



MEMORANDUM

Date: 04 Jun 02

To: Dave Sawicki, Project Manager, Tetra Tech EM Inc. (Tetra Tech)
Superfund Technical Assessment and Response Team (START) for Region 5

From: Nancy McDonald, Chemist, Tetra Tech START for Region 5

Subject: Data Validation for
St. Clair Shores Site
St. Clair Shores, Michigan
Analytical Technical Direction Document (TDD) No. S05-0203-003
Project TDD No. S05-0203-002

Laboratory: AAC Trinity (AACT), Farmington Hills, Michigan
Work Orders No. 02-0838 and 02-0911
Polychlorinated Biphenyl (PCB) Analysis of Four Wipe Samples

1.0 INTRODUCTION

The Tetra Tech START for Region 5 evaluated PCB analytical data for four wipe samples collected on 25 Mar and 02 Apr 02 during a site assessment of the St. Clair Shores site in St. Clair Shores, Michigan. The wipe samples were analyzed under the above-referenced work orders by AACT using U.S. Environmental Protection Agency (U.S. EPA) SW-846 Method 8082 for PCB analysis.

The organic data were evaluated in general accordance with U.S. EPA's "Contract Laboratory Program National Functional Guidelines for Organic Data Review" dated Oct 99. Organic data validation consisted of a review of the following QC parameters: holding times, initial and continuing calibrations, blank results, matrix spike and matrix spike duplicate (MS/MSD) results, surrogate recovery results, laboratory control sample (LCS) results, and sample quantitation.

Section 2.0 discusses the results of the organic data validation and Section 3.0 presents an overall assessment of the data. The attachment contains AACT's summary of sample analytical results.

2.0 ORGANIC DATA VALIDATION RESULTS

The results of START's data validation for the organic analyses are summarized below in terms of the QC parameters reviewed.

2.1 HOLDING TIMES

All wipe samples were analyzed within the holding time limits of 14 days to extraction and 40 days from extraction to analysis.

2.2 INITIAL AND CONTINUING CALIBRATIONS

All correlation coefficients for the initial calibration results met the QC limit of greater than 0.99, and most exceeded 0.999. All continuing calibration results for the quantitation and confirmation columns were within the QC limit of 15 percent difference.

2.3 BLANK RESULTS

A method blank was run with each analytical batch in the proper sequence. No PCBs were detected in the blanks at concentrations exceeding the sample reporting limits.

2.4 MS/MSD RESULTS

No wipe MS or MSD samples were analyzed. No qualification is warranted for this data gap.

2.5 SURROGATE RECOVERY RESULTS

All surrogate recovery results were within laboratory-established QC limits.

2.6 LCS RESULTS

An LCS was analyzed, and all LCS results were within the laboratory-established QC limits.

2.7 SAMPLE QUANTITATION

Sample quantitation was manually verified for sample 21531A (collected on 02 Apr 02). Sample quantitation was performed correctly.

None of the environmental sample chromatograms were good matches with the Aroclor standards. Therefore, AACT used its best judgment in deciding which Aroclor or Aroclors should be used for quantitation. The Aroclors chosen for quantitation are acceptable, but different choices would have yielded different quantitative results. Whether those results would be higher or lower and how much higher or lower depends on (1) the nature of the environmental sample (which congeners are present at what concentrations), (2) which Aroclor or Aroclors are chosen by the laboratory for quantitation, and (3) which chromatographic peaks for each chosen Aroclor are used for quantitation. This issue is further discussed in Section 3.0 (overall assessment of data).

3.0 OVERALL ASSESSMENT OF DATA

All sample analytical data generated by AACT are acceptable for use as qualified.

The primary uncertainty with the sample results was associated with identification of the PCB mixtures. The PCB chromatographic peak patterns for the samples were not good matches to the calibration standards. This problem is characteristic of PCB analysis of environmental samples and is due to (1) the

samples containing different batches of PCB products than the standards, (2) the samples containing mixtures of two or more Aroclors, and (3) the degradation of PCBs in the environment (typically through dechlorination and oxygenation). Sample quantitation is a function of PCB identification. For example, results for samples in Clayton Group Services data packages for the St. Clair Shores site were quantified using a different algorithm, one that generates quantitative results for all Aroclors before the analyst selects the Aroclor to be reported rather than the one used by AACT that quantitates results after Aroclor selection. Based on the results quantified using the different algorithms, reported sample concentrations may vary by a factor of up to two based on the analyst's judgment regarding the Aroclor patterns that best match the sample results. As noted earlier, the direction and magnitude of the variations in quantitation cannot be predicted but must be determined on a sample-by-sample basis.

ATTACHMENT

AACT SUMMARY OF SAMPLE ANALYTICAL RESULTS

(Four Sheets)

AAC Trinity

Date: 01-Apr-02

CLIENT: Tetra Tech EM, Inc.
 Lab Order: 02-0838
 Project: S05-0203-002/St. Clair Shores
 Lab ID: 02-0838-01

Client Sample ID: 21531-A
 Collection Date: 3/25/2002 4:30:00 PM
 Matrix: WIPE

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS - EPA 8082		EPA8082		Analyst: MB		
Aroclor 1016	ND	0.10		µg, Total	1	3/27/2002 9:40:54 PM
Aroclor 1221	ND	0.10		µg, Total	1	3/27/2002 9:40:54 PM
Aroclor 1232	ND	0.10		µg, Total	1	3/27/2002 9:40:54 PM
Aroclor 1242	ND	0.10		µg, Total	1	3/27/2002 9:40:54 PM
Aroclor 1248	ND	0.10		µg, Total	1	3/27/2002 9:40:54 PM
Aroclor 1254	ND	0.10		µg, Total	1	3/27/2002 9:40:54 PM
Aroclor 1260	ND	0.10		µg, Total	1	3/27/2002 9:40:54 PM
Surr: Decachlorobiphenyl	65.8	43-137		%REC	1	3/27/2002 9:40:54 PM
Surr: Tetrachloro-m-xylene	45.2	45-120		%REC	1	3/27/2002 9:40:54 PM

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 E - Value above quantitation range
 RL - Reporting Limit if used

77

AAC Trinity

Date: 01-Apr-02

CLIENT: Tetra Tech EM, Inc.
 Lab Order: 02-0838
 Project: S05-0203-002/St. Clair Shores
 Lab ID: 02-0838-02

Client Sample ID: 21531-B
 Collection Date: 3/25/2002 4:30:00 PM
 Matrix: WIPE

Analyses	Result	RL	Qual Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS - EPA 8082		EPA8082		Analyst: MB	
Aroclor 1016	ND	0.10	µg, Total	1	3/27/2002 8:51:01 PM
Aroclor 1221	ND	0.10	µg, Total	1	3/27/2002 8:51:01 PM
Aroclor 1232	ND	0.10	µg, Total	1	3/27/2002 8:51:01 PM
Aroclor 1242	ND	0.10	µg, Total	1	3/27/2002 8:51:01 PM
Aroclor 1248	9.4	0.10	µg, Total	1	3/27/2002 8:51:01 PM
Aroclor 1254	0.86	0.10	µg, Total	1	3/27/2002 8:51:01 PM
Aroclor 1260	ND	0.10	µg, Total	1	3/27/2002 8:51:01 PM
Surr: Decachlorobiphenyl	77.6	43-137	%REC	1	3/27/2002 8:51:01 PM
Surr: Tetrachloro-m-xylene	53.9	45-120	%REC	1	3/27/2002 8:51:01 PM

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level
 S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 E - Value above quantitation range
 RL - Reporting Limit if used

AAC Trinity

Date: 04-Apr-02

CLIENT: Tetra Tech EM, Inc. **Client Sample ID:** 21531A
Lab Order: 02-0911 **Collection Date:** 4/2/2002 9:15:00 AM
Project: S05-0203-002/St. Clair Shores/PO# G9009E020
Lab ID: 02-0911-01 **Matrix:** WIPE

Analyses	Result	RL	Qual Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS - EPA 8082					Analyst: MB
		EPA8082			
Aroclor 1016	ND	0.10	µg, Total	1	4/4/2002 5:38:42 AM
Aroclor 1221	ND	0.10	µg, Total	1	4/4/2002 5:38:42 AM
Aroclor 1232	ND	0.10	µg, Total	1	4/4/2002 5:38:42 AM
Aroclor 1242	ND	0.10	µg, Total	1	4/4/2002 5:38:42 AM
Aroclor 1248	2.9	0.10	µg, Total	1	4/4/2002 5:38:42 AM
Aroclor 1254	0.44	0.10	µg, Total	1	4/4/2002 5:38:42 AM
Aroclor 1260	ND	0.10	µg, Total	1	4/4/2002 5:38:42 AM
Surr: Decachlorobiphenyl	81.0	43-137	%REC	1	4/4/2002 5:38:42 AM
Surr: Tetrachloro-m-xylene	65.1	45-120	%REC	1	4/4/2002 5:38:42 AM

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level
 S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 E - Value above quantitation range
 RL - Reporting Limit if used

3

AAC Trinity

Date: 04-Apr-02

CLIENT: Tetra Tech EM, Inc.
 Lab Order: 02-0911
 Project: S05-0203-002/St. Clair Shores/PO# G9009E020
 Lab ID: 02-0911-02

Client Sample ID: 21531B
 Collection Date: 4/2/2002 9:17:00 AM
 Matrix: WIPE

Analyses	Result	RL	Qual Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS - EPA 8082		EPA8082		Analyst: MB	
Aroclor 1016	ND	1.0	µg, Total	10	4/4/2002 3:10:30 AM
Aroclor 1221	ND	1.0	µg, Total	10	4/4/2002 3:10:30 AM
Aroclor 1232	ND	1.0	µg, Total	10	4/4/2002 3:10:30 AM
Aroclor 1242	ND	1.0	µg, Total	10	4/4/2002 3:10:30 AM
Aroclor 1248	22	1.0	µg, Total	10	4/4/2002 3:10:30 AM
Aroclor 1254	2.6	1.0	µg, Total	10	4/4/2002 3:10:30 AM
Aroclor 1260	ND	1.0	µg, Total	10	4/4/2002 3:10:30 AM
Surr: Decachlorobiphenyl	67.0	43-137	%REC	10	4/4/2002 3:10:30 AM
Surr: Tetrachloro-m-xylene	66.9	45-120	%REC	10	4/4/2002 3:10:30 AM

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 * - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 E - Value above quantitation range
 RL - Reporting Limit if used

cl.