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March 19, 2019

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Re: Toxicity Due to PCDDs (Dioxins) and PCDFs (Furans) at Sky Valley Education Center and Other Schools with PCB Contamination

Dear Public Officials:

Please find enclosed toxicological data from the January 4, 2019, inspection of Sky Valley Education Center in Monroe, Washington. The inspection was conducted in *Bard et al. v. Monsanto Co., et al.*, King Co. Sup. Ct. Case No. 18-2-00001-7 SEA. After consultation with an ethics attorney, we make this information public under RPC 1.6(b)(1).

The toxicity exceeds state and federal safety standards, although the school remains in use for children, parents, and teachers. Other schools with past or present PCB contamination may contain similar dioxin and furan hazards as those found here. Our concern is for public safety at this school and others with past or present PCB contamination.

Sincerely,

Sean J. Gamble

Enclosures: Dr. Faeder Letter w/Attachments 1-3 & CV

Environmental and Health Management, Inc.

TEL. 909-860-8282
Cell: 951-202-4365
efaeder@jx.netcom.com

March 18, 2019

Sean J. Gamble, Esq.
Friedman | Rubin®
1109 1st Avenue, Suite 501
Seattle, Washington 98101

SUBJECT: **Analysis Results for Chemicals at the Sky Valley Education Center, Monroe, Washington, Collected in January 2019, that Require State and Federal Environmental and Health Protection Agencies to Investigate and Certify that the School is Safe for Occupancy and Use**

Dear Mr. Gamble:

I have received the information that you sent to me regarding the transmittal of samples, laboratory analytical results and a summary for polychlorinated biphenyls ("PCBs"), polychlorinated dibenzodioxins ("PCDDs", and polychlorinated dibenzofurans (PCDFs"). All samples were taken at the Sky Valley Education Center ("SVEC") in Monroe, Washington, on January 4, 2019 by Environmental Health & Engineering, Inc. ("EHE"), a national consulting firm based in Newton, Massachusetts. The samples were shared with representatives of the Monroe School District, and Monsanto Chemical Company at the time that they were collected, so both named parties have samples equivalent to the ones whose analytical results were sent to me

.

EHE had the samples analyzed for PCBs. Six samples were additionally analyzed for PCDDs, and PCDFs, over the next two months. PCDD and PCDF results from all six of the indoor samples analyzed for these chemicals were well above the federal ATSDR screening level of 50 parts per trillion (ppt; equal to 50 picograms per gram of material sampled), and five of the six samples were above U.S. EPA's draft cleanup standards (cited by the State of Washington's Department of Ecology in 2011). All six samples also exceeded U.S. EPA's November 2018 *Regional Screening Level*, residential soil cleanup guidance level of 4.8 picograms per gram (ppt) by **10-100 fold**.
Five of the six samples analyzed were taken from indoor areas representative of what children and teachers could have been exposed to through 2018, in spite of cleanup and maintenance performed in the SVEC school environment. This is unacceptable, and may represent an extremely toxic indoor environment. These results occurred **after** the school district cleaned up the SVEC in preparation for the site inspection and sampling by EHE - in December 2018, according to information that I was given at an informal meeting with former teachers at the school prior to the site inspection, and consistent with the signs of intense cleaning that I observed during my inspection of the school on January 3, 2019.

HISTORY

You retained a group of experts to assist you with litigation involving the exposure, or potential exposure of a group of children and teachers to polychlorinated biphenyls ("PCBs") released into

their school environment in rural Washington state, over a period of years up to and including the present. The school in question was the Sky Valley Education Center, an alternative school chartered under WAC 392-121-182 Alternative Learning Experience Requirements (per https://www.monroe.wednet.edu/svec/about/who-we-are). The Sky Valley program has been operating at its present location since 2011. Prior to that the school site was occupied by a middle school, which operated at that location for many years. Parts of the buildings on the site were initially constructed in 1950, more in 1968, and modifications since then.
The school accommodates Montessori-based learning, and families choosing to participate in education at SVEC often bring younger children to school to be with a care-giving parent that cannot leave them at home. Pregnant women may also accompany their children to SVEC, for learning days of their older children.

CHLORINATED ORGANIC CHEMICALS

The chlorinated chemicals of concern for your expert retention focused initially around polychlorinated biphenyls, a family of 209 congeners (multi-ring compounds with chlorine atoms in different ring positions). However, the PCBs used in fluorescent light ballasts were heated, and leaked, and chemically formed new groups of far more toxic compounds, called PCDDs ("dioxins") and PCDFs ("furans"). There are 135 different PCDFs, and 75 different PCDDs. The relative toxicity of the different congeners of these materials varies over almost five orders of magnitude (i.e., the most toxic congener, 2,3,7,8-tetrachlorodibenzodioxin, is more potent (toxic) than, for example, 2,3,3',4,4',5,5'-heptachlorobiphenyl, by a factor of 33,333). Depending upon the relative concentrations of the different chlorinated chemical concentrations, the generally lower concentration amounts of dioxin and furan congeners to which children and teachers could be exposed at SVEC could easily dominate the list of chemicals able to make people at SVEC very sick.

The U.S. EPA, and other international (e.g., World Health Organization), and state environmental programs (e.g., California Office of Environmental Health Hazard Evaluation) developed ways to catalog the toxicity of mixtures of these congeners to which humans or other animals and plants could be exposed through relative toxicity equivalence factors ("TEFs"- all congeners relative to 2,3,7,8 tetrachlorodibenzodioxin's potency assigned a TEF value less than or equal to 1) and assigned a toxicity equivalence ("TEQ") amount based upon adding up all the amounts of a mixture based upon the TEFs and measured amounts of all congeners present to which a target organism is exposed.

The values discussed in this letter are all TEQ-based amounts of dioxins and furans, as are the comparison numbers in the regulatory values tables.

FRAME OF REFERENCE

Different regulatory agencies and their scientific and monitoring advisory groups have measured PCB, PCDD, and PCDF levels in a variety of media and places. I will only point out, in this short letter, two examples of summary information prepared by the state of Washington's Department of Ecology. They summarized dioxin levels (as TEQ concentrations) in some Seattle neighborhoods, obtained from their measurements in soil outside buildings. They also summarized dioxin levels (also in TEQ concentrations) in Washington State soils by land use. These tables are reproduced in this letter so that you can see the low levels they found, compared to what EHE found inside SVEC. Even the highest values measured **outside** in these studies are exceeded, often by many times, the values found **inside** in the SVEC samples that EHE measured. One part per trillion (ppt) TEQ is the same as one nanogram per kilogram (nG/kG) in EHE results).

I leave it as an exercise for the regulatory agencies to collect further data inside SVEC, and establish that the environment is safe for children, pregnant women, teachers, and other people wandering through the school, **and certify it as safe**.

Table 1. Dioxin Levels in Seattle Neighborhoods and Comparisons to State and Federal Regulatory Limits

Neighborhood	[1]Range (ppt)	Average	[2]Number of Samples above State MTCA Method B cleanup level (11 ppt)	[3]Number of Samples above Federal ATSDR screening Level (50 ppt)	[4]Number of Samples above EPA Draft cleanup Level (72 ppt)
Ballard	1.9 - 62.4	26	17	2	0
Capitol Hill	3.2 - 96.2	18	8	3	1
Georgetown	5.3 - 114.7	36	17	4	2
Ravenna	5.2 - 49.6	15	7	0	0
South Park	3.6 - 22.7	12	12	0	0
West Seattle	1.7 - 32.8	7.5	2	0	0
All areas	1.7 - 114.7	19	63	9	3

[1] Soil data for dioxins is reported as toxic equivalents (TEQs). This means that the measured concentrations have been adjusted to reflect the different levels of potency of individual dioxin and furan components. The concentrations, adjusted for potency level, are combined into a single concentration that reflects the potential toxicity of the mixture of dioxin and furan components.

[2] State MTCA is a rule that outlines procedures for setting cleanup levels for hazardous substances.

[3] Federal Agency for Toxic Substances Disease Registry Screening Levels. This level is used to identify areas where more study is needed and is not a cleanup level.

[4] Environmental Protection Agency proposed soil screening levels. EPA's Superfund cleanup program published draft soil cleanup guidelines in 2009. These guidelines are used for setting cleanup levels for hazardous substances.

[5] The EPA cPAH screening level is a guideline used for setting cleanup levels for hazardous substances.

Taken from:
Washington State Department of Ecology,
Publication 11-09-219, September 2011

Table 2

Dioxin concentrations in Washington State soils by land use
Reported as Toxic Equivalents (TEQ), parts per trillion. Non-detect samples given a value of zero.

Land Use	Range	Average	Median	Geometric Mean*	Number of Samples
Urban	0.13 – 19	4.1	1.7	1.9	14
Forest	0.033 – 5.2	2.3	2.2	1.2	8
Open	0.040 – 4.6	1.0	0.27	0.24	8
Agricultural	**0.0078-1.2**	**0.14**	**0.054**	**0.062**	**54**

*A geometric mean is similar to an average. In many environmental studies, including this one, a geometric mean is the best estimate of the central or most common value in a data set.

Taken from:
Washington State Department of Ecology,
Focus, Publication 99-1380, November 1999

EHE Results from SVEC Sampling

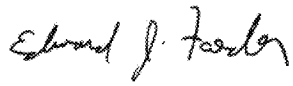
You provided me with three documents created by EHE or their testing laboratory, ALS Environmental, Houston, TX. They are attached to this letter. **Attachment 1** is the chain of custody form for the samples collected at SVEC on January 4, 2019. The actual lab-generated data are contained in **Attachment 2**. EHE analyzed those results and summarized them for the samples taken January 4, 2019, and summarized those results in their Table 1, attached to this letter as **Attachment 3**. Only six of the samples analyzed were tested for dioxins and furans. They are highlighted in yellow, as are their numerical results, in units of nG/kG (written in the table as ng/Kg), which are the same units as parts per trillion (ppt) (used in the Department of Ecology tables). Five of the six samples came from rooms which were used by children, parents, teachers, as they were active area portions of the SVEC. The sixth sample came from a lighting fixture base plate with "black tar-like material," presumably from a ruptured/leaking fluorescent light ballast that was used at SVEC, and later stored in the School District Building Shed. The latter should be investigated for its hold time at the storage area, as it had a PCB concentration at a measured value of 180 parts per million (*cf.* sample ***Field ID*** 184852 results, **Attachment 3**).

Five of the six results for the measured dioxin and furan levels exceeded every measured value reported by the Department of Ecology in its summary tables, as included in this letter.

Discussion and Conclusion

I have carefully avoided a detailed discussion of the risks that children, parents, teachers, and others were exposed to by their presence at SVEC in this letter. The purpose of this letter is to urge you to contact the cognizant parties who are responsible for protecting the public. They should consider the scientific data presented herein and conduct additional testing and a thorough evaluation of safety for all who continue to occupy SVEC. Demand that the agencies certify SVEC as a safe environment, especially for sensitive individuals like children and pregnant women. This is clearly the duty and responsibility of public health and environmental protection agencies. Historic exposure and its aftermath will sort itself out in court.

Sincerely,



Edward J. Faeder, Ph.D., Q.E.P.

Attachments (3)

srf1903.4271

Environmental Health & Engineering, Inc.

CHAIN OF CUSTODY FORM

Attachment 1

DATE: 1/4/2019

FROM: Environmental Health and Engineering, Inc.
180 Wells Avenue, Suite 200
Newton, MA 02459-3328

TO: EHE, Inc
Newton, MA

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 22437

The cost of this analysis will be covered by EH&E Purchase Order # N.A.

For EH & E Data Coordinator - URGENT DATA ☐

SAMPLE ID	SAMPLE TYPE	ANALYTICAL METHOD/NUMBER	OTHER:Time/Date/Vol.
184824	BULK	SAMPLES SHIPPED TO:	1/4/2019
184825		EHE INC,	
184826		180 WELLS AVENUE	
184827		SUITE 200	
184828		NEWTON, MA 02459	
184829			
184830			
184844			
184845			
184846			
184849			
184852			
184831	WIPE		
184832			
184833			
184834			

Special instructions:

☐ Standard turn around time ☐ Rush by _____ date/time ☒ Other SAMPLE SHIPMENT

☐ Fax results 781-247-4305

☐ **RETURN SAMPLES** ☐ Electronic transfer - datacoordinator@eheinc.com

☐ Additional report recipient _____

Each signatory please return one copy of this form to the above address

Relinquished by: _____ of Environmental Health & Engineering, Inc. Date: 1/4/2019

Received by: FEDEX of (company name) FEDEX Date: 1/4/2019

Relinquished by: FEDEX of (company name) FEDEX Date: 1/7/2019

Received by: _____ of (company name) EHE Date: 1/7/2019

Relinquished by: _____ of (company name) EHE Date: 1/7/2019

Received by: _____ of (company name) EHE Date: 1/7/2019

Lab Data
Received by: _____ of Environmental Health & Engineering, Inc. Date: _____

Page 1 of 2

WHITE-EH&E FILE COPY YELLOW-LAB COPY PINK-PROJECT MANAGER COPY GOLD-DATA COORDINATOR COPY

Environmental Health & Engineering, Inc.

CHAIN OF CUSTODY FORM

Attachment 1

DATE: 1/4/2019

FROM: Environmental Health and Engineering, Inc.
180 Wells Avenue, Suite 200
Newton, MA 02459-3328

TO: EHHE, Inc.
Newton, MA

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 22432

The cost of this analysis will be covered by EH&E Purchase Order # N.A.

For EH & E Data Coordinator - URGENT DATA ☐

SAMPLE ID	SAMPLE TYPE	ANALYTICAL METHOD/NUMBER	OTHER:Time/Date/Vol.
184835	WIPE	SAMPLES SHIPPED TO:	1/4/2019
184836		EHHE, Inc.	
184837		180 WELLS AVE	
184838		SUITE 200	
184839		Newton, MA 02459	
184840			
184841			
184842			
184843			
184844			
184848			
184850			
184851			

Special instructions:

☐ Standard turn around time ☐ Rush by _____ date/time ☒ Other WIPE SAMPLES
☐ Fax results 781-247-4305
☐ **RETURN SAMPLES** ☐ Electronic transfer - datacoordinator@eheinc.com
☐ Additional report recipient _____

Each signatory please return one copy of this form to the above address

Relinquished by: [signature] of Environmental Health & Engineering, Inc. Date: 1/4/2019
Received by: FEDEX of (company name) FEDEX Date: 1/4/2019
Relinquished by: FEDEX of (company name) FEDEX Date: 1/7/2019
Received by: [signature] of (company name) EHE Date: 1/7/2019
Relinquished by: [signature] of (company name) EHE Date: 1/7/2019
Received by: [signature] of (company name) EHE Date: 1/7/2019
Lab Data
Received by: _____ of Environmental Health & Engineering, Inc. Date: _____

Page 2 of 2

WHITE-EH&E FILE COPY YELLOW-LAB COPY PINK-PROJECT MANAGER COPY GOLD-DATA COORDINATOR COPY

ED_004522_00089765-00008

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900145
Project:	HS19020856	**Date Collected:**	01/25/19 00:00
Sample Matrix:	Solid	**Date Received:**	02/18/19 11:30
Sample Name:	187059	**Units:**	ng/Kg
Lab Code:	E1900145-006	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/27/19 15:52
Prep Method:	Method Soxhlet	**Date Extracted:**	2/22/19
Sample Amount:	0.097g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520696	**Blank File Name:**	P520690
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	42.0**JK**		40.8	51.5	1.13	1.001	1
1,2,3,7,8-PeCDD	117**JK**		7.84	258	1.26	1.001	1
1,2,3,4,7,8-HxCDD	114**JK**		3.56	258	1.47	1.000	1
1,2,3,6,7,8-HxCDD	780		3.60	258	1.32	1.000	1
1,2,3,7,8,9-HxCDD	275		3.41	258	1.10	1.007	1
1,2,3,4,6,7,8-HpCDD	11500		22.0	258	1.05	1.000	1
OCDD	161000		11.5	515	0.89	1.000	1
2,3,7,8-TCDF	21.5**JK**		8.04	51.5	0.59	1.000	1
1,2,3,7,8-PeCDF	29.2**J**		8.25	258	1.46	1.000	1
2,3,4,7,8-PeCDF	95.0**J**		8.27	258	1.47	1.001	1
1,2,3,4,7,8-HxCDF	118**J**		23.5	258	1.18	1.001	1
1,2,3,6,7,8-HxCDF	122**J**		23.9	258	1.14	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	27.4	258			1
2,3,4,6,7,8-HxCDF	134**J**		24.6	258	1.29	1.000	1
1,2,3,4,6,7,8-HpCDF	3050		43.2	258	1.01	1.000	1
1,2,3,4,7,8,9-HpCDF	105**JK**		46.5	258	1.31	1.000	1
OCDF	6850		13.0	515	0.87	1.004	1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900145
Project:	HS19020856	**Date Collected:**	01/25/19 00:00
Sample Matrix:	Solid	**Date Received:**	02/18/19 11:30
Sample Name:	187059	**Units:**	ng/Kg
Lab Code:	E1900145-006	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/27/19 15:52
Prep Method:	Method Soxhlet	**Date Extracted:**	2/22/19
Sample Amount:	0.097g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520696	**Blank File Name:**	P520690
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	40.8	51.5			1
Total Penta-Dioxins	598		7.84	258	1.66		1
Total Hexa-Dioxins	4620		3.52	258	1.37		1
Total Hepta-Dioxins	25000		22.0	258	1.07		1
Total Tetra-Furans	56.9		8.04	51.5	0.71		1
Total Penta-Furans	266		8.26	258	1.45		1
Total Hexa-Furans	5890		24.8	258	1.11		1
Total Hepta-Furans	12800		44.8	258	1.01		1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900145
Project:	HS19020856	**Date Collected:**	01/25/19 00:00
Sample Matrix:	Solid	**Date Received:**	02/18/19 11:30
Sample Name:	187059	**Units:**	Percent
Lab Code:	E1900145-006	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/27/19 15:52
Prep Method:	Method Soxhlet	**Date Extracted:**	2/22/19
Sample Amount:	0.097g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520696	**Blank File Name:**	P520690
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520686

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	588.566	29		25-164	0.79	1.025
13C-1,2,3,7,8-PeCDD	2000	1089.965	54		25-181	1.62	1.223
13C-1,2,3,4,7,8-HxCDD	2000	1141.119	57		32-141	1.30	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1247.999	62		28-130	1.28	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1327.290	66		23-140	1.09	1.070
13C-OCDD	4000	1386.707	35		17-157	0.87	1.143
13C-2,3,7,8-TCDF	2000	760.054	38		24-169	0.79	0.989
13C-1,2,3,7,8-PeCDF	2000	981.297	49		24-185	1.57	1.173
13C-2,3,4,7,8-PeCDF	2000	944.389	47		21-178	1.60	1.211
13C-1,2,3,4,7,8-HxCDF	2000	929.760	46		26-152	0.51	0.968
13C-1,2,3,6,7,8-HxCDF	2000	965.506	48		26-123	0.51	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1019.515	51		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	962.609	48		28-136	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	838.653	42		28-143	0.45	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1001.288	50		26-138	0.44	1.083
37Cl-2,3,7,8-TCDD	800	306.003	38		35-197	NA	1.026

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900145
Project:	HS19020856	**Date Collected:**	01/25/19 00:00
Sample Matrix:	Solid	**Date Received:**	02/18/19 11:30
Sample Name:	187059	**Units:**	ng/Kg
Lab Code:	E1900145-006	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	**42.0**	40.8	51.5	1	1	42.0
1,2,3,7,8-PeCDD	**117**	7.84	258	1	1	117
1,2,3,4,7,8-HxCDD	**114**	3.56	258	1	0.1	11.4
1,2,3,6,7,8-HxCDD	**780**	3.60	258	1	0.1	78.0
1,2,3,7,8,9-HxCDD	**275**	3.41	258	1	0.1	27.5
1,2,3,4,6,7,8-HpCDD	**11500**	22.0	258	1	0.01	115
OCDD	**161000**	11.5	515	1	0.0003	48.3
2,3,7,8-TCDF	**21.5**	8.04	51.5	1	0.1	2.15
1,2,3,7,8-PeCDF	**29.2**	8.25	258	1	0.03	0.876
2,3,4,7,8-PeCDF	**95.0**	8.27	258	1	0.3	28.5
1,2,3,4,7,8-HxCDF	**118**	23.5	258	1	0.1	11.8
1,2,3,6,7,8-HxCDF	**122**	23.9	258	1	0.1	12.2
1,2,3,7,8,9-HxCDF	ND	27.4	258	1	0.1	
2,3,4,6,7,8-HxCDF	**134**	24.6	258	1	0.1	13.4
1,2,3,4,6,7,8-HpCDF	**3050**	43.2	258	1	0.01	30.5
1,2,3,4,7,8,9-HpCDF	**105**	46.5	258	1	0.01	1.05
OCDF	**6850**	13.0	515	1	0.0003	2.06
		Total TEQ				542

2005 WHO TEFs, ND = 0

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900099
Project:	HS19020127	**Date Collected:**	01/31/19 00:00
Sample Matrix:	Soil	**Date Received:**	02/04/19 14:10
Sample Name:	187065	**Units:**	ng/Kg
Lab Code:	E1900099-001	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/19/19 17:08
Prep Method:	Method Soxhlet	**Date Extracted:**	2/13/19
Sample Amount:	0.700g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520515	**Blank File Name:**	P520511
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520507

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	4.94	7.14			1
1,2,3,7,8-PeCDD	10.4**J**		0.815	35.7	1.59	1.001	1
1,2,3,4,7,8-HxCDD	23.6**J**		1.09	35.7	1.20	1.000	1
1,2,3,6,7,8-HxCDD	331		1.09	35.7	1.33	1.000	1
1,2,3,7,8,9-HxCDD	60.0		1.04	35.7	1.11	1.007	1
1,2,3,4,6,7,8-HpCDD	1820		0.892	35.7	1.03	1.000	1
OCDD	3560		1.40	71.4	0.89	1.000	1
2,3,7,8-TCDF	11.8**K**		2.17	7.14	0.63	1.001	1
1,2,3,7,8-PeCDF	40.4		3.04	35.7	1.40	1.001	1
2,3,4,7,8-PeCDF	197		3.02	35.7	1.41	1.001	1
1,2,3,4,7,8-HxCDF	327		4.76	35.7	1.20	1.000	1
1,2,3,6,7,8-HxCDF	131		4.41	35.7	1.15	1.000	1
1,2,3,7,8,9-HxCDF	39.5**K**		5.25	35.7	0.96	1.001	1
2,3,4,6,7,8-HxCDF	87.3		4.48	35.7	1.19	1.000	1
1,2,3,4,6,7,8-HpCDF	894		1.97	35.7	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	18.7**J**		2.18	35.7	0.97	1.000	1
OCDF	147		2.00	71.4	0.84	1.004	1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900099
Project:	HS19020127	**Date Collected:**	01/31/19 00:00
Sample Matrix:	Soil	**Date Received:**	02/04/19 14:10
Sample Name:	187065	**Units:**	ng/Kg
Lab Code:	E1900099-001	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/19/19 17:08
Prep Method:	Method Soxhlet	**Date Extracted:**	2/13/19
Sample Amount:	0.700g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520515	**Blank File Name:**	P520511
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520507

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	4.94	7.14			1
Total Penta-Dioxins	84.1		0.815	35.7	1.70		1
Total Hexa-Dioxins	1580		1.07	35.7	1.25		1
Total Hepta-Dioxins	3600		0.892	35.7	1.04		1
Total Tetra-Furans	37.3		2.17	7.14	0.77		1
Total Penta-Furans	689		3.04	35.7	1.45		1
Total Hexa-Furans	3040		4.70	35.7	1.21		1
Total Hepta-Furans	1700		2.07	35.7	1.00		1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900099
Project:	HS19020127	**Date Collected:**	01/31/19 00:00
Sample Matrix:	Soil	**Date Received:**	02/04/19 14:10
Sample Name:	187065	**Units:**	Percent
Lab Code:	E1900099-001	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/19/19 17:08
Prep Method:	Method Soxhlet	**Date Extracted:**	2/13/19
Sample Amount:	0.700g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520515	**Blank File Name:**	P520511
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520507

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	808.109	40		25-164	0.82	1.024
13C-1,2,3,7,8-PeCDD	2000	1410.101	71		25-181	1.59	1.214
13C-1,2,3,4,7,8-HxCDD	2000	1358.284	68		32-141	1.29	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1474.899	74		28-130	1.27	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1765.043	88		23-140	1.08	1.070
13C-OCDD	4000	2074.195	52		17-157	0.93	1.142
13C-2,3,7,8-TCDF	2000	1151.478	58		24-169	0.81	0.990
13C-1,2,3,7,8-PeCDF	2000	1312.951	66		24-185	1.57	1.166
13C-2,3,4,7,8-PeCDF	2000	1273.818	64		21-178	1.59	1.202
13C-1,2,3,4,7,8-HxCDF	2000	1200.041	60		26-152	0.52	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1257.023	63		26-123	0.54	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1259.880	63		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1256.874	63		28-136	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1145.499	57		28-143	0.45	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1238.612	62		26-138	0.45	1.082
37Cl-2,3,7,8-TCDD	800	453.178	57		35-197	NA	1.025

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900099
Project:	HS19020127	**Date Collected:**	01/31/19 00:00
Sample Matrix:	Soil	**Date Received:**	02/04/19 14:10
Sample Name:	187065	**Units:**	ng/Kg
Lab Code:	E1900099-001	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	4.94	7.14	1	1	
1,2,3,7,8-PeCDD	**10.4**	0.815	35.7	1	1	10.4
1,2,3,4,7,8-HxCDD	**23.6**	1.09	35.7	1	0.1	2.36
1,2,3,6,7,8-HxCDD	**331**	1.09	35.7	1	0.1	33.1
1,2,3,7,8,9-HxCDD	**60.0**	1.04	35.7	1	0.1	6.00
1,2,3,4,6,7,8-HpCDD	**1820**	0.892	35.7	1	0.01	18.2
OCDD	**3560**	1.40	71.4	1	0.0003	1.07
2,3,7,8-TCDF	**11.8**	2.17	7.14	1	0.1	1.18
1,2,3,7,8-PeCDF	**40.4**	3.04	35.7	1	0.03	1.21
2,3,4,7,8-PeCDF	**197**	3.02	35.7	1	0.3	59.1
1,2,3,4,7,8-HxCDF	**327**	4.76	35.7	1	0.1	32.7
1,2,3,6,7,8-HxCDF	**131**	4.41	35.7	1	0.1	13.1
1,2,3,7,8,9-HxCDF	**39.5**	5.25	35.7	1	0.1	3.95
2,3,4,6,7,8-HxCDF	**87.3**	4.48	35.7	1	0.1	8.73
1,2,3,4,6,7,8-HpCDF	**894**	1.97	35.7	1	0.01	8.94
1,2,3,4,7,8,9-HpCDF	**18.7**	2.18	35.7	1	0.01	0.187
OCDF	**147**	2.00	71.4	1	0.0003	0.0441
		Total TEQ				200

2005 WHO TEFs, ND = 0

10450 Stancliff Rd. Suite 210
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February 13, 2019

Kevin M. Coglan
Environmental Health & Engineering
180 Wells Avenue, Suite 200,
Newton, MA 02459

Work Order: **HS19011056**

Laboratory Results for: **22437 Friedman/Rubin S.V.E.C.**

Dear Kevin,

ALS Environmental received 21 sample(s) on Jan 23, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Corey Grandits
Project Manager

Client: Environmental Health & Engineering
Project: 22437 Friedman/Rubin S.V.E.C.
Work Order: HS19011056

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19011056-01	184838	Wipe		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-02	184839	Wipe		21-Jan-2019 00:00	23-Jan-2019 09:55	☑
HS19011056-03	184831	Wipe		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-04	184840	Wipe		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-05	184841	Wipe		21-Jan-2019 00:00	23-Jan-2019 09:55	☑
HS19011056-06	187061	Solid		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-07	187062	Solid		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-08	187066	Solid		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-09	187067	Solid		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-10	187064	Solid		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-11	184824	Dust		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-12	184827	Dust		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-13	184829	Dust		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-14	187056	Dust		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-15	187057	Dust		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-16	187058	Dust		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-17	187059	Dust		21-Jan-2019 00:00	23-Jan-2019 09:55	☑
HS19011056-18	184852	Solid		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-19	187069	Solid		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-20	187087 Blank	Solid		21-Jan-2019 00:00	23-Jan-2019 09:55	☐
HS19011056-21	187088 Blank	Solid		21-Jan-2019 00:00	23-Jan-2019 09:55	☐

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Work Order: HS19011056

CASE NARRATIVE

Work Order Comments

- The analyses for Dioxins/Furans and PCB Congeners were subcontracted to our ALS Houston TX, High Resolution Lab. Final report attached.

ECD Organics by Method SW8082

Batch ID: 136949

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 136985,137511

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 184838

Collection Date: 21-Jan-2019 00:00

ANALYTICAL REPORT

WorkOrder:HS19011056

Lab ID:HS19011056-01

Matrix:Wipe

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541C/3665A / 23-Jan-2019		Analyst: JBA
Aroclor 1016		U	500	500	ng, Total	1	25-Jan-2019 12:19
Aroclor 1221		U	500	500	ng, Total	1	25-Jan-2019 12:19
Aroclor 1232		U	500	500	ng, Total	1	25-Jan-2019 12:19
Aroclor 1242		U	500	500	ng, Total	1	25-Jan-2019 12:19
Aroclor 1248		U	500	500	ng, Total	1	25-Jan-2019 12:19
Aroclor 1254		U	500	500	ng, Total	1	25-Jan-2019 12:19
Aroclor 1260		U	500	500	ng, Total	1	25-Jan-2019 12:19
PCBs (Total)		U	500	500	ng, Total	1	25-Jan-2019 12:19
Surr: Decachlorobiphenyl	*106*			*30-150*	*%REC*	*1*	*25-Jan-2019 12:19*
Surr: Tetrachloro-m-xylene	*102*			*30-150*	*%REC*	*1*	*25-Jan-2019 12:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

ANALYTICAL REPORT

Project: 22437 Friedman/Rubin S.V.E.C.

WorkOrder:HS19011056

Sample ID: 184831

Lab ID:HS19011056-03

Collection Date: 21-Jan-2019 00:00

Matrix:Wipe

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541C/3665A / 23-Jan-2019		Analyst: JBA
Aroclor 1016		U	500	500	ng, Total	1	25-Jan-2019 12:36
Aroclor 1221		U	500	500	ng, Total	1	25-Jan-2019 12:36
Aroclor 1232		U	500	500	ng, Total	1	25-Jan-2019 12:36
Aroclor 1242		U	500	500	ng, Total	1	25-Jan-2019 12:36
Aroclor 1248		U	500	500	ng, Total	1	25-Jan-2019 12:36
Aroclor 1254		U	500	500	ng, Total	1	25-Jan-2019 12:36
Aroclor 1260		U	500	500	ng, Total	1	25-Jan-2019 12:36
PCBs (Total)		U	500	500	ng, Total	1	25-Jan-2019 12:36
Surr: Decachlorobiphenyl	*102*			*30-150*	*%REC*	*1*	*25-Jan-2019 12:36*
Surr: Tetrachloro-m-xylene	*95.1*			*30-150*	*%REC*	*1*	*25-Jan-2019 12:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 184840

Collection Date: 21-Jan-2019 00:00

ANALYTICAL REPORT

WorkOrder:HS19011056

Lab ID:HS19011056-04

Matrix:Wipe

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541C/3665A / 23-Jan-2019		Analyst: JBA
Aroclor 1016		U	500	500	ng, Total	1	25-Jan-2019 12:53
Aroclor 1221		U	500	500	ng, Total	1	25-Jan-2019 12:53
Aroclor 1232		U	500	500	ng, Total	1	25-Jan-2019 12:53
Aroclor 1242		U	500	500	ng, Total	1	25-Jan-2019 12:53
Aroclor 1248		U	500	500	ng, Total	1	25-Jan-2019 12:53
Aroclor 1254		U	500	500	ng, Total	1	25-Jan-2019 12:53
Aroclor 1260		U	500	500	ng, Total	1	25-Jan-2019 12:53
PCBs (Total)		U	500	500	ng, Total	1	25-Jan-2019 12:53
Surr: Decachlorobiphenyl	*114*			*30-150*	*%REC*	*1*	*25-Jan-2019 12:53*
Surr: Tetrachloro-m-xylene	*97.1*			*30-150*	*%REC*	*1*	*25-Jan-2019 12:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Environmental Health & Engineering	**ANALYTICAL REPORT**
Project:	22437 Friedman/Rubin S.V.E.C.	WorkOrder:HS19011056
Sample ID:	187061	Lab ID:HS19011056-06
Collection Date:	21-Jan-2019 00:00	Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0			1	13-Feb-2019 15:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 187062

Collection Date: 21-Jan-2019 00:00

ANALYTICAL REPORT

WorkOrder:HS19011056

Lab ID:HS19011056-07

Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541/3665A / 23-Jan-2019		Analyst: JLJ
Aroclor 1016	U		470	1900	ug/Kg	10	24-Jan-2019 16:08
Aroclor 1221	U		630	1900	ug/Kg	10	24-Jan-2019 16:08
Aroclor 1232	U		510	1900	ug/Kg	10	24-Jan-2019 16:08
Aroclor 1242	U		670	1900	ug/Kg	10	24-Jan-2019 16:08
Aroclor 1248	**6,800**	P	**670**	**1900**	**ug/Kg**	10	24-Jan-2019 16:08
Aroclor 1254	**5,500**		**530**	**1900**	**ug/Kg**	10	24-Jan-2019 16:08
Aroclor 1260	U		450	1900	ug/Kg	10	24-Jan-2019 16:08
PCBs (Total)	**12,000**		**450**	**1900**	**ug/Kg**	10	24-Jan-2019 16:08
Surr: Decachlorobiphenyl	*142*	*J*		*54-143*	*%REC*	*10*	*24-Jan-2019 16:08*
Surr: Tetrachloro-m-xylene	*98.3*	*J*		*50-140*	*%REC*	*10*	*24-Jan-2019 16:08*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Environmental Health & Engineering	**ANALYTICAL REPORT**
Project:	22437 Friedman/Rubin S.V.E.C.	WorkOrder:HS19011056
Sample ID:	187066	Lab ID:HS19011056-08
Collection Date:	21-Jan-2019 00:00	Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541/3665A / 23-Jan-2019		Analyst: JLJ
Aroclor 1016	U		270	1100	ug/Kg	10	24-Jan-2019 16:24
Aroclor 1221	U		360	1100	ug/Kg	10	24-Jan-2019 16:24
Aroclor 1232	U		290	1100	ug/Kg	10	24-Jan-2019 16:24
Aroclor 1242	U		380	1100	ug/Kg	10	24-Jan-2019 16:24
Aroclor 1248	**2,400**	P	**380**	**1100**	**ug/Kg**	10	24-Jan-2019 16:24
Aroclor 1254	**2,500**		**300**	**1100**	**ug/Kg**	10	24-Jan-2019 16:24
Aroclor 1260	U		260	1100	ug/Kg	10	24-Jan-2019 16:24
PCBs (Total)	**4,900**		**260**	**1100**	**ug/Kg**	10	24-Jan-2019 16:24
Surr: Decachlorobiphenyl	*140*	*J*		*54-143*	*%REC*	*10*	*24-Jan-2019 16:24*
Surr: Tetrachloro-m-xylene	*89.0*	*J*		*50-140*	*%REC*	*10*	*24-Jan-2019 16:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Environmental Health & Engineering	**ANALYTICAL REPORT**
Project:	22437 Friedman/Rubin S.V.E.C.	WorkOrder:HS19011056
Sample ID:	187067	Lab ID:HS19011056-09
Collection Date:	21-Jan-2019 00:00	Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0			1	13-Feb-2019 15:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 187064

Collection Date: 21-Jan-2019 00:00

ANALYTICAL REPORT

WorkOrder:HS19011056

Lab ID:HS19011056-10

Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541/3665A / 23-Jan-2019		Analyst: JLJ
Aroclor 1016	U		300	1200	ug/Kg	1	25-Jan-2019 10:43
Aroclor 1221	U		400	1200	ug/Kg	1	25-Jan-2019 10:43
Aroclor 1232	U		320	1200	ug/Kg	1	25-Jan-2019 10:43
Aroclor 1242	U		420	1200	ug/Kg	1	25-Jan-2019 10:43
Aroclor 1248	U		420	1200	ug/Kg	1	25-Jan-2019 10:43
Aroclor 1254	**3,000**		**340**	**1200**	**ug/Kg**	1	25-Jan-2019 10:43
Aroclor 1260	**1,200**	J	**290**	**1200**	**ug/Kg**	1	25-Jan-2019 10:43
PCBs (Total)	**4,200**		**290**	**1200**	**ug/Kg**	1	25-Jan-2019 10:43
Surr: Decachlorobiphenyl	*105*			*54-143*	*%REC*	*1*	*25-Jan-2019 10:43*
Surr: Tetrachloro-m-xylene	*117*			*50-140*	*%REC*	*1*	*25-Jan-2019 10:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 184824

Collection Date: 21-Jan-2019 00:00

ANALYTICAL REPORT

WorkOrder:HS19011056

Lab ID:HS19011056-11

Matrix:Dust

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541/3665A / 23-Jan-2019		Analyst: JLJ
Aroclor 1016		U	2500	10000	ug/Kg	1	25-Jan-2019 10:59
Aroclor 1221		U	3400	10000	ug/Kg	1	25-Jan-2019 10:59
Aroclor 1232		U	2700	10000	ug/Kg	1	25-Jan-2019 10:59
Aroclor 1242		U	3500	10000	ug/Kg	1	25-Jan-2019 10:59
Aroclor 1248		U	3500	10000	ug/Kg	1	25-Jan-2019 10:59
Aroclor 1254		U	2800	10000	ug/Kg	1	25-Jan-2019 10:59
Aroclor 1260		U	2400	10000	ug/Kg	1	25-Jan-2019 10:59
PCBs (Total)		U	2400	10000	ug/Kg	1	25-Jan-2019 10:59
Surr: Decachlorobiphenyl	*109*			*54-143*	*%REC*	*1*	*25-Jan-2019 10:59*
Surr: Tetrachloro-m-xylene	*91.5*			*50-140*	*%REC*	*1*	*25-Jan-2019 10:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 184827

Collection Date: 21-Jan-2019 00:00

ANALYTICAL REPORT

WorkOrder:HS19011056

Lab ID:HS19011056-12

Matrix:Dust

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541/3665A / 23-Jan-2019		Analyst: JLJ
Aroclor 1016		U	3200	13000	ug/Kg	1	25-Jan-2019 11:15
Aroclor 1221		U	4200	13000	ug/Kg	1	25-Jan-2019 11:15
Aroclor 1232		U	3400	13000	ug/Kg	1	25-Jan-2019 11:15
Aroclor 1242		U	4400	13000	ug/Kg	1	25-Jan-2019 11:15
Aroclor 1248		U	4400	13000	ug/Kg	1	25-Jan-2019 11:15
Aroclor 1254		U	3500	13000	ug/Kg	1	25-Jan-2019 11:15
Aroclor 1260		U	3000	13000	ug/Kg	1	25-Jan-2019 11:15
PCBs (Total)		U	3000	13000	ug/Kg	1	25-Jan-2019 11:15
Surr: Decachlorobiphenyl	*92.7*			*54-143*	*%REC*	*1*	*25-Jan-2019 11:15*
Surr: Tetrachloro-m-xylene	*76.0*			*50-140*	*%REC*	*1*	*25-Jan-2019 11:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 184829

Collection Date: 21-Jan-2019 00:00

ANALYTICAL REPORT

WorkOrder:HS19011056

Lab ID:HS19011056-13

Matrix:Dust

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541/3665A / 23-Jan-2019		Analyst: JLJ
Aroclor 1016	U		970	3900	ug/Kg	1	25-Jan-2019 11:31
Aroclor 1221	U		1300	3900	ug/Kg	1	25-Jan-2019 11:31
Aroclor 1232	U		1000	3900	ug/Kg	1	25-Jan-2019 11:31
Aroclor 1242	U		1400	3900	ug/Kg	1	25-Jan-2019 11:31
Aroclor 1248	U		1400	3900	ug/Kg	1	25-Jan-2019 11:31
Aroclor 1254	**1,900**	J	**1100**	**3900**	**ug/Kg**	1	25-Jan-2019 11:31
Aroclor 1260	U		920	3900	ug/Kg	1	25-Jan-2019 11:31
PCBs (Total)	**1,900**	J	**920**	**3900**	**ug/Kg**	1	25-Jan-2019 11:31
Surr: Decachlorobiphenyl	*108*			*54-143*	*%REC*	*1*	*25-Jan-2019 11:31*
Surr: Tetrachloro-m-xylene	*83.7*			*50-140*	*%REC*	*1*	*25-Jan-2019 11:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Environmental Health & Engineering		**ANALYTICAL REPORT**
Project:	22437 Friedman/Rubin S.V.E.C.	WorkOrder:	HS19011056
Sample ID:	187056	Lab ID:	HS19011056-14
Collection Date:	21-Jan-2019 00:00	Matrix:	Dust

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541/3665A / 23-Jan-2019		Analyst: JLJ
Aroclor 1016	U		570	2300	ug/Kg	1	25-Jan-2019 11:47
Aroclor 1221	U		760	2300	ug/Kg	1	25-Jan-2019 11:47
Aroclor 1232	U		610	2300	ug/Kg	1	25-Jan-2019 11:47
Aroclor 1242	**17,000**		**800**	**2300**	**ug/Kg**	1	25-Jan-2019 11:47
Aroclor 1248	U		800	2300	ug/Kg	1	25-Jan-2019 11:47
Aroclor 1254	**6,800**		**640**	**2300**	**ug/Kg**	1	25-Jan-2019 11:47
Aroclor 1260	U		550	2300	ug/Kg	1	25-Jan-2019 11:47
PCBs (Total)	**24,000**		**550**	**2300**	**ug/Kg**	1	25-Jan-2019 11:47
Surr: Decachlorobiphenyl	*94.6*			*54-143*	*%REC*	*1*	*25-Jan-2019 11:47*
Surr: Tetrachloro-m-xylene	*87.9*			*50-140*	*%REC*	*1*	*25-Jan-2019 11:47*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Environmental Health & Engineering	**ANALYTICAL REPORT**
Project:	22437 Friedman/Rubin S.V.E.C.	WorkOrder:HS19011056
Sample ID:	187057	Lab ID:HS19011056-15
Collection Date:	21-Jan-2019 00:00	Matrix:Dust

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0			1	13-Feb-2019 15:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 187058

Collection Date: 21-Jan-2019 00:00

ANALYTICAL REPORT

WorkOrder:HS19011056

Lab ID:HS19011056-16

Matrix:Dust

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541/3665A / 23-Jan-2019		Analyst: JLJ
Aroclor 1016	U		1300	5000	ug/Kg	1	25-Jan-2019 12:03
Aroclor 1221	U		1700	5000	ug/Kg	1	25-Jan-2019 12:03
Aroclor 1232	U		1400	5000	ug/Kg	1	25-Jan-2019 12:03
Aroclor 1242	U		1800	5000	ug/Kg	1	25-Jan-2019 12:03
Aroclor 1248	U		1800	5000	ug/Kg	1	25-Jan-2019 12:03
Aroclor 1254	U		1400	5000	ug/Kg	1	25-Jan-2019 12:03
Aroclor 1260	**3,700**	J	**1200**	**5000**	**ug/Kg**	1	25-Jan-2019 12:03
PCBs (Total)	**3,700**	J	**1200**	**5000**	**ug/Kg**	1	25-Jan-2019 12:03
Surr: Decachlorobiphenyl	*105*			*54-143*	*%REC*	*1*	*25-Jan-2019 12:03*
Surr: Tetrachloro-m-xylene	*94.6*			*50-140*	*%REC*	*1*	*25-Jan-2019 12:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Environmental Health & Engineering		**ANALYTICAL REPORT**
Project:	22437 Friedman/Rubin S.V.E.C.		WorkOrder:HS19011056
Sample ID:	184852		Lab ID:HS19011056-18
Collection Date:	21-Jan-2019 00:00		Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541/3665A / 23-Jan-2019		Analyst: JLJ
Aroclor 1016	U		2700	11000	ug/Kg	10	24-Jan-2019 18:15
Aroclor 1221	U		3700	11000	ug/Kg	10	24-Jan-2019 18:15
Aroclor 1232	U		2900	11000	ug/Kg	10	24-Jan-2019 18:15
Aroclor 1242	**130,000**		**3800**	**11000**	**ug/Kg**	10	24-Jan-2019 18:15
Aroclor 1248	**49,000**	P	**3800**	**11000**	**ug/Kg**	10	24-Jan-2019 18:15
Aroclor 1254	U		3100	11000	ug/Kg	10	24-Jan-2019 18:15
Aroclor 1260	U		2600	11000	ug/Kg	10	24-Jan-2019 18:15
PCBs (Total)	**180,000**		**2600**	**11000**	**ug/Kg**	10	24-Jan-2019 18:15
Surr: Decachlorobiphenyl	*109*	*J*		*54-143*	*%REC*	*10*	*24-Jan-2019 18:15*
Surr: Tetrachloro-m-xylene	*100*	*J*		*50-140*	*%REC*	*10*	*24-Jan-2019 18:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Environmental Health & Engineering	**ANALYTICAL REPORT**
Project:	22437 Friedman/Rubin S.V.E.C.	WorkOrder:HS19011056
Sample ID:	187069	Lab ID:HS19011056-19
Collection Date:	21-Jan-2019 00:00	Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0			1	13-Feb-2019 15:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

ANALYTICAL REPORT

Project: 22437 Friedman/Rubin S.V.E.C.

WorkOrder:HS19011056

Sample ID: 187087 Blank

Lab ID:HS19011056-20

Collection Date: 21-Jan-2019 00:00

Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541C/3665A / 07-Feb-2019		Analyst: JBA
Aroclor 1016		U	500	500	ng, Total	1	07-Feb-2019 23:56
Aroclor 1221		U	500	500	ng, Total	1	07-Feb-2019 23:56
Aroclor 1232		U	500	500	ng, Total	1	07-Feb-2019 23:56
Aroclor 1242		U	500	500	ng, Total	1	07-Feb-2019 23:56
Aroclor 1248		U	500	500	ng, Total	1	07-Feb-2019 23:56
Aroclor 1254		U	500	500	ng, Total	1	07-Feb-2019 23:56
Aroclor 1260		U	500	500	ng, Total	1	07-Feb-2019 23:56
PCBs (Total)		U	500	500	ng, Total	1	07-Feb-2019 23:56
Surr: Decachlorobiphenyl	*85.6*			*30-150*	*%REC*	*1*	*07-Feb-2019 23:56*
Surr: Tetrachloro-m-xylene	*89.2*			*30-150*	*%REC*	*1*	*07-Feb-2019 23:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 187088 Blank

Collection Date: 21-Jan-2019 00:00

ANALYTICAL REPORT

WorkOrder:HS19011056

Lab ID:HS19011056-21

Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
PCBS BY SW8082A		**Method:SW8082**			Prep:SW3541C/3665A / 07-Feb-2019		Analyst: JBA
Aroclor 1016		U	500	500	ng, Total	1	08-Feb-2019 00:13
Aroclor 1221		U	500	500	ng, Total	1	08-Feb-2019 00:13
Aroclor 1232		U	500	500	ng, Total	1	08-Feb-2019 00:13
Aroclor 1242		U	500	500	ng, Total	1	08-Feb-2019 00:13
Aroclor 1248		U	500	500	ng, Total	1	08-Feb-2019 00:13
Aroclor 1254		U	500	500	ng, Total	1	08-Feb-2019 00:13
Aroclor 1260		U	500	500	ng, Total	1	08-Feb-2019 00:13
PCBs (Total)		U	500	500	ng, Total	1	08-Feb-2019 00:13
Surr: Decachlorobiphenyl	*72.1*			*30-150*	*%REC*	*1*	*08-Feb-2019 00:13*
Surr: Tetrachloro-m-xylene	*79.9*			*30-150*	*%REC*	*1*	*08-Feb-2019 00:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Attachment 2

WEIGHT LOG

Client: Environmental Health & Engineering
Project: 22437 Friedman/Rubin S.V.E.C.
WorkOrder: HS19011056

Batch ID: 136949 **Method:** PCBS BY SW8082A **Prep:** PCBPR_SOX

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19011056-07	1	2.66	10 (mL)	3.759
HS19011056-08	1	4.68	10 (mL)	2.137
HS19011056-10	1	0.42	10 (mL)	23.81
HS19011056-11	1	0.05	10 (mL)	200
HS19011056-12	1	0.04	10 (mL)	250
HS19011056-13	1	0.13	10 (mL)	76.92
HS19011056-14	1	0.22	10 (mL)	45.45
HS19011056-16	1	0.1	10 (mL)	100
HS19011056-18	1	0.46	10 (mL)	21.74

Batch ID: 136985 **Method:** PCBS BY SW8082A **Prep:** PCBWIPEPR_SOX

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19011056-01	1	1	10 (mL)	10
HS19011056-03	1	1	10 (mL)	10
HS19011056-04	1	1	10 (mL)	10

Batch ID: 137511 **Method:** PCBS BY SW8082A **Prep:** PCBWIPEPR_SOX

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19011056-20	1	1	10 (mL)	10
HS19011056-21	1	1	10 (mL)	10

Client: Environmental Health & Engineering
Project: 22437 Friedman/Rubin S.V.E.C.
WorkOrder: HS19011056

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 136949	**Test Name :** PCBS BY SW8082A			**Matrix:** Dust		
HS19011056-11	184824	21 Jan 2019 00:00		23 Jan 2019 11:43	25 Jan 2019 10:59	1
HS19011056-12	184827	21 Jan 2019 00:00		23 Jan 2019 11:43	25 Jan 2019 11:15	1
HS19011056-13	184829	21 Jan 2019 00:00		23 Jan 2019 11:43	25 Jan 2019 11:31	1
HS19011056-14	187056	21 Jan 2019 00:00		23 Jan 2019 11:43	25 Jan 2019 11:47	1
HS19011056-16	187058	21 Jan 2019 00:00		23 Jan 2019 11:43	25 Jan 2019 12:03	1
Batch ID 136949	**Test Name :** PCBS BY SW8082A			**Matrix:** Solid		
HS19011056-07	187062	21 Jan 2019 00:00		23 Jan 2019 11:43	24 Jan 2019 16:08	10
HS19011056-08	187066	21 Jan 2019 00:00		23 Jan 2019 11:43	24 Jan 2019 16:24	10
HS19011056-10	187064	21 Jan 2019 00:00		23 Jan 2019 11:43	25 Jan 2019 10:43	1
HS19011056-18	184852	21 Jan 2019 00:00		23 Jan 2019 11:43	24 Jan 2019 18:15	10
Batch ID 136985	**Test Name :** PCBS BY SW8082A			**Matrix:** Wipe		
HS19011056-01	184838	21 Jan 2019 00:00		23 Jan 2019 16:30	25 Jan 2019 12:19	1
HS19011056-03	184831	21 Jan 2019 00:00		23 Jan 2019 16:30	25 Jan 2019 12:36	1
HS19011056-04	184840	21 Jan 2019 00:00		23 Jan 2019 16:30	25 Jan 2019 12:53	1
Batch ID 137511	**Test Name :** PCBS BY SW8082A			**Matrix:** Solid		
HS19011056-20	187087 Blank	21 Jan 2019 00:00		07 Feb 2019 12:28	07 Feb 2019 23:56	1
HS19011056-21	187088 Blank	21 Jan 2019 00:00		07 Feb 2019 12:28	08 Feb 2019 00:13	1
Batch ID R332801	**Test Name :** SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A			**Matrix:** Dust		
HS19011056-15	187057	21 Jan 2019 00:00			13 Feb 2019 15:02	1
Batch ID R332801	**Test Name :** SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A			**Matrix:** Solid		
HS19011056-06	187061	21 Jan 2019 00:00			13 Feb 2019 15:02	1
HS19011056-09	187067	21 Jan 2019 00:00			13 Feb 2019 15:02	1
HS19011056-19	187069	21 Jan 2019 00:00			13 Feb 2019 15:02	1

Client: Environmental Health & Engineering
Project: 22437 Friedman/Rubin S.V.E.C.
WorkOrder: HS19011056

QC BATCH REPORT

Batch ID: 136949 **Instrument: ECD_7** **Method: SW8082**

MBLK Sample ID: **MBLK-136949** Units: **ug/Kg** Analysis Date: **24-Jan-2019 08:24**
Client ID: Run ID: **ECD_7_331650** SeqNo: **4924836** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	U	17								
Aroclor 1221	U	17								
Aroclor 1232	U	17								
Aroclor 1242	U	17								
Aroclor 1248	U	17								
Aroclor 1254	U	17								
Aroclor 1260	U	17								
PCBs (Total)	U	17								
Surr: Decachlorobiphenyl	*5.921*	*1.6*	*6.667*	*0*	*88.8*	*54 - 143*				
Surr: Tetrachloro-m-xylene	*6.129*	*1.6*	*6.667*	*0*	*91.9*	*50 - 140*				

LCS Sample ID: **LCS-136949** Units: **ug/Kg** Analysis Date: **24-Jan-2019 08:40**
Client ID: Run ID: **ECD_7_331650** SeqNo: **4924837** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	158.9	17	166.7	0	95.3	53 - 135				
Aroclor 1260	157.3	17	166.7	0	94.3	54 - 137				
Surr: Decachlorobiphenyl	*6.335*	*1.6*	*6.667*	*0*	*95.0*	*54 - 143*				
Surr: Tetrachloro-m-xylene	*6.452*	*1.6*	*6.667*	*0*	*96.8*	*50 - 140*				

MS Sample ID: **HS19011054-02MS** Units: **ug/Kg** Analysis Date: **24-Jan-2019 09:28**
Client ID: Run ID: **ECD_7_331650** SeqNo: **4924839** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	160.6	17	166.3	0	96.6	53 - 135				
Aroclor 1260	187.2	17	166.3	27.16	96.2	54 - 137				
Surr: Decachlorobiphenyl	*6.88*	*1.6*	*6.651*	*0*	*103*	*54 - 143*				
Surr: Tetrachloro-m-xylene	*6.621*	*1.6*	*6.651*	*0*	*99.5*	*50 - 140*				

Client: Environmental Health & Engineering
Project: 22437 Friedman/Rubin S.V.E.C.
WorkOrder: HS19011056

QC BATCH REPORT

Batch ID: 136949 **Instrument: ECD_7** **Method: SW8082**

MSD Sample ID: **HS19011054-02MSD** Units: **ug/Kg** Analysis Date: **24-Jan-2019 09:43**
Client ID: Run ID: **ECD_7_331650** SeqNo: **4924840** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	149.7	17	166.5	0	89.9	53 - 135	160.6	7.02	30	
Aroclor 1260	187.8	17	166.5	27.16	96.5	54 - 137	187.2	0.338	30	
Surr: Decachlorobiphenyl	*6.448*	*1.6*	*6.66*	*0*	*96.8*	*54 - 143*	*6.88*	*6.49*	*30*	
Surr: Tetrachloro-m-xylene	*6.124*	*1.6*	*6.66*	*0*	*91.9*	*50 - 140*	*6.621*	*7.81*	*30*	

The following samples were analyzed in this batch: HS19011056-07 HS19011056-08 HS19011056-10 HS19011056-11 HS19011056-12 HS19011056-13 HS19011056-14 HS19011056-16 HS19011056-18

Client: Environmental Health & Engineering
Project: 22437 Friedman/Rubin S.V.E.C.
WorkOrder: HS19011056

QC BATCH REPORT

Batch ID: 136985 **Instrument: ECD_7** **Method: SW8082**

MBLK Sample ID: **MBLK-136985** Units: **ng, Total** Analysis Date: **24-Jan-2019 20:22**
Client ID: Run ID: **ECD_7_331725** SeqNo: **4925168** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	U	500								
Aroclor 1221	U	500								
Aroclor 1232	U	500								
Aroclor 1242	U	500								
Aroclor 1248	U	500								
Aroclor 1254	U	500								
Aroclor 1260	U	500								
PCBs (Total)	U	500								
Surr: Decachlorobiphenyl	*189.1*	*0*	*200*	*0*	*94.5*	*30 - 150*				
Surr: Tetrachloro-m-xylene	*180.3*	*0*	*200*	*0*	*90.2*	*30 - 150*				

LCS Sample ID: **LCS-136985** Units: **ng, Total** Analysis Date: **24-Jan-2019 20:38**
Client ID: Run ID: **ECD_7_331725** SeqNo: **4925169** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	4793	500	5000	0	95.9	50 - 130				
Aroclor 1260	5156	500	5000	0	103	50 - 130				
Surr: Decachlorobiphenyl	*201.9*	*0*	*200*	*0*	*101*	*30 - 150*				
Surr: Tetrachloro-m-xylene	*193.6*	*0*	*200*	*0*	*96.8*	*30 - 150*				

LCSD Sample ID: **LCSD-136985** Units: **ng, Total** Analysis Date: **24-Jan-2019 20:54**
Client ID: Run ID: **ECD_7_331725** SeqNo: **4925170** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	4960	500	5000	0	99.2	50 - 130	4793	3.42	30	
Aroclor 1260	5318	500	5000	0	106	50 - 130	5156	3.08	30	
Surr: Decachlorobiphenyl	*205.4*	*0*	*200*	*0*	*103*	*30 - 150*	*201.9*	*1.73*	*30*	
Surr: Tetrachloro-m-xylene	*198.9*	*0*	*200*	*0*	*99.5*	*30 - 150*	*193.6*	*2.73*	*30*	

The following samples were analyzed in this batch: HS19011056-01 HS19011056-03 HS19011056-04

Client: Environmental Health & Engineering
Project: 22437 Friedman/Rubin S.V.E.C.
WorkOrder: HS19011056

QC BATCH REPORT

Batch ID: 137511 **Instrument: ECD_7** **Method: SW8082**

MBLK Sample ID: **MBLK-137511** Units: **ng, Total** Analysis Date: **07-Feb-2019 21:24**
Client ID: Run ID: **ECD_7_332552** SeqNo: **4943020** PrepDate: **07-Feb-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	U	500								
Aroclor 1221	U	500								
Aroclor 1232	U	500								
Aroclor 1242	U	500								
Aroclor 1248	U	500								
Aroclor 1254	U	500								
Aroclor 1260	U	500								
PCBs (Total)	U	500								
Surr: Decachlorobiphenyl	*136.4*	*0*	*200*	*0*	*68.2*	*30 - 150*				
Surr: Tetrachloro-m-xylene	*125.9*	*0*	*200*	*0*	*62.9*	*30 - 150*				

LCS Sample ID: **LCS-137511** Units: **ng, Total** Analysis Date: **07-Feb-2019 21:41**
Client ID: Run ID: **ECD_7_332552** SeqNo: **4943021** PrepDate: **07-Feb-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	3191	500	5000	0	63.8	50 - 130				
Aroclor 1260	2685	500	5000	0	53.7	50 - 130				
Surr: Decachlorobiphenyl	*112.8*	*0*	*200*	*0*	*56.4*	*30 - 150*				
Surr: Tetrachloro-m-xylene	*142.6*	*0*	*200*	*0*	*71.3*	*30 - 150*				

LCSD Sample ID: **LCSD-137511** Units: **ng, Total** Analysis Date: **07-Feb-2019 21:58**
Client ID: Run ID: **ECD_7_332552** SeqNo: **4943022** PrepDate: **07-Feb-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aroclor 1016	3593	500	5000	0	71.9	50 - 130	3191	11.9	30	
Aroclor 1260	3219	500	5000	0	64.4	50 - 130	2685	18.1	30	
Surr: Decachlorobiphenyl	*127.9*	*0*	*200*	*0*	*64.0*	*30 - 150*	*112.8*	*12.5*	*30*	
Surr: Tetrachloro-m-xylene	*178.3*	*0*	*200*	*0*	*89.2*	*30 - 150*	*142.6*	*22.2*	*30*	

The following samples were analyzed in this batch: HS19011056-20 HS19011056-21

Client: Environmental Health & Engineering
Project: 22437 Friedman/Rubin S.V.E.C.
WorkOrder: **HS19011056**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

RIGHT SOLUTIONS | RIGHT PARTNER

Sample Receipt Checklist

Client Name: Environmental Health & Engineering

Work Order: HS19011056

Date/Time Received: **23-Jan-2019 09:55**

Received by: **PJM**

Checklist completed by: *Paresh M. Giga* (eSignature) 23-Jan-2019 (Date)

Reviewed by: *RJ Modashia* (eSignature) 23-Jan-2019 (Date)

Matrices: **Dust/Solid/Wipe**

Carrier name: **FedEx**

	Yes	No	
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	2 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:None
Samplers name present on COC?	☐	☑	
Chain of custody agrees with sample labels?	☐	☑	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	1.8c/2.1c U/C	IR25
Cooler(s)/Kit(s):	44451	
Date/Time sample(s) sent to storage:	1/23/19 11:35	

	Yes	No	
Water - VOA vials have zero headspace?	☐	☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	☐	☐	N/A ☑
pH adjusted?	☐	☐	N/A ☑

pH adjusted by:

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Environmental Health & Engineering, Inc.

CHAIN OF CUSTODY FORM

DATE: 1/21/2019

FROM: Environmental Health and Engineering, Inc.
[illegible] Wells Avenue, Suite 200
Newton, MA 02459-3328

Attachment 2

TO: ALS Environmental
Houston, TX

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 22437 (Friedman/Rubin S.V.E.C.)

The cost of this analysis will be covered by EH&E Purchase Order # N.A.

For EH & E Data Coordinator - URGENT DATA ☐

SAMPLE ID	SAMPLE TYPE	ANALYTICAL METHOD/NUMBER	OTHER:Time/Date/Vol.
184838	WIPE-Hexane	PCB Aroclor - 8082	DUE: 1/25/19
184839	WIPE-Hexane	Dioxin/Furan - 1613B	HOLD
184831	WIPE-Hexane	PCB Aroclor - 8082	DUE: 1/25/19
184840	WIPE-Hexane	PCB Aroclor - 8082	DUE: 1/25/19
184841	WIPE-Hexane	Dioxin/Furan - 1613B	HOLD
187061	BULK-CARPET	Dioxin/Furan - 1613B	HOLD
187062	BULK-CARPET	PCB Aroclor - 8082	DUE: 1/25/19
187066	BULK-CARPET	PCB Aroclor - 8082	DUE: 1/25/19
187067	BULK-CARPET	Dioxin/Furan - 1613B	HOLD
187064	BULK-CARPET	PCB Aroclor - 8082	DUE: 1/25/19
184824	BULK-DUST	PCB Aroclor - 8082	DUE: 1/25/19
184827	BULK-DUST	PCB Aroclor - 8082	DUE: 1/25/19
184829	BULK-DUST	PCB Aroclor - 8082	DUE: 1/25/19
187056	BULK-DUST	PCB Aroclor - 8082	DUE: 1/25/19
187057	BULK-DUST	(Arc) ~~PCB Aroclor - 8082~~ 1613B (OK)	HOLD
187058	BULK-DUST	PCB Aroclor - 8082	DUE: 1/25/19

HS19011056
Environmental Health & Engineering
22437 Friedman/Rubin S.V.E.C.

☑ Rush by 1/25/19 or as Indicated date/time ☐ Other

☑ Electronic transfer - datacoordinator@eheinc.com
[illegible]@eheinc.com

is form to the above address

Relinquished by: [signature] of Environmental Health & Engineering, Inc. Date: 1/21/19
Received by: Courier of (company name) FEDEX Date: 1/21/19
Relinquished by: of (company name) Date:
Received by: P.M. [signature] of (company name) ALS. Date: 1/23/19 09:55
Relinquished by: of (company name) Date:
Received by: of (company name) Date:
Lab Data
Received by: of Environmental Health & Engineering, Inc. Date:

44451 OK 1.30 +25 CF 0.30

Page 1 of 2

WHITE-EH&E FILE COPY YELLOW-LAB COPY PINK-PROJECT MANAGER COPY GOLD-DATA COORDINATOR COPY

RIGHT SOLUTIONS | RIGHT PARTNER

Environmental Health & Engineering, Inc.

CHAIN OF CUSTODY FORM

DATE: 1/21/2019

Attachment 2

FROM: Environmental Health and Engineering, Inc.
[illegible] Wells Avenue, Suite 200
Newton, MA 02459-3328

TO: ALS Environmental
Houston, TX

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 22437 (Friedman/Rubin S.V.E.C.)

The cost of this analysis will be covered by EH&E Purchase Order # N.A.

For EH & E Data Coordinator - URGENT DATA ☐

SAMPLE ID	SAMPLE TYPE	ANALYTICAL METHOD/NUMBER	OTHER:Time/Date/Vol.
187059	BULK-DUST	DIOXIN/FURAN - 1613B	HOLD
184852	BULK-TAR	PCB Aroclor - 8082	Due: 1/25/19
187069	BULK-TAR	DIOXIN/FURAN - 1613B	HOLD
187087	BLANK	PCB (8082) & DIOXIN/FURAN (1613B	HOLD
187088	BLANK	PCB (8082) & DIOXIN/FURAN (1613B)	HOLD

HS19011056
Environmental Health & Engineering
22437 Friedman/Rubin S.V.E.C.

Special instructions:

☐ Standard turn around time ☑ Rush by 1/25/19 or as indicated date/time ☐ Other _____

☐ Fax results 781-247-4305

☐ **RETURN SAMPLES** ☐ Electronic transfer - datacoordinator@eheinc.com

☑ Additional report recipient Kroghlan@eheinc.com

Each signatory please return one copy of this form to the above address

Relinquished by: [signature] of Environmental Health & Engineering, Inc. Date: 1/21/2019

Received by: [signature] of (company name) FEDEX Date: 1/21/2019

Relinquished by: _____ of (company name) _____ Date: _____

Received by: [signature] of (company name) ALS. Date: 1/23/19 09:55

Relinquished by: _____ of (company name) _____ Date: _____

Received by: _____ of (company name) _____ Date: _____

Lab Data
Received by: _____ of Environmental Health & Engineering, Inc. Date: _____

Page 2 of 2

WHITE-EH&E FILE COPY YELLOW-LAB COPY PINK-PROJECT MANAGER COPY GOLD-DATA COORDINATOR COPY

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Attachment B

CUSTODY SEAL
Date: 1/22/19 Time: 4:55 PM
Name: E. COGHLAN
Company: EHTE, INC.

Seal Broken By:
Date: 1/23/19

FedEx
TRK# 0215 8137 0760 7599
TUE - 22 JAN AA
STANDARD OVERNIGHT
DSR
77099
TX-US
IAH
NH SGRA

FTD 187013 21JAN19 OWDA 563C2/D74C/0C8A

FedEx Express Package US Airbill
FedEx Tracking Number 8137 0760 7599
Form ID No. 0215

1 From
Date
Sender's Name Phone
Company
Address Dept./Floor/Suite/Room
City State ZIP

2 Your Internal Billing Reference 22437

3 To
Recipient's Name CLIENT SERVICES Phone 281-530-5656
Company ALS ENVIRONMENTAL Houston LAB
Address 10450 STANCLIFF RD STE 210 Dept./Floor/Suite/Room
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City Houston State TX ZIP 77099-4338

Hold Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.
Hold Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

8137 0760 7599

4 Express Package Service * To most locations.
Packages up to 150 lbs. For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day
- FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.
- FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.
- [x] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days
- FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.
- FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.
- FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.
FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube [x] Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.
Saturday Delivery NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
No Signature Required — Package may be left without obtaining a signature for delivery.
[x] Direct Signature — Someone at recipient's address may sign for delivery.
Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?
One box must be checked.
[x] No
Yes — As per attached Shipper's Declaration.
Yes — Shipper's Declaration not required.
Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
Restrictions apply for dangerous goods — see the current FedEx Service Guide.
Cargo Aircraft Only

7 Payment Bill to:
Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.
[x] Sender — Acct. No. in Section 1 will be billed.
Recipient Third Party Credit Card Cash/Check

Total Packages 1 Total Weight 10 lbs.
Credit Card Auth.

*Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

611

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Attachment 2

February 07, 2019

Service Request No:E1900077

ALS Environmental - US
10450 Stancliff Road
Suite 210
Houston, TX 77099

Laboratory Results for: HS19011056

Enclosed are the results of the sample(s) submitted to our laboratory January 29, 2019
For your reference, these analyses have been assigned our service request number **E1900077.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the final complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance to the TNI 2009 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Attachment 2

ALS Environmental

Client:	ALS Houston	**Service Request No.:**	E1900077
Project:	HS19011056	**Date Received:**	01/29/19
Sample Matrix:	Misc Solid		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four samples were received for analysis at ALS Environmental in Houston on 01/29/19.

The samples were received at 0.9°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Method Blank

The Method Blank EQ1900034-01 contained low levels of target Dioxin/Furan compounds above the EDL however below the Method Reporting Limit (MRL). The associated compounds in the samples are not flagged with a 'B' flag as the sample results are greater than ten times the level detected in the method blank.

Precision and Accuracy:

EQ1900034: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD for this extraction batch. The LCS and DLCS recoveries are within control limits.

E flags

When OCDD exceeds the upper method calibration limit (MCL), we use an 'E' flag on the Sample Analytical Report results page when the detector is not saturated. Sample E1900077-004 is reported with an 'E' flag to denote that the sample had concentration greater than the highest calibration point. The process of dilution is counter to the isotopic dilution technique that the laboratory uses to determine recovery and produces variability in the final value. The laboratory only dilutes when detector saturation occurs.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

2378-TCDF

Samples analyzed on the DB-5MSUI column were analyzed under conditions where sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

Attachment 2

Detection Limits

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- 2378-TCDF from the DB-225 column, when confirmation required
- Non-detected compounds reported as ND = ½ * Detection Limit
- Non-detected compounds are not included in the 'Total'

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E1900077-001	187061	1/21/2019	0000
E1900077-002	187067	1/21/2019	0000
E1900077-003	187057	1/21/2019	0000
E1900077-004	187069	1/21/2019	0000

Service Request Summary

Attachment 2

Folder #: **E1900077**
Client Name: ALS Environmental - US
Project Name: HS19011056
Project Number:

Report To: Corey Grandits
ALS Environmental - US
10450 Stancliff Road
Houston, TX 77099
USA
Phone Number: 281-575-2146
Cell Number:
Fax Number:
E-mail: corey.grandits@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: TWOODS
Date Received: 01/29/19
Internal Due Date: 2/13/2019
QAP: LAB QAP
Qualifier Set: HRMS Qualifier Set
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS19011056
EDD: No EDD Specified

2 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
2 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: EHRMS-WIC 6D
Pressure Gas:
Rush

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON Dioxins Furans/1613B
E1900077-001	187061	Solid	01/21/19 0000	II
E1900077-002	187067	Solid	01/21/19 0000	II
E1900077-003	187057	Solid	01/21/19 0000	II
E1900077-004	187069	Solid	01/21/19 0000	II

Service Request Summary

Attachment 2

Folder #:	**E1900077**
Client Name:	ALS Environmental - US
Project Name:	HS19011056
Project Number:	

Report To:	Corey Grandits ALS Environmental - US 10450 Stancliff Road Houston, TX 77099 USA
Phone Number:	281-575-2146
Cell Number:	
Fax Number:	
E-mail:	corey.grandits@alsglobal.com

Project Chemist:	Corey Grandits
Originating Lab:	HOUSTON
Logged By:	TWOODS
Date Received:	01/29/19
Internal Due Date:	2/13/2019
QAP:	LAB QAP
Qualifier Set:	HRMS Qualifier Set
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	HS19011056
EDD:	No EDD Specified

2	8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
2	4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: EHRMS-WIC 6D

Pressure Gas:

Rush

Attachment 2

Data Qualifiers

HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E Estimated value. The reported concentration is above the calibration range of the instrument.
H Sample extracted and/or analyzed out of suggested holding time.
J Estimated value. The reported concentration is below the MRL.
K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.
P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S Signal saturated detector. Result reported from dilution.
U Compound was analyzed for, but was not detected (ND).
X See Case Narrative.
Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i The MDL/MRL have been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

Attachment 2

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID E190077 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
02/06/19	JC	001-004

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
2/6/19	LG	001-004

HS-HRMSREVIEW R1.0

PEER REVIEW PAGE2015

ALS Environmental

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Attachment 2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 10670

E1900077 5
ALS Environmental - US
HS19011056

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Corey Grandits
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	Corey.Grandits@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19011056
TSR:	Jennifer Bell

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19011056-06**	**187061**	**Solid**	**21 Jan 2019 00:00**
	Sub 1613B Dioxin/Furans Full List			11 Feb 2019
2.	**HS19011056-09**	**187067**	**Solid**	**21 Jan 2019 00:00**
	Sub 1613B Dioxin/Furans Full List			11 Feb 2019
3.	**HS19011056-15**	**187057**	**Dust**	**21 Jan 2019 00:00**
	Sub 1613B Dioxin/Furans Full List			11 Feb 2019
4.	**HS19011056-19**	**187069**	**Solid**	**21 Jan 2019 00:00**
	Sub 1613B Dioxin/Furans Full List			11 Feb 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: STD (Laboratory Standard QC: method blank and LCS required)

Relinquished By:	J. [illegible]	Date/Time:	1/29/19 15:30
Received By:	[illegible]	Date/Time:	1/29/19 15:30
Cooler ID(s):		Temperature(s):	

0.5°C

ALS Environmental

Cooler Receipt Form
Attachment 2

Project Chemist: CG

Client/Project: ALS - Houston.

Thermometer ID: SM04

Date/Time Received: 01/29/19 1530 Initials: KW

Date/Time Logged in: 01/30/19 1400 Initials: KW

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ○ Courier ☒ Client
2. Samples received in: ☒ Cooler ○ Box ○ Envelope ○ Other
3. Were custody seals on coolers? ○ Yes ☒ No
   Were they intact? ○ Yes ○ No ☒ N/A
   Were they signed and dated? ○ Yes ○ No ☒ N/A
   If yes, how many and where?
4. Packing Material: ○ Inserts ☒ Baggies ☒ Bubble Wrap ○ Gel Packs ☒ Wet Ice ○ Sleeves ○ Other
5. Foreign or Regulated Soil? ○ Yes ☒ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
N/A		01/29/19	1531	JG	0.5/0.9	☒
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ☒ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ☒ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ☒ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ☒ Yes ○ No
10. Did sample labels and tags agree with custody documents? ☒ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: E1900077 5
ALS Environmental - US
HS19011056

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SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental - Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6°C.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10°C.
- ✓ Air samples are shipped and stored cold, at 0 to 6°C
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

ALS Environmental

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 330769 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/TWOODS **Prep Method:** Method Soxhlet **Prep Date/Time:** 2/1/19 01:44 PM

Attachment 2

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E1900050-001	Breeder Feed Dioxins Test	.01	1613B/Dioxins Furans			Misc. Solid	10.094g	brown pellets/pet food
2	E1900061-001	Sludge Full-January 2019	.01	1613B/Dioxins Furans			Soil	10.192g	tan powder
3	E1900077-001	187061	.01	1613B/Dioxins Furans			Solid	2.954g	brown carpet
4	E1900077-002	187067	.01	1613B/Dioxins Furans			Solid	4.145g	brown carpet
5	E1900077-003	187057	.01	1613B/Dioxins Furans			Solid	0.188g	dark fuzz
6	E1900077-004	187069	.01	1613B/Dioxins Furans			Solid	0.609g	black hard substance
7	EQ1900034-01	MB		1613B/Dioxins Furans			Solid	10.072g	
8	EQ1900034-02	LCS		1613B/Dioxins Furans			Solid	10.031g	
9	EQ1900034-03	DLCS		1613B/Dioxins Furans			Solid	10.001g	

Spiking Solutions

Name: 1613B Matrix Working Standard Inventory ID 196331 Logbook Ref: 196331 JG 1/16/19 2-20ng/ml Expires On: 07/15/2019

E1900050-001	100.00µL	E1900061-001	100.00µL	E1900077-001	100.00µL	E1900077-002	100.00µL	E1900077-003	100.00µL	E1900077-004	100.00µL
EQ1900034-01	100.00µL	EQ1900034-02	100.00µL	EQ1900034-03	100.00µL						

Name: 8290/1613B Cleanup Working Standard Inventory ID 196382 Logbook Ref: JG 1/18/19 196382 8ng/ml Expires On: 04/27/2019

E1900050-001	100.00µL	E1900061-001	100.00µL	E1900077-001	100.00µL	E1900077-002	100.00µL	E1900077-003	100.00µL	E1900077-004	100.00µL
EQ1900034-01	100.00µL	EQ1900034-02	100.00µL	EQ1900034-03	100.00µL						

Name: 1613B Labeled Working Standard Inventory ID 196739 Logbook Ref: 196739 tw 020119 2/4ng/ml Expires On: 07/31/2019

E1900050-001	1,000.00µL	E1900061-001	1,000.00µL	E1900077-001	1,000.00µL	E1900077-002	1,000.00µL	E1900077-003	1,000.00µL	E1900077-004	1,000.00µL
EQ1900034-01	1,000.00µL	EQ1900034-02	1,000.00µL	EQ1900034-03	1,000.00µL						

Preparation Materials

Carbon, High Purity	tw 012819 carbon (196585)	Ethyl Acetate 99.9% Minimum EtOAc	AL 12/31/18 (195971)	Glass Wool	tw 011119 glass wool (196223)
Hexanes 95%	tw 011119 hexane (196222)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	AL (195005)	Sodium Hydroxide 1N NaOH	TW 6/14/18 (191093)
Sodium Sulfate Anhydrous Reagent Grade Na2SO4	JG 01/07/19 (196116)	Tridecane (n-Tridecane)	AL 12/12/18 (195585)	Silica Gel	tw 12/31/18 (195984)
sulfuric acid	tw 1/28/19 sulfuric (196582)	Toluene 99.9% Minimum	tw 011119 toluene (196224)		

Preparation Information Benchsheet

Prep Run#: 330769
Team: Semivoa GCMS/TWOODS

Prep WorkFlow: OrgExtS(365)
Prep Method: Method Soxhlet

Status: Prepped
Prep Date/Time: 2/1/19 01:44 PM

Attachment 2

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	2/1/19 13:44	Started:	2/4/19 10:00	Started:	2/4/19 14:00	Started:	2/5/19 09:00
Finished:	2/2/19 08:00	Finished:	2/4/19 11:00	Finished:	2/4/19 17:00	Finished:	2/5/19 12:00
By:	JGUIN	By:	JGUIN	By:	JGUIN	By:	JGUIN
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

ALS Environmental

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187061	**Units:**	ng/Kg
Lab Code:	E1900077-001	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 17:05
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	2.954g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616742	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	1.48	1.69			1
1,2,3,7,8-PeCDD	7.97**J**		0.923	8.46	1.77	1.001	1
1,2,3,4,7,8-HxCDD	9.49**K**		0.994	8.46	1.60	1.000	1
1,2,3,6,7,8-HxCDD	91.8		1.07	8.46	1.22	1.000	1
1,2,3,7,8,9-HxCDD	16.3**K**		0.956	8.46	1.47	1.007	1
1,2,3,4,6,7,8-HpCDD	521		3.01	8.46	1.05	1.000	1
OCDD	2130		4.21	16.9	0.88	1.000	1
2,3,7,8-TCDF	28.1		1.69	1.69	0.69	1.001	1
1,2,3,7,8-PeCDF	42.4		2.41	8.46	1.68	1.001	1
2,3,4,7,8-PeCDF	76.7		2.27	8.46	1.60	1.001	1
1,2,3,4,7,8-HxCDF	70.5		1.30	8.46	1.19	1.000	1
1,2,3,6,7,8-HxCDF	32.1		1.28	8.46	1.21	1.000	1
1,2,3,7,8,9-HxCDF	5.37**JK**		1.60	8.46	1.56	1.001	1
2,3,4,6,7,8-HxCDF	20.4		1.43	8.46	1.13	1.001	1
1,2,3,4,6,7,8-HpCDF	136		1.19	8.46	1.10	1.000	1
1,2,3,4,7,8,9-HpCDF	3.67**JK**		1.54	8.46	1.30	1.000	1
OCDF	61.6		5.21	16.9	0.89	1.005	1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187061	**Units:**	ng/Kg
Lab Code:	E1900077-001	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 17:05
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	2.954g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616742	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	10.4		1.48	1.69	0.84		1
Total Penta-Dioxins	153		0.923	8.46	1.52		1
Total Hexa-Dioxins	579		1.01	8.46	1.26		1
Total Hepta-Dioxins	1130		3.01	8.46	1.02		1
Total Tetra-Furans	435		1.69	1.69	0.68		1
Total Penta-Furans	1310		2.34	8.46	1.66		1
Total Hexa-Furans	949		1.39	8.46	1.26		1
Total Hepta-Furans	241		1.35	8.46	1.10		1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187061	**Units:**	Percent
Lab Code:	E1900077-001	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 17:05
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	2.954g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616742	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1021.343	51		25-164	0.81	1.022
13C-1,2,3,7,8-PeCDD	2000	868.564	43		25-181	1.55	1.197
13C-1,2,3,4,7,8-HxCDD	2000	1123.550	56		32-141	1.32	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1093.183	55		28-130	1.25	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	735.033	37		23-140	1.04	1.067
13C-OCDD	4000	818.694	20		17-157	0.94	1.139
13C-2,3,7,8-TCDF	2000	1015.450	51		24-169	0.79	0.991
13C-1,2,3,7,8-PeCDF	2000	839.425	42		24-185	1.58	1.153
13C-2,3,4,7,8-PeCDF	2000	885.838	44		21-178	1.56	1.187
13C-1,2,3,4,7,8-HxCDF	2000	1182.683	59		26-152	0.55	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1163.529	58		26-123	0.54	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1050.012	53		29-147	0.53	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1068.767	53		28-136	0.54	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	712.129	36		28-143	0.45	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	678.910	34		26-138	0.45	1.079
37Cl-2,3,7,8-TCDD	800	440.914	55		35-197	NA	1.022

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187061	**Units:**	ng/Kg
Lab Code:	E1900077-001	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	1.48	1.69	1	1	
1,2,3,7,8-PeCDD	**7.97**	0.923	8.46	1	1	7.97
1,2,3,4,7,8-HxCDD	**9.49**	0.994	8.46	1	0.1	0.949
1,2,3,6,7,8-HxCDD	**91.8**	1.07	8.46	1	0.1	9.18
1,2,3,7,8,9-HxCDD	**16.3**	0.956	8.46	1	0.1	1.63
1,2,3,4,6,7,8-HpCDD	**521**	3.01	8.46	1	0.01	5.21
OCDD	**2130**	4.21	16.9	1	0.0003	0.639
2,3,7,8-TCDF	**28.1**	1.69	1.69	1	0.1	2.81
1,2,3,7,8-PeCDF	**42.4**	2.41	8.46	1	0.03	1.27
2,3,4,7,8-PeCDF	**76.7**	2.27	8.46	1	0.3	23.0
1,2,3,4,7,8-HxCDF	**70.5**	1.30	8.46	1	0.1	7.05
1,2,3,6,7,8-HxCDF	**32.1**	1.28	8.46	1	0.1	3.21
1,2,3,7,8,9-HxCDF	**5.37**	1.60	8.46	1	0.1	0.537
2,3,4,6,7,8-HxCDF	**20.4**	1.43	8.46	1	0.1	2.04
1,2,3,4,6,7,8-HpCDF	**136**	1.19	8.46	1	0.01	1.36
1,2,3,4,7,8,9-HpCDF	**3.67**	1.54	8.46	1	0.01	0.0367
OCDF	**61.6**	5.21	16.9	1	0.0003	0.0185
		Total TEQ				66.9

2005 WHO TEFs, ND = 0

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187067	**Units:**	ng/Kg
Lab Code:	E1900077-002	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 17:53
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	4.145g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616743	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	1.05	1.21			1
1,2,3,7,8-PeCDD	9.51		0.692	6.03	1.74	1.001	1
1,2,3,4,7,8-HxCDD	13.5		1.48	6.03	1.23	1.000	1
1,2,3,6,7,8-HxCDD	155		1.57	6.03	1.30	1.000	1
1,2,3,7,8,9-HxCDD	27.6		1.42	6.03	1.30	1.007	1
1,2,3,4,6,7,8-HpCDD	925		2.22	6.03	1.09	1.000	1
OCDD	3260		2.43	12.1	0.88	1.000	1
2,3,7,8-TCDF	48.3		0.880	1.21	0.80	1.001	1
1,2,3,7,8-PeCDF	74.1		3.23	6.03	1.58	1.001	1
2,3,4,7,8-PeCDF	172		3.37	6.03	1.51	1.001	1
1,2,3,4,7,8-HxCDF	162		2.15	6.03	1.24	1.000	1
1,2,3,6,7,8-HxCDF	63.9		1.88	6.03	1.37	1.001	1
1,2,3,7,8,9-HxCDF	14.3		2.60	6.03	1.29	1.001	1
2,3,4,6,7,8-HxCDF	32.5		2.17	6.03	1.32	1.000	1
1,2,3,4,6,7,8-HpCDF	254		1.12	6.03	1.07	1.000	1
1,2,3,4,7,8,9-HpCDF	7.15		1.52	6.03	1.00	1.000	1
OCDF	104		3.58	12.1	0.87	1.004	1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187067	**Units:**	ng/Kg
Lab Code:	E1900077-002	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 17:53
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	4.145g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616743	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	12.4		1.05	1.21	0.78		1
Total Penta-Dioxins	133		0.692	6.03	1.64		1
Total Hexa-Dioxins	957		1.49	6.03	1.24		1
Total Hepta-Dioxins	1870		2.22	6.03	1.07		1
Total Tetra-Furans	587		0.880	1.21	0.83		1
Total Penta-Furans	2010		3.30	6.03	1.45		1
Total Hexa-Furans	2070		2.17	6.03	1.27		1
Total Hepta-Furans	501		1.30	6.03	1.07		1

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Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187067	**Units:**	Percent
Lab Code:	E1900077-002	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 17:53
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	4.145g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616743	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1095.918	55		25-164	0.80	1.022
13C-1,2,3,7,8-PeCDD	2000	907.207	45		25-181	1.50	1.197
13C-1,2,3,4,7,8-HxCDD	2000	1120.473	56		32-141	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1118.469	56		28-130	1.28	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	735.964	37		23-140	1.13	1.067
13C-OCDD	4000	799.643	20		17-157	0.86	1.139
13C-2,3,7,8-TCDF	2000	1062.687	53		24-169	0.77	0.991
13C-1,2,3,7,8-PeCDF	2000	992.819	50		24-185	1.60	1.153
13C-2,3,4,7,8-PeCDF	2000	944.653	47		21-178	1.54	1.186
13C-1,2,3,4,7,8-HxCDF	2000	1202.302	60		26-152	0.56	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1317.554	66		26-123	0.55	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1087.574	54		29-147	0.53	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1175.114	59		28-136	0.54	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	743.019	37		28-143	0.49	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	683.995	34		26-138	0.43	1.079
37Cl-2,3,7,8-TCDD	800	467.570	58		35-197	NA	1.023

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187067	**Units:**	ng/Kg
Lab Code:	E1900077-002	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	1.05	1.21	1	1	
1,2,3,7,8-PeCDD	**9.51**	0.692	6.03	1	1	9.51
1,2,3,4,7,8-HxCDD	**13.5**	1.48	6.03	1	0.1	1.35
1,2,3,6,7,8-HxCDD	**155**	1.57	6.03	1	0.1	15.5
1,2,3,7,8,9-HxCDD	**27.6**	1.42	6.03	1	0.1	2.76
1,2,3,4,6,7,8-HpCDD	**925**	2.22	6.03	1	0.01	9.25
OCDD	**3260**	2.43	12.1	1	0.0003	0.978
2,3,7,8-TCDF	**48.3**	0.880	1.21	1	0.1	4.83
1,2,3,7,8-PeCDF	**74.1**	3.23	6.03	1	0.03	2.22
2,3,4,7,8-PeCDF	**172**	3.37	6.03	1	0.3	51.6
1,2,3,4,7,8-HxCDF	**162**	2.15	6.03	1	0.1	16.2
1,2,3,6,7,8-HxCDF	**63.9**	1.88	6.03	1	0.1	6.39
1,2,3,7,8,9-HxCDF	**14.3**	2.60	6.03	1	0.1	1.43
2,3,4,6,7,8-HxCDF	**32.5**	2.17	6.03	1	0.1	3.25
1,2,3,4,6,7,8-HpCDF	**254**	1.12	6.03	1	0.01	2.54
1,2,3,4,7,8,9-HpCDF	**7.15**	1.52	6.03	1	0.01	0.0715
OCDF	**104**	3.58	12.1	1	0.0003	0.0312
		Total TEQ				128

2005 WHO TEFs, ND = 0

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187057	**Units:**	ng/Kg
Lab Code:	E1900077-003	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 18:42
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	0.188g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616744	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	150		23.9	26.6	0.71	1.001	1
1,2,3,7,8-PeCDD	41.4	**J**	15.3	133	1.39	1.000	1
1,2,3,4,7,8-HxCDD	53.6	**JK**	7.95	133	1.80	1.000	1
1,2,3,6,7,8-HxCDD	546		7.85	133	1.08	1.000	1
1,2,3,7,8,9-HxCDD	116	**J**	7.35	133	1.11	1.006	1
1,2,3,4,6,7,8-HpCDD	6440		28.4	133	1.02	1.000	1
OCDD	32400		36.4	266	0.88	1.000	1
2,3,7,8-TCDF	363		16.9	26.6	0.68	1.001	1
1,2,3,7,8-PeCDF	58.5	**JK**	9.05	133	1.85	1.001	1
2,3,4,7,8-PeCDF	186		9.82	133	1.46	1.000	1
1,2,3,4,7,8-HxCDF	234	**K**	20.7	133	1.48	1.000	1
1,2,3,6,7,8-HxCDF	158		19.9	133	1.35	1.000	1
1,2,3,7,8,9-HxCDF	38.4	**J**	25.6	133	1.22	1.001	1
2,3,4,6,7,8-HxCDF	160	**K**	21.6	133	1.01	1.000	1
1,2,3,4,6,7,8-HpCDF	3010		21.6	133	1.06	1.000	1
1,2,3,4,7,8,9-HpCDF	107	**JK**	28.2	133	1.44	1.000	1
OCDF	4580		31.5	266	0.87	1.005	1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187057	**Units:**	ng/Kg
Lab Code:	E1900077-003	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 18:42
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	0.188g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616744	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	150		23.9	26.6	0.71		1
Total Penta-Dioxins	70.3**J**		15.3	133	1.65		1
Total Hexa-Dioxins	2460		7.71	133	1.12		1
Total Hepta-Dioxins	13100		28.4	133	1.06		1
Total Tetra-Furans	1060		16.9	26.6	0.74		1
Total Penta-Furans	1220		9.42	133	1.65		1
Total Hexa-Furans	5350		21.8	133	1.34		1
Total Hepta-Furans	8900		24.5	133	1.06		1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187057	**Units:**	Percent
Lab Code:	E1900077-003	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 18:42
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	0.188g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616744	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1017.140	51		25-164	0.80	1.022
13C-1,2,3,7,8-PeCDD	2000	911.472	46		25-181	1.54	1.198
13C-1,2,3,4,7,8-HxCDD	2000	1153.872	58		32-141	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1196.094	60		28-130	1.20	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	851.647	43		23-140	1.06	1.067
13C-OCDD	4000	1065.113	27		17-157	0.91	1.139
13C-2,3,7,8-TCDF	2000	1019.018	51		24-169	0.78	0.991
13C-1,2,3,7,8-PeCDF	2000	1014.641	51		24-185	1.60	1.153
13C-2,3,4,7,8-PeCDF	2000	940.006	47		21-178	1.60	1.187
13C-1,2,3,4,7,8-HxCDF	2000	1145.217	57		26-152	0.53	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1175.176	59		26-123	0.54	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1075.140	54		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1153.447	58		28-136	0.56	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	818.948	41		28-143	0.46	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	758.042	38		26-138	0.46	1.079
37Cl-2,3,7,8-TCDD	800	422.577	53		35-197	NA	1.023

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187057	**Units:**	ng/Kg
Lab Code:	E1900077-003	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	**150**	23.9	26.6	1	1	150
1,2,3,7,8-PeCDD	**41.4**	15.3	133	1	1	41.4
1,2,3,4,7,8-HxCDD	**53.6**	7.95	133	1	0.1	5.36
1,2,3,6,7,8-HxCDD	**546**	7.85	133	1	0.1	54.6
1,2,3,7,8,9-HxCDD	**116**	7.35	133	1	0.1	11.6
1,2,3,4,6,7,8-HpCDD	**6440**	28.4	133	1	0.01	64.4
OCDD	**32400**	36.4	266	1	0.0003	9.72
2,3,7,8-TCDF	**363**	16.9	26.6	1	0.1	36.3
1,2,3,7,8-PeCDF	**58.5**	9.05	133	1	0.03	1.76
2,3,4,7,8-PeCDF	**186**	9.82	133	1	0.3	55.8
1,2,3,4,7,8-HxCDF	**234**	20.7	133	1	0.1	23.4
1,2,3,6,7,8-HxCDF	**158**	19.9	133	1	0.1	15.8
1,2,3,7,8,9-HxCDF	**38.4**	25.6	133	1	0.1	3.84
2,3,4,6,7,8-HxCDF	**160**	21.6	133	1	0.1	16.0
1,2,3,4,6,7,8-HpCDF	**3010**	21.6	133	1	0.01	30.1
1,2,3,4,7,8,9-HpCDF	**107**	28.2	133	1	0.01	1.07
OCDF	**4580**	31.5	266	1	0.0003	1.37
		Total TEQ				523

2005 WHO TEFs, ND = 0

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187069	**Units:**	ng/Kg
Lab Code:	E1900077-004	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 16:16
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	0.609g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616741	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	12.8	12.8			1
1,2,3,7,8-PeCDD	14.7**JK**		10.5	41.1	3.11	1.001	1
1,2,3,4,7,8-HxCDD	13.2**J**		6.74	41.1	1.09	1.001	1
1,2,3,6,7,8-HxCDD	164		7.35	41.1	1.10	1.000	1
1,2,3,7,8,9-HxCDD	86.9		6.55	41.1	1.34	1.007	1
1,2,3,4,6,7,8-HpCDD	8090		21.0	41.1	1.07	1.000	1
OCDD	65700**E**		11.0	82.1	0.88	1.000	1
2,3,7,8-TCDF	35.2**K**		11.7	11.7	0.94	1.001	1
1,2,3,7,8-PeCDF	ND	U	6.77	41.1			1
2,3,4,7,8-PeCDF	38.0**JK**		10.3	41.1	1.28	1.000	1
1,2,3,4,7,8-HxCDF	37.3**J**		6.75	41.1	1.25	1.000	1
1,2,3,6,7,8-HxCDF	11.4**J**		7.52	41.1	1.14	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	8.45	41.1			1
2,3,4,6,7,8-HxCDF	ND	U	7.64	41.1			1
1,2,3,4,6,7,8-HpCDF	67.5**K**		3.38	41.1	0.87	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	4.65	41.1			1
OCDF	227		15.4	82.1	0.96	1.005	1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187069	**Units:**	ng/Kg
Lab Code:	E1900077-004	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 16:16
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	0.609g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616741	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	12.8	12.8			1
Total Penta-Dioxins	ND	U	10.5	41.1			1
Total Hexa-Dioxins	1390		6.87	41.1	1.32		1
Total Hepta-Dioxins	15200		21.0	41.1	1.02		1
Total Tetra-Furans	ND	U	11.7	11.7			1
Total Penta-Furans	223		8.11	41.1	1.63		1
Total Hexa-Furans	128		7.59	41.1	1.26		1
Total Hepta-Furans	247		3.92	41.1	1.05		1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187069	**Units:**	Percent
Lab Code:	E1900077-004	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 16:16
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	0.609g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616741	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1187.134	59		25-164	0.74	1.022
13C-1,2,3,7,8-PeCDD	2000	909.885	45		25-181	1.46	1.198
13C-1,2,3,4,7,8-HxCDD	2000	1333.954	67		32-141	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1308.224	65		28-130	1.24	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1030.788	52		23-140	1.11	1.067
13C-OCDD	4000	1437.471	36		17-157	0.88	1.140
13C-2,3,7,8-TCDF	2000	855.089	43		24-169	0.78	0.992
13C-1,2,3,7,8-PeCDF	2000	881.637	44		24-185	1.60	1.153
13C-2,3,4,7,8-PeCDF	2000	561.446	28		21-178	1.53	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1210.525	61		26-152	0.54	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1060.572	53		26-123	0.53	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1232.965	62		29-147	0.50	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1132.628	57		28-136	0.55	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	875.371	44		28-143	0.46	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	757.225	38		26-138	0.42	1.079
37Cl-2,3,7,8-TCDD	800	473.841	59		35-197	NA	1.023

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	01/21/19 00:00
Sample Matrix:	Solid	**Date Received:**	01/29/19 15:30
Sample Name:	187069	**Units:**	ng/Kg
Lab Code:	E1900077-004	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	12.8	12.8	1	1	
1,2,3,7,8-PeCDD	**14.7**	10.5	41.1	1	1	14.7
1,2,3,4,7,8-HxCDD	**13.2**	6.74	41.1	1	0.1	1.32
1,2,3,6,7,8-HxCDD	**164**	7.35	41.1	1	0.1	16.4
1,2,3,7,8,9-HxCDD	**86.9**	6.55	41.1	1	0.1	8.69
1,2,3,4,6,7,8-HpCDD	**8090**	21.0	41.1	1	0.01	80.9
OCDD	**65700**	11.0	82.1	1	0.0003	19.7
2,3,7,8-TCDF	**35.2**	11.7	11.7	1	0.1	3.52
1,2,3,7,8-PeCDF	ND	6.77	41.1	1	0.03	
2,3,4,7,8-PeCDF	**38.0**	10.3	41.1	1	0.3	11.4
1,2,3,4,7,8-HxCDF	**37.3**	6.75	41.1	1	0.1	3.73
1,2,3,6,7,8-HxCDF	**11.4**	7.52	41.1	1	0.1	1.14
1,2,3,7,8,9-HxCDF	ND	8.45	41.1	1	0.1	
2,3,4,6,7,8-HxCDF	ND	7.64	41.1	1	0.1	
1,2,3,4,6,7,8-HpCDF	**67.5**	3.38	41.1	1	0.01	0.675
1,2,3,4,7,8,9-HpCDF	ND	4.65	41.1	1	0.01	
OCDF	**227**	15.4	82.1	1	0.0003	0.0681
		Total TEQ				162

2005 WHO TEFs, ND = 0

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1900034-01	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 12:55
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	10.072g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616737	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.391	0.496			1
1,2,3,7,8-PeCDD	ND	U	0.101	2.48			1
1,2,3,4,7,8-HxCDD	ND	U	0.0852	2.48			1
1,2,3,6,7,8-HxCDD	ND	U	0.0915	2.48			1
1,2,3,7,8,9-HxCDD	ND	U	0.0823	2.48			1
1,2,3,4,6,7,8-HpCDD	0.130**JK**		0.0652	2.48	1.76	1.000	1
OCDD	0.882**JK**		0.118	4.96	1.10	1.000	1
2,3,7,8-TCDF	ND	U	0.234	0.496			1
1,2,3,7,8-PeCDF	ND	U	0.0745	2.48			1
2,3,4,7,8-PeCDF	ND	U	0.0797	2.48			1
1,2,3,4,7,8-HxCDF	0.112**J**		0.0603	2.48	1.35	1.001	1
1,2,3,6,7,8-HxCDF	0.0967**JK**		0.0551	2.48	1.66	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.0707	2.48			1
2,3,4,6,7,8-HxCDF	0.0781**JK**		0.0589	2.48	0.75	1.000	1
1,2,3,4,6,7,8-HpCDF	0.0691**JK**		0.0665	2.48	0.80	1.000	1
1,2,3,4,7,8,9-HpCDF	0.0763**JK**		0.0577	2.48	1.41	1.000	1
OCDF	0.359**JK**		0.174	4.96	0.57	1.005	1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1900034-01	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 12:55
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	10.072g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616737	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.391	0.496			1
Total Penta-Dioxins	ND	U	0.101	2.48			1
Total Hexa-Dioxins	ND	U	0.0862	2.48			1
Total Hepta-Dioxins	ND	U	0.0652	2.48			1
Total Tetra-Furans	ND	U	0.234	0.496			1
Total Penta-Furans	ND	U	0.0770	2.48			1
Total Hexa-Furans	0.112**J**		0.0607	2.48	1.35		1
Total Hepta-Furans	ND	U	0.0615	2.48			1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1900034-01	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/05/19 12:55
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	10.072g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P616737	**Blank File Name:**	P616737
ICAL Date:	09/25/18	**Cal Ver. File Name:**	P616735

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	972.024	49		25-164	0.79	1.022
13C-1,2,3,7,8-PeCDD	2000	1063.411	53		25-181	1.53	1.198
13C-1,2,3,4,7,8-HxCDD	2000	1082.679	54		32-141	1.29	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1144.040	57		28-130	1.32	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1187.124	59		23-140	1.07	1.067
13C-OCDD	4000	1989.798	50		17-157	0.94	1.139
13C-2,3,7,8-TCDF	2000	930.720	47		24-169	0.78	0.991
13C-1,2,3,7,8-PeCDF	2000	1114.926	56		24-185	1.60	1.154
13C-2,3,4,7,8-PeCDF	2000	1045.550	52		21-178	1.56	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1039.469	52		26-152	0.53	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1150.796	58		26-123	0.54	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1053.278	53		29-147	0.54	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1070.744	54		28-136	0.54	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	721.709	36		28-143	0.44	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	1035.649	52		26-138	0.47	1.080
37Cl-2,3,7,8-TCDD	800	409.072	51		35-197	NA	1.023

ALS Environmental

Accuracy & Precision

ALS Environmental - Houston HRMS
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Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Analyzed:**	02/06/19
Sample Matrix:	Solid	**Date Extracted:**	02/01/19

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	ng/Kg
Prep Method:	Method Soxhlet	**Basis:**	As Received
		Analysis Lot:	624485

	Lab Control Sample EQ1900034-02			Duplicate Lab Control Sample EQ1900034-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	99.9	99.7	100	102	100	102	70-140	2	50
1,2,3,4,7,8-HxCDD	110	99.7	110	114	100	114	70-164	4	50
1,2,3,6,7,8-HxCDD	108	99.7	109	112	100	112	76-134	3	50
1,2,3,7,8,9-HxCDD	106	99.7	106	113	100	113	64-162	6	50
1,2,3,7,8-PeCDD	107	99.7	107	109	100	109	70-142	1	50
2,3,7,8-TCDD	22.2	19.9	111	22.6	20.0	113	67-158	2	50
OCDD	203	199	102	211	200	106	78-144	4	50
1,2,3,4,6,7,8-HpCDF	113	99.7	114	116	100	116	82-122	2	50
1,2,3,4,7,8,9-HpCDF	102	99.7	102	103	100	103	78-138	1	50
1,2,3,4,7,8-HxCDF	104	99.7	104	105	100	105	72-134	2	50
1,2,3,6,7,8-HxCDF	101	99.7	101	105	100	105	84-130	3	50
1,2,3,7,8,9-HxCDF	101	99.7	101	105	100	105	78-130	4	50
1,2,3,7,8-PeCDF	99.3	99.7	100	102	100	102	80-134	3	50
2,3,4,6,7,8-HxCDF	105	99.7	105	108	100	108	70-156	3	50
2,3,4,7,8-PeCDF	104	99.7	104	107	100	107	68-160	4	50
2,3,7,8-TCDF	21.4	19.9	107	22.0	20.0	110	75-158	3	50
OCDF	220	199	110	225	200	113	63-170	3	50

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1900034-02	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/06/19 16:24
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	10.031g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520272	**Blank File Name:**	P616737
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520262

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	22.2		0.354	0.498	0.82	1.001	1
1,2,3,7,8-PeCDD	107		0.0670	2.49	1.53	1.001	1
1,2,3,4,7,8-HxCDD	110		0.0406	2.49	1.24	1.000	1
1,2,3,6,7,8-HxCDD	108		0.0401	2.49	1.29	1.000	1
1,2,3,7,8,9-HxCDD	106		0.0384	2.49	1.27	1.007	1
1,2,3,4,6,7,8-HpCDD	99.9		0.0732	2.49	1.04	1.000	1
OCDD	203		0.220	4.98	0.92	1.000	1
2,3,7,8-TCDF	21.4		0.280	0.498	0.88	1.001	1
1,2,3,7,8-PeCDF	99.3		0.0821	2.49	1.56	1.000	1
2,3,4,7,8-PeCDF	104		0.0819	2.49	1.46	1.001	1
1,2,3,4,7,8-HxCDF	104		0.0642	2.49	1.23	1.000	1
1,2,3,6,7,8-HxCDF	101		0.0578	2.49	1.19	1.000	1
1,2,3,7,8,9-HxCDF	101		0.0745	2.49	1.21	1.000	1
2,3,4,6,7,8-HxCDF	105		0.0636	2.49	1.22	1.000	1
1,2,3,4,6,7,8-HpCDF	113		0.263	2.49	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	102		0.297	2.49	1.01	1.000	1
OCDF	220		0.230	4.98	0.84	1.005	1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1900034-02	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/06/19 16:24
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	10.031g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520272	**Blank File Name:**	P616737
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520262

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	22.2		0.354	0.498	0.82		1
Total Penta-Dioxins	107		0.0670	2.49	1.53		1
Total Hexa-Dioxins	324		0.0397	2.49	1.24		1
Total Hepta-Dioxins	99.9		0.0732	2.49	1.04		1
Total Tetra-Furans	22.1		0.280	0.498	0.69		1
Total Penta-Furans	203		0.0820	2.49	1.56		1
Total Hexa-Furans	411		0.0645	2.49	1.23		1
Total Hepta-Furans	216		0.279	2.49	1.03		1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1900034-02	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/06/19 16:24
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	10.031g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520272	**Blank File Name:**	P616737
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520262

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	799.673	40		25-164	0.80	1.023
13C-1,2,3,7,8-PeCDD	2000	1129.364	56		25-181	1.62	1.204
13C-1,2,3,4,7,8-HxCDD	2000	949.240	47		32-141	1.33	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1039.910	52		28-130	1.33	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	944.894	47		23-140	1.08	1.068
13C-OCDD	4000	1391.208	35		17-157	0.91	1.141
13C-2,3,7,8-TCDF	2000	813.943	41		24-169	0.79	0.990
13C-1,2,3,7,8-PeCDF	2000	1112.409	56		24-185	1.65	1.158
13C-2,3,4,7,8-PeCDF	2000	1086.881	54		21-178	1.61	1.193
13C-1,2,3,4,7,8-HxCDF	2000	918.983	46		26-152	0.52	0.970
13C-1,2,3,6,7,8-HxCDF	2000	996.100	50		26-123	0.53	0.973
13C-1,2,3,7,8,9-HxCDF	2000	925.367	46		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	920.006	46		28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	857.647	43		28-143	0.44	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	963.451	48		26-138	0.45	1.080
37Cl-2,3,7,8-TCDD	800	326.188	41		35-197	NA	1.023

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1900034-03	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/06/19 17:12
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	10.001g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520273	**Blank File Name:**	P616737
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520262

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	22.6		0.309	0.500	0.86	1.001	1
1,2,3,7,8-PeCDD	109		0.0781	2.50	1.56	1.001	1
1,2,3,4,7,8-HxCDD	114		0.0704	2.50	1.28	1.000	1
1,2,3,6,7,8-HxCDD	112		0.0726	2.50	1.28	1.000	1
1,2,3,7,8,9-HxCDD	113		0.0681	2.50	1.23	1.007	1
1,2,3,4,6,7,8-HpCDD	102		0.0530	2.50	1.11	1.000	1
OCDD	211		0.104	5.00	0.91	1.000	1
2,3,7,8-TCDF	22.0		0.206	0.500	0.78	1.001	1
1,2,3,7,8-PeCDF	102		0.131	2.50	1.50	1.000	1
2,3,4,7,8-PeCDF	107		0.134	2.50	1.56	1.001	1
1,2,3,4,7,8-HxCDF	105		0.0452	2.50	1.21	1.000	1
1,2,3,6,7,8-HxCDF	105		0.0422	2.50	1.21	1.000	1
1,2,3,7,8,9-HxCDF	105		0.0528	2.50	1.23	1.000	1
2,3,4,6,7,8-HxCDF	108		0.0469	2.50	1.23	1.000	1
1,2,3,4,6,7,8-HpCDF	116		0.295	2.50	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	103		0.335	2.50	1.02	1.000	1
OCDF	225		0.153	5.00	0.88	1.005	1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1900034-03	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/06/19 17:12
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	10.001g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520273	**Blank File Name:**	P616737
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520262

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	22.8		0.309	0.500	0.86		1
Total Penta-Dioxins	109		0.0781	2.50	1.56		1
Total Hexa-Dioxins	338		0.0703	2.50	1.28		1
Total Hepta-Dioxins	103		0.0530	2.50	1.16		1
Total Tetra-Furans	23.1		0.206	0.500	0.83		1
Total Penta-Furans	214		0.133	2.50	1.42		1
Total Hexa-Furans	424		0.0465	2.50	1.21		1
Total Hepta-Furans	220		0.314	2.50	1.00		1

Attachment 2

Client:	ALS Environmental - US	**Service Request:**	E1900077
Project:	HS19011056	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1900034-03	**Basis:**	As Received

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	02/06/19 17:12
Prep Method:	Method Soxhlet	**Date Extracted:**	2/1/19
Sample Amount:	10.001g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P520273	**Blank File Name:**	P616737
ICAL Date:	01/29/19	**Cal Ver. File Name:**	P520262

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	858.821	43		25-164	0.83	1.023
13C-1,2,3,7,8-PeCDD	2000	1241.105	62		25-181	1.64	1.205
13C-1,2,3,4,7,8-HxCDD	2000	1127.525	56		32-141	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1192.594	60		28-130	1.27	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1144.914	57		23-140	1.07	1.068
13C-OCDD	4000	1765.658	44		17-157	0.88	1.141
13C-2,3,7,8-TCDF	2000	866.820	43		24-169	0.81	0.991
13C-1,2,3,7,8-PeCDF	2000	1217.880	61		24-185	1.59	1.159
13C-2,3,4,7,8-PeCDF	2000	1173.117	59		21-178	1.58	1.193
13C-1,2,3,4,7,8-HxCDF	2000	1050.150	53		26-152	0.52	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1147.800	57		26-123	0.52	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1109.913	55		29-147	0.53	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1086.211	54		28-136	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1016.055	51		28-143	0.43	1.044
13C-1,2,3,4,7,8,9-HpCDF	2000	1185.537	59		26-138	0.44	1.081
37Cl-2,3,7,8-TCDD	800	380.065	48		35-197	NA	1.024

Table 1.0 Summary of Aroclor and Dioxin/Furan Analyses for Samples Collected from the Indoor Environment at the Sky Valley Education Center, Monroe, WA (Samples Collected on January 4, 2019 by Environmental Health & Engineering, Inc., Newton, MA)

Field ID#[a]	Transmitted Sample ID#[b]	Analysis	Sample Type	Location	Description	Result[c]	Data Flags[d]	Analyte	Units
184824	184824	PCB	Bulk - Dust	Classroom #20	Dust collected from face of filter in unit ventilator	<10	U	Aroclor	µg/g
184827	184827	PCB	Bulk - Dust	Classroom #11	Dust collected from face of filter in unit ventilator	<13	U	Aroclor	µg/g
184829	184829	PCB	Bulk - Dust	Classroom #5	Dust collected from face of filter in unit ventilator	1.9	J	A1254	µg/g
184831	184831	PCB	Wipe	Classroom # 5	Dust on black mastic material in unit ventilator	<0.5	U	Aroclor	µg/100cm^2
184838	184838	PCB	Wipe	Gym - Boy's Locker Rm	Black, soot-like material on ceiling, near toilet, 2nd strip	<0.31	U	Aroclor	µg/100cm^2
184840	184840	PCB	Wipe	Gym - Girl's Locker Rm	Black, soot-like material on ceiling, near entrance	<0.34	U	Aroclor	µg/100cm^2
184852	184852	PCB	Bulk - Tar	Transportation Building Shed	Black tar-like material from lighting aluminum base plate	180	P(A1248)	A1242 (130) A1248 (49)	µg/g
184844 & 184845[e]	187056	PCB	Bulk - Dust	Annex Building	Dust from inside cabinet heater in hall outside Room B	24		A1242 (17) A1254 (6.8)	µg/g
184844 & 184845[e]	187057	D/F	Bulk - Dust	Annex Building	Dust from inside cabinet heater in hall outside Room B	523	J, K	D/F TEQ	ng/Kg
184846	187058	PCB	Bulk - Dust	Annex Building	Dust from return/exhaust duct btwn Rms A and C	3.7	J	A1260	µg/g
184846	187059	D/F	Bulk - Dust	Annex Building	Dust from return/exhaust duct btwn Rms A and C	542	J, K	D/F TEQ	ng/Kg
184825	187061	D/F	Bulk - Carpet	Classroom # 20	Tan carpet remnant from inside unit ventilator	66.9	J, K	D/F TEQ	ng/Kg
184825	187062	PCB	Bulk - Carpet	Classroom # 20	Tan carpet remnant from inside unit ventilator	12	P(A1248)	A1248 (6.8) A1254 (5.5)	µg/g
184828	187064	PCB	Bulk - Carpet	Classroom #11	Carpet remnant under wall, multi-colored	4.2	J(A1260)	A1254 (3.0) A1260 (1.2)	µg/g
184829	187065	D/F	Bulk - Dust	Classroom #5	Dust collected from face of filter in unit ventilator	200	J, K	D/F TEQ	ng/Kg
184830	187066	PCB	Bulk - Carpet	Classroom #5	Tan carpet remnant from inside unit ventilator	4.9	P(A1248)	A1248 (2.4) A1254 (2.5)	µg/g
184830	187067	D/F	Bulk - Carpet	Classroom #5	Tan carpet remnant from inside unit ventilator	128		D/F TEQ	ng/Kg

Table 1.0 Summary of Aroclor and Dioxin/Furan Analyses for Samples Collected from the Indoor Environment at the Sky Valley Education Center, Monroe, WA (Samples Collected on January 4, 2019 by Environmental Health & Engineering, Inc., Newton, MA)

Field ID#[a]	Transmitted Sample ID#[b]	Analysis	Sample Type	Location	Description	Result[c]	Data Flags[d]	Analyte	Units
184852	187069	D/F	Bulk - Tar	Transportation Building Shed	Black tar-like material from lighting aluminum base plate	162	J, K	D/F TEQ	ng/Kg

[a]Number assigned to the sample collected in the field at Sky Valley Education Center
[b]Number assigned to the sample transmitted to the laboratory. In some cases the sample was submitted under the Field ID#, in other cases the sample was split for dioxin/furan analysis and assigned a new number known as the Transmitted Sample ID# in this table.
[c]All samples analyzed for ALS Environmental Laboratories, Houston, TX. Aroclor analysis was conducted using EPA Method 8082 and included Arcolors A1016, A1221, A1232, A1242, A1248, A1254 and A1260. Dioxin/furan analysis was conducted using EPA Method 1613B.
[d]Refer to laboratory reports for data qualifiers. A "U" flag indicates that no analytes in the sample were found above the method detection limit. A "J" flag indicates that one or more analytes were detected below the method reporting limit (above the detection limit but below the quantification limit). A "K" flag indicates the concentration for one or more dioxin/furan congeners in the sample are estimates as the ion abundance ratios for the primary and secondary ions are outside theoretical acceptance limits. A "P" flag indicates that one or more analytes had dual column results that differed by more than 40%.
[e]Two dust samples were collected from the same surface and composited for analysis to insure an adequate amount sample for the laboratory.

cm^2 square centimeter
D/F dioxin/furan
g gram
kg kilogram, or 1,000 grams
ng nanogram, or $1x10^{-9}$ grams
TEF Toxic Equivalent Factor
TEQ Toxic Equivalency, calculated by the laboratory based on measured levels of target dioxin/furan congeners and applying the TEFs from WHO (2005)
µg micrograms, or $1x10^{-6}$ grams
ng/kg nanograms of analyte per kilogram of sample, or parts per trillion (ppt)
µg/g micrograms of analyte per gram of sample, or parts per million (ppm)
WHO World Health Organization
"<" less than the method detection limit (MDL)

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EDWARD J. FAEDER

Résumé

EDUCATION

B. A., Chemistry - 1965
Columbia College, New York, New York

Ph. D., Biophysical Chemistry - 1970
Cornell University, Ithaca, New York

Post Doctorate, Biochemistry - 1972
Duke University, Durham, North Carolina

SUMMARY OF SKILLS

Thirty-three years of experience in high level management, organizational, technical, and policy areas related to environmental protection, health and safety for utilities and aerospace industries. Government experience, consulting experience, academic and teaching experience. Skill and experience negotiating complex environmental protection and safety agreements with a variety of regulatory agencies, including EPA, OSHA, state and local health departments and air quality management districts. Experience with the approach and impacts of DOE "Tiger Teams." Experience in the development of strategic approaches to complex environmental, health and safety toxic tort litigation. Ability to integrate multi-disciplinary approaches into the solution of complex regulatory and health-related problems. Ability to enlist senior management and working group support and participation in solving problems. Ability to work in stressful environments.

WORK EXPERIENCE

Present - 1991 Executive Vice President
SRF Environmental and Health Management, Inc.
Diamond Bar, California

Assists clients to resolve environmental, health and safety (EHS) issues cost effectively and in compliance with regulatory requirements. Specializes in organizational analysis and problems to optimize handling EHS activities by corporate and company senior management, and works on specific problems associated with toxic chemicals, hazardous wastes, perform risk assessments, environmental, health and safety audits relevant to the purchase and sale of property. Deals with potential human health problems arising from environmental or occupational exposures. Provides litigation support in toxic torts cases. California State Registered Environmental Assessor (REA-00046), Qualified Environmental Professional, Fellow, American Institute of Chemists, and Fellow, American College of Forensic Examiners (No. 1196).

1991 - 1990 Senior Vice President
The Jefferson Group
West Covina, California

Was the Director of The Jefferson Group's Los Angeles-based Environmental and Occupational Health Division. Focus was on providing a wide range of health protection (environmental, health, safety, occupational medical, and emergency response) services to clients. Specialized in working to audit, analyze, and restructure corporate health protection activities so that regulatory compliance could be achieved cost effectively and with appropriate senior management control.

1993 - 1980 Adjunct Associate Professor, Environmental and Occupational Health Sciences Division, School of Public Health, UCLA
Los Angeles, California.

Participated in the development of an integrated departmental program in environmental toxicology; supervised graduate student activities in electric utility industry-related research projects. Currently teach environmental toxicology in the UCLA Hazardous Materials Management Extension Program, and maintain affiliations with the Environmental Sciences and Engineering professional degree program.

1990 - 1988 Director, Environmental Protection and Safety
Lockheed Aeronautical Systems Company
Burbank, California.

Was responsible for organizing and directing the Environmental Protection and Safety Branch of Lockheed Aeronautical System Company's Burbank Division. Combined all health, safety, and environmental activities for the company, from three other branches. Professional and regulatory affairs specialists focused on environmental, health and safety, hazardous chemicals, and waste issues for a business unit employing about 15,000 people. Built this group to almost 100 in size, and had responsibility for many health protection issues of importance to the Company. The latter included: An asbestos program for older buildings; solvent usage; airborne toxic chemicals; groundwater contamination and Company participation in a unique area-wide Superfund site involving multiple potentially responsible parties (PRPs); hazardous waste minimization and disposal; toxicological assessment of new chemicals and processes program; management of a major, multimillion dollar occupational health and safety commitment to the U.S. Occupational Safety and Health Administration as part of the settlement of citations against the Company. Used non-traditional, applied research, problem-solving approaches unique within the aerospace industry. Tactical and strategic planning were involved. The Branch operating budget was in excess of $40,000,000 per year (function plus capital equipment) Managed almost 100 health protection specialists.

1987 Director, Environmental and Health Sciences,
ICF-Clement Western Operations, ICF Technology,
Los Angeles, California.

Developed and managed ICF's risk assessment efforts in the western part of the United States. Recruitment and staffing, general management of technical personnel, performance as a technical expert in the risk assessment area, development of a marketing strategy for business growth in this area, and its implementation. Supervised nine professionals, at maximum group size. Performed technical and related policy work for private and governmental clients on hazardous waste problems, air toxics issues, environmental site assessments and auditing, risk communication to public groups, and health and safety issues. Provided testimony and work with attorneys to develop technically sound legal strategy in toxics-related cases.

1986 - 1985 Manager of Environmental Operations
Southern California Edison Company
Rosemead, California.

Directed the Southern California Edison Company's response to environmental problems arising from their business operations. Managed forty technical and professional people, and a budget of $8,000,000 in performing these activities. Served as the initial contact and coordinated developmental remedial measures. Provided interface with staff and other key personnel of environmental and regulatory agencies concerning the issuance, amendment or revocation of existing laws, policies or regulations. Developed and implemented environmental compliance programs. Coordinated permitting and licensing with environmental and regulatory agencies. Coordinated responses to requests from regulatory agencies for information on the environmental aspects of Company operations. Provided environmental engineering design and monitoring services for facilities in support of generation project managers and other requesting organizations.

1985 - 1984 Manager, Systems Research and Development
Southern California Edison Company
Rosemead, California.

Managed all environmental research activities for the Company, including environmental and occupational health, terrestrial and marine ecology, and atmospheric chemistry. Supervised a group of 33 company and contract professionals in conducting research activities in support of corporate environmental goals. Annual budget was in excess of $5,000,000. Provided internal and external technical support for corporate line operations and regulatory and licensing processes.

1984 - 1981 Consulting Scientist
Southern California Edison Company
Rosemead, California.

Developed research programs in all areas of toxic and hazardous chemical effects on Company employees and people living within its service territory. The program dealt with

exposure to chemicals used in Company facilities and wastes generated by business operations. A specific example is the development of a corporate PCB exposure program to characterize worker exposure and effects from using PCBs in a subject population of 2,000 employees. Served as the Company expert in the area of environmental toxicology. Managed the integration of research findings with policy objectives for industry-wide impacts through active participation in utility ad hoc groups, e.g., technical management of EEI/USWAG PCB Project; UARG Health and Welfare Effects Committee participation in SO_2 and NO_2 ambient air standard setting processes. Continued to function as supervisor of Health and Biological Effects Group, containing five professionals.

1980 - 1976 Senior Research Scientist, Supervisor Health and Biological Effects Research
Southern California Edison Company
Rosemead, California.

Developed and implemented corporate research program to determine the effects of air pollution on human beings in Southern California; provided technical support for other groups in the Company, particularly Law, and Environmental Affairs in the health effects area; served as Health Effects Coordinator on an industry-wide basis, through Utility Air Regulatory Group Ambient Standards Committee with other companies and provided technical input directly to federal regulatory agencies. Supervised health effects research for the Company and directed work of health and biological effects section of Environmental Systems Group. Annual budget was approximately $3,000,000. Group contained three professionals.

1976 - 1975 Acting Chief, Biochemical Screening Section, Health Effects Research Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina.

Directed the development of biochemical and chemical techniques to examine the exposure of animals and people to toxic substances.

1975 - 1972 Research Chemist, Bioenvironmental Laboratory
Branch, Division of Health Effects Research,
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina.

Developed coordinated program to examine effects of gaseous and heavy metal pollutants on biochemical systems in animals. Established extramural contract research program through EPA's Minority Institute Research Support Program.

1972 - 1970 Research Associate, Department of Biochemistry,
Duke University
Durham, North Carolina.

Examined the role of metals and co-factors in electron transfer through biological molecules.

ADDITIONAL EDUCATION

5th International Conference on Bioaerosols, Fungi, Bacteria, Mycotoxins and Human Health," conference, September 10-12, 2003, Saratoga Springs, New York.

"Healthy Indoor Environments 2003, Setting the Standards for Indoor Air Quality," conference, April 10-12, 2003, Anaheim, California.

"Comparative Sampling Techniques for Mold Investigations" and "Methods to Assess the Effectiveness of Mold Remediation" Workshops, April 9, 2003, The University of Tulsa Indoor Air Program, Anaheim, California.

"Maintaining a Healthy School Environment Workshop," U.S. EPA Region IX update, April 8, 2003, Anaheim, California.

"Introduction to Immunology," an update of modern immunology and changes in the past five years, sponsored by the American Association of Immunologists, June 22-25, 2002, Tufts University, Medford, Massachusetts.

"Mold Litigation Conference," including expert discussions on morphology, fungal presence, characterization, and effects, sponsored by Mealey Publications, February 25, 26, 2002, Phoenix, Arizona.

"Asthma and Allergen Control," an indoor air quality workshop sponsored by U.S. EPA, Region IX and the California Department of Health Services, and delivered by University of Tulsa, Oakland, California, January 22-23, 2001.

"Sampling/Biological Contamination Control," an indoor air quality workshop organized by U.S. EPA, Region IX, and delivered by University of Tulsa, San Diego, California, September 12, 2000.

"Biological Remediation and Control," an indoor air quality workshop organized by U.S. EPA, Region IX, and delivered by University of Tulsa, San Diego, California, September 13, 2000.

"Hands-on Training with the Decision Tools Suite: @RISK, PrecisionTree®, TopRank®, BestFit®, RISKview™, RISKOptimizer™," Ithaca, New York, June 12-14, 2000.

"Groundwater Services, Inc., User Training in Risk-Based Corrective Action (RBCA) Assessment Toolkit for Chemical Releases," Houston, Texas, June 23, 1999.

"ASTM User Training in Risk-Based Corrective Action (RBCA) Assessment Toolkit Applied at Petroleum Release Sites," Los Angeles, California, June 25, 1998.

"Respiratory Protection Training in Cal/OSHA Requirements for CCR Title 8, Section 5144," by the American Safety Institute, Los Angeles, California, May 27, 1999.

"Hazardous Materials 8-Hour First Responder Operations Training — Update," La Habra, California,

September 3, 1997.

"Repair and Maintenance Operations of All Asbestos Containing Material (ACM) Types — 16 Hour O&M Training," for certification, La Habra, California, August 3,4, 1997.

"ISO 14000 EMS Lead Auditor Course," for certification, Fullerton, California, May 28 - June 1, 1997.

"ASTM User Training in Risk-Based Corrective Action (RBCA) Applied at Petroleum Release Sites," San Diego, California, January 14-15, 1997.

"Air Permits Modeling Course," Bowman Environmental, November 5-6, 1996, Los Angeles, California.

"A Guide to Voluntary Compliance in Safety and Health," U.S. Department of Labor, OSHA Training Institute, Des Plaines, Illinois, August 31 - September 4, 1992.

Lockheed Executive Institute, Lockheed Corporation, August 14-19, 1988, Calabasas, California.

"Basic Health and Safety Training Course", CDM 150.4, Camp, Dresser, and Mckee, June 22-26,1987, Springfield VA.

"Basic Leadership Laboratory," UCLA Extension Program, Ojai, California - December 4-10, 1983.

"Managerial Policy Institute," General Management Program, University of Southern California, February-May, 1983.

"Public Utilities Executives' Course," University of Idaho, July 5-29, 1982.

"Electric Utility Systems and Practices Course," GE and SCE, Oct. 1980-Feb. 1981.

"Communications Workshop," SCE sponsored (Les Crane), August 6-8, 1980.

"Supervisory Effectiveness Seminar," SCE, May 1, 1978.

"Introduction to Supervision," U.S. Civil Service Commission, Feb. 9-13, 1976.

"Grant and Interagency Agreement Project Officer's Course," U.S. Environmental Protection Agency, June 12, 13, 1975.

" Radioisotopes in Life Science," North Carolina State University, Dec. 17-21, 1973.

MEMBERSHIPS AND AFFILIATIONS

Air and Waste Management Association
American Association for the Advancement of Science
American Board of Forensic Examiners
American Chemical Society
American College of Toxicology
American Industrial Hygiene Association
American Society of Safety Engineers
Phi Kappa Phi
Sigma Xi
Society for Risk Analysis

ADDITIONAL PROFESSIONAL ACTIVITIES

Certified Mold Inspector, (CMI, 6669), Environmental Assessment Association, Present - October 2001

Certified Environmental Manager (CEM 6669), Environmental Assessment Association, Present - February 2001

Advisor, Environmental, Health and Safety Advisory Council, Office of the Director, Los Angeles Unified School District, April, 2000 - November, 1999

Fellow, American College of Forensic Examiners (FACFE, No. 1196), Present - September, 1997

Qualified Environmental Professional, Institute of Professional Environmental Practice, Present - 1996

Diplomate, American Board of Forensic Examiners (DABFE, No. 3135), Present - 1996

Fellow, American Institute of Chemists, Present - 1992

Certified Trainer for OSHA Compliance in Safety and Health (1992-1995)

Registered Environmental Assessor, State of California(REA - 00046), Present - 1988.

Certified Environmental Inspector (CEI 6669), Environmental Assessment Association, Present - 1991.

Chairman, Systems and Risk Technical Advisory Committee, UCLA Engineering Research Center for Hazardous Substances Control, 1989 -1988.

Member, Policy Advisory Group, UCLA Engineering Research Center for Hazardous Substances Control, 1989 - 1988.

Graduate Student Faculty Advisor, UCLA Environmental Sciences and Engineering Program, 1987 - 1982.

Vice Chairman, Division Advisory Committee, Energy Analysis and Environment Division, Electric Power Research Institute, 1986 - 1985.

Co-Chairman, Health and Welfare Effects Committee, Utility Air Regulatory Group, 1986 - 1977.

Member, Medical Research Group, Air Pollution Research Advisory Committee, Coordinating Research Council, 1984 - 1978.

Member, Task Force on Environment, Environmental Assessment Department Advisory Committee, Electric Power Research Institute, 1984 - 1981.

Technical Manager, Edison Electric Institute/Utility Solid Waste Activity Group PCB Project, 1983 - 1981.

PUBLICATIONS

Eschenroeder, A. Q. and Faeder, E. J. (1988). "A Monte Carlo Analysis of Health Risks from PCB-Containing Mineral Transformer Fires." Risk Analysis 8, p.p. 291-297.

Eschenroeder, A. Q., Doyle, C. P., and Faeder, E. J. (1986). "Health Risks of PCB Spills From Electrical Equipment." Risk Analysis 6, 213.

Sahl, J. D., Crocker, T. T., Gordon R. J., and Faeder, E. J. (1985). "Polychlorinated Biphenyls in the Blood of Personnel From an Electric Utility," Journal of Occupational Medicine, 27, pp. 639-643.

Sahl, J. D., Crocker, T. T., Gordon, R. J., and Faeder, E. J. (1985). "Polychlorinated Biphenyl Levels in the Blood Plasma of a Selected Sample of Non-Occupationally Exposed Southern California Working Adults," Science of the Total Environment, 46, pp. 9-18.

Grove, R. S., Bean, R. M., and Faeder, E. J. (1985). "Characteristics of Halogenated Components Discharged From Coastal Power Plant and Assessment of Their Potential Health Effects," in Proceedings of the 5th Conference_on Water Chlorination: Environmental Impact and Health Effects, Williamsburg, Virginia, pp. 1371-1379.

Saperstein, M. D., and Faeder, E. J. (1984). "Statistical Survey of PCB Contamination in Substation and Distribution System Equipment Containing Mineral Oil," Proceedings of the Electric Power Research Institute's Symposium on PCBs, Atlanta, Georgia.

Bailey, D. A., Lobnitz, M. M., Doyle, C. P., and Faeder, E. J. (1984). "High-Temperature Fluid-Wall Reactor: Permitting Considerations for Commercialization" in Proceedings of the Second Annual Conference on Municipal, Hazardous and Coal Wastes Management (U.S. Department of Energy), Miami, Florida.

Saperstein, M. D. and Faeder, E. J. (1982). "Environmental Toxicology of PCB Substitutes for Capacitors," Regulatory Toxicol. Pharmacol. 2, 238.

Saperstein, M. D., Gordon, R. J., and Faeder, E. J. (1982). "PCB Contamination in Distribution

Transformers," Journal of Environmental Science and Health, A17 (2), 241.

Doyle, C. P., Woodruff, C., Eschenroeder, A., and Faeder, E. J. (1982). Impacts of Motor Vehicle Inspection and Maintenance on Emission Reduction in Southern California," Science of the Total Environment 22, 31.

Gordon, R. V., Szita, J. and Faeder, E. J. (1982). "PCB Analysis in Transformer Oil by Capillary Column Gas Chromatography," Analytical Chemistry, 54, 478.

Mustafa, M. G., Elsayed, N. M., and Faeder, E. J. (1980). "Biochemical Effects of Oxidant on Animal Lungs," Toxicol. Lett. S9, No. 1, 98.

Phalen, R. F., Reischl, P., Faeder, E. J., and Cavender, F. L. (1980). "Response of the Respiratory Tract to Inhaled Pollutants" in Generation of Aerosols and Facilities for Exposure Experiments, K. Willeke (ed.), Ann Arbor Science publisher, Ann Arbor, Michigan, pp. 125-140.

Mustafa, M. G., Faeder, E. J., and Lee, S. D. (1979). "Biochemical Basis of Pulmonary Response to Ozone and Nitrogen Dioxide Injury," in Molecular Basis of Environmental Toxicology, R. S. Bhatnager (ed.), Ann Arbor Science publisher, Ann Arbor, Michigan, pp. 151-172.

Chadwick, R. W., Faeder, E. J., King, L. C., Copeland, M. F., Williams, K., and Chuang, L. (1978). "Effect of Acute and Chronic Cd-Exposure on Lindane Metabolism." Ecotoxicology and Environmental Safety 2, 301.

Faeder, E. J., Chaney, S. W., King, L. C., Hinners, T. A., Bruce, R., and Fowler, B. A. (1977). "Biochemical and Ultrastructural Changes in Livers of Cd-Treated Rats," Toxicol. Appl. Pharmacol. 39 473.

King, L. C., Clark, V., and Faeder, E. J. (1976). "Effects of Cadmium Exposure on Rat Kidneys," Bull. Environ. Contamin. Toxicol. 16 572.

Faeder, E. J., Davis, P., and Siegel, L. M. (1974). "The Role of Flavins in Catalysis by E. coli Sulfite Reductase," J. Biol. Chem. 249, 1599.

Lucier, G. W., McDaniel, O. S., Fowler, B. W., Sanawane, B. R., Hook, G., and Faeder, E. J., (1973). "Studies on TCDD-Induced Change in Rat Liver Microsomal and Mitochondrial Enzymes," Env. Health Perspectives, Issue No. 5, 199.

Faeder, E. J. and Siegel, L.M., (1973). "A Rapid Micromethod for Determination of FMN and FAD in Mixtures," Anal. Biochem. 63 322.

Lucier, G. W., McDaniel, O.S., Bend, J. R., and Faeder, E. J. (1972). "Effects of Hycanthone and Two of its Chlorinated Analogs on Hepatic Microsomes," J. Pharmacol. and Exp. Therap. 186 416.

Siegel, L. M., Faeder, E. J., and Kamin, H. (1972). "Flavin Interaction in NADPH Sulfite Reductase," Z. Naturfor. 27 1087.

Faeder, E. J. and Hammes, G. G. (1970). "Kinetic Sudies of Tryptophan Synthetase. Interaction of

L-Serine, Indole, and Tryptophan with the Native Enzyme," Biochemistry 10 1941.

Faeder, E. J. and Hammes, G. G., (1970). "Kinetic Studies of Tryptophan Synthetase. Interaction of Substrates with the B Subunit," Biochemistry 9, 4043.

Faeder, E. J. (1970). "A Stopped Flow-Temperature Jump Apparatus: Construction and Application to the Kinetic Studies of Tryptophan Synthetase," Ph.D. Thesis, Cornell University.

PRESENTATIONS

Faeder, E.J. (2003), "Health and Safety Issues: Focus on Indoor Air Quality and Hazard Communication," conducted for Visalia Unified School District, August 23, 2003, Visalia, California

Faeder, E.J. (2003), Windrich, Z., and J. Samaniego "Mold in Apartments," invited presentation to the Apartment Association of Greater Los Angeles, Los Angeles, California, January 29, 2003.

Faeder, E.J., (2003) "Indoor Air Quality Issues–An Update for Employees of Visalia Unified School District,", January 16, 2003, Visalia, California.

Faeder, E.J. (2002) "Surface Mining in Wyoming: An NO_2 Exposure Issue,"presentation to the National Advisory Committee on Acute Exposure Guideline Levels, Washington, D.C., December 10, 2002.

Faeder, E.J. (2002) " Nitrogen Dioxide and Human Health – Development of a Short Term Acute Exposure Goal for the Eagle Butte Mine, Gillette, Wyoming," invited presentation to the Wyoming Environmental Quality Council, Casper, Wyoming, October 22, 2002.

Faeder, E.J. (2002) and Z. Windrich, "Target: Mold in Apartments," invited presentation to the Apartment Association of Greater Los Angeles, Los Angeles, California, October 15, 2002.

Faeder, E.J. (2002), "Tools for Schools in Visalia — An Update for 2002." training conducted for Visalia Unified School District, May 23, 2002, Visalia, California.

Faeder, E.J., "Indoor Air Quality Issues for Schools – A 'Hands On' Approach," in-service training for employees of Visalia Unified School District and invited neighboring local district representatives, May 22, 2002, Visalia, California.

Faeder, E.J. (2001) "Mold – A Pariah or an Exaggeration," invited speaker, private law firm, continuing education series, November 29, 2001, Orange, California.

Faeder, E.J. (2001) "Microbiological Contamination Relating to Homes and Residences," invited speaker, regional realty group, October 31, 2001, Diamond Bar, California.

Faeder, E.J. (2001) "Effects of Nitrogen Dioxide on Human Health – Guidance in the Establishment of a Short Term, Occasional Exposure Standard to Protect the Public from Mine Blasting Activities," invited presentation to the Wyoming Department of Environmental Protection and Wyoming Environmental Quality Council, Casper, Wyoming, September 12, 2001.

Faeder, E.J. (2001) "Microbiological Contamination Relating to Construction Defect Litigation," invited presentation at private insurance carrier's annual construction defect seminar, Gilford, New Hampshire, June 25, 26, 2001.

Faeder, E.J. (2001) "Nitrogen Dioxide and Human Health," invited presentation to consortium of mining companies, Gillette, Wyoming, June 14, 2001.

Faeder, E.J. (2000) "Indoor Air Quality Program Update – 1/18/00: Results from Testing and Interpretation,"report to the Saugus Union School District Governing Board summarizing program data and status, January 17, 2000, Santa Clarita, California.

Faeder, E.J. (1999) "Indoor Air Quality Studies in Portable Classrooms in Southern California: Chemical and Biological Impacts," invited speaker, presented to the California Inter-Agency Committee on Indoor Air Quality, Oakland, California, December 8, 1999.

Faeder, E.J. (1999) " Air Quality Issues in the Castaic Union School District – Results from an Indoor Air Quality Program Measuring Selected Chemical and Biological Parameters in Ten Relocatable Classrooms," presentation to Castaic Union School District Board, meeting October 21, 1999.

Faeder, E.J. (1999) "Indoor Air Issues Relating to Construction Defect Litigation – Some Observations," invited speaker, private law firm, Orange, California, October, 1999.

Faeder, E.J. (1999) "Saugus Union School District – Indoor Air Quality Program,"invited speaker, 1999 Fall School Law and Financing Workshop, Bowie, Arneson, Wiles & Giannone, Ontario, California, October, 1999.

Faeder, E.J. (1999) "Evaluation of Indoor Air Quality Issues in the Saugus Union School District – Preliminary Results from an Indoor Air Quality Program Addressing Health Effects Issues Raised in Relocatable Classrooms," presentation to Santa Clarita Valley physicians, July, 1999.

Faeder, E.J. (1999) "Evaluation of Indoor Air Quality Issues in the Saugus Union School District – Outline of an Indoor Air Quality Program to Address Issues Raised in Relocatable Classrooms," presentation to Indoor Air Quality Coordinators for the District, July, 1999.

Faeder, E.J. (1999) "Proposition 65 Hazard Warnings for Potential Exposure to Ethylene Oxide," company hazard communication supplemental training for a private client, April, 1999.

Faeder, E.J. (1998) "Environmental Compliance with Hazardous Chemical Regulations," company regulatory program training for a private client, October - December, 1998.

Faeder, E.J. (1998) "General Health and Safety, Emergency Action and Response, Hazard Communication, Respiratory Protection, and Chemical Hygiene Training for the Pharmaceutical Device Manufacturing Industry," Pharmacia Iovision (Pharmacia & Upjohn), March - June, 1998.

Faeder, E.J. (1997) "Environment of Care — Update in Health Care Practitioner Safety, Occupational Health, Requirements for a Medium-size Community Hospital, invited speaker, continuing education program, private corporation, August 26, 1997; revised version December 10, 1997 for manager/

preceptor training of all incoming staff.

Faeder, E.J. (1997) "Respiratory Protection Program Training and Certification," development of program and training/certification of selected Engineering Department personnel in a medium-size community hospital, October, 1997.

Faeder, E.J. (1997) "Chemical Exposure and Human Health Impacts Related to Litigation," invited speaker, continuing education program, private law firm, January 27, 1997.

Faeder, E.J. (1996) "Health and Safety Basic Training for New Employees in the Healthcare and Hospital Industry," orientation training for entering employees in a large, mixed ambulatory treatment/ hospital organization, January - June.

Faeder, E.J. (1996) "Health and Safety Reorientation Training for New Employees in the Healthcare and Hospital Industry," annual recurrent update training for employees in a large, mixed ambulatory treatment/ hospital organization, January - June.

Faeder, E.J. (1995) "Risk Assessment for Litigation Support: A Panel Presentation and Discussion," moderator, speaker Southern California Chapter, Society of Risk Analysis Eighth Annual Workshop, invited participant, University of Southern California, Los Angeles, California, May 18, 1995.

Faeder, E.J. (1994) "Indoor Risk Asessment," moderator, speaker, session Chair, Southern California Chapter, Society of Risk Analysis Seventh Annual Workshop, invited participant, University of Southern California, Los Angeles, California, May 19, 1994.

Faeder, E.J. (1993) "Exposure Assessment as a Key to Litigation Support: You Can't Have an Injury Without a Cause, But You Can Believe You're Hurt By What You Don't Understand," New Trends in Environmental Injury - A Seminar for Attorneys and Claims Professionals, Universal City, California, Invited Speaker, May 14, 1993.

Faeder, E.J. (1993) " Explaining Health, Safety, and Environmental Issues to Customers," American Water Works Association, California-Nevada Spring Meeting, Burbank, California, April 15, 1993.

Faeder, E.J. (1993) "Health Protection: Lessons for the Electric Utility Industry," Electric Power Research Institute Task Force Meeting, Health Studies Program Committee, San Francisco, California.

Faeder, E.J. (1991) "Environmental, Health and Safety at the Los Angeles Department of Water and Power: How are Water and Power Doing?", talk for senior management December 13, 1991.

Faeder, E.J. (1991) "Environmental, Health and Safety Regulatory Issues Affecting the Toxicologist,"California Association of Toxicologists' Workshop on Environmental Toxicology, November 1, 1991, San Diego, California.

Faeder, E.J. (1991) "Health and Risk Assessment," session chairman, 1st International Society for the Advancement of Material and Process Engineering Environmental Conference, May 21-23, San Diego, California.

Rock, A., Kelsh, M., and E. Faeder (1991) "Information Management Approach for Databases Required for Hazard Assessment in the Aerospace Industry," 1st International Society for the Advancement of Material and Process Engineering Environmental Conference, May 21-23, San Diego, California.

Faeder, E.J. (1990) "Environmental, Health and Safety Issues in the Aerospace Industry - or - They Don't Make Airplanes Like (Out of What) They Used To!" invited speaker, Society of Plastics Engineers Advancements in Materials for Polymer Composites and Special Topics Conference, October 16-18, Los Angeles, California.

Faeder, E.J. (1990) "Environmental Health and Safety Issues in the Aerospace Industry," invited speaker and panel discussant, National Security Industrial Association, Manufacturing Management Committee, October 17-19, 1990, San Diego, California.

Faeder, E. J. (1990) "Contractor Liability for Safety and Health of Subcontractor, Suppliers, and Customer Employees: Some Concerns," invited speaker, "Developing Contractor-Subcontractor Relationships for Strategic Business Opportunities," sponsored by the Orange County chapters of the National Contract Management Association and the American Bar Association (Public Contract Law Section), May 15, Buena Park, California.

Faeder, E. J., Gurba, P. E., and Rock, A. R. (1990) "Health Effects in the Aerospace Workplace - Some Concerns," Composites in Manufacturing 9 Symposium, Society of Manufacturing Engineers, January 15-18, 1990, San Diego, California.

Faeder, E. J. (1989). "Recent OSHA Experiences at Lockheed," Aerospace Industries Association Occupational Safety and Health/Environmental Affairs Fall Meeting, August 28-30, 1989, Boston, Massachusetts.

Faeder, E. J. (1988). "Risk Assessment," California Aerospace Environmental Association Mid-Winter Conference, February 17, 1988, Long Beach,California.

Faeder, E. J. (1987). "Evaluating Risk - Regulatory Trends and Impacts: Air Toxics in the West," organizing chairman, session at the Third Annual Hazardous Materials Management Conference/West, December 1-3, 1987, Long Beach, California.

Sahl, J. D., Crocker, T. T., Saperstein M. D., and Faeder, E. J. (1985). "Occupational Exposures of Electric Utility Personnel to PCBs - A Case Study," Electric Power Research Institute PCB Seminar, October 22-25, Seattle, Washington.

Eschenroeder, A. Q. and Faeder, E. J. (1985). "Human Health Risks from PCB-Contaminated Mineral Oil Transformers," Electric Power Research Institute PCB Seminar, October 22-25, Seattle, Washington.

Saperstein, M. D. and Faeder, E. J. (1983). "Statistical Survey of PCB Contamination in Substation and Distribution System Equipment Containing Mineral Oil," Electric Power Research Institute's Symposium on PCBs, December 6-8, Atlanta, Georgia.

Bailey, D. A., Lobnitz, M. M., Doyle, C. P., and Faeder, E. J. (1983). "High-Temperature Fluid-Wall

Reactor: Permitting Considerations for Commercialization," Second Annual Conference on Municipal, Hazardous and Coal Wastes Management (U.S. Department of Energy), December 5-7, Miami, Florida.

Colucci, A. V. and Faeder, E. J., Brubaker, P. E., and Strieter, R. P. (1982). "A Unified Format for the Use of Human Clinical Data: Case Study NO_2 and SO_2," Air Pollution Control Association Annual Meeting, June 20-25, New Orleans, Louisiana.

Colucci, A. V. and Faeder, E. J. (1981). "A Unified Approach to the Use of Human Clinical Data: Application to the Establishment of Air Quality Criteria," Pacific Section, American Association for the Advancement of Science, June 15, 16, Eugene, Oregon.

Mustafa, M. G., Elsayed, N. M., and Faeder, E. J. (1980). "Biochemical Effects of Oxidants in Animal Lungs," International Congress on Toxicology, July 6-11, Brussels, Belgium.

Faeder, E. J., Straughan, I. R., and Ellis, E. C. (1979). "Air Pollution Health Hazards in Southern California: Assessing the Role for the Southern California Edison Company," International Conference on Energy Use Management, October 22-26, Los Angeles, California.

Phalen, R. F., Reischl, P., Faeder, E. J., and Cavender, F. L. (1979). "Response of the Respiratory Tract to Inhaled Pollutants," American Chemical Society/Japan Chemical Society Joint Congress, April 1-6, Honolulu, Hawaii.

Faeder, E. J. and Colucci, A. V. (1978). "The Effects of Sulfate Aerosols on Human Health," American Society of Civil Engineers Convention, October 16-20, Chicago, Illinois.

Chadwick, R. C., Faeder, E. J., King, L. C., Copeland, M. F., Williams, K., and Chuang, L. (1978). "Effects of Acute and Chronic Cd Exposure on Lindane Metabolism," Society of Toxicology, Seventeenth Annual Meeting, San Francisco, California.

King, L. C., Williams, K., Faeder, E. J., and Chadwick, R. C. (1978). "Effects of Subacute Dosing on Rats Given a Delayed Exposure to Lindane," Society of Toxicology Seventeenth Annual Meeting, San Francisco, California.

Hinners, T., Faeder, E. J., and King, L. C. (1975). "Atomic Absorption Analysis of Unashed Tissue," Fall Meeting, Analytical Chemistry Division of the American Chemical Society, Chicago, Illinois.

Faeder, E. J., Chaney, S. Q., King, L. C., and Hinners, T. (1975). "Cadmium Toxicity in Rats: Differential Effects of Chronic and Acute Exposure on Liver and Kidney," American Society for Pharmacology and Experimental Therapeutics, Fall Meeting, Davis, California.

Chaney, S. Q., Faeder, E. J., King, L. C., and Hinners, T. (1975). "Protective Role of Liver Metallothionein Against Inhibition of Microsomal Proteins in the Rat," Society of Toxicology, Fourteenth Annual Meeting, Williamsburg, Virginia.

Faeder, E. J., King, L. C., Chaney, S. Q., Bruce, R., Hinners, T., and Fowler, B. (1975). "Cadmium Chloride Administration in Rats and the Onset of Liver Pathology," Society of Toxicology, Fourteenth Annual Meeting, Williamsburg, Virginia.

TECHNICAL REPORTS

Faeder, E.J., "Water Damage at Oak Grove Elementary School – Investigation, Findings, and Recommended Actions," Report addressing potential long term water damage at school under construction, prepared for Visalia Unified School District, August 21, 2003.

Faeder, E.J., "Response to Memorandum by Suzanne Wuerthele, Ph.D., and Robert Benson, Ph.D., on My December 11, 2001 Report Addressing Short Term Acute Exposure to Nitrogen Dioxide," report prepared for industry client and submitted to the Wyoming Department of Environmental Quality as part of a permit requirement, May 29, 2002.

Faeder, E.J., "Short Term Acute Exposures to Nitrogen Dioxide," report prepared for industry client and submitted to the Wyoming Department of Environmental Quality as part of a permit requirement, December 11, 2001.

Faeder, E.J., "Report on the Evaluation of Indoor Air Quality in a Private Home in Nashville, Tennessee," letter report prepared for private clients involving litigation alleging fungal growth as causal agent for illness in occupants,"August, 2000.

Faeder, E.J., "Child Care Room, Bouquet Canyon Elementary School – Report on the Chemical and Biological Testing of a Classroom with an Odor Problem," final report prepared for a school district on a classroom contaminated with a toxigenic mold, May, 2000.

Faeder, E.J., "Indoor Air Quality Chemical and Biological Measurements in Relocatable Classrooms – Evaluation of Air Quality in Relocatable Classrooms Used by the Saugus Union School District," final report prepared for the Board of Education, October, 1999.

Faeder, E.J., and B. Piazza, "Proposition 65 Assessment: Ethylene Oxide Off-Gassing from Sterilized Catheters Quarantined and Stored in a Warehouse – Employee and Community Exposures," prepared for a private client, July, 1999.

Faeder, E.J., and others, "Report of Findings – Pilot-Scale Removal of Organic and Inorganic Contaminants from Waste Water Stored with Recoverable Oil Resource," evaluation of applicability of federal TSCA PCB regulations and general NPDES Order compliance for a novel biological/chemical proprietary cleanup process used by a private client, two reports in April and May, 1999.

Faeder, E.J., "Evaluation of Ethylene Oxide Off-Gas Emissions from Sterilized Products Evaluated in an Engineering Test Laboratory" prepared for a private client, April, 1999.

Faeder, E.J., "Evaluation of Iron Sponge Contamination of Soil and pH Effects in Sensitive Habitat Area at a Southern California Beach," prepared for a private client, March, 1999.

Faeder, E.J., "Site Inspection and Evaluation of Remedial Options for Odor Contamination of a Private Residence in Southern California," prepared for a private client, December, 1998.

Faeder, E.J., "Proposition 65 Cancer Risk Analysis of Ethylene Oxide Off-Gas Emissions from Sterilized Products," prepared for a private client, December, 1998.

Faeder, E.J., "Proposition 65 Cancer Risk Analysis of 1,4-Dioxane Emissions from an Industrial Process," prepared for a private client, December, 1998.

Faeder, E.J., "1996 Health Risk Assessment of Film Processing Company," prepared for private client and submitted to the South Coast Air Quality Management District, January 26, 1998.

Faeder, E.J., "Radon and Radiation Health Risks in the Area of Highlands Ranch, Colorado," written technical opinion in litigation matter before the United States district Court for the Northern District of Texas, Dallas Division, August 15, 1997.

Faeder, E.J., "Illness and Chemical Exposure in Sugar Beet Production of Sugar in Minnesota," written technical opinion in litigation matter before the United States district Court, District of Minnesota, August 14, 1996.

Faeder, E.J., "Analysis of Alleged Chemical Exposure and Potential to Produce Neurological Impacts Relating to Utility Pole Fire Emissions," written technical report for private utility client in litigation, San Barnardino County Municipal Court, November, 1996..

Faeder, E.J., "The Re-evaluation of PCB Toxicity and Basis for Re-classification of Contaminated Waste Oil," report prepared for private utility client, September, 1996.

Faeder, E.J., "Mold Contamination of a Private Residence - An Assessment with Recommendations for Further Actions on Behalf of the Occupants," report prepared for private client March, 1996, with supplement prepared May, 1996.

Faeder, E.J., and Warner, R.M., "Compliance Review of Health and Safety Activities at a Multi-Facility Health Care Network and Hospital," final report for a private client employing over 4,500 personnel, March, 1996.

Faeder, E.J., "An Activity Profile Analysis of Materials and Inventory Management at the Los Angeles Department of Water and Power," final report, July, 1995.

Faeder, E.J., "Activity Profile Analysis: Information Extraction from a Proprietary Data Base," for a confidential client, final report June, 1995.

Faeder, E.J., "Review of Health, Safety, and Environmental Issues Relating to a Large Oil Refinery and It's Operations, " confidential report for a private client, July, 1994.

Faeder, E.J., "Focused Assessment of A Corporate Facility Evaluating Health Risk from Historic Waste Deposition," final report for a client to the L.A. County Fire Department, February, 1994.

Faeder, E.J., "Safety, Health and Environmental Protection: An Opportunity for Positive Change at a Large Municipal Utility," final report for client, March, 1993.

Faeder, E.J., and Lee, T. "Polychlorinated Biphenyl Substitutes in Electric Utility Equipment," final report to Electric Power Research Institute, March, 1993 (EPRI TR-10260).

Faeder, E.J., and Lee, T. "Human Health Effects of PCBs: Critical Review and Evaluation of Toxicity Information on PCBs," final report to Electric Power Research Institute, July, 1992.

Faeder, E.J. "Safety, Health and Environmental Protection at a Large Aerospace Manufacturing Company: What is the Most Efficient Structure for the Corporation?", report to senior management, November, 1991.

White, B.J., and Faeder, E.J. "Report on the Safety and Health Audit of Ames Laboratory," private study for Ames National Laboratory, October, 1991.

Faeder, E.J., and Cassady, M.E., "Safety Inspection of a Secondary Lead Recovery Facility," a pre-operational inspection of a large, state-of-the-art battery lead recovery facility for a private client, July, 1991.

Faeder, E.J., and White, B.J., "Review of Environmental, Health and Safety, and Related Health Protection Activities Within A large Electric Utility," prepared for a private, Fortune 100 corporation, July, 1991.

Faeder, E.J., and White, B.J., "Recommendations to Management Regarding Safety and Health Programs in a Multifacility Meat Production Company," prepared for a major meat producing company in a Fortune 50 corporation, April, 1991.

White, B.J., and Faeder, E.J., "Recommendations for Management and Operation of Effective Safety and Health Programs in a Paper Mill," prepared for a large private paper manufacturing company, April, 1991.

Faeder, E.J., "Toxic Substances Research at EPRI," prepared as the basis for evaluating multi-divisional toxic substances research conducted by the Electric Power Research Institute, January, 1991.

Faeder, E.J., and Schumacher, R.P. "Initial Workplace Assessment of Facilities for Crystalline Silica," prepared for a multinational cement manufacturer, November, 1990.

Stevens, D. W., and Faeder, E. J. "Need for an Environmental Impact Report: Los Angeles County Proposed Skyline Trail Extension Project," prepared for Roquemore, Pringle & Moore, December, 1988.

Faeder, E. J. "Air Toxics as a Potential Market," prepared for a private client, April, 1988.

Faeder, E. J. "Environmental Impacts Assessment of Selected Work Practices at San Vallé Tile Kilns, Corona, California," prepared for San Vallé Tile Kilns, February, 1988.

Faeder, E. J. "Health Effects Programmatic Evaluation," prepared for the Environment Division, Electric Power Research Institute, January, 1988.

Faeder, E. J., as part of Nickel Task Force, "Summary Report on Nickel," EPA, 1974.

Winge, D., Krasno, J., Faeder, E. J., and Colucci, A., "Cadmium Accumulation in Rat Liver: Correlation Between Bound Metal and Pathology," HSL, 1973.

Faeder, E. J., as part of the Pollutant Burden Indicator Team, "Collection of Autopsy Tissue Sets: CHESS Pollutant Burden Protocol," HSL, 1973.

Faeder, E. J., as part of the Pollutant Burden Indicator Team, "Soil Sampling: CHESS Pollutant Burden Protocol," DHER, 1973.

Faeder, E. J., Goldstein, G., and Colucci, A. V. (1973). "The Measurement of Carbon Monoxide Bound to Human Blood," In-House Technical Report, National Research Center, RTP, NC.

Faeder, E. J., as part of the Pollutant Burden Indicator Team, "Collection of Maternal Blood: Maternal-Fetal Tissues Sets," DHER, 1972.

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