

DATA SUMMARY FORM: INORGANIC

Case #: 38316

SDG : MCY2E6

Site :

HAVERTOWN PCP

Lab. :

CHEM

Sample Number :	MCY2H5				
Sampling Location : (Prefix : HAV-LTR-)	R2-0309				
Matrix :	Water				
Units :	ug/L				
Date Sampled :	4/8/2009				
Time Sampled :	11:45				
Dilution Factor :	1.0				

ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	200	17.5	B								
ANTIMONY	60										
*ARSENIC	10	5.7	J								
BARIUM	200	60.6	J								
BERYLLIUM	5										
*CADMIUM	5										
CALCIUM	5000	40100									
*CHROMIUM	10	2.1	J								
COBALT	50	61.5									
COPPER	25										
IRON	100	21400									
LEAD	10	3.5	J								
MAGNESIUM	5000	19600									
MANGANESE	15	15000									
MERCURY	0.2										
NICKEL	40	7.9	J								
POTASSIUM	5000	8220									
SELENIUM	35										
SILVER	10										
SODIUM	5000	36200	J								
THALLIUM	25										
VANADIUM	50										
ZINC	60	10.6	J								

CRQL = Contract Required Quantitation Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor)

Revised 09/99

Prefix : All sample locations are prefixed HAV-LTR-

Lockheed Martin Enterprise Solutions & Services
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Telephone: 410-305-3037 Facsimile 410-305-3597

DATE: April 21, 2009

SUBJECT: Inorganic Data Validation (IM1 Level)
Case: 38316
SDG: MCY290
Site: Havertown PCP

FROM: Donald M. Brown^{Dmb}
Inorganic Data Reviewer

Mahboobeh Mecanic^{Mm}
Senior Oversight Chemist

TO: Fred Foreman
ESAT Region 3 Project Officer

OVERVIEW

Case 38316, Sample Delivery Group (SDG) MCY290, consisted of twenty (20) aqueous samples analyzed for total metals by Chemtech Consulting Group (CHEM). The sample set included one (1) field blank and one (1) field duplicate pair. Samples were analyzed in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 through the Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to EPA Region III Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995, which includes review of all Forms but excludes review of raw data. Areas of concern with respect to data usability are listed below.

A field blank associated with the samples in this SDG was analyzed in a separate SDG (MCY2B3). The results for this blank are included in Appendix C. Field blanks were utilized to evaluate sample results for field contamination based on corresponding sampling dates.

Data in this case have been impacted by outliers present in the laboratory and field blanks as well as the matrix spike and ICP serial dilution analyses. Details of these outliers are discussed under "Minor Problems" and qualified analytical results for all samples are summarized on the Data Summary Forms (DSFs).

MINOR PROBLEMS

Continuing calibration (CCB) and/or field (FB) blanks had reported results greater than the Method Detection Limits (MDLs) for the analytes listed below. Positive results for these analytes in affected samples which are less than or equal to five times ($\leq 5X$) the blank concentrations may be biased high and have been qualified "B" on the DSFs.

Blank Affected Analytes

CCB aluminum (Al), arsenic (As), cadmium (Cd), copper (Cu), lead (Pb),
 magnesium (Mg), manganese (Mn), nickel (Ni), thallium (Tl)
FB Al, iron (Fe)

The matrix spike recovery was high ($>125\%$) for Tl. Positive results for this analyte in affected samples may be biased high. The "K" qualifier for this outlier has been superseded by "B" or "J" on the DSFs.

The percent difference (%D) in the ICP serial dilution analysis was outside the control limit ($>10\%$) for sodium (Na). Positive results for this analyte in all samples are estimated due to possible matrix interferences and have been qualified "J" on the DSFs.

NOTES

Reported results between MDLs and Contract Required Quantitation Limits (CRQLs) were qualified "J" on the DSFs unless superseded by "B".

Reported results for field duplicate pair MCY2A0/MCY299 were within 20% RPD, \pm CRQL for all analytes.

The post-digestion spike recovery was high ($>125\%$) for Tl. No data were qualified based on this finding.

Sample MCY294 was reanalyzed at a five-fold (5X) dilution in order to bring the concentration of Na within the linear range of the instrument. The result for this analyte in this sample was reported from the diluted analysis and annotated with a "+" on the DSF.

Data for Case 38316, SDG MCY290, were reviewed in accordance with EPA Region 3 Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995.

CHEMTECH
284 Sheffield Street
Mountainside, NJ 07092

SDG NARRATIVE

USEPA
SDG # MCY290
CASE # 38316
CONTRACT # EPW08065
LAB NAME: CHEMTECH CONSULTING GROUP
LAB CODE: CHEM
CHEMTECH PROJECT # A2048

A. Number of Samples and Date of Receipt

20 Water Samples were delivered to the laboratory intact on 03/28/09 & 04/02/09.

B. Parameters

Test requested for Metals CLP Full & Hg.

C. Cooler Temp

Indicator Bottle: Presence/Absence
Cooler: 4°C & 4°C.

D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

E. Corrective Action taken for above:

F. Analytical Techniques:

All analyses were based on CLP Methodology by method ILM05.4

G. Calculation:

Calculation example for ICP-AES Water Sample:

Results reported in Ug/L = Results in ppm X 1000 X Dilution Factor (if any) X Fraction of Sample Amount Taken in ICP Water- Prep

Fraction of Sample Amount Taken in ICP Water- Prep = 100/100 or 50/50 =1
(if 100 ml Initial Volume taken and Final Volume was made to 100 ml or 50 ml Initial Volume)

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and Final Volume made to 50 ml in ICP-AES Water Digestion procedure)

Calculation example for Hg Water Sample:

Results reported in Ug/L = Results in ppb X Dilution Factor (if any) X Fraction of Sample Amount Taken in Water Hg-Prep.

Fraction of Sample Amount Taken in Water Hg-Prep = $100/100 = 1$
(if 100 ml Initial Volume taken and made it to Final Volume as 100 ml)

H. QA/ QC

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements except for the Thallium. Duplicate sample did meet requirements. Serial Dilution did meet requirements except for the Sodium.

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

Signature Mildred V Reyes

Name: Mildred V. Reyes

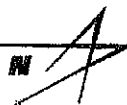
Date 4/14/09

Title: Document Control Officer

Lockheed Martin Enterprise Solutions & Services
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Date: April 20, 2009

Subject: Inorganic Data Validation (IM1 Level)
Case: 38316
SDG : MCY2B3
Site : Havertown PCP

From: Kurt Roby *KR*
Inorganic Data Reviewer

Mahboobeh Mecanic ^{hm}
Senior Oversight Chemist

To: Fred Foreman
ESAT Region 3 Project Officer

OVERVIEW

Case 38316, Sample Delivery Group (SDG) MCY2B3, consisted of seventeen (17) aqueous samples analyzed for total metals by ICP-AES and for mercury (Hg) by cold vapor technique. The sample set included one (1) field blank. All samples were analyzed by ChemTech Consulting Group (CHEM) according to Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 through the Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to EPA Region III Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995, which includes review of all Forms but excludes review of raw data. Areas of concern with respect to data usability are listed below.

Data in this case have been impacted by outliers present in field and laboratory blanks. Details of this outlier are discussed under "Minor Problem" and qualified analytical results for all samples are summarized on the Data Summary Forms (DSFs).

MINOR PROBLEM

Continuing Calibration (CCB), Preparation (PB) and Field (FB) Blanks had reported results greater than the Method Detection Limits (MDLs) for the analytes listed below. Positive results for these analytes in affected samples which are less than five times (<5X) blank concentrations may be biased high and have been qualified "B" on the DSFs.

<u>Blank</u>	<u>Affected Analytes</u>
CCB	Aluminum (Al), barium (Ba), iron (Fe), manganese (Mn)
PB	Al
FB	Al, Fe, sodium (Na)

NOTES

Reported results between Method Detection Limits (MDLs) and Contract Required Quantitation Limits (CRQLs) were qualified "J" unless superseded by "B" on the DSFs.

Data for Case 38316, SDG MCY2B3, were reviewed in accordance with EPA Region III Innovative Approaches (Level IM1) for Validation of Inorganic data, June 1995.

ATTACHMENTS**INFORMATION REGARDING REPORT CONTENT**

- Appendix A Glossary of Data Qualifier Codes
- Appendix B Data Summary Form(s)
- Appendix C Chain of Custody Records
- Appendix D Laboratory Case Narrative

DCN: 38316_MCY2B3

CHEMTECH
284 Sheffield Street
Mountainside, NJ 07092

SDG NARRATIVE

USEPA
SDG # MCY2B3
CASE # 38316
CONTRACT # EPW08065
LAB NAME: CHEMTECH CONSULTING GROUP
LAB CODE: CHEM
CHEMTECH PROJECT # A2120

A. Number of Samples and Date of Receipt

17 Water Samples were delivered to the laboratory intact on 04/02/09.

B. Parameters

Test requested for Metals CLP Full & Hg.

C. Cooler Temp

Indicator Bottle: Presence/Absence
Cooler: 4°C

D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

E. Corrective Action taken for above:

F. Analytical Techniques:

All analyses were based on CLP Methodology by method ILM05.4

G. Calculation:

Calculation example for ICP-AES Water Sample:

Results reported in Ug/L = Results in ppm X 1000 X Dilution Factor (if any) X Fraction of
Sample Amount Taken in ICP Water- Prep

Fraction of Sample Amount Taken in ICP Water- Prep = 100/100 or 50/50 =1
(if 100 ml Initial Volume taken and Final Volume was made to 100 ml or 50 ml Initial Volume

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and Final Volume made to 50 ml in ICP-AES Water Digestion procedure)

Calculation example for Hg Water Sample:

Results reported in Ug/L = Results in ppb X Dilution Factor (if any) X Fraction of Sample Amount Taken in Water Hg-Prep.

Fraction of Sample Amount Taken in Water Hg-Prep = $100/100 = 1$
(if 100 ml Initial Volume taken and made it to Final Volume as 100 ml)

H. QA/QC

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements. Duplicate sample did meet requirements. Serial Dilution did meet requirements.

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

Signature Mildred V. Reyes

Name: Mildred V. Reyes

Date 4/14/09

Title: Document Control Officer



Lockheed Martin Enterprise Solutions & Services
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Telephone 410-305-3037 Facsimile 410-305-3597

DATE: April 29, 2009

SUBJECT: Level IM1 Inorganic Data Validation for Case 38316
SDG: MCY2D1
Site: Havertown PCP

FROM: Shilpa Udani *SU*
Inorganic Data Reviewer

Through: Mahboobeh Mecanic *MM*
Senior Data Review Chemist

TO: Fred Foreman
ESAT Region 3 Project Officer

OVERVIEW

Case 38316, Sample Delivery Group (SDG) MCY2D1, consisted of twenty-one (21) aqueous samples submitted to ChemTech Consulting Group (CHEM) for total metals analyses. The sample set included one (1) field blank and three (3) field duplicate pairs. Samples were analyzed in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 through the Routine Analytical Services (RAS) program.

SUMMARY

Validation of data was performed according to EPA Region III Innovative Approaches for Validation of Inorganic Data, Level IM1, which includes review of all Forms but excludes review of raw data. Areas of concern with respect to data usability are listed below.

Data in this Case have been impacted by outliers present in the field and laboratory blanks as well as the ICP serial dilution and matrix spike analyses. Details for these outliers are discussed under "Minor Problems" and qualified analytical results for all samples are summarized on Data Summary Forms (DSFs).

MINOR PROBLEMS

Field (FB) and Continuing Calibration Blanks (CCBs) had reported results greater than the Method Detection Limits (MDLs) for analytes listed below. Positive results reported for these analytes in affected samples which are less than or equal to five times ($\leq 5X$) blank concentration may be biased high and have been qualified "B" on the DSFs.

<u>Blanks</u>	<u>Affected Analytes</u>
FB	aluminum (Al), mercury (Hg), thallium (Tl), zinc (Zn)
CCB	Al, Tl

The matrix spike recovery was low ($<75\%$ but $> 30\%$) for selenium (Se). The low recovery may be attributed to matrix interferences or analyte lost during the digestion process. Quantitation limits for this analyte in all samples may be biased low and have been qualified "UL" on the DSFs.

Percent Difference (%D) for the ICP serial dilution analysis was outside the control limit ($>10\%$) for sodium (Na). Reported positive results for this analyte in all samples are estimated and have been qualified "J" on the DSFs.

NOTES

Positive results which are less than the Contract Required Quantitation Limits (CRQLs) but greater than MDL have been qualified "J" on the DSFs unless superseded by "B".

Sample MCY2E3 was reanalyzed at a two-fold (2X) dilution in order to bring the concentration for Na within the established calibration range. The result for this analyte in this sample is reported from the diluted analysis and annotated with a "+" on the DSF.

Post-digestion Spike had a low recovery ($<75\%$ but $> 30\%$) for Se. No data were qualified based on the post-digestion spike recovery.

Reported results for field duplicate pair MCY2D3/MCY2D4 were within control limits (20% RPD, \pm CRQL) for all analytes.

Samples MCY2E5 and MCY2G8 are identified as a field duplicate on the Chain-Of-Custody (COC) records. The field duplicate pairs for these samples (MCY2E6 and MCY2G9) included in SDG MCY2E6. Results for these samples are included in Appendix C. Results for these field duplicate pairs were within control limits (20% RPD, \pm CRQL) for all analytes.

Data for Case 38316, SDG MCY2D1 were reviewed in accordance with EPA Region 3 Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995.

ATTACHMENTS

INFORMATION REGARDING REPORT CONTENT

APPENDIX A	GLOSSARY OF DATA QUALIFIER CODES
APPENDIX B	DATA SUMMARY FORM(S)
APPENDIX C	CHAIN OF CUSTODY RECORD(S)
APPENDIX D	LABORATORY CASE NARRATIVE(S)

DCN:38316_MCY2D1.IM1

CHEMTECH
284 Sheffield Street
Mountainside, NJ 07092

SDG NARRATIVE

USEPA
SDG # MCY2D1
CASE # 38316
CONTRACT # EPW08065
LAB NAME: CHEMTECH CONSULTING GROUP
LAB CODE: CHEM
CHEMTECH PROJECT # A2237

A. Number of Samples and Date of Receipt

21 Water Samples were delivered to the laboratory intact on 04/09/09.

B. Parameters

Test requested for Metals CLP Full & Hg.

C. Cooler Temp

Indicator Bottle: Presence/Absence
Cooler: 4°C & 4°C

D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

Issue 1: The laboratory received two containers for water sample MCY2F1 on 4/9/09 and the sample is designated on the TR/COC as laboratory QC. One container's content (tag #3-22368) looks yellowish with sediment and the other container's content (tag #3-22367) is clear water. The laboratory would like to know what container should they use to proceed with the analysis and laboratory QC.

Issue 2: The laboratory received 42 samples on 4/9 and would like to know if they can create two SDGs with 21 samples each (SDGs MCY2E6 and MCY2D1).

E. Corrective Action taken for above:

Resolution 1: Per Region 3, the laboratory should use the container with clear water for the analysis and laboratory QC and should hold the container with the yellowish color if additional volume is needed. The issue should be noted in the Case/SDG Narrative.

Resolution 2: Per Region 3, the laboratory can create two SDGs with 21 samples each and the issue should be noted in the Case/SDG Narrative.

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F. Analytical Techniques:

All analyses were based on CLP Methodology by method ILM05.4

G. Calculation:

Calculation example for ICP-AES Water Sample:

Results reported in Ug/L = Results in ppm X 1000 X Dilution Factor (if any) X Fraction of Sample Amount Taken in ICP Water- Prep

Fraction of Sample Amount Taken in ICP Water- Prep = $100/100$ or $50/50 = 1$
(if 100 ml Initial Volume taken and Final Volume was made to 100 ml or 50 ml Initial Volume and Final Volume made to 50 ml in ICP-AES Water Digestion procedure)

Calculation example for Hg Water Sample:

Results reported in Ug/L = Results in ppb X Dilution Factor (if any) X Fraction of Sample Amount Taken in Water Hg-Prep.

Fraction of Sample Amount Taken in Water Hg-Prep = $100/100 = 1$
(if 100 ml Initial Volume taken and made it to Final Volume as 100 ml)

H. QA/ QC

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements except for Selenium. Duplicate sample did meet requirements. Serial Dilution did meet requirements except for Sodium.

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

Signature Mildred V. Reyes

Name: Mildred V. Reyes

Date 4/22/09

Title: Document Control Officer

**EPA USEPA Contract Laboratory Program
Generic Chain of Custody**

Reference Case: **R**
Client No: R33169

Region: 3	Date Shipped: 4/8/2009	Carrier Name: FedEx	Airbill: 796499455000
Project Code: 112G00940.0000.0810	Shipped to:	SGS Environmental 5500 Business Drive Wilmington, NC 28405-8446 (919) 562-0044	
Account Code: 112G00940.0000.0810	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNOVER
CERCLIS ID: PAD002338010	Ground Water/	L/G	PCDD (21)
Spill ID: 54	Anderson		
Site Name/State: Havertown OU2 Annual DAS 0309/PA	Ground Water/	L/G	PCDD (21)
Project Leader: Harish Mittal	Jason Delfessio		
Action: Long Term Response	Ground Water/	L/G	PCDD (21)
Sampling Co: Tetra Tech NUS	Dennis		
	Anderson		
	Ground Water/	L/G	PCDD (21)
	Dennis		
	Anderson		
	Ground Water/	L/G	PCDD (21)
	Dennis		
	Anderson		

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNOVER	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
R3316920	Ground Water/ Dennis	L/G	PCDD (21)	3-22441 (Ice Only), 3-22442 (Ice Only) (2)	HAV-LTR-RW3-0309	S: 4/7/2009 10:55	-
R3316922	Ground Water/ Anderson	L/G	PCDD (21)	3-22513 (Ice Only), 3-22514 (Ice Only) (2)	HAV-LTR-HAV05-0309	S: 4/7/2009 11:22	-
R3316923	Ground Water/ Jason Delfessio	L/G	PCDD (21)	3-22515 (Ice Only), 3-22516 (Ice Only) (2)	HAV-LTR-RW6-0309	S: 4/7/2009 15:00	-
R3316924	Ground Water/ Anderson	L/G	PCDD (21)	3-22517 (Ice Only), 3-22518 (Ice Only) (2)	HAV-LTR-CTR1-0309	S: 4/7/2009 14:45	-
R3316925	Ground Water/ Anderson	L/G	PCDD (21)	3-22519 (Ice Only), 3-22520 (Ice Only) (2)	HAV-LTR-CTR-0309	S: 4/7/2009 14:15	-

Temp Blank

Field Duplicate
of CTR

Shipment for Case Completed Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: PCDD = Dioxins and Furans	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Used?

TR Number: 3-295386538-040709-0016
PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

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FZY5.1.047 Page 1 of 1

EPA USEPA Contract Laboratory Program
Generic Chain of Custody

Reference Case: **R**
 Client No: R33169

Region: 3	Date Shipped: 4/8/2009	Carrier Name: FedEX	Airbill: 797487466319
Project Code: 112G00940.0000.0810	Shipped to: SGS Environmental	5600 Business Drive	
Account Code: 112G00940.0000.0810	Wilmington NC		
CERCLIS ID: PAD002338010	28405-8446		
Spill ID: 54	(919) 552-0044		
Site Name/State: Haverstown OU2 Annual DAS 0309/PA			
Project Leader: Harish Mittal			
Action: Long Term Response			
Sampling Co: Tetra Tech NUS			

Chain of Custody Record	
Relinquished By	(Date / Time)
<i>Wade A. P. Chow</i>	4/8/09 12:20
2	
3	
4	

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
R3316916	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22433 (Ice Only), 3-22434 (Ice Only) (2)	HAV-LTR-NW1-0309	4/8/2009 14:46	
R3316917	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22435 (Ice Only), 3-22436 (Ice Only) (2)	HAV-LTR-HAV02-0309	4/8/2009 16:00	
R3316926	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22554 (Ice Only), 3-22555 (Ice Only) (2)	HAV-LTR-CW2D-0309	4/8/2009 9:30	

Temp Blank

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: PCDD = Dioxins and Furans	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Lead?

TR Number: 3-295386538-040709-0014
 PR provides preliminary results. Requests for preliminary results will increase analytical costs.
 Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

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**EPA USEPA Contract Laboratory Program
Generic Chain of Custody**

Reference Case: **R**
Client No: R33169

Region: Project Code: Account Code: CERCLIS ID: Spill ID: Site Name/State: Project Leader: Action: Sampling Co:	3 112G00940.0000.0810 112G00940.0000.0810 PAD002338010 54 Havertown OU2 Annual DAS 0309/PA Hanish Mital Long Term Response Tetra Tech NUS	Date Shipped: Carrier Name: Airbill: Shipped to:	4/8/2009 FedEx 797487464202 SGS Environmental 5600 Business Drive Wilmington NC 28405-8446 (919) 552-0044	Chain of Custody Record	Sampler Signature: Received By: (Date / Time)	<i>Wade A. Robw</i> <i>Wade A. Robw</i> 4/8/09 12:15	
SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
R3316910	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22373 (Ice Only), 3-22374 (Ice Only) (2)	HAV-LTR-CW16D-0309	S: 4/6/2009 10:06	-
R3316911	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22375 (Ice Only), 3-22376 (Ice Only) (2)	HAV-LTR-CW16S-0309	S: 4/6/2009 11:10	-
R3316912	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22377 (Ice Only), 3-22378 (Ice Only) (2)	HAV-LTR-CW24D-0309	S: 4/6/2009 13:25	-
R3316913	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22379 (Ice Only), 3-22380 (Ice Only) (2)	HAV-LTR-RW5X-0309	S: 4/6/2009 11:30	-
R3316914	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22381 (Ice Only), 3-22382 (Ice Only) (2)	HAV-LTR-RW5-0309	S: 4/6/2009 11:00	-

Field Duplicate
of R33169-5

Temp Blank

Shipment for Case Complete? Y	Sample(s) to be used for laboratory GC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: PCDD = Dioxins and Furans	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TR Number: **3-295386538-040709-0013**

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

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**USEPA Contract Laboratory Program
Generic Chain of Custody**

Reference Case: **R**

Client No: R33169

Region: 3	Date Shipped: 4/8/2009	Chain of Custody Record	Sampler Signature: <i>Dennis Anderson</i>
Project Code: 112G00940.0000.0810	Carrier Name: FedEx	Relinquished By: <i>DCR</i>	Received By: _____
Account Code: 112G00940.0000.0810	Airbill: 79849945327	1. <i>Dennis Anderson 4/8/09</i>	(Date / Time)
CERCLIS ID: PAD002338010	Shipped to: SGS Environmental	2. <i>Nona Clark 12:15</i>	(Date / Time)
Spill ID: 54	5500 Business Drive	3. _____	
Site Name/State: Havertown OU2 Annual DAS 0309/PA	Wilmington NC	4. _____	
Project Leader: Harish Mittal	28405-8446		
Action: Long Term Response	(919) 552-0044		
Sampling Co: Tetra Tech NUS			

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	PRESERVATIVE/ Bottles	TAG No./	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
R3316908	Field QC/ Dennis Anderson	L/G	PCDD (21)	3-22399 (Ice Only), 3-22370 (Ice Only) (2)	3-22370	HAV-LTR-FB3-0309	S: 4/2/2009 9:15	Field Blank
R3316909	Ground Water/ Dennis Anderson	L/G	PCDD (21)	3-22371 (Ice Only), 3-22372 (Ice Only) (2)	3-22372	HAV-LTR-NW6-0309	S: 4/2/2009 9:40	-
R3316915	Ground Water/ Dennis Anderson	L/G	PCDD (21)	3-22383 (Ice Only), 3-22384 (Ice Only) (2)	3-22384	HAV-LTR-CW26D-0309	S: 4/6/2009 9:20	-
R3316918	Ground Water/ Dennis Anderson	L/G	PCDD (21)	3-22437 (Ice Only), 3-22438 (Ice Only) (2)	3-22438	HAV-LTR-CW29D-0309	S: 4/6/2009 16:00	-
R3316919	Ground Water/ Dennis Anderson	L/G	PCDD (21)	3-22439 (Ice Only), 3-22440 (Ice Only) (2)	3-22440	HAV-LTR-CW31D-0309	S: 4/7/2009 12:20	-

Temp Blank

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
	Concentration: L = Low, M = Low/Medium, H = High	Type/Designator: Composite = C, Grab = G	Shipment Iced? _____
<p>TR Number: 3-295386538-040709-0015</p> <p>PR provides preliminary results. Requests for preliminary results will increase analytical costs.</p> <p>Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602</p>			

REGION COPY

**EPA USEPA Contract Laboratory Program
Generic Chain of Custody**

Reference Case: **R**
Client No: R33169

Region: 3	Date Shipped: 4/1/2009	Carrier Name: FedEx	Shipped to:
Project Code: 112G00940.0000.0810	Carrier Name: FedEx	Altrbill: 797498350208	SGS Environmental
Account Code: 112G00940.0000.0810	Altrbill: 797498350208	Shipped to:	5500 Business Drive
CERCLIS ID: PAD002338010	Shipped to:	5500 Business Drive	Wilmington NC
Spill ID: 54	Shipped to:	28405-3446	(919) 552-0044
Site Name/State: Havertown OJZ Annual DAS 0309/PA	Shipped to:	28405-3446	(919) 552-0044
Project Leader: Harish Mittal	Shipped to:	28405-3446	(919) 552-0044
Action: Long Term Response	Shipped to:	28405-3446	(919) 552-0044
Sampling Co: Tetra Tech NUS	Shipped to:	28405-3446	(919) 552-0044

Chain of Custody Record	
Relinquished By	Received By
1 Vadim A. Petrov 4/1/09 1500	Vadim A. Petrov
2	
3	
4	

SAMPLE NO.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSES/ TURNOAROUND	TAG No./ PRESERVATIVE/ Soils	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
R3316906	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22230 (Ice Only), 3-22231 (Ice Only) (2)	HAV-L-TR-CW13D-0308 S:	3/31/2009 11:45	
R3316907	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22232 (Ice Only), 3-22233 (Ice Only), 3-22234 (Ice Only), 3-22235 (Ice Only), 3-22236 (Ice Only), 3-22237 (Ice Only) (6)	HAV-L-TR-CW6S-0308 S:	3/31/2009 13:56	MS/MSD

Temp Blank

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC: R3316907	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: PCDD = Dioxins and Furans	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composites = C, Grab = G	Shipment Recd?

TR Number: 3-295386538-040109-0009

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

REGIONAL COPY

**EPA USEPA Contract Laboratory Program
Generic Chain of Custody**

Reference Case:
Client No. R33168

R

Region: 3	Date Shipped: 4/1/2009	Carrier Name: FedEx	Station Location: HAV-LTR-FB1-0308	QC Type: Field Blank
Project Code: 112G00940.0000.0810	Carrier Name: FedEx	Shipped to: SGS Environmental	Station Location: HAV-LTR-CW12D-0309	QC Type: -
Account Code: 112G00940.0000.0810	Carrier Name: FedEx	Shipped to: 5800 Business Drive	Station Location: HAV-LTR-CW12S-0309	QC Type: -
CERGLIS ID: PAD002338010	Carrier Name: FedEx	Shipped to: Wilmington NC	Station Location: HAV-LTR-CW10S-0309	QC Type: -
Split ID: 54	Carrier Name: FedEx	Shipped to: 28405-8448	Station Location: HAV-LTR-CW10D-0309	QC Type: -
Site Name/State: Havertown OU2 Annual DAS 0309/PA	Carrier Name: FedEx	Shipped to: (919) 562-0044	Station Location: -	QC Type: -
Project Leader: Harish Mittal	Carrier Name: FedEx	Shipped to: -	Station Location: -	QC Type: -
Action: Long Term Response	Carrier Name: FedEx	Shipped to: -	Station Location: -	QC Type: -
Sampling Co: Tetra Tech NUS	Carrier Name: FedEx	Shipped to: -	Station Location: -	QC Type: -

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	PRESERVATIVE/ BOTTLES	TAG No/ PRESERVATIVE/ BOTTLES	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
R3316901	Field QC/ Vadim Petrov	L/G	PCDD (21)	3-22074 (Ice Only), 3-22075 (Ice Only) (2)	3-22074 (Ice Only), 3-22075 (Ice Only) (2)	HAV-LTR-FB1-0308	3/25/2009 11:20	Field Blank
R3316902	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22076 (Ice Only), 3-22077 (Ice Only) (2)	3-22076 (Ice Only), 3-22077 (Ice Only) (2)	HAV-LTR-CW12D-0309	3/25/2009 11:35	-
R3316903	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22078 (Ice Only), 3-22079 (Ice Only) (2)	3-22078 (Ice Only), 3-22079 (Ice Only) (2)	HAV-LTR-CW12S-0309	3/25/2009 12:35	-
R3316904	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22226 (Ice Only), 3-22227 (Ice Only) (2)	3-22226 (Ice Only), 3-22227 (Ice Only) (2)	HAV-LTR-CW10S-0309	3/30/2009 11:25	-
R3316905	Ground Water/ Vadim Petrov	L/G	PCDD (21)	3-22228 (Ice Only), 3-22229 (Ice Only) (2)	3-22228 (Ice Only), 3-22229 (Ice Only) (2)	HAV-LTR-CW10D-0309	3/30/2009 12:10	-

Temp Blank

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: PCDD = Dioxins and Furans	Concentration: L = Low, M = Low/Medium, H = High.	Type/Designator: Composite = C, Grab = G	Shipment Used?

TR Number: 3-295386538-040109-0008
 PR provides preliminary results. Requests for preliminary results will increase analytical costs.
 Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

REGION COPY

DATA SUMMARY FORM: PCDDs & PCDFs (2005 WHO TEQ)

Water Samples (pg/L)

Case #: R33169

SDG R3316901

Number of water samples: 7

Site :

HAVERTOWN PCP

Lab:

SGS

Sample Number :	R3316901	R3316902	R3316903	R3316904	R3316905											
Sampling Location : (Prefix : HAV-LTR-)	FB1-0309	CW12D-0309	CW12S-0309	CW10S-0309	CW10D-0309											
Field QC :	Field Blank															
Date Sampled :	3/25/2009	3/25/2009	3/25/2009	3/30/2009	3/30/2009											
Time Sampled :	11:20	11:35	12:35	11:25	12:10											
Dilution Factor :	1.06	0.97	0.96	1.01	1.0											
Analyte / TEF	CRQL	CONC:	TEQ	Q	CONC:	TEQ	Q	CONC:	TEQ	Q	CONC:	TEQ	Q	CONC:	TEQ	Q
2378-TCDD (1.0)	10		0:			0:			0:			0:			0:	
12378-PeCDD (1.0)	50		0:			0:			0:			0:			0:	
123478-HxCDD (0.10)	50		0:			0:			0:			0:			0:	
123678-HxCDD (0.10)	50		0:			0:			0:			0:			0:	
123789-HxCDD (0.10)	50		0:			0:			0:			0:			0:	
1234678-HpCDD (0.01)	50		0:		10.2	0.102	J	15.1	0.151	J		0:		22.8	0.228	J
OCDD (0.0003)	100		0:		71.8	0.0215	J	85.9	0.026	J	48.3	0.01	J	278	0.08	J
2378-TCDF (0.1)	50		0:			0:			0:			0:			0:	
12378-PeCDF (0.03)	50		0:			0:			0:			0:			0:	
23478-PeCDF (0.30)	50		0:			0:			0:			0:			0:	
123478-HxCDF (0.10)	50		0:			0:			0:			0:			0:	
123678-HxCDF (0.10)	50		0:			0:			0:			0:			0:	
234678-HxCDF (0.10)	50		0:			0:			0:			0:			0:	
123789-HxCDF (0.10)	50		0:			0:			0:			0:			0:	
1234678-HpCDF (0.01)	50		0:			0:			0:			0:			0:	
1234789-HpCDF (0.01)	50		0:			0:			0:			0:			0:	
OCDF (0.0003)	100		0:		18.2	0.0055	J	15.1	0.005	J		0:		36.3	0.01	J
TOTAL TEQ			0			0.129			0.181			0.01			0.32	

TEQs are based on 2005 WHO Scheme.

DATA SUMMARY FORM: PCDDs & PCDFs (2005 WHO TEQ)

Water Samples (pg/L)

Case #: R33169

SDG R3316901

Site :

HAVERTOWN PCP

Lab:

SGS

Sample Number :		R3316906	R3316907										
Sampling Location : (Prefix : HAV-LTR-)		CW13D-0309	CW5S-0309										
Field QC :													
Date Sampled :		3/31/2009	3/31/2009										
Time Sampled :		11:45	13:55										
Dilution Factor :		1.03	1.01										
Analyte / TEF	CRQL	CONC:	TEQ	Q	CONC:	TEQ	Q	CONC:	TEQ	Q	CONC:	TEQ	Q
2378-TCDD (1.0)	10		0:		20.7:	20.7:	J		0:			0:	
12378-PeCDD (1.0)	50		0:			0:			0:			0:	
123478-HxCDD (0.10)	50		0:			0:			0:			0:	
123678-HxCDD (0.10)	50		0:			0:			0:			0:	
123789-HxCDD (0.10)	50		0:			0:			0:			0:	
1234678-HpCDD (0.01)	50	10.7:	0.107:	J	213:	2.13:			0:			0:	
OCDD (0.0003)	100	91.2:	0.02736:	J	8240:	2.472:			0:			0:	
2378-TCDF (0.1)	50		0:			0:			0:			0:	
12378-PeCDF (0.03)	50		0:			0:			0:			0:	
23478-PeCDF (0.30)	50		0:			0:			0:			0:	
123478-HxCDF (0.10)	50		0:			0:			0:			0:	
123678-HxCDF (0.10)	50		0:			0:			0:			0:	
234678-HxCDF (0.10)	50		0:			0:			0:			0:	
123789-HxCDF (0.10)	50		0:			0:			0:			0:	
1234678-HpCDF (0.01)	50		0:		45.1:	0.451:	J		0:			0:	
1234789-HpCDF (0.01)	50		0:			0:			0:			0:	
OCDF (0.0003)	100	22.4:	0.00672:	J	379:	0.1137:			0:			0:	
TOTAL TEQ			0.14108			25.867			0			0	

TEQs are based on 2005 WHO Scheme.

Water Samples (pg/L)

Case #: R33169

SDG :R3316908

Number of water samples: 18

Site :

HAVERTOWN PCP

Lab:

SGS

Sample Number :	R3316908	R3316909	R3316910	R3316911	R3316912											
Sampling Location : (Prefix : HAV-LTR-)	FB3-0309	NW6-0309	CW16D-0309	CW16S-0309	CW24D-0309											
Field QC :	Field Blank															
Date Sampled :	4/2/2009	4/2/2009	4/6/2009	4/6/2009	4/6/2009											
Time Sampled :	9:15	9:40	10:06	11:10	13:25											
Dilution Factor :	0.99	1.0	1.03	1.08	1.12											
Analyte / TEF	CRQL	CONC:	TEQ	Q	CONC:	TEQ	Q	CONC:	TEQ	Q	CONC:	TEQ	Q	CONC:	TEQ	Q
2378-TCDD (1.0)	10		0		135	135		0		0		0			0	
12378-PeCDD (1.0)	50		0		59.0	59		0		0		0		75.6	75.6	
123478-HxCDD (0.10)	50		0		52.1	5.21		0		0		18.9	18.9		0	
123678-HxCDD (0.10)	50		0		357	35.7		0		0		2280	228	822	82.2	
123789-HxCDD (0.10)	50		0		56.1	5.61		0		0		14.8	14.8	12	12	
1234678-HpCDD (0.01)	50		0		463	4.63		253	2.53		33800	338	J	5610	56.1	
OCDD (0.0003)	100		0		3360	1.008		1640	0.492		426000	128	J	55600	16.7	J
2378-TCDF (0.1)	50		0			0			0			0			0	
12378-PeCDF (0.03)	50		0			0			0			0			0	
23478-PeCDF (0.30)	50		0		24.2	7.26	J		0		27	8.1	J		0	
123478-HxCDF (0.10)	50		0			0			0		153	15.3		15.4	1.54	J
123678-HxCDF (0.10)	50		0			0			0		22.3	2.23	J		0	
234678-HxCDF (0.10)	50		0			0			0		64.4	6.44	J		0	
123789-HxCDF (0.10)	50		0		6.95	0.695	J		0		136	13.6			0	
1234678-HpCDF (0.01)	50		0		47.9	0.479	J	74.3	0.743		7830	78.3		832	8.32	
1234789-HpCDF (0.01)	50		0			0			0		710	7.1		54.5	0.55	
OCDF (0.0003)	100		0		348	0.1044		625	0.188		83800	25.1	J	8290	2.49	
TOTAL TEQ			0			254.7			3.953			884			256	

TEQs are based on 2005 WHO Scheme.

Water Samples (pg/L)

Case #: R33169

SDG : R3316908

Site :

HAVERTOWN PCP

Lab:

SGS

Sample Number :		R3316913	R3316914	R3316915	R3316916	R3316917										
Sampling Location : (Prefix : HAV-LTR-)		RW5X-0309	RW5-0309	CW26D-0309	NW1-0309	HAV02-0309										
Field QC :		Dup. of R3316914	Dup. of R3316913													
Date Sampled :		4/6/2009	4/6/2009	4/6/2009	4/6/2009	4/6/2009										
Time Sampled :		11:30	11:00	9:20	14:46	16:00										
Dilution Factor :		1.04	0.96	1.99	1.93	1.98										
Analyte / TEF	CRQL	CONC	TEQ	Q	CONC	TEQ	Q	CONC	TEQ	Q	CONC	TEQ	Q	CONC	TEQ	Q
2378-TCDD (1.0)	10	202	202		165	165		0	0		0	0		0	0	
12378-PeCDD (1.0)	50	306	306		104	104		0	0		0	0		0	0	
123478-HxCDD (0.10)	50	459	45.9		302	30.2		0	0		0	0		0	0	
123678-HxCDD (0.10)	50	963	96.3		817	81.7		0	0		537	53.7		88.2	8.82	
123789-HxCDD (0.10)	50	322	32.2		255	25.5		0	0		34.9	3.49	J		0	
1234678-HpCDD (0.01)	50	1340	13.4		869	8.69		79.6	0.796		19900	199		3370	33.7	
OCDD (0.0003)	100	4750	4.75		4410	4.41		472	0.472		151000	15.1	J	25300	2.53	
2378-TCDF (0.1)	50		0			0			0			0			0	
12378-PeCDF (0.03)	50		0			0			0			0			0	
23478-PeCDF (0.30)	50	162	48.6		123	36.9			0			0		5.95	1.79	J
123478-HxCDF (0.10)	50		0			0			0		47.9	4.79	J	19.9	1.99	J
123678-HxCDF (0.10)	50		0			0			0		9.85	0.99	J		0	
234678-HxCDF (0.10)	50		0			0			0		32.2	3.22	J	10.4	1.04	J
123789-HxCDF (0.10)	50	24.9	2.49	J	18.4	1.84	J		0			0			0	
1234678-HpCDF (0.01)	50	13.8	0.138	J	12.8	0.128	J	20.6	0.206	J	6120	61.2		855	8.55	
1234789-HpCDF (0.01)	50		0			0			0		192	1.92		55.5	0.56	
OCDF (0.0003)	100	66.3	0.0663	J	71.2	0.0712	J	155	0.047		70300	7.03		7960	0.796	
TOTAL TEQ			748.473		455.3			1.19			395			66.4		

TEQs are based on 2005 WHO Scheme.

Water Samples (pg/L)

Case #: R33169

SDG : R3316908

Site :

HAVERTOWN PCP

Lab:

SGS

Sample Number :	R3316918	R3316919	R3316920	R3316922	R3316923	
Sampling Location : (Prefix : HAV-LTR-)	CW29D-0309	CW31D-0309	RW3-0309	HAV05-0309	RW6-0309	
Field QC :						
Date Sampled :	4/6/2009	4/7/2009	4/7/2009	4/7/2009	4/7/2009	
Time Sampled :	16:00	12:20	10:55	11:22	15:00	
Dilution Factor :	1.96	1.95	1.04	1.04	0.97	
Analyte / TEF	CRQL	CONC: TEQ Q	CONC: TEQ Q	CONC: TEQ Q	CONC: TEQ Q	
2378-TCDD (1.0)	10	0	0	0	35.8 35.8	56.1 56.1
12378-PeCDD (1.0)	50	0	0	0	52.8 52.8	83.9 83.9
123478-HxCDD (0.10)	50	0	0	97.8 9.78 J	0	108 10.8
123678-HxCDD (0.10)	50	0	0	1280 128	0	442 44.2
123789-HxCDD (0.10)	50	0	0	147 14.7	345 34.5	0
1234678-HpCDD (0.01)	50	60.3 0.603	0	5700 57	5710 57.1	1230 12.3
OCDD (0.0003)	100	375 0.125	122 0.0366	55700 1671 J	83700 251 J	35800 10.7
2378-TCDF (0.1)	50	0	0	0	0	0
12378-PeCDF (0.03)	50	0	0	0	0	0
23478-PeCDF (0.30)	50	0	0	0	0	53.7 16.1
123478-HxCDF (0.10)	50	0	0	20.5 2.05 J	22.6 2.26 J	0
123678-HxCDF (0.10)	50	0	0	0	17.8 1.78 J	0
234678-HxCDF (0.10)	50	0	0	14.8 1.48 J	14.9 1.49 J	0
123789-HxCDF (0.10)	50	0	0	38.7 3.87 J	34.0 3.4 J	18.1 1.81 J
1234678-HpCDF (0.01)	50	143 0.143 J	7.98 0.0798 J	764 7.64	949 9.49	28.2 0.28 J
1234789-HpCDF (0.01)	50	0	0	47.1 0.471 J	57.4 0.57	0
OCDF (0.0003)	100	107 0.0321	31.7 0.0095 J	6540 1.962	8300 2.49	202 0.06
TOTAL TEQ		0.8906	0.1259	243.7	227	236

TEQs are based on 2005 WHO Scheme.

Water Samples (pg/L)

Case #: R33169

SDG R3316908

Site :

HAVERTOWN PCP

Lab:

SGS

Sample Number :		R3316924			R3316925			R3316926								
Sampling Location : (Prefix : HAV-LTR-)		CTR1-0309			CTR-0309			CW2D-0309								
Field QC :		Dup. of R3316925			Dup. of R3316924											
Date Sampled :		4/7/2009			4/7/2009			4/8/2009								
Time Sampled :		14:45			14:15			9:30								
Dilution Factor :		0.95			1.96			0.99								
Analyte / TEF	CRQL	CONC	TEQ	Q	CONC	TEQ	Q	CONC	TEQ	Q	CONC	TEQ	Q	CONC	TEQ	Q
2378-TCDD (1.0)	10	52.8	52.8		0	0		0	0		0	0		0	0	
12378-PeCDD (1.0)	50	54.9	54.9		0	0		31.0	31.0	J	0	0		0	0	
123478-HxCDD (0.10)	50	103	103		0	0		93.0	93		0	0		0	0	
123678-HxCDD (0.10)	50	516	51.6		0	0		1240	124		0	0		0	0	
123789-HxCDD (0.10)	50	162	16.2		0	0		152	15.2		0	0		0	0	
1234678-HpCDD (0.01)	50	349	3.49		30.5	0.305	J	6520	65.2		0	0		0	0	
OCDD (0.0003)	100	4270	42.81		194	0.0582	J	88600	26.58	J	0	0		0	0	
2378-TCDF (0.1)	50		0		0	0		0	0		0	0		0	0	
12378-PeCDF (0.03)	50		0		0	0		0	0		0	0		0	0	
23478-PeCDF (0.30)	50	52.2	15.66		0	0		0	0		0	0		0	0	
123478-HxCDF (0.10)	50		0		0	0		197	1.97	J	0	0		0	0	
123678-HxCDF (0.10)	50		0		0	0		0	0		0	0		0	0	
234678-HxCDF (0.10)	50		0		0	0		0	0		0	0		0	0	
123789-HxCDF (0.10)	50		0		0	0		36.1	3.61	J	0	0		0	0	
1234678-HpCDF (0.01)	50	8.51	0.0851	J	7.98	0.0798	J	718	7.18		0	0		0	0	
1234789-HpCDF (0.01)	50		0		0	0		0	0		0	0		0	0	
OCDF (0.0003)	100	48.0	0.0444	J	63.6	0.0191	J	6210	1.863		0	0		0	0	
TOTAL TEQ			206.331		0.4621			285.9			0			0		

TEQs are based on 2005 WHO Scheme.

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DATE: April 30, 2009

SUBJECT: Dioxin/Furan Data Validation For DAS R33169
SDG: R3316901
Site: Havertown PCP

FROM: Shilpa Udani ^{LU}
Data reviewer

Mahboobeh Mecanic ^{MM}
Senior Oversight Chemist

TO: Fred Foreman
ESAT Region 3 Project Officer

OVERVIEW

DAS R33169, Sample Delivery Group (SDG) R3316901, from the Havertown PCP site consisted of seven (7) aqueous samples submitted to SGS Environmental Services (SGS) for determination of total tetra through octa chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The sample set included one (1) field blank. The analyses were performed by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) DLM02.0 through the Delivery of Analytical Services (DAS) program.

The Toxicity Equivalents (TEQ) for all samples, based on the 2005 World Health Organization (WHO) Scheme, are summarized on the Data Summary Forms (DSFs) in Appendix B. All results are equated to 2,3,7,8-TCDD toxicity on the basis of single column determination except for 2,3,7,8-TCDF which is confirmed on a second column when detected above Contract Required Quantitation Limit (CRQL). The DSFs summarize all sample results in units of pg/L.

Analytical Methodology Comments

- Two (2) ions were monitored for identification of each tetra through octa dioxin and furan. The appropriate diphenylether ion was also monitored for possible interference with the furan identifications.
- The laboratory utilized a total of fifteen (15) labeled internal standards for quantitation of native dioxins and furans. Two (2) labeled recovery standards and one (1) labeled cleanup standard were used to determine method (extraction and cleanup procedure) efficiencies.

QA/QC Comments

- Positive results reported below the Contract Required Quantitation Limit (CRQL) were qualified "J" on the DSFs.
- Results for OCDF in sample R3316903 and 2,3,7,8-TCDD in sample R3316907 were reported as Estimated Maximum Possible Concentration (EMPC) on the Form Is by the laboratory due to isomers' ion ratios being outside the $\pm 15\%$ criterion. The ion ratios for these isomers were within Region III expanded $\pm 25\%$ theoretical ion abundances ratio. The results for these isomers were reported by the reviewer as true PCDD/PCDF isomers and qualifier "J" on the DSFs.

Notes

- The Ongoing Precision Result (OPR) recoveries and Relative Percent Differences (RPDs) were within control limits for all compounds.
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis of sample R3316907 reported the recovery of OCDD outside the upper control limit in the MS analysis. No data were qualified based on this outlier.
- The samples were analyzed utilizing a DB-5 column. No confirmation analyses were performed since no 2,3,7,8-TCDF was detected.
- No positive results were reported in the analyses of method blank associated with this case.
- The dilution factors reported on the DSFs reflect sample volumes other than 1000 mL used by the laboratory for the analysis of these samples.
- CRQLs reported on the DSFs are based on the lowest calibration standard, a final extract volume of 20 μl and sample volume of 1000 mL. To calculate sample CRQLs multiply CRQL by the dilution factor (DF).

$$\text{Sample CRQL} = (\text{CRQL}) (\text{DF})$$

Attachments

- 1) Appendix A - Glossary of Data Qualifier Codes (Dioxin/Furan)
- 2) Appendix B - Data Summary Forms. Toxicity Equivalent (TEQ)
- 3) Appendix C - Chain of Custody (COC) Records
- 4) Appendix D - Laboratory Case Narrative

SDG Narrative
SGS Project: G556-166
DAS: R33169
EPA SDG: R3316901

Samples: 9
Matrix: 9 Waters
Receipt Dates: April 2nd, 2009
Method: DLM02.0

Notes:

- The submitted samples were accepted into the lab on April 2nd, 2009 and extracted on April 6th, 2009 by method 3520C. The sample extracts and associated QC extracts were then processed through clean-up by method 3630/3620 and analyzed by HRGC/HRMS for method DLM02.0.
- No analytical issues were encountered.

Ex. Calculations:

An example calculation can be found on the quant report for each sample submitted

$$\text{Native Concentration} = \frac{(A1_N + A2_N)(ES \text{ Amount})}{(A1_{ES} + A2_{ES})(RRF)(Weight)(\%Solids)}$$

$$ES \%R = \frac{(A1_{ES} + A2_{ES})(\# \text{ of fractions}^1)(Amount \text{ JS})}{(A1_{JS} + A1_{JS})(RRF)(CS \text{ Amount})} \times 100$$

$$CS \%R = \frac{(A1_{CS} + A2_{CS})(\# \text{ of fractions}^1)(Amount \text{ JS})}{(A1_{JS} + A1_{JS})(RRF)(CS \text{ Amount})} \times 100$$

$$\text{Extract Concentration} = \frac{(A1_N + A2_N)(ES \text{ Amount})}{(A1_{ES} + A2_{ES})(RRF)(Final \text{ Volume})}$$

$$\text{Reporting Limit} = \frac{(\text{Extract Concentration at LCL})(Final \text{ Volume})}{(Weight)(\%Solids)}$$

¹If an extract was split between spike additions, the split must be taken into account.

Deviations between SGS Labs and DLM02.0:

1. Samples will be prepared and analyzed as per SGS SOP's, which were submitted with the original proposal.
2. Exhibit B: Sec. 2.5.1.1: A DB-5MS is used for the analysis of non-confirm data.
3. Exhibit B: Sec 2.9: Extracts will be stored in capped vials at room temperature indefinitely.
4. Exhibit D: Sec. 2.1.1.1: Continuous Liquid-Liquid Extraction (CLLE) is utilized for the extraction of aqueous samples.
5. Exhibit D: Secs. 2.1.1.2, 10.1.3: Samples containing >1% solids are vacuum filtered. The aqueous portion is extracted by CLLE and the extract combined with the filter for SDS extraction.
6. Exhibit D: Sec. 2.1.3.1: Tissues are extracted by soxhlet using methylene chloride.
7. Exhibit D: Sec. 9.2.2.1.2: M/z 330.9792 PFK is used for system tuning.
8. Exhibit D: Sec. 9.4.5.2: Absolute retention times from the daily continuing calibration are used for peak identification.
9. Exhibit D: Sec. 10.2.3.1: Solid samples are mixed with sodium sulfate prior to extraction.
10. Exhibit D: Sec. 10.3: Extracts are concentrated by modified heating mantle or by Turbovap nitrogen blowdown.
11. Exhibit D: Sec. 12.1.4.2: A Method Blank is acceptable if there are no PCDD/F's detected above the 1613 minimum levels. If target analytes are above this limit, the associated samples must have concentrations that exceed 10 times the levels detected in the Method Blank.
12. Exhibit D: Sec. 12.2.2: An OPR (On-Going Precision and Recovery; LCS) sample is analyzed with every analytical batch.
13. QC included in the data package will include a LMB and an OPR per batch of 20 or fewer samples. Additional QC samples must be specifically requested on the COC or via communication with the project manager and are considered billable samples.
14. The instrument identifier is listed on the quant report for each sample. Additionally, instrument conditions do not deviate from those referenced in submitted SOPs.

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DATE: May 11, 2009

SUBJECT: Dioxin/Furan Data Validation For DAS R33169
SDG: R3316908
Site: Havertown PCP

FROM: Shilpa Udani *SU*
Data reviewer

Mahboobeh Mecanic *MM*
Senior Oversight Chemist

TO: Colleen Walling
ESAT Region 3 Project Officer

OVERVIEW

DAS R33169, Sample Delivery Group (SDG) R3316908, from the Havertown PCP site consisted of eighteen (18) aqueous samples submitted to SGS Environmental Services (SGS) for determination of total tetra through octa chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The sample set included one (1) field blank and two (2) field duplicate pairs. The analyses were performed by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) DLM02.0 through the Delivery of Analytical Services (DAS) program.

The Toxicity Equivalents (TEQ) for all samples, based on the 2005 World Health Organization (WHO) Scheme, are summarized on the Data Summary Forms (DSFs) in Appendix B. All results are equated to 2,3,7,8-TCDD toxicity on the basis of single column determination except for 2,3,7,8-TCDF which is confirmed on a second column when detected above Contract Required Quantitation Limit (CRQL). The DSFs summarize all sample results in units of pg/L.

Analytical Methodology Comments

- Two (2) ions were monitored for identification of each tetra through octa dioxin and furan. The appropriate diphenylether ion was also monitored for possible interference with the furan identifications.
- The laboratory utilized a total of fifteen (15) labeled internal standards for quantitation of native dioxins and furans. Two (2) labeled recovery standards and one (1) labeled cleanup standard were used to determine method (extraction and cleanup procedure) efficiencies.

QA/QC Comments

- Positive results reported below the Contract Required Quantitation Limits (CRQLs) were qualified "J" on the DSFs.
- Results for several isomers were reported as Estimated Maximum Possible Concentration (EMPC) on the Form Is by the laboratory due to isomers' ion ratios being outside the $\pm 15\%$ criterion. When the ion ratios for these isomers were within Region III expanded $\pm 25\%$ theoretical ion abundances ratio, the results for these isomers were reported by the reviewer as true PCDD/PCDF isomers and qualifier "J" on the DSF.
- The concentration of several compounds in samples listed below exceeded the calibration range in the initial analyses. These samples were not diluted to bring the concentration of these compounds within the calibration range. Results for these compounds in these samples were qualified "J" on the DSFs.

<u>Samples</u>	<u>Compounds</u>
R3316911	1,2,3,4,6,7,8-HpCDD, OCDD, OCDF
R3316912, R3316916, R3316920, R3316922, R3316926	OCDD

Notes

- The Ongoing Precision Result (OPR) recoveries and Relative Percent Differences (RPDs) were within control limits for all compounds.
- The samples were analyzed utilizing a DB-5 column. No confirmation analyses were performed since no 2,3,7,8-TCDF was detected.
- Field duplicate pair samples R3316924/R3316925 were analyzed at different dilution factors (1X and 2X, respectively). CRQLs are elevated in sample R3316925. Results were not comparable for this duplicate pair.
- Reported results for field duplicate pair samples R3316913/R3316914, were not comparable for most PCDD isomers.
- The dilution factors reported on the DSFs reflect sample volumes other than 1000 mL used by the laboratory for the analyses of these samples.

- CRQLs reported on the DSFs are based on the lowest calibration standard, a final extract volume of 20 μ l and sample volume of 1000 mL. To calculate sample CRQLs multiply CRQL by the dilution factor (DF).

$$\text{Sample CRQL} = (\text{CRQL}) (\text{DF})$$

Attachments

- 1) Appendix A - Glossary of Data Qualifier Codes (Dioxin/Furan)
- 2) Appendix B - Data Summary Forms. Toxicity Equivalent (TEQ)
- 3) Appendix C - Chain of Custody (COC) Records
- 4) Appendix D - Laboratory Case Narrative

DCN: R33169.wpd



SDG Narrative
SGS Project: G556-167
DAS: R33169
EPA SDG: R3316908

Samples: 18
Matrix: 18 Waters
Receipt Dates: April 9th, 2009
Method: DLM02.0

Notes:

- The submitted samples were accepted into the lab on April 9th, 2009 and extracted on April 13th and April 27th, 2009 by method 3520C. The sample extracts and associated QC extracts were then processed through clean-up by method 3630/3620 and analyzed by HRGC/HRMS for method DLM02.0.
- No analytical issues were encountered.

Ex. Calculations:

An example calculation can be found on the quant report for each sample submitted

$$\text{Native Concentration} = \frac{(A1_N + A2_N)(ES \text{ Amount})}{(A1_{ES} + A2_{ES})(RRF)(\text{Weight})(\% \text{ Solids})}$$

$$ES \%R = \frac{(A1_{ES} + A2_{ES})(\# \text{ of fractions}^1)(\text{Amount JS})}{(A1_{JS} + A2_{JS})(RRF)(CS \text{ Amount})} \times 100$$

$$CS \%R = \frac{(A1_{CS} + A2_{CS})(\# \text{ of fractions}^1)(\text{Amount JS})}{(A1_{JS} + A2_{JS})(RRF)(CS \text{ Amount})} \times 100$$

$$\text{Extract Concentration} = \frac{(A1_N + A2_N)(ES \text{ Amount})}{(A1_{ES} + A2_{ES})(RRF)(\text{Final Volume})}$$

$$\text{Reporting Limit} = \frac{(\text{Extract Concentration at LCL})(\text{Final Volume})}{(\text{Weight})(\% \text{ Solids})}$$

¹If an extract was split between spike additions, the split must be taken into account.

Deviations between SGS Labs and DLM02.0:

1. Samples will be prepared and analyzed as per SGS SOP's, which were submitted with the original proposal.
2. Exhibit B: Sec. 2.5.1.1: A DB-5MS is used for the analysis of non-confirm data.
3. Exhibit B: Sec 2.9: Extracts will be stored in capped vials at room temperature indefinitely.
4. Exhibit D: Sec. 2.1.1.1: Continuous Liquid-Liquid Extraction (CLLE) is utilized for the extraction of aqueous samples.
5. Exhibit D: Secs. 2.1.1.2, 10.1.3: Samples containing >1% solids are vacuum filtered. The aqueous portion is extracted by CLLE and the extract combined with the filter for SDS extraction.
6. Exhibit D: Sec. 2.1.3.1: Tissues are extracted by soxhlet using methylene chloride.
7. Exhibit D: Sec. 9.2.2.1.2: M/z 330.9792 PFK is used for system tuning.
8. Exhibit D: Sec. 9.4.5.2: Absolute retention times from the daily continuing calibration are used for peak identification.
9. Exhibit D: Sec. 10.2.3.1: Solid samples are mixed with sodium sulfate prior to extraction.
10. Exhibit D: Sec. 10.3: Extracts are concentrated by modified heating mantle or by Turbovap nitrogen blowdown.
11. Exhibit D: Sec. 12.1.4.2: A Method Blank is acceptable if there are no PCDD/F's detected above the 1613 minimum levels. If target analytes are above this limit, the associated samples must have concentrations that exceed 10 times the levels detected in the Method Blank.
12. Exhibit D: Sec. 12.2.2: An OPR (On-Going Precision and Recovery; LCS) sample is analyzed with every analytical batch.
13. QC included in the data package will include a LMB and an OPR per batch of 20 or fewer samples. Additional QC samples must be specifically requested on the COC or via communication with the project manager and are considered billable samples.
14. The instrument identifier is listed on the quant report for each sample. Additionally, instrument conditions do not deviate from those referenced in submitted SOPs.

GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of analytes):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte Present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.

Q = No analytical result.

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of analytes):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte Present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

Q = No analytical result.

**GLOSSARY OF DATA QUALIFIER CODES
(DIOXIN/FURAN)**

- B** Blank Contamination
- J** The analyte was positively identified; the associated numerical value is the estimated concentration of the analyte in the sample.
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- R** The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U** Not detected above the Contract Required Quantitation Limit (CRQL).
- UJ** Not detected, quantitation limit is estimated.