



## Tetra Tech EM Inc.

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### MEMORANDUM

**Date:** 17 Apr 02

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

**From:** Harry Ellis, 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 Order No. 02-0630  
Polychlorinated Biphenyl (PCB) Analysis of Six Wipe Samples

#### 1.0 INTRODUCTION

The Tetra Tech START for Region 5 evaluated PCB analytical data for six wipe samples collected on 07 Mar 02 during a site assessment of the St. Clair Shores site in St. Clair Shores, Michigan. The samples were analyzed under the above-referenced work order 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 quality control (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, 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 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 from the initial calibration results were well within the QC limit of greater than 0.99, and most results exceeded 0.999. The laboratory used five-point calibration curves for all Aroclors, although the method requires only five-point curves for Aroclors 1016 and 1260 and single-point calibrations for the other Aroclors. 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 the analytical batch in the proper sequence and contained no analytes.

### **2.4 MS/MSD RESULTS**

No wipe MS or MSD samples were analyzed. No qualifications are warranted for this data gap.

## **2.5 SURROGATE RECOVERY RESULTS**

Most of the surrogate recovery results were within the QC limits. The surrogates for sample No. M4262-W were not usable because of the 50-fold dilution of the extract required by the high PCB content of this sample. No qualifications are warranted for this data gap.

## **2.6 LCS RESULTS**

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

## **2.7 SAMPLE QUANTITATION**

Sample quantitation was manually verified for one sample. Sample quantitation was performed correctly.

None of the environmental sample chromatograms were a good match to the Aroclor standards. Therefore, the laboratory used its best judgment in deciding which Aroclors should be used for quantitation. Different Aroclor choices would have yielded somewhat different quantitative results. The choice of two Aroclors for these samples is reasonable. The sets of peaks that AACT used for quantitation of Aroclors 1248 and 1254 do not overlap, and the combination of the two sets spans many of the sample chromatograms.

## **3.0 OVERALL ASSESSMENT OF DATA**

All sample analytical data generated by AACT are acceptable for use. The primary problem with the sample results was associated with the identification of the PCB mixture because the sample PCB chromatographic peak patterns were not good matches to the calibration standards. This problem is characteristic of environmental samples and is due to (1) the samples originating from different batches

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St. Clair Shores Site  
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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; therefore, the reported concentrations may vary by a factor of up to two based on the analyst's judgment on the Aroclor pattern that best matches the sample result.

**ATTACHMENT**

**AACT SUMMARY OF SAMPLE ANALYTICAL RESULTS**

(Six Sheets)

**AAC Trinity**

Date: 11-Mar-02

**CLIENT:** Tetra Tech EM, Inc.  
**Lab Order:** 02-0630  
**Project:** S050203002/St. Clair Shores  
**Lab ID:** 02-0630-01

**Client Sample ID:** M7056-W  
**Collection Date:** 3/7/2002 12:15:00 PM  
**Matrix:** WIPE

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>POLYCHLORINATED BIPHENYLS - EPA 8082</b>		<b>EPA8082</b>		Analyst: MB		
Aroclor 1016	ND	0.50		µg	1	3/8/2002 6:44:33 PM
Aroclor 1221	ND	0.50		µg	1	3/8/2002 6:44:33 PM
Aroclor 1232	ND	0.50		µg	1	3/8/2002 6:44:33 PM
Aroclor 1242	ND	0.50		µg	1	3/8/2002 6:44:33 PM
Aroclor 1248	2.8	0.50		µg	1	3/8/2002 6:44:33 PM
Aroclor 1254	1.5	0.50		µg	1	3/8/2002 6:44:33 PM
Aroclor 1260	ND	0.50		µg	1	3/8/2002 6:44:33 PM
Surr: Decachlorobiphenyl	99.4	43-137		%REC	1	3/8/2002 6:44:33 PM
Surr: Tetrachloro-m-xylene	67.2	45-120		%REC	1	3/8/2002 6:44:33 PM

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

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# AAC Trinity

Date: 11-Mar-02

CLIENT: Tetra Tech EM, Inc.  
 Lab Order: 02-0630  
 Project: S050203002/St. Clair Shores  
 Lab ID: 02-0630-02

Client Sample ID: M7058-W  
 Collection Date: 3/7/2002 12:50:00 PM  
 Matrix: WIPE

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>POLYCHLORINATED BIPHENYLS - EPA 8082</b>		<b>EPA8082</b>				Analyst: MB
Aroclor 1016	ND	0.50		µg	1	3/8/2002 7:10:19 PM
Aroclor 1221	ND	0.50		µg	1	3/8/2002 7:10:19 PM
Aroclor 1232	ND	0.50		µg	1	3/8/2002 7:10:19 PM
Aroclor 1242	ND	0.50		µg	1	3/8/2002 7:10:19 PM
Aroclor 1248	2.3	0.50		µg	1	3/8/2002 7:10:19 PM
Aroclor 1254	0.63	0.50		µg	1	3/8/2002 7:10:19 PM
Aroclor 1260	ND	0.50		µg	1	3/8/2002 7:10:19 PM
Surr: Decachlorobiphenyl	106	43-137		%REC	1	3/8/2002 7:10:19 PM
Surr: Tetrachloro-m-xylene	74.1	45-120		%REC	1	3/8/2002 7:10:19 PM

**Qualifiers:** ND - Not Detected at the Reporting Limit  
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 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

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**AAC Trinity**

Date: 11-Mar-02

CLIENT: Tetra Tech EM, Inc.  
 Lab Order: 02-0630  
 Project: S050203002/St. Clair Shores  
 Lab ID: 02-0630-03

Client Sample ID: M4262-W  
 Collection Date: 3/7/2002 12:15:00 PM  
 Matrix: WIPE

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>POLYCHLORINATED BIPHENYLS - EPA 8082</b>		<b>EPA8082</b>				Analyst: MB
Aroclor 1016	ND	25		µg	50	3/9/2002 5:30:50 PM
Aroclor 1221	ND	25		µg	50	3/9/2002 5:30:50 PM
Aroclor 1232	ND	25		µg	50	3/9/2002 5:30:50 PM
Aroclor 1242	ND	25		µg	50	3/9/2002 5:30:50 PM
Aroclor 1248	240	25		µg	50	3/9/2002 5:30:50 PM
Aroclor 1254	240	25		µg	50	3/9/2002 5:30:50 PM
Aroclor 1260	ND	25		µg	50	3/9/2002 5:30:50 PM
Surr: Decachlorobiphenyl	DL	43-137	S	%REC	50	3/9/2002 5:30:50 PM
Surr: Tetrachloro-m-xylene	DL	45-120	S	%REC	50	3/9/2002 5:30:50 PM

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits  
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 B - Analyte detected in the associated Method Blank      E - Value above quantitation range  
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**AAC Trinity**

Date: 11-Mar-02

**CLIENT:** Tetra Tech EM, Inc.

**Client Sample ID:** J01-CW-W

**Lab Order:** 02-0630

**Collection Date:** 3/7/2002 12:50:00 PM

**Project:** S050203002/St. Clair Shores

**Lab ID:** 02-0630-04

**Matrix:** WIPE

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>POLYCHLORINATED BIPHENYLS - EPA 8082</b>		<b>EPA8082</b>				Analyst: MB
Aroclor 1016	ND	10		µg	20	3/9/2002 5:05:09 PM
Aroclor 1221	ND	10		µg	20	3/9/2002 5:05:09 PM
Aroclor 1232	ND	10		µg	20	3/9/2002 5:05:09 PM
Aroclor 1242	ND	10		µg	20	3/9/2002 5:05:09 PM
Aroclor 1248	86	10		µg	20	3/9/2002 5:05:09 PM
Aroclor 1254	40	10		µg	20	3/9/2002 5:05:09 PM
Aroclor 1260	ND	10		µg	20	3/9/2002 5:05:09 PM
Surr: Decachlorobiphenyl	109	43-137		%REC	20	3/9/2002 5:05:09 PM
Surr: Tetrachloro-m-xylene	70.8	45-120		%REC	20	3/9/2002 5:05:09 PM

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

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# AAC Trinity

Date: 11-Mar-02

**CLIENT:** Tetra Tech EM, Inc.

**Client Sample ID:** M4480-W

**Lab Order:** 02-0630

**Collection Date:** 3/7/2002 12:10:00 PM

**Project:** S050203002/St. Clair Shores

**Lab ID:** 02-0630-05

**Matrix:** WIPE

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>POLYCHLORINATED BIPHENYLS - EPA 8082</b>		<b>EPA8082</b>				<b>Analyst: MB</b>
Aroclor 1016	ND	0.50		µg	1	3/8/2002 8:53:07 PM
Aroclor 1221	ND	0.50		µg	1	3/8/2002 8:53:07 PM
Aroclor 1232	ND	0.50		µg	1	3/8/2002 8:53:07 PM
Aroclor 1242	ND	0.50		µg	1	3/8/2002 8:53:07 PM
Aroclor 1248	0.74	0.50		µg	1	3/8/2002 8:53:07 PM
Aroclor 1254	0.76	0.50		µg	1	3/8/2002 8:53:07 PM
Aroclor 1260	ND	0.50		µg	1	3/8/2002 8:53:07 PM
Surr: Decachlorobiphenyl	111	43-137		%REC	1	3/8/2002 8:53:07 PM
Surr: Tetrachloro-m-xylene	65.8	45-120		%REC	1	3/8/2002 8:53:07 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

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