCDD	0.581	--	0.0652	1.199040767	0.2608	LT	1.2		0.581				0.1	0.581	0.581	0.581	0.581	0.0581	0.0581
697	20.85	12	1,2,3,7,8,9-HxCDD	0.62	J	0.0709	1.199040767	0.2836	LT	1.2		0.62				0.1	0.62	0.62	0.62	0.31	0.062	0.031
697	20.85	13	1,2,3,4,6,7,8-HpCDF		D	2.85	1.199040767	11.4	LT	2.85	>ML	LT	11.4	>ML	<5x*B	0.01	1.425	0	0.7125		0.007125	
697	20.85	14	1,2,3,4,7,8,9-HpCDF	0.21	--	0.0847	1.199040767	0.3388	LT	1.2		LT	0.3388			0.01	0.21	0.105	0.21	0.105	0.0021	0.00105
697	20.85	15	1,2,3,4,6,7,8-HpCDD	13.1	--	0.0648	1.199040767	0.2592	13.1			13.1				0.01	13.1	13.1	13.1	13.1	0.131	0.131
697	20.85	16	OCDF	5.28	BJ	0.0746	2.398081535	0.2984	5.28			5.28			<5x*B	0.0001	5.28	5.28	5.28	2.64	0.000528	0.000264
697	20.85	17	OCDD	105	--	0.0808	2.398081535	0.3232	105			105				0.0001	105	105	105	105	0.0105	0.0105
761	20.19	1	2,3,7,8-TCDF	0.146	NJ	0.0709	0.24764735	0.2836	LT	0.2		LT	0.2836	>ML		0.1	0.146	0.073	0.073		0.0073	
761	20.19	2	2,3,7,8-TCDD		--	0.0212	0.24764735	0.0848	LT	0.2		LT	0.0848			1	0.0106	0	0.0106		0.0106	
761	20.19	3	1,2,3,7,8-PeCDF		E	0.239	1.238236751	0.956	LT	1.2		LT	0.956			0.05	0.1195	0	0.1195		0.005975	
761	20.19	4	2,3,4,7,8-PeCDF	0.269	--	0.0822	1.238236751	0.3288	LT	1.2		LT	0.3288			0.5	0.269	0.1345	0.269	0.1345	0.1345	0.06725
761	20.19	5	1,2,3,7,8-PeCDD	0.613	--	0.0243	1.238236751	0.0972	LT	1.2		0.613				1	0.613	0.613	0.613	0.613	0.613	0.613
761	20.19	6	1,2,3,4,7,8-HxCDF		E	0.331	1.238236751	1.324	LT	1.2		LT	1.324	>ML		0.1	0.1655	0	0.1655		0.01655	
761	20.19	7	1,2,3,6,7,8-HxCDF		D	1.08	1.238236751	4.32	LT	1.2		LT	4.32	>ML		0.1	0.54	0	0.27		0.027	
761	20.19	8	2,3,4,6,7,8-HxCDF	0.518	--	0.0761	1.238236751	0.3044	LT	1.2		0.518				0.1	0.518	0.518	0.518	0.518	0.0518	0.0518
761	20.19	9	1,2,3,7,8,9-HxCDF		--	0.175	1.238236751	0.7	LT	1.2		LT	0.7			0.1	0.0875	0	0.0875		0.00875	
761	20.19	10	1,2,3,4,7,8-HxCDD		E	0.606	1.238236751	2.424	LT	1.2		LT	2.424	>ML		0.1	0.303	0	0.303		0.0303	
761	20.19	11	1,2,3,6,7,8-HxCDD	0.828	--	0.0585	1.238236751	0.234	LT	1.2		0.828				0.1	0.828	0.828	0.828	0.828	0.0828	0.0828
761	20.19	12	1,2,3,7,8,9-HxCDD	0.459	J	0.0575	1.238236751	0.23	LT	1.2		0.459				0.1	0.459	0.459	0.459	0.2295	0.0459	0.02295
761	20.19	13	1,2,3,4,6,7,8-HpCDF		D	9.71	1.238236751	38.84	LT	9.71	>ML	LT	38.84	>ML		0.01	4.855	0	2.4275		0.024275	
761	20.19	14	1,2,3,4,7,8,9-HpCDF		--	0.314	1.238236751	1.256	LT	1.2		LT	1.256	>ML		0.01	0.157	0	0.157		0.00157	
761	20.19	15	1,2,3,4,6,7,8-HpCDD	19.7	--	0.12	1.238236751	0.48	19.7			19.7				0.01	19.7	19.7	19.7	19.7	0.197	0.197
761	20.19	16	OCDF		EIJ	12.1	2.476473502	48.4	LT	12.1	>ML	LT	48.4	>ML		0.0001	6.05	0	6.05		0.000605	
761	20.19	17	OCDD	146	I	0.269	2.476473502	1.076	146			146				0.0001	146	146	146	146	0.0146	0.0146
772	16.85	1	2,3,7,8-TCDF	0.43	NJ	0.149	0.296735905	0.596	0.43			LT	0.596	>ML		0.1	0.43	0.215	0.215		0.0215	
772	16.85	2	2,3,7,8-TCDD		E	0.189	0.296735905	0.756	LT	0.3		LT	0.756	>ML		1	0.0945	0	0.0945		0.0945	
772	16.85	3	1,2,3,7,8-PeCDF	0.616	--	0.336	1.483679525	1.344	LT	1.5		LT	1.344			0.05	0.616	0.308	0.616	0.308	0.0308	0.0154
772	16.85	4	2,3,4,7,8-PeCDF	2.52	--	0.232	1.483679525	0.928	2.52			2.52				0.5	2.52	2.52	2.52	2.52	1.26	1.26
772	16.85	5	1,2,3,7,8-PeCDD	0.802	--	0.257	1.483679525	1.028	LT	1.5		LT	1.028			1	0.802	0.401	0.802	0.401	0.802	0.401
772	16.85	6	1,2,3,4,7,8-HxCDF	0.841	--	0.53	1.483679525	2.12	LT	1.5		LT	2.12	>ML		0.1	0.841	0.4205	0.841	0.4205	0.0841	0.04205
772	16.85	7	1,2,3,6,7,8-HxCDF	0.847	--	0.473	1.483679525	1.892	LT	1.5		LT	1.892	>ML		0.1	0.847	0.4235	0.847	0.4235	0.0847	0.04235
772	16.85	8	2,3,4,6,7,8-HxCDF	4.15	D	0.761	1.483679525	3.044	4.15			4.15				0.1	4.15	4.15	2.075		0.2075	
772	16.85	9	1,2,3,7,8,9-HxCDF		E	0.726	1.483679525	2.904	LT	1.5		LT	2.904	>ML		0.1	0.363	0	0.363		0.0363	
772	16.85	10	1,2,3,4,7,8-HxCDD	0.822	--	0.123	1.483679525	0.492	LT	1.5		0.822				0.1	0.822	0.822	0.822	0.822	0.0822	0.0822
772	16.85	11	1,2,3,6,7,8-HxCDD	2.19	--	0.113	1.483679525	0.452	2.19			2.19				0.1	2.19	2.19	2.19	2.19	0.219	0.219
772	16.85	12	1,2,3,7,8,9-HxCDD	0.682	J	0.103	1.483679525	0.412	LT	1.5		0.682				0.1	0.682	0.682	0.682	0.341	0.0682	0.0341
772	16.85	13	1,2,3,4,6,7,8-HpCDF	8.92	--	0.279	1.483679525	1.116	8.92			8.92				0.01	8.92	8.92	8.92	8.92	0.0892	0.0892
772	16.85	14	1,2,3,4,7,8,9-HpCDF		--	0.732	1.483679525	2.928	LT	1.5		LT	2.928	>ML		0.01	0.366	0	0.366		0.00366	
772	16.85	15	1,2,3,4,6,7,8-HpCDD	45.9	--	0.301	1.483679525	1.204	45.9			45.9				0.01	45.9	45.9	45.9	45.9	0.459	0.459
772	16.85	16	OCDF	23.9	IJ	1.11	2.96735905	4.44	23.9			23.9				0.0001	23.9	23.9	23.9	11.95	0.00239	0.001195
772	16.85	17	OCDD	328	I	0.926	2.96735905	3.704	328			328				0.0001	328	328	328	328	0.0328	0.0328
793	20.6	1	2,3,7,8-TCDF	0.234	NJ	0.0265	0.242718447	0.106	LT	0.2		0.234				0.1	0.234	0.234	0.117		0.0117	
793	20.6	2	2,3,7,8-TCDD		--	0.00316	0.242718447	0.01264	LT	0.2		LT	0.01264			1	0.00158	0	0.0016		0.00158	
793	20.6	3	1,2,3,7,8-PeCDF		E	0.171	1.213592233	0.684	LT	1.2		LT	0.684			0.05	0.0855	0	0.0855		0.004275	
793	20.6	4	2,3,4,7,8-PeCDF		E	0.227	1.213592233	0.908	LT	1.2		LT	0.908			0.5	0.1135	0	0.1135		0.05675	

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
793	20.6	5	1,2,3,7,8-PeCDD		--	0.0161	1.213592233	0.0644	LT	1.2		LT	0.0644			1	0.00805	0	0.0081		0.00805	
793	20.6	6	1,2,3,4,7,8-HxCDF	0.308	B	0.0476	1.213592233	0.1904	LT	1.2		0.308			<5x*B	0.1	0.308	0.308	0.308	0.154	0.0308	0.0154
793	20.6	7	1,2,3,6,7,8-HxCDF		E	0.276	1.213592233	1.104	LT	1.2		LT	1.104			0.1	0.138	0	0.138		0.0138	
793	20.6	8	2,3,4,6,7,8-HxCDF		--	0.0506	1.213592233	0.2024	LT	1.2		LT	0.2024			0.1	0.0253	0	0.0253		0.00253	
793	20.6	9	1,2,3,7,8,9-HxCDF		E	0.313	1.213592233	1.252	LT	1.2		LT	1.252	>ML		0.1	0.1565	0	0.1565		0.01565	
793	20.6	10	1,2,3,4,7,8-HxCDD	0.66	--	0.0244	1.213592233	0.0976	LT	1.2		0.66				0.1	0.66	0.66	0.66	0.66	0.066	0.066
793	20.6	11	1,2,3,6,7,8-HxCDD	1.49	--	0.0227	1.213592233	0.0908	1.49			1.49				0.1	1.49	1.49	1.49	1.49	0.149	0.149
793	20.6	12	1,2,3,7,8,9-HxCDD	0.996	J	0.0235	1.213592233	0.094	LT	1.2		0.996				0.1	0.996	0.996	0.996	0.498	0.0996	0.0498
793	20.6	13	1,2,3,4,6,7,8-HpCDF	5.24	--	0.0244	1.213592233	0.0976	5.24			5.24				0.01	5.24	5.24	5.24	5.24	0.0524	0.0524
793	20.6	14	1,2,3,4,7,8,9-HpCDF		E	0.465	1.213592233	1.86	LT	1.2		LT	1.86	>ML		0.01	0.2325	0	0.2325		0.002325	
793	20.6	15	1,2,3,4,6,7,8-HpCDD	34.1	--	0.0328	1.213592233	0.1312	34.1			34.1				0.01	34.1	34.1	34.1	34.1	0.341	0.341
793	20.6	16	OCDF	11	J	0.0468	2.427184466	0.1872	11			11				0.0001	11	11	11	5.5	0.0011	0.00055
793	20.6	17	OCDD	282	--	0.0964	2.427184466	0.3856	282			282				0.0001	282	282	282	282	0.0282	0.0282
825	20.04	1	2,3,7,8-TCDF	0.263	NJ	0.0759	0.249500998	0.3036	0.263			LT	0.3036	>ML		0.1	0.263	0.1315	0.1315		0.01315	
825	20.04	2	2,3,7,8-TCDD	0.335	--	0.0337	0.249500998	0.1348	0.335			0.335				1	0.335	0.335	0.335	0.335	0.335	0.335
825	20.04	3	1,2,3,7,8-PeCDF	0.405	B	0.0704	1.24750499	0.2816	LT	1.2		0.405			<5x*B	0.05	0.405	0.405	0.405	0.2025	0.02025	0.010125
825	20.04	4	2,3,4,7,8-PeCDF	0.513	--	0.0667	1.24750499	0.2668	LT	1.2		0.513				0.5	0.513	0.513	0.513	0.513	0.2565	0.2565
825	20.04	5	1,2,3,7,8-PeCDD		E	0.8	1.24750499	3.2	LT	1.2		LT	3.2	>ML		1	0.4	0	0.4		0.4	
825	20.04	6	1,2,3,4,7,8-HxCDF	0.864	--	0.0337	1.24750499	0.1348	LT	1.2		0.864				0.1	0.864	0.864	0.864	0.864	0.0864	0.0864
825	20.04	7	1,2,3,6,7,8-HxCDF	1.56	--	0.0303	1.24750499	0.1212	1.56			1.56				0.1	1.56	1.56	1.56	1.56	0.156	0.156
825	20.04	8	2,3,4,6,7,8-HxCDF	0.804	B	0.047	1.24750499	0.188	LT	1.2		0.804			<5x*B	0.1	0.804	0.804	0.804	0.402	0.0804	0.0402
825	20.04	9	1,2,3,7,8,9-HxCDF	0.515	B	0.0441	1.24750499	0.1764	LT	1.2		0.515			<5x*B	0.1	0.515	0.515	0.515	0.2575	0.0515	0.02575
825	20.04	10	1,2,3,4,7,8-HxCDD	0.867	--	0.0367	1.24750499	0.1468	LT	1.2		0.867				0.1	0.867	0.867	0.867	0.867	0.0867	0.0867
825	20.04	11	1,2,3,6,7,8-HxCDD	1.58	--	0.0285	1.24750499	0.114	1.58			1.58				0.1	1.58	1.58	1.58	1.58	0.158	0.158
825	20.04	12	1,2,3,7,8,9-HxCDD	1.53	J	0.0352	1.24750499	0.1408	1.53			1.53				0.1	1.53	1.53	1.53	0.765	0.153	0.0765
825	20.04	13	1,2,3,4,6,7,8-HpCDF	13.1	--	0.0356	1.24750499	0.1424	13.1			13.1				0.01	13.1	13.1	13.1	13.1	0.131	0.131
825	20.04	14	1,2,3,4,7,8,9-HpCDF	0.761	--	0.078	1.24750499	0.312	LT	1.2		0.761				0.01	0.761	0.761	0.761	0.761	0.00761	0.00761
825	20.04	15	1,2,3,4,6,7,8-HpCDD	35.8	--	0.0572	1.24750499	0.2288	35.8			35.8				0.01	35.8	35.8	35.8	35.8	0.358	0.358
825	20.04	16	OCDF	19	--	0.0915	2.49500998	0.366	19			19				0.0001	19	19	19	19	0.0019	0.0019
825	20.04	17	OCDD	322	--	0.0912	2.49500998	0.3648	322			322				0.0001	322	322	322	322	0.0322	0.0322
845	12.37	1	2,3,7,8-TCDF	0.922	NJ	0.409	0.404203719	1.636	0.922			LT	1.636	>ML		0.1	0.922	0.461	0.461		0.0461	
845	12.37	2	2,3,7,8-TCDD	6.07	--	0.0646	0.404203719	0.2584	6.07			6.07				1	6.07	6.07	6.07	6.07	6.07	6.07
845	12.37	3	1,2,3,7,8-PeCDF		E	0.577	2.021018593	2.308	LT	2		LT	2.308	>ML		0.05	0.2885	0	0.2885		0.014425	
845	12.37	4	2,3,4,7,8-PeCDF	1	--	0.0919	2.021018593	0.3676	LT	2		1				0.5	1	1	1	1	0.5	0.5
845	12.37	5	1,2,3,7,8-PeCDD		E	0.996	2.021018593	3.984	LT	2		LT	3.984	>ML		1	0.498	0	0.498		0.498	
845	12.37	6	1,2,3,4,7,8-HxCDF	1.23	--	0.196	2.021018593	0.784	LT	2		1.23				0.1	1.23	1.23	1.23	1.23	0.123	0.123
845	12.37	7	1,2,3,6,7,8-HxCDF	1.28	--	0.132	2.021018593	0.528	LT	2		1.28				0.1	1.28	1.28	1.28	1.28	0.128	0.128
845	12.37	8	2,3,4,6,7,8-HxCDF	1.85	--	0.163	2.021018593	0.652	LT	2		1.85				0.1	1.85	1.85	1.85	1.85	0.185	0.185
845	12.37	9	1,2,3,7,8,9-HxCDF	0.75	B	0.196	2.021018593	0.784	LT	2		LT	0.784		<5x*B	0.1	0.75	0.375	0.75	0.1875	0.075	0.01875
845	12.37	10	1,2,3,4,7,8-HxCDD	1.84	--	0.0778	2.021018593	0.3112	LT	2		1.84				0.1	1.84	1.84	1.84	1.84	0.184	0.184
845	12.37	11	1,2,3,6,7,8-HxCDD	3.31	--	0.0712	2.021018593	0.2848	3.31			3.31				0.1	3.31	3.31	3.31	3.31	0.331	0.331
845	12.37	12	1,2,3,7,8,9-HxCDD	2.61	J	0.0769	2.021018593	0.3076	2.61			2.61				0.1	2.61	2.61	2.61	1.305	0.261	0.1305
845	12.37	13	1,2,3,4,6,7,8-HpCDF	20.9	--	0.0976	2.021018593	0.3904	20.9			20.9				0.01	20.9	20.9	20.9	20.9	0.209	0.209
845	12.37	14	1,2,3,4,7,8,9-HpCDF	0.971	--	0.144	2.021018593	0.576	LT	2		0.971				0.01	0.971	0.971	0.971	0.971	0.00971	0.00971
845	12.37	15	1,2,3,4,6,7,8-HpCDD	68.4	--	0.223	2.021018593	0.892	68.4			68.4				0.01	68.4	68.4	68.4	68.4	0.684	0.684
845	12.37	16	OCDF	41.2	J	0.0704	4.042037187	0.2816	41.2			41.2				0.0001	41.2	41.2	41.2	20.6	0.00412	0.00206
845	12.37	17	OCDD	488	--	0.435	4.042037187	1.74	488			488				0.0001	488	488	488	488	0.0488	0.0488
902-B	20.65	1	2,3,7,8-TCDF		J	0.17	0.242130751	0.68	LT	0.2		LT	0.68	>ML		0.1	0.085	0	0.085		0.0085	
902-B	20.65	2	2,3,7,8-TCDD		--	0.962	0.242130751	3.848	LT	0.962	>ML	LT	3.848	>ML		1	0.481	0	0.481		0.481	
902-B	20.65	3	1,2,3,7,8-PeCDF		J	1.76	1.210653753	7.04	LT	1.76	>ML	LT	7.04	>ML		0.05	0.88	0	0.88		0.044	
902-B	20.65	4	2,3,4,7,8-PeCDF		--	1.39	1.210653753	5.56	LT	1.39	>ML	LT	5.56	>ML		0.5	0.695	0	0.695		0.3475	
902-B	20.65	5	1,2,3,7,8-PeCDD		J	4.06	1.210653753	16.24	LT	4.06	>ML	LT	16.24	>ML		1	2.03	0	2.03		2.03	
902-B	20.65	6	1,2,3,4,7,8-HxCDF		E	3.49	1.210653753	13.96	LT	3.49	>ML	LT	13.96	>ML	<5x*B	0.1	1.745	0	1.745		0.1745	
902-B	20.65	7	1,2,3,6,7,8-HxCDF		E	2.86	1.210653753	11.44	LT	2.86	>ML	LT	11.44	>ML		0.1	1.43	0	1.43		0.143	
902-B	20.65	8	2,3,4,6,7,8-HxCDF		E	5.63	1.210653753	22.52	LT	5.63	>ML	LT	22.52	>ML	<5x*B	0.1	2.815	0	2.815		0.2815	
902-B	20.65	9	1,2,3,7,8,9-HxCDF		J	5.76	1.210653753	23.04	LT	5.76	>ML	LT	23.04	>ML	<5x*B	0.1	2.88	0	2.88		0.288	
902-B	20.65	10	1,2,3,4,7,8-HxCDD		E	4.13	1.210653753	16.52	LT	4.13	>ML	LT	16.52	>ML		0.1	2.065	0	2.065		0.2065	
902-B	20.65	11	1,2,3,6,7,8-HxCDD		E	3.44	1.210653753	13.76	LT	3.44	>ML	LT	13.76	>ML		0.1	1.72	0	1.72		0.172	
902-B	20.65	12	1,2,3,7,8,9-HxCDD		E	5.27	1.210653753	21.08	LT	5.27	>ML	LT	21.08	>ML		0.1	2.635	0	2.635		0.2635	

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
902-B	20.65	13	1,2,3,4,6,7,8-HpCDF	22	J	2.4	1.210653753	9.6	22			22				0.01	22	22	22	11	0.22	0.11
902-B	20.65	14	1,2,3,4,7,8,9-HpCDF	4.98	--	1.68	1.210653753	6.72	4.98			LT	6.72	>ML		0.01	4.98	2.49	4.98	2.49	0.0498	0.0249
902-B	20.65	15	1,2,3,4,6,7,8-HpCDD	85	--	0.845	1.210653753	3.38	85			85				0.01	85	85	85	85	0.85	0.85
902-B	20.65	16	OCDF	47.1	J	1.22	2.421307506	4.88	47.1			47.1				0.0001	47.1	47.1	47.1	23.55	0.00471	0.002355
902-B	20.65	17	OCDD	695	--	1.6	2.421307506	6.4	695			695				0.0001	695	695	695	695	0.0695	0.0695
917	20.31	1	2,3,7,8-TCDF		E	0.285	0.246184146	1.14	LT	0.285	>ML	LT	1.14	>ML		0.1	0.1425	0	0.1425		0.01425	
917	20.31	2	2,3,7,8-TCDD	0.174	--	0.0257	0.246184146	0.1028	LT	0.2		0.174				1	0.174	0.174	0.174	0.174	0.174	0.174
917	20.31	3	1,2,3,7,8-PeCDF	0.28	--	0.0459	1.230920729	0.1836	LT	1.2		0.28				0.05	0.28	0.28	0.28	0.28	0.014	0.014
917	20.31	4	2,3,4,7,8-PeCDF	0.369	--	0.0444	1.230920729	0.1776	LT	1.2		0.369				0.5	0.369	0.369	0.369	0.369	0.1845	0.1845
917	20.31	5	1,2,3,7,8-PeCDD	0.803	--	0.0838	1.230920729	0.3352	LT	1.2		0.803				1	0.803	0.803	0.803	0.803	0.803	0.803
917	20.31	6	1,2,3,4,7,8-HxCDF	0.572	--	0.0585	1.230920729	0.234	LT	1.2		0.572				0.1	0.572	0.572	0.572	0.572	0.0572	0.0572
917	20.31	7	1,2,3,6,7,8-HxCDF	0.534	B	0.0522	1.230920729	0.2088	LT	1.2		0.534			<5x*B	0.1	0.534	0.534	0.534	0.267	0.0534	0.0267
917	20.31	8	2,3,4,6,7,8-HxCDF	0.519	--	0.0675	1.230920729	0.27	LT	1.2		0.519				0.1	0.519	0.519	0.519	0.519	0.0519	0.0519
917	20.31	9	1,2,3,7,8,9-HxCDF	0.496	B	0.0736	1.230920729	0.2944	LT	1.2		0.496			<5x*B	0.1	0.496	0.496	0.496	0.248	0.0496	0.0248
917	20.31	10	1,2,3,4,7,8-HxCDD		E	1.15	1.230920729	4.6	LT	1.2		LT	4.6	>ML		0.1	0.575	0	0.575		0.0575	
917	20.31	11	1,2,3,6,7,8-HxCDD	3.84	--	0.0435	1.230920729	0.174	3.84			3.84				0.1	3.84	3.84	3.84	3.84	0.384	0.384
917	20.31	12	1,2,3,7,8,9-HxCDD	2.44	J	0.0481	1.230920729	0.1924	2.44			2.44				0.1	2.44	2.44	2.44	1.22	0.244	0.122
917	20.31	13	1,2,3,4,6,7,8-HpCDF	6.94	--	0.0683	1.230920729	0.2732	6.94			6.94				0.01	6.94	6.94	6.94	6.94	0.0694	0.0694
917	20.31	14	1,2,3,4,7,8,9-HpCDF	0.53	--	0.0922	1.230920729	0.3688	LT	1.2		0.53				0.01	0.53	0.53	0.53	0.53	0.0053	0.0053
917	20.31	15	1,2,3,4,6,7,8-HpCDD	157	--	0.192	1.230920729	0.768	157			157				0.01	157	157	157	157	1.57	1.57
917	20.31	16	OCDF	27.6	--	0.0735	2.461841457	0.294	27.6			27.6				0.0001	27.6	27.6	27.6	27.6	0.00276	0.00276
917	20.31	17	OCDD	817	--	0.101	2.461841457	0.404	817			817				0.0001	817	817	817	817	0.0817	0.0817
971	15.69	1	2,3,7,8-TCDF	0.396	NJ	0.0521	0.318674315	0.2084	0.396			0.396				0.1	0.396	0.396	0.198		0.0198	
971	15.69	2	2,3,7,8-TCDD		E	0.28	0.318674315	1.12	LT	0.3		LT	1.12	>ML		1	0.14	0	0.14		0.14	
971	15.69	3	1,2,3,7,8-PeCDF		E	0.349	1.593371574	1.396	LT	1.6		LT	1.396			0.05	0.1745	0	0.1745		0.008725	
971	15.69	4	2,3,4,7,8-PeCDF	0.581	--	0.0273	1.593371574	0.1092	LT	1.6		0.581				0.5	0.581	0.581	0.581	0.581	0.2905	0.2905
971	15.69	5	1,2,3,7,8-PeCDD	0.59	--	0.0421	1.593371574	0.1684	LT	1.6		0.59				1	0.59	0.59	0.59	0.59	0.59	0.59
971	15.69	6	1,2,3,4,7,8-HxCDF	0.696	--	0.14	1.593371574	0.56	LT	1.6		0.696				0.1	0.696	0.696	0.696	0.696	0.0696	0.0696
971	15.69	7	1,2,3,6,7,8-HxCDF	0.656	--	0.124	1.593371574	0.496	LT	1.6		0.656				0.1	0.656	0.656	0.656	0.656	0.0656	0.0656
971	15.69	8	2,3,4,6,7,8-HxCDF	0.649	--	0.169	1.593371574	0.676	LT	1.6		LT	0.676			0.1	0.649	0.3245	0.649	0.3245	0.0649	0.03245
971	15.69	9	1,2,3,7,8,9-HxCDF	0.594	B	0.194	1.593371574	0.776	LT	1.6		LT	0.776		<5x*B	0.1	0.594	0.297	0.594	0.1485	0.0594	0.01485
971	15.69	10	1,2,3,4,7,8-HxCDD	0.974	B	0.0599	1.593371574	0.2396	LT	1.6		0.974			<5x*B	0.1	0.974	0.974	0.974	0.487	0.0974	0.0487
971	15.69	11	1,2,3,6,7,8-HxCDD	1.74	--	0.0557	1.593371574	0.2228	1.74			1.74				0.1	1.74	1.74	1.74	1.74	0.174	0.174
971	15.69	12	1,2,3,7,8,9-HxCDD	1.55	J	0.0597	1.593371574	0.2388	LT	1.6		1.55				0.1	1.55	1.55	1.55	0.775	0.155	0.0775
971	15.69	13	1,2,3,4,6,7,8-HpCDF		D	11.6	1.593371574	46.4	LT	11.6	>ML	LT	46.4	>ML	<5x*B	0.01	5.8	0	2.9		0.029	
971	15.69	14	1,2,3,4,7,8,9-HpCDF		E	0.839	1.593371574	3.356	LT	1.6		LT	3.356	>ML		0.01	0.4195	0	0.4195		0.004195	
971	15.69	15	1,2,3,4,6,7,8-HpCDD	47.6	--	0.0989	1.593371574	0.3956	47.6			47.6				0.01	47.6	47.6	47.6	47.6	0.476	0.476
971	15.69	16	OCDF	15.3	J	0.1	3.186743149	0.4	15.3			15.3				0.0001	15.3	15.3	15.3	7.65	0.00153	0.000765
971	15.69	17	OCDD	440	--	0.118	3.186743149	0.472	440			440				0.0001	440	440	440	440	0.044	0.044
985	10.19	1	2,3,7,8-TCDF	8.79	NJ	0.0668	0.490677134	0.2672	8.79			8.79				0.1	8.79	8.79	4.395		0.4395	
985	10.19	2	2,3,7,8-TCDD	1.15	--	0.0287	0.490677134	0.1148	1.15			1.15				1	1.15	1.15	1.15	1.15	1.15	1.15
985	10.19	3	1,2,3,7,8-PeCDF	30.2	--	0.159	2.453385672	0.636	30.2			30.2				0.05	30.2	30.2	30.2	30.2	1.51	1.51
985	10.19	4	2,3,4,7,8-PeCDF	64.1	--	0.147	2.453385672	0.588	64.1			64.1				0.5	64.1	64.1	64.1	64.1	32.05	32.05
985	10.19	5	1,2,3,7,8-PeCDD	22.1	--	0.0577	2.453385672	0.2308	22.1			22.1				1	22.1	22.1	22.1	22.1	22.1	22.1
985	10.19	6	1,2,3,4,7,8-HxCDF	77	--	0.984	2.453385672	3.936	77			77				0.1	77	77	77	77	7.7	7.7
985	10.19	7	1,2,3,6,7,8-HxCDF	48.1	--	0.842	2.453385672	3.368	48.1			48.1				0.1	48.1	48.1	48.1	48.1	4.81	4.81
985	10.19	8	2,3,4,6,7,8-HxCDF	86.5	--	1.05	2.453385672	4.2	86.5			86.5				0.1	86.5	86.5	86.5	86.5	8.65	8.65
985	10.19	9	1,2,3,7,8,9-HxCDF	30.4	--	1.18	2.453385672	4.72	30.4			30.4				0.1	30.4	30.4	30.4	30.4	3.04	3.04
985	10.19	10	1,2,3,4,7,8-HxCDD	58.4	--	0.304	2.453385672	1.216	58.4			58.4				0.1	58.4	58.4	58.4	58.4	5.84	5.84
985	10.19	11	1,2,3,6,7,8-HxCDD	180	--	0.274	2.453385672	1.096	180			180				0.1	180	180	180	180	18	18
985	10.19	12	1,2,3,7,8,9-HxCDD	115	--	0.29	2.453385672	1.16	115			115				0.1	115	115	115	115	11.5	11.5
985	10.19	13	1,2,3,4,6,7,8-HpCDF	448	--	0.936	2.453385672	3.744	448			448				0.01	448	448	448	448	4.48	4.48
985	10.19	14	1,2,3,4,7,8,9-HpCDF	26.7	--	1.37	2.453385672	5.48	26.7			26.7				0.01	26.7	26.7	26.7	26.7	0.267	0.267
985	10.19	15	1,2,3,4,6,7,8-HpCDD	3240	CJ	0.101	2.453385672	0.404	3240			3240				0.01	3240	3240	3240	1620	32.4	16.2
985	10.19	16	OCDF	229	J	0.0973	4.906771344	0.3892	229			229				0.0001	229	229	229	114.5	0.0229	0.01145
985	10.19	17	OCDD	7720	SJ	0.19	4.906771344	0.76	7720			7720				0.0001	7720	7720	7720	3860	0.772	0.386
996	20.98	1	2,3,7,8-TCDF	4.1	NJ	0.272	0.238322212	1.088	4.1			4.1				0.1	4.1	4.1	2.05		0.205	
996	20.98	2	2,3,7,8-TCDD	0.648	--	0.0665	0.238322212	0.266	0.648			0.648				1	0.648	0.648	0.648	0.648	0.648	0.648
996	20.98	3	1,2,3,7,8-PeCDF	2.71	--	0.105	1.191611058	0.42	2.71			2.71				0.05	2.71	2.71	2.71	2.71	0.1355	0.1355

Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	EDL	ML	QL	Adj Total Conc	Total Detect Limit	Total Outlier	Adj Quant Conc	Quant Detect Limit	Quant Outlier	<5x in MB found	WHO TEFs Human	Adj Full Conc1	Adj Quant Conc1	Adj Full Conc2	Adj Quant Conc2	Congener TEQs Full	Congener TEQs Quant
996	20.98	4	2,3,4,7,8-PeCDF	13.6	--	0.0815	1.191611058	0.326	13.6			13.6				0.5	13.6	13.6	13.6	13.6	6.8	6.8
996	20.98	5	1,2,3,7,8-PeCDD	4.14	--	0.0788	1.191611058	0.3152	4.14			4.14				1	4.14	4.14	4.14	4.14	4.14	4.14
996	20.98	6	1,2,3,4,7,8-HxCDF	6.17	--	0.511	1.191611058	2.044	6.17			6.17				0.1	6.17	6.17	6.17	6.17	0.617	0.617
996	20.98	7	1,2,3,6,7,8-HxCDF	5.55	--	0.453	1.191611058	1.812	5.55			5.55				0.1	5.55	5.55	5.55	5.55	0.555	0.555
996	20.98	8	2,3,4,6,7,8-HxCDF	18.4	--	0.624	1.191611058	2.496	18.4			18.4				0.1	18.4	18.4	18.4	18.4	1.84	1.84
996	20.98	9	1,2,3,7,8,9-HxCDF	1.87	B	0.696	1.191611058	2.784	1.87			LT	2.784	>ML	<5x*B	0.1	1.87	0.935	1.87	0.4675	0.187	0.04675
996	20.98	10	1,2,3,4,7,8-HxCDD	5.72	--	0.106	1.191611058	0.424	5.72			5.72				0.1	5.72	5.72	5.72	5.72	0.572	0.572
996	20.98	11	1,2,3,6,7,8-HxCDD	13	--	0.0894	1.191611058	0.3576	13			13				0.1	13	13	13	13	1.3	1.3
996	20.98	12	1,2,3,7,8,9-HxCDD	10.4	J	0.101	1.191611058	0.404	10.4			10.4				0.1	10.4	10.4	10.4	5.2	1.04	0.52
996	20.98	13	1,2,3,4,6,7,8-HpCDF	82.3	--	0.159	1.191611058	0.636	82.3			82.3				0.01	82.3	82.3	82.3	82.3	0.823	0.823
996	20.98	14	1,2,3,4,7,8,9-HpCDF	4.56	I	0.429	1.191611058	1.716	4.56			4.56				0.01	4.56	4.56	4.56	4.56	0.0456	0.0456
996	20.98	15	1,2,3,4,6,7,8-HpCDD	329	--	0.228	1.191611058	0.912	329			329				0.01	329	329	329	329	3.29	3.29
996	20.98	16	OCDF	147	J	0.0893	2.383222116	0.3572	147			147				0.0001	147	147	147	73.5	0.0147	0.00735
996	20.98	17	OCDD	2650	CJ	0.123	2.383222116	0.492	2650			2650				0.0001	2650	2650	2650	1325	0.265	0.1325

APPENDIX D: Non-Detect Contribution to TEQ Values for Each Sample

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
1	1A10312	10.208	1	2,3,7,8-TCDD		U	0.086	0.043	1	0.043	0	
1	1A10312	10.208	2	1,2,3,7,8-PeCDD		U	0.125	0.063	0.5	0.03125	0	
1	1A10312	10.208	3	1,2,3,4,7,8-HxCDD		U	0.140	0.070	0.1	0.007	0	
1	1A10312	10.208	4	1,2,3,6,7,8-HxCDD		U	0.159	0.080	0.1	0.00795	0	
1	1A10312	10.208	5	1,2,3,7,8,9-HxCDD		U	0.146	0.073	0.1	0.0073	0	
1	1A10312	10.208	6	1,2,3,4,6,7,8-HpCDD	5.000	B	0.163		0.01	0.05	0.05	
1	1A10312	10.208	7	OCDD	48.820	B	0.434		0.0001	0.004882	0.004882	
1	1A10312	10.208	8	2,3,7,8-TCDF	0.241	CJ	0.103		0.1	0.0241	0.0241	
1	1A10312	10.208	9	1,2,3,7,8-PeCDF		U	0.111	0.056	0.05	0.002775	0	
1	1A10312	10.208	10	2,3,4,7,8-PeCDF		U	0.115	0.058	0.5	0.02875	0	
1	1A10312	10.208	11	1,2,3,4,7,8-HxCDF	0.570	BJ	0.097		0.1	0.057	0.057	
1	1A10312	10.208	12	1,2,3,6,7,8-HxCDF		U	0.094	0.047	0.1	0.0047	0	
1	1A10312	10.208	13	1,2,3,7,8,9-HxCDF		U	0.140	0.070	0.1	0.007	0	
1	1A10312	10.208	14	2,3,4,6,7,8-HxCDF		U	0.107	0.054	0.1	0.00535	0	
1	1A10312	10.208	15	1,2,3,4,6,7,8-HpCDF	3.730	B	0.335		0.01	0.0373	0.0373	
1	1A10312	10.208	16	1,2,3,4,7,8,9-HpCDF		U	0.578	0.289	0.01	0.00289	0	
1	1A10312	10.208	17	OCDF	16.050	B	0.438		0.0001	0.001605	0.001605	
Σ TEQ:										**0.322852**	**0.174887**	**45.83%**
2	2A20312	9.537	1	2,3,7,8-TCDD		U	0.060	0.030	1	0.03	0	
2	2A20312	9.537	2	1,2,3,7,8-PeCDD	0.281	J	0.128		0.5	0.1405	0.1405	
2	2A20312	9.537	3	1,2,3,4,7,8-HxCDD	0.411	J	0.135		0.1	0.0411	0.0411	
2	2A20312	9.537	4	1,2,3,6,7,8-HxCDD	1.032	J	0.161		0.1	0.1032	0.1032	
2	2A20312	9.537	5	1,2,3,7,8,9-HxCDD	0.790	J	0.145		0.1	0.079	0.079	
2	2A20312	9.537	6	1,2,3,4,6,7,8-HpCDD	23.274	B	0.280		0.01	0.23274	0.23274	
2	2A20312	9.537	7	OCDD	218.335	B	0.702		0.0001	0.021834	0.021834	
2	2A20312	9.537	8	2,3,7,8-TCDF	0.600	CJ	0.140		0.1	0.06	0.06	
2	2A20312	9.537	9	1,2,3,7,8-PeCDF		U	0.071	0.036	0.05	0.001775	0	
2	2A20312	9.537	10	2,3,4,7,8-PeCDF	0.413	JK	0.072		0.5	0.2065	0.2065	
2	2A20312	9.537	11	1,2,3,4,7,8-HxCDF	0.473	BJ	0.108		0.1	0.0473	0.0473	
2	2A20312	9.537	12	1,2,3,6,7,8-HxCDF	0.402	J	0.110		0.1	0.0402	0.0402	
2	2A20312	9.537	13	1,2,3,7,8,9-HxCDF		U	0.156	0.078	0.1	0.0078	0	
2	2A20312	9.537	14	2,3,4,6,7,8-HxCDF	0.542	J	0.133		0.1	0.0542	0.0542	
2	2A20312	9.537	15	1,2,3,4,6,7,8-HpCDF	6.834	B	0.365		0.01	0.06834	0.06834	
2	2A20312	9.537	16	1,2,3,4,7,8,9-HpCDF		U	0.641	0.321	0.01	0.003205	0	
2	2A20312	9.537	17	OCDF	20.925	B	0.755		0.0001	0.002093	0.002093	
Σ TEQ:										**1.139786**	**1.097006**	**3.75%**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
3	3B20312	10.208	1	2,3,7,8-TCDD		U	0.106	0.053	1	0.053	0	
3	3B20312	10.208	2	1,2,3,7,8-PeCDD		U	0.142	0.071	0.5	0.0355	0	
3	3B20312	10.208	3	1,2,3,4,7,8-HxCDD		U	0.120	0.060	0.1	0.006	0	
3	3B20312	10.208	4	1,2,3,6,7,8-HxCDD	1.797	J	0.145		0.1	0.1797	0.1797	
3	3B20312	10.208	5	1,2,3,7,8,9-HxCDD		U	0.129	0.065	0.1	0.00645	0	
3	3B20312	10.208	6	1,2,3,4,6,7,8-HpCDD	2.649	B	0.283		0.01	0.02649	0.02649	
3	3B20312	10.208	7	OCDD	18.024	B	0.512		0.0001	0.001802	0.001802	
3	3B20312	10.208	8	2,3,7,8-TCDF	0.531	CJ	0.115		0.1	0.0531	0.0531	
3	3B20312	10.208	9	1,2,3,7,8-PeCDF		U	0.122	0.061	0.05	0.00305	0	
3	3B20312	10.208	10	2,3,4,7,8-PeCDF		U	0.131	0.066	0.5	0.03275	0	
3	3B20312	10.208	11	1,2,3,4,7,8-HxCDF	0.334	BJ	0.107		0.1	0.0334	0.0334	
3	3B20312	10.208	12	1,2,3,6,7,8-HxCDF		U	0.102	0.051	0.1	0.0051	0	
3	3B20312	10.208	13	1,2,3,7,8,9-HxCDF		U	0.157	0.079	0.1	0.00785	0	
3	3B20312	10.208	14	2,3,4,6,7,8-HxCDF		U	0.124	0.062	0.1	0.0062	0	
3	3B20312	10.208	15	1,2,3,4,6,7,8-HpCDF	3.614	BK	0.265		0.01	0.03614	0.03614	
3	3B20312	10.208	16	1,2,3,4,7,8,9-HpCDF		U	0.444	0.222	0.01	0.00222	0	
3	3B20312	10.208	17	OCDF	10.034	B	0.574		0.0001	0.001003	0.001003	
Σ TEQ:										**0.489756**	**0.331636**	**32.29%**
4	4C20312	10.280	1	2,3,7,8-TCDD		U	0.288	0.144	1	0.144	0	
4	4C20312	10.280	2	1,2,3,7,8-PeCDD		U	0.299	0.150	0.5	0.07475	0	
4	4C20312	10.280	3	1,2,3,4,7,8-HxCDD		U	0.313	0.157	0.1	0.01565	0	
4	4C20312	10.280	4	1,2,3,6,7,8-HxCDD		U	0.363	0.182	0.1	0.01815	0	
4	4C20312	10.280	5	1,2,3,7,8,9-HxCDD		U	0.320	0.160	0.1	0.016	0	
4	4C20312	10.280	6	1,2,3,4,6,7,8-HpCDD	2.642		0.403		0.01	0.02642	0.02642	
4	4C20312	10.280	7	OCDD	18.801		1.039		0.0001	0.00188	0.00188	
4	4C20312	10.280	8	2,3,7,8-TCDF		U	0.303	0.152	0.1	0.01515	0	
4	4C20312	10.280	9	1,2,3,7,8-PeCDF		U	0.200	0.100	0.05	0.005	0	
4	4C20312	10.280	10	2,3,4,7,8-PeCDF		U	0.221	0.111	0.5	0.05525	0	
4	4C20312	10.280	11	1,2,3,4,7,8-HxCDF		U	0.193	0.097	0.1	0.00965	0	
4	4C20312	10.280	12	1,2,3,6,7,8-HxCDF		U	0.182	0.091	0.1	0.0091	0	
4	4C20312	10.280	13	1,2,3,7,8,9-HxCDF		U	0.246	0.123	0.1	0.0123	0	
4	4C20312	10.280	14	2,3,4,6,7,8-HxCDF		U	0.220	0.110	0.1	0.011	0	
4	4C20312	10.280	15	1,2,3,4,6,7,8-HpCDF	1.853	J	0.320		0.01	0.01853	0.01853	
4	4C20312	10.280	16	1,2,3,4,7,8,9-HpCDF		U	0.497	0.249	0.01	0.002485	0	
4	4C20312	10.280	17	OCDF	7.805		1.435		0.0001	0.000781	0.000781	
Σ TEQ:										**0.436096**	**0.047611**	**89.08%**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
5	5D20312	10.140	1	2,3,7,8-TCDD		U	0.207	0.104	1	0.1035	0	
5	5D20313	10.140	2	1,2,3,7,8-PeCDD		U	0.239	0.120	0.5	0.05975	0	
5	5D20314	10.140	3	1,2,3,4,7,8-HxCDD		U	0.272	0.136	0.1	0.0136	0	
5	5D20315	10.140	4	1,2,3,6,7,8-HxCDD		U	0.314	0.157	0.1	0.0157	0	
5	5D20316	10.140	5	1,2,3,7,8,9-HxCDD		U	0.277	0.139	0.1	0.01385	0	
5	5D20317	10.140	6	1,2,3,4,6,7,8-HpCDD	17.481		0.481		0.01	0.17481	0.17481	
5	5D20318	10.140	7	OCDD	166.357		1.050		0.0001	0.016636	0.016636	
5	5D20319	10.140	8	2,3,7,8-TCDF	0.629	CJ	0.216		0.1	0.0629	0.0629	
5	5D20320	10.140	9	1,2,3,7,8-PeCDF		U	0.188	0.094	0.05	0.0047	0	
5	5D20321	10.140	10	2,3,4,7,8-PeCDF		U	0.201	0.101	0.5	0.05025	0	
5	5D20322	10.140	11	1,2,3,4,7,8-HxCDF	0.608	J	0.181		0.1	0.0608	0.0608	
5	5D20323	10.140	12	1,2,3,6,7,8-HxCDF	0.259	JK	0.175		0.1	0.0259	0.0259	
5	5D20324	10.140	13	1,2,3,7,8,9-HxCDF		U	0.252	0.126	0.1	0.0126	0	
5	5D20325	10.140	14	2,3,4,6,7,8-HxCDF	0.378	JK	0.209		0.1	0.0378	0.0378	
5	5D20326	10.140	15	1,2,3,4,6,7,8-HpCDF	6.964		0.314		0.01	0.06964	0.06964	
5	5D20327	10.140	16	1,2,3,4,7,8,9-HpCDF		U	0.516	0.258	0.01	0.00258	0	
5	5D20328	10.140	17	OCDF	24.260		1.445		0.0001	0.002426	0.002426	
Σ TEQ:										**0.727442**	**0.450912**	**38.01%**
6	6D30312	10.118	1	2,3,7,8-TCDD		U	0.219	0.110	1	0.1095	0	
6	6D30312	10.118	2	1,2,3,7,8-PeCDD		U	0.263	0.132	0.5	0.06575	0	
6	6D30312	10.118	3	1,2,3,4,7,8-HxCDD		U	0.311	0.156	0.1	0.01555	0	
6	6D30312	10.118	4	1,2,3,6,7,8-HxCDD		U	0.351	0.176	0.1	0.01755	0	
6	6D30312	10.118	5	1,2,3,7,8,9-HxCDD		U	0.313	0.157	0.1	0.01565	0	
6	6D30312	10.118	6	1,2,3,4,6,7,8-HpCDD	5.708		0.533		0.01	0.05708	0.05708	
6	6D30312	10.118	7	OCDD	28.964		1.511		0.0001	0.002896	0.002896	
6	6D30312	10.118	8	2,3,7,8-TCDF	1.257	C	0.242		0.1	0.1257	0.1257	
6	6D30312	10.118	9	1,2,3,7,8-PeCDF		U	0.161	0.081	0.05	0.004025	0	
6	6D30312	10.118	10	2,3,4,7,8-PeCDF		U	0.180	0.090	0.5	0.045	0	
6	6D30312	10.118	11	1,2,3,4,7,8-HxCDF	0.639	J	0.208		0.1	0.0639	0.0639	
6	6D30312	10.118	12	1,2,3,6,7,8-HxCDF		U	0.199	0.100	0.1	0.00995	0	
6	6D30312	10.118	13	1,2,3,7,8,9-HxCDF		U	0.284	0.142	0.1	0.0142	0	
6	6D30312	10.118	14	2,3,4,6,7,8-HxCDF		U	0.235	0.118	0.1	0.01175	0	
6	6D30312	10.118	15	1,2,3,4,6,7,8-HpCDF	3.801		0.413		0.01	0.03801	0.03801	
6	6D30312	10.118	16	1,2,3,4,7,8,9-HpCDF		U	0.723	0.362	0.01	0.003615	0	
6	6D30312	10.118	17	OCDF	11.756		2.304		0.0001	0.001	0.001176	
Σ TEQ:										**0.601302**	**0.288762**	**51.98%**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
7	7B30312	10.220	1	2,3,7,8-TCDD		U	0.081	0.041	1	0.0405	0	
7	7B30312	10.220	2	1,2,3,7,8-PeCDD	0.310	JK	0.128		0.5	0.155	0.155	
7	7B30312	10.220	3	1,2,3,4,7,8-HxCDD	0.252	JK	0.133		0.1	0.0252	0.0252	
7	7B30312	10.220	4	1,2,3,6,7,8-HxCDD	1.533	J	0.163		0.1	0.1533	0.1533	
7	7B30312	10.220	5	1,2,3,7,8,9-HxCDD	0.710	JK	0.145		0.1	0.071	0.071	
7	7B30312	10.220	6	1,2,3,4,6,7,8-HpCDD	27.718	B	0.306		0.01	0.27718	0.27718	
7	7B30312	10.220	7	OCDD	201.630	B	0.628		0.0001	0.020163	0.020163	
7	7B30312	10.220	8	2,3,7,8-TCDF	0.647	CJ	0.101		0.1	0.0647	0.0647	
7	7B30312	10.220	9	1,2,3,7,8-PeCDF		U	0.079	0.040	0.05	0.001975	0	
7	7B30312	10.220	10	2,3,4,7,8-PeCDF		U	0.092	0.046	0.5	0.023	0	
7	7B30312	10.220	11	1,2,3,4,7,8-HxCDF	1.100	BJ	0.122		0.1	0.11	0.11	
7	7B30312	10.220	12	1,2,3,6,7,8-HxCDF	0.557	J	0.120		0.1	0.0557	0.0557	
7	7B30312	10.220	13	1,2,3,7,8,9-HxCDF		U	0.174	0.087	0.1	0.0087	0	
7	7B30312	10.220	14	2,3,4,6,7,8-HxCDF	0.687	J	0.138		0.1	0.0687	0.0687	
7	7B30312	10.220	15	1,2,3,4,6,7,8-HpCDF	9.477	B	0.166		0.01	0.09477	0.09477	
7	7B30312	10.220	16	1,2,3,4,7,8,9-HpCDF	0.518	J	0.309		0.01	0.00518	0.00518	
7	7B30312	10.220	17	OCDF	16.977	B	0.690		0.0001	0.001698	0.001698	
Σ TEQ:										**1.176766**	**1.102591**	**6.30%**
8	8C30312	10.228	1	2,3,7,8-TCDD		U	0.281	0.141	1	0.1405	0	
8	8C30312	10.228	2	1,2,3,7,8-PeCDD		U	0.305	0.153	0.5	0.07625	0	
8	8C30312	10.228	3	1,2,3,4,7,8-HxCDD	0.616	J	0.286		0.1	0.0616	0.0616	
8	8C30312	10.228	4	1,2,3,6,7,8-HxCDD	2.067	J	0.324		0.1	0.2067	0.2067	
8	8C30312	10.228	5	1,2,3,7,8,9-HxCDD	0.931	J	0.289		0.1	0.0931	0.0931	
8	8C30312	10.228	6	1,2,3,4,6,7,8-HpCDD	26.627		0.464		0.01	0.26627	0.26627	
8	8C30312	10.228	7	OCDD	178.011		1.696		0.0001	0.017801	0.017801	
8	8C30312	10.228	8	2,3,7,8-TCDF		U	0.260	0.130	0.1	0.013	0	
8	8C30312	10.228	9	1,2,3,7,8-PeCDF		U	0.195	0.098	0.05	0.004875	0	
8	8C30312	10.228	10	2,3,4,7,8-PeCDF		U	0.202	0.101	0.5	0.0505	0	
8	8C30312	10.228	11	1,2,3,4,7,8-HxCDF	0.661	J	0.286		0.1	0.0661	0.0661	
8	8C30312	10.228	12	1,2,3,6,7,8-HxCDF	0.355	JK	0.273		0.1	0.0355	0.0355	
8	8C30312	10.228	13	1,2,3,7,8,9-HxCDF		U	0.380	0.190	0.1	0.019	0	
8	8C30312	10.228	14	2,3,4,6,7,8-HxCDF	0.852	J	0.327		0.1	0.0852	0.0852	
8	8C30312	10.228	15	1,2,3,4,6,7,8-HpCDF	9.158		0.330		0.01	0.09158	0.09158	
8	8C30312	10.228	16	1,2,3,4,7,8,9-HpCDF	0.981	J	0.617		0.01	0.00981	0.00981	
8	8C30312	10.228	17	OCDF	27.935		2.300		0.0001	0.002794	0.002794	
Σ TEQ:										**1.24058**	**0.936455**	**24.51%**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
9	9D40314	10.133	1	2,3,7,8-TCDD		U	0.256	0.128	1	0.128	0	
9	9D40314	10.133	2	1,2,3,7,8-PeCDD		U	0.244	0.122	0.5	0.061	0	
9	9D40314	10.133	3	1,2,3,4,7,8-HxCDD		U	0.283	0.142	0.1	0.01415	0	
9	9D40314	10.133	4	1,2,3,6,7,8-HxCDD	0.680	J	0.319		0.1	0.068	0.068	
9	9D40314	10.133	5	1,2,3,7,8,9-HxCDD	0.608	J	0.285		0.1	0.0608	0.0608	
9	9D40314	10.133	6	1,2,3,4,6,7,8-HpCDD	11.022		0.491		0.01	0.11022	0.11022	
9	9D40314	10.133	7	OCDD	112.157		0.831		0.0001	0.011216	0.011216	
9	9D40314	10.133	8	2,3,7,8-TCDF	0.480	CJ	0.237		0.1	0.048	0.048	
9	9D40314	10.133	9	1,2,3,7,8-PeCDF		U	0.210	0.105	0.05	0.00525	0	
9	9D40314	10.133	10	2,3,4,7,8-PeCDF		U	0.219	0.110	0.5	0.05475	0	
9	9D40314	10.133	11	1,2,3,4,7,8-HxCDF	0.642	J	0.183		0.1	0.0642	0.0642	
9	9D40314	10.133	12	1,2,3,6,7,8-HxCDF		U	0.169	0.085	0.1	0.00845	0	
9	9D40314	10.133	13	1,2,3,7,8,9-HxCDF		U	0.237	0.119	0.1	0.01185	0	
9	9D40314	10.133	14	2,3,4,6,7,8-HxCDF		U	0.199	0.100	0.1	0.00995	0	
9	9D40314	10.133	15	1,2,3,4,6,7,8-HpCDF	2.693	K	0.304		0.01	0.02693	0.02693	
9	9D40314	10.133	16	1,2,3,4,7,8,9-HpCDF		U	0.429	0.215	0.01	0.002145	0	
9	9D40314	10.133	17	OCDF	18.268		1.236		0.0001	0.001827	0.001827	
Σ TEQ:										**0.686738**	**0.391193**	**43.04%**
10	10E40314	10.187	1	2,3,7,8-TCDD		U	0.123	0.062	1	0.0615	0	
10	10E40314	10.187	2	1,2,3,7,8-PeCDD		U	0.166	0.083	0.5	0.0415	0	
10	10E40314	10.187	3	1,2,3,4,7,8-HxCDD		U	0.199	0.100	0.1	0.00995	0	
10	10E40314	10.187	4	1,2,3,6,7,8-HxCDD		U	0.225	0.113	0.1	0.01125	0	
10	10E40314	10.187	5	1,2,3,7,8,9-HxCDD		U	0.201	0.101	0.1	0.01005	0	
10	10E40314	10.187	6	1,2,3,4,6,7,8-HpCDD	9.817		0.315		0.01	0.09817	0.09817	
10	10E40314	10.187	7	OCDD	81.536		0.826		0.0001	0.008154	0.008154	
10	10E40314	10.187	8	2,3,7,8-TCDF	0.209	CJ	0.154		0.1	0.0209	0.0209	
10	10E40314	10.187	9	1,2,3,7,8-PeCDF		U	0.138	0.069	0.05	0.00345	0	
10	10E40314	10.187	10	2,3,4,7,8-PeCDF		U	0.145	0.073	0.5	0.03625	0	
10	10E40314	10.187	11	1,2,3,4,7,8-HxCDF	0.546	J	0.126		0.1	0.0546	0.0546	
10	10E40314	10.187	12	1,2,3,6,7,8-HxCDF		U	0.127	0.064	0.1	0.00635	0	
10	10E40314	10.187	13	1,2,3,7,8,9-HxCDF		U	0.175	0.088	0.1	0.00875	0	
10	10E40314	10.187	14	2,3,4,6,7,8-HxCDF		U	0.143	0.072	0.1	0.00715	0	
10	10E40314	10.187	15	1,2,3,4,6,7,8-HpCDF	4.365		0.150		0.01	0.04365	0.04365	
10	10E40314	10.187	16	1,2,3,4,7,8,9-HpCDF		U	0.269	0.135	0.01	0.001345	0	
10	10E40314	10.187	17	OCDF	15.391		1.131		0.0001	0.001539	0.001539	
Σ TEQ:										**0.424558**	**0.227013**	**46.53%**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
11	11E50314	10.121	1	2,3,7,8-TCDD	0.257	JK	0.075		1	0.257	0.257	
11	11E50314	10.121	2	1,2,3,7,8-PeCDD	0.508	JK	0.107		0.5	0.254	0.254	
11	11E50314	10.121	3	1,2,3,4,7,8-HxCDD	0.687	J	0.146		0.1	0.0687	0.0687	
11	11E50314	10.121	4	1,2,3,6,7,8-HxCDD	2.566		0.175		0.1	0.2566	0.2566	
11	11E50314	10.121	5	1,2,3,7,8,9-HxCDD	2.116	J	0.157		0.1	0.2116	0.2116	
11	11E50314	10.121	6	1,2,3,4,6,7,8-HpCDD	54.295	B	0.294		0.01	0.54295	0.54295	
11	11E50314	10.121	7	OCDD	409.042	B	0.552		0.0001	0.040904	0.040904	
11	11E50314	10.121	8	2,3,7,8-TCDF	0.887	CJ	0.083		0.1	0.0887	0.0887	
11	11E50314	10.121	9	1,2,3,7,8-PeCDF	0.202	J	0.088		0.05	0.0101	0.0101	
11	11E50314	10.121	10	2,3,4,7,8-PeCDF	0.284	JK	0.094		0.5	0.142	0.142	
11	11E50314	10.121	11	1,2,3,4,7,8-HxCDF	0.792	J	0.117		0.1	0.0792	0.0792	
11	11E50314	10.121	12	1,2,3,6,7,8-HxCDF	0.487	JK	0.113		0.1	0.0487	0.0487	
11	11E50314	10.121	13	1,2,3,7,8,9-HxCDF		U	0.155	0.078	0.1	0.0155	0	
11	11E50314	10.121	14	2,3,4,6,7,8-HxCDF	0.713	J	0.125		0.1	0.0713	0.0713	
11	11E50314	10.121	15	1,2,3,4,6,7,8-HpCDF	12.182		0.215		0.01	0.12182	0.12182	
11	11E50314	10.121	16	1,2,3,4,7,8,9-HpCDF	0.998	J	0.388		0.01	0.00998	0.00998	
11	11E50314	10.121	17	OCDF	35.289		0.646		0.0001	0.003529	0.003529	
Σ TEQ:										**2.222583**	**2.207083**	**0.70%**
12	12D50314	10.162	1	2,3,7,8-TCDD	0.525	JK	0.237		1	0.525	0.525	
12	12D50314	10.162	2	1,2,3,7,8-PeCDD		U	0.207	0.104	0.5	0.05175	0	
12	12D50314	10.162	3	1,2,3,4,7,8-HxCDD	0.554	JK	0.271		0.1	0.0554	0.0554	
12	12D50314	10.162	4	1,2,3,6,7,8-HxCDD	2.066	J	0.306		0.1	0.2066	0.2066	
12	12D50314	10.162	5	1,2,3,7,8,9-HxCDD	1.536	J	0.273		0.1	0.1536	0.1536	
12	12D50314	10.162	6	1,2,3,4,6,7,8-HpCDD	67.437		0.623		0.01	0.67437	0.67437	
12	12D50314	10.162	7	OCDD	547.854		1.873		0.0001	0.054785	0.054785	
12	12D50314	10.162	8	2,3,7,8-TCDF	0.734	CJ	0.221		0.1	0.0734	0.0734	
12	12D50314	10.162	9	1,2,3,7,8-PeCDF		U	0.253	0.127	0.05	0.006325	0	
12	12D50314	10.162	10	2,3,4,7,8-PeCDF		U	0.254	0.127	0.5	0.0635	0	
12	12D50314	10.162	11	1,2,3,4,7,8-HxCDF	1.202	JK	0.214		0.1	0.1202	0.1202	
12	12D50314	10.162	12	1,2,3,6,7,8-HxCDF	0.858	J	0.205		0.1	0.0858	0.0858	
12	12D50314	10.162	13	1,2,3,7,8,9-HxCDF		U	0.278	0.139	0.1	0.0139	0	
12	12D50314	10.162	14	2,3,4,6,7,8-HxCDF	1.146	J	0.238		0.1	0.1146	0.1146	
12	12D50314	10.162	15	1,2,3,4,6,7,8-HpCDF	22.812		0.410		0.01	0.22812	0.22812	
12	12D50314	10.162	16	1,2,3,4,7,8,9-HpCDF	1.136	J	0.665		0.01	0.01136	0.01136	
12	12D50314	10.162	17	OCDF	67.523		1.892		0.0001	0.006752	0.006752	
Σ TEQ:										**2.445463**	**2.309988**	**5.54%**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
13	13E60314	10.134	1	2,3,7,8-TCDD		U	0.166	0.083	1	0.083	0	
13	13E60314	10.134	2	1,2,3,7,8-PeCDD		U	0.155	0.078	0.5	0.03875	0	
13	13E60314	10.134	3	1,2,3,4,7,8-HxCDD		U	0.140	0.070	0.1	0.007	0	
13	13E60314	10.134	4	1,2,3,6,7,8-HxCDD	0.841	JK	0.162		0.1	0.0841	0.0841	
13	13E60314	10.134	5	1,2,3,7,8,9-HxCDD	0.739	J	0.143		0.1	0.0739	0.0739	
13	13E60314	10.134	6	1,2,3,4,6,7,8-HpCDD	16.633		0.325		0.01	0.16633	0.16633	
13	13E60314	10.134	7	OCDD	146.272		0.729		0.0001	0.014627	0.014627	
13	13E60314	10.134	8	2,3,7,8-TCDF		U	0.139	0.070	0.1	0.00695	0	
13	13E60314	10.134	9	1,2,3,7,8-PeCDF		U	0.129	0.065	0.05	0.003225	0	
13	13E60314	10.134	10	2,3,4,7,8-PeCDF		U	0.130	0.065	0.5	0.0325	0	
13	13E60314	10.134	11	1,2,3,4,7,8-HxCDF	0.497	J	0.190		0.1	0.0497	0.0497	
13	13E60314	10.134	12	1,2,3,6,7,8-HxCDF		U	0.172	0.086	0.1	0.0086	0	
13	13E60314	10.134	13	1,2,3,7,8,9-HxCDF		U	0.258	0.129	0.1	0.0129	0	
13	13E60314	10.134	14	2,3,4,6,7,8-HxCDF	0.459	J	0.214		0.1	0.0459	0.0459	
13	13E60314	10.134	15	1,2,3,4,6,7,8-HpCDF	4.063		0.330		0.01	0.04063	0.04063	
13	13E60314	10.134	16	1,2,3,4,7,8,9-HpCDF		U	0.570	0.285	0.01	0.00285	0	
13	13E60314	10.134	17	OCDF	18.890		0.707		0.0001	0.001889	0.001889	
Σ TEQ:										**0.672851**	**0.477076**	**29.10%**
14	14D60314	10.270	1	2,3,7,8-TCDD		U	0.215	0.108	1	0.1075	0	
14	14D60314	10.270	2	1,2,3,7,8-PeCDD		U	0.267	0.134	0.5	0.06675	0	
14	14D60314	10.270	3	1,2,3,4,7,8-HxCDD		U	0.279	0.140	0.1	0.01395	0	
14	14D60314	10.270	4	1,2,3,6,7,8-HxCDD		U	0.306	0.153	0.1	0.0153	0	
14	14D60314	10.270	5	1,2,3,7,8,9-HxCDD		U	0.277	0.139	0.1	0.01385	0	
14	14D60314	10.270	6	1,2,3,4,6,7,8-HpCDD	10.998		0.351		0.01	0.10998	0.10998	
14	14D60314	10.270	7	OCDD	199.877		0.878		0.0001	0.019988	0.019988	
14	14D60314	10.270	8	2,3,7,8-TCDF	0.631	CJ	0.194		0.1	0.0631	0.0631	
14	14D60314	10.270	9	1,2,3,7,8-PeCDF		U	0.223	0.112	0.05	0.005575	0	
14	14D60314	10.270	10	2,3,4,7,8-PeCDF		U	0.226	0.113	0.5	0.0565	0	
14	14D60314	10.270	11	1,2,3,4,7,8-HxCDF	0.523	JK	0.187		0.1	0.0523	0.0523	
14	14D60314	10.270	12	1,2,3,6,7,8-HxCDF	0.322	J	0.174		0.1	0.0322	0.0322	
14	14D60314	10.270	13	1,2,3,7,8,9-HxCDF		U	0.251	0.126	0.1	0.01255	0	
14	14D60314	10.270	14	2,3,4,6,7,8-HxCDF		U	0.213	0.107	0.1	0.01065	0	
14	14D60314	10.270	15	1,2,3,4,6,7,8-HpCDF	2.812		0.288		0.01	0.02812	0.02812	
14	14D60314	10.270	16	1,2,3,4,7,8,9-HpCDF	0.531	J	0.448		0.01	0.00531	0.00531	
14	14D60314	10.270	17	OCDF	15.181		1.381		0.0001	0.001518	0.001518	
Σ TEQ:										**0.615141**	**0.312516**	**49.20%**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
15	15D70314	10.141	1	2,3,7,8-TCDD	0.959	J	0.181		1	0.959	0.959	
15	15D70314	10.141	2	1,2,3,7,8-PeCDD	0.484	J	0.187		0.5	0.242	0.242	
15	15D70314	10.141	3	1,2,3,4,7,8-HxCDD	0.557	JK	0.257		0.1	0.0557	0.0557	
15	15D70314	10.141	4	1,2,3,6,7,8-HxCDD	1.947	J	0.276		0.1	0.1947	0.1947	
15	15D70314	10.141	5	1,2,3,7,8,9-HxCDD	1.288	JK	0.252		0.1	0.1288	0.1288	
15	15D70314	10.141	6	1,2,3,4,6,7,8-HpCDD	42.234		0.510		0.01	0.42234	0.42234	
15	15D70314	10.141	7	OCDD	356.259		1.229		0.0001	0.035626	0.035626	
15	15D70314	10.141	8	2,3,7,8-TCDF	1.429	C	0.160		0.1	0.1429	0.1429	
15	15D70314	10.141	9	1,2,3,7,8-PeCDF	0.703	J	0.136		0.05	0.03515	0.03515	
15	15D70314	10.141	10	2,3,4,7,8-PeCDF	1.162	J	0.132		0.5	0.581	0.581	
15	15D70314	10.141	11	1,2,3,4,7,8-HxCDF	2.908		0.123		0.1	0.2908	0.2908	
15	15D70314	10.141	12	1,2,3,6,7,8-HxCDF	1.483	J	0.115		0.1	0.1483	0.1483	
15	15D70314	10.141	13	1,2,3,7,8,9-HxCDF		U	0.178	0.089	0.1	0.0089	0	
15	15D70314	10.141	14	2,3,4,6,7,8-HxCDF	2.857		0.142		0.1	0.2857	0.2857	
15	15D70314	10.141	15	1,2,3,4,6,7,8-HpCDF	18.351		0.310		0.01	0.18351	0.18351	
15	15D70314	10.141	16	1,2,3,4,7,8,9-HpCDF	0.823	J	0.567		0.01	0.00823	0.00823	
15	15D70314	10.141	17	OCDF	40.179		1.720		0.0001	0.004018	0.004018	
Σ TEQ:										**3.726674**	**3.717774**	**0.24%**
16	16E70314	10.235	1	2,3,7,8-TCDD		U	0.071	0.036	1	0.0355	0	
16	16E70314	10.235	2	1,2,3,7,8-PeCDD		U	0.117	0.059	0.5	0.02925	0	
16	16E70314	10.235	3	1,2,3,4,7,8-HxCDD		U	0.116	0.058	0.1	0.0058	0	
16	16E70314	10.235	4	1,2,3,6,7,8-HxCDD	0.362	J	0.132		0.1	0.0362	0.0362	
16	16E70314	10.235	5	1,2,3,7,8,9-HxCDD		U	0.121	0.061	0.1	0.00605	0	
16	16E70314	10.235	6	1,2,3,4,6,7,8-HpCDD	10.848	B	0.191		0.01	0.10848	0.10848	
16	16E70314	10.235	7	OCDD	109.745	B	0.416		0.0001	0.010975	0.010975	
16	16E70314	10.235	8	2,3,7,8-TCDF	0.359	CJ	0.073		0.1	0.0359	0.0359	
16	16E70314	10.235	9	1,2,3,7,8-PeCDF		U	0.086	0.043	0.05	0.00215	0	
16	16E70314	10.235	10	2,3,4,7,8-PeCDF		U	0.099	0.050	0.5	0.02475	0	
16	16E70314	10.235	11	1,2,3,4,7,8-HxCDF	0.363	J	0.081		0.1	0.0363	0.0363	
16	16E70314	10.235	12	1,2,3,6,7,8-HxCDF	0.147	JK	0.074		0.1	0.0147	0.0147	
16	16E70314	10.235	13	1,2,3,7,8,9-HxCDF		U	0.115	0.058	0.1	0.00575	0	
16	16E70314	10.235	14	2,3,4,6,7,8-HxCDF		U	0.090	0.045	0.1	0.0045	0	
16	16E70314	10.235	15	1,2,3,4,6,7,8-HpCDF	3.990		0.199		0.01	0.0399	0.0399	
16	16E70314	10.235	16	1,2,3,4,7,8,9-HpCDF		U	0.346	0.173	0.01	0.00173	0	
16	16E70314	10.235	17	OCDF	9.021		0.414		0.0001	0.000902	0.000902	
Σ TEQ:										**0.398837**	**0.283357**	**28.95%**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
17	17D10312	10.190	1	2,3,7,8-TCDD		U	0.157	0.079	1	0.0785	0	
17	17D10312	10.190	2	1,2,3,7,8-PeCDD		U	0.281	0.141	0.5	0.07025	0	
17	17D10312	10.190	3	1,2,3,4,7,8-HxCDD		U	0.289	0.145	0.1	0.01445	0	
17	17D10312	10.190	4	1,2,3,6,7,8-HxCDD		U	0.332	0.166	0.1	0.0166	0	
17	17D10312	10.190	5	1,2,3,7,8,9-HxCDD		U	0.294	0.147	0.1	0.0147	0	
17	17D10312	10.190	6	1,2,3,4,6,7,8-HpCDD	5.291		0.633		0.01	0.05291	0.05291	
17	17D10312	10.190	7	OCDD	40.398		1.326		0.0001	0.00404	0.00404	
17	17D10312	10.190	8	2,3,7,8-TCDF		U	0.206	0.103	0.1	0.0103	0	
17	17D10312	10.190	9	1,2,3,7,8-PeCDF		U	0.204	0.102	0.05	0.0051	0	
17	17D10312	10.190	10	2,3,4,7,8-PeCDF		U	0.229	0.115	0.5	0.05725	0	
17	17D10312	10.190	11	1,2,3,4,7,8-HxCDF	0.637	J	0.215		0.1	0.0637	0.0637	
17	17D10312	10.190	12	1,2,3,6,7,8-HxCDF	0.294	J	0.193		0.1	0.0294	0.0294	
17	17D10312	10.190	13	1,2,3,7,8,9-HxCDF		U	0.276	0.138	0.1	0.0138	0	
17	17D10312	10.190	14	2,3,4,6,7,8-HxCDF	0.555	J	0.246		0.1	0.0555	0.0555	
17	17D10312	10.190	15	1,2,3,4,6,7,8-HpCDF	8.124		0.464		0.01	0.08124	0.08124	
17	17D10312	10.190	16	1,2,3,4,7,8,9-HpCDF		U	0.822	0.411	0.01	0.00411	0	
17	17D10312	10.190	17	OCDF	31.304		1.624		0.0001	0.00313	0.00313	
Σ TEQ:										**0.57498**	**0.28992**	**49.58%**
18	18D20312	10.255	1	2,3,7,8-TCDD		U	0.248	0.124	1	0.124	0	
18	18D20312	10.255	2	1,2,3,7,8-PeCDD		U	0.276	0.138	0.5	0.069	0	
18	18D20312	10.255	3	1,2,3,4,7,8-HxCDD	0.559	J	0.255		0.1	0.0559	0.0559	
18	18D20312	10.255	4	1,2,3,6,7,8-HxCDD	0.832	J	0.285		0.1	0.0832	0.0832	
18	18D20312	10.255	5	1,2,3,7,8,9-HxCDD	0.645	JK	0.256		0.1	0.0645	0.0645	
18	18D20312	10.255	6	1,2,3,4,6,7,8-HpCDD	5.802		0.428		0.01	0.05802	0.05802	
18	18D20312	10.255	7	OCDD	33.890		0.736		0.0001	0.003389	0.003389	
18	18D20312	10.255	8	2,3,7,8-TCDF	1.485	C	0.277		0.1	0.1485	0.1485	
18	18D20312	10.255	9	1,2,3,7,8-PeCDF	0.644	J	0.266		0.05	0.0322	0.0322	
18	18D20312	10.255	10	2,3,4,7,8-PeCDF	0.924	J	0.285		0.5	0.462	0.462	
18	18D20312	10.255	11	1,2,3,4,7,8-HxCDF	0.987	JK	0.244		0.1	0.0987	0.0987	
18	18D20312	10.255	12	1,2,3,6,7,8-HxCDF	0.686	J	0.223		0.1	0.0686	0.0686	
18	18D20312	10.255	13	1,2,3,7,8,9-HxCDF		U	0.326	0.163	0.1	0.0163	0	
18	18D20312	10.255	14	2,3,4,6,7,8-HxCDF	0.686	J	0.274		0.1	0.0686	0.0686	
18	18D20312	10.255	15	1,2,3,4,6,7,8-HpCDF	3.137		0.289		0.01	0.03137	0.03137	
18	18D20312	10.255	16	1,2,3,4,7,8,9-HpCDF	0.699	J	0.422		0.01	0.00699	0.00699	
18	18D20312	10.255	17	OCDF	46.627		0.983		0.0001	0.004663	0.004663	
Σ TEQ:										**1.395932**	**1.186632**	**14.99%**

Davis County Sample Results

Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
19	19C30312	10.271	1	2,3,7,8-TCDD		U	0.072	0.036	1	0.036	0	
19	19C30312	10.271	2	1,2,3,7,8-PeCDD		U	0.113	0.057	0.5	0.02825	0	
19	19C30312	10.271	3	1,2,3,4,7,8-HxCDD	0.438	J	0.149		0.1	0.0438	0.0438	
19	19C30312	10.271	4	1,2,3,6,7,8-HxCDD	2.016	J	0.179		0.1	0.2016	0.2016	
19	19C30312	10.271	5	1,2,3,7,8,9-HxCDD	1.606	J	0.160		0.1	0.1606	0.1606	
19	19C30312	10.271	6	1,2,3,4,6,7,8-HpCDD	62.575	B	0.395		0.01	0.62575	0.62575	
19	19C30312	10.271	7	OCDD	509.967	B	0.648		0.0001	0.050997	0.050997	
19	19C30312	10.271	8	2,3,7,8-TCDF	1.350	C	0.119		0.1	0.135	0.135	
19	19C30312	10.271	9	1,2,3,7,8-PeCDF		U	0.076	0.038	0.05	0.0019	0	
19	19C30312	10.271	10	2,3,4,7,8-PeCDF	0.470	J	0.084		0.5	0.235	0.235	
19	19C30312	10.271	11	1,2,3,4,7,8-HxCDF	0.762	BJ	0.161		0.1	0.0762	0.0762	
19	19C30312	10.271	12	1,2,3,6,7,8-HxCDF	0.381	J	0.158		0.1	0.0381	0.0381	
19	19C30312	10.271	13	1,2,3,7,8,9-HxCDF		U	0.230	0.115	0.1	0.0115	0	
19	19C30312	10.271	14	2,3,4,6,7,8-HxCDF	0.601	J	0.185		0.1	0.0601	0.0601	
19	19C30312	10.271	15	1,2,3,4,6,7,8-HpCDF	11.622	B	0.185		0.01	0.11622	0.11622	
19	19C30312	10.271	16	1,2,3,4,7,8,9-HpCDF	0.814	J	0.363		0.01	0.00814	0.00814	
19	19C30312	10.271	17	OCDF	34.769	B	0.820		0.0001	0.003477	0.003477	
Σ TEQ:										**1.832634**	**1.754984**	**4.24%**
20	20C30312	10.229	1	2,3,7,8-TCDD	1.039		0.351		1	1.039	1.039	
20	20C30312	10.229	2	1,2,3,7,8-PeCDD		U	0.508	0.254	0.5	0.127	0	
20	20C30312	10.229	3	1,2,3,4,7,8-HxCDD	0.557	J	0.391		0.1	0.0557	0.0557	
20	20C30312	10.229	4	1,2,3,6,7,8-HxCDD	1.784	J	0.435		0.1	0.1784	0.1784	
20	20C30312	10.229	5	1,2,3,7,8,9-HxCDD	1.663	J	0.391		0.1	0.1663	0.1663	
20	20C30312	10.229	6	1,2,3,4,6,7,8-HpCDD	55.521		0.712		0.01	0.55521	0.55521	
20	20C30312	10.229	7	OCDD	481.962		1.118		0.0001	0.048196	0.048196	
20	20C30312	10.229	8	2,3,7,8-TCDF	1.011	C	0.485		0.1	0.1011	0.1011	
20	20C30312	10.229	9	1,2,3,7,8-PeCDF	0.679	JK	0.344		0.05	0.03395	0.03395	
20	20C30312	10.229	10	2,3,4,7,8-PeCDF		U	0.372	0.186	0.5	0.093	0	
20	20C30312	10.229	11	1,2,3,4,7,8-HxCDF	1.048	J	0.201		0.1	0.1048	0.1048	
20	20C30312	10.229	12	1,2,3,6,7,8-HxCDF	0.608	JK	0.192		0.1	0.0608	0.0608	
20	20C30312	10.229	13	1,2,3,7,8,9-HxCDF	0.469	JK	0.254		0.1	0.0469	0.0469	
20	20C30312	10.229	14	2,3,4,6,7,8-HxCDF	0.982	J	0.234		0.1	0.0982	0.0982	
20	20C30312	10.229	15	1,2,3,4,6,7,8-HpCDF	9.811		0.469		0.01	0.09811	0.09811	
20	20C30312	10.229	16	1,2,3,4,7,8,9-HpCDF	0.941	J	0.737		0.01	0.00941	0.00941	
20	20C30312	10.229	17	OCDF	32.294		1.155		0.0001	0.003229	0.003229	
Σ TEQ:										**2.819306**	**2.599306**	**7.80%**

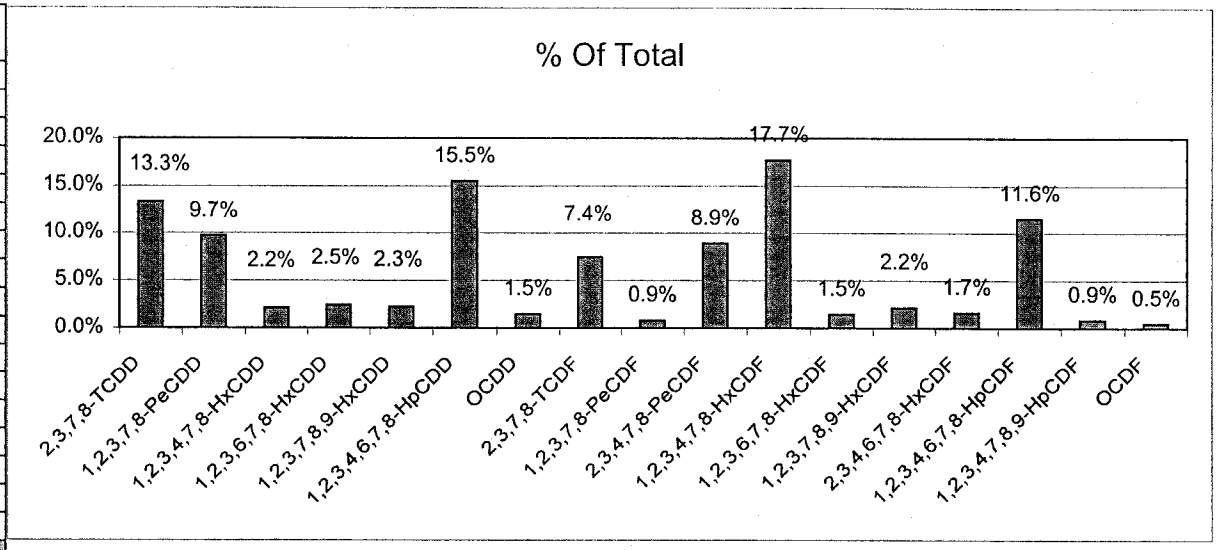
Davis County Sample Results

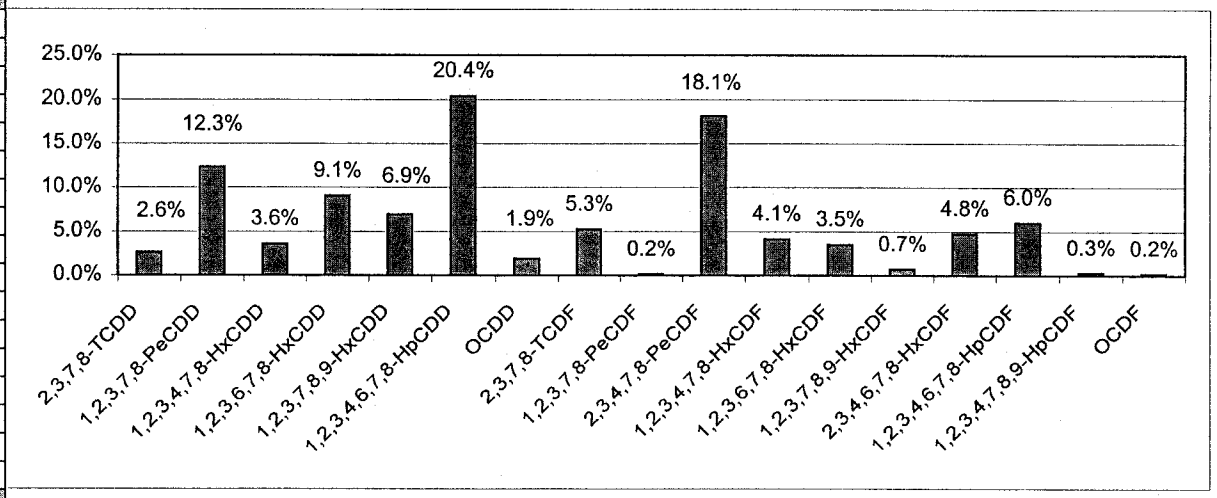
Location Number	Sample ID	Weight	Analyte Order	Analyte	Result Conc	Result Flag	Detect Limit (EDL)	0.5*EDL	WHO TEFs Human	Congener TEQs Full	Congener TEQs (ND=0)	% ND Contribution
21	21C30312	9.738	1	2,3,7,8-TCDD		U	0.300	0.150	1	0.15	0	
21	21C30312	9.738	2	1,2,3,7,8-PeCDD	0.900	J	0.448		0.5	0.45	0.45	
21	21C30312	9.738	3	1,2,3,4,7,8-HxCDD	0.996	J	0.370		0.1	0.0996	0.0996	
21	21C30312	9.738	4	1,2,3,6,7,8-HxCDD	3.369		0.424		0.1	0.3369	0.3369	
21	21C30312	9.738	5	1,2,3,7,8,9-HxCDD	2.441	J	0.376		0.1	0.2441	0.2441	
21	21C30312	9.738	6	1,2,3,4,6,7,8-HpCDD	100.790		0.841		0.01	1.0079	1.0079	
21	21C30312	9.738	7	OCDD	894.182		2.726		0.0001	0.089418	0.089418	
21	21C30312	9.738	8	2,3,7,8-TCDF	2.804	C	0.441		0.1	0.2804	0.2804	
21	21C30312	9.738	9	1,2,3,7,8-PeCDF		U	0.334	0.167	0.05	0.00835	0	
21	21C30312	9.738	10	2,3,4,7,8-PeCDF	1.867	J	0.356		0.5	0.9335	0.9335	
21	21C30312	9.738	11	1,2,3,4,7,8-HxCDF	1.966	JK	0.265		0.1	0.1966	0.1966	
21	21C30312	9.738	12	1,2,3,6,7,8-HxCDF	1.495	J	0.254		0.1	0.1495	0.1495	
21	21C30312	9.738	13	1,2,3,7,8,9-HxCDF		U	0.377	0.189	0.1	0.01885	0	
21	21C30312	9.738	14	2,3,4,6,7,8-HxCDF	2.076	JK	0.300		0.1	0.2076	0.2076	
21	21C30312	9.738	15	1,2,3,4,6,7,8-HpCDF	26.315		0.452		0.01	0.26315	0.26315	
21	21C30312	9.738	16	1,2,3,4,7,8,9-HpCDF	1.636	J	0.743		0.01	0.01636	0.01636	
21	21C30312	9.738	17	OCDF	141.634		2.477		0.0001	0.014163	0.014163	
Σ TEQ:										**4.466392**	**4.289192**	**3.97%**
22	22C30312	10.248	1	2,3,7,8-TCDD		U	0.339	0.170	1	0.1695	0	
22	22C30312	10.248	2	1,2,3,7,8-PeCDD		U	0.337	0.169	0.5	0.08425	0	
22	22C30312	10.248	3	1,2,3,4,7,8-HxCDD		U	0.344	0.172	0.1	0.0172	0	
22	22C30312	10.248	4	1,2,3,6,7,8-HxCDD	1.206	J	0.405		0.1	0.1206	0.1206	
22	22C30312	10.248	5	1,2,3,7,8,9-HxCDD	1.185	J	0.354		0.1	0.1185	0.1185	
22	22C30312	10.248	6	1,2,3,4,6,7,8-HpCDD	8.810		0.543		0.01	0.0881	0.0881	
22	22C30312	10.248	7	OCDD	32.511		1.188		0.0001	0.003251	0.003251	
22	22C30312	10.248	8	2,3,7,8-TCDF	1.351	C	0.393		0.1	0.1351	0.1351	
22	22C30312	10.248	9	1,2,3,7,8-PeCDF		U	0.288	0.144	0.05	0.0072	0	
22	22C30312	10.248	10	2,3,4,7,8-PeCDF		U	0.301	0.151	0.5	0.07525	0	
22	22C30312	10.248	11	1,2,3,4,7,8-HxCDF	0.903	J	0.229		0.1	0.0903	0.0903	
22	22C30312	10.248	12	1,2,3,6,7,8-HxCDF	0.458	J	0.222		0.1	0.0458	0.0458	
22	22C30312	10.248	13	1,2,3,7,8,9-HxCDF		U	0.319	0.160	0.1	0.01595	0	
22	22C30312	10.248	14	2,3,4,6,7,8-HxCDF	0.656	JK	0.257		0.1	0.0656	0.0656	
22	22C30312	10.248	15	1,2,3,4,6,7,8-HpCDF	2.714		0.329		0.01	0.02714	0.02714	
22	22C30312	10.248	16	1,2,3,4,7,8,9-HpCDF		U	0.560	0.280	0.01	0.0028	0	
22	22C30312	10.248	17	OCDF	4.247	J	1.552		0.0001	0.000425	0.000425	
Σ TEQ:										**1.066966**	**0.694816**	**34.88%**

APPENDIX E: Individual Congener Contribution to TEQ Values for Each Sample

Individual Congener Contribution to TEQ Values

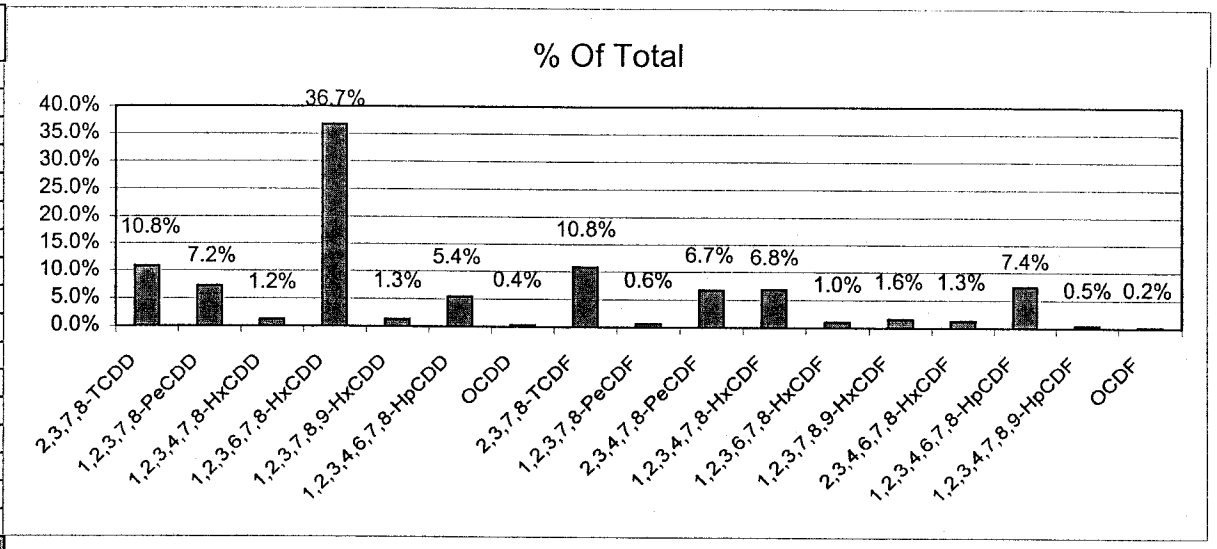
Location Number	Analyte	Congener TEQs Full	% Of Total
1	2,3,7,8-TCDD	0.043	13.3%
1	1,2,3,7,8-PeCDD	0.03125	9.7%
1	1,2,3,4,7,8-HxCDD	0.007	2.2%
1	1,2,3,6,7,8-HxCDD	0.00795	2.5%
1	1,2,3,7,8,9-HxCDD	0.0073	2.3%
1	1,2,3,4,6,7,8-HpCDD	0.05	15.5%
1	OCDD	0.004882	1.5%
1	2,3,7,8-TCDF	0.024	7.4%
1	1,2,3,7,8-PeCDF	0.002775	0.9%
1	2,3,4,7,8-PeCDF	0.02875	8.9%
1	1,2,3,4,7,8-HxCDF	0.057	17.7%
1	1,2,3,6,7,8-HxCDF	0.0047	1.5%
1	1,2,3,7,8,9-HxCDF	0.007	2.2%
1	2,3,4,6,7,8-HxCDF	0.00535	1.7%
1	1,2,3,4,6,7,8-HpCDF	0.0373	11.6%
1	1,2,3,4,7,8,9-HpCDF	0.00289	0.9%
1	OCDF	0.001605	0.5%
Σ TEQ:		**0.322752**	100.0%
2	2,3,7,8-TCDD	0.03	2.6%
2	1,2,3,7,8-PeCDD	0.1405	12.3%
2	1,2,3,4,7,8-HxCDD	0.0411	3.6%
2	1,2,3,6,7,8-HxCDD	0.1032	9.1%
2	1,2,3,7,8,9-HxCDD	0.079	6.9%
2	1,2,3,4,6,7,8-HpCDD	0.23274	20.4%
2	OCDD	0.021834	1.9%
2	2,3,7,8-TCDF	0.06	5.3%
2	1,2,3,7,8-PeCDF	0.001775	0.2%
2	2,3,4,7,8-PeCDF	0.2065	18.1%
2	1,2,3,4,7,8-HxCDF	0.0473	4.1%
2	1,2,3,6,7,8-HxCDF	0.0402	3.5%
2	1,2,3,7,8,9-HxCDF	0.0078	0.7%
2	2,3,4,6,7,8-HxCDF	0.0542	4.8%
2	1,2,3,4,6,7,8-HpCDF	0.06834	6.0%
2	1,2,3,4,7,8,9-HpCDF	0.003205	0.3%
2	OCDF	0.002093	0.2%
Σ TEQ:		**1.139786**	100.0%

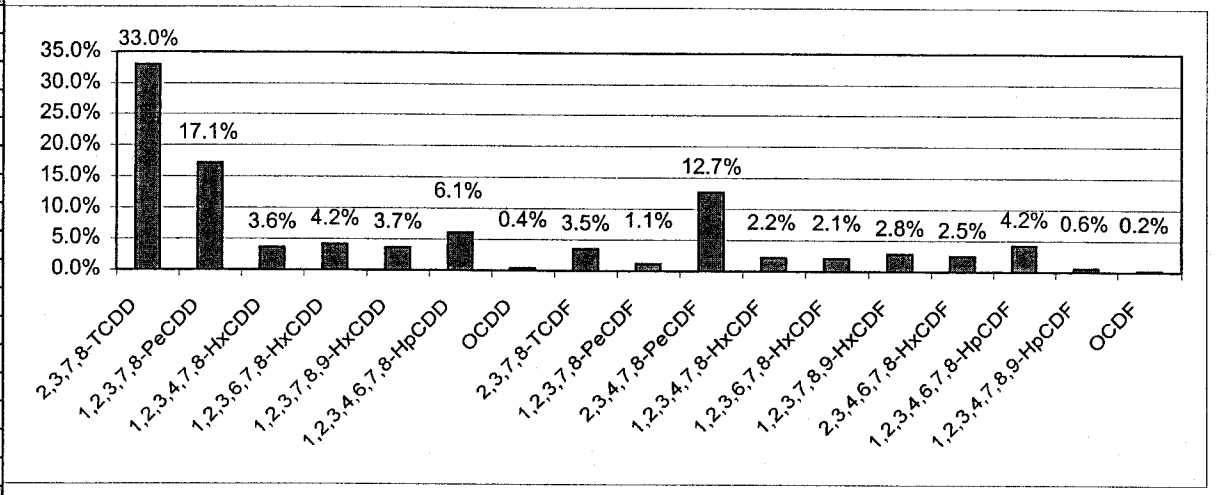




Individual Congener Contribution to TEQ Values

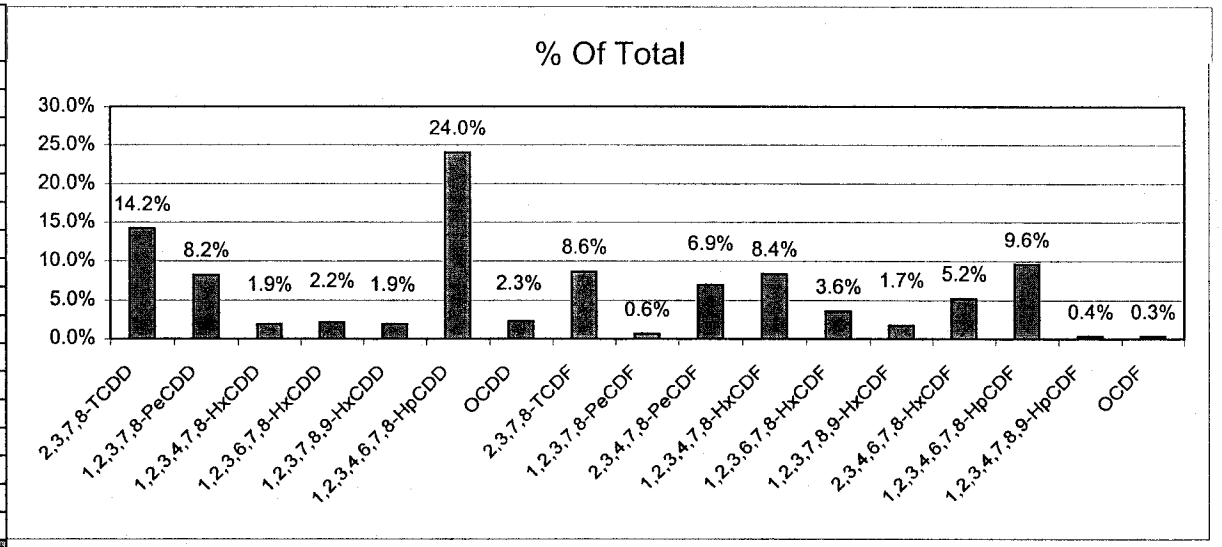
Location Number	Analyte	Congener TEQs Full	% Of Total
3	2,3,7,8-TCDD	0.053	10.8%
3	1,2,3,7,8-PeCDD	0.0355	7.2%
3	1,2,3,4,7,8-HxCDD	0.006	1.2%
3	1,2,3,6,7,8-HxCDD	0.1797	36.7%
3	1,2,3,7,8,9-HxCDD	0.00645	1.3%
3	1,2,3,4,6,7,8-HpCDD	0.02649	5.4%
3	OCDD	0.001802	0.4%
3	2,3,7,8-TCDF	0.0531	10.8%
3	1,2,3,7,8-PeCDF	0.00305	0.6%
3	2,3,4,7,8-PeCDF	0.03275	6.7%
3	1,2,3,4,7,8-HxCDF	0.0334	6.8%
3	1,2,3,6,7,8-HxCDF	0.0051	1.0%
3	1,2,3,7,8,9-HxCDF	0.00785	1.6%
3	2,3,4,6,7,8-HxCDF	0.0062	1.3%
3	1,2,3,4,6,7,8-HpCDF	0.03614	7.4%
3	1,2,3,4,7,8,9-HpCDF	0.00222	0.5%
3	OCDF	0.001003	0.2%
Σ TEQ:		**0.489756**	100.0%
4	2,3,7,8-TCDD	0.144	33.0%
4	1,2,3,7,8-PeCDD	0.07475	17.1%
4	1,2,3,4,7,8-HxCDD	0.01565	3.6%
4	1,2,3,6,7,8-HxCDD	0.01815	4.2%
4	1,2,3,7,8,9-HxCDD	0.016	3.7%
4	1,2,3,4,6,7,8-HpCDD	0.02642	6.1%
4	OCDD	0.00188	0.4%
4	2,3,7,8-TCDF	0.01515	3.5%
4	1,2,3,7,8-PeCDF	0.005	1.1%
4	2,3,4,7,8-PeCDF	0.05525	12.7%
4	1,2,3,4,7,8-HxCDF	0.00965	2.2%
4	1,2,3,6,7,8-HxCDF	0.0091	2.1%
4	1,2,3,7,8,9-HxCDF	0.0123	2.8%
4	2,3,4,6,7,8-HxCDF	0.011	2.5%
4	1,2,3,4,6,7,8-HpCDF	0.01853	4.2%
4	1,2,3,4,7,8,9-HpCDF	0.002485	0.6%
4	OCDF	0.000781	0.2%
Σ TEQ:		**0.436096**	100.0%



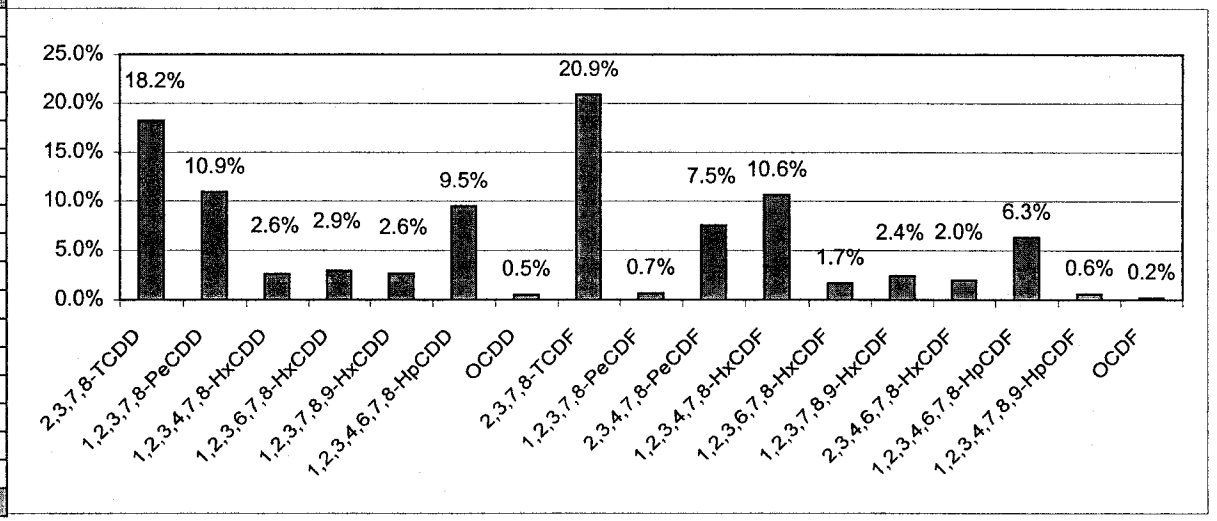


Individual Congener Contribution to TEQ Values

Location Number	Analyte	Congener TEQs Full	% Of Total
5	2,3,7,8-TCDD	0.1035	14.2%
5	1,2,3,7,8-PeCDD	0.05975	8.2%
5	1,2,3,4,7,8-HxCDD	0.0136	1.9%
5	1,2,3,6,7,8-HxCDD	0.0157	2.2%
5	1,2,3,7,8,9-HxCDD	0.01385	1.9%
5	1,2,3,4,6,7,8-HpCDD	0.17481	24.0%
5	OCDD	0.016636	2.3%
5	2,3,7,8-TCDF	0.0629	8.6%
5	1,2,3,7,8-PeCDF	0.0047	0.6%
5	2,3,4,7,8-PeCDF	0.05025	6.9%
5	1,2,3,4,7,8-HxCDF	0.0608	8.4%
5	1,2,3,6,7,8-HxCDF	0.0259	3.6%
5	1,2,3,7,8,9-HxCDF	0.0126	1.7%
5	2,3,4,6,7,8-HxCDF	0.0378	5.2%
5	1,2,3,4,6,7,8-HpCDF	0.06964	9.6%
5	1,2,3,4,7,8,9-HpCDF	0.00258	0.4%
5	OCDF	0.002426	0.3%
Σ TEQ:		**0.727442**	100.0%

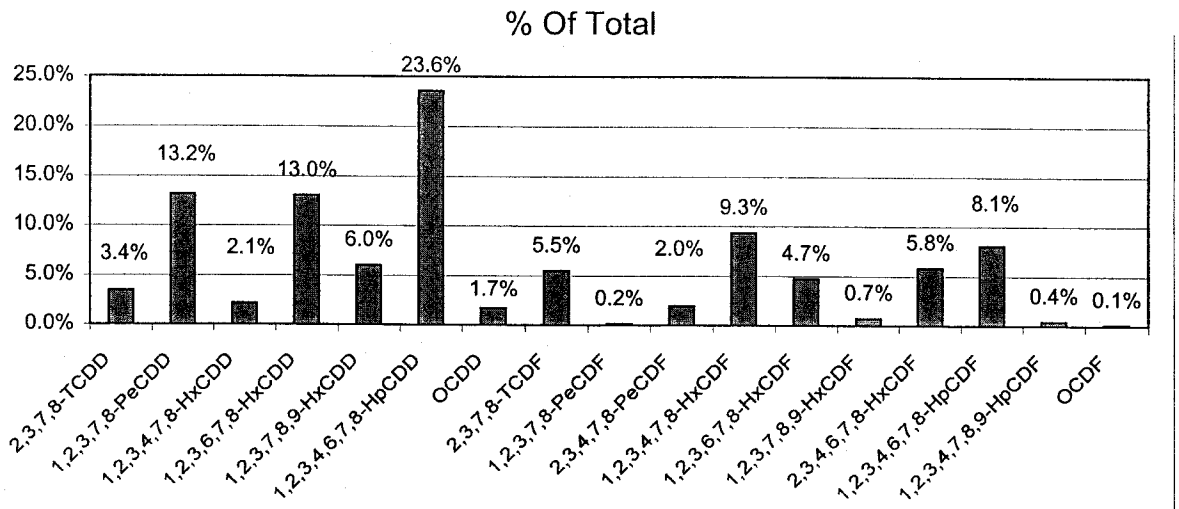


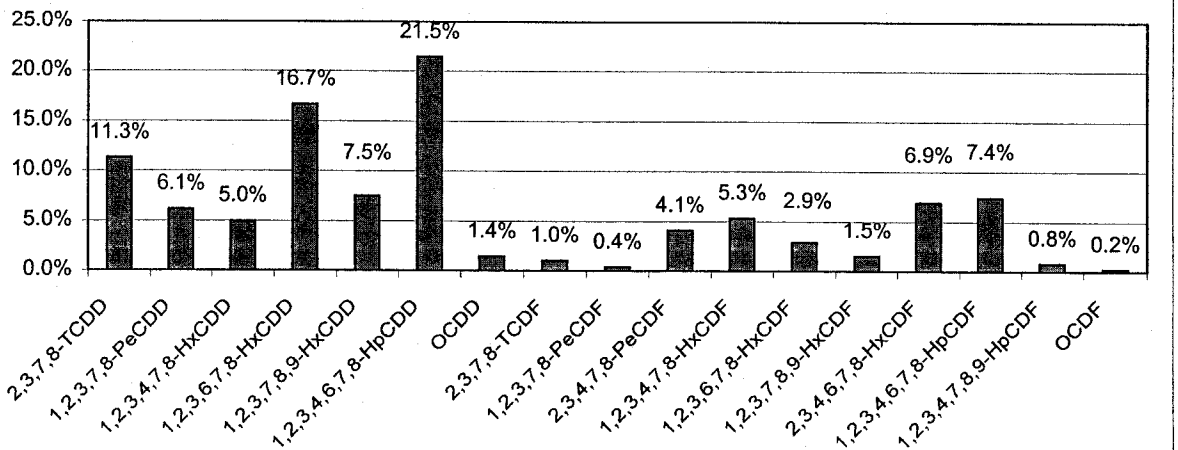
6	2,3,7,8-TCDD	0.1095	18.2%
6	1,2,3,7,8-PeCDD	0.06575	10.9%
6	1,2,3,4,7,8-HxCDD	0.01555	2.6%
6	1,2,3,6,7,8-HxCDD	0.01755	2.9%
6	1,2,3,7,8,9-HxCDD	0.01565	2.6%
6	1,2,3,4,6,7,8-HpCDD	0.05708	9.5%
6	OCDD	0.002896	0.5%
6	2,3,7,8-TCDF	0.1257	20.9%
6	1,2,3,7,8-PeCDF	0.004025	0.7%
6	2,3,4,7,8-PeCDF	0.045	7.5%
6	1,2,3,4,7,8-HxCDF	0.0639	10.6%
6	1,2,3,6,7,8-HxCDF	0.00995	1.7%
6	1,2,3,7,8,9-HxCDF	0.0142	2.4%
6	2,3,4,6,7,8-HxCDF	0.01175	2.0%
6	1,2,3,4,6,7,8-HpCDF	0.03801	6.3%
6	1,2,3,4,7,8,9-HpCDF	0.003615	0.6%
6	OCDF	0.001176	0.2%
Σ TEQ:		**0.601302**	100.0%



Individual Congener Contribution to TEQ Values

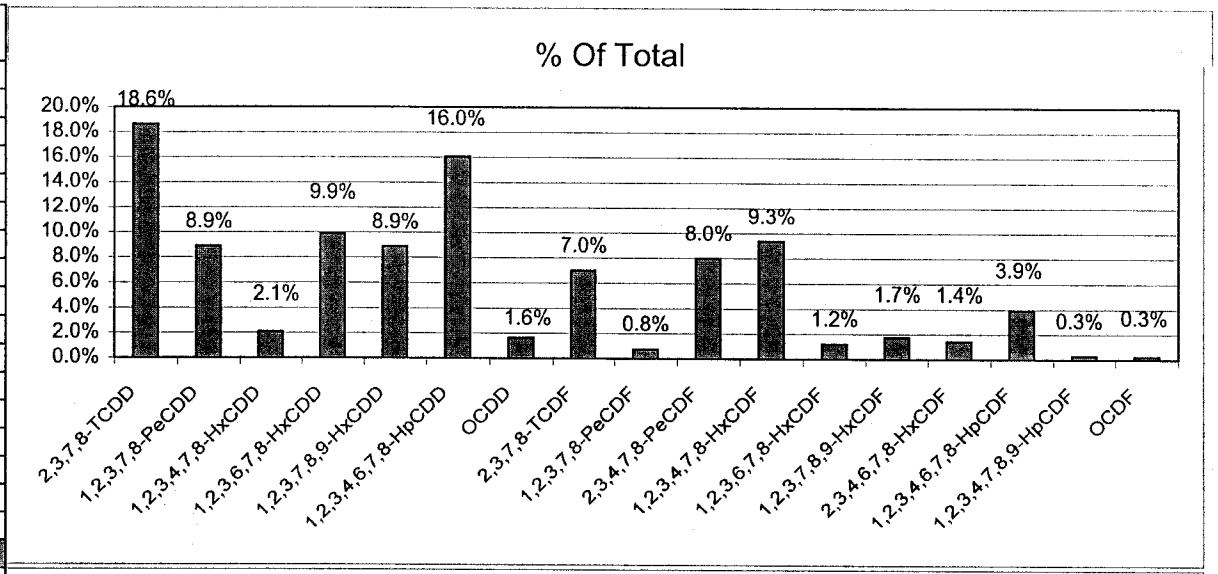
Location Number	Analyte	Congener TEQs Full	% Of Total
7	2,3,7,8-TCDD	0.0405	3.4%
7	1,2,3,7,8-PeCDD	0.155	13.2%
7	1,2,3,4,7,8-HxCDD	0.0252	2.1%
7	1,2,3,6,7,8-HxCDD	0.1533	13.0%
7	1,2,3,7,8,9-HxCDD	0.071	6.0%
7	1,2,3,4,6,7,8-HpCDD	0.27718	23.6%
7	OCDD	0.020163	1.7%
7	2,3,7,8-TCDF	0.0647	5.5%
7	1,2,3,7,8-PeCDF	0.001975	0.2%
7	2,3,4,7,8-PeCDF	0.023	2.0%
7	1,2,3,4,7,8-HxCDF	0.11	9.3%
7	1,2,3,6,7,8-HxCDF	0.0557	4.7%
7	1,2,3,7,8,9-HxCDF	0.0087	0.7%
7	2,3,4,6,7,8-HxCDF	0.0687	5.8%
7	1,2,3,4,6,7,8-HpCDF	0.09477	8.1%
7	1,2,3,4,7,8,9-HpCDF	0.00518	0.4%
7	OCDF	0.001698	0.1%
Σ TEQ:		**1.176766**	100.0%
8	2,3,7,8-TCDD	0.1405	11.3%
8	1,2,3,7,8-PeCDD	0.07625	6.1%
8	1,2,3,4,7,8-HxCDD	0.0616	5.0%
8	1,2,3,6,7,8-HxCDD	0.2067	16.7%
8	1,2,3,7,8,9-HxCDD	0.0931	7.5%
8	1,2,3,4,6,7,8-HpCDD	0.26627	21.5%
8	OCDD	0.017801	1.4%
8	2,3,7,8-TCDF	0.013	1.0%
8	1,2,3,7,8-PeCDF	0.004875	0.4%
8	2,3,4,7,8-PeCDF	0.0505	4.1%
8	1,2,3,4,7,8-HxCDF	0.0661	5.3%
8	1,2,3,6,7,8-HxCDF	0.0355	2.9%
8	1,2,3,7,8,9-HxCDF	0.019	1.5%
8	2,3,4,6,7,8-HxCDF	0.0852	6.9%
8	1,2,3,4,6,7,8-HpCDF	0.09158	7.4%
8	1,2,3,4,7,8,9-HpCDF	0.00981	0.8%
8	OCDF	0.002794	0.2%
Σ TEQ:		**1.24058**	100.0%

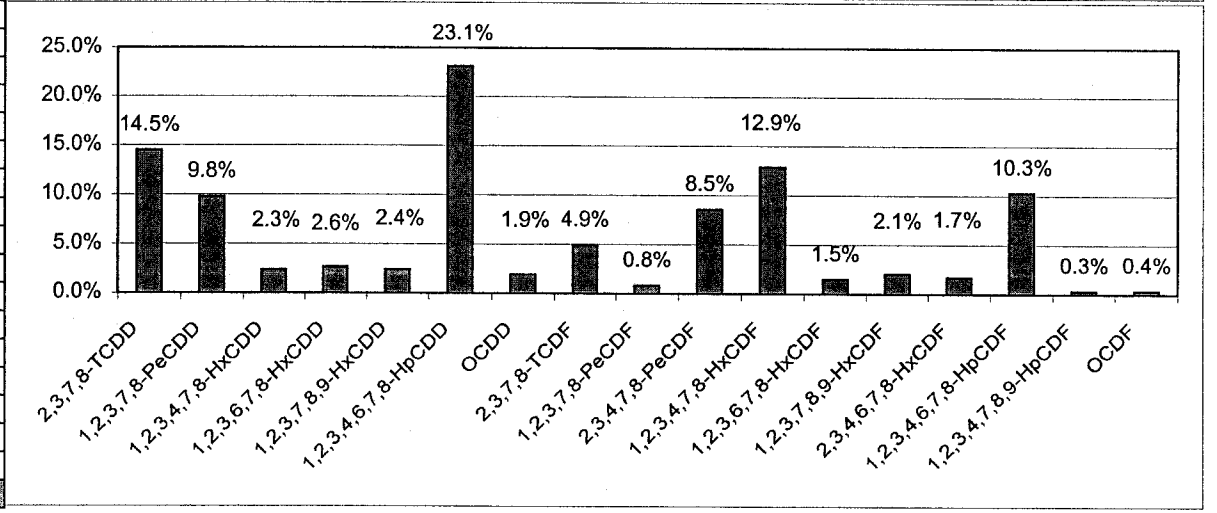




Individual Congener Contribution to TEQ Values

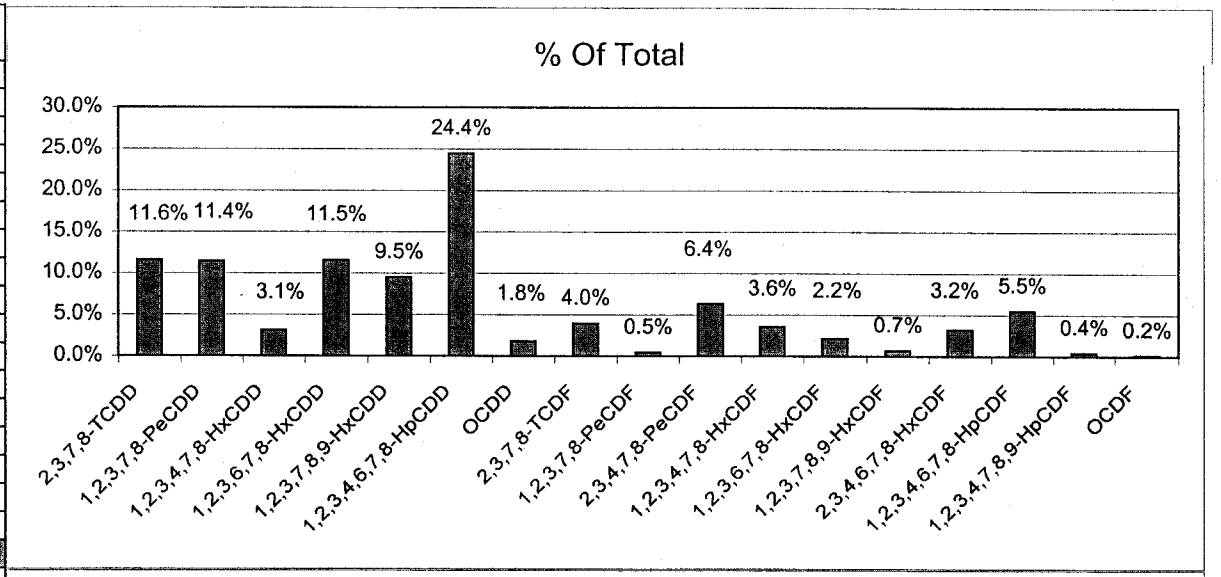
Location Number	Analyte	Congener TEQs Full	% Of Total
9	2,3,7,8-TCDD	0.128	18.6%
9	1,2,3,7,8-PeCDD	0.061	8.9%
9	1,2,3,4,7,8-HxCDD	0.01415	2.1%
9	1,2,3,6,7,8-HxCDD	0.068	9.9%
9	1,2,3,7,8,9-HxCDD	0.0608	8.9%
9	1,2,3,4,6,7,8-HpCDD	0.11022	16.0%
9	OCDD	0.011216	1.6%
9	2,3,7,8-TCDF	0.048	7.0%
9	1,2,3,7,8-PeCDF	0.00525	0.8%
9	2,3,4,7,8-PeCDF	0.05475	8.0%
9	1,2,3,4,7,8-HxCDF	0.0642	9.3%
9	1,2,3,6,7,8-HxCDF	0.00845	1.2%
9	1,2,3,7,8,9-HxCDF	0.01185	1.7%
9	2,3,4,6,7,8-HxCDF	0.00995	1.4%
9	1,2,3,4,6,7,8-HpCDF	0.02693	3.9%
9	1,2,3,4,7,8,9-HpCDF	0.002145	0.3%
9	OCDF	0.001827	0.3%
Σ TEQ:		**0.686738**	100.0%
10	2,3,7,8-TCDD	0.0615	14.5%
10	1,2,3,7,8-PeCDD	0.0415	9.8%
10	1,2,3,4,7,8-HxCDD	0.00995	2.3%
10	1,2,3,6,7,8-HxCDD	0.01125	2.6%
10	1,2,3,7,8,9-HxCDD	0.01005	2.4%
10	1,2,3,4,6,7,8-HpCDD	0.09817	23.1%
10	OCDD	0.008154	1.9%
10	2,3,7,8-TCDF	0.0209	4.9%
10	1,2,3,7,8-PeCDF	0.00345	0.8%
10	2,3,4,7,8-PeCDF	0.03625	8.5%
10	1,2,3,4,7,8-HxCDF	0.0546	12.9%
10	1,2,3,6,7,8-HxCDF	0.00635	1.5%
10	1,2,3,7,8,9-HxCDF	0.00875	2.1%
10	2,3,4,6,7,8-HxCDF	0.00715	1.7%
10	1,2,3,4,6,7,8-HpCDF	0.04365	10.3%
10	1,2,3,4,7,8,9-HpCDF	0.001345	0.3%
10	OCDF	0.001539	0.4%
Σ TEQ:		**0.424558**	100.0%

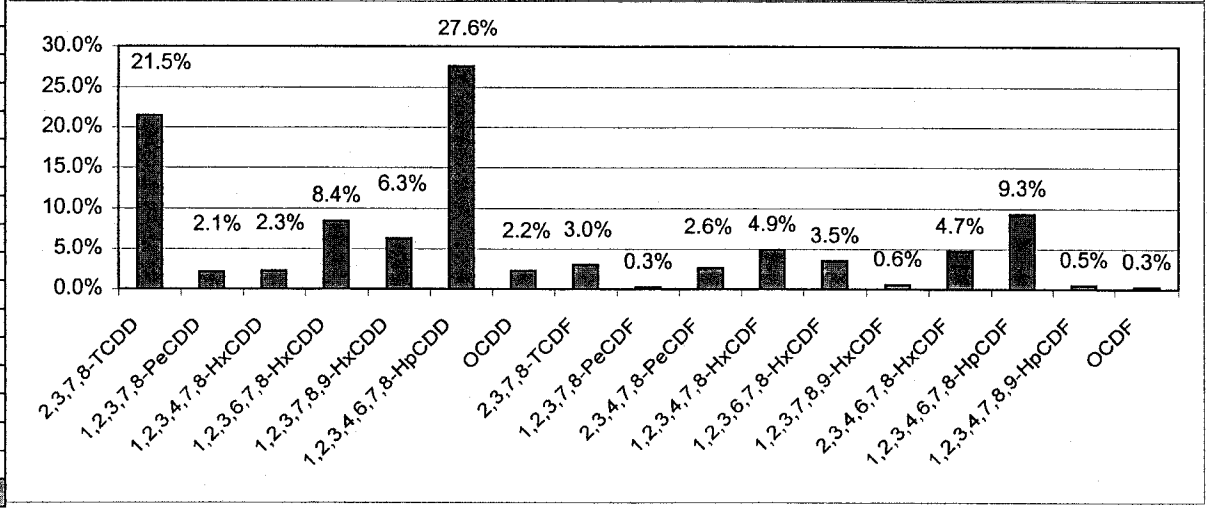




Individual Congener Contribution to TEQ Values

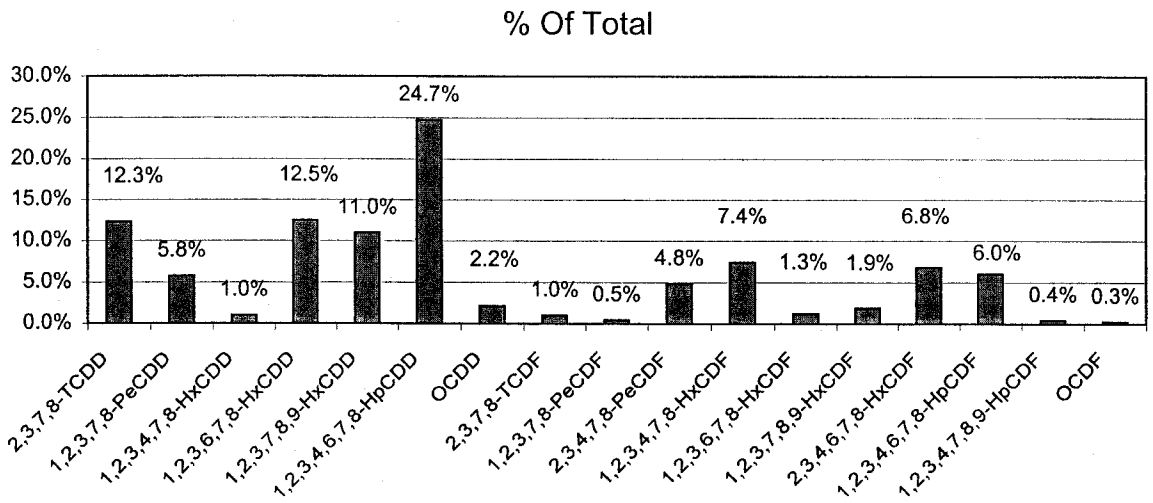
Location Number	Analyte	Congener TEQs Full	% Of Total
11	2,3,7,8-TCDD	0.257	11.6%
11	1,2,3,7,8-PeCDD	0.254	11.4%
11	1,2,3,4,7,8-HxCDD	0.0687	3.1%
11	1,2,3,6,7,8-HxCDD	0.2566	11.5%
11	1,2,3,7,8,9-HxCDD	0.2116	9.5%
11	1,2,3,4,6,7,8-HpCDD	0.54295	24.4%
11	OCDD	0.040904	1.8%
11	2,3,7,8-TCDF	0.0887	4.0%
11	1,2,3,7,8-PeCDF	0.0101	0.5%
11	2,3,4,7,8-PeCDF	0.142	6.4%
11	1,2,3,4,7,8-HxCDF	0.0792	3.6%
11	1,2,3,6,7,8-HxCDF	0.0487	2.2%
11	1,2,3,7,8,9-HxCDF	0.0155	0.7%
11	2,3,4,6,7,8-HxCDF	0.0713	3.2%
11	1,2,3,4,6,7,8-HpCDF	0.12182	5.5%
11	1,2,3,4,7,8,9-HpCDF	0.00998	0.4%
11	OCDF	0.003529	0.2%
Σ TEQ:		**2.222583**	100.0%
12	2,3,7,8-TCDD	0.525	21.5%
12	1,2,3,7,8-PeCDD	0.05175	2.1%
12	1,2,3,4,7,8-HxCDD	0.0554	2.3%
12	1,2,3,6,7,8-HxCDD	0.2066	8.4%
12	1,2,3,7,8,9-HxCDD	0.1536	6.3%
12	1,2,3,4,6,7,8-HpCDD	0.67437	27.6%
12	OCDD	0.054785	2.2%
12	2,3,7,8-TCDF	0.0734	3.0%
12	1,2,3,7,8-PeCDF	0.006325	0.3%
12	2,3,4,7,8-PeCDF	0.0635	2.6%
12	1,2,3,4,7,8-HxCDF	0.1202	4.9%
12	1,2,3,6,7,8-HxCDF	0.0858	3.5%
12	1,2,3,7,8,9-HxCDF	0.0139	0.6%
12	2,3,4,6,7,8-HxCDF	0.1146	4.7%
12	1,2,3,4,6,7,8-HpCDF	0.22812	9.3%
12	1,2,3,4,7,8,9-HpCDF	0.01136	0.5%
12	OCDF	0.006752	0.3%
Σ TEQ:		**2.445463**	100.0%

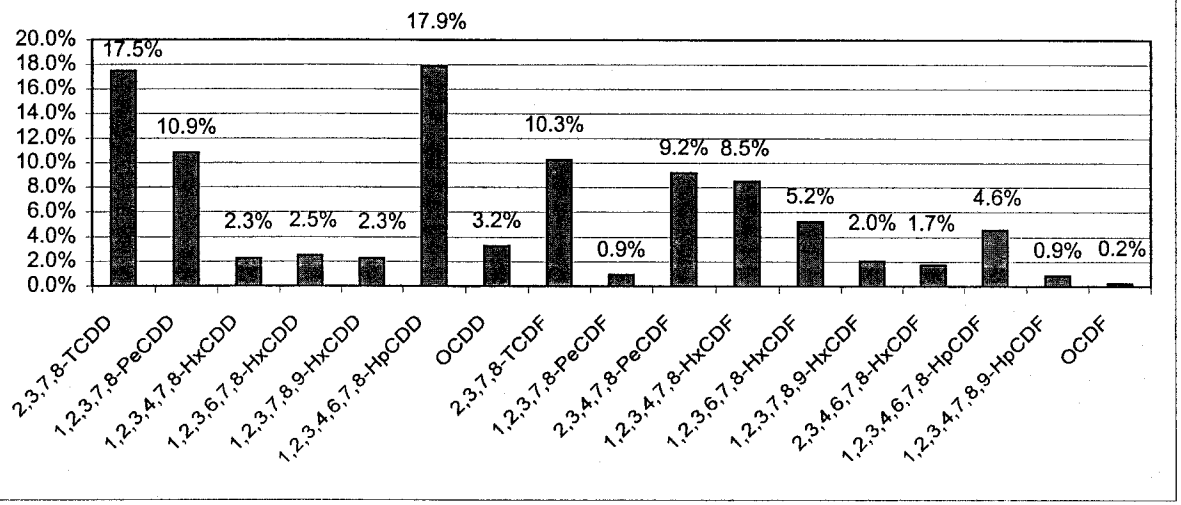




Individual Congener Contribution to TEQ Values

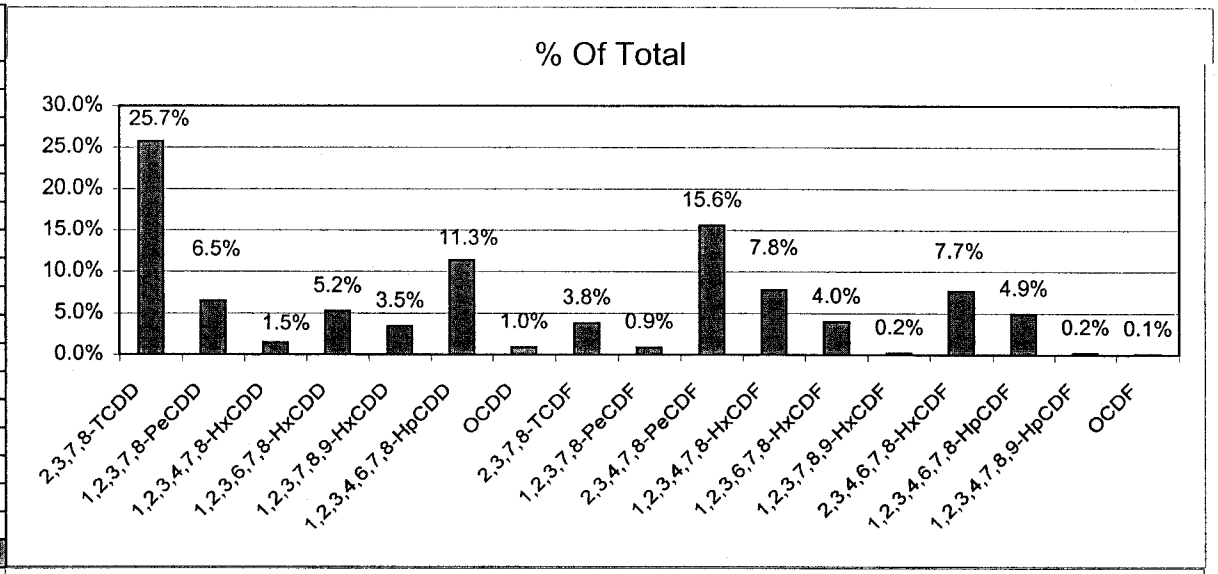
Location Number	Analyte	Congener TEQs Full	% Of Total
13	2,3,7,8-TCDD	0.083	12.3%
13	1,2,3,7,8-PeCDD	0.03875	5.8%
13	1,2,3,4,7,8-HxCDD	0.007	1.0%
13	1,2,3,6,7,8-HxCDD	0.0841	12.5%
13	1,2,3,7,8,9-HxCDD	0.0739	11.0%
13	1,2,3,4,6,7,8-HpCDD	0.16633	24.7%
13	OCDD	0.014627	2.2%
13	2,3,7,8-TCDF	0.00695	1.0%
13	1,2,3,7,8-PeCDF	0.003225	0.5%
13	2,3,4,7,8-PeCDF	0.0325	4.8%
13	1,2,3,4,7,8-HxCDF	0.0497	7.4%
13	1,2,3,6,7,8-HxCDF	0.0086	1.3%
13	1,2,3,7,8,9-HxCDF	0.0129	1.9%
13	2,3,4,6,7,8-HxCDF	0.0459	6.8%
13	1,2,3,4,6,7,8-HpCDF	0.04063	6.0%
13	1,2,3,4,7,8,9-HpCDF	0.00285	0.4%
13	OCDF	0.001889	0.3%
Σ TEQ:		**0.672851**	100.0%
14	2,3,7,8-TCDD	0.1075	17.5%
14	1,2,3,7,8-PeCDD	0.06675	10.9%
14	1,2,3,4,7,8-HxCDD	0.01395	2.3%
14	1,2,3,6,7,8-HxCDD	0.0153	2.5%
14	1,2,3,7,8,9-HxCDD	0.01385	2.3%
14	1,2,3,4,6,7,8-HpCDD	0.10998	17.9%
14	OCDD	0.019988	3.2%
14	2,3,7,8-TCDF	0.0631	10.3%
14	1,2,3,7,8-PeCDF	0.005575	0.9%
14	2,3,4,7,8-PeCDF	0.0565	9.2%
14	1,2,3,4,7,8-HxCDF	0.0523	8.5%
14	1,2,3,6,7,8-HxCDF	0.0322	5.2%
14	1,2,3,7,8,9-HxCDF	0.01255	2.0%
14	2,3,4,6,7,8-HxCDF	0.01065	1.7%
14	1,2,3,4,6,7,8-HpCDF	0.02812	4.6%
14	1,2,3,4,7,8,9-HpCDF	0.00531	0.9%
14	OCDF	0.001518	0.2%
Σ TEQ:		**0.615141**	100.0%



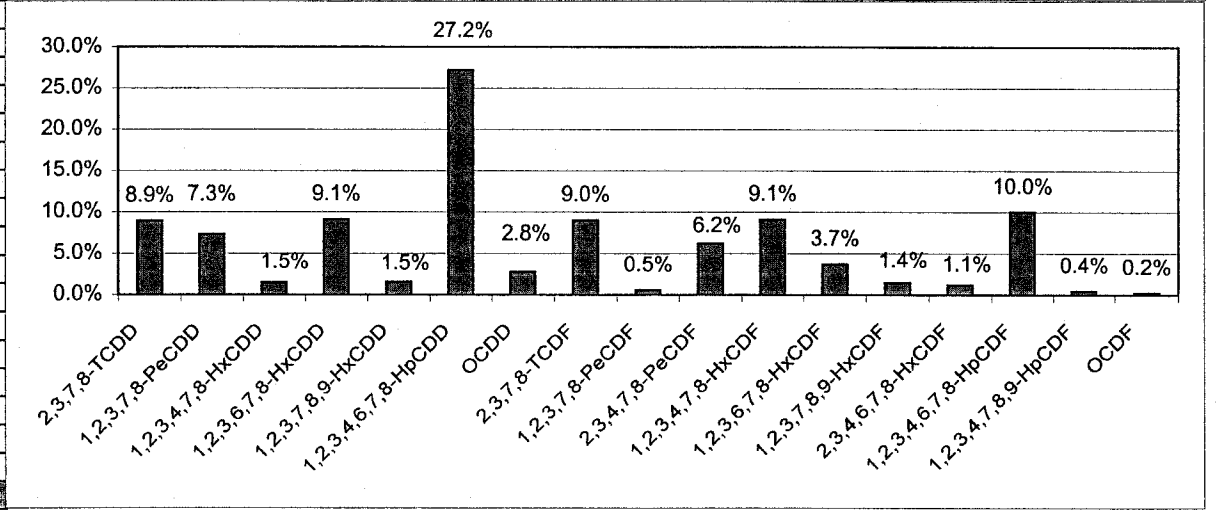


Individual Congener Contribution to TEQ Values

Location Number	Analyte	Congener TEQs Full	% Of Total
15	2,3,7,8-TCDD	0.959	25.7%
15	1,2,3,7,8-PeCDD	0.242	6.5%
15	1,2,3,4,7,8-HxCDD	0.0557	1.5%
15	1,2,3,6,7,8-HxCDD	0.1947	5.2%
15	1,2,3,7,8,9-HxCDD	0.1288	3.5%
15	1,2,3,4,6,7,8-HpCDD	0.42234	11.3%
15	OCDD	0.035626	1.0%
15	2,3,7,8-TCDF	0.1429	3.8%
15	1,2,3,7,8-PeCDF	0.03515	0.9%
15	2,3,4,7,8-PeCDF	0.581	15.6%
15	1,2,3,4,7,8-HxCDF	0.2908	7.8%
15	1,2,3,6,7,8-HxCDF	0.1483	4.0%
15	1,2,3,7,8,9-HxCDF	0.0089	0.2%
15	2,3,4,6,7,8-HxCDF	0.2857	7.7%
15	1,2,3,4,6,7,8-HpCDF	0.18351	4.9%
15	1,2,3,4,7,8,9-HpCDF	0.00823	0.2%
15	OCDF	0.004018	0.1%
Σ TEQ:		**3.726674**	100.0%

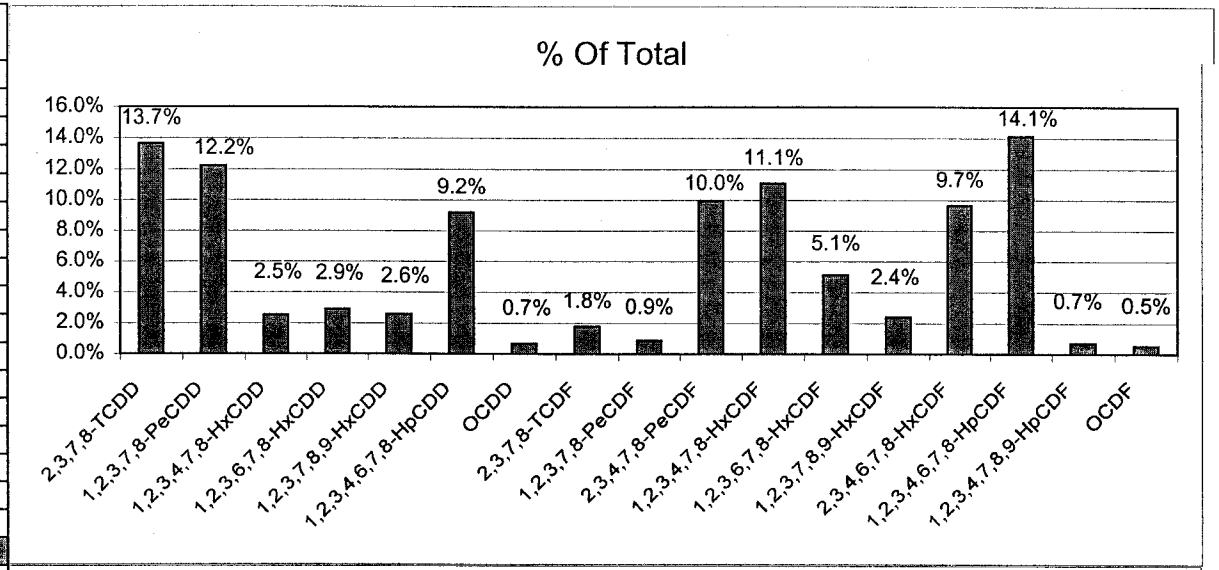


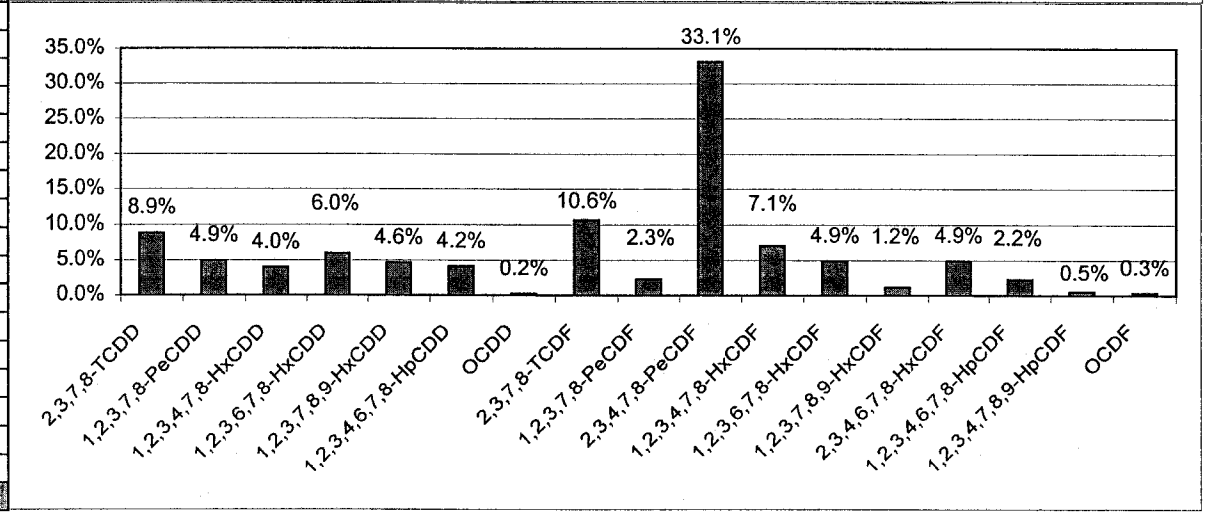
16	2,3,7,8-TCDD	0.0355	8.9%
16	1,2,3,7,8-PeCDD	0.02925	7.3%
16	1,2,3,4,7,8-HxCDD	0.0058	1.5%
16	1,2,3,6,7,8-HxCDD	0.0362	9.1%
16	1,2,3,7,8,9-HxCDD	0.00605	1.5%
16	1,2,3,4,6,7,8-HpCDD	0.10848	27.2%
16	OCDD	0.010975	2.8%
16	2,3,7,8-TCDF	0.0359	9.0%
16	1,2,3,7,8-PeCDF	0.00215	0.5%
16	2,3,4,7,8-PeCDF	0.02475	6.2%
16	1,2,3,4,7,8-HxCDF	0.0363	9.1%
16	1,2,3,6,7,8-HxCDF	0.0147	3.7%
16	1,2,3,7,8,9-HxCDF	0.00575	1.4%
16	2,3,4,6,7,8-HxCDF	0.0045	1.1%
16	1,2,3,4,6,7,8-HpCDF	0.0399	10.0%
16	1,2,3,4,7,8,9-HpCDF	0.00173	0.4%
16	OCDF	0.000902	0.2%
Σ TEQ:		**0.398837**	100.0%



Individual Congener Contribution to TEQ Values

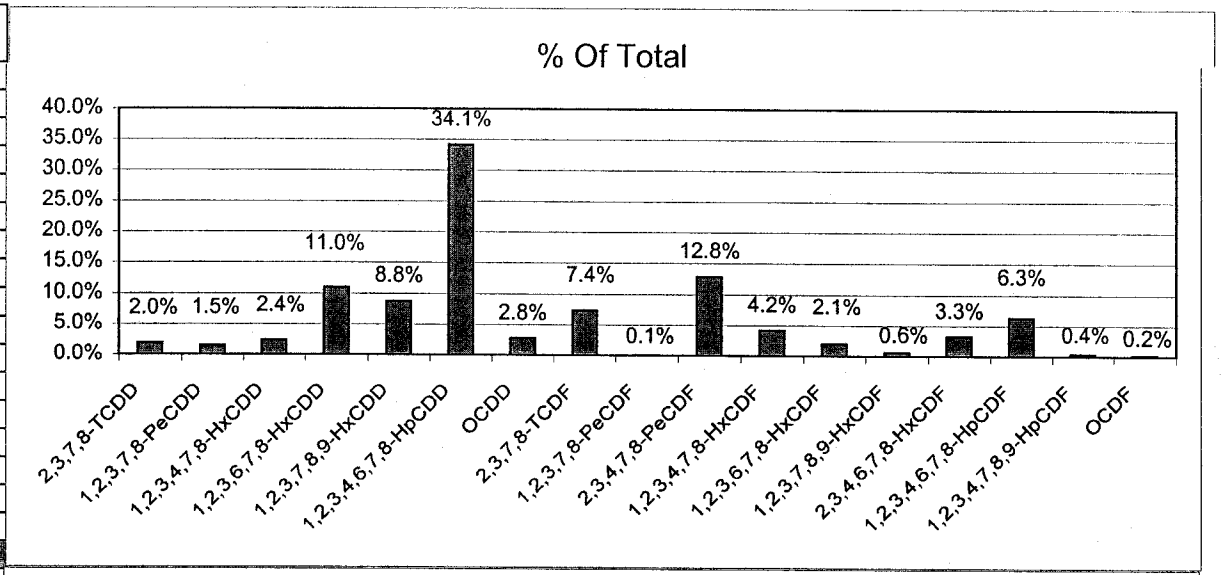
Location Number	Analyte	Congener TEQs Full	% Of Total
17	2,3,7,8-TCDD	0.0785	13.7%
17	1,2,3,7,8-PeCDD	0.07025	12.2%
17	1,2,3,4,7,8-HxCDD	0.01445	2.5%
17	1,2,3,6,7,8-HxCDD	0.0166	2.9%
17	1,2,3,7,8,9-HxCDD	0.0147	2.6%
17	1,2,3,4,6,7,8-HpCDD	0.05291	9.2%
17	OCDD	0.00404	0.7%
17	2,3,7,8-TCDF	0.0103	1.8%
17	1,2,3,7,8-PeCDF	0.0051	0.9%
17	2,3,4,7,8-PeCDF	0.05725	10.0%
17	1,2,3,4,7,8-HxCDF	0.0637	11.1%
17	1,2,3,6,7,8-HxCDF	0.0294	5.1%
17	1,2,3,7,8,9-HxCDF	0.0138	2.4%
17	2,3,4,6,7,8-HxCDF	0.0555	9.7%
17	1,2,3,4,6,7,8-HpCDF	0.08124	14.1%
17	1,2,3,4,7,8,9-HpCDF	0.00411	0.7%
17	OCDF	0.00313	0.5%
Σ TEQ:		**0.57498**	100.0%
18	2,3,7,8-TCDD	0.124	8.9%
18	1,2,3,7,8-PeCDD	0.069	4.9%
18	1,2,3,4,7,8-HxCDD	0.0559	4.0%
18	1,2,3,6,7,8-HxCDD	0.0832	6.0%
18	1,2,3,7,8,9-HxCDD	0.0645	4.6%
18	1,2,3,4,6,7,8-HpCDD	0.05802	4.2%
18	OCDD	0.003389	0.2%
18	2,3,7,8-TCDF	0.1485	10.6%
18	1,2,3,7,8-PeCDF	0.0322	2.3%
18	2,3,4,7,8-PeCDF	0.462	33.1%
18	1,2,3,4,7,8-HxCDF	0.0987	7.1%
18	1,2,3,6,7,8-HxCDF	0.0686	4.9%
18	1,2,3,7,8,9-HxCDF	0.0163	1.2%
18	2,3,4,6,7,8-HxCDF	0.0686	4.9%
18	1,2,3,4,6,7,8-HpCDF	0.03137	2.2%
18	1,2,3,4,7,8,9-HpCDF	0.00699	0.5%
18	OCDF	0.004663	0.3%
Σ TEQ:		**1.395932**	100.0%

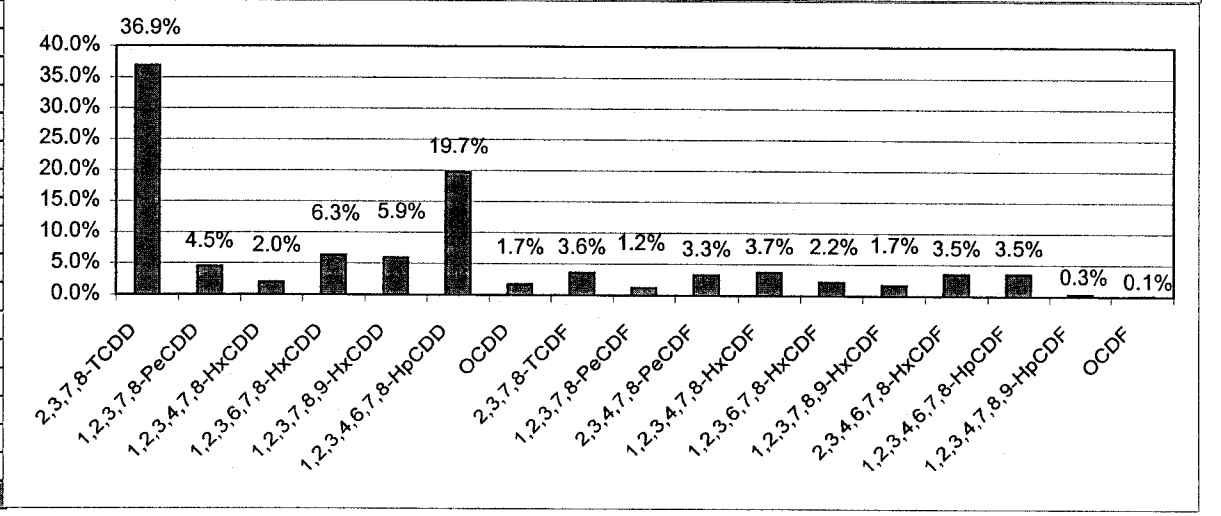




Individual Congener Contribution to TEQ Values

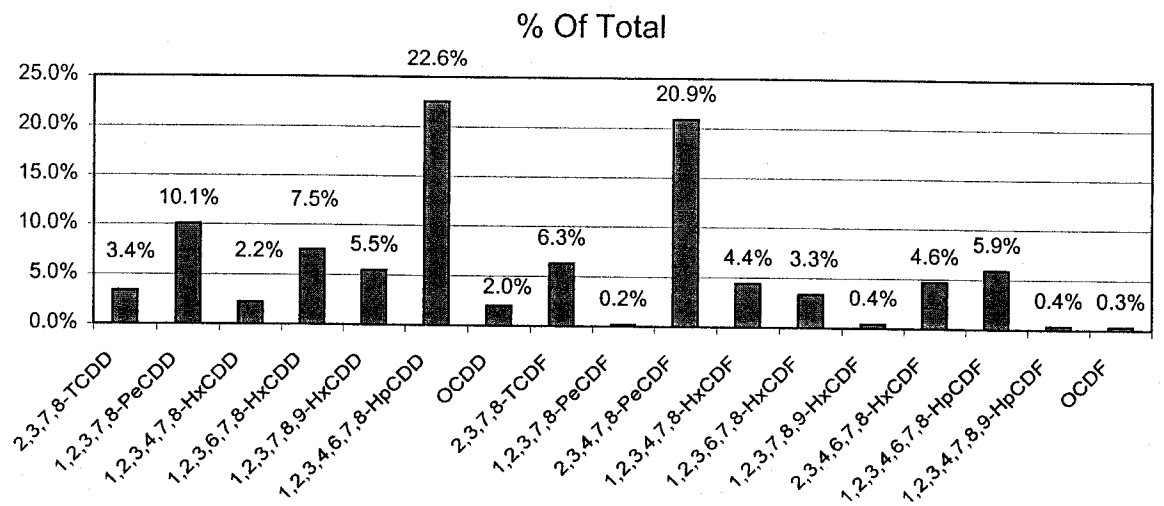
Location Number	Analyte	Congener TEQs Full	% Of Total
19	2,3,7,8-TCDD	0.036	2.0%
19	1,2,3,7,8-PeCDD	0.02825	1.5%
19	1,2,3,4,7,8-HxCDD	0.0438	2.4%
19	1,2,3,6,7,8-HxCDD	0.2016	11.0%
19	1,2,3,7,8,9-HxCDD	0.1606	8.8%
19	1,2,3,4,6,7,8-HpCDD	0.62575	34.1%
19	OCDD	0.050997	2.8%
19	2,3,7,8-TCDF	0.135	7.4%
19	1,2,3,7,8-PeCDF	0.0019	0.1%
19	2,3,4,7,8-PeCDF	0.235	12.8%
19	1,2,3,4,7,8-HxCDF	0.0762	4.2%
19	1,2,3,6,7,8-HxCDF	0.0381	2.1%
19	1,2,3,7,8,9-HxCDF	0.0115	0.6%
19	2,3,4,6,7,8-HxCDF	0.0601	3.3%
19	1,2,3,4,6,7,8-HpCDF	0.11622	6.3%
19	1,2,3,4,7,8,9-HpCDF	0.00814	0.4%
19	OCDF	0.003477	0.2%
Σ TEQ:		**1.832634**	100.0%
20	2,3,7,8-TCDD	1.039	36.9%
20	1,2,3,7,8-PeCDD	0.127	4.5%
20	1,2,3,4,7,8-HxCDD	0.0557	2.0%
20	1,2,3,6,7,8-HxCDD	0.1784	6.3%
20	1,2,3,7,8,9-HxCDD	0.1663	5.9%
20	1,2,3,4,6,7,8-HpCDD	0.55521	19.7%
20	OCDD	0.048196	1.7%
20	2,3,7,8-TCDF	0.1011	3.6%
20	1,2,3,7,8-PeCDF	0.03395	1.2%
20	2,3,4,7,8-PeCDF	0.093	3.3%
20	1,2,3,4,7,8-HxCDF	0.1048	3.7%
20	1,2,3,6,7,8-HxCDF	0.0608	2.2%
20	1,2,3,7,8,9-HxCDF	0.0469	1.7%
20	2,3,4,6,7,8-HxCDF	0.0982	3.5%
20	1,2,3,4,6,7,8-HpCDF	0.09811	3.5%
20	1,2,3,4,7,8,9-HpCDF	0.00941	0.3%
20	OCDF	0.003229	0.1%
Σ TEQ:		**2.819306**	100.0%

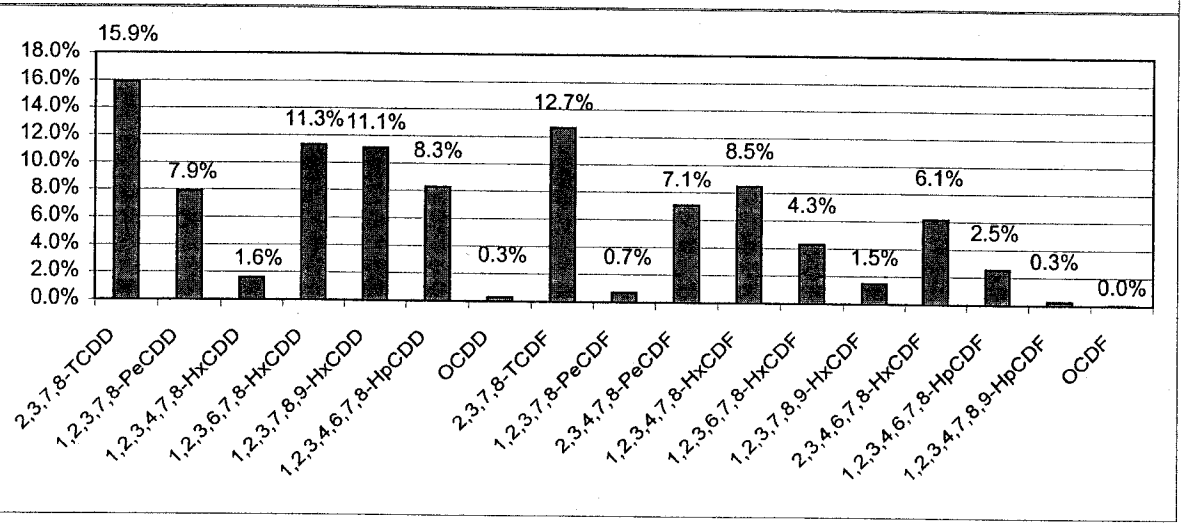




Individual Congener Contribution to TEQ Values

Location Number	Analyte	Congener TEQs Full	% Of Total
21	2,3,7,8-TCDD	0.15	3.4%
21	1,2,3,7,8-PeCDD	0.45	10.1%
21	1,2,3,4,7,8-HxCDD	0.0996	2.2%
21	1,2,3,6,7,8-HxCDD	0.3369	7.5%
21	1,2,3,7,8,9-HxCDD	0.2441	5.5%
21	1,2,3,4,6,7,8-HpCDD	1.0079	22.6%
21	OCDD	0.089418	2.0%
21	2,3,7,8-TCDF	0.2804	6.3%
21	1,2,3,7,8-PeCDF	0.00835	0.2%
21	2,3,4,7,8-PeCDF	0.9335	20.9%
21	1,2,3,4,7,8-HxCDF	0.1966	4.4%
21	1,2,3,6,7,8-HxCDF	0.1495	3.3%
21	1,2,3,7,8,9-HxCDF	0.01885	0.4%
21	2,3,4,6,7,8-HxCDF	0.2076	4.6%
21	1,2,3,4,6,7,8-HpCDF	0.26315	5.9%
21	1,2,3,4,7,8,9-HpCDF	0.01636	0.4%
21	OCDF	0.014163	0.3%
Σ TEQ:		**4.466392**	100.0%
22	2,3,7,8-TCDD	0.1695	15.9%
22	1,2,3,7,8-PeCDD	0.08425	7.9%
22	1,2,3,4,7,8-HxCDD	0.0172	1.6%
22	1,2,3,6,7,8-HxCDD	0.1206	11.3%
22	1,2,3,7,8,9-HxCDD	0.1185	11.1%
22	1,2,3,4,6,7,8-HpCDD	0.0881	8.3%
22	OCDD	0.003251	0.3%
22	2,3,7,8-TCDF	0.1351	12.7%
22	1,2,3,7,8-PeCDF	0.0072	0.7%
22	2,3,4,7,8-PeCDF	0.07525	7.1%
22	1,2,3,4,7,8-HxCDF	0.0903	8.5%
22	1,2,3,6,7,8-HxCDF	0.0458	4.3%
22	1,2,3,7,8,9-HxCDF	0.01595	1.5%
22	2,3,4,6,7,8-HxCDF	0.0656	6.1%
22	1,2,3,4,6,7,8-HpCDF	0.02714	2.5%
22	1,2,3,4,7,8,9-HpCDF	0.0028	0.3%
22	OCDF	0.000425	0.0%
Σ TEQ:		**1.066966**	100.0%





APPENDIX F: Data Validation Report

Data Validation Report

For the

Davis County Soil Dioxins

Davis County, Utah

Organic Analysis Data for
Chlorinated Dioxins and Furans
in Soil

Analysis performed by:

Columbia Analytical Services
Houston, Texas
CAS Report # E2300153

Data Validation performed by

ChemVal Consulting, Inc.
2940 East Oakridge Drive
Salt Lake City, Utah 84109
(801) 274-8480

For the

Rocky Mountain Center for Environmental and Occupational Health
Salt Lake City, Utah

June 20, 2003

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ChemVal Consulting inc.

EXECUTIVE SUMMARY

ChemVal Consulting, Inc has completed validation of the submitted organics analysis package of soil samples from the Survey of Davis County from Davis County, Utah. Twenty-five soil samples were submitted for analysis. The samples were analyzed by Columbia Analytical Services of Houston, Texas for Polychlorinated Dibenzodioxins and Dibenzofurans. The data are reported by the laboratory in a single data package, CAS Report No. E2300153.

The following samples were reported:

1A10312	17D10312
2A20312	18D20312
03B20312	9D40314
7B30312	12D50314
19C30312	14D60314
20C30312	15D70314
21C30312	10E40314
22C30312	13E60314
4C20312	11E50314
8C30312	16E70314
5D20312	03B20312D
6D30312	18D20312D
	9D40314D

Based on the findings of the validation effort, the sample results were determined to be valid as reported by the laboratory, with a few exceptions. The validator recommends qualifying the samples in the same way that the laboratory proposed.

Details of the validation findings and conclusions are provided in the remaining sections of this report.

2940 East Oakridge Drive, Salt Lake City, UT 84109

Phone: (801) 274-3480 Web Site: www.chemval.com

INTRODUCTION

Analyses were performed according to EPA Method 1613, published by EPA's Office of Water, *Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution by HRGC/HRMS,* October 1994.

The laboratory reported the results of the sample analyses with some qualification. The laboratory case narrative noted the exceptions detailed in this report.

To the extent applicable, validation was performed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008). Where the application of a CLP document to 1600-Series methods was not appropriate, the method specifications took precedence. In addition, professional judgement was applied as necessary and appropriate.

The data validation process is intended to evaluate data on a technical basis in addition to a method compliance basis, rather than on a contract compliance basis. The data package as received from the laboratory must contain sufficient raw data documentation to facilitate the validation process and allow verification of all reported sample results. The review is based on the data provided by the laboratory and assumes that it is accurate, true, and complete.

The conclusion of the validation process may result in the addition of qualifiers to the reported data. Data that is unqualified may be used without reservation. Data that is qualified may be used with the qualification in mind. An additional qualifier was used by the laboratory and is listed last in the list below. The following data qualifiers may be used:

- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N - The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification."
- NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- K - Estimated maximum possible concentration. This qualifier is used when the result is generated from chromatographic data that does not meet all of the qualitative criteria given in the method for a positive identification.

I. Holding Times, Preservation, and Sample Integrity

The soil samples were collected from March 12 through 14, 2003, extracted on 3/24/03 and 3/25/03, and analyzed from 3/27/03 through 3/31/03. The method states that there are no established holding times and that samples and extracts that are held cold are valid for at least one year. All sample extracts were analyzed well within this time frame.

The samples were received in good condition and met all acceptance requirements.

II. Calibration and Instrument Performance

Initial and continuing calibrations were performed and met all acceptance criteria.

Retention time (RT) windows were appropriately evaluated and met all acceptance criteria.

An appropriate analytical sequence was followed for all samples and standards in the CB analyses.

III. Blanks

Method blanks were prepared and analyzed as required by the reference methods. Small amounts of target compounds were detected one of the soil method blanks, and resulted in some of the compounds being flagged with a "B" qualifier by the laboratory. No serious laboratory contamination was noted.

IV. Surrogate Recovery

Surrogate standards are not analyzed as a part of this method.

V. Extract Cleanup

All appropriate extract clean-ups required by the analytical method were performed and documented in the data package.

VI. Spiked Analyses

A. Labeled Compound Analyses

Each field sample was spiked with the method-required suite of labeled compounds. All of the recoveries of the labeled compounds in all of the samples were within acceptance limits.

B. Laboratory Control Sample (LCS)

An LCS was prepared and analyzed with the extraction batch as required by the published method. All recoveries were within control limits.

C. Matrix Spike/Matrix Spike Duplicate Samples (MS/MSD)

Samples 1A10312 (Lab ID: E2300153-001) and 18D20312D (Lab ID: E2300153-024) were prepared as matrix spike/matrix spike duplicate pairs. Recoveries of all compounds were within acceptance limits, indicating that no significant matrix effects were present.

VII. Duplicates

A. Laboratory Duplicates

All of the RPDs in the MS/MSD analyses were within acceptance limits.

B. Field Duplicates

Three field duplicates were included with this submission. The results of the duplicate analyses were similar, particularly for those compounds reported above the reporting limit.

VIII. Compound Identification

Target compounds were appropriately identified in the spiked quality control samples. Labeled target compound analogues were appropriately identified in the quality control samples and in the field samples. Selected ion chromatograms were provided to verify all of the compounds and peak areas reported by the laboratory. The values obtained from the selected ion chromatograms were appropriately processed by the laboratory to verify qualitative identification.

Samples found to be positive for 2,3,7,8-TCDF in the original analysis were subjected to a confirmatory analysis on a different column. Most of the values did not confirm. Those that did not confirm were reported in the summary forms with a "U" flag and the detection limit of the confirmatory analysis. This was done to differentiate them from the analyses that were reported as "<" in the original analysis.

IX. Compound Quantitation and Reported Detection Limits

The peak areas determined from the selected ion chromatograms were appropriately processed to provide quantitative values for the target compounds using isotope dilution methodology. Samples in which the ion ratios were not within quality control acceptance limits but the peaks would generate a quantitative value above the detection limit were quantitated using the Estimated Maximum Possible Concentration procedure described in EPA Method 8290. These values are flagged with a "K" flag. It should be noted that this is designed to give a value in the presence of an interference, but that the value is not a confirmed value and is only an estimate of what could be in the sample if all of the peak is due to the target analyte. The "K" flags have been retained in this data validation report to identify these values.

Sample-specific detection limits were correctly calculated and accurately reported for the dioxin analyses. The detection limits were adjusted for the percent moisture in the sample and for the precise sample mass used in the extraction. Detection limits are determined as defined by Method 1613, taking into account the background levels in the sample chromatogram.

X. System Performance

The analytical system used for these analyses appears to have been working well at the time of these analyses, based on evaluation of the available raw data.

XI. Documentation

A copy of the Chain-of-Custody (COC) record documenting all samples submitted to the laboratory in this group was included in the data package. The COC was accurately completed and included appropriate sample receiving information.

XII. Overall Assessment

Based on this validation effort, all of the results for Dioxon/Furan analyses of the samples reported in CAS Report No. E2300153 were determined to be valid as reported.

In the summary tables attached to this report, any analytes that are shown with a value in the table that is "<" were reported as Not Detected (ND).

Appendix A

Data Summary Forms

CAS Report No. E2300153
Davis County Dioxin Soil Survey

DATA SUMMARY FORM: DIOXIN CONGENERS

Site Name: Davis County Dioxin Survey

CAS #: E2300153

Soil Samples
(ng/Kg)
Sampling Dates: 3/12-14/03

To calculate sample quantitation limits
(DL * Dilution Factor/(%Solids))

	Field Sample No.	1A10312		2A20312		03B20312		7B30312		19C30312		20C30312	
	Laboratory ID No.	E2300153-001		E2300153-002		E2300153-003		E2300153-004		E2300153-005		E2300153-006	
	Percent Solids	92.4		84.6		84.1		75.7		91.8		91.7	
	Dilution Factor	1		1		1		1		1		1	
DL	COMPOUND												
0.067	2,3,7,8-TCDD	<0.86		<0.060		<0.106		<0.081		<0.072		1.04	
0.165	1,2,3,7,8-PeCDD	<0.125		0.281	J	<0.142		0.286	JK	<0.113		<0.508	
0.110	1,2,3,4,7,8-HxCDD	<0.140		0.411	J	<0.120		0.252	JK	0.438	J	0.557	J
0.130	1,2,3,6,7,8-HxCDD	<0.159		1.03	J	1.797	JK	1.53	J	2.02	J	1.78	J
0.117	1,2,3,7,8,9-HxCDD	<0.146		0.79	J	<0.129		0.71	JK	1.61	J	1.66	J
0.140	1,2,3,4,6,7,8-HpCDD	5	B	23.3	B	2.65	BJ	27.7	B	62.6	B	55.5	
0.286	OCDD	48.8	B	218	B	18	BJ	202	B	510	B	482	
0.081	2,3,7,8-TCDF	0.385	U	0.348	U	0.274	U	0.409	U	0.383	U	0.252	U
0.065	1,2,3,7,8-PeCDF	<0.111		<0.071		<0.122		<0.079		<0.076		0.679	JK
0.067	2,3,4,7,8-PeCDF	<0.115		0.413	JK	<0.131		<0.092		0.47	J	<0.372	
0.058	1,2,3,4,7,8-HxCDF	0.571	BJ	0.473	BJK	0.334	BJK	1.1	BJK	0.762	BJK	1.05	J
0.060	1,2,3,6,7,8-HxCDF	<0.094		0.402	J	<0.102		0.557	J	0.381	J	0.608	JK
0.085	1,2,3,7,8,9-HxCDF	<0.140		<0.156		<0.157		<0.174		<0.230		0.469	JK
0.066	2,3,4,6,7,8-HxCDF	<0.107		0.542	J	<0.124		0.687	J	0.601	J	0.982	J
0.077	1,2,3,4,6,7,8-HpCDF	3.73	BJ	6.83	B	3.61	BK	9.48	B	11.6	B	9.81	
0.124	1,2,3,4,7,8,9-HpCDF	<0.578		<0.641		<0.444		0.518	J	0.814	J	0.941	J
0.334	OCDF	16.1	B	20.9	B	10.0	B	17.0	B	34.8	B	32.3	

DATA SUMMARY FORM: DIOXIN CONGENERS

Site Name: Davis County Dioxin Survey

STL #: E2300153

Soil Samples
(ng/Kg)
Sampling Dates: 3/12-14/03

To calculate sample quantitation limits
(DL * Dilution Factor/(%Solids))

	Field Sample No.	21C30312		22C30312		4C20312		8C30312		5D20312		6D30312	
	Laboratory ID No.	E2300153-007		E2300153-008		E2300153-009		E2300153-010		E2300153-011		E2300153-012	
	Percent Solids	84.3		91.8		90.0		94.3		82.9		76.6	
	Dilution Factor	1		1		1		1		1		1	
DL	COMPOUND												
0.067	2,3,7,8-TCDD	<0.300		<0.339		<0.288		<0.281		<0.207		<0.219	
0.165	1,2,3,7,8-PeCDD	0.9	J	<0.337		<0.299		<0.305		<0.239		<0.263	
0.11	1,2,3,4,7,8-HxCDD	0.996	J	<0.344		<0.313		0.616	J	<0.272		<0.311	
0.13	1,2,3,6,7,8-HxCDD	3.37	J	1.21	J	<0.363		2.07	J	<0.314		<0.351	
0.117	1,2,3,7,8,9-HxCDD	2.44	J	1.18	J	<0.320		0.931	J	<0.277		<0.313	
0.14	1,2,3,4,6,7,8-HpCDD	101		8.81		2.64	J	26.6		17.5		5.71	
0.286	OCDD	894		32.5		18.8		178		166		29.0	
0.081	2,3,7,8-TCDF	2.80	C	0.207	U	<0.303		<0.260		0.210	U	0.305	U
0.065	1,2,3,7,8-PeCDF	<0.334		<0.288		<0.200		<0.195		<0.188		<0.161	
0.067	2,3,4,7,8-PeCDF	1.87	J	<0.301		<0.221		<0.202		<0.201		<0.180	
0.058	1,2,3,4,7,8-HxCDF	1.97	JK	0.903	J	<0.193		0.661	J	0.608	J	0.639	J
0.06	1,2,3,6,7,8-HxCDF	1.5	J	0.458	J	<0.182		0.355	JK	0.259	JK	<0.199	
0.085	1,2,3,7,8,9-HxCDF	<0.377		<0.309		<0.246		<0.380		<0.252		<0.284	
0.066	2,3,4,6,7,8-HxCDF	2.08	JK	0.656	JK	<0.220		0.852	J	0.378	JK	<0.235	
0.077	1,2,3,4,6,7,8-HpCDF	26.3		2.71	J	1.85	J	9.16		6.96		3.80	J
0.124	1,2,3,4,7,8,9-HpCDF	1.64	J	<0.560		<0.497		0.981	J	<0.516		<0.723	
0.334	OCDF	142		4.25	J	7.80	J	27.9		24.3		2.30	

DATA SUMMARY FORM: DIOXIN CONGENERS

Site Name: Davis County Dioxin Survey

STL #: E2300153

Soil Samples
(ng/Kg)
Sampling Dates: 3/12-14/03

To calculate sample quantitation limits
(DL * Dilution Factor/(%Solids))

	Field Sample No.	17D10312		18D20312		9D40314		12D50314		14D60314		15D70314	
	Laboratory ID No.	E2300153-013		E2300153-014		E2300153-015		E2300153-016		E2300153-017		E2300153-018	
	Percent Solids	78.2		94.8		78.6		79.3		82.8		82.4	
	Dilution Factor	1		1		1		1		1		1	
DL	COMPOUND												
0.067	2,3,7,8-TCDD	<0.157		<0.248		<0.256		0.525	JK	<0.215		0.959	J
0.165	1,2,3,7,8-PeCDD	<0.281		<0.276		<0.244		<0.207		<0.267		0.484	J
0.11	1,2,3,4,7,8-HxCDD	<0.289		0.559	J	<0.283		0.554	JK	<0.279		0.557	JK
0.13	1,2,3,6,7,8-HxCDD	<0.332		0.832	J	0.680	J	2.07	J	<0.306		1.95	J
0.117	1,2,3,7,8,9-HxCDD	<0.294		0.645	JK	0.608	J	1.54	J	<0.277		0.29	JK
0.14	1,2,3,4,6,7,8-HpCDD	5.29		5.80		11.0		67.4		11.0		42.2	
0.286	OCDD	40.4		33.9		112		548		200		356	
0.081	2,3,7,8-TCDF	<0.206		0.311	U	0.292	U	0.260	U	0.392	U	0.347	U
0.065	1,2,3,7,8-PeCDF	<0.204		0.644	JK	<0.210				<0.223		0.703	J
0.067	2,3,4,7,8-PeCDF	<0.229		0.924	J	<0.219				<0.226		1.16	J
0.058	1,2,3,4,7,8-HxCDF	0.598	JK	0.987	JK	0.642	J	1.20	JK	0.523	JK	2.91	J
0.06	1,2,3,6,7,8-HxCDF	0.302	J	0.686	J	<0.169		0.858	J	0.322	J	1.48	J
0.085	1,2,3,7,8,9-HxCDF	<0.276		<0.326		<0.237				<0.251		<0.178	
0.066	2,3,4,6,7,8-HxCDF	0.555	J	0.686	J	<0.199		1.15	J	<0.213		2.86	J
0.077	1,2,3,4,6,7,8-HpCDF	8.12		3.14	J	2.69	JK	22.8		2.81	J	18.4	
0.124	1,2,3,4,7,8,9-HpCDF	<0.822		0.699	J	<0.429		1.14	J	0.531	J	0.823	J
0.334	OCDF	31.3		46.6		18.3		67.5		15.2		40.2	

DATA SUMMARY FORM: DIOXIN CONGENERS

Site Name: Davis County Dioxin Survey

STL #: E2300153

Soil Samples
(ng/Kg)
Sampling Dates: 3/12-14/03

To calculate sample quantitation limits
(DL * Dilution Factor/(%Solids))

	Field Sample No.	10E40314		13E60314		11E50314		16E70314		03B20312D		18D20312D	
	Laboratory ID No.	E2300153-019		E2300153-020		E2300153-021		E2300153-022		E2300153-023		E2300153-024	
	Percent Solids	86.3		81.4		90.0		82.4		85.4		96.7	
	Dilution Factor	1		1		1		1		1		1	
DL	COMPOUND												
0.067	2,3,7,8-TCDD	<0.123		<0.166		0.257	JK	<0.071		<0.076		<0.055	
0.165	1,2,3,7,8-PeCDD	<0.166		<0.155		0.508	JK	<0.117		<0.139		<0.077	
0.11	1,2,3,4,7,8-HxCDD	<0.199		<0.140		0.687	J	<0.116		<0.137		<0.104	
0.13	1,2,3,6,7,8-HxCDD	<0.225		0.841	JK	2.57	J	0.362	J	<0.160		0.443	JK
0.117	1,2,3,7,8,9-HxCDD	<0.201		0.739	J	2.12	J	<0.121		<0.145		0.561	J
0.14	1,2,3,4,6,7,8-HpCDD	9.82		16.6		54.3	B	10.8	B	3.28	BJ	5.14	B
0.286	OCDD	81.5		146		409	B	110	B	30.2	B	30.2	B
0.081	2,3,7,8-TCDF	0.347	U	<0.139		0.410	U	0.271	U	0.343	U	0.252	U
0.065	1,2,3,7,8-PeCDF	<0.138		<0.129		0.202	J	<0.086		0.145	JK	<0.060	
0.067	2,3,4,7,8-PeCDF	<0.145		<0.130		0.284	JK	<0.099		<0.104		0.276	J
0.058	1,2,3,4,7,8-HxCDF	0.546	J	0.497	J	0.792	J	0.363	J	0.265	JK	0.466	J
0.06	1,2,3,6,7,8-HxCDF	<0.127		<0.172		0.487	JK	0.147	JK	0.117	JK	0.234	J
0.085	1,2,3,7,8,9-HxCDF	<0.175		<0.258		<0.155		<0.115		0.282	J	<0.136	
0.066	2,3,4,6,7,8-HxCDF	<0.143		0.459	J	0.713	J	<0.090		0.151	JK	0.229	J
0.077	1,2,3,4,6,7,8-HpCDF	4.36	J	4.06	J	12.2		3.99	J	4.42	J	2.54	J
0.124	1,2,3,4,7,8,9-HpCDF	<0.269		<0.570		0.998	J	<0.346		<0.433		<0.425	
0.334	OCDF	15.4		18.9		35.3		9.02	J	9.78	J	5.05	J

DATA SUMMARY FORM: DIOXIN CONGENERS

Site Name: Davis County Dioxin Survey

STL #: E2300153

Soil Samples
(ng/Kg)
Sampling Dates: 3/12-14/03

To calculate sample quantitation limits
(DL * Dilution Factor/(%Solids))

	Field Sample No.	09D40314D	
	Laboratory ID No.	E2300153-025	
	Percent Solids	78.4	
	Dilution Factor	1	
DL	COMPOUND		
0.067	2,3,7,8-TCDD	<0.072	
0.165	1,2,3,7,8-PeCDD	<0.109	
0.11	1,2,3,4,7,8-HxCDD	<0.128	
0.13	1,2,3,6,7,8-HxCDD	0.659	J
0.117	1,2,3,7,8,9-HxCDD	0.374	J
0.14	1,2,3,4,6,7,8-HpCDD	11.2	B
0.286	OCDD	126	B
0.081	2,3,7,8-TCDF	0.250	U
0.065	1,2,3,7,8-PeCDF	<0.088	
0.067	2,3,4,7,8-PeCDF	<0.105	
0.058	1,2,3,4,7,8-HxCDF	0.341	J
0.06	1,2,3,6,7,8-HxCDF	0.177	J
0.085	1,2,3,7,8,9-HxCDF	<0.150	
0.066	2,3,4,6,7,8-HxCDF	0.23	JK
0.077	1,2,3,4,6,7,8-HpCDF	3.63	J
0.124	1,2,3,4,7,8,9-HpCDF	<0.377	
0.334	OCDF	8.06	J

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Dioxin Soil Sample Locations in Davis County

Location #	Grid #	UTM Coords	Address	Description
1	A1	0407859/4554880	1800 N 3690 W-West Point	open lot on N. side of 1800N
2	A2	0410865/4555222	2050 N 1930 W-Clinton	N of park
3	B2	0409939/4549430	1500 S 2450 W-Syracuse	NE corner of Canterbury Park
4	C2	0414744/4549029	1800 S 575 E-Clearfield	open lot next to housing development
5	D2	0416004/4549135	1700 E 1000 N-Layton	S side of East Layton City Park
6	D3	0419378/4543502	200 N 1254 W-Kaysville	SW corner of Barnes Memorial Park
7	B3	0415440/4545942	3700 S 2200 W-Syracuse	LDS Church lot next to residential area
8	C3	0418152/4545652	160 S 500 W-Layton	Empty lot at corner of Flint & Park
9	D4	0421161/4540774	50 W 1240 S-Kaysville	Park at the corner of Park & Frontage Rd
10	E4	0425905/4536068	500 S 275 E-Farmington	NE corner of park
11	E5	0426000/4530321	50 W 300 N-Centerville	S side of park near Main St and Parrish
12	D5	0424773/4528816	550 W 1600 N-West Bountiful	SW corner of park
13	E6	0428093/4526941	1300 E Center St-Bountiful	SE corner of Tolman Park
14	D6	0422924/4525020	1750 S 1200 W-Woods Cross	W side of Mills Park
15	D7	0423409/4521615	Center St 1100 W- N Salt Lake	City Park W of 1100 W
16	E7	0426140/4522000	Bountiful Blvd 400 E-Bountiful	SE corner of North Canyon Park
17	D1	0422407/4552660	8100 S 2100 E-South Weber	NE corner of park
18	D2	0420260/4551342	900 E 3400 N-Layton	by gate leading to field
19	C3	0416305/4551417	3088 B Concord-Hill AFB	housing on SW side of base
20	C3	0419357/4551654	Old Housing Area-Hill AFB	300 yd NW of WES
21	C3	0414113/4554049	Corner of Hill & Georgia-Hill AFB	Aspen housing area
22	C3	0419830/4551280	Old Housing Area-Hill AFB	Max impact site from modelling

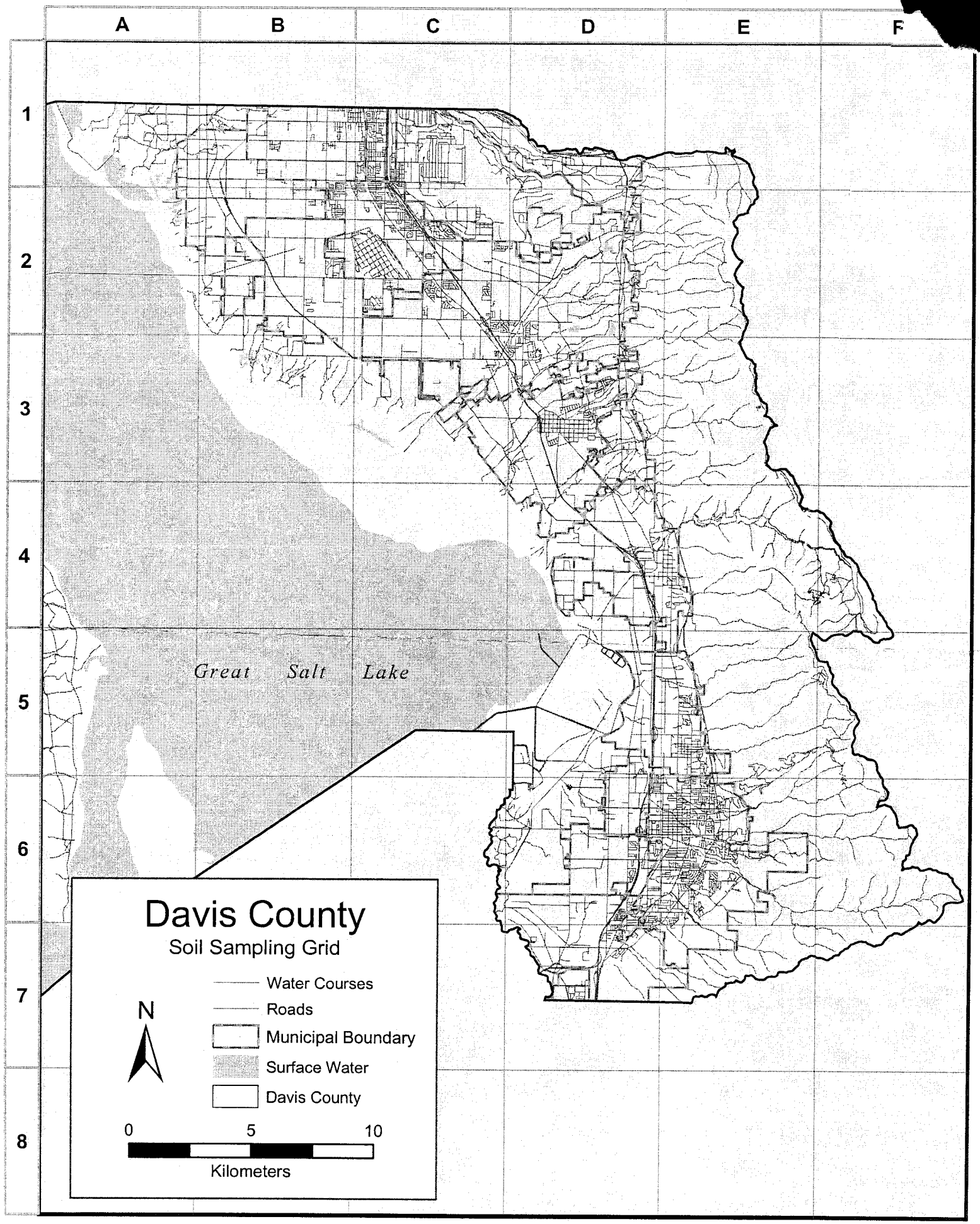
A
B
C
D
E
F
1
2
3
4
5
6
7
8
Great Salt Lake
Davis County
Soil Sampling Grid
Water Courses
Roads
Municipal Boundary
Surface Water
Davis County
N
0
5
10
Kilometers

Figure 1

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