

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 24, 2004  
September 27, 2004  
September 28, 2004  
September 29, 2004  
September 30, 2004

**Report Date:** October 25, 2004 (reported by the laboratory)

**Parameters:** Pesticides/PCBs

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** Y1G57

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 for pesticides and Aroclors. The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

## **I. Technical Holding Time and Sample Custody**

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All technical holding time requirements were met.

## **II. Calibration**

Pesticide Resolution check and PEM standards were in-control.

Initial and continuing calibration standards were in-control.

## **III. Method Blank**

Method blanks and instrument blanks were analyzed as required. Instrument blanks were free of contamination Method blank PBLKRN contained alpha-chlordane below the CRQL. There were no alpha chlordane detects in the associated EB samples.

## **IV. Laboratory Control Sample (LCS)**

There was no LCS associated with this SDG.

## **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

There were no MS/MSDs associated with this SDG.

## **VI. Surrogate Recovery**

Surrogate recoveries were within criteria.

## **VII. Confirmation**

Detected concentrations that exceeded 25% difference between the primary and secondary columns were flagged "J". See table below.

## **VIII. Field Duplicates**

There were no field duplicates in this SDG.

## **IX. Field Blanks**

This SDG consists of five EBs. Samples Y1G57, Y1G64, and Y1G67 contained 4,4'-DDD below the CRQL and samples Y1G57 and Y1G64 contained gamma-BHC below the CRQL.

## **X. Target Analyte Quantitation**

Raw data was not reviewed.

## **XI. Sample Receipt**

Samples were received intact with in-control temperatures and with appropriate COCs.

## **XII. Overall Assessment of Data**

1. No LCS or MS/MSDs were extracted with this SDG to evaluate precision and accuracy. However, all sample surrogate recoveries were in-control.

2. This SDG consists of five EBs. Samples Y1G57, Y1G64, and Y1G67 contained 4,4'-DDD below the CRQL and samples Y1G57 and Y1G64 contained gamma-BHC below the CRQL
3. Calibrations were in-control.
4. Samples were collected and analyzed base on an approved method and results were reported using industry-standardized units. Sample results were complete; no data was rejected.

### Data Qualification Summary

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G57	GAMMA-BHC (LINDANE)	0.011	J	Confirmation>UCL
Y1G64	GAMMA-BHC (LINDANE)	0.011	J	Confirmation>UCL

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 15, 2004  
September 16, 2004  
September 17, 2004

**Report Date:** November 04, 2004

**Parameters:** GC/MS Semivolatile SIM for 1,4-Dioxane

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** Y1G42

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents five equipment blanks analyzed for 1,4-Dioxane by GC/MS Semivolatile SIM. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004; the EPA National Functional Guidelines for Organic Data Review (NFG), October 1999; and Modification Reference Number 1147.1 (provided in the data package) were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time

All technical holding time requirements were met.

### II. Calibration

No tuning criteria specified. Calibration gas scan for PFTBA provided.

The initial and continuing calibration criteria set forth in Modification Reference Number 1147.1 is as follows:

RRF criteria for 1,4-Dioxane and the deuterated 1,4-Dioxane shall be 0.005 or greater and the %RSD and the % Difference criteria shall be no greater than 50%. These criteria were met in this SDG.

The low standard shall be at or below the contract required quantitation limit (CRQL). The CRQL was established at 5ug/L. The low standard was 2ug/ml with a final volume of 0.5ml and an initial volume approximately 1 liter. The data was reported as non-detect at approximately 0.5ug/L which is one-half the reporting limit as calculated using the low standard and approximately 10 fold lower than the CRQL.

### **III. Method Blank**

Method blanks were analyzed as required. 1,4-Dioxane was detected in each method blank below the sample reporting limit. 1,4-Dioxane was not detected in the associated samples and not flags were applied.

### **IV. Laboratory Control Sample (LCS)**

No LCSs were extracted or analyzed.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD not required as per Modification Reference Number 1147.1.

### **VI. Surrogate Recovery**

Form II for surrogate recovery was not required for SIM analysis. As per communication with Terry Smith of the EPA the surrogate 1,4-Dioxane was reported as a second analyte on the Form I. A recovered value was reported in place of a per cent recovery. Surrogate spike recovery is unknown.

### **VII. Internal Standard Recovery**

1,4-Dichlorobenzene-d4 internal standard recovery was biased high in SBLK01, Y1G36, and Y1G52 due to the coelution with the surrogate 1,2-Dichlorobenzene-d4 used in the full scan of these samples. All samples were non-detect, therefore, no flags were applied.

### **VIII. Field Duplicates**

There were no field duplicates in this SDG.

### **IX. Field Blanks**

This SDG consists of five equipment blanks (EB). 1,4-Dioxane was not detected in the EBs.

### **X. Target Analyte Quantitation**

Raw data was not reviewed.

### **XI. Overall Assessment of Data**

1. The CRQL is 5ug/L. Samples were reported as non-detect below the CRQL and below a reporting limit using the low standard in the ICAL. Recommend raising the non-detect level to the value as calculated using the low standard.
2. No LCS or MS/MSD recoveries were available as accuracy or precision indicators. 1,4-Dioxane-d8 was used as a surrogate but the per cent recovery for each sample is unknown. Recommend requesting this information from the laboratory in order to review any extraction bias.
3. Samples in this SDG are all EBs; 1,4-Dioxane was non-detect.

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 24, 2004  
September 27, 2004  
September 28, 2004  
September 29, 2004  
September 30, 2004

**Report Date:** November 04, 2004

**Parameters:** GC/MS Semivolatile SIM for 1,4-Dioxane

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** Y1G67

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents five equipment blanks analyzed for 1,4-Dioxane by GC/MS Semivolatiles SIM. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004; the EPA National Functional Guidelines for Organic Data Review (NFG), October 1999; and Modification Reference Number 1147.1 (provided in the data package) were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time

All technical holding time requirements were met.

### II. Calibration

No tuning criteria specified. Calibration gas scan for PFTBA provided.

The initial and continuing calibration criteria set forth in Modification Reference Number 1147.1 is as follows:

RRF criteria for 1,4-Dioxane and the deuterated 1,4-Dioxane shall be 0.005 or greater and the %RSD and the % Difference criteria shall be no greater than 50%. These criteria were met in this SDG.

The low standard shall be at or below the contract required quantitation limit (CRQL). The CRQL was established at 5ug/L. The low standard was 2ug/ml with a final volume of 0.5ml and an initial volume approximately 1 liter. The data was reported as non-detect at approximately 0.5ug/L which is one-half the reporting limit as calculated using the low standard and approximately 10 fold lower than the CRQL.

### **III. Method Blank**

Method blanks were analyzed as required. 1,4-Dioxane was detected in each method blank below the sample reporting limit. 1,4-Dioxane was not detected in the associated samples and not flags were applied.

### **IV. Laboratory Control Sample (LCS)**

No LCSs were extracted or analyzed.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD not required as per Modification Reference Number 1147.1.

### **VI. Surrogate Recovery**

Form II for surrogate recovery was not required for SIM analysis. As per communication with Terry Smith of the EPA the surrogate 1,4-Dioxane was reported as a second analyte on the Form I. A recovered value was reported in place of a per cent recovery. Surrogate spike recovery is unknown.

### **VII. Internal Standard Recovery**

Internal Standard recoveries were within criteria

### **VIII. Field Duplicates**

There were no field duplicates in this SDG.

### **IX. Field Blanks**

This SDG consists of five equipment blanks (EB). 1,4-Dioxane was not detected in the EBs.

### **X. Target Analyte Quantitation**

Raw data was not reviewed.

### **XI. Overall Assessment of Data**

1. The CRQL is 5ug/L. Samples were reported as non-detect below the CRQL and below a reporting limit using the low standard in the ICAL. Recommend raising the non-detect level to the value as calculated using the low standard.

2. No LCS or MS/MSD recoveries were available as accuracy or precision indicators. 1,4-Dioxane-d8 was used as a surrogate but the per cent recovery for each sample is unknown. Recommend requesting this information from the laboratory in order to review any extraction bias.
3. Samples in this SDG are all EBs; 1,4-Dioxane was non-detect.

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** October 08, 2004  
October 14, 2004  
**Report Date:** November 09, 2004  
**Parameters:** GC/MS Semivolatile SIM for 1,4-Dioxane  
**Laboratory:** Compuchem/Division of Liberty Analytical  
**Sample Delivery Group:** Y1G92

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents one equipment blank and four samples analyzed for 1,4-Dioxane by GC/MS Semivolatile SIM. The equipment blank was collected on 10/08/04 and the samples were collected on 10/14/04. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004; the EPA National Functional Guidelines for Organic Data Review (NFG), October 1999; and Modification Reference Number 1147.1 ( provided in the data package) were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time

All technical holding time requirements were met.

### II. Calibration

No tuning criteria specified. Calibration gas scan for PFTBA provided.

The initial and continuing calibration criteria set forth in Modification Reference Number 1147.1 is as follows:

RRF criteria for 1,4-Dioxane and the deuterated 1,4-Dioxane shall be 0.005 or greater and the %RSD and the % Difference criteria shall be no greater than 50%. These criteria were met in this SDG.

The low standard shall be at or below the contract required quantitation limit (CRQL). The CRQL was established at 5ug/L. The low standard was 2ug/mL with a final volume of 0.5ml and an initial volume approximately 1 liter. Non-detected results were reported at approximately 1ug/L.

### **III. Method Blank**

Method blanks were analyzed as required. 1,4-Dioxane was detected in the method blank below the sample reporting limit. 1,4-Dioxane was detected below the reporting limit in sample Y1G92 and at a similar concentration as detected in the method blank and the sample was flagged "U". The equipment blank (EB) and one sample was non-detect and in two samples 1,4-Dioxane was detected > 5x the blank concentration; no flags were applied.

### **IV. Laboratory Control Sample (LCS)**

No LCSs were extracted or analyzed.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD not required as per Modification Reference Number 1147.1.

### **VI. Surrogate Recovery**

Form II for surrogate recovery was not required for SIM analysis. As per communication with Terry Smith of the EPA the surrogate 1,4-Dioxane was reported as a second analyte on the Form I. A recovered value was reported in place of a per cent recovery. Surrogate spike recovery is unknown.

### **VII. Internal Standard Recovery**

Internal standard recoveries were within criteria.

### **VIII. Field Duplicates**

There were no field duplicates in this SDG.

### **IX. Field Blanks**

One EB was included in this SDG. 1,4-Dioxane was not detected in the EB.

### **X. Target Analyte Quantitation**

Raw data was not reviewed.

### **XI. Sample Receipt**

One container for sample Y1G91 was received broken. No further information provided.

**XII. Overall Assessment of Data**

1. The CRQL is 5ug/L. Non-detected results were reported at approximately 1ug/L. 1,4-Dioxane was detected in samples Y1G93 and Y1G94.
2. No LCS or MS/MSD recoveries were available as accuracy or precision indicators. 1,4-Dioxane-d8 was used as a surrogate but the percent recovery for each sample is unknown. Recommend requesting this information from the laboratory in order to review any extraction bias.

**Data Qualification Summary**

Analyte	Field ID	Final Result	Final Flag	Validation Comments
1,4-Dioxane	Y1G92	9	U	Detect<5x method blank detect

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 22, 2004  
September 24, 2004  
September 27, 2004  
September 28, 2004

**Report Date:** March 31, 2005

**Parameters:** Organochlorine Pesticides and PCBs

**Laboratory:** CompuChem

**Sample Delivery Group:** Y1G50

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 and project-approved modifications described in Modification Reference Number 1148.0 for pesticides and PCBs. The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

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- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory with in control temperatures and appropriate chain of custody forms (COC) and custody seals intact.

All samples were analyzed with the required holding time.

### II. Instrument Performance Check

Instrument tuning was performed as required by the method.

### III. Calibration

The initial calibration and continuing calibrations are in control.

#### **IV. Method Blanks**

Method blanks were extracted and analyzed as required and were free of contamination.

#### **V. Field Blanks**

No equipment blanks were included in this SDG, as this is a soil data deliverable.

#### **VI. Laboratory Control Sample (LCS)**

The laboratory failed to analyze a LCS in this SDG. The matrix spike/matrix spike duplicate (MS/MSD) is in control and the calibrations are in control overall.

#### **VII. Surrogates**

A surrogate recovery was above the upper control limit in sample Y1G71. All associated detected results were flagged "J".

#### **VIII. Matrix Spike/Matrix Spike Duplicate**

A MS/MSD was performed on sample Y1G58 and all acceptance criteria were met with one exception.

The recovery of gamma-BHC was below the lower control limit in the MS. The parent sample was non-detect for this analyte and result was flagged "UJ".

#### **IX. Field Duplicates**

Sample Y1G56 is the field duplicate (FD) for Y1G54. All acceptance criteria were met.

Sample Y1G55 is the FD for Y1G53. The relative percent difference of 4,4'-DDD was above the upper control limit. The detected result in the normal and duplicate were flagged "J".

#### **X. Internal Standards**

Not applicable.

#### **XI. Confirmation**

When a target compound detected concentration has a relative percent difference between the primary and secondary column of greater than 25 percent, results are qualified as estimated concentrations and flagged "J". Analytes in several samples exceeded this criterion and results qualified for this condition are presented in the table below.

#### **XII. Target Compound Identification and Quantitation**

Raw data were not reviewed as part of this scope.

Several samples required dilution due to high analyte concentration.

Due to the level of analyte concentration, several samples were confirmed by GC/MS. 4,4'-DDD and 4,4'-DDE were confirmed in samples Y1G60 and Y1G61. 4,4'-DDD was confirmed in samples Y1G62, Y1G63, Y1G68, and Y1G69.

#### **XIII. Overall Assessment of Data**

- No data was qualified due to blank contamination.
- The overall indication is that the accuracy and precision goals were met. High surrogate recovery problems were noted in one sample.
- There were very significant percent differences between the primary and confirmation results in some of the samples. These discrepancies could indicate the presence of interferences or even the possibility of false positives.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units.
- Comparability and completeness goals for the project appear to have been met.

## Data Qualification Summary Y1G50

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G50	4,4'-DDD	1	J	CF>UCL
Y1G50	4,4'-DDT	1.6	J	CF>UCL
Y1G51	DIELDRIN	120	J	CF>UCL
Y1G51	ALPHA-CHLORDANE	49	J	CF>UCL
Y1G53	ENDRIN ALDEHYDE	0.84	J	CF>UCL
Y1G53	ALDRIN	0.93	J	CF>UCL
Y1G53	4,4'-DDD	6.3	J	FD>RPD, RPD 69% vs 50%
Y1G55	4,4'-DDD	13	J	FD>RPD, RPD 69% vs 50%
Y1G55	ALDRIN	1.3	J	CF>UCL
Y1G55	DIELDRIN	1.2	J	CF>UCL
Y1G55	ENDRIN ALDEHYDE	1.1	J	CF>UCL
Y1G58	ALDRIN	3.6	J	CF>UCL
Y1G58	GAMMA-BHC (LINDANE)	2.2	UJ	MS<LCL, %R 40% LCL=46 UCL=127
Y1G58	DIELDRIN	1	J	CF>UCL
Y1G58	4,4'-DDT	1.5	J	CF>UCL
Y1G58	4,4'-DDE	10	J	CF>UCL
Y1G60	ALDRIN	8.9	J	CF>UCL
Y1G60	GAMMA-CHLORDANE	43	J	CF>UCL
Y1G60	ALPHA-CHLORDANE	30	J	CF>UCL
Y1G61	GAMMA-CHLORDANE	21	J	CF>UCL
Y1G61	ALDRIN	8.9	J	CF>UCL
Y1G61	ALPHA-CHLORDANE	23	J	CF>UCL
Y1G62	ALPHA-BHC	4.7	J	CF>UCL
Y1G62	GAMMA-CHLORDANE	23	J	CF>UCL
Y1G62	ALPHA-CHLORDANE	10	J	CF>UCL
Y1G63	ALPHA-CHLORDANE	15	J	CF>UCL
Y1G63	ALPHA-BHC	5.5	J	CF>UCL
Y1G63DL	4,4'-DDE	2400	J	CF>UCL
Y1G65	AROCLOR-1260	20	J	CF>UCL
Y1G65	GAMMA-CHLORDANE	1	J	CF>UCL
Y1G66	GAMMA-CHLORDANE	2.3	J	CF>UCL
Y1G66	ENDRIN	0.8	J	CF>UCL
Y1G66	ALPHA-CHLORDANE	2.1	J	CF>UCL
Y1G66	4,4'-DDT	16	J	CF>UCL
Y1G66	AROCLOR-1260	33	J	CF>UCL
Y1G66	DIELDRIN	4.9	J	CF>UCL
Y1G68	ALPHA-CHLORDANE	5.2	J	CF>UCL
Y1G68	ENDRIN	4.6	J	CF>UCL
Y1G68	ALPHA-BHC	2.4	J	CF>UCL
Y1G68	4,4'-DDT	150	J	CF>UCL
Y1G68	GAMMA-CHLORDANE	10	J	CF>UCL
Y1G69	DIELDRIN	1900	J	CF>UCL
Y1G69	ALPHA-CHLORDANE	45	J	CF>UCL
Y1G70	4,4'-DDE	4.3	J	CF>UCL
Y1G71	4,4'-DDE	21	J	Sur>UCL, DCB 200% LCL=30 UCL=150

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Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G71	4,4'-DDD	32	J	Sur>UCL, DCB 200% LCL=30 UCL=150
Y1G71	DIELDRIN	6.2	J	Sur>UCL, DCB 200% LCL=30 UCL=150
Y1G71	GAMMA-CHLORDANE	1.6	J	CF>UCL/Sur>UCL, DCB 200% LCL=30 UCL=150

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** October 08, 2004  
October 14, 2004

**Report Date:** November 09, 2004

**Parameters:** GC/MS Semivolatile SIM for Bis (2-chloroethyl) ether

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** Y1G91

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents one equipment blank (EB) and four samples analyzed for Bis (2-chloroethyl) ether by GC/MS Semivolatile SIM. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004; the EPA National Functional Guidelines for Organic Data Review (NFG), October 1999; and Modification Reference Number 1147.1 ( provided in the data package) were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

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- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time

All technical holding time requirements were met.

### II. Calibration

No tuning criteria specified. Calibration gas scan for PFTBA provided.

The initial and continuing calibration criteria were met.

The low standard shall be at or below the CRQL. The CRQL is 0.01ug/L. The low standard is 0.04ug/ml with a final volume of 0.5ml and an initial volume of approximately 1 liter. The data was reported as non-detect at the CRQL but the low standard calculates to a reporting limit of 0.02ug/L.

### **III. Method Blank**

Method blank criteria were met.

### **IV. Laboratory Control Sample (LCS)**

No LCS was extracted analyzed.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSDs were not required as per Modification Reference Number 1147.1.

### **VI. Surrogate Recovery**

Form II for surrogate recovery was not required for SIM analysis. Surrogate data for these samples is presented in the full scan analyses in SDG Y1G35.

### **VII. Internal Standard Recovery**

1,4-Dichlorobenzene-d4 internal standard recovery was biased high in SBLKTZ, and Y1G91 due to the co-elution with the surrogate 1,2-Dichlorobenzene-d4 used in the full scan of these samples. All samples were non-detect, therefore, no flags were applied.

### **VIII. Field Duplicates**

There were no field duplicates in this SDG.

### **IX. Field Blanks**

This SDG contains one EB. Bis (2-chloroethyl)ether was not detected in the EB.

### **X. Target Analyte Quantitation**

Raw data was not reviewed.

### **XI. Overall Assessment of Data**

1. The CRQL of 0.01ug/L does not appear to have been met and needs further clarification. See calibration section.
2. No LCS or MS/MSD recoveries were available as accuracy or precision indicators.
3. Surrogate recoveries were presented in the full scan. Unknown if surrogate recoveries met criteria. Surrogate recoveries for SIM analysis not discussed in Modification Reference Number 1147.1.

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 13, 2004  
September 14, 2004  
September 15, 2004

**Report Date:** March 29, 2004

**Parameters:** Total Metals

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** MY1G09

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents samples analyzed by EPA Method ILMO5.3. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004 and the EPA National Functional Guidelines for Inorganic Data Review (NFG), July 2002 were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate COC and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All technical holding time requirements were met.

### II. Calibration

All calibration verification standards met acceptance criteria.

Several target analytes were detected in the initial calibration blank (ICB) and the continuing calibration blank (CCB). These blank detects have no impact on the sample results and no flags were applied.

### **III. Method Blank**

A method blank was analyzed as required. Several analytes were detected in the MB. The blank detects were less than 10 times the sample results and thus have no impact on the data. No flags were applied.

### **IV. Laboratory Control Sample (LCS)**

The LCS recovery was below criteria for potassium. All associated samples were detected for this analyte and "J" flags were applied.

The LCS data is provided in the hardcopy but not in the edata.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

A MS was analyzed on sample MY1G24.

Antimony was recovered below criteria in the MS and zinc was recovered above criteria. Both analytes were detected in the parent sample and results were flagged "J".

### **VI. Laboratory Duplicates**

A laboratory duplicate was analyzed on sample MY1G24. All relative percent difference (RPD) criteria were met with the exception of two analytes.

The RPDs of calcium and chromium were above criteria in the laboratory duplicate. The parent sample was detected for both analytes and "J" flags were applied.

### **VII. Field Duplicates**

There were no field duplicates in this SDG.

### **VIII. Field Blanks**

None associated with the samples in this SDG.

### **IX. Serial Dilutions**

The RPD of potassium was above criteria in the serial dilution of sample MY1G24. The detected sample result was flagged "J".

### **X. Target Analyte Quantitation**

Raw data was not reviewed.

### **XI. Overall Assessment of Data**

- All of the results are useable for project objectives and therefore, the completeness objectives were met for all method/analyte combinations.
- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable. One LCS recovery exceedance, two laboratory duplicate exceedances, and two matrix spike recovery exceedances were observed.

- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units.
- Target analytes were detected in the associated MB, ICB, and CCBs. These low-level field blank detects do not impact the sample data.

### Data Qualification Summary

Field ID	Analyte	Final Result	Final Flag	Validation Comments
MY1G11	POTASSIUM	1080	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G12	POTASSIUM	1160	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G13	POTASSIUM	1570	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G14	POTASSIUM	974	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G15	POTASSIUM	1050	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G16	POTASSIUM	869	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G17	POTASSIUM	717	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G18	POTASSIUM	1080	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G19	POTASSIUM	973	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G20	POTASSIUM	1390	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G21	POTASSIUM	1060	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G22	POTASSIUM	1750	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G23	POTASSIUM	1050	J	LCS<LCL, %R 47% LCL=75 UCL=125
MY1G24	ANTIMONY	1.1	J	MS<LCL, %R 60% LCL=75 UCL=125
MY1G24	CALCIUM	12800	J	LabDupeRPD>UCL, RPD 65% vs 30%
MY1G24	CHROMIUM	128	J	LabDupeRPD>UCL, RPD 63% vs 30%
MY1G24	POTASSIUM	668	J	LCS<LCL, %R 47% LCL=75 UCL=125/SerDil RPD>UCL, RPD 12% vs 10%
MY1G24	ZINC	179	J	MS>UCL, %R 137% LCL=75 UCL=125
MY1G25	POTASSIUM	950	J	LCS<LCL, %R 47% LCL=75 UCL=125

## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** September 15, 16, 17, 20, 2004  
**Report Date:** March 30, 2005  
**Parameters:** Total Metals  
**Laboratory:** CompuChem/Division of Liberty Analytical Corp.  
**Sample Delivery Group:** MY1G26

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents samples analyzed by EPA Method ILMO5.3. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004 and the EPA National Functional Guidelines for Inorganic Data Review (NFG), July 2002 were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U      The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J      The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ     The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R      The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate COC and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All technical holding time requirements were met.

### II. Calibration

All initial and continuing calibration verification requirements were met.

### **III. Blanks**

No target analytes were detected at or above the contract required detection limits in the preparation or calibration blanks. There were several analytes that were detected above the instrument detection limits in the preparation and/or calibration blanks. Some of the sample results that were less than 5 times the highest associated blank concentration have been qualified as not detected. Other sample results were associated with negative blank results, and have been flagged as estimated.

### **IV. ICP Interference Check Sample**

All requirements were met.

### **V. Laboratory Control Sample (LCS)**

All acceptance criteria were met.

### **VI. Duplicate Sample Analysis**

The absolute difference between the duplicate results of lead in sample MY1G48 was greater than twice the contract required detection limit. Since there is not sufficient information to evaluate matrix similarity among the samples in this SDG, only the result for Lead in sample MY1G48 has been flagged as estimated. (Note: The laboratory flagged the results for calcium and zinc, in addition to that of Lead, based on the method requirements. Review of the calcium and zinc duplicate results, however, indicated that they did meet the technical review requirements, and consequently, they have not been qualified.)

### **VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD analysis was performed on sample MY1G48.

The spike recoveries of antimony and lead were below the lower acceptance limit at 50% and 12%, respectively. The post-digestion spike recoveries were acceptable. The native sample results for these analytes are potentially biased low. Since there is not sufficient information to evaluate matrix similarity among the samples in this SDG, only the results for antimony and lead in sample MY1G48 have been flagged as estimated.

### **VIII. ICP Serial Dilution**

The percent differences between the undiluted sample and serial dilution results of aluminum, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, vanadium, and zinc in sample MY1G48 were above the acceptance limit. The results for these analytes are potentially imprecise. Since there is not sufficient information to evaluate matrix similarity among the samples in this SDG, only the results for these analytes in sample MY1G48 have been flagged as estimated. (Note: the laboratory failed to flag the Zinc result for the serial dilution deviation.)

### **IX. Field Blanks**

The equipment blanks associated with the samples in this SDG were submitted in another SDG. Several target analytes were detected in each of the equipment blanks. The blank concentration of each of the analytes was insignificant relative to the concentrations found in the associated samples, and no results have been qualified.

#### **X. Field Duplicates**

There were no field duplicates in this SDG.

#### **XI. Analyte Quantitation**

Raw data review and quantitation were not within the scope of this data review.

#### **XII. Overall Assessment of Data**

- The matrix spike recoveries of antimony and lead indicate low bias in the results of these analytes in sample MY1G48 and in all other samples of similar matrix.
- The serial dilution results of aluminum, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, vanadium, and zinc indicate lack of precision in the results of these analytes in sample MY1G48 and in all other samples of similar matrix.
- The duplicate results of lead also indicate imprecise results for this analyte in sample MY1G48 and in all other samples of similar matrix.
- Laboratory accuracy met the measurement performance criteria.
- Detection of antimony and silver in calibration blanks suggests that some of the reported sample results were false negatives. Negative results of selenium and thallium in the preparation or calibration blanks indicate potential low bias in some of the sample results.
- Comparability and completeness goals for the project appear to have been met.

## Data Qualification Summary

Field ID	Analyte	Final Result	Final Flag	Validation Comments
MY1G26	ANTIMONY	0.66	U	CCB<RL
MY1G26	SILVER	0.23	U	CCB<RL
MY1G26	THALLIUM	1.1	J	NegativeLB>IDL
MY1G27	ANTIMONY	1.6	U	CCB<RL
MY1G27	SELENIUM	1	J	NegativeCCB>IDL
MY1G27	THALLIUM	0.45	J	NegativeLB>IDL
MY1G28	ANTIMONY	1.9	U	CCB<RL
MY1G28	SELENIUM	1.2	J	NegativeCCB>IDL
MY1G28	THALLIUM	0.96	J	NegativeLB>IDL
MY1G29	ANTIMONY	1.2	U	CCB<RL
MY1G29	THALLIUM	1.5	J	NegativeLB>IDL
MY1G30	THALLIUM	1.7	J	NegativeLB>IDL
MY1G31	ANTIMONY	1.1	U	CCB<RL
MY1G31	THALLIUM	1.8	J	NegativeLB>IDL
MY1G32	ANTIMONY	1.1	U	CCB<RL
MY1G32	SELENIUM	0.98	J	NegativeCCB>IDL
MY1G32	THALLIUM	0.95	J	NegativeLB>IDL
MY1G33	THALLIUM	1.8	J	NegativeLB>IDL
MY1G34	ANTIMONY	0.79	U	CCB<RL
MY1G34	SELENIUM	0.9	J	NegativeCCB>IDL
MY1G34	THALLIUM	3.1	U	NegativeLB>IDL
MY1G37	THALLIUM	1.1	J	NegativeLB>IDL
MY1G38	ANTIMONY	0.77	U	CCB<RL
MY1G38	THALLIUM	1	J	NegativeLB>IDL
MY1G39	THALLIUM	1.4	J	NegativeLB>IDL
MY1G40	ANTIMONY	0.66	U	CCB<RL
MY1G40	SELENIUM	0.94	J	NegativeCCB>IDL
MY1G40	THALLIUM	0.41	J	NegativeLB>IDL
MY1G41	THALLIUM	3.2	J	NegativeLB>IDL
MY1G44	THALLIUM	0.58	J	NegativeLB>IDL
MY1G45	ANTIMONY	0.68	U	CCB<RL
MY1G45	THALLIUM	2.2	J	NegativeLB>IDL
MY1G46	THALLIUM	1.9	J	NegativeLB>IDL
MY1G47	ANTIMONY	0.92	U	CCB<LCL
MY1G47	SELENIUM	0.79	J	NegativeCCB>IDL
MY1G47	THALLIUM	0.54	J	NegativeLB>IDL
MY1G48	ALUMINUM	6360	J	SerDiIRPD>UCL
MY1G48	ANTIMONY	0.98	U	MS%R<RL
MY1G48	BARIUM	102	J	SerDiIRPD>UCL
MY1G48	CALCIUM	4570	J	SerDiIRPD>UCL
MY1G48	CHROMIUM	28.6	J	SerDiIRPD>UCL
MY1G48	COBALT	4.4	J	SerDiIRPD>UCL
MY1G48	COPPER	9.9	J	SerDiIRPD>UCL
MY1G48	IRON	9670	J	SerDiIRPD>UCL
MY1G48	LEAD	13.2	J	MS%R<LCL/LabDupeRPD>UCL/SerDiIRPD>UCL

Field ID	Analyte	Final Result	Final Flag	Validation Comments
MY1G48	MAGNESIUM	1510	J	SerDiIRPD>UCL
MY1G48	MANGANESE	186	J	SerDiIRPD>UCL
MY1G48	NICKEL	18.8	J	SerDiIRPD>UCL
MY1G48	SILVER	0.13	U	CCB<RL
MY1G48	VANADIUM	22.4	J	SerDiIRPD>UCL
MY1G48	ZINC	27.6	J	SerDiIRPD>UCL

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 15, 2004  
September 16, 2004  
September 17, 2004  
September 20, 2004  
September 22, 2004

**Report Date:** March 28, 2004

**Parameters:** Total Metals

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** MY1G35

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents five equipment blanks by EPA Method ILMO5.3. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004 and the EPA National Functional Guidelines for Inorganic Data Review (NFG), July 2002 were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative, and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All technical holding time requirements were met.

### II. Calibration

All calibration verification standards met acceptance criteria.

Several target analytes were detected in the initial calibration blank (ICB) and the continuing calibration blank (CCB). These blank detects are similar concentrations as the EB detects.

The Al, Ba, Be, Cu, Fe, and Mg detects in the EB MY1G35 are likely due to laboratory contamination. The Al, Ba, Be, Ca, Cu, and Fe detects in the EB MY1G36 are likely due to laboratory contamination. The Be, Ca, Cu, and Mg detects in the EB MY1G42 are likely due to laboratory contamination. The Ba, Be, Cu, Fe, and Mg detects in the EB MY1G49 are likely due to laboratory contamination. The Be, Ca, Cu, and Mg detects in the EB MY1G52 are likely due to laboratory contamination.

### **III. Method Blank**

A method blank was analyzed as required. Ba, Be, and Cu were detected in the MB below the reporting limit. These analytes were detected less than five times the blank concentration in the EBs. The detects are likely due to laboratory contamination.

### **IV. Laboratory Control Sample (LCS)**

All acceptance criteria were met.

The LCS data is provided in the hardcopy but not in the edata.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

The sample that was spiked was not specific to this delivery group.

### **VI. Field Duplicates**

There were no field duplicates in this SDG.

### **VII. Field Blanks**

This SDG consists of five EBs only. Several target analytes were detected in the EBs. These detects are likely due to laboratory contamination as described in Section II above.

### **VIII. Target Analyte Quantitation**

Raw data was not reviewed.

### **IX. Overall Assessment of Data**

- All of the results are useable for project objectives and therefore, the completeness objectives were met for all method/analyte combinations.
- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry standardized units.
- Target analytes were detected in the EBs. These field blank detects are likely due to laboratory contamination because there are similar detects in the MB, ICB and CCBs.

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 24, 2004  
September 27, 2004  
September 28, 2004  
September 29, 2004  
September 30, 2004

**Report Date:** March 28, 2004

**Parameters:** Total Metals

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** MY1G57

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents five equipment blanks by EPA Method ILMO5.3. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004 and the EPA National Functional Guidelines for Inorganic Data Review (NFG), July 2002 were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative, and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All technical holding time requirements were met.

### II. Calibration

All calibration verification standards met acceptance criteria.

Several target analytes were detected in the initial calibration blank (ICB) and the continuing calibration blank (CCB). These blank detects are similar concentration to the EB detects.

The Ba, Ca, Cu, Fe, and Mg detects in the EB MY1G57 are likely due to laboratory contamination. The Ba, Cu, Fe, Mg, and Se detects in the EB MY1G64 are likely due to laboratory contamination. The Ba, Cu, Fe, Mg, and K detects in the EB MY1G67 are likely due to laboratory contamination. The Ba, Ca, Cu, Fe, and Se detects in the EB MY1G81 are likely due to laboratory contamination. The Ba and Cu detects in the EB MY1G86 are likely due to laboratory contamination.

### **III. Method Blank**

A method blank was analyzed as required. Ba and Cu were detected in the MB below the reporting limit. These analytes were detected less than five times the blank concentration in the EBs. The detects are likely due to laboratory contamination.

The target analytes were not detected at or above the quantitation limit in the method blank.

### **IV. Laboratory Control Sample (LCS)**

All acceptance criteria were met.

The LCS data is provided in the hardcopy but not in the edata.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

The sample that was spiked was not specific to this delivery group.

### **VI. Field Duplicates**

There were no field duplicates in this SDG.

### **VII. Field Blanks**

This SDG consists of five EBs. Target analytes were detected in the Ebs. These detects are likely due to laboratory contamination as described in Section II above.

### **VIII. Target Analyte Quantitation**

Raw data was not reviewed.

### **IX. Overall Assessment of Data**

- All of the results are useable for project objectives and therefore, the completeness objectives were met for all method/analyte combinations.
- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry standardized units.
- Target analytes were detected in the EBs. These field blank detects are likely due to laboratory contamination because there are similar detects in the ICB, MB, and CCBs.



## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** September 29, 2004  
September 30, 2004  
**Report Date:** March 29, 2004  
**Parameters:** Total Metals  
**Laboratory:** Compuchem/Division of Liberty Analytical  
**Sample Delivery Group:** MY1G72

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents samples analyzed by EPA Method ILMO5.3. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004 and the EPA National Functional Guidelines for Inorganic Data Review (NFG), July 2002 were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative, and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All technical holding time requirements were met.

### II. Calibration

All calibration verification standards met acceptance criteria.

Several target analytes were detected in the initial calibration blank (ICB) and the continuing calibration blank (CCB). These blank detects have no impact on the sample results and no flags were applied.

### **III. Method Blank**

A method blank was analyzed as required. Several analytes were detected in the MB. These blank detects were less than 10 times the samples results and thus have no impact on the data. No flags were applied.

### **IV. Laboratory Control Sample (LCS)**

The LCS recovery was below criteria for potassium. All associated samples were detected for this analyte and "J" flags were applied.

The LCS data is provided in the hardcopy but not in the edata.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

A MS was analyzed on sample MY1G80.

Antimony and manganese were recovered below criteria in the MS. Both analytes were detected in the parent sample and results were flagged "J".

### **VI. Laboratory Duplicates**

A laboratory duplicate was analyzed on sample MY1G80. All relative percent difference (RPD) criteria were met with the exception of two analytes.

The RPDs of iron and manganese were above criteria in the laboratory duplicate. The parent sample was detected for both analytes and "J" flags were applied.

### **VII. Field Duplicates**

There were no field duplicates in this SDG.

### **VIII. Field Blanks**

Samples MY1G84 and MY1G85 are associated with the EB MY1G86 in SDG MY1G57. The associated EB was detected for barium and calcium. The sample results were much greater than 10 times the blank concentrations and no flags were applied.

Samples MY1G72, MY1G73, MY1G74, MY1G75, MY1G76, MY1G77, MY1G78, MY1G79, MY1G80, MY1G82, and MY1G83 are associated with the EB MY1G81 in SDG MY1G57. The associated EB was detected for barium, calcium, copper, iron, and selenium. The sample results were much greater than 10 times the blank concentrations and no flags were applied.

### **IX. Target Analyte Quantitation**

Raw data was not reviewed.

### **X. Overall Assessment of Data**

- All of the results are useable for project objectives and therefore, the completeness objectives were met for all method/analyte combinations.
- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable. One LCS recovery exceedance, two laboratory duplicate exceedances, and two matrix spike recovery exceedances were observed.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry standardized units.
- Target analytes were detected in the associated MB, ICB, CCB, and EBs. These low level field blank detects do not impact the sample data.

### Data Qualification Summary

Field ID	Analyte	Final Result	Final Flag	Validation Comments
MY1G72	POTASSIUM	1030	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G73	POTASSIUM	886	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G74	POTASSIUM	917	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G75	POTASSIUM	994	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G76	POTASSIUM	1030	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G77	POTASSIUM	819	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G78	POTASSIUM	1010	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G79	POTASSIUM	956	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G80	ANTIMONY	0.57	J	MS %recovery 53% LCL = 75 UCL = 125
MY1G80	IRON	15600	J	LabDupRPD>UCL, RPD 43% vs. 30%
MY1G80	MANGANESE	291	J	MS %recovery 45% LCL = 75 UCL = 125 Lab duplicate RPD 33% vs. 30%
MY1G80	POTASSIUM	1080	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G82	POTASSIUM	1770	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G83	POTASSIUM	1860	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G84	POTASSIUM	536	J	LCS %recovery 40% LCL = 75 UCL = 125
MY1G85	POTASSIUM	541	J	LCS %recovery 40% LCL = 75 UCL = 125

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** October 8, 2004  
October 14, 2004  
**Report Date:** March 29, 2004  
**Parameters:** Total Metals  
**Laboratory:** Compuchem/Division of Liberty Analytical  
**Sample Delivery Group:** MY1G87

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents samples analyzed by EPA Method ILM05.3. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004 and the EPA National Functional Guidelines for Inorganic Data Review (NFG), July 2002 were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate COCs and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All technical holding time requirements were met.

### II. Calibration

All calibration verification standards met acceptance criteria.

Several target analytes were detected in the initial calibration blank (ICB) and the continuing calibration blank (CCB). These blank detects have no impact on the sample results and no flags were applied.

### **III. Method Blank**

A method blank was analyzed as required. Calcium was detected in the MB. The blank detect was less than 10 times the samples results and thus has no impact on the data. No flags were applied.

### **IV. Laboratory Control Sample (LCS)**

The LCS recovery was below criteria for potassium. All associated samples were detected for this analyte and "J" flags were applied.

The LCS data is provided in the hardcopy but not in the edata.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

A MS was analyzed on sample MY1G87.

Antimony and manganese were recovered below criteria in the MS. Both analytes were detected in the parent sample and results were flagged "J".

### **VI. Laboratory Duplicates**

A laboratory duplicate was analyzed on sample MY1G87. All relative percent difference (RPD) criteria were met with the exception of three analytes.

The RPDs of calcium, lead, and manganese were above criteria in the laboratory duplicate. The parent sample was detected for both analytes and "J" flags were applied.

### **VII. Field Duplicates**

There were no field duplicates in this SDG.

### **VIII. Field Blanks**

Sample MY1G87 is associated with the EB MY1G88 in SDG MY1G88. Six analytes were detected in the EB. The concentration of the blank detects were less than 10 times the sample concentrations and no data was qualified.

### **IX. Serial Dilutions**

The RPD of zinc was above criteria in the serial dilution of sample MY1G87. The detected sample result was flagged "J".

### **X. Target Analyte Quantitation**

Raw data was not reviewed.

### **XI. Overall Assessment of Data**

- All of the results are useable for project objectives and therefore, the completeness objectives were met for all method/analyte combinations.

- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable. One LCS recovery exceedance, three laboratory duplicate exceedances, and two matrix spike recovery exceedances were observed.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units.
- Target analytes were detected in the associated MB, ICB, EB, and CCBs. These low-level blank detects do not impact the sample data.

**Data Qualification Summary**

<b>Field ID</b>	<b>Analyte</b>	<b>Final Result</b>	<b>Final Flag</b>	<b>Validation Comments</b>
MY1G87	ANTIMONY	7.3	UJ	MS<LCL, %R60% LCL=75 UCL=125
MY1G87	CALCIUM	4650	J	Lab Dupe RPD>UCL, RPD 31% vs 30%
MY1G87	LEAD	13.2	J	Lab Dupe RPD>UCL, RPD 35% vs 30%
MY1G87	MANGANESE	309	J	Lab Dupe RPD>UCL, RPD 38% vs 30%/MS<LCL, %R26% LCL=75 UCL=125
MY1G87	POTASSIUM	1160	J	LCS<LCL, %R44% LCL=75 UCL=125
MY1G87	ZINC	23.1	J	SerDil RPD>UCL, RPD 12% vs 10%
MY1G89	POTASSIUM	782	J	LCS<LCL, %R44% LCL=75 UCL=125
MY1G90	POTASSIUM	1000	J	LCS<LCL, %R44% LCL=75 UCL=125

## Data Validation Report

Project/Site Name: AMCO  
Collection Date: October 8, 2004  
October 14, 2004  
Report Date: March 29, 2004  
Parameters: Total Metals  
Laboratory: Compuchem/Division of Liberty Analytical  
Sample Delivery Group: MY1G88

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents samples analyzed by EPA Method ILMO5.3. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004 and the EPA National Functional Guidelines for Inorganic Data Review (NFG), July 2002 were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U      The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J      The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent





## IX. Overall Assessment of Data

All of the results are useable for project objectives and therefore, the completeness objectives were met for all method/analyte combinations.

The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.

Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units.

Target analytes were detected in the EB. These field blank detects are likely due to laboratory contamination because there are similar detects in the MB, ICB and CCBs.

Several analytes were qualified due to laboratory blank contamination.

### Data Qualification Summary

Field ID	Analyte	Final Result	Final Flag	Validation Comments
MY1G91	ANTIMONY	3.9	U	CCB<RL, blank target 3.37 ug/L
MY1G91	BERYLLIUM	0.13	U	CCB<RL, blank target 0.472 ug/L
MY1G91	SELENIUM	1.9	U	CCB<RL, blank target 1.95 ug/L
MY1G91	SILVER	0.93	U	CCB<RL, blank target 0.574 ug/L
MY1G92	ANTIMONY	4	U	CCB<RL, blank target 3.37 ug/L
MY1G92	MAGNESIUM	40.7	U	CCB<RL, blank target 38 ug/L
MY1G93	ANTIMONY	3.2	U	CCB<RL, blank target 3.37 ug/L
MY1G93	BERYLLIUM	0.13	U	CCB<RL, blank target 0.472 ug/L
MY1G93	VANADIUM	2.1	U	CCB<RL, blank target 0.593 ug/L
MY1G94	BERYLLIUM	0.15	U	CCB<RL, blank target 0.472 ug/L
MY1G94	SELENIUM	1.9	U	CCB<RL, blank target 1.95 ug/L
MY1G94	SILVER	1.8	U	CCB<RL, blank target 0.574 ug/L

## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** September 16, 17, 2004  
**Report Date:** December 06, 2004  
**Parameters:** PCDD/PCDF  
**Laboratory:** Pace Analytical Services, Inc.  
**Sample Delivery Group:** R93

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. The case narrative indicates that the samples in this SDG were analyzed by a modified version of USEPA Method 1613B/Contract Laboratory Program (CLP) Statement of Work DLM01.4 for polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF). The data review was performed using the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review, August 2002.

Tier II review was performed by CH2M HILL chemists as required by the SAP. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance. Contract compliance is addressed in the Checklist for Task Order Compliance for Dioxin Data Packages Delivered under DLM01.4 which was completed concurrently with this data review.

The scope of the data review was limited to the chain-of-custody records, the case narrative, and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may be imprecise.
- R The sample result is unusable. The analyte may or may not be present in the sample.

## **I. Holding Times, Storage, and Preservation**

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All holding time requirements were met.

## **II. Performance Evaluation Samples**

Not applicable – there were no performance evaluation samples associated with this SDG.

## **III. Mass Calibration and Mass Spectrometer Resolution**

Verification of the mass calibration and mass spectrometer resolution was not within the scope of the Tier II review.

## **IV. Window Defining Mix (WDM)**

All requirements within the scope of the Tier II review were determined to have been met.

## **V. Chromatographic Resolution**

The GC resolution criteria were met.

## **VI. Instrument Stability**

The relative retention times (RRT) of the 2,3,7,8-TCDD internal standard in the mid-point standard injected at the beginning and end of the analytical sequence on 10/14/04 exceeded the upper acceptance limit. The RRTs of the 1,2,3,4,6,7,8-HpCDD internal standard in both injections of the same standard were below the lower acceptance limit. The absolute retention times of these internal standards were fairly consistent between the two injections. Since adequate stability was indicated by the two injections, no data have been qualified.

The ion abundance and response criteria were met.

Verification of the instrument sensitivity was not within the scope of the Tier II review.

## **VII. HRGC/HRMS Initial Calibration**

Initial calibration was performed at the required frequency.

There is no information in the data package regarding the standard concentrations used for initial calibration.

The ion abundance and linearity criteria were met.

Verification of the instrument sensitivity, GC resolution, and retention times was not within the scope of the Tier II review.

## **VIII. HRGC/HRMS Calibration Verification**

The absolute retention time of the first eluting internal standard met the criteria. Comparison of the absolute retention times of the rest of the internal standards with those obtained during initial calibration was not within the scope of the Tier II review.

The relative retention times (RRT) of the 2,3,7,8-TCDD internal standard in the mid-point standard injected at the beginning and end of the analytical sequence on 10/14/04 exceeded the upper acceptance limit. The RRTs of the 1,2,3,4,6,7,8-HpCDD internal standard in both injections of the same standard were below the lower acceptance limit. The absolute retention times of these internal standards were fairly consistent between the two injections. Since adequate stability was indicated by the two injections, no data have been qualified.

The ion abundances and analyte responses met the criteria.

Verification of the instrument sensitivity was not within the scope of the Tier II review.

#### **IX. Identification Criteria**

The laboratory indicates in the case narrative that ions  $m/z$  354 and  $m/z$  356 were used in the quantitation of 1,2,3,7,8-PeCDD instead of the method-specified  $m/z$  356 and  $m/z$  358 ions in order to better exclude contributions from potential interferences. 1,2,3,7,8-PeCDD was reported as positive in samples R94 and R95. The ion ratios were within 15% of the those in associated calibration verification standards. All other ion abundance ratios met the acceptance criteria.

Evaluation of the relative retention times, peak identifications, signal-to-noise ratios, and polychlorinated diphenyl ether interferences was not within the scope of the Tier II review.

#### **X. Method Blank Analysis**

2,3,7,8-TCDF was detected below the contract required quantitation limit (CRQL) in the method blank during its analysis on the DB-225 column. It was detected above the CRQL in samples R94 and R95. The results have been flagged "J".

Non-target TCDDs and PeCDDs were also detected in the method blank. The total results for these homologues in the samples have been flagged "J".

#### **XI. Laboratory Control Sample Analysis**

The laboratory control sample met all the criteria.

#### **XII. Toxicity Equivalency Factor (TEF) and Isomer Specificity**

The TEF calculations were properly performed.

#### **XIII. Dilution by Addition of Solvent**

No verification could be performed since raw data were outside the scope of the Tier II review.

#### **XIV. Dilution by Rextraction and Reanalysis**

No verification could be performed since raw data were outside the scope of the Tier II review.

#### **XV. Second Column Confirmation**

Second column confirmation for 2,3,7,8-TCDF in samples R94 and R95 was performed as required. All the criteria were met.

**XVI. Estimated Detection Limit (EDL) and Estimated Maximum Possible Concentration (EMPC)**

EDLs and EMPCs were properly reported.

Verification of EDL and EMPC calculations was not within the scope of the Tier II review.

**XVII. Labeled Compound Recoveries**

All labeled compound recoveries and ion abundance ratios met the criteria.

Verification of signal-to-noise ratios was not within the scope of the Tier II review.

**XVIII. Field Blanks**

There were no field blanks in this SDG.

**XIX. Field Duplicates**

There were no field duplicates in this SDG.

**XX. Overall Assessment of Data**

The data review did not identify any serious problems. The only qualification that was required was for low-level detections of 2,3,7,8-TCDF and non-target TCDDs and PeCDDs in the method blank. The impact of these detections on the data usability should be minimal.

**Data Qualification Summary**

<b>Field ID</b>	<b>Analyte</b>	<b>Final Result</b>	<b>Final Flag</b>	<b>Validation Comments</b>
R93	Total TCDD	18.9	J	LB detect
R93	Total PeCDD	4.27	J	LB detect
R94	2,3,7,8-TCDF	6.68	J	LB<CRQL
R94	Total TCDD	29.6	J	LB detect
R94	Total PeCDD	18.7	J	LB detect
R95	2,3,7,8-TCDF	8.22	J	LB<CRQL
R95	Total TCDD	52.4	J	LB detect
R95	Total PeCDD	63.2	J	LB detect

## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** September 15, 16, 17, 20, 2004  
**Report Date:** October 18, 2004  
**Parameters:** Pesticide/Aroclor  
**Laboratory:** CompuChem/Division of Liberty Analytical Corp.  
**Sample Delivery Group:** Y1G26

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 for pesticides and Aroclors. The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified, and the numerical value represents its approximate concentration".
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

## **I. Technical Holding Time and Sample Custody**

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All holding time requirements were met.

## **II. GC/ECD Instrument Performance Check**

The resolution check and performance evaluation mixtures were analyzed at the required frequency and the results met all the requirements.

## **III. Initial Calibration**

All initial calibration requirements were met.

## **IV. Continuing Calibration**

All continuing calibration requirements were met.

## **V. Blanks**

Method, instrument, and sulfur cleanup blanks were analyzed at the required frequency.

Gamma-BHC was detected below the contract required quantitation limit (CRQL) in method blank PBLKOQ. The associated sample results less than 5 times the method blank results have been flagged "U".

Dieldrin was detected in the instrument blank PIBLKWI associated with some of the samples. The blank concentration was negligible compared to the associated sample concentrations.

There were no other relevant blank detections.

## **VI. Surrogate Spikes**

The surrogate, Decachlorobiphenyl, was recovered above the upper acceptance limit from samples Y1G43 and Y1G44. The positive sample results have been qualified as estimated.

All the other surrogate recoveries that were reported were acceptable, except in cases where the surrogates were diluted out.

## **VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Duplicate spike analyses of sample Y1G48 were performed. All the spike results were acceptable.

## **VIII. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

## **IX. Pesticide Cleanup Checks**

All requirements for the Florisil and GPC checks were met.

## **X. Target Compound Identification**

Sample results with greater than 25% differences between the primary column and the confirmation column have been qualified as estimated.

The laboratory indicated that confirmation by GC/MS was performed when required by the levels of the analytes found in some of the samples. No supporting documentation was included in the data package.

Verifying compound identification was not within the scope of the data review for this SDG.

## **XI. Compound Quantitation and Reported CRQLs**

The responses of one or more analytes in the original analyses of several samples exceeded the calibration range. The samples were reanalyzed at further dilutions. The results of these analytes from the original analyses should be excluded in favor of the reanalysis results that were within the calibration range.

Verification of quantitation and accuracy of reported CRQLs was not within the scope of the data review for this SDG.

## **XII. Field Blanks**

The equipment blanks associated with the samples in this SDG were submitted in another SDG. 4,4'-DDD was detected below the CRQL in equipment blank Y1G49 in SDG Y1G35. The blank concentration was insignificant relative to the concentrations found in the samples, and no results have been qualified.

## **XIII. Field Duplicates**

There were no field duplicates in this SDG.

## **XIV. Overall Assessment of Data**

- The overall indication is that the accuracy and precision goals were met. High surrogate recovery problems were noted in two samples, however, they may not necessarily apply to the target analytes.
- There were very significant percent differences between the primary and confirmation results in some of the samples. These discrepancies could indicate the presence of interferences or even the possibility of false positives.
- Low levels of gamma-BHC found in some samples appear to be attributed to laboratory contamination.
- Comparability and completeness goals for the project appear to have been met.

### Data Qualification Summary

SDG	Samples Affected	Matrix	Analyte	Flag	Reason
Y1G26	Y1G30 Y1G33DL Y1G34 Y1G47	S	gamma-BHC	U	<5xLB
Y1G26	Y1G43	S	4,4'-DDE Endrin 4,4'-DDD 4,4'-DDT Methoxychlor Endrin Ketone	J	Sur %R>UCL
Y1G26	Y1G44	S	Dieldrin 4,4'-DDE Endrin 4,4'-DDD 4,4'-DDT Endrin Ketone	J	Sur %R>UCL
Y1G26	Y1G27	S	alpha-Chlordane	J	CF %D>25%
Y1G26	Y1G28	S	Dieldrin	J	CF %D>25%
Y1G26	Y1G29	S	alpha-Chlordane gamma-chlordane	J	CF %D>25%
Y1G26	Y1G30	S	alpha-BHC gamma-BHC Heptachlor Endrin Ketone	J	CF %D>25%
Y1G26	Y1G31 Y1G31DL	S	Dieldrin	J	CF %D>25%
Y1G26	Y1G32 Y1G32DL	S	Dieldrin	J	CF %D>25%
Y1G26	Y1G33	S	Dieldrin	J	CF %D>25%
Y1G26	Y1G37	S	4,4'-DDE Endosulfan Sulfate	J	CF %D>25%

			4,4'-DDT Endrin Ketone gamma-Chlordane		
Y1G26	Y1G41	S	alpha-BHC alpha-Chlordane	J	CF %D>25%
Y1G26	Y1G43	S	4,4'-DDE Endrin 4,4'-DDT Methoxychlor	J	CF %D>25%
Y1G26	Y1G44	S	4,4'-DDE Endrin 4,4'-DDT Endrin Ketone	J	CF %D>25%
Y1G26	Y1G45	S	Endrin Ketone alpha-Chlordane gamma-Chlordane	J	CF %D>25%
Y1G26	Y1G45DL	S	Dieldrin	J	CF %D>25%
Y1G26	Y1G46	S	Heptachlor 4,4'-DDD	J	CF %D>25%
Y1G26	Y1G47	S	gamma-BHC 4,4'-DDD	J	CF %D>25%
Y1G26	Y1G48	S	Endosulfan I gamma-Chlordane	J	CF %D>25%

### Results To be Excluded

SDG	Samples Affected	Analyte	Reason
Y1G26	Y1G31	4,4'-DDE 4,4'-DDD 4,4'-DDT	Reanalysis
Y1G26	Y1G31DL	All analytes <u>except</u> : 4,4'-DDE 4,4'-DDD 4,4'-DDT	Reanalysis

Y1G26	Y1G32	4,4'-DDE 4,4'-DDD	Reanalysis
Y1G26	Y1G32DL	All analytes <u>except</u> : 4,4'-DDE 4,4'-DDD	Reanalysis
Y1G26	Y1G33	4,4'-DDE 4,4'-DDD 4,4'-DDT	Reanalysis
Y1G26	Y1G33DL	All analytes <u>except</u> : 4,4'-DDE 4,4'-DDD 4,4'-DDT	Reanalysis
Y1G26	Y1G34	4,4'-DDD 4,4'-DDT	Reanalysis
Y1G26	Y1G34DL	All analytes <u>except</u> : 4,4'-DDD 4,4'-DDT	Reanalysis
Y1G26	Y1G41	Dieldrin 4,4'-DDE 4,4'-DDD	Reanalysis
Y1G26	Y1G41DL	All analytes <u>except</u> : Dieldrin 4,4'-DDE 4,4'-DDD	Reanalysis
Y1G26	Y1G44	4,4'-DDD	Reanalysis
Y1G26	Y1G44DL	All analytes <u>except</u> : 4,4'-D4	Reanalysis
Y1G26	Y1G45	Dieldrin 4,4'-DDE 4,4'-DDD	Reanalysis
Y1G26	Y1G45DL	All analytes <u>except</u> : Dieldrin 4,4'-DDE	Reanalysis

		4,4'-DDD	
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## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** March 14, 15, 16, 17, 18, 2005  
**Report Date:** April 09, 2005  
**Parameters:** Pesticide/Aroclor  
**Laboratory:** Datachem Laboratories  
**Sample Delivery Group:** Y1RY2

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLC03.2 for pesticides and Aroclors. The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Full data review was performed as required by the SAP. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified, and the numerical value represents its approximate concentration".
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All holding time requirements were met.

## **II. GC/ECD Instrument Performance Check**

The resolution check and performance evaluation mixtures were analyzed at the required frequency and the results met all the requirements.

## **III. Initial Calibration**

All initial calibration requirements were met.

## **IV. Continuing Calibration**

All continuing calibration requirements were met.

## **V. Blanks**

Method and instrument blanks were analyzed at the required frequency. No sulfur cleanup was used.

Alpha-BHC and gamma-BHC were detected below the contract required quantitation limit (CRQL) in method blank PBLKW1. Neither analyte was detected in any of the field samples, and no results have been qualified. Gamma-BHC was detected in the equipment blank Y1S14, but the concentration was greater than 5 times that found in the method blank, and the result has not been qualified.

Endosulfan Sulfate was detected below the CRQL in all three instrument blanks analyzed on column DB608, and delta-BHC was detected below the CRQL in one of these instrument blanks when analyzed on column DB1701. Neither analyte was confirmed on one or the other column.

## **VI. Surrogate Spikes**

All the requirements were met.

## **VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

No spike analyses were requested for this SDG, and none were performed.

## **VIII. Laboratory Control Sample (LCS)**

All the requirements were met.

## **IX. Pesticide Cleanup Checks**

All requirements for the Florisil check were met. Cleanup by gel permeation chromatography (GPC) was not used.

## **X. Target Compound Identification**

Most of the sample results had greater than 25% differences between the primary column and the confirmation column, and have been qualified as estimated. The discrepancies were

mostly attributed to integration biases, exacerbated by the low concentrations of the analytes, resulting from poor peak resolution from closely eluting peaks or from the matrix background.

Compound identification was reviewed for sample Y1RY2, and was verified to be accurate.

### **XI. Compound Quantitation and Reported CRQLs**

Quantitation was reviewed for sample Y1RY2, and was verified to be accurate. 4,4'-DDD was detected above the CRQL, and was reported off of the DB1701 column. The sample chromatogram shows the peak for this analyte to be poorly resolved from an adjacent peak, resulting in biased integration. The result for this analyte has been flagged "J".

All samples in this SDG were analyzed undiluted. Correct CRQLs were used.

### **XII. Field Blanks**

Gamma-BHC, Aldrin, Dieldrin, and Endosulfan II were detected below the CRQL in equipment blank Y1S14. Of these analytes, only Dieldrin was detected in the associated field samples. It was detected in all three field samples at levels below the CRQL. Its concentration in sample Y1RZ1 was less than 5 times that of the equipment blank, and the result has been flagged "U". The other two field sample concentrations were greater than 5 times that found in the equipment blank, and the results have not been qualified.

### **XIII. Field Duplicates**

No field duplicates were analyzed in this SDG.

### **XIV. Overall Assessment of Data**

- For each analyte the lower of the two column results was reported as required by the CLP procedure. There were very significant percent differences between the primary and confirmation results in the majority of the analytes detected in the samples. Most of the detections were of concentrations below the CRQL. The discrepancies were likely attributed to integration biases caused by poor peak resolution from adjacent peaks or from the matrix background.
- Low level of Dieldrin found in one of the samples appears to be attributed to field-related contamination as was evident from the equipment blank result. Three other contaminants found in the equipment blank were not detected in the samples. Low-level laboratory contamination was evident in the laboratory blanks, but did not impact the sample results.
- Except for the low accuracy which should be expected for low-level detections, the overall quality of the data was found to be good.

### Data Qualification Summary

Field ID	Analyte	Final Flag	Validation Comments
Y1RY2	HEPTACHLOR HEPTACHLOR EPOXIDE ENDOSULFAN SULFATE 4,4'-DDT ENDRIN KETONE ALPHA-CHLORDANE GAMMA-CHLORDANE	J	CF %D >25%
Y1RY2	4,4'-DDD	J	POOR PEAK RESOLUTION
Y1RZ0	HEPTACHLOR EPOXIDE DIELDRIN 4,4'-DDE ENDRIN 4,4'-DDD 4,4'-DDT	J	CF %D >25%
Y1RZ1	4,4'-DDE ENDOSULFAN SULFATE	J	CF %D >25%
Y1RZ1	DIELDRIN	U	<5xEB

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** September 13-15, 2004  
**Report Date:** March 30, 2005  
**Parameters:** Organochlorine Pesticides  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G09

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 for pesticides and Aroclors. The data review was performed using the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact.

Samples Y1G26 - 28 were placed in SDG Y1G26.

All samples were analyzed within the required holding time.

**Note:** The COC provided with the data shows that pesticide analysis was requested for samples Y1G09, 11, 12, 14, 16, 18, 20, 22, 24, and 25 only. Samples Y1G13, 15, 17, 19, 21, and 23 were also analyzed and reported. There is no documentation in the data deliverable to verify that this change was requested.

## **II. Instrument Performance Checks**

Resolution check and performance evaluation mixtures were analyzed as required by the method and met acceptance criteria.

## **III. Calibration**

The initial calibration and continuing calibrations were in control with the exception of the continuing calibration of 9/29/05, CLPEST column. Endrin (17.5%D) exceeded the %D criterion of 15%. All associated results were non-detects and were flagged "UJ."

## **IV. Method Blanks**

There were no detections of target compounds in the method blanks.

## **V. Field Blanks**

There were equipment blanks associated with the samples in this SDG.

## **VI. Laboratory Control Sample (LCS)**

The laboratory failed to analyze an LCS in this SDG. The matrix spike/matrix spike duplicate (MS/MSD) is in control and the calibrations are in control overall. The CCAL was used in consideration of what the LCS would have recovered had it been analyzed. Since the CCALs are in control overall, the results already qualified from out of control CCALs are sufficiently flagged for project use.

## **VII. Surrogate Spikes**

The decachlorobiphenyl surrogate spikes were recovered above the upper control limit in several samples. This surrogate is closely associated with the PCB compounds in the analysis. PCB analytes were not detected for these samples and no flags were applied.

## **VIII. Matrix Spike/Matrix Spike Duplicate**

A matrix spike and matrix spike duplicate was performed on sample Y1G25. Heptachlor yielded zero percent recovery from both the MS and MSD. The non-detected result in the parent sample was flagged "UJ" as an estimated concentration.

## **IX. Field Duplicates**

There were no field duplicates in this SDG.

## **X. Internal Standards**

Not applicable.

## **XI. Confirmation**

When a target compound detected concentration has a relative percent difference between the primary and secondary column of greater than 25 percent, results are qualified as estimated concentrations and flagged "J". Results qualified for this condition are presented in the table below.

## **XII. Target Compound Identification and Quantitation**

Raw data were not reviewed as part of this scope.

Several samples required dilution due to high analyte concentration.

## **XII. Overall Assessment of Data**

- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.
- There were very significant percent differences between the primary and confirmation results in some of the samples. These discrepancies could indicate the presence of interferences or even the possibility of false positives.
- There was no method blank contamination
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units.

## Data Qualification Summary Y1G09

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G09	DIELDRIN	2200	J	CF>UCL
Y1G11	ALPHA-CHLORDANE	8.6	J	CF>UCL
Y1G11	BETA-BHC	16	J	CF>UCL
Y1G11	DIELDRIN	49	J	CF>UCL
Y1G11	ENDOSULFAN SULFATE	1.6	J	CF>UCL
Y1G11	GAMMA-CHLORDANE	10	J	CF>UCL
Y1G12	ALDRIN	0.83	J	CF>UCL
Y1G12	ALPHA-CHLORDANE	18	J	CF>UCL
Y1G12	BETA-BHC	3.3	J	CF>UCL
Y1G12	DIELDRIN	34	J	CF>UCL
Y1G13	4,4'-DDD	5.9	J	CF>UCL
Y1G13	BETA-BHC	16	J	CF>UCL
Y1G13	ENDRIN	2.9	J	CF>UCL
Y1G13	GAMMA-BHC (LINDANE)	0.65	J	CF>UCL
Y1G14	BETA-BHC	2.6	J	CF>UCL
Y1G14	ENDRIN	1.1	J	CF>UCL
Y1G14	GAMMA-CHLORDANE	1.9	J	CF>UCL
Y1G15	BETA-BHC	1.5	J	CF>UCL
Y1G15	GAMMA-CHLORDANE	0.77	J	CF>UCL
Y1G16	DIELDRIN	8.5	J	CF>UCL
Y1G16	ENDRIN	14	J	CF>UCL
Y1G17	4,4'-DDD	2.6	J	CF>UCL
Y1G17	4,4'-DDE	8.2	J	CF>UCL
Y1G17	ENDOSULFAN I	0.74	J	CF>UCL
Y1G19	BETA-BHC	1.9	J	CF>UCL
Y1G19	DIELDRIN	1.7	J	CF>UCL
Y1G19	ENDRIN	3.5	J	CF>UCL
Y1G19	GAMMA-CHLORDANE	2.7	J	CF>UCL
Y1G20	BETA-BHC	5.1	J	CF>UCL
Y1G20	DIELDRIN	19	J	CF>UCL
Y1G20	HEPTACHLOR EPOXIDE	2.8	J	CF>UCL
Y1G20	METHOXYCHLOR	7	J	CF>UCL
Y1G20DL	ALPHA-CHLORDANE	81	J	CF>UCL
Y1G21	ALPHA-CHLORDANE	2.5	J	CF>UCL
Y1G21	DIELDRIN	2.6	J	CF>UCL
Y1G21	GAMMA-CHLORDANE	2.3	J	CF>UCL
Y1G22	4,4'-DDE	1.3	J	CF>UCL
Y1G22	4,4'-DDT	5.4	J	CF>UCL
Y1G22	BETA-BHC	24	J	CF>UCL
Y1G22	ENDOSULFAN SULFATE	4.4	J	CF>UCL
Y1G22	ENDRIN ALDEHYDE	3	J	CF>UCL
Y1G22	GAMMA-CHLORDANE	11	J	CF>UCL
Y1G23	4,4'-DDE	1.9	J	CF>UCL
Y1G23	4,4'-DDT	12	J	CF>UCL
Y1G23	ALPHA-CHLORDANE	2.4	J	CF>UCL

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G23	BETA-BHC	5.8	J	CF>UCL
Y1G23	ENDRIN	1.2	J	CF>UCL
Y1G23	GAMMA-CHLORDANE	5.8	J	CF>UCL
Y1G24	4,4'-DDE	25	J	CF>UCL
Y1G24	4,4'-DDT	35	J	CF>UCL
Y1G24	ALPHA-CHLORDANE	0.4	J	CF>UCL
Y1G24	BETA-BHC	2.1	J	CF>UCL
Y1G24	DIELDRIN	3.8	J	CF>UCL
Y1G25	BETA-BHC	2.6	J	CF>UCL
Y1G25	DIELDRIN	46	J	CF>UCL
Y1G25	ENDRIN	1.3	J	CF>UCL
Y1G25	GAMMA-CHLORDANE	0.83	J	CF>UCL
Y1G25	HEPTACHLOR	2	UJ	MS/MSD%R

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** September 17 - 23, 2004  
**Report Date:** March 31, 2005  
**Parameters:** Organochlorine Pesticides and PCBs  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G35

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 for pesticides and Aroclors. The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory with in control temperatures and appropriate chain of custody forms (COC) and custody seals intact. There was a discrepancy between the air bill number listed on the COC and the actual air bill number that arrived with the samples. The laboratory noted this and received permission to continue analyses as requested on the COC.

All technical holding time requirements were met.

### II. Instrument Performance Check

Instrument performance checks were as required by the method.

### **III. Calibration**

The initial calibration and continuing calibrations are in control.

### **IV. Method Blanks**

Method blanks and instrument blanks were analyzed as required. Instrument blanks were free of contamination.

### **V. Field Blanks**

Each sample in the delivery group is an equipment blank.

### **VI. Laboratory Control Sample (LCS)**

There was no LCS associated with this SDG.

### **VII. Surrogate Spikes**

Surrogate spikes were in control overall. Surrogate tetrachloro-m-xylene (associated with the pesticide target compounds) showed a slight low bias for samples Y1G36 and Y1G42. All pesticide target compounds in these two samples are considered estimated concentrations with a possible low bias and are flagged "UJ".

### **VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

A MS/MSD were not performed.

### **IX. Field Duplicates**

Not applicable.

### **X. Internal Standards**

Not applicable.

### **XI. Confirmation**

Confirmation analysis met criteria.

### **X. Target Compound Identification and Quantitation**

Reporting limit objectives were met. No raw data were reviewed as part of this scope.

### **XII. Overall Assessment of Data**

- Calibrations are in control.
- There was no method blank contamination.
- The results of laboratory and matrix related accuracy indicators are generally acceptable and therefore, the data are accurate. There are no precision indicators to evaluate.
- The samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units.

- Sample results are complete; no results have been rejected from project use.

## Data Qualification Summary Y1G35

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G36	4,4'-DDD	0.1	UJ	Surr<LCL, low bias
Y1G36	4,4'-DDE	0.1	UJ	Surr<LCL, low bias
Y1G36	4,4'-DDT	0.1	UJ	Surr<LCL, low bias
Y1G36	ALDRIN	0.05	UJ	Surr<LCL, low bias
Y1G36	ALPHA-BHC	0.05	UJ	Surr<LCL, low bias
Y1G36	ALPHA-CHLORDANE	0.05	UJ	Surr<LCL, low bias
Y1G36	AROCLOR-1016	1	UJ	Surr<LCL, low bias
Y1G36	AROCLOR-1221	2	UJ	Surr<LCL, low bias
Y1G36	AROCLOR-1232	1	UJ	Surr<LCL, low bias
Y1G36	AROCLOR-1242	1	UJ	Surr<LCL, low bias
Y1G36	AROCLOR-1248	1	UJ	Surr<LCL, low bias
Y1G36	AROCLOR-1254	1	UJ	Surr<LCL, low bias
Y1G36	AROCLOR-1260	1	UJ	Surr<LCL, low bias
Y1G36	BETA-BHC	0.05	UJ	Surr<LCL, low bias
Y1G36	DELTA-BHC	0.05	UJ	Surr<LCL, low bias
Y1G36	DIELDRIN	0.1	UJ	Surr<LCL, low bias
Y1G36	ENDOSU1FAN I	0.05	UJ	Surr<LCL, low bias
Y1G36	ENDOSULFAN II	0.1	UJ	Surr<LCL, low bias
Y1G36	ENDOSULFAN SULFATE	0.1	UJ	Surr<LCL, low bias
Y1G36	ENDRIN	0.1	UJ	Surr<LCL, low bias
Y1G36	ENDRIN ALDEHYDE	0.1	UJ	Surr<LCL, low bias
Y1G36	ENDRIN KETONE	0.1	UJ	Surr<LCL, low bias
Y1G36	GAMMA-BHC (LINDANE)	0.05	UJ	Surr<LCL, low bias
Y1G36	GAMMA-CHLORDANE	0.05	UJ	Surr<LCL, low bias
Y1G36	HEPTACHLOR	0.05	UJ	Surr<LCL, low bias
Y1G36	HEPTACHLOR EPOXIDE	0.05	UJ	Surr<LCL, low bias
Y1G36	METHOXYCHLOR	0.5	UJ	Surr<LCL, low bias
Y1G36	TOXAPHENE	5	UJ	Surr<LCL, low bias
Y1G42	4,4'-DDD	0.1	UJ	Surr<LCL, low bias
Y1G42	4,4'-DDE	0.1	UJ	Surr<LCL, low bias
Y1G42	4,4'-DDT	0.1	UJ	Surr<LCL, low bias
Y1G42	ALDRIN	0.05	UJ	Surr<LCL, low bias
Y1G42	ALPHA-BHC	0.05	UJ	Surr<LCL, low bias
Y1G42	ALPHA-CHLORDANE	0.05	UJ	Surr<LCL, low bias
Y1G42	AROCLOR-1016	1	UJ	Surr<LCL, low bias
Y1G42	AROCLOR-1221	2	UJ	Surr<LCL, low bias
Y1G42	AROCLOR-1232	1	UJ	Surr<LCL, low bias
Y1G42	AROCLOR-1242	1	UJ	Surr<LCL, low bias
Y1G42	AROCLOR-1248	1	UJ	Surr<LCL, low bias
Y1G42	AROCLOR-1254	1	UJ	Surr<LCL, low bias
Y1G42	AROCLOR-1260	1	UJ	Surr<LCL, low bias
Y1G42	BETA-BHC	0.05	UJ	Surr<LCL, low bias
Y1G42	DELTA-BHC	0.05	UJ	Surr<LCL, low bias
Y1G42	DIELDRIN	0.1	UJ	Surr<LCL, low bias
Y1G42	ENDOSU1FAN I	0.05	UJ	Surr<LCL, low bias
Y1G42	ENDOSULFAN II	0.1	UJ	Surr<LCL, low bias

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G42	ENDOSULFAN SULFATE	0.1	UJ	Surr<LCL, low bias
Y1G42	ENDRIN	0.1	UJ	Surr<LCL, low bias
Y1G42	ENDRIN ALDEHYDE	0.1	UJ	Surr<LCL, low bias
Y1G42	ENDRIN KETONE	0.1	UJ	Surr<LCL, low bias
Y1G42	GAMMA-BHC (LINDANE)	0.05	UJ	Surr<LCL, low bias
Y1G42	GAMMA-CHLORDANE	0.05	UJ	Surr<LCL, low bias
Y1G42	HEPTACHLOR	0.05	UJ	Surr<LCL, low bias
Y1G42	HEPTACHLOR EPOXIDE	0.05	UJ	Surr<LCL, low bias
Y1G42	METHOXYCHLOR	0.5	UJ	Surr<LCL, low bias
Y1G42	TOXAPHENE	5	UJ	Surr<LCL, low bias

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** September 29-30, 2004  
**Report Date:** March 28, 2005  
**Parameters:** Organochlorine Pesticides and PCBs  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G72

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## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed for pesticides and PCBs by EPA PST/PCB LL OLMO4.3 Soils (as modified by the request for quotation September 16,2004). The USEPA National Functional Guidelines for Organic Data Review, October, 1999 were mainly used as the basis for this review as defined in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (August 2004).

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified, and the numerical value represents its approximate concentration".
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

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## **I. Technical Holding Time and Sample Custody**

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All samples were analyzed with the required holding time.

**Note:** The COC provided with the data shows that 13 soils were collected but only 10 were identified for analysis of pesticides. All 13 samples were analyzed for pesticides and there is no documentation in the data deliverable to verify that this change was requested. Samples Y1G73, Y1G75 and Y1G77 did not request pesticide analysis.

## **II. Instrument Performance Check**

Instrument tuning was performed as required by the method.

## **III. Calibration**

The initial calibration and continuing calibrations are in control.

## **IV. Method Blanks**

The method blank extracted as part of the sample extraction lot detected 4,4-DDD at 0.68 ug/kg. This compound in samples 84 and 85 is considered to be a non-detect, flagged "U" because the detected concentration was less than 5 times the associated blank concentration.

## **V. Field Blanks**

Equipment blanks were collected and provided in an alternate SDG. There were no detected target compounds found in the equipment blank collected.

## **VI. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

## **VII. Surrogate Spikes**

The surrogate decachlorobiphenyl was recovered above the upper control limit in several samples. This surrogate is closely associated with the PCB compounds in the analysis. All PCB results are non-detections and no flags were applied.

The tetrachloro-m-xylene surrogate was recovered above the upper control limit in several samples. Associated detected results are considered estimated concentrations and flagged "J".

## **VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

A matrix spike and matrix spike duplicate was performed on sample Y1G80 and acceptance criteria were met.

## **IX. Field Duplicates**

Four duplicate pairs were collected and analyzed.

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The relative percent difference was above the upper control limit for 4,4'-DDT in the FD pair Y1G75/Y1G73. The detected results in the normal and duplicate were flagged "J".

#### **X. Internal Standards**

Not applicable.

#### **XI. Confirmation**

The confirmation relative percent differences (RPD) of several analytes were above the upper control limit in several samples. The detected results were flagged "J".

#### **XII. Target Compound Identification and Quantitation**

Raw data were not reviewed as part of this scope.

#### **XIII. Overall Assessment of Data**

- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units. The data are representative and comparable to past sample results.
- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.
- Sample results are complete; no results have been rejected from project use.
- Calibrations are in control.
- The method blank detected low concentration of 4,4-DDD. Two sample results were qualified as non-detected results in association with the blank contribution.
- 4,4'-DDD, 4,4'-DDT and 4,4' -DDE were over the calibration range in several samples and dilutions were required.
- Confirmation RPD was above control limits in several samples.
- Surrogate recoveries were above control limits in several samples.

## Data Qualification Summary Y1G72

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G72	DIELDRIN	21	J	CF>UCL
Y1G73	4,4'-DDT	120	J	FDRPD>UCL, 84% vs 50%
Y1G73	DIELDRIN	5.5	J	CF>UCL
Y1G74	DIELDRIN	23	J	CF>UCL
Y1G75	4,4'-DDT	49	J	FDRPD>UCL, 84% vs 50%
Y1G75	ALPHA-CHLORDANE	0.48	J	CF>UCL
Y1G75	DIELDRIN	3.9	J	CF>UCL
Y1G75	GAMMA-BHC (LINDANE)	0.87	J	CF>UCL
Y1G76	DIELDRIN	86	J	CF>UCL/Sur>UCL
Y1G77	ENDRIN	2.2	J	CF>UCL
Y1G78	BETA-BHC	1.8	J	CF>UCL
Y1G79	ALPHA-CHLORDANE	5.9	J	CF>UCL
Y1G79	ENDRIN ALDEHYDE	4.9	J	CF>UCL
Y1G79	ENDRIN KETONE	6.9	J	CF>UCL
Y1G79	GAMMA-CHLORDANE	5.2	J	CF>UCL
Y1G80	BETA-BHC	3.3	J	CF>UCL
Y1G82	ALDRIN	15	J	CF>UCL/Sur>UCL
Y1G82	ALPHA-CHLORDANE	16	J	Sur>UCL
Y1G82	BETA-BHC	35	J	CF>UCL/Sur>UCL
Y1G82	DIELDRIN	460	J	Sur>UCL
Y1G82	GAMMA-CHLORDANE	4.2	J	CF>UCL/Sur>UCL
Y1G82	HEPTACHLOR	8.8	J	Sur>UCL
Y1G82DL	4,4'-DDD	3100	J	Sur>UCL
Y1G82DL	4,4'-DDE	1900	J	Sur>UCL
Y1G83	ALDRIN	6.5	J	CF>UCL/Sur>UCL
Y1G83	ALPHA-CHLORDANE	19	J	CF>UCL/Sur>UCL
Y1G83	DIELDRIN	500	J	Sur>UCL
Y1G83	ENDRIN KETONE	12	J	Sur>UCL
Y1G83DL	4,4'-DDD	3500	J	Sur>UCL
Y1G83DL	4,4'-DDE	2200	J	Sur>UCL
Y1G84	4,4'-DDD	1.1	U	LB<RL/CF>UCL
Y1G84	BETA-BHC	2.7	J	CF>UCL
Y1G85	4,4'-DDD	1.4	U	LB<RL
Y1G85	4,4'-DDE	1.6	J	CF>UCL
Y1G85	BETA-BHC	1.2	J	CF>UCL
Y1G85	ENDRIN KETONE	1.1	J	CF>UCL

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** October 8, 2004  
October 14, 2004  
**Report Date:** March 30, 2005  
**Parameters:** Organochlorine Pesticides  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G87

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 for pesticides and aroclors. The data review was performed using the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles were labeled with station locations rather than organic sample numbers. There was sample breakage during transit but there was sufficient volume remaining to proceed with sample analysis.

All samples were analyzed within the required holding time.

## II. Instrument Performance Checks

Resolution check and performance evaluation mixtures were analyzed as required by the method and met acceptance criteria.

## III. Calibration

The initial calibration and continuing calibrations were in control.

## IV. Method Blanks

There were no detections of target compounds in the method blanks greater than the RL or that affected sample data.

## V. Field Blanks

There were equipment blanks associated with the samples in this SDG. No detects were measured in the EB.

## VI. Laboratory Control Sample (LCS)

The laboratory failed to analyze a LCS in this SDG. The matrix spike/matrix spike duplicate (MS/MSD) is in control and the calibrations are in control overall.

## VII. Surrogate Spikes

The TCMX surrogate spikes were recovered above the upper control limit in several samples but did not result in data qualification. Likewise, surrogates were diluted out in some of the sample analyses due to analyte concentrations exceeding the calibration range in undiluted analyses.

## VIII. Matrix Spike/Matrix Spike Duplicate

A matrix spike and matrix spike duplicate was performed. The native concentrations of aldrin and dieldrin greatly exceeded the amount spiked in the MS/MSD yielding meaningless recoveries. No sample data were qualified.

## IX. Field Duplicates

There were no field duplicates in this SDG.

## X. Internal Standards

Not applicable.

## XI. Confirmation

When a target compound detected concentration has a relative percent difference between the primary and secondary column of greater than 25 percent, results are qualified as estimated concentrations and flagged "J". Results qualified for this condition are presented in the table below.

## XII. Target Compound Identification and Quantitation

Raw data were not reviewed as part of this scope.

Several samples required dilution due to high analyte concentration.

## **XII. Overall Assessment of Data**

- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.
- There were significant percent differences between the primary and confirmation results in some of the samples. These discrepancies could indicate the presence of interferences or even the possibility of false positives.
- There was no method blank contamination
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units.

**Data Qualification Summary Y1G87**

<b>Field ID</b>	<b>Analyte</b>	<b>Final Result</b>	<b>Final Flag</b>	<b>Validation Comments</b>
Y1G87	ENDRIN	1.2	J	CF>UCL
Y1G87	ALPHA-CHLORDANE	1.7	J	CF>UCL
Y1G87	GAMMA-CHLORDANE	1.5	J	CF>UCL

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** October 8 and 14, 2004  
**Report Date:** March 30, 2005  
**Parameters:** Organochlorine Pesticides and PCBs  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G88

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 for pesticides and Aroclors. The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory with in control temperatures and appropriate COCs and custody seals intact. Individual sample bottles were labeled with station locations rather than organic sample numbers. The deliverable contains an email discussion about this issue and approval to analyze the samples as received.

The sample was analyzed within the required holding time.

### II. Instrument Performance Check

Instrument performance checks were as required by the method and acceptance criteria were met.

### **III. Calibration**

The initial calibration and continuing calibrations are in control.

### **IV. Method Blanks**

The method blank extracted as part of the sample extraction lot did not detect any target compounds.

### **V. Field Blanks**

Not applicable.

### **VI. Laboratory Control Sample (LCS)**

The laboratory failed to analyze a LCS in this SDG. The surrogate spikes were in control. The CCAL was used in consideration of what the LCS would have recovered had it been analyzed. Since the CCALs are in control overall, the results already qualified from out of control CCALs are sufficiently flagged for project use.

### **VII. Surrogate Spikes**

Surrogate spikes were in control.

### **VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

A MS/MSD was not performed.

### **IX. Field Duplicates**

Not applicable.

### **X. Internal Standards**

Not applicable.

### **XI. Confirmation**

Not applicable. There were no target detections in the sample.

### **XII. Target Compound Identification and Quantitation**

Not applicable.

### **XIII. Overall Assessment of Data**

- Calibrations are in control.
- There was no method blank contamination.
- The results of laboratory and matrix related accuracy indicators are generally acceptable and therefore, the data are accurate. There are no precision indicators to evaluate.

- The sample was collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units.
- Sample results are complete; no results have been rejected from project use.

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 15, 2004  
September 16, 2004  
September 17, 2004  
September 20, 2004  
September 22, 2004

**Report Date:** November 04, 2004

**Parameters:** GC/MS Semivolatile SIM for Selected Compounds

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** Y1G36

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents five equipment blanks analyzed by GC/MS Semivolatile SIM for a subset of SVOC compounds identified in Modification Reference Number 1147.1. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004; the EPA National Functional Guidelines for Organic Data Review (NFG), October 1999; and Modification Reference Number 1147.1 (provided in the data package) were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time

All technical holding time requirements were met.

### II. Calibration

No tuning criteria specified. Calibration gas scan for PFTBA provided.

Minimum RF of 0.01 was met. CCV % D was met. Modification Reference Number does not state RSD criteria. Pentachlorophenol RSD was 47.9% and 2-Nitroaniline RSD was 28.9%.

The low standard shall be at or below the contract required quantitation limit (CRQL). Base on the low standard, initial and final volumes, it appears that the CRQLs were not met for all compounds.

### **III. Method Blank**

Method blanks were analyzed as required. Method blank SBLKND contained 2-Nitroaniline below the CRQL. Method Blanks SBLKO1 and SBLKPE contained benzo(a)anthracene below the CRQL and 2-Nitroaniline above the CRQL. Sample detects were less than 5x the blank contamination and were flagged "U".

Samples Y1G35 and Y1G42 each contained benzo(a)anthracene below the CRQL which was not detected in the associated blank.

### **IV. Laboratory Control Sample (LCS)**

No LCS data, presumed to be performed under full scan.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD not required as per Modification Reference Number 1147.1.

### **VI. Surrogate Recovery**

Surrogate data presented in full scan analyses in SDGY1G35.

### **VII. Internal Standard Recovery**

Internal standard recoveries were within criteria.

### **VIII. Field Duplicates**

There were no field duplicates in this SDG.

### **IX. Field Blanks**

This SDG consists of five equipment blanks. Benzo(a)anthracene was detected in Y1G35 and Y1G42 that was not detected in the associated method blank.

### **X. Target Analyte Quantitation**

Raw data was not reviewed.

### **XI. Sample Receipt**

No temperature blank received COC TR Number 9-425908971-091604-0002

### **XII. Overall Assessment of Data**

1. EB samples Y1G35 and Y1G42 each contained benzo(a)anthracene below the CRQL not detected in the associated blank. EB versus associated samples not evaluated.
2. Modification Reference Number does not state ICAL RSD criteria. Pentachlorophenol RSD 47.9% and 2-Nitroaniline RSD 28.9%.

3. The low standard shall be at or below the contract required quantitation limit (CRQL). Base on the low standard (0.04ug/ml), initial and final volumes ( 1L and 0.5ml ) , it appears that the CRQLs were not met for benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene as stated in modification reference number 1147.1 as 0.01ug/L.
4. N-nitroso-di-n-propylamine CRQL of 0.01ug/L was not met; reported as non-detect at 0.080ug/L.

**Data Qualification Summary**

<b>Field ID</b>	<b>Analyte</b>	<b>Final Result</b>	<b>Final Flag</b>	<b>Validation Comments</b>
Y1G35	2-NITROANILINE	0.02	U	Detect <5x method blank detect
Y1G36	2-NITROANILINE	0.04	U	Detect <5x method blank detect
Y1G42	2-NITROANILINE	0.06	U	Detect <5x method blank detect
Y1G49	2-NITROANILINE	0.04	U	Detect <5x method blank detect
Y1G52	2-NITROANILINE	0.06	U	Detect <5x method blank detect
Y1G52	BENZO(A)ANTHRACENE	0.002	U	Detect <5x method blank detect

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 24, 2004  
September 27, 2004  
September 28, 2004  
September 29, 2004  
September 30, 2004

**Report Date:** November 04, 2004

**Parameters:** GC/MS Semivolatile SIM for Selected Compounds

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** Y1G64

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents five equipment blanks analyzed by GC/MS Semivolatile SIM for a subset of SVOC compounds identified in Modification Reference Number 1147.1. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004; the EPA National Functional Guidelines for Organic Data Review (NFG), October 1999; and Modification Reference Number 1147.1 (provided in the data package) were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time

All technical holding time requirements were met.

### II. Calibration

No tuning criteria specified. Calibration gas scan for PFTBA provided.

Minimum RF of 0.01 was met. CCV % D was met. Modification Reference Number does not state RSD criteria. Pentachlorophenol RSD was 47.9% and 2-Nitroaniline RSD was 28.9%.

The low standard shall be at or below the contract required quantitation limit (CRQL). Base on the low standard, initial and final volumes, it appears that the CRQLs were not met for all compounds.

### **III. Method Blank**

Method blanks were analyzed as required. Method blanks SBLKPE and SBLKQZ each contained 2-nitroaniline above the CRQL and benzo(a)anthracene below the CRQL. Sample detects were less than 5x the blank contamination and were flagged "U". See Summary table for specific flags.

### **IV. Laboratory Control Sample (LCS)**

No LCS data, presumed to be performed under full scan.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD not required as per Modification Reference Number 1147.1.

### **VI. Surrogate Recovery**

Surrogate data presented in full scan analyses in SDGY1G35.

### **VII. Internal Standard Recovery**

Internal standard recoveries were within criteria except internal standard 1,4-Dichlorobenzene-d4 in samples Y1G67 and Y1G86 associated with bis(2-chloroethyl)ether analysis. Internal standard recoveries were greater than the upper control limit. Bis(2-chloroethyl)ether was non-detect and no flags were applied.

### **VIII. Field Duplicates**

There were no field duplicates in this SDG.

### **IX. Field Blanks**

This SDG consists of five EBs. Benzo(a)anthracene and 2-Nitroaniline were detected in the samples and in associated method blanks. See table for flags.

### **X. Target Analyte Quantitation**

Raw data was not reviewed.

### **XI. Sample Receipt**

No sample receipt issues.

### **XII. Overall Assessment of Data**

1. SDG consisted of 5 EBs. Benzo(a)anthracene and 2-Nitroaniline were detected in the samples and associated method blanks. See table for flags.

2. Modification Reference Number does not state ICAL RSD criteria. Pentachlorophenol RSD 47.9% and 2-Nitroaniline RSD 28.9%.
3. The low standard shall be at or below the contract required quantitation limit (CRQL). Base on the low standard (0.04ug/ml), initial and final volumes ( 1L and 0.5ml) , it appears that the CRQLs were not met for benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene as stated in modification reference number 1147.1 as 0.01ug/L.
4. N-nitroso-di-n-propylamine CRQL of 0.01ug/L was not met; reported as non-detect at 0.080ug/L.

**Data Qualification Summary**

<b>Field ID</b>	<b>Analyte</b>	<b>Final Result</b>	<b>Final Flag</b>	<b>Validation Comments</b>
Y1G57	2-NITROANILINE	0.2	U	Detect <5x method blank detect
Y1G57	BENZO(A)ANTHRACENE	0.01	U	Detect <5x method blank detect
Y1G64	2-NITROANILINE	0.05	U	Detect <5x method blank detect
Y1G64	BENZO(A)ANTHRACENE	0.01	U	Detect <5x method blank detect
Y1G67	2-NITROANILINE	0.05	U	Detect <5x method blank detect
Y1G67	BENZO(A)ANTHRACENE	0.01	U	Detect <5x method blank detect
Y1G81	2-NITROANILINE	0.2	U	Detect <5x method blank detect
Y1G86	2-NITROANILINE	0.2	U	Detect <5x method blank detect

## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** September 15, 16, 17, 20, 2004  
**Report Date:** October 18, 2004  
**Parameters:** Semivolatile Organic Compounds  
**Laboratory:** CompuChem/Division of Liberty Analytical Corp.  
**Sample Delivery Group:** Y1G26

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 and project-approved modifications described in Modification Reference Number 1148.0 for Semi-Volatile organic compounds (SVOC). The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative, and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U      The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J      The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ     The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R      The sample result is 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.

### I. Technical Holding Time

Sample Y1G41 was extracted using medium-level protocol outside of the required holding time 24 days after collection. The extract was analyzed undiluted and at a 1:5 dilution. The positive results from both analyses have been flagged "J", and the non-detects have been flagged "UJ".

The holding time requirements were met for all other samples.

## II. GC/MS Instrument Performance Check

All instrument performance check requirements were met.

## III. Initial Calibration

All initial calibration requirements were met.

## IV. Continuing Calibration

2,4-Dinitrophenol and 1,2,4,5-Tetrachlorobenzene were recovered below the lower acceptance limit from the continuing calibration verification performed on 10/07/04 at 1100 on instrument 5972HP70. Neither analyte was detected in the associated samples, and the results have been flagged "UJ".

2,4-Dinitrophenol and Hexachlorocyclopentadiene were recovered below the lower acceptance limit from the continuing calibration verification performed on 10/08/04 at 0945 on instrument 5972HP70. Neither analyte was detected in the associated samples, and the results have been flagged "UJ".

1,2,4,5-Tetrachlorobenzene was recovered below the lower acceptance limit from the continuing calibration verification performed on 10/09/04 at 1118 on instrument 5972HP70. The analyte was not detected in the associated samples, and the results have been flagged "UJ".

## V. Blanks

Di-n-butylphthalate, Pyrene, Butylbenzylphthalate, Benzo(a)anthracene, Chrysene, bis(2-Ethylhexyl)phthalate, di-n-Octylphthalate, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, Dibenzo(a,h)anthracene, and Benzo(g,h,i)perylene were detected below the contract required quantitation limit (CRQL) in method blank SBLKOR. The associated sample results less than 5 times (10 times for the phthalates) the blank result have been flagged "U".

There were no other method blank detections of target analytes.

## VI. Surrogates

The surrogates, 2-Fluorobiphenyl and 2,4,6-Tribromophenol were recovered above the upper acceptance limits from the matrix spike and matrix spike duplicate of sample Y1G41. This indicates a potential slight high bias in the reported recoveries of the spiked analytes.

All the other surrogate recoveries were acceptable, and no sample results have been qualified.

## VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Duplicate spike analyses of sample Y1G48 were performed using the low-level protocol. All samples in this SDG, except Y1G41, were analyzed using the low-level protocol. All the spike results met the acceptance criteria.

Since sample Y1G41 was analyzed using the medium-level protocol. Duplicate spike analyses using the same protocol were also performed on this sample. The recoveries of n-Nitroso-di-n-propylamine, 4-Nitrophenol, 2,4-Dinitrotoluene, and Pentachlorophenol from

the duplicate spikes were above the upper acceptance limits. These analytes were not detected in the unspiked sample, and no results have been qualified.

### **VIII. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

### **IX. Internal Standards**

All internal standard areas and retention times were within the acceptance limits.

### **X. Target Compound Identification**

Verifying compound identification was not within the scope of the data review for this SDG.

### **XI. Compound Quantitation and Reported CRQLs**

The responses of one or more analytes in the original analyses of samples Y1G41, Y1G43, and Y1G44 exceeded the calibration range. The samples were reanalyzed at further dilutions. The results of these analytes from the original analyses should be excluded in favor of the reanalysis results which were within the calibration range.

Verification of quantitation and accuracy of reported CRQLs was not within the scope of the data review for this SDG.

### **XII. Tentatively Identified Compounds (TIC)**

Verification of tentative identifications was not within the scope of the data review for this SDG.

### **XIII. Field Blanks**

The equipment blanks associated with the samples in this SDG were submitted in another SDG. Diethylphthalate and bis(2-Ethylhexyl)phthalate were detected below the CRQL in equipment blank Y1G35 in SDG Y1G35. Diethylphthalate was not detected in any of the associated samples in this SDG, and no results have been qualified. The blank concentration of bis(2-Ethylhexyl)phthalate was insignificant relative to the concentrations found in the samples, and no results have been qualified.

### **XIV. Field Duplicates**

There were no field duplicates in this SDG.

### **XV. System Performance**

Raw data review was not within the scope of this task, and the system performance could not be evaluated.

### **XVI. Overall Assessment of Data**

- The overall indication is that the accuracy and precision goals were met for the low-level protocol which was used for all samples except Y1G41. There were indications of high bias in the duplicate spikes of Y1G41 analyzed using the medium-level protocol, likely attributed to interference from the sample matrix.

- The responses of a few target analytes in the continuing calibration verifications were diminished by more than 25%. However, these shifts were not likely to have had a significant impact on the sample results, since the analytes were not detected in the samples.
- Low levels of some phthalates and polynuclear aromatic hydrocarbons in some samples appear to be attributed to laboratory contamination.
- Comparability and completeness goals for the project appear to have been met.

## Data Qualification Summary

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G27	PYRENE	380	U	LB<RL
Y1G29	1,2,4,5-Tetrachlorobenzene	350	UJ	CCV<LCL
Y1G29	PYRENE	350	U	LB<RL
Y1G30	1,2,4,5-Tetrachlorobenzene	530	UJ	CCV<LCL
Y1G30	2,4-DINITROPHENOL	1300	UJ	CCV<LCL
Y1G30	PYRENE	530	U	LB<RL
Y1G31	1,2,4,5-Tetrachlorobenzene	1400	UJ	CCV<LCL
Y1G32	1,2,4,5-Tetrachlorobenzene	350	UJ	CCV<LCL
Y1G32	BENZO(G,H,I)PERYLENE	350	U	LB<RL
Y1G32	BIS(2-ETHYLHEXYL)PHTHALATE	350	U	LB<RL
Y1G32	CHRYSENE	350	U	LB<RL
Y1G32	PYRENE	350	U	LB<RL
Y1G33	1,2,4,5-Tetrachlorobenzene	370	UJ	CCV<LCL
Y1G33	2,4-DINITROPHENOL	930	UJ	CCV<LCL
Y1G33	BIS(2-ETHYLHEXYL)PHTHALATE	370	U	LB<RL
Y1G34	1,2,4,5-Tetrachlorobenzene	420	UJ	CCV<LCL
Y1G34	2,4-DINITROPHENOL	1100	UJ	CCV<LCL
Y1G34	BUTYLBENZYLPHthalate	420	U	LB<RL
Y1G37	2,4-DINITROPHENOL	2000	UJ	CCV<LCL
Y1G37	BENZO(B)FLUORANTHENE	720	U	LB<RL
Y1G37	BENZO(G,H,I)PERYLENE	510	U	LB<RL
Y1G37	BENZO(K)FLUORANTHENE	850	U	LB<RL
Y1G37	DIBENZO(A,H)-ANTHRACENE	800	U	LB<RL
Y1G37	HEXACHLOROCYCLO-PENTADIENE	800	UJ	CCV<LCL
Y1G37	INDENO(1,2,3-CD)-PYRENE	630	U	LB<RL
Y1G38	1,2,4,5-Tetrachlorobenzene	390	UJ	CCV<LCL
Y1G38	2,4-DINITROPHENOL	990	UJ	CCV<LCL
Y1G38	BIS(2-ETHYLHEXYL)PHTHALATE	390	U	LB<RL
Y1G39	1,2,4,5-Tetrachlorobenzene	450	UJ	CCV<LCL
Y1G39	2,4-DINITROPHENOL	1100	UJ	CCV<LCL
Y1G40	1,2,4,5-Tetrachlorobenzene	390	UJ	CCV<LCL
Y1G40	2,4-DINITROPHENOL	990	UJ	CCV<LCL
Y1G41	1,1'-BIPHENYL	4400	J	HT>UCL
Y1G41	1,2,4,5-Tetrachlorobenzene	12000	UJ	HT>UCL
Y1G41	2,2'-OXYBIS(1- CHLOROPROPANE)	12000	UJ	HT>UCL
Y1G41	2,4,5-TRICHLOROPHENOL	30000	UJ	HT>UCL
Y1G41	2,4,6-TRICHLOROPHENOL	12000	UJ	HT>UCL
Y1G41	2,4-DICHLOROPHENOL	12000	UJ	HT>UCL
Y1G41	2,4-DIMETHYLPHENOL	12000	UJ	HT>UCL
Y1G41	2,4-DINITROPHENOL	30000	UJ	HT>UCL
Y1G41	2,4-DINITROTOLUENE	12000	UJ	HT>UCL
Y1G41	2,6-DINITROTOLUENE	12000	UJ	HT>UCL
Y1G41	2-CHLORONAPHTHALENE	3700	J	HT>UCL
Y1G41	2-CHLOROPHENOL	12000	UJ	HT>UCL
Y1G41	2-METHYLPHENOL	12000	UJ	HT>UCL

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G41	2-NITROANILINE	30000	UJ	HT>UCL
Y1G41	2-NITROPHENOL	12000	UJ	HT>UCL
Y1G41	3,3'-DICHLOROBENZIDINE	12000	UJ	HT>UCL
Y1G41	3-NITROANILINE	30000	UJ	HT>UCL
Y1G41	4,6-DINITRO-2-METHYLPHENOL	30000	UJ	HT>UCL
Y1G41	4-BROMOPHENYL-PHENYLEETHER	12000	UJ	HT>UCL
Y1G41	4-CHLORO-3-METHYLPHENOL	12000	UJ	HT>UCL
Y1G41	4-CHLOROANILINE	12000	UJ	HT>UCL
Y1G41	4-CHLOROPHENYL-PHENYL ETHER	12000	UJ	HT>UCL
Y1G41	4-METHYLPHENOL	12000	UJ	HT>UCL
Y1G41	4-NITROANILINE	30000	UJ	HT>UCL
Y1G41	4-NITROPHENOL	30000	UJ	HT>UCL
Y1G41	ACENAPHTHENE	10000	J	HT>UCL
Y1G41	ACENAPHTHYLENE	12000	UJ	HT>UCL
Y1G41	ACETOPHENONE	12000	UJ	HT>UCL
Y1G41	ANTHRACENE	12000	UJ	HT>UCL
Y1G41	ATRAZINE	12000	UJ	HT>UCL
Y1G41	BENZALDEHYDE	12000	UJ	HT>UCL
Y1G41	BENZO(A)ANTHRACENE	12000	UJ	HT>UCL
Y1G41	BENZO(A)PYRENE	12000	UJ	HT>UCL
Y1G41	BENZO(B)FLUORANTHENE	12000	UJ	HT>UCL
Y1G41	BENZO(G,H,I)PERYLENE	12000	UJ	HT>UCL
Y1G41	BENZO(K)FLUORANTHENE	12000	UJ	HT>UCL
Y1G41	BIS(2-CHLOROETHOXY)METHANE	12000	UJ	HT>UCL
Y1G41	BIS-(2-CHLOROETHYL)ETHER	12000	UJ	HT>UCL
Y1G41	BIS(2-ETHYLHEXYL)PHTHALATE	13000	J	HT>UCL
Y1G41	BUTYLBENZYLPHTHALATE	12000	UJ	HT>UCL
Y1G41	CAPROLACTAM	12000	UJ	HT>UCL
Y1G41	CARBAZOLE	12000	UJ	HT>UCL
Y1G41	CHRYSENE	12000	UJ	HT>UCL
Y1G41	DIBENZO(A,H)-ANTHRACENE	12000	UJ	HT>UCL
Y1G41	DIBENZOFURAN	4100	J	HT>UCL
Y1G41	DIETHYLPHTHALATE	12000	UJ	HT>UCL
Y1G41	DIMETHYLPHTHALATE	12000	UJ	HT>UCL
Y1G41	DI-N-BUTYLPHTHALATE	2900	J	HT>UCL
Y1G41	DI-N-OCTYLPHTHALATE	12000	UJ	HT>UCL
Y1G41	FLUORANTHENE	4000	J	HT>UCL
Y1G41	FLUORENE	8900	J	HT>UCL
Y1G41	HEXACHLOROBENZENE	12000	UJ	HT>UCL
Y1G41	HEXACHLOROBUTADIENE	12000	UJ	HT>UCL
Y1G41	HEXACHLOROCYCLO-PENTADIENE	12000	UJ	HT>UCL
Y1G41	HEXACHLOROETHANE	12000	UJ	HT>UCL
Y1G41	INDENO(1,2,3-CD)-PYRENE	12000	UJ	HT>UCL
Y1G41	ISOPHORONE	12000	UJ	HT>UCL
Y1G41	NAPHTHALENE	80000	J	HT>UCL
Y1G41	NITROBENZENE	12000	UJ	HT>UCL
Y1G41	N-NITROSO DIPHENYLAMINE	12000	UJ	HT>UCL

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G41	N-NITROSO-DI-N PROPYLAMINE	12000	UJ	HT>UCL
Y1G41	PENTACHLOROPHENOL	30000	UJ	HT>UCL
Y1G41	PHENANTHRENE	16000	J	HT>UCL
Y1G41	PHENOL	12000	UJ	HT>UCL
Y1G41	PYRENE	4900	J	HT>UCL
Y1G41DL	2-METHYLNAPHTHALENE	370000	J	HT>UCL
Y1G43	1,2,4,5-Tetrachlorobenzene	380	UJ	CCV<LCL
Y1G43	2,4-DINITROPHENOL	940	UJ	CCV<LCL
Y1G43	DIBENZO(A,H)-ANTHRACENE	380	U	LB<RL
Y1G44	1,2,4,5-Tetrachlorobenzene	770	UJ	CCV<LCL
Y1G44	2,4-DINITROPHENOL	1900	UJ	CCV<LCL
Y1G45	1,2,4,5-Tetrachlorobenzene	720	UJ	CCV<LCL
Y1G45	2,4-DINITROPHENOL	1800	UJ	CCV<LCL
Y1G45	BENZO(G,H,I)PERYLENE	720	U	LB<RL
Y1G46	2,4-DINITROPHENOL	1400	UJ	CCV<LCL
Y1G46	BIS(2-ETHYLHEXYL)PHTHALATE	550	U	LB<RL
Y1G46	HEXACHLOROCYCLO-PENTADIENE	550	UJ	CCV<LCL
Y1G47	2,4-DINITROPHENOL	1000	UJ	CCV<LCL
Y1G47	BIS(2-ETHYLHEXYL)PHTHALATE	400	U	LB<RL
Y1G47	HEXACHLOROCYCLO-PENTADIENE	400	UJ	CCV<LCL
Y1G48	2,4-DINITROPHENOL	1000	UJ	CCV<LCL
Y1G48	HEXACHLOROCYCLO-PENTADIENE	400	UJ	CCV<LCL

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 22, 2004  
September 24, 2004  
September 27,2004  
September 28, 2004

**Report Date:** March 31, 2005

**Parameters:** GC/MS Semivolatile SIM for Selected Compounds

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** Y1G50

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents sixteen normal samples and two field duplicates (FD) analyzed by GC/MS Semivolatile for the SVOC compounds identified in Modification Reference Number 1147.1. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004; the EPA National Functional Guidelines for Organic Data Review (NFG), October 1999; and Modification Reference Number 1147.1 (provided in the data package) were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U      The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J      The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ     The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R      The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

Seven samples required dilution due to the high concentration of 2-methylnaphthalene. The dilutions were performed outside of the technical holding time requirement at 15 days, 16 days, and 21 days. The 2-methylnaphthalene results for samples Y1G51, Y1G60, Y1G61, Y1G62, Y1G63, Y1G68, and Y1G69 are flagged "J".

## **II. Calibration**

Pentachlorophenol was recovered below the lower acceptance criteria in two continuing calibration verification standards (CCV). Associated detected results were flagged "J" and non-detected results were flagged "UJ".

1,2,4,5-tetrachlorobenzene was recovered below the lower acceptance criteria in one CCV. One associated non-detected result was flagged "UJ".

## **III. Method Blank**

Method blanks were analyzed as required. Method blank SBLKRC contained di-n-octylphthalate below the CRQL. All associated samples were non-detect for this analyte and no flags were applied.

## **IV. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

## **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD was performed on samples Y1G51 and Y1G58. All acceptance criteria were met with one exception.

The relative percent difference of acenaphthene was above the upper control limit in the MS/MSD set for sample Y1G58. The parent sample was non-detect for this analyte and no flags were applied.

## **VI. Surrogate Recovery**

All surrogate acceptance criteria were met.

## **VII. Internal Standard Recovery**

All internal standard acceptance criteria were met.

## **VIII. Field Duplicates**

Sample Y1G55 is a FD for Y1G53. Sample Y1G56 is a FD for Y1G54. All FD acceptance criteria were met.

## **IX. Field Blanks**

No field blanks in this SDG.

## **X. Target Analyte Quantitation**

Raw data was not reviewed.

Samples Y1G50, Y1G53, Y1G55, Y1G65, and Y1G66 were analyzed diluted due to the very dark color of the extract. The RLs have been raised accordingly. No undiluted data available.

#### **XI. Sample Receipt**

No sample receipt issues.

#### **XII. Overall Assessment of Data**

- The duplicate matrix spike results of representative analytes spiked into samples Y1G51 and Y1G58 indicated acceptable accuracy and precision. However, there were indications of potential bias, including variability in excess of the acceptable limits in the responses of some analytes in the calibration standards.
- No data was qualified due to blank contamination .
- Comparability and completeness goals for the project appear to have been met.

**Data Qualification Summary**

<b>Field ID</b>	<b>Analyte</b>	<b>Validation Comments</b>	<b>Final Flag</b>
Y1G50	1,2,4,5-Tetrachlorobenzene	CCV<LCL, 36.2% vs. 25%	UJ
Y1G51	PENTACHLOROPHENOL	CCV<LCL, 26.6% vs. 25%	UJ
Y1G51DL	2-METHYLNAPHTHALENE	HT>UCL	J
Y1G60	PENTACHLOROPHENOL	CCV<LCL, 26.6% vs. 25%	UJ
Y1G60DL	2-METHYLNAPHTHALENE	HT>UCL	J
Y1G61	PENTACHLOROPHENOL	CCV<LCL, 26.6% vs. 25%	UJ
Y1G61DL	2-METHYLNAPHTHALENE	HT>UCL	J
Y1G62	PENTACHLOROPHENOL	CCV<LCL, 26.6% vs. 25%	UJ
Y1G62DL	2-METHYLNAPHTHALENE	HT>UCL	J
Y1G63	PENTACHLOROPHENOL	CCV<LCL, 26.6% vs. 25%	UJ
Y1G63DL	2-METHYLNAPHTHALENE	HT>UCL	J
Y1G68	PENTACHLOROPHENOL	CCV<LCL, 26.6% vs. 25%	UJ
Y1G68DL	2-METHYLNAPHTHALENE	HT>UCL	J
Y1G69	PENTACHLOROPHENOL	CCV<LCL, 26.6% vs. 25%	J
Y1G69DL	2-METHYLNAPHTHALENE	HT>UCL	J
Y1G70	PENTACHLOROPHENOL	CCV<LCL, 36.2% vs. 25%	UJ
Y1G71	PENTACHLOROPHENOL	CCV<LCL, 36.2% vs. 25%	UJ

## Data Validation Report

**Project/Site Name:** AMCO

**Collection Date:** September 24, 2004  
September 27, 2004  
September 28, 2004  
September 29, 2004  
September 30, 2004

**Report Date:** March 30, 2005

**Parameters:** GC/MS Semivolatile Organic Compounds

**Laboratory:** Compuchem/Division of Liberty Analytical

**Sample Delivery Group:** Y1G57

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents five equipment blanks (EB) analyzed for GC/MS Semivolatiles by method OLMO4.3. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004; the EPA National Functional Guidelines for Organic Data Review (NFG), October 1999; and Modification Reference Number 1147.1 were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative, and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All technical holding time requirements were met.

### II. Calibration

Tune criteria were met. Samples were analyzed within the tune time.

The minimum response factor of 0.05 was met for all compounds. Initial calibration acceptance criteria were met.

All continuing calibration verification standards (CCV) met criteria except 2,2'-oxybis(1-chloropropane). "UJ" flags were applied to sample non-detects for this compound.

### **III. Method Blank**

Method blanks were analyzed as required. Method blank SBLKQZ contained Bis(2-ethylhexyl)phthalate above the CRQL at 3.3ug/L. Method Blank SBLKPE contained Bis(2-ethylhexyl)phthalate below the CRQL at 0.86ug/L. Sample detects were less than 5x the blank contamination and were flagged "U". See Summary table for specific flags.

### **IV. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

There were no MS/MSD associated with this SDG.

### **VI. Surrogate Recovery**

Surrogate recoveries were within criteria except 2-fluorobiphenyl recovery in SBLKPE which was below the lower control limit of 43% at 40%. No flags were applied.

### **VII. Internal Standard Recovery**

Internal standard recoveries were within criteria.

### **VIII. Field Duplicates**

There were no field duplicates in this SDG.

### **IX. Field Blanks**

This SDG consists of five EBs. 4-Chloro-3-methylphenol was detected in the sample Y1G57 below the CRQL. There were no other detects in the EBs that were not also detected in the associated method blanks.

### **X. Target Analyte Quantitation**

Raw data was not reviewed. TICs identified in the method blanks and associated samples were not reviewed.

### **XI. Sample Receipt**

Samples were received intact with in-control temperatures and with appropriate COCs.

### **XII. Overall Assessment of Data**

1. No LCS or MS/MSDs were extracted with this SDG to evaluate precision and accuracy. However, all sample internal standard and surrogate recoveries were in-control.
2. Bis(2-ethylhexyl)phthalate was the only method blank contamination and was also detected in the EB samples. 4-Chloro-3-methylphenol was the only EB detect in sample Y1G57.
3. Calibrations were in-control with the exception of one CCV.
4. Samples were collected and analyzed base on an approved method and results were reported using industry standardized units. Sample results were complete; no data was rejected.

**Data Qualification Summary**

<b>Field ID</b>	<b>Analyte</b>	<b>Final Result</b>	<b>Final Flag</b>	<b>Validation Comments</b>
Y1G57	2,2'-OXYBIS(1- CHLOROPROPANE)	10	UJ	CCV>UCL
Y1G57	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	Detect<5x method blank detect
Y1G64	2,2'-OXYBIS(1- CHLOROPROPANE)	10	UJ	CCV>UCL
Y1G64	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	Detect<5x method blank detect
Y1G67	2,2'-OXYBIS(1- CHLOROPROPANE)	10	UJ	CCV>UCL
Y1G67	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	Detect<5x method blank detect
Y1G81	2,2'-OXYBIS(1- CHLOROPROPANE)	10	UJ	CCV>UCL
Y1G81	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	Detect<5x method blank detect
Y1G86	2,2'-OXYBIS(1- CHLOROPROPANE)	10	UJ	CCV>UCL
Y1G86	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	Detect<5x method blank detect

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** October 8, 2004  
October 14, 2004  
**Report Date:** March 30, 2005  
**Parameters:** GC/MS Semivolatile Organic Compounds  
**Laboratory:** Compuchem/Division of Liberty Analytical  
**Sample Delivery Group:** Y1G87

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents soil samples analyzed for GC/MS Semivolatiles by method OLMO4.3. Specifications and requirements in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (AMCO SAP), August 2004; the EPA National Functional Guidelines for Organic Data Review (NFG), October 1999; and Modification Reference Number 1147.1 were mainly used as the basis for this review. Laboratory acceptance limits were used in cases where the SAP and NFG do not specify any limits.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative, and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All technical holding time requirements were met.

### II. Calibration

Tune criteria were met. Samples were analyzed within the tune time.

The minimum response factor of 0.05 was met for all compounds. Initial calibration acceptance criteria were met except for 2,4-dinitrophenol.

All continuing calibration verification standards (CCV) met criteria except 4-nitrophenol. "UJ" flags were applied to sample non-detects for this compound.

### **III. Method Blank**

Method blanks were analyzed as required and found to be acceptable.

### **IV. Laboratory Control Sample (LCS)**

There was no LCS associated with this SDG.

### **V. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

The MS/MSD required analysis on a diluted basis. All spikes were diluted out and yielded meaningless recoveries.

### **VI. Surrogate Recovery**

Surrogate recoveries were within criteria.

### **VII. Internal Standard Recovery**

Internal standard recoveries were within criteria.

### **VIII. Field Duplicates**

There were no field duplicates in this SDG.

### **IX. Field Blanks**

This SDG did not contain an EB. The EB analyzed in other SDG did not contain reportable levels of target analytes that affected these sample data.

### **X. Target Analyte Quantitation**

Raw data was not reviewed. TICs identified in the method blanks and associated samples were not reviewed.

### **XI. Sample Receipt**

Samples were received intact with in-control temperatures and with appropriate COCs.

### **XII. Overall Assessment of Data**

1. No LCS was extracted with this SDG to evaluate precision and accuracy. However, all sample internal standard and surrogate recoveries were in-control.
2. Calibrations were in-control with the exception of one analyte in the initial calibration and one CCV.
3. Samples were collected and analyzed base on an approved method and results were reported using industry standardized units. Sample results were complete; no data was rejected.

**Data Qualification Summary**

<b>Field ID</b>	<b>Analyte</b>	<b>Final Result</b>	<b>Final Flag</b>	<b>Validation Comments</b>
Y1G89	2,4-DINITROPHENOL	950	UJ	ICAL%RSD
Y1G89	4-NITROPHENOL	950	UJ	CCAL<LCL
Y1G90	2,4-DINITROPHENOL	1000	UJ	ICAL%RSD
Y1G90	4-NITROPHENOL	1000	UJ	CCAL<LCL
Y1G87	2,4-DINITROPHENOL	30000	UJ	ICAL%RSD
Y1G87	4-NITROPHENOL	30000	UJ	CCAL<LCL

## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** March 14, 15, 16, 17, 18, 2005  
**Report Date:** April 09, 2005  
**Parameters:** Semivolatile Organic Compounds  
**Laboratory:** EnviroSystems, Inc.  
**Sample Delivery Group:** Y1RY2

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 and project-approved modifications described in Modification Reference Number 1183.0 for Semi-Volatile organic compounds (SVOC). The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004 (SAP).

Full data review was performed as required by the SAP. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time

Duplicate matrix spikes of samples Y1RZ0 were extracted 20 days following collection of the parent sample. The recoveries reported could potentially be lower than they would have been, but the potential differences were not likely to have had any impact on the parent sample results.

The holding time requirements were met for all the native samples.

### II. GC/MS Instrument Performance Check

Equipment blank Y1S15 was analyzed 24 minutes past the 12-hour clock. This deviation was not likely to have had any impact on the sample results.

The instrument performance check requirements were otherwise met.

### III. Initial Calibration

The relative standard deviations of the relative response factors of 3-Nitroaniline and 3,3'-Dichlorobenzidine in the initial calibration performed on 03/16/05 on instrument HP73G exceeded 30%. Neither analytes was detected in the associated samples, and the results have been flagged "UJ".

### IV. Continuing Calibration

The relative response factors of 2,4-Dinitrophenol, 4-Nitrophenol, 4,6-Dinitro-2-methylphenol, Pentachlorophenol, Benzo(k)fluoranthene, and Indeno(1,2,3-c,d)pyrene in the continuing calibration verification standard analyzed on 03/23/05 at 1053 on instrument HP73G were less than the corresponding initial calibration average relative response factors by more than 25%. Those of 3-Nitroaniline, 4-Nitroaniline, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, bis(2-Ethylhexyl)phthalate, and Di-n-octylphthalate were greater than the corresponding initial calibration average relative response factors by more than 25%. The relative response factor of 2,4-Dinitrophenol was less than 0.05. None of these analyte was detected in the associated samples. The 2,4-Dinitrophenol results have been rejected, and the rest of the results have been flagged "UJ".

The relative response factors of Hexachlorocyclopentadiene, 3-Nitroaniline, 2,4-Dinitrophenol, 4,6-Dinitro-2-methylphenol, and 3,3'-Dichlorobenzidine in the continuing calibration verification standard analyzed on 04/03/05 at 1348 on instrument HP73G were less than the corresponding initial calibration average relative response factors by more than 25%. Those of Hexachlorobutadiene, Pyrene, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate, and Benzo(b)fluoranthene were greater than the corresponding initial calibration average relative response factors by more than 25%. The relative response factor of 2,4-Dinitrophenol was less than 0.05. None of these analyte was detected in the associated samples, and the results have been flagged "UJ".

The relative response factors of n-Nitroso-di-n-propylamine, 3-Nitroaniline, 2,4-Dinitrophenol, 4,6-Dinitro-2-methylphenol, and 3,3'-Dichlorobenzidine in the continuing calibration verification standard analyzed on 04/04/05 at 1041 on instrument HP73G were less than the corresponding initial calibration average relative response factors by more than 25%. Those of n-Nitrosodiphenylamine, Butylbenzylphthalate, Di-n-octylphthalate, and Benzo(b)fluoranthene were greater than the corresponding initial calibration average relative response factors by more than 25%. The relative response factor of 2,4-Dinitrophenol was less than 0.05. None of these analyte was detected in the associated samples. The 2,4-Dinitrophenol results have been rejected, and the rest of the results have been flagged "UJ".

The relative response factors of n-Nitroso-di-n-propylamine, 3-Nitroaniline, 2,4-Dinitrophenol, 4,6-Dinitro-2-methylphenol, Pentachlorophenol, and 3,3'-Dichlorobenzidine in the continuing calibration verification standard analyzed on 04/05/05 at 1150 on instrument HP73G were less than the corresponding initial calibration average relative response factors by more than 25%. Those of Pyrene, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, and Di-n-octylphthalate were greater than the corresponding initial calibration average relative response factors by more than 25%. The relative response factor

of 2,4-Dinitrophenol was less than 0.05. This standard was associated with the duplicate matrix spikes of sample Y1RZ0 only, and did not impact the native sample results.

#### **V. Blanks**

Acetophenone was detected below the contract required quantitation limit (CRQL) in method blanks SBLK64 and SBLK90. It was not detected in any of the associated samples, and no results have been qualified.

#### **VI. Surrogates**

The surrogate, 2-Fluorobiphenyl, was recovered below the lower acceptance limit from samples Y1RZ9, Y1S01, Y1RY8, Y1RY9, Y1RZ7, and Y1S00. All other surrogate recoveries were acceptable. Since only one surrogate from the same fraction failed the acceptance criteria in the above samples, no sample results have been qualified.

#### **VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Duplicate spike analyses of sample Y1RZ0 were performed. The recoveries of 4-Nitrophenol from one of the spiked samples, and of Pentachlorophenol from both spiked samples were above the upper acceptance limits. These analytes were not detected in the unspiked sample, and no results have been qualified.

#### **VIII. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

#### **IX. Internal Standards**

All internal standard areas and retention times were within the acceptance limits.

#### **X. Target Compound Identification**

Compound identification was verified to be accurate.

#### **XI. Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL)**

The only field sample detections in this SDG were of low levels of bis(2-Ethylhexyl)phthalate. The calculations were reviewed, and were verified to be accurate. The CRQLs were verified to be correct.

#### **XII. Tentatively Identified Compounds (TIC)**

Verification of tentative identifications was not within the scope of the data review for this SDG.

#### **XIII. Field Blanks**

4-Chloro-3-methylphenol was detected below the CRQL in both equipment blanks Y1S14 and Y1S15. It was not detected in any of the field samples, and no results have been qualified.

#### **XIV. Field Duplicates**

There were no detections in either sample Y1S00 or its field duplicate, Y1S01.

## XV. System Performance

The case narrative addresses the manual integrations that were done on continuing calibration verification standards SST050GW and SST050GY due to poor peak shape, coelution, and/or low response. Review of the raw data indicated that the manual integrations were done to resolve the Benzo(b)fluoranthene and Benzo(k)fluoranthene peaks in standard SST050GW, and on the Pentachlorophenol peak, which coeluted with an unidentified peak, in standard SST050GY. The manual integrations in standards SST050GW were not likely to have impacted the associated sample results, since the peaks were adequately resolved, and there were no peaks identified at the retention time of either analyte in any of the samples. Standard SST050GY was associated with the duplicate matrix spikes of sample Y1RZ0 only. The coelution problem involving Pentachlorophenol in the standard could have accounted partly or solely for the high recoveries of the analyte from the duplicate spikes.

There were excessive drifts in the relative responses of some analytes from one continuing calibration verification to the next. Some of the relative responses swung from negative to positive or vice-versa.

No other signs of system performance problems were evident in the data that were provided.

## XVI. Overall Assessment of Data

- Lack of response of 2,4-Dinitrophenol and excessive swings in the relative responses of several analytes were noted in the continuing calibration verification standards. These had potential impact on the likelihood of detection of these analytes at the CRQL. Excessive gains in the relative responses of some phthalates, notably Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, and Di-n-octylphthalate, may have been signs of random phthalate contamination of the analytical system, which may have accounted for the low levels of bis(2-Ethylhexyl)phthalate detected in three of the samples.
- The laboratory performed manual integrations on the Benzo(b)fluoranthene and Benzo(k)fluoranthene peaks in one of the continuing calibration verification standards since the peaks eluted closely together. The manual integrations may have caused the excessive fluctuations in the relative response factors for these analytes. However, they should not have impacted the sample results since neither analyte was detected in the samples. Manual integration was also performed on the Pentachlorophenol peak in another continuing calibration verification standard to try to resolve it from a coeluting peak. The lack of peak resolution was likely to have resulted in the high recoveries of the analyte from the associated duplicate matrix spikes. It was not likely to have impacted sample results since no Pentachlorophenol was identified in the samples.
- Low-level contaminants were detected in the method blanks and equipment blanks. However, these did not have any impact on the field sample results.

## Data Qualification Summary

Field ID	Analyte	Final Flag	Validation Comments
All samples	3-NITROANILINE 3,3'-DICHLOROBENZIDINE	UJ	ICAL RSD >30%
Y1RY5 Y1RY6 Y1RZ0 Y1RZ1 Y1S14 Y1RY2 Y1RY8 Y1RY9 Y1RZ7 Y1S00	2,4-DINITROPHENOL	R	CCV RRF <0.05
Y1RY5 Y1RY6 Y1RZ0 Y1RZ1 Y1S14 Y1RY2	2,4-DINITROPHENOL	R	CCV %D >25%
Y1RY5 Y1RY6 Y1RZ0 Y1RZ1 Y1S14 Y1RY2	3-NITROANILINE 4-NITROPHENOL 4-NITROANILINE 4,6-DINITRO-2-METHYLPHENOL PENTACHLOROPHENOL BUTYLBENZYLPHTHALATE 3,3'-DICHLOROBENZIDINE BIS(2-ETHYLHEXYL)PHTHALATE DI-N-OCTYLPHTHALATE BENZO(K)FLUORANTHENE INDENO(1,2,3-C,D)PYRENE	UJ	CCV %D >25%
Y1RY3 Y1RZ5 Y1RZ6 Y1RZ9 Y1S01 Y1S12 Y1S15	HEXACHLOROBUTADIENE HEXACHLOROCYCLOPENTADIENE 3-NITROANILINE 2,4-DINITROPHENOL 4,6-DINITRO-2-METHYLPHENOL PYRENE BUTYLBENZYLPHTHALATE 3,3'-DICHLOROBENZIDINE BIS(2-ETHYLHEXYL)PHTHALATE DI-N-OCTYLPHTHALATE BENZO(B)FLUORANTHENE	UJ	CCV %D >25%
Y1RY8 Y1RY9 Y1RZ7 Y1S00	2,4-DINITROPHENOL	R	CCV %D >25%
Y1RY8 Y1RY9 Y1RZ7 Y1S00	N-NITROSO-DI-N-PROPYLAMINE 3-NITROANILINE 4,6-DINITRO-2-METHYLPHENOL N-NITROSODIPHENYLAMINE BUTYLBENZYLPHTHALATE 3,3'-DICHLOROBENZIDINE DI-N-OCTYLPHTHALATE BENZO(B)FLUORANTHENE	UJ	CCV %D >25%

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** September 13-15, 2004  
**Report Date:** March 30, 2005  
**Parameters:** Semi-Volatile Organic Compounds  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G09

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed for Semi-Volatile Organics by EPA SVOC LL OLMO4.3 Soils (as modified by the request for quotation September 16, 2004). The USEPA National Functional Guidelines for Organic Data Review, February 1994 were mainly used as the basis for this review as defined in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (August 2004).

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory with in control temperatures and appropriate COCs and custody seals intact. Matrix spike/matrix spike duplicate (MS/MSD) assignment was specified by client email after sample receipt.

Samples Y1G26 - 28 were placed in SDG Y1G26.

Medium level re-extractions of samples Y1G10 and 11 were performed nine days outside of holding time. Results for these samples were flagged "J"/"UJ." All other samples were analyzed with the required holding time.

## **II. Instrument Performance Check**

Instrument tuning was performed as required by the method.

## **III. Calibration**

The initial calibration and continuing calibrations were in control.

## **IV. Method Blanks**

The method blanks extracted as part of the sample extraction lots were free of target compounds. No instrument blanks were analyzed daily to show the background target analyte contribution.

## **V. Field Blanks**

No equipment blanks were included in this SDG.

## **VI. Laboratory Control Sample (LCS)**

The laboratory analyzed but failed to report an LCS in this SDG. The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

## **VII. Surrogate Spikes**

Surrogate spikes were in control for all sample analyses with two exceptions.

Surrogate 2,4,6-tribromophenol in sample Y1G13 was recovered above the upper control limit, high bias. No action was taken, as a single acid surrogate out of control does not impact data quality for this sample.

Surrogates 2,4,6-tribromophenol and terphenyl-d14 in sample Y1G24 were recovered above the upper control limit, high bias. No action was taken, as a single acid and single base surrogate out of control does not impact data quality for this sample.

## **VIII. Matrix Spike/Matrix Spike Duplicate**

A MS/MSD was performed on sample Y1G10, medium level extraction, and was in control. Another MS/MSD was performed on sample Y1G25, low level extraction. Recovery of 2,4-dinitrotoluene was above the 89% upper control limit at 95%. This compound was not detected in the parent sample, so no qualifiers were required.

## **IX. Field Duplicates**

There were no field duplicates in this SDG.

## **X. Internal Standards**

All internal standard recoveries and retention times were in control.

## **XI. Confirmation**

Not applicable.

## **XII. Target Compound Identification and Quantitation**

Raw data were not reviewed as part of this scope.

## **XIII. Overall Assessment of Data**

- Calibrations were in control.
- There was no method blank contamination.
- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units. The data are representative and comparable to past sample results.
- Sample results are complete; no results have been rejected from project use.

## Data Qualification Summary Y1G09

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G10	1,1'-BIPHENYL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	1,2,4,5-Tetrachlorobenzene	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2,2'-OXYBIS(1- CHLOROPROPANE)	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2,4,5-TRICHLOROPHENOL	58000	UJ	Holding time exceeded by less than 2x
Y1G10	2,4,6-TRICHLOROPHENOL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2,4-DICHLOROPHENOL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2,4-DIMETHYLPHENOL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2,4-DINITROPHENOL	58000	UJ	Holding time exceeded by less than 2x
Y1G10	2,4-DINITROTOLUENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2,6-DINITROTOLUENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2-CHLORONAPHTHALENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2-CHLOROPHENOL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2-METHYLPHENOL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	2-NITROANILINE	58000	UJ	Holding time exceeded by less than 2x
Y1G10	2-NITROPHENOL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	3,3'-DICHLOROBENZIDINE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	3-NITROANILINE	58000	UJ	Holding time exceeded by less than 2x
Y1G10	4,6-DINITRO-2-METHYLPHENOL	58000	UJ	Holding time exceeded by less than 2x
Y1G10	4-BROMOPHENYL-PHENYLETHER	23000	UJ	Holding time exceeded by less than 2x
Y1G10	4-CHLORO-3-METHYLPHENOL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	4-CHLOROANILINE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	4-CHLOROPHENYL-PHENYL ETHER	23000	UJ	Holding time exceeded by less than 2x
Y1G10	4-METHYLPHENOL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	4-NITROANILINE	58000	UJ	Holding time exceeded by less than 2x
Y1G10	4-NITROPHENOL	58000	UJ	Holding time exceeded by less than 2x
Y1G10	ACENAPHTHENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	ACENAPHTHYLENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	ACETOPHENONE	14000	J	Holding time exceeded by less than 2x
Y1G10	ANTHRACENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	ATRAZINE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BENZALDEHYDE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BENZO(A)ANTHRACENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BENZO(A)PYRENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BENZO(B)FLUORANTHENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BENZO(G,H,I)PERYLENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BENZO(K)FLUORANTHENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BIS(2-CHLOROETHOXY)METHANE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BIS-(2-CHLOROETHYL)ETHER	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BIS(2-ETHYLHEXYL)PHTHALATE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	BUTYLBENZYLPHTHALATE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	CAPROLACTAM	23000	UJ	Holding time exceeded by less than 2x
Y1G10	CARBAZOLE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	CHRYSENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	DIBENZO(A,H)-ANTHRACENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	DIBENZOFURAN	23000	UJ	Holding time exceeded by less than 2x

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G10	DIETHYLPHTHALATE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	DIMETHYLPHTHALATE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	DI-N-BUTYLPHTHALATE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	DI-N-OCTYLPHTHALATE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	FLUORANTHENE	5900	J	Holding time exceeded by less than 2x
Y1G10	FLUORENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	HEXACHLOROBENZENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	HEXACHLOROBUTADIENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	HEXACHLOROCYCLO-PENTADIENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	HEXACHLOROETHANE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	INDENO(1,2,3-CD)-PYRENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	ISOPHORONE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	NAPHTHALENE	27000	J	Holding time exceeded by less than 2x
Y1G10	NITROBENZENE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	N-NITROSO DIPHENYLAMINE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	N-NITROSO-DI-N PROPYLAMINE	23000	UJ	Holding time exceeded by less than 2x
Y1G10	PENTACHLOROPHENOL	58000	UJ	Holding time exceeded by less than 2x
Y1G10	PHENANTHRENE	7600	J	Holding time exceeded by less than 2x
Y1G10	PHENOL	23000	UJ	Holding time exceeded by less than 2x
Y1G10	PYRENE	5900	J	Holding time exceeded by less than 2x
Y1G10DL	2-METHYLNAPHTHALENE	260000	J	Holding time exceeded by less than 2x
Y1G11	1,1'-BIPHENYL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	1,2,4,5-Tetrachlorobenzene	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2,2'-OXYBIS(1- CHLOROPROPANE)	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2,4,5-TRICHLOROPHENOL	32000	UJ	Holding time exceeded by less than 2x
Y1G11	2,4,6-TRICHLOROPHENOL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2,4-DICHLOROPHENOL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2,4-DIMETHYLPHENOL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2,4-DINITROPHENOL	32000	UJ	Holding time exceeded by less than 2x
Y1G11	2,4-DINITROTOLUENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2,6-DINITROTOLUENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2-CHLORONAPHTHALENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2-CHLOROPHENOL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2-METHYLNAPHTHALENE	63000	J	Holding time exceeded by less than 2x
Y1G11	2-METHYLPHENOL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	2-NITROANILINE	32000	UJ	Holding time exceeded by less than 2x
Y1G11	2-NITROPHENOL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	3,3'-DICHLOROBENZIDINE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	3-NITROANILINE	32000	UJ	Holding time exceeded by less than 2x
Y1G11	4,6-DINITRO-2-METHYLPHENOL	32000	UJ	Holding time exceeded by less than 2x
Y1G11	4-BROMOPHENYL-PHENYLETHER	13000	UJ	Holding time exceeded by less than 2x
Y1G11	4-CHLORO-3-METHYLPHENOL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	4-CHLOROANILINE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	4-CHLOROPHENYL-PHENYL ETHER	13000	UJ	Holding time exceeded by less than 2x
Y1G11	4-METHYLPHENOL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	4-NITROANILINE	32000	UJ	Holding time exceeded by less than 2x
Y1G11	4-NITROPHENOL	32000	UJ	Holding time exceeded by less than 2x

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G11	ACENAPHTHENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	ACENAPHTHYLENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	ACETOPHENONE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	ANTHRACENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	ATRAZINE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BENZALDEHYDE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BENZO(A)ANTHRACENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BENZO(A)PYRENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BENZO(B)FLUORANTHENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BENZO(G,H,I)PERYLENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BENZO(K)FLUORANTHENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BIS(2-CHLOROETHOXY)METHANE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BIS-(2-CHLOROETHYL)ETHER	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BIS(2-ETHYLHEXYL)PHTHALATE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	BUTYLBENZYLPHTHALATE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	CAPROLACTAM	13000	UJ	Holding time exceeded by less than 2x
Y1G11	CARBAZOLE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	CHRYSENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	DIBENZO(A,H)-ANTHRACENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	DIBENZOFURAN	13000	UJ	Holding time exceeded by less than 2x
Y1G11	DIETHYLPHTHALATE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	DIMETHYLPHTHALATE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	DI-N-BUTYLPHTHALATE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	DI-N-OCTYLPHTHALATE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	FLUORANTHENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	FLUORENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	HEXACHLOROBENZENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	HEXACHLOROBUTADIENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	HEXACHLOROCYCLO-PENTADIENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	HEXACHLOROETHANE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	INDENO(1,2,3-CD)-PYRENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	ISOPHORONE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	NAPHTHALENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	NITROBENZENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	N-NITROSO DIPHENYLAMINE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	N-NITROSO-DI-N PROPYLAMINE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	PENTACHLOROPHENOL	32000	UJ	Holding time exceeded by less than 2x
Y1G11	PHENANTHRENE	13000	UJ	Holding time exceeded by less than 2x
Y1G11	PHENOL	13000	UJ	Holding time exceeded by less than 2x
Y1G11	PYRENE	13000	UJ	Holding time exceeded by less than 2x

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** September 17-23, 2004  
**Report Date:** March 31, 2005  
**Parameters:** Semi-Volatile Organic Compounds  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G35

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents equipment blanks analyzed for Semi-Volatile Organics by EPA SVOC LL OLMO4.3 Soils (as modified by the request for quotation September 16, 2004, item 1147.1). The USEPA National Functional Guidelines for Organic Data Review, October, 1999 were mainly used as the basis for this review as defined in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (August 2004).

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory with in control temperatures and appropriate COCs and custody seals intact. There was a discrepancy between the air bill number listed on the COC and the actual air bill number that arrived with the samples. The laboratory noted this and received permission to continue analyses as requested on the COC.

All samples were analyzed with the required holding time.

### II. Instrument Performance Check

Instrument tuning was performed as required by the method.

### **III. Calibration**

The initial and continuing calibration is in control overall. 2,2-oxybis (1-chloropropane) is outside of method specification with a small high bias. All associated sample results are non-detected concentrations and no flags have been applied.

In addition, the 20 standard, the second data point in the 6 point curve was dropped for seven compounds. This is typically not considered an acceptable practice and may require discussion with the laboratory. However, five data points were included for each target compound and no results have been qualified for this issue.

### **IV. Method Blanks**

The method blanks show a small number of TIC compounds. These were not qualified in associated samples.

The method blanks also have 0.86 and 3.4 part per billion (ppb) bis(2-ethylhexyl)phthalate. Both of these concentrations are less than the reporting limit. All samples are considered non-detected concentrations for this compound and are flagged "U".

### **V. Field Blanks**

Each sample in the delivery group is an equipment blank. Low concentrations of 4-chloro-3-methylphenol and bis(2-ethylhexyl)phthalate were detected in the equipment blanks. The detections of bis(2-ethylhexyl)phthalate are considered non-detects due to associated method blank contribution.

### **VI. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

### **VII. Surrogate Spikes**

Surrogate spikes were in control for all sample analyses with exception of one phenolic surrogate spike in the method blank. No action was taken.

### **VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

A matrix spike and matrix spike duplicate was not performed.

### **IX. Field Duplicates**

Not applicable.

### **X. Internal Standards**

All internal standard recoveries and retention times were in control.

### **XI. Confirmation**

Not applicable.

## **XII. Target Compound Identification and Quantitation**

Reporting limit objectives are met. No raw data were reviewed as part of this scope.

## **XIII. Overall Assessment of Data**

- Calibrations are in control overall and no results required qualification.
- There was method blank contamination of Bis(2-ethylhexyl)phthalate at less than the reporting limit. All detected concentrations for this target compound are qualified as non-detected results.
- The results of laboratory and matrix related accuracy indicators are generally acceptable and therefore, the data are accurate. There are no precision indicators to evaluate.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry standardized units. The data are representative and comparable to past sample results.
- Sample results are complete, no results have been rejected from project use.
- All samples in this SDG are equipment blanks.

**Data Qualification Summary Y1G35**

<b>Field ID</b>	<b>Analyte</b>	<b>Final Result</b>	<b>Final Flag</b>	<b>Validation Comments</b>
Y1G35	BIS(2-ETHYLHEXYL)PHTHALATE	0.8	U	LB<RL
Y1G36	BIS(2-ETHYLHEXYL)PHTHALATE	3	U	LB<RL
Y1G42	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	LB<RL
Y1G49	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	LB<RL
Y1G52	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	LB<RL

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** September 29-30, 2004  
**Report Date:** March 28, 2005  
**Parameters:** Semi-Volatile Organic Compounds  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G72

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed for Semi-volatile Organics by EPA SVOC LL OLMO4.3 Soils (as modified by the request for quotation September 16,2004). The USEPA National Functional Guidelines for Organic Data Review, October, 1999 were mainly used as the basis for this review as defined in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (August 2004).

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U     The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J     The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ    The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R     The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

All samples were analyzed with the required holding time.

### II. Instrument Performance Check

Instrument tuning was performed as required by the method.

### **III. Calibration**

The initial calibration was in control.

A continuing calibration verification (CCAL) was recovered below the lower control limit for 2,4-dinitrophenol. All associated results are non-detect and "UJ" flags were applied.

A CCAL was recovered above the upper control limit for benzo (k) fluoranthene. One associated detected result was flagged "J".

### **IV. Method Blanks**

The method blank extracted, as part of the sample extraction lot was free of target compounds. No instrument blanks were analyzed daily to show the background target analyte contribution.

### **V. Field Blanks**

No equipment blanks were included in this SDG, as this is a soil data deliverable. Equipment blanks were collected and provided in an alternate SDG. Bis (2-ethylhexyl) phthalate was detected in the two equipment blanks at or under the reporting limit. This concentration is insignificant to the associated detected concentrations of this compound and no flags were applied.

### **VI. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

### **VII. Surrogate Spikes**

Surrogate spikes were in control for all sample analyses with one exception. Surrogate 2,4,6-Tribromophenol in sample Y1G82 was recovered above the upper control limit. The laboratory incorrectly lists this surrogate as "diluted out" but the analysis was performed neat. No action was taken, as a single acid surrogate out of control does not impact data quality for this sample.

### **VIII. Matrix Spike/Matrix Spike Duplicate**

A MS/MSD was performed on sample Y1G80 and acceptance criteria were met.

### **IX. Field Duplicates**

Four duplicate pairs were collected and analyzed. All acceptance criteria were met.

### **X. Internal Standards**

All internal standard recoveries and retention times were in control.

### **XI. Confirmation**

Not applicable.

### **XII. Target Compound Identification and Quantitation**

Raw data were not reviewed as part of this scope.

### **XIII. Overall Assessment of Data**

- Calibration control required qualification of a limited amount of results with no significant impact to the data overall.
- No data was qualified due to blank contamination.
- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units. The data are representative and comparable to past sample results.
- Sample results are complete; no results have been rejected from project use.
- Results from the neat analysis of Y1G82 and 83 should be used as final except for 2-Methylnaphthalene which was over range and should be used from the diluted analysis.

**Data Qualification Summary Y1G72**

<b>Field ID</b>	<b>Analyte</b>	<b>Final Result</b>	<b>Final Flag</b>	<b>Validation Comments</b>
Y1G72	2,4-DINITROPHENOL	930	UJ	CCAL<LCL, low bias
Y1G73	2,4-DINITROPHENOL	1000	UJ	CCAL<LCL, low bias
Y1G74	2,4-DINITROPHENOL	940	UJ	CCAL<LCL, low bias
Y1G75	2,4-DINITROPHENOL	1000	UJ	CCAL<LCL, low bias
Y1G76	2,4-DINITROPHENOL	950	UJ	CCAL<LCL, low bias
Y1G77	2,4-DINITROPHENOL	1100	UJ	CCAL<LCL, low bias
Y1G78	2,4-DINITROPHENOL	950	UJ	CCAL<LCL, low bias
Y1G79	2,4-DINITROPHENOL	1900	UJ	CCAL<LCL, low bias
Y1G79	BENZO(K)FLUORANTHENE	890	J	CCAL>UCL, high bias

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** October 8 and 14, 2004  
**Report Date:** March 28, 2005  
**Parameters:** Semi-Volatile Organic Compounds  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G88

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed for Semi-Volatile Organics by EPA SVOC LL OLMO4.3 Soils (as modified by the request for quotation September 16,2004 , item 1147.1). The USEPA National Functional Guidelines for Organic Data Review, October, 1999 were mainly used as the basis for this review as defined in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (August 2004).

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U      The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J      The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ     The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R      The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and appropriate COC and custody seals intact. Individual sample bottles were labeled with station locations rather than organic sample numbers. The deliverable contains an email discussion about this issue and approval to analyze the samples as received. One sample bottle from Y1G91 was received broken but sufficient volume remained to complete the work as required.

All samples were analyzed with the required holding time.

## II. Instrument Performance Check

Instrument tuning was performed as required by the method.

## III. Calibration

The initial calibration is in control overall with two exceptions.

2,4-Dinitrophenol is outside of method specification and all sample results are considered an estimated concentration, flagged "J/UJ".

The 20 standard, the second data point in the 6 point curve was dropped for seven compounds. This is typically not considered an acceptable practice and may require discussion with the laboratory. However, five data points were included for each target compound and no results have been qualified for this issue.

The continuing calibration verification was recovered below the lower control limit for 4-Nitrophenol. All associated sample results are considered an estimated concentration, flagged "J/UJ".

## IV. Method Blanks

The method blank extracted as part of the sample extraction lot shows many TIC compounds. These were not qualified in associated samples.

The method blank also has 6.8 part per billion (ppb) bis(2-ethylhexyl)phthalate. All samples are considered non-detected concentrations for this compound and are flagged "U".

No instrument blanks were analyzed daily to show the background target analyte contribution.

## V. Field Blanks

An equipment blank was collected and provided in this SDG. Bis(2-ethylhexyl)phthalate was detected in the both the method and the equipment blanks and no action was taken for the equipment blank detection. All samples were qualified based on the method blank concentration which is the higher of the two blanks.

The equipment blank also has 1.4 ppb of 4-chloro-3-methylphenol. All samples are considered non-detected concentrations for this compound and are flagged "U".

## VI. Laboratory Control Sample (LCS)

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

## VII. Surrogate Spikes

Surrogate spikes were in control for all sample analyses.

## VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A matrix spike and matrix spike duplicate was not performed.

## IX. Field Duplicates

Field duplicates were not provided in this SDG.

#### **X. Internal Standards**

All internal standard recoveries and retention times were in control.

#### **XI. Confirmation**

Not applicable.

#### **XII. Target Compound Identification and Quantitation**

The methods required per the modifications to the SOW on the September 16<sup>th</sup> quotation , item 1147.1 have not all been reported. The analysis of polynuclear aromatic hydrocarbons (PAHs) as well as other specific target analytes by a selected ion monitoring method approach was not performed and therefore, reporting limit objectives were not met for some of the compounds of concern as follows.

2-nitroaniline

3,3-dichlorobenzidene

hexachlorobenzene

hexachlorobutadiene

all PAHs

n-nitroso-di-n-propylamine

pentachlorophenol

nitrobenzene (noted as unachievable by the laboratory in 1147.1)

bis(2-chloromethoxy) methane (noted as unachievable by the laboratory in 1147.1)

Phenol was detected above the calibration range in sample Y1G94. No diluted reanalysis was performed. The undiluted result is reported and flagged "J".

#### **XIII. Overall Assessment of Data**

- Calibration control required qualification of a limited amount of results with no significant impact to the data overall.
- Data was qualified due to low level blank contamination. Bis(2-ethylhexyl)phthalate was detected in the method and the equipment blank at less than the reporting limit. 4-chloro-3-metholphenol was also detected in the equipment blank. All previously detected concentrations for these target compounds are qualified as non-detected results.
- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry standardized units.
- Sample results are complete, no results have been rejected from project use.

## Data Qualification Summary Y1G88

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G88	2,4-DINITROPHENOL	25	UJ	ICAL<LCL, unknown bias
Y1G88	4-CHLORO-3-METHYLPHENOL	1	U	EB<RL
Y1G88	4-NITROPHENOL	25	UJ	CCAL<LCL, low bias
Y1G88	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	LB<RL
Y1G91	2,4-DINITROPHENOL	25	UJ	ICAL<LCL, unknown bias
Y1G91	4-CHLORO-3-METHYLPHENOL	3	U	EB<RL
Y1G91	4-NITROPHENOL	25	UJ	CCAL<LCL, low bias
Y1G91	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	LB<RL
Y1G92	2,4-DINITROPHENOL	25	UJ	ICAL<LCL, unknown bias
Y1G92	4-CHLORO-3-METHYLPHENOL	2	U	EB<RL
Y1G92	4-NITROPHENOL	25	UJ	CCAL<LCL, low bias
Y1G92	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	LB<RL
Y1G93	2,4-DINITROPHENOL	25	UJ	ICAL<LCL, unknown bias
Y1G93	4-CHLORO-3-METHYLPHENOL	10	U	EB<RL
Y1G93	4-NITROPHENOL	25	UJ	CCAL<LCL, low bias
Y1G93	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	LB<RL
Y1G94	2,4-DINITROPHENOL	25	UJ	ICAL<LCL, unknown bias
Y1G94	4-CHLORO-3-METHYLPHENOL	10	U	EB<RL
Y1G94	4-NITROPHENOL	25	UJ	CCAL<LCL, low bias
Y1G94	BIS(2-ETHYLHEXYL)PHTHALATE	10	U	LB<RL
Y1G94	PHENOL	47	J	>ICLinearrange, no reanalysis

## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** September 15, 16, 17, 20, 2004  
**Report Date:** October 18, 2004  
**Parameters:** Volatile Organic Compounds  
**Laboratory:** CompuChem/Division of Liberty Analytical Corp.  
**Sample Delivery Group:** Y1G26

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 and project-approved modifications described in Modification Reference Number 1148.0 for volatile organic compounds (VOC). The data review was performed using the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative, and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

The case narrative states that all soil samples that were submitted for VOC analysis in this SDG were in EnCore samplers. The Work Order Summary Report indicates that each VOC

sample was received in the laboratory in a small tube. Each sample was then transferred into a weighed 40-mL vial, and frozen upon receipt by the laboratory within 48 hours of collection. The samples were prepared for VOC analysis according to modified SW-846 method 5035.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

All instrument performance check requirements were met.

## **III. Initial Calibration**

The relative standard deviation of the relative response factors of 2-Hexanone in the initial calibration performed on 09/24/04 on instrument F50052 exceeded 30%. 2-Hexanone was not detected in the associated samples, and the results have been flagged "UJ".

The relative standard deviation of the relative response factors of Acetone in the initial calibration performed on 09/24/04 on instrument F50055 exceeded 30%. The associated positive sample results have been flagged "J", and the non-detects have been flagged "UJ".

The average relative response factors of 1,4-Dioxane in the initial calibrations performed on 09/24/04 and on 10/05/04 on instrument F50055 were less than 0.05. 1,4-Dioxane was detected in one of the associated samples, and the result has been flagged "J". It was not detected in the rest of the associated samples, and the results have been rejected.

All other initial calibration results met the requirements.

## **IV. Continuing Calibration**

Acetone and 1,2,4-Trichlorobenzene were recovered below the lower acceptance limit from the continuing calibration verification performed on 09/29/04 at 1505 on instrument F50052. Neither analyte was detected in the associated sample, and the results have been flagged "UJ".

Acetone, Carbon Disulfide, Methyl Acetate, 2-Butanone, 4-Methyl-2-pentanone, and 2-Hexanone, and 1,2,4-Trichlorobenzene were recovered above the upper acceptance limit from the continuing calibration verification performed on 09/30/04 at 1039. The recoveries of Styrene and Bromoform from the same standard were below the lower acceptance limit. Of these analytes, Acetone was detected in associated sample Y1G46DL, and Styrene was detected in associated sample Y1G41DL. The positive results have been flagged "J", and the non-detects have been flagged "UJ".

Chloromethane was recovered below the lower acceptance limit from the continuing calibration verifications performed on 09/25/04 at 1915 and on 09/26/04 at 1741. The analyte was not detected in the associated samples, and the results have been flagged "UJ".

The recoveries of 1,4-Dioxane and t-Butyl Alcohol from the continuing calibration verification performed on 09/27/04 at 2000 were above the upper acceptance limit. Neither analyte was detected in the associated samples, and the results have been flagged "UJ".

Dichlorodifluoromethane, Vinyl Chloride, Carbon Disulfide were recovered above the upper acceptance limit from the continuing calibration verification performed on 09/28/04

at 1351. This standard was associated with the MS and MSD analyses only, and no sample results have been qualified.

The relative response factors of 1,4-Dioxane in all the continuing calibration verifications associated with the samples in this SDG were less than 0.05. 1,4-Dioxane was detected in one of the associated samples, and the result has been flagged "J". It was not detected in the rest of the associated samples, and the results have been rejected.

## **V. Blanks**

Methylene Chloride was detected below the contract required quantitation limit (CRQL) in method blank VBLKNG. The associated sample results less than 10 times the blank result have been flagged "U".

1,2,4-Trichlorobenzene was detected below the CRQL in method blank VBLKNF. It was not detected in the associated sample, and no result has been qualified.

There were no detections in the rest of the method blanks.

## **VI. System Monitoring Compounds**

The surrogate, Bromofluorobenzene, was recovered above the upper acceptance limit from sample Y1G41 during the original analysis using low-level protocol. The positive results from this analysis have been flagged as estimated.

## **VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

Duplicate spike analyses of sample Y1G48 were performed. All results met the acceptance criteria.

## **VIII. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

## **IX. Internal Standards**

The area of the internal standard, Chlorobenzene-d5, in the original analysis of sample Y1G28 was less than the lower acceptance limit, but was above 40% of the corresponding area in the 12-hour calibration standard. The associated analytes were not detected in the sample, and "UJ" flags have been applied to the results. The sample was reanalyzed with all three internal standard areas failing the acceptance criteria. The reanalysis results should be excluded in favor of the original analysis results.

## **X. Target Compound Identification**

Verifying compound identification was not within the scope of the data review for this SDG.

## **XI. Compound Quantitation and Reported CRQLs**

All samples were originally analyzed using direct purge. Samples Y1G34, Y1G41, and Y1G46 contained analytes with responses exceeding the calibration range, and were reanalyzed using their methanol extracts. Some analytes that were either not detected, or

were detected at much lower concentrations in the original analyses, were detected at significantly higher concentrations in the reanalyses. The discrepancies in the results are likely an indication of the inability or difficulty to purge these analytes from the soil matrix. The results of the original analyses for these analytes should be excluded in favor of the reanalysis results.

The concentration of Vinyl Chloride in the original analysis of sample Y1G41 exceeded the calibration range. The analyte was diluted out of detection when the sample was reanalyzed using its methanol extract. The reanalysis result should be excluded in favor of the original result which has been qualified "J".

The concentration of 2-Butanone in the original analysis of sample Y1G46 exceeded the calibration range. The analyte was diluted out of detection when the sample was reanalyzed using its methanol extract. The reanalysis result should be excluded in favor of the original result which has been qualified "J".

Verification of quantitation and accuracy of reported CRQLs was not within the scope of the data review for this SDG.

## **XII. Tentatively Identified Compounds (TIC)**

Verification of tentative identifications was not within the scope of the data review for this SDG.

## **XIII. Field Blanks**

There were no field blanks in this SDG.

## **XIV. Field Duplicates**

There were no field duplicates in this SDG.

## **XV. System Performance**

Raw data review was not within the scope of this task, and the system performance could not be evaluated.

## **XVI. Overall Assessment of Data**

- The duplicate matrix spike results of representative analytes spiked into sample Y1G48 indicated acceptable accuracy and precision. However, there were indications of potential bias, including variability in excess of the acceptable limits in the responses of some analytes in the calibration standards. Other indications of potential bias were a high surrogate recovery in one sample and a low internal standard recovery in another sample.
- The lack of response of 1,4-Dioxane in the calibration standards has resulted in the rejection of most of the sample results for this analyte. 1,4-Dioxane has a history of being poorly purged from samples.
- There was an indication of inability or difficulty to purge some analytes from three samples. This was evident from the detection of significant levels of these analytes when the samples were reanalyzed using their methanol extracts. The analytes were

either not detected, or were detected at much lower concentrations, when the samples were originally analyzed using direct purge. It is suggested that the data user consider the possibility of this phenomenon occurring in other samples that were not reanalyzed using methanol extraction.

- Low levels of Methylene Chloride in some samples appear to be attributed to laboratory contamination.
- Comparability and completeness goals for the project appear to have been met.

## Data Qualification Summary

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G26	ACETONE	40	J	ICAL%RSD>UCL
Y1G26	1,4-DIOXANE	280	R	ICAL/CCV RRF<LCL
Y1G27	ACETONE	11	UJ	ICAL%RSD>UCL
Y1G27	CHLOROMETHANE	11	UJ	CCV<LCL
Y1G27	METHYLENE CHLORIDE	11	U	LB<RL
Y1G27	1,4-DIOXANE	290	R	ICAL/CCV RRF<LCL
Y1G28	1,1,2,2-TETRACHLOROETHANE	12	UJ	IS3<LCL
Y1G28	1,2,4-TRICHLOROBENZENE	12	UJ	IS3<LCL
Y1G28	1,2-DIBROMO-3- CHLOROPROPANE	12	UJ	IS3<LCL
Y1G28	1,2-DICHLOROBENZENE	12	UJ	IS3<LCL
Y1G28	1,3-DICHLOROBENZENE	12	UJ	IS3<LCL
Y1G28	1,4-DICHLOROBENZENE	12	UJ	IS3<LCL
Y1G28	ACETONE	12	UJ	ICAL%RSD>UCL
Y1G28	BROMOFORM	12	UJ	IS3<LCL
Y1G28	CHLOROBENZENE	12	UJ	IS3<LCL
Y1G28	CHLOROMETHANE	12	UJ	CCV<LCL
Y1G28	ETHYLBENZENE	12	UJ	IS3<LCL
Y1G28	ISOPROPYLBENZENE	12	UJ	IS3<LCL
Y1G28	STYRENE	12	UJ	IS3<LCL
Y1G28	XYLENES (TOTAL)	12	UJ	IS3<LCL
Y1G28	1,4-DIOXANE	300	R	ICAL/CCV RRF<LCL
Y1G29	ACETONE	10	UJ	ICAL%RSD>UCL
Y1G29	CHLOROMETHANE	10	UJ	CCV<LCL
Y1G29	1,4-DIOXANE	250	R	ICAL/CCV RRF<LCL
Y1G30	ACETONE	280	J	ICAL%RSD>UCL
Y1G30	CHLOROMETHANE	16	UJ	CCV<LCL
Y1G30	METHYLENE CHLORIDE	16	U	LB<RL
Y1G30	1,4-DIOXANE	390	R	ICAL/CCV RRF<LCL
Y1G31	ACETONE	10	UJ	ICAL%RSD>UCL
Y1G31	CHLOROMETHANE	10	UJ	CCV<LCL
Y1G31	METHYLENE CHLORIDE	10	U	LB<RL
Y1G31	1,4-DIOXANE	250	R	ICAL/CCV RRF<LCL
Y1G32	ACETONE	54	J	ICAL%RSD>UCL
Y1G32	CHLOROMETHANE	11	UJ	CCV<LCL
Y1G32	METHYLENE CHLORIDE	11	U	LB<RL
Y1G32	1,4-DIOXANE	270	R	ICAL/CCV RRF<LCL
Y1G33	ACETONE	53	J	ICAL%RSD>UCL
Y1G33	CHLOROMETHANE	11	UJ	CCV<LCL
Y1G33	METHYLENE CHLORIDE	11	U	LB<RL
Y1G33	1,4-DIOXANE	280	R	ICAL/CCV RRF<LCL
Y1G34	ACETONE	75	J	ICAL%RSD>UCL
Y1G34	CHLOROMETHANE	12	UJ	CCV<LCL
Y1G34	1,4-DIOXANE	310	R	ICAL/CCV RRF<LCL
Y1G37	ACETONE	25	J	ICAL%RSD>UCL

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G37	CHLOROMETHANE	12	UJ	CCV<LCL
Y1G37	METHYLENE CHLORIDE	12	U	LB<RL
Y1G37	1,4-DIOXANE	300	R	ICAL/CCV RRF<LCL
Y1G38	ACETONE	11	J	ICAL%RSD>UCL
Y1G38	CHLOROMETHANE	12	UJ	CCV<LCL
Y1G38	1,4-DIOXANE	300	R	ICAL/CCV RRF<LCL
Y1G39	ACETONE	14	UJ	ICAL%RSD>UCL
Y1G39	CHLOROMETHANE	14	UJ	CCV<LCL
Y1G39	1,4-DIOXANE	340	R	ICAL/CCV RRF<LCL
Y1G40	ACETONE	12	UJ	ICAL%RSD>UCL
Y1G40	CHLOROMETHANE	12	UJ	CCV<LCL
Y1G40	METHYLENE CHLORIDE	12	U	LB<RL
Y1G40	1,4-DIOXANE	300	R	ICAL/CCV RRF<LCL
Y1G41	1,1-DICHLOROETHANE	120	J	Sur>UCL
Y1G41	1,3-DICHLOROBENZENE	130	J	Sur>UCL
Y1G41	1,4-DICHLOROBENZENE	120	J	Sur>UCL
Y1G41	ACETONE	220	J	Sur>UCL/ICAL%RSD>UCL
Y1G41	BENZENE	49	J	Sur>UCL
Y1G41	CHLOROMETHANE	12	UJ	CCV<LCL
Y1G41	CYCLOHEXANE	80	J	Sur>UCL
Y1G41	METHYLENE CHLORIDE	14	J	Sur>UCL
Y1G41	TETRACHLOROETHENE	13	J	Sur>UCL
Y1G41	TRANS-1,2-DICHLOROETHENE	69	J	Sur>UCL
Y1G41	TRICHLOROETHENE	140	J	Sur>UCL
Y1G41	VINYL CHLORIDE	250	J	>ICLinearrange, diluted out in reanalysis
Y1G41	1,4-DIOXANE	300	R	ICAL/CCV RRF<LCL
Y1G41DL	STYRENE	980	J	CCV<LCL
Y1G43	ACETONE	50	J	ICAL%RSD>UCL
Y1G43	CHLOROMETHANE	11	UJ	CCV<LCL
Y1G43	1,4-DIOXANE	280	R	ICAL/CCV RRF<LCL
Y1G44	ACETONE	23	J	ICAL%RSD>UCL
Y1G44	CHLOROMETHANE	12	UJ	CCV<LCL
Y1G44	1,4-DIOXANE	290	R	ICAL/CCV RRF<LCL
Y1G45	ACETONE	140	J	ICAL%RSD>UCL
Y1G45	CHLOROMETHANE	11	UJ	CCV<LCL
Y1G45	1,4-DIOXANE	270	R	ICAL/CCV RRF<LCL
Y1G46	2-BUTANONE	390	J	>ICLinearrange, diluted out in reanalysis
Y1G46	CHLOROMETHANE	17	UJ	CCV<LCL
Y1G46	1,4-DIOXANE	1500	J	ICAL/CCV RRF<LCL
Y1G46DL	ACETONE	460	J	CCV<LCL
Y1G47	ACETONE	12	UJ	ICAL%RSD>UCL
Y1G47	1,4-DIOXANE	300	R	ICAL/CCV RRF<LCL
Y1G48	ACETONE	12	UJ	ICAL%RSD>UCL
Y1G48	1,4-DIOXANE	310	R	ICAL/CCV RRF<LCL

## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** September 22, 24, 27, 28, 2004  
**Report Date:** March 30, 2005  
**Parameters:** Volatile Organic Compounds  
**Laboratory:** CompuChem/Division of Liberty Analytical Corp.  
**Sample Delivery Group:** Y1G50

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 and project-approved modifications described in Modification Reference Number 1148.0 for volatile organic compounds (VOC). The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

The case narrative references EPA CLP SOW Document OLM04.3 flex clause 1148.1, and EnCore Preparation Worksheets are present in the package, but it is not clearly stated that the samples were received in EnCores. Samples were prepared for VOC analysis according to modified SW-846 method 5035.

Four sample dilutions were performed outside of the technical holding time requirements. Nine analytes in sample Y1G60DL, nine analytes in sample Y1G61DL, eight analytes in sample Y1G62DL, and six analytes in sample Y1G63DL were flagged "J".

## II. GC/MS Instrument Performance Check

All instrument performance check requirements were met.

## III. Initial Calibration

The relative standard deviation (RSD) of the relative response factors of acetone in the initial calibration performed on 09/24/04 on instrument F50055 exceeded 30%. The associated detected results were flagged "J" and associated non-detected results were flagged "UJ".

All other initial calibration results met the requirements.

## IV. Continuing Calibration

Trichlorofluoromethane, bromomethane, and acetone were recovered below the lower acceptance limit in continuing calibration verification standards (CCV). Two associated non-detected results were flagged "UJ" and one detected result was flagged "J".

Carbon disulfide, MTBE, 2-butanone, and 4-methyl-2-pentanone were recovered above the upper acceptance limit in CCVs. Eight associated detected results were flagged "J".

## V. Blanks

Toluene was detected below the contract required quantitation limit (CRQL) in method blank VBLKWT. The associated sample results less than 10 times the blank results have been flagged "U".

Acetone was detected below the CRQL in method blank VBLKAD. The associated sample results less than 10 times the blank results have been flagged "U".

Acetone was detected above the CRQL in method blank VBLKWR. The associated sample results less than 10 times the blank results have been flagged "U".

## VI. System Monitoring Compounds

The surrogate, 1,2-dichloroethane-d4, was recovered below the lower acceptance limit in samples Y1G68, Y1G69, and Y1G70. The associated detected results were flagged "J" and the non-detected results were flagged "UJ".

The surrogate, bromofluorobenzene, was recovered above the upper acceptance limit in samples Y1G63DL, Y1G69DL, Y1G68DL, Y1G66, Y1G61, Y1G51, and Y1G60. The associated detected results were flagged "J".

The surrogate, toluene-d8, was recovered above the upper acceptance limit in samples Y1G62, Y1G63, and Y1G60. The associated detected results were flagged "J".

## VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Duplicate spike analyses of sample Y1G58 were performed. All results met the acceptance criteria with one exception.

1,1-dichloroethene was recovered below the lower acceptance limit in the MS. The parent sample was not detected for this analyte and result was flagged "UJ".

### **VIII. Laboratory Control Sample (LCS)**

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

### **IX. Internal Standards**

The area of three internal standards (IS) in sample Y1G63, two IS in sample Y1G69, and two IS in sample Y1G70 were above the upper acceptance limit. Sample Y1G63 was reanalyzed diluted, but reanalysis was outside of technical holding time. The reanalysis results should be excluded in favor of the original analysis results. Sample Y1G69 and Y1G70 were not reanalyzed. Associated detected results were flagged "J" and non-detected results were flagged "UJ".

### **X. Target Compound Identification**

Verifying compound identification was not within the scope of the data review for this SDG.

### **XI. Compound Quantitation and Reported CRQLs**

Twenty-nine analytes in seven samples were reported above the linear range of the calibration. The samples were diluted and reanalyzed; however, the analytes were non-detect in the diluted analysis. The original results are reported with "J" flags.

Verification of quantitation and accuracy of reported CRQLs was not within the scope of the data review for this SDG.

### **XII. Tentatively Identified Compounds (TIC)**

Verification of tentative identifications was not within the scope of the data review for this SDG.

### **XIII. Field Blanks**

There were no field blanks in this SDG.

### **XIV. Field Duplicates**

Sample Y1G56 is a field duplicate (FD) for sample Y1G54. Sample Y1G55 is a FD for sample Y1G53. All acceptance criteria were met for both FD sets.

### **XV. System Performance**

Raw data review was not within the scope of this task, and the system performance could not be evaluated.

### **XVI. Overall Assessment of Data**

- The duplicate matrix spike results of representative analytes spiked into sample Y1G58 indicated acceptable accuracy and precision. However, there were indications of potential bias, including variabilities in excess of the acceptable limits in the responses of some analytes in the calibration standards. Other indications of potential bias were surrogate recovery exceedances and internal standard recovery exceedances.
- Low levels of toluene and acetone in some samples appear to be attributed to laboratory contamination.

### Data Qualification Summary

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G50	ACETONE	58	J	ICAL%RSD>UCL, 31.3%
Y1G51	1,1-DICHLOROETHANE	62	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	1,3-DICHLOROBENZENE	130	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	2-BUTANONE	48	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	ACETONE	140	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	BENZENE	35	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	CHLOROETHANE	14	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	CIS-1,2-DICHLOROETHENE	120	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	CYCLOHEXANE	170	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	TETRACHLOROETHENE	8	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	TRANS-1,2-DICHLOROETHENE	3	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G51	TRICHLOROETHENE	5	J	Sur>UCL, BFB 140% LCL = 59 UCL = 113
Y1G54	ACETONE	24	J	ICAL%RSD>UCL, 31.3%
Y1G55	ACETONE	43	J	ICAL%RSD>UCL, 31.3%
Y1G56	ACETONE	32	J	ICAL%RSD>UCL, 31.3%
Y1G58	1,1-DICHLOROETHENE	13	UJ	MS<LCL %R31% LCL=59 UCL=172
Y1G58	ACETONE	13	UJ	ICAL%RSD>UCL, 31.3%
Y1G59	ACETONE	12	UJ	ICAL%RSD>UCL, 31.3%
Y1G60	1,1-DICHLOROETHENE	49	J	Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	1,2,4-TRICHLOROBENZENE	7	J	Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	1,3-DICHLOROBENZENE	510	J	diluted out of reanalysis, "J"/Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	4-METHYL-2-PENTANONE	11000	J	CCV>UCL, %D 25.7% vs 25%/diluted out of reanalysis/Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	ACETONE	210	J	LB>RL, blank target 13 ug/kg/ICAL%RSD>UCL, 31.3%/Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G60	BENZENE	480	J	diluted out of reanalysis, "J"/Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	CHLOROBENZENE	430	J	diluted out of reanalysis, "J"/Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	CHLOROETHANE	7	J	Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	CYCLOHEXANE	670	J	diluted out of reanalysis, "J"/Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	METHYLENE CHLORIDE	14	J	Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	TETRACHLOROETHENE	100	J	Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	TRANS-1,2-DICHLOROETHENE	77	J	Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	TRICHLOROETHENE	280	J	Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60	VINYL CHLORIDE	51	J	Sur>UCL, TOL 167% LCL=84 UCL=138 and BFB 750 LCL=59 UCL=113
Y1G60DL	1,1-DICHLOROETHANE	14000	J	HT>UCL, 14 days
Y1G60DL	1,2-DICHLOROBENZENE	110000	J	HT>UCL, 14 days
Y1G60DL	1,4-DICHLOROBENZENE	19000	J	HT>UCL, 14 days
Y1G60DL	CIS-1,2-DICHLOROETHENE	27000	J	HT>UCL, 14 days
Y1G60DL	ETHYLBENZENE	47000	J	HT>UCL, 14 days
Y1G60DL	ISOPROPYLBENZENE	14000	J	HT>UCL, 14 days
Y1G60DL	METHYLCYCLOHEXANE	12000	J	HT>UCL, 14 days
Y1G60DL	TOLUENE	380000	J	HT>UCL, 14 days
Y1G60DL	XYLENES (TOTAL)	320000	J	HT>UCL, 14 days
Y1G61	1,1-DICHLOROETHENE	15	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	1,2,4-TRICHLOROBENZENE	43	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	1,2-DICHLOROETHANE	13	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	1,3-DICHLOROBENZENE	77	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	2-BUTANONE	250	J	CCV>UCL, %D 26.7% vs 25%
Y1G61	ACETONE	420	J	LB>RL, blank target 13 ug/kg/ICAL%RSD>UCL, 31.3%/diluted out in reanalysis/Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	BENZENE	150	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	CHLOROBENZENE	82	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	CHLOROETHANE	15	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	CYCLOHEXANE	58	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	METHYLCYCLOHEXANE	450	J	diluted out of reanalysis/Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	METHYLENE CHLORIDE	14	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	TETRACHLOROETHENE	21	J	Sur>UCL, BFB 117% LCL=59 UCL=113

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G61	TRANS-1,2-DICHLOROETHENE	65	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	TRICHLOROETHENE	36	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61	VINYL CHLORIDE	43	J	Sur>UCL, BFB 117% LCL=59 UCL=113
Y1G61DL	1,1-DICHLOROETHANE	5000	J	HT>UCL, 14 days
Y1G61DL	1,2-DICHLOROBENZENE	32000	J	HT>UCL, 14 days
Y1G61DL	1,4-DICHLOROBENZENE	5000	J	HT>UCL, 14 days
Y1G61DL	4-METHYL-2-PENTANONE	3900	J	HT>UCL, 14 days
Y1G61DL	CIS-1,2-DICHLOROETHENE	16000	J	HT>UCL, 14 days
Y1G61DL	ETHYLBENZENE	10000	J	HT>UCL, 14 days
Y1G61DL	ISOPROPYLBENZENE	4400	J	HT>UCL, 14 days
Y1G61DL	TOLUENE	92000	J	HT>UCL, 14 days
Y1G61DL	XYLENES (TOTAL)	71000	J	HT>UCL, 14 days
Y1G62	1,1-DICHLOROETHANE	250	J	diluted out in reanalysis "J"/Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	1,2,4-TRICHLOROBENZENE	61	J	Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	1,3-DICHLOROBENZENE	10	J	Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	1,4-DICHLOROBENZENE	130	J	Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	ACETONE	160	J	LB>RL, blank target 13 ug/kg/ICAL%RSD>UCL, 31.3%/Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	CARBON DISULFIDE	5	J	CCV>UCL, %D 25.2% vs 25%/Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	CHLOROBENZENE	83	J	Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	CHLOROETHANE	7	J	Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	METHYL TERT-BUTYL ETHER	4	J	CCV>UCL, %D 27% vs 25%/Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	METHYLENE CHLORIDE	12	J	Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	TETRACHLOROETHENE	6	J	Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62	TRANS-1,2-DICHLOROETHENE	10	J	Sur>UCL TOL 403% LCL=84 UCL=138
Y1G62DL	1,2-DICHLOROBENZENE	12000	J	HT>UCL, 11 days
Y1G62DL	CIS-1,2-DICHLOROETHENE	7200	J	HT>UCL, 11 days
Y1G62DL	ETHYLBENZENE	50000	J	HT>UCL, 11 days
Y1G62DL	ISOPROPYLBENZENE	9400	J	HT>UCL, 11 days
Y1G62DL	METHYLCYCLOHEXANE	29000	J	HT>UCL, 11 days
Y1G62DL	TOLUENE	14000	J	HT>UCL, 11 days
Y1G62DL	VINYL CHLORIDE	2200	J	HT>UCL, 11 days

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G62DL	XYLENES (TOTAL)	170000	J	HT>UCL, 11 days
Y1G63	1,1,1-TRICHLOROETHANE	12	UJ	IS>UCL DFB 259%
Y1G63	1,1,2,2-TETRACHLOROETHANE	12	UJ	IS>UCL CBZ 227%
Y1G63	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	12	UJ	IS>UCL BCM 209%
Y1G63	1,1,2-TRICHLOROETHANE	12	UJ	IS>UCL DFB 259%
Y1G63	1,1-DICHLOROETHANE	320	J	diluted out in reanalysis, "J"/Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL BCM 209%
Y1G63	1,1-DICHLOROETHENE	12	UJ	IS>UCL BCM 209%
Y1G63	1,2,4-TRICHLOROBENZENE	12	UJ	IS>UCL CBZ 227%
Y1G63	1,2-DIBROMO-3-CHLOROPROPANE	12	UJ	IS>UCL CBZ 227%
Y1G63	1,2-DIBROMOETHANE	12	UJ	IS>UCL CBZ 227%
Y1G63	1,2-DICHLOROETHANE	12	UJ	IS>UCL BCM 209%
Y1G63	1,2-DICHLOROPROPANE	12	UJ	IS>UCL DFB 259%
Y1G63	1,3-DICHLOROBENZENE	15	J	Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL CBZ 227%
Y1G63	1,4-DICHLOROBENZENE	290	J	diluted out in reanalysis, "J"/Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL CBZ 227%
Y1G63	2-BUTANONE	12	UJ	IS>UCL BCM 209%
Y1G63	2-HEXANONE	12	UJ	IS>UCL CBZ 227%
Y1G63	4-METHYL-2-PENTANONE	12	UJ	IS>UCL CBZ 227%
Y1G63	ACETONE	46	U	LB>RL, blank target 13 ug/kg/ICAL%RSD>UCL, 31.3%/Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL BCM 209%
Y1G63	BENZENE	800	J	diluted out in reanalysis, "J"/Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL DFB 259%
Y1G63	BROMODICHLOROMETHANE	12	UJ	IS>UCL DFB 259%
Y1G63	BROMOFORM	12	UJ	IS>UCL DFB 259%
Y1G63	BROMOMETHANE	12	UJ	IS>UCL BCM 209%
Y1G63	CARBON DISULFIDE	12	UJ	IS>UCL BCM 209%
Y1G63	CARBON TETRACHLORIDE	12	UJ	IS>UCL DFB 259%
Y1G63	CHLOROBENZENE	240	J	diluted out in reanalysis, "J"/Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL CBZ 227%
Y1G63	CHLOROETHANE	12	J	Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL BCM 209%
Y1G63	CHLOROFORM	12	UJ	IS>UCL BCM 209%
Y1G63	CHLOROMETHANE	12	UJ	IS>UCL BCM 209%
Y1G63	CIS-1,2-DICHLOROETHENE	3200	J	diluted out in reanalysis, "J"/Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL BCM 209%
Y1G63	CIS-1,3-DICHLOROPROPENE	12	UJ	IS>UCL DFB 259%
Y1G63	CYCLOHEXANE	3200	J	diluted out in reanalysis, "J"/Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL DFB 259%

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G63	DIBROMOCHLOROMETHANE	12	UJ	IS>UCL DFB 259%
Y1G63	DICHLORODIFLUOROMETHANE	12	UJ	IS>UCL BCM 209%
Y1G63	METHYL ACETATE	12	UJ	IS>UCL BCM 209%
Y1G63	METHYLENE CHLORIDE	12	J	Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL BCM 209%
Y1G63	STYRENE	12	UJ	IS>UCL CBZ 227%
Y1G63	TETRACHLOROETHENE	71	J	Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL CBZ 227%
Y1G63	TRANS-1,2-DICHLOROETHENE	20	J	Sur>UCL TOL 525% LCL=84 UCL=138
Y1G63	TRANS-1,3-DICHLOROPROPENE	12	UJ	IS>UCL DFB 259%
Y1G63	TRICHLOROETHENE	4	J	Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL DFB 259%
Y1G63	TRICHLOROFUOROMETHANE	12	UJ	IS>UCL BCM 209%
Y1G63	VINYL CHLORIDE	130	J	Sur>UCL TOL 525% LCL=84 UCL=138/IS>UCL BCM 209%
Y1G63DL	1,2-DICHLOROBENZENE	33000	J	Sur>UCL BFB 115% LCL = 59 UCL = 113/HT>UCL, 11 days
Y1G63DL	ETHYLBENZENE	110000	J	Sur>UCL BFB 115% LCL = 59 UCL = 113/HT>UCL, 11 days
Y1G63DL	ISOPROPYLBENZENE	17000	J	Sur>UCL BFB 115% LCL = 59 UCL = 113/HT>UCL, 11 days
Y1G63DL	METHYLCYCLOHEXANE	78000	J	Sur>UCL BFB 115% LCL = 59 UCL = 113/HT>UCL, 11 days
Y1G63DL	TOLUENE	520000	J	Sur>UCL BFB 115% LCL = 59 UCL = 113/HT>UCL, 11 days
Y1G63DL	XYLENES (TOTAL)	540000	J	Sur>UCL BFB 115% LCL = 59 UCL = 113/HT>UCL, 11 days
Y1G65	ACETONE	45	U	LB<RL, blank target 9 ug/kg, "U"
Y1G66	2-BUTANONE	26	J	Sur>UCL BFB 491% LCL=59 UCL=113
Y1G66	ACETONE	110	J	LB<RL, blank target 6 ug/kg/CCV<LCL, %D 33.2% vs 25%/ICAL%RSD>UCL, 31.3%/Sur>UCL BFB 491% LCL=59 UCL=113
Y1G66	BROMOMETHANE	11	UJ	CCV<LCL, %D 30.4% vs 25%
Y1G66	CIS-1,2-DICHLOROETHENE	3	J	Sur>UCL BFB 491% LCL=59 UCL=113
Y1G66	ETHYLBENZENE	4	J	Sur>UCL BFB 491% LCL=59 UCL=113
Y1G66	TOLUENE	11	U	LB<RL, blank target 6 ug/kg
Y1G66	TRICHLOROFUOROMETHANE	11	UJ	CCV<LCL, %D 26.1% vs 25%
Y1G66	XYLENES (TOTAL)	14	J	Sur>UCL BFB 491% LCL=59 UCL=113
Y1G68	1,1,1-TRICHLOROETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,1,2,2-TETRACHLOROETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,1,2-TRICHLOROETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,1-DICHLOROETHANE	450	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 59% LCL=70 UCL=121

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G68	1,1-DICHLOROETHENE	6	J	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,2,4-TRICHLOROBENZENE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,2-DIBROMO-3-CHLOROPROPANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,2-DIBROMOETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,2-DICHLOROETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,2-DICHLOROPROPANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,3-DICHLOROBENZENE	61	J	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	1,4-DICHLOROBENZENE	320	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	2-BUTANONE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	2-HEXANONE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	4-METHYL-2-PENTANONE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	ACETONE	200	J	LB>RL, blank target 13 ug/kg/ICAL%RSD>UCL, 31.3%/Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	BENZENE	200	J	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	BROMODICHLOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	BROMOFORM	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	BROMOMETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	CARBON DISULFIDE	9	J	CCV>UCL, %D 25.2% vs 25%/Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	CARBON TETRACHLORIDE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	CHLOROBENZENE	930	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	CHLOROETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	CHLOROFORM	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	CHLOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	CIS-1,2-DICHLOROETHENE	9500	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	CIS-1,3-DICHLOROPROPENE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	CYCLOHEXANE	470	J	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	DIBROMOCHLOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	DICHLORODIFLUOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	ISOPROPYLBENZENE	1400	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	METHYL ACETATE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	METHYL TERT-BUTYL ETHER	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	METHYLCYCLOHEXANE	8300	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 59% LCL=70 UCL=121

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G68	METHYLENE CHLORIDE	12	J	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	STYRENE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	t-Butanol	59	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	TETRACHLOROETHENE	63	J	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	TRANS-1,2-DICHLOROETHENE	120	J	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	TRANS-1,3-DICHLOROPROPENE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	TRICHLOROETHENE	130	J	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	TRICHLOROFUOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68	VINYL CHLORIDE	180	J	Sur<LCL 1,2-DCE 59% LCL=70 UCL=121
Y1G68DL	1,2-DICHLOROBENZENE	24000	J	Sur>UCL BFB 121% LCL = 59 UCL = 113
Y1G68DL	ETHYLBENZENE	45000	J	Sur>UCL BFB 121% LCL = 59 UCL = 113
Y1G68DL	TOLUENE	490000	J	Sur>UCL BFB 121% LCL = 59 UCL = 113
Y1G68DL	XYLENES (TOTAL)	370000	J	Sur>UCL BFB 121% LCL = 59 UCL = 113
Y1G69	1,1,1-TRICHLOROETHANE	60	J	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	1,1,2,2-TETRACHLOROETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	1,1,2-TRICHLOROETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	1,1-DICHLOROETHANE	2400	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	1,1-DICHLOROETHENE	87	J	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	1,2,4-TRICHLOROBENZENE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	1,2-DIBROMO-3-CHLOROPROPANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	1,2-DIBROMOETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	1,2-DICHLOROBENZENE	52	J	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	1,2-DICHLOROETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	1,2-DICHLOROPROPANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	1,3-DICHLOROBENZENE	6	J	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	1,4-DICHLOROBENZENE	45	J	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	2-BUTANONE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	2-HEXANONE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	4-METHYL-2-PENTANONE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	ACETONE	130	U	LB>RL, blank target 13 ug/kg/ICAL%RSD>UCL, 31.3%/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G69	BENZENE	1000	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	BROMODICHLOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	BROMOFORM	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	BROMOMETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	CARBON DISULFIDE	3	J	CCV>UCL, %D 25.2% vs 25%/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	CARBON TETRACHLORIDE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	CHLOROENZENE	940	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	CHLOROETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	CHLOROFORM	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	CHLOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	CIS-1,3-DICHLOROPROPENE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	CYCLOHEXANE	2800	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	DIBROMOCHLOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	DICHLORODIFLUOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	METHYL ACETATE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	METHYL TERT-BUTYL ETHER	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	METHYLENE CHLORIDE	15	J	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	STYRENE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	t-Butanol	58	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	TETRACHLOROETHENE	1400	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121
Y1G69	TRANS-1,2-DICHLOROETHENE	790	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	TRANS-1,3-DICHLOROPROPENE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	TRICHLOROETHENE	7300	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL DFB 243%
Y1G69	TRICHLOROFUOROMETHANE	12	UJ	Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69	VINYL CHLORIDE	330	J	diluted out in reanalysis "J"/Sur<LCL 1,2-DCE 60% LCL=70 UCL=121/IS>UCL BCM 244%
Y1G69DL	CIS-1,2-DICHLOROETHENE	190000	J	Sur>UCL BFB 117% LCL = 59 UCL = 113
Y1G69DL	ETHYLBENZENE	51000	J	Sur>UCL BFB 117% LCL = 59 UCL = 113
Y1G69DL	ISOPROPYLBENZENE	20000	J	Sur>UCL BFB 117% LCL = 59 UCL = 113
Y1G69DL	METHYLCYCLOHEXANE	30000	J	Sur>UCL BFB 117% LCL = 59 UCL = 113
Y1G69DL	TOLUENE	1600000	J	Sur>UCL BFB 117% LCL = 59 UCL = 113
Y1G69DL	XYLENES (TOTAL)	350000	J	Sur>UCL BFB 117% LCL = 59 UCL = 113

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G70	1,1,1-TRICHLOROETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	1,1,2,2-TETRACHLOROETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	1,1,2-TRICHLOROETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	1,1-DICHLOROETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	1,1-DICHLOROETHENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	1,2,4-TRICHLOROBENZENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	1,2-DIBROMO-3-CHLOROPROPANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	1,2-DIBROMOETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	1,2-DICHLOROBENZENE	15	J	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	1,2-DICHLOROETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	1,2-DICHLOROPROPANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	1,3-DICHLOROBENZENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	1,4-DICHLOROBENZENE	2	J	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	2-BUTANONE	6	J	CCV>UCL, %D 26.7% vs 25%/Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	2-HEXANONE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	4-METHYL-2-PENTANONE	12	J	CCV>UCL, %D 25.7% vs 25%/Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	ACETONE	11	U	LB>RL, blank target 13 ug/kg/ICAL%RSD>UCL, 31.3%/Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	BENZENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	BROMODICHLOROMETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	BROMOFORM	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	BROMOMETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	CARBON DISULFIDE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	CARBON TETRACHLORIDE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	CHLOROBENZENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	CHLOROETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	CHLOROFORM	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	CHLOROMETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	CIS-1,2-DICHLOROETHENE	44	J	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	CIS-1,3-DICHLOROPROPENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	CYCLOHEXANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G70	DIBROMOCHLOROMETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	DICHLORODIFLUOROMETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	ETHYLBENZENE	45	J	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	ISOPROPYLBENZENE	430	J	diluted out of reanalysis "J"/Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	METHYL ACETATE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	METHYL TERT-BUTYL ETHER	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	METHYLCYCLOHEXANE	15	J	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	METHYLENE CHLORIDE	11	J	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	STYRENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	t-Butanol	55	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	TETRACHLOROETHENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G70	TRANS-1,2-DICHLOROETHENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	TRANS-1,3-DICHLOROPROPENE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	TRICHLOROETHENE	4	J	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL DFB 206%
Y1G70	TRICHLOROFUOROMETHANE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	VINYL CHLORIDE	11	UJ	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121/IS>UCL BCM 207%
Y1G70	XYLENES (TOTAL)	370	J	Sur<LCL 1,2-DCE 69% LCL=70 UCL=121
Y1G71	ACETONE	33	U	LB<RL, blank target 9 ug/kg, "U"

## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** October 8, 2004  
October 14,2004  
**Report Date:** March 30, 2005  
**Parameters:** Volatile Organic Compounds  
**Laboratory:** CompuChem/Division of Liberty Analytical Corp.  
**Sample Delivery Group:** Y1G87

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 and project-approved modifications described in Modification Reference Number 1148.0 for volatile organic compounds (VOC). The data review was performed using the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

The case narrative references EPA CLP SOW Document OLM04.3 flex clause 1148.1, and EnCore Preparation Worksheets verify that the samples were prepared as indicated in the flex clause.

All hold-time criteria were met.

## II. GC/MS Instrument Performance Check

All instrument performance checks requirements were met.

## III. Initial Calibration

The relative standard deviation (RSD) of the relative response factors of 1,1,2-Trichloro-1,2,2-trifluoroethene and cis-1,2-dichloroethene exceeded 30%. The associated detected results were flagged "J" and associated non-detected results were flagged "UJ".

All other initial calibration results met the requirements.

## IV. Continuing Calibration

Dichlorodifluoromethane, chloromethane, vinyl chloride and chloroethane were recovered below the lower acceptance limit in continuing calibration verification standards (CCV). Associated non-detected results were flagged "UJ" and detected results were flagged "J".

## V. Blanks

Several analytes were detected below the contract required quantitation limit (CRQL) in the various blank analyses. The blank associated with sample Y1G87 contained 2-butanone within 10X of the amount detected and was flagged "U" at the measured concentration. Also, the acetone detected in sample in Y1G87 is also likely a laboratory artifact even though the associated blank did not contain a reportable level of acetone. The result wasn't qualified.

## VI. System Monitoring Compounds

All three surrogates were recovered greater than QC limits in sample Y1G87. Y1G87 also had an internal standard recovered less than method specified limits. The sample was reanalyzed at a dilution and all surrogate and internal standard recoveries met QC limits. The analytes reported from the diluted analysis were only those that exceeded the calibration range in the undiluted analysis. The remaining results reported from the undiluted analysis and the associated detected results were flagged "J" and the non-detected results were flagged "UJ".

## VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

An MS/MSD was performed on the dilution of sample Y1G87 and all acceptance criteria were met.

## VIII. Laboratory Control Sample (LCS)

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

## IX. Target Compound Identification

Verifying compound identification was not within the scope of the data review for this SDG.

## X. Compound Quantitation and Reported CRQLs

Four analytes in sample Y1G87 were reported above the linear range of the calibration. The sample was diluted and reanalyzed; however, the analytes were non-detect in the diluted analysis. The original results are reported with "J" flags.

Verification of quantitation and accuracy of reported CRQLs was not within the scope of the data review for this SDG.

#### XI. Tentatively Identified Compounds (TIC)

Verification of tentative identifications was not within the scope of the data review for this SDG.

#### XII. Field Blanks

There were no field blanks in this SDG.

#### XIII. Field Duplicates

No field duplicates were analyzed in this SDG.

#### XIV. System Performance

Raw data review was not within the scope of this task, and the system performance could not be evaluated.

#### XV. Overall Assessment of Data

- Matrix effects were identified in the low level analysis of sample Y1G87.
- Instrument calibration was generally acceptable.
- Laboratory contamination was not a significant issue during sample analysis.
- No data were rejected for project decisionmaking suggesting that the data quality objectives are met for this SDG.

### Data Qualification Summary

NativeID	Analyte	Final Result	Final Validation Flag	Validation Comments
Y1G89	DICHLORODIFLUOROMETHANE	11	UJ	CCAL<LCL
Y1G89	CHLOROMETHANE	11	UJ	CCAL<LCL
Y1G89	VINYL CHLORIDE	11	UJ	CCAL<LCL
Y1G89	CHLOROETHANE	11	UJ	CCAL<LCL
Y1G89	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	11	UJ	ICAL%RSD
Y1G89	CIS-1,2-DICHLOROETHENE	11	UJ	ICAL%RSD
Y1G87	DICHLORODIFLUOROMETHANE	12	UJ	SUR>UCL,CCAL<LCL
Y1G87	CHLOROMETHANE	12	UJ	SUR>UCL, CCAL<LCL
Y1G87	VINYL CHLORIDE	12	UJ	SUR>UCL, CCAL<LCL
Y1G87	BROMOMETHANE	12	U	SUR>UCL
Y1G87	CHLOROETHANE	12	UJ	SUR>UCL, CCAL<LCL
Y1G87	TRICHLOROFLUOROMETHANE	12	U	SUR>UCL
Y1G87	1,1-DICHLOROETHENE	12	U	SUR>UCL
Y1G87	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	12	UJ	SUR>UCL,ICAL%RSD
Y1G87	ACETONE	110	J	SUR>UCL
Y1G87	CARBON DISULFIDE	12	U	SUR>UCL

Y1G87	METHYL ACETATE	12	U	SUR>UCL
Y1G87	METHYLENE CHLORIDE	12	U	SUR>UCL
Y1G87	TRANS-1,2-DICHLOROETHENE	6	J	SUR>UCL
Y1G87	METHYL TERT-BUTYL ETHER	12	U	SUR>UCL
Y1G87	1,1-DICHLOROETHANE	34	J	SUR>UCL
Y1G87	CIS-1,2-DICHLOROETHENE	47	J	SUR>UCL, ICAL%RSD
Y1G87	2-BUTANONE	36	U	SUR>UCL, LMB<RL
Y1G87	CHLOROFORM	12	U	SUR>UCL
Y1G87	1,1,1-TRICHLOROETHANE	12	U	SUR>UCL
Y1G87	CYCLOHEXANE	99	J	SUR>UCL
Y1G87	CARBON TETRACHLORIDE	12	U	SUR>UCL
Y1G87	BENZENE	25	J	SUR>UCL
Y1G87	1,2-DICHLOROETHANE	12	U	SUR>UCL
Y1G87	TRICHLOROETHENE	9	J	SUR>UCL
Y1G87	METHYLCYCLOHEXANE	270	J	SUR>UCL, >ICAL
Y1G87	1,2-DICHLOROPROPANE	12	U	SUR>UCL
Y1G87	BROMODICHLOROMETHANE	12	U	SUR>UCL
Y1G87	CIS-1,3-DICHLOROPROPENE	12	U	SUR>UCL
Y1G87	4-METHYL-2-PENTANONE	12	U	SUR>UCL, IS<LCL
Y1G87	TOLUENE	1200	J	SUR>UCL, >ICAL, IS<LCL
Y1G87	TRANS-1,3-DICHLOROPROPENE	12	U	SUR>UCL
Y1G87	1,1,2-TRICHLOROETHANE	12	U	SUR>UCL
Y1G87	TETRACHLOROETHENE	29	J	SUR>UCL, IS<LCL
Y1G87	2-HEXANONE	12	U	SUR>UCL, IS<LCL
Y1G87	DIBROMOCHLOROMETHANE	12	U	SUR>UCL
Y1G87	1,2-DIBROMOETHANE	12	U	SUR>UCL, IS<LCL
Y1G87	ETHYLBENZENE	330	J	SUR>UCL, >ICAL, IS<LCL
Y1G87	XYLENES (TOTAL)	2200	J	SUR>UCL, >ICAL, IS<LCL
Y1G87	STYRENE	12	U	SUR>UCL, IS<LCL
Y1G87	BROMOFORM	12	U	SUR>UCL
Y1G87	ISOPROPYLBENZENE	350	J	SUR>UCL, >ICAL, IS<LCL
Y1G87	1,1,2,2-TETRACHLOROETHANE	12	U	SUR>UCL, IS<LCL
Y1G87	1,2-DIBROMO-3-CHLOROPROPANE	12	U	SUR>UCL, IS<LCL
Y1G87	t-Butanol	61	U	SUR>UCL
Y1G90	DICHLORODIFLUOROMETHANE	13	UJ	CCAL<LCL
Y1G90	CHLOROMETHANE	13	UJ	CCAL<LCL
Y1G90	VINYL CHLORIDE	13	UJ	CCAL<LCL
Y1G90	CHLOROETHANE	13	UJ	CCAL<LCL
Y1G90	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	13	UJ	ICAL%RSD
Y1G90	CIS-1,2-DICHLOROETHENE	13	UJ	ICAL%RSD

## Data Validation Report

**Project/Site Name:** AMCO Chemical Superfund Site/Oakland, CA  
**Collection Date:** March 14, 15, 16, 17, 18, 2005  
**Report Date:** April 09, 2005  
**Parameters:** Volatile Organic Compounds  
**Laboratory:** Envirosystems, Inc.  
**Sample Delivery Group:** Y1RY2

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 and project-approved modifications described in Modification Reference Number 1183.0 for volatile organic compounds (VOC). The data review was performed using the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004 (SAP).

Full data review was performed as required by the SAP. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory in coolers at 1-2°C with the appropriate chain of custody forms (COC) and custody seals intact. The laboratory noted on the COC that sample Y1S17, which is listed on the COC as an equipment blank from station MW-EB-04-0305, was missing.

The COC form shows notations that the VOC samples for Y1RZ0 and Y1RY8 were not preserved. The laboratory's Volatiles pH Logbook lists the pH of these samples as 7 and 8, respectively. However, the case narrative lists all VOC samples as having pH <2. It can only be assumed that pH adjustment was performed by the laboratory; there is no documentation of the pH adjustment.

All technical holding time requirements were met, assuming that pH adjustment was performed at the time of receipt of the samples that had not been previously preserved.

## II. GC/MS Instrument Performance Check

All instrument performance check requirements were met.

## III. Initial Calibration

The relative standard deviations of the relative response factors of Methyl Acetate, Methylene Chloride, 2-Butanone, 2-Hexanone, 1,2-Dibromo-3-chloropropane, and tert-Butyl Alcohol in the initial calibration performed on 03/24/05 on instrument F5100B exceeded 30%. The associated positive sample results have been flagged "J", and the non-detects "UJ".

The average relative response factors of 2-Hexanone, 1,2-Dibromo-3-chloropropane, and tert-Butyl Alcohol from the same initial calibration were less than 0.05. These analytes were not detected in the associated samples, and the results have been rejected.

All other initial calibration results met the requirements.

## IV. Continuing Calibration

The relative response factors of Methyl Acetate, 2-Hexanone, and tert-Butyl Alcohol from the continuing calibration verification performed on 03/24/05 at 0846 on instrument F5100B were less than the corresponding initial calibration average relative response factors by more than 25%. The relative response factor of Acetone from the same calibration verification standard was greater than the initial calibration average relative response factor by more than 25%. The associated positive sample results have been flagged "J", and the non-detects "UJ".

The relative response factors of Methyl Acetate, Methylene Chloride, 2-Hexanone, and tert-Butyl Alcohol from the continuing calibration verification performed on 03/25/05 at 0949 on instrument F5100B were less than the corresponding initial calibration average relative response factors by more than 25%. The relative response factors of Acetone and Carbon Disulfide from the same calibration verification standard were greater than the corresponding initial calibration average relative response factors by more than 25%. The associated positive sample results have been flagged "J", and the non-detects "UJ".

The relative response factors of Bromomethane, Methyl Acetate, 2-Butanone, 4-Methyl-2-pentanone, 2-Hexanone, 1,2-Dibromo-3-chloropropane, and tert-Butyl Alcohol from the continuing calibration verification performed on 03/28/05 at 0852 on instrument F5100B were less than the corresponding initial calibration average relative response factors by more than 25%. The relative response factor of Isopropylbenzene from the same calibration verification standard was greater than the initial calibration average relative response factor by more than 25%. These analytes were not detected in any of the associated samples, and the results have been flagged "UJ".

The relative response factors of 4-Methyl-2-pentanone, 2-Hexanone, 1,2-Dibromo-3-chloropropane, and tert-Butyl Alcohol in all the above continuing calibration verifications were less than 0.05. These analytes were not detected in any of the associated samples, and the results have been rejected.

## V. Blanks

Methylene Chloride was detected above the contract required quantitation limit (CRQL) in method blanks VBLKBM and VBLKBG and in trip blank Y1S07. It was detected below the CRQL in trip blank Y1S10. Methylene Chloride was detected in most of the samples at concentrations below 10 times the associated blank concentration, after adjusting for any dilution. All the sample results have been eventually flagged "UJ" due to the high initial calibration relative standard deviation of the relative response factors and low recovery from the one of the calibration verification standards.

Carbon Disulfide was detected slightly above the CRQL in trip blank Y1S07 and at the CRQL in trip blank Y1S08. There were no detections of this analyte in the associated field samples, and no results have been qualified.

Chloromethane was detected at the CRQL in trip blank Y1S10. There were no detections of this analyte in the associated field samples, and no results have been qualified.

1,1-Dichloroethane and cis-1,2-Dichloroethene were also detected above the CRQL in trip blank Y1S10. These analytes were detected in several of the associated field samples. The concentration of 1,1-Dichloroethane reported in sample Y1RY2 was less than the trip blank concentration, and that of cis-1,2-Dichloroethene reported in sample Y1RZ0 was less than 5 times the trip blank concentration. Both sample results have been flagged "U".

There were no detections in the equipment blanks.

## VI. System Monitoring Compounds

The surrogates, Toluene-d8 and 1,2-Dichloroethane- d4, were recovered above the upper acceptance limits from sample Y1S01 during the original analysis. A 1:5 dilution of the sample was used in the original analysis. The sample was reanalyzed at a 1:25 dilution due to the response of cis-1,2-Dichloroethene exceeding the calibration range in the original analysis. All surrogates met the acceptance criteria in the reanalysis. Since low internal standard recoveries were also noted in the original analysis, the results of this analysis have been excluded in favor of the reanalysis results.

## VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Duplicate spike analyses of sample Y1RZ5 were performed. The recoveries of Trichloroethene and Benzene from the matrix spike duplicate were above the upper acceptance limits. The parent sample results have been flagged "J".

## VIII. Laboratory Control Sample (LCS)

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

## IX. Internal Standards

The area of the internal standard, Bromochloromethane, in the original analysis of sample Y1S01 was less than the lower acceptance limit. Although the areas of the other internal standards were within the acceptance range, they were at the low end of the range. A 1:5

dilution of the sample was used in the original analysis. The sample was reanalyzed at a 1:25 dilution due to the response of cis-1,2-Dichloroethene exceeding the calibration range. All three internal standard areas were within the acceptance criteria and were very close to those of the 12-hour standard in the reanalysis. The results of the original analysis have been excluded in favor of the reanalysis results.

#### **X. Target Compound Identification**

Compound identification was verified for sample Y1RZ5. 1,2-Dichloroethane was reported as detected in the sample, however, the sample spectrum did not meet the identification criteria. The result has been flagged "U". All the other identified compounds met the criteria.

1,2-Dichloroethane was not reported as detected in any other sample.

#### **XI. Compound Quantitation and Reported CRQLs**

Quantitation was reviewed for sample Y1RZ5, and was verified to be accurate. The CRQLs were correctly adjusted for the dilutions that were used.

#### **XII. Tentatively Identified Compounds (TIC)**

Verification of tentative identifications was not within the scope of the data review for this SDG.

#### **XIII. Field Duplicates**

Samples Y1S00 and Y1S01 were field duplicates. Sample Y1S00 was originally analyzed undiluted, and sample Y1S01 was originally analyzed at a 1:5 dilution. They were both reanalyzed at 1:25 dilutions due to the high concentration of cis-1,2-Dichloroethene. Internal standard and surrogate recovery problems were encountered in the original analysis of sample Y1S01. Discrepancies were noted between the original analysis results of sample Y1S00 and those of sample Y1S01. There were also discrepancies between the original results and the reanalysis results for each sample. The reanalysis results were consistent between the two samples, and met the acceptance criteria for field duplicates. Both sets of original analysis results have been excluded in favor of the reanalysis results.

#### **XIV. System Performance**

The laboratory noted in the case narrative that foaming was experienced with some of the samples. The case narrative also addresses manual integrations that were performed on the three lowest-concentration initial calibration standards and on both continuing calibration verification standards. The manual integrations were done to compensate for poor peak shape, coelution, and/or low response. Review of the raw data indicated that the manual integrations were performed on the tert-Butyl Alcohol peaks in the initial calibration standards and in one of the continuing calibration verification standards, and on the Acetone peaks in both continuing calibration verification standards. These were low-responding peaks that were extremely ill-defined due to poor resolution from coeluting peaks.

There was no evidence of degradation of chromatographic conditions in the data that were provided.

## XV. Overall Assessment of Data

- The matrix spike duplicate recoveries of Benzene and Trichloroethene from sample Y1RZ5 indicated potential high bias.
- Other indications of potential bias were high relative standard deviations of the relative response factors in the initial calibration, as well as shifts, mostly downward, outside the acceptable range in the relative responses of some analytes during the continuing calibration verifications.
- The lack of response of a few target analytes in the calibration standards has resulted in the rejection of the sample results for these analytes.
- Anomalies concerning the field duplicate results appear to have been related to internal standard problems during the original analysis of one of the samples and/or detector saturation. Reanalyses at a dilution appear to have resolved the problems.
- Low concentrations of Methylene Chloride were detected in the method blanks and two of the trip blanks. Contamination with a few other target analytes was also evident in the trip blanks. The low levels of these analytes reported in some of the samples were attributed to these contaminants.
- One false positive attributed to a false spectral match was noted.

## Data Qualification Summary

Field ID	Analyte	Final Flag	Validation Comments
Y1S00	DICHLOROFLUOROMETHANE	Exclude	RE
Y1S00	CHLOROMETHANE	Exclude	RE
Y1S00	VINYL CHLORIDE	Exclude	RE
Y1S00	BROMOMETHANE	Exclude	RE
Y1S00	CHLOROETHANE	Exclude	RE
Y1S00	TRICHLOROFLUOROMETHANE	Exclude	RE
Y1S00	1,1-DICHLOROETHENE	Exclude	RE
Y1S00	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Exclude	RE
Y1S00	ACETONE	Exclude	RE
Y1S00	CARBON DISULFIDE	Exclude	RE
Y1S00	METHYL ACETATE	Exclude	RE
Y1S00	METHYLENE CHLORIDE	Exclude	RE
Y1S00	TRANS-1,2-DICHLOROETHENE	Exclude	RE
Y1S00	METHYL TERT-BUTYL ETHER	Exclude	RE
Y1S00	1,1-DICHLOROETHANE	Exclude	RE
Y1S00	cis-1,2-DICHLOROETHENE	Exclude	>IC; RE
Y1S00	2-BUTANONE	Exclude	RE
Y1S00	CHLOROFORM	Exclude	RE
Y1S00	1,1,1-TRICHLOROETHANE	Exclude	RE
Y1S00	CYCLOHEXANE	Exclude	RE
Y1S00	CARBON TETRACHLORIDE	Exclude	RE
Y1S00	BENZENE	Exclude	RE
Y1S00	1,2-DICHLOROETHANE	Exclude	RE
Y1S00	TRICHLOROETHENE	Exclude	RE
Y1S00	METHYLCYCLOHEXANE	Exclude	RE
Y1S00	1,2-DICHLOROPROPANE	Exclude	RE
Y1S00	BROMODICHLOROMETHANE	Exclude	RE
Y1S00	CIS-1,3-DICHLOROPROPANE	Exclude	RE
Y1S00	4-METHYL-2-PENTANONE	Exclude	RE
Y1S00	TOLUENE	Exclude	RE
Y1S00	TRANS-1,3-DICHLOROPROPANE	Exclude	RE
Y1S00	1,1,2-TRICHLOROETHANE	Exclude	RE
Y1S00	TETRACHLOROETHENE	Exclude	RE
Y1S00	2-HEXANONE	Exclude	RE
Y1S00	DIBROMOCHLOROMETHANE	Exclude	RE
Y1S00	1,2-DIBROMOETHANE	Exclude	RE
Y1S00	CHLOROBENZENE	Exclude	RE
Y1S00	ETHYLBENZENE	Exclude	RE
Y1S00	XYLENE (TOTAL)	Exclude	RE
Y1S00	STYRENE	Exclude	RE
Y1S00	BROMOFORM	Exclude	RE
Y1S00	ISOPROPYLBENZENE	Exclude	RE
Y1S00	1,1,2,2-TETRACHLOROETHANE	Exclude	RE
Y1S00	1,3-DICHLOROBENZENE	Exclude	RE

Field ID	Analyte	Final Flag	Validation Comments
Y1S00	1,4-DICHLOROBENZENE	Exclude	RE
Y1S00	1,2-DICHLOROBENZENE	Exclude	RE
Y1S00	1,2-DIBROMO-3- CHLOROPROPANE	Exclude	RE
Y1S00	1,2,4-TRICHLOROBENZENE	Exclude	RE
Y1S00	ETHYL TERT-BUTYL ETHER	Exclude	RE
Y1S00	TERT-AMYL METHYLETHER	Exclude	RE
Y1S00	TERT-BUTYL ALCOHOL	Exclude	RE
Y1S01	DICHLOROFLUOROMETHANE	Exclude	IS <LCL; RE
Y1S01	CHLOROMETHANE	Exclude	IS <LCL; RE
Y1S01	VINYL CHLORIDE	Exclude	IS <LCL; RE
Y1S01	BROMOMETHANE	Exclude	IS <LCL; RE
Y1S01	CHLOROETHANE	Exclude	IS <LCL; RE
Y1S01	TRICHLOROFLUOROMETHANE	Exclude	IS <LCL; RE
Y1S01	1,1-DICHLOROETHENE	Exclude	IS <LCL; RE
Y1S01	1,1,2-TRICHLORO-1,2,2- TRIFLUOROETHANE	Exclude	IS <LCL; RE
Y1S01	ACETONE	Exclude	Surr %R >UCL; IS <LCL; RE
Y1S01	CARBON DISULFIDE	Exclude	IS <LCL; RE
Y1S01	METHYL ACETATE	Exclude	IS <LCL; RE
Y1S01	METHYLENE CHLORIDE	Exclude	IS <LCL; RE
Y1S01	TRANS-1.2-DICHLOROETHENE	Exclude	IS <LCL; RE
Y1S01	METHYL TERT-BUTYL ETHER	Exclude	IS <LCL; RE
Y1S01	1,1-DICHLOROETHANE	Exclude	IS <LCL; RE
Y1S01	CIS-1,2-DICHLOROETHENE	Exclude	Surr %R >UCL; IS <LCL; >IC; RE
Y1S01	2-BUTANONE	Exclude	IS <LCL; RE
Y1S01	CHLOROFORM	Exclude	IS <LCL; RE
Y1S01	1,1,1-TRICHLOROETHANE	Exclude	RE
Y1S01	CYCLOHEXANE	Exclude	RE
Y1S01	CARBON TETRACHLORIDE	Exclude	RE
Y1S01	BENZENE	Exclude	RE
Y1S01	1,2-DICHLOROETHANE	Exclude	RE
Y1S01	TRICHLOROETHENE	Exclude	RE
Y1S01	METHYLCYCLOHEXANE	Exclude	RE
Y1S01	1,2-DICHLOROPROPANE	Exclude	RE
Y1S01	BROMODICHLOROMETHANE	Exclude	RE
Y1S01	CIS-1,3-DICHLOROPROPANE	Exclude	RE
Y1S01	4-METHYL-2-PENTANONE	Exclude	RE
Y1S01	TOLUENE	Exclude	RE
Y1S01	TRANS-1.3-DICHLOROPROPANE	Exclude	RE
Y1S01	1,1,2-TRICHLOROETHANE	Exclude	RE
Y1S01	TETRACHLOROETHENE	Exclude	RE
Y1S01	2-HEXANONE	Exclude	RE
Y1S01	DIBROMOCHLOROMETHANE	Exclude	RE
Y1S01	1,2-DIBROMOTHANE	Exclude	RE
Y1S01	CHLOROBENZENE	Exclude	RE
Y1S01	ETHYLBENZENE	Exclude	RE

Field ID	Analyte	Final Flag	Validation Comments
Y1S01	XYLENE (TOTAL)	Exclude	RE
Y1S01	STYRENE	Exclude	RE
Y1S01	BROMOFORM	Exclude	RE
Y1S01	ISOPROPYLBENZENE	Exclude	RE
Y1S01	1,1,2,2-TETRACHLOROETHANE	Exclude	RE
Y1S01	1,3-DICHLOROBENZENE	Exclude	RE
Y1S01	1,4-DICHLOROBENZENE	Exclude	RE
Y1S01	1,2-DICHLOROBENZENE	Exclude	RE
Y1S01	1,2-DIBROMO-3- CHLOROPROPANE	Exclude	RE
Y1S01	1,2,4-TRICHLOROBENZENE	Exclude	RE
Y1S01	ETHYL TERT-BUTYL ETHER	Exclude	RE
Y1S01	TERT-AMYL METHYLETHER	Exclude	RE
Y1S01	TERT-BUTYL ALCOHOL	Exclude	RE
Y1RZ5DL	DICHLOROFLUOROMETHANE	Exclude	RE
Y1RZ5DL	CHLOROMETHANE	Exclude	RE
Y1RZ5	VINYL CHLORIDE	Exclude	>IC; RE
Y1RZ5DL	BROMOMETHANE	Exclude	RE
Y1RZ5DL	CHLOROETHANE	Exclude	RE
Y1RZ5DL	TRICHLOROFLUOROMETHANE	Exclude	RE
Y1RZ5DL	1,1-DICHLOROETHENE	Exclude	RE
Y1RZ5DL	1,1,2-TRICHLORO-1,2,2- TRIFLUOROETHANE	Exclude	RE
Y1RZ5DL	ACETONE	Exclude	RE
Y1RZ5DL	CARBON DISULFIDE	Exclude	RE
Y1RZ5DL	METHYL ACETATE	Exclude	RE
Y1RZ5DL	METHYLENE CHLORIDE	Exclude	RE
Y1RZ5DL	TRANS-1.2-DICHLOROETHENE	Exclude	RE
Y1RZ5DL	METHYL TERT-BUTYL ETHER	Exclude	RE
Y1RZ5	1,1-DICHLOROETHANE	Exclude	>IC; RE
Y1RZ5	cis-1,2-DICHLOROETHENE	Exclude	>IC; RE
Y1RZ5DL	2-BUTANONE	Exclude	RE
Y1RZ5DL	CHLOROFORM	Exclude	RE
Y1RZ5DL	1,1,1-TRICHLOROETHANE	Exclude	RE
Y1RZ5DL	CYCLOHEXANE	Exclude	RE
Y1RZ5DL	CARBON TETRACHLORIDE	Exclude	RE
Y1RZ5DL	BENZENE	Exclude	RE
Y1RZ5DL	1,2-DICHLOROETHANE	Exclude	RE
Y1RZ5DL	TRICHLOROETHENE	Exclude	RE
Y1RZ5DL	METHYLCYCLOHEXANE	Exclude	RE
Y1RZ5DL	1,2-DICHLOROPROPANE	Exclude	RE
Y1RZ5DL	BROMODICHLOROMETHANE	Exclude	RE
Y1RZ5DL	CIS-1,3-DICHLOROPROPANE	Exclude	RE
Y1RZ5DL	4-METHYL-2-PENTANONE	Exclude	RE
Y1RZ5DL	TOLUENE	Exclude	RE
Y1RZ5DL	TRANS-1.3-DICHLOROPROPANE	Exclude	RE
Y1RZ5DL	1,1,2-TRICHLOROETHANE	Exclude	RE

Field ID	Analyte	Final Flag	Validation Comments
Y1RZ5DL	TETRACHLOROETHENE	Exclude	RE
Y1RZ5DL	2-HEXANONE	Exclude	RE
Y1RZ5DL	DIBROMOCHLOROMETHANE	Exclude	RE
Y1RZ5DL	1,2-DIBROMOTHANE	Exclude	RE
Y1RZ5DL	CHLOROBENZENE	Exclude	RE
Y1RZ5DL	ETHYLBENZENE	Exclude	RE
Y1RZ5DL	XYLENE (TOTAL)	Exclude	RE
Y1RZ5DL	STYRENE	Exclude	RE
Y1RZ5DL	BROMOFORM	Exclude	RE
Y1RZ5DL	ISOPROPYLBENZENE	Exclude	RE
Y1RZ5DL	1,1,2,2-TETRACHLOROETHANE	Exclude	RE
Y1RZ5DL	1,3-DICHLOROBENZENE	Exclude	RE
Y1RZ5DL	1,4-DICHLOROBENZENE	Exclude	RE
Y1RZ5	1,2-DICHLOROBENZENE	Exclude	>IC; RE
Y1RZ5DL	1,2-DIBROMO-3- CHLOROPROPANE	Exclude	RE
Y1RZ5DL	1,2,4-TRICHLOROBENZENE	Exclude	RE
Y1RZ5DL	ETHYL TERT-BUTYL ETHER	Exclude	RE
Y1RZ5DL	TERT-AMYL METHYLETER	Exclude	RE
Y1RZ5DL	TERT-BUTYL ALCOHOL	Exclude	RE
Y1RZ7DL	DICHLOROFLUOROMETHANE	Exclude	RE
Y1RZ7DL	CHLOROMETHANE	Exclude	RE
Y1RZ7DL	VINYL CHLORIDE	Exclude	RE
Y1RZ7DL	BROMOMETHANE	Exclude	RE
Y1RZ7DL	CHLOROETHANE	Exclude	RE
Y1RZ7DL	TRICHLOROFLUOROMETHANE	Exclude	RE
Y1RZ7DL	1,1-DICHLOROETHENE	Exclude	RE
Y1RZ7DL	1,1,2-TRICHLORO-1,2,2- TRIFLUOROETHANE	Exclude	RE
Y1RZ7DL	ACETONE	Exclude	RE
Y1RZ7DL	CARBON DISULFIDE	Exclude	RE
Y1RZ7DL	METHYL ACETATE	Exclude	RE
Y1RZ7DL	METHYLENE CHLORIDE	Exclude	RE
Y1RZ7DL	TRANS-1,2-DICHLOROETHENE	Exclude	RE
Y1RZ7DL	METHYL TERT-BUTYL ETHER	Exclude	RE
Y1RZ7	1,1-DICHLOROETHANE	Exclude	>IC; RE
Y1RZ7	cis-1,2-DICHLOROETHENE	Exclude	>IC; RE
Y1RZ7DL	2-BUTANONE	Exclude	RE
Y1RZ7DL	CHLOROFORM	Exclude	RE
Y1RZ7DL	1,1,1-TRICHLOROETHANE	Exclude	RE
Y1RZ7DL	CYCLOHEXANE	Exclude	RE
Y1RZ7DL	CARBON TETRACHLORIDE	Exclude	RE
Y1RZ7DL	BENZENE	Exclude	RE
Y1RZ7DL	1,2-DICHLOROETHANE	Exclude	RE
Y1RZ7DL	TRICHLOROETHENE	Exclude	RE
Y1RZ7DL	METHYLCYCLOHEXANE	Exclude	RE
Y1RZ7DL	1,2-DICHLOROPROPANE	Exclude	RE

Field ID	Analyte	Final Flag	Validation Comments
Y1RZ7DL	BROMODICHLOROMETHANE	Exclude	RE
Y1RZ7DL	CIS-1,3-DICHLOROPROPANE	Exclude	RE
Y1RZ7DL	4-METHYL-2-PENTANONE	Exclude	RE
Y1RZ7DL	TOLUENE	Exclude	RE
Y1RZ7DL	TRANS-1.3-DICHLOROPROPANE	Exclude	RE
Y1RZ7DL	1,1,2-TRICHLOROETHANE	Exclude	RE
Y1RZ7DL	TETRACHLOROETHENE	Exclude	RE
Y1RZ7DL	2-HEXANONE	Exclude	RE
Y1RZ7DL	DIBROMOCHLOROMETHANE	Exclude	RE
Y1RZ7DL	1,2-DIBROMOTHANE	Exclude	RE
Y1RZ7DL	CHLOROBENZENE	Exclude	RE
Y1RZ7DL	ETHYLBENZENE	Exclude	RE
Y1RZ7DL	XYLENE (TOTAL)	Exclude	RE
Y1RZ7DL	STYRENE	Exclude	RE
Y1RZ7DL	BROMOFORM	Exclude	RE
Y1RZ7DL	ISOPROPYLBENZENE	Exclude	RE
Y1RZ7DL	1,1,2,2-TETRACHLOROETHANE	Exclude	RE
Y1RZ7DL	1,3-DICHLOROBENZENE	Exclude	RE
Y1RZ7DL	1,4-DICHLOROBENZENE	Exclude	RE
Y1RZ7DL	1,2-DICHLOROBENZENE	Exclude	RE
Y1RZ7DL	1,2-DIBROMO-3-CHLOROPROPANE	Exclude	RE
Y1RZ7DL	1,2,4-TRICHLOROBENZENE	Exclude	RE
Y1RZ7DL	ETHYL TERT-BUTYL ETHER	Exclude	RE
Y1RZ7DL	TERT-AMYL METHYLETHER	Exclude	RE
Y1RZ7DL	TERT-BUTYL ALCOHOL	Exclude	RE
All samples	METHYL ACETATE 2-BUTANONE 2-HEXANONE 1,2-DIBROMO-3-CHLOROPROPANE	UJ	ICAL RSD >30%
All samples	METHYLENE CHLORIDE	UJ	ICAL RSD >30%; <10xTB; <10xLB
All samples	2-HEXANONE 1,2-DIBROMO-3-CHLOROPROPANE TERT-BUTYL ALCOHOL	R	ICAL RRF <0.05
All samples	4-METHYL-2-PENTANONE 2-HEXANONE 1,2-DIBROMO-3-CHLOROPROPANE TERT-BUTYL ALCOHOL	R	CCV RRF <0.05/CCV %D >25%
Y1S12 Y1RY9 Y1RZ6 Y1RY8 Y1RZ9 Y1S00DL Y1S01DL Y1S10	CARBON DISULFIDE METHYL ACETATE	UJ	CCV %D >25%
Y1S12	ACETONE	UJ	CCV %D >25%

Field ID	Analyte	Final Flag	Validation Comments
Y1RY9 Y1RZ6 Y1RY8 Y1RZ9 Y1S10		UJ J UJ UJ UJ	
Y1RY2 Y1RY5 Y1RY6 Y1RZ0 Y1RZ1 Y1RY3 Y1RZ5 Y1S07 Y1S14 Y1S08 Y1S15	ACETONE METHYL ACETATE	UJ	CCV %D >25%
Y1RZ7	BROMOMETHANE METHYL ACETATE 2-BUTANONE ISOPROPYLBENZENE	UJ	CCV %D >25%
Y1RZ5	BENZENE TRICHLOROETHENE	J	MSD %R >UCL
Y1RZ5	1,2-DICHLOROETHANE	U	FALSE SPECTRAL MATCH
Y1RY2	1,1-DICHLOROETHANE	U	<5xTB
Y1RZ0	CIS-1,2-DICHLOROETHENE	U	<5xTB

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** September 13-15, 2004  
**Report Date:** March 29, 2005  
**Parameters:** Volatile Organic Compounds  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G09

## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed by USEPA Contract Laboratory Program (CLP) Statement of Work OLM04.3 and project-approved modifications described in Modification Reference Number 1148.0 for volatile organic compounds (VOC). The data review was performed using the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999 as well as the criteria specified in the Remedial Investigation Sampling and Analysis Plan, AMCO Chemical Superfund Site, August 2004.

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody (COC) records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory with in control temperatures and appropriate COC and custody seals intact. Matrix spike/matrix spike duplicate (MS/MSD) samples were not indicated on the COC form. Lab was directed by the client via email to use sample Y1G25 for QC.

Samples Y1G26 - 28 were placed in SDG Y1G26.

All samples were analyzed within the required holding time.

## II. Instrument Performance Check

Instrument tuning was performed as required by the method.

## III. Calibration

The initial calibration (ICAL) analyzed on 9/22/04 had the following compounds with RSD percentages above the control limits: acetone at 69%, 4-methyl-2-pentanone at 34%, 2-hexanone at 38%, 1,4-dioxane at 39%, and t-butyl alcohol at 31%. Linear regression was not attempted. Results for these analytes were qualified as estimated concentrations and flagged "J"/"UJ" in samples Y1G14, 15, 16, 17, 18, 19, 20, and 21.

The overall response factor mean of 1,4-dioxane (0.007) in the ICAL of 9/22/04 does not meet the minimum requirement of 0.01. The non-detected results for samples Y1G14 - 21 were rejected and flagged "R."

The ICAL analyzed on 9/24/04 between 1536 and 2007 hours had acetone out of control at 31% RSD and linear regression was not attempted. Acetone was qualified as an estimated concentration and flagged "J"/"UJ" in samples Y1G12, 13, 22, 23, 24 and 25.

The continuing calibration (CCAL) associated with the dilution of sample 11 had chloromethane (39%) out of control. The chloromethane result for 11DL was used because of the poor compound separation in the initial analysis. The result was qualified as estimated concentration with a high bias and flagged "J."

The CCAL associated with samples 23 and 25 had chloromethane (-27%) out of control with a low bias. Results were qualified as estimated concentrations and flagged "UJ."

## IV. Method Blanks

Chloromethane (2 $\mu$ g/Kg) and 1,2,4-trichlorobenzene (2 $\mu$ g/Kg) were detected below the reporting limits in method blank VBLKNF of 9/24/04. There were no detects of these compounds in the associated samples, so no flags were required.

Methylene chloride (7 $\mu$ g/Kg) was detected below the reporting limit in method blank VBLKNG of 9/25/04. The associated sample detected results were less than 10 times the blank concentrations and were qualified as non-detected results at the detected concentration and flagged "U."

## V. Field Blanks

No trip blanks or equipment blanks were included with these samples.

## VI. Laboratory Control Sample (LCS)

The SOW does not require an LCS analysis.

## VII. Surrogate Spikes

Surrogate spikes were out of control with a high bias in samples Y1G09, 11, 14, 15, and 18. Samples Y1G09 and 11, which had high concentrations of target analytes, were reanalyzed

by medium level protocol with acceptable surrogate recoveries. Detects from the initial analyses of these samples were flagged "J" as estimated concentrations. The reanalysis data were not qualified.

Samples Y1G15 and 18 had only low-level detects. The lab did not reanalyze these samples. Detected results from each of these samples are qualified as estimated concentrations and flagged "J".

Sample Y1G14 had no target analyte detected results. The high bias does not impact the non-detected results and therefore, the laboratory did not reanalyze the sample and no data qualifiers were applied.

### **VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

An MS and MSD were requested on sample Y1G25 but were not performed due to a laboratory error.

### **IX. Field Duplicates**

There were no field duplicates in this SDG.

### **X. Internal Standards (IS)**

The internal standard (IS) chlorobenzene was recovered above the method specified limit in the initial analysis of sample Y1G09. The high recovery appears to be due to the sample matrix and target analyte concentrations. The reanalysis of this sample by medium level protocol had acceptable IS recoveries. The reanalysis should provide the more reliable data for those compounds that were above the calibration range in the initial analysis ("E" qualifiers). The initial analysis is reported for all compounds that were not over the calibration range. Analytes associated with the IS were flagged "UJ" for non-detects and "J" for detects.

### **XI. Confirmation**

Not applicable.

### **X. Target Compound Identification and Quantitation**

Raw data were not reviewed as part of this scope.

### **XI. Overall Assessment of Data**

- Calibration control required qualification of a limited amount of results with no significant impact to the data overall.
- Blank contamination was minimal and indicative of standard laboratory operating conditions.
- The lack of trip blanks does not appear to have impacted sample results. In the judgement of this reviewer, there are no concentrations significantly high enough to possibly carry over from sample to sample. The impact of the lack of equipment blanks cannot be determined from this review.

- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable. Minimal data is qualified due to one internal standard exceedance and several surrogate recovery exceedances.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units.
- Sample results are complete; no results have been rejected from project use.

## Data Qualification Summary Y1G09

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G09	1,1,2,2-TETRACHLOROETHANE	10	UJ	IS>UCL, 209%
Y1G09	1,1-DICHLOROETHANE	24	J	Sur>UCL - bias high
Y1G09	1,2,4-TRICHLOROETHANE	2	J	Sur>UCL - bias high/IS>UCL, 209%
Y1G09	1,2-DIBROMO-3-CHLOROPROPANE	10	UJ	IS>UCL, 209%
Y1G09	1,2-DIBROMOETHANE	10	UJ	IS>UCL, 209%
Y1G09	1,3-DICHLOROETHANE	12	J	Sur>UCL - bias high/IS>UCL, 209%
Y1G09	1,4-DICHLOROETHANE	46	J	Sur>UCL - bias high/IS>UCL, 209%
Y1G09	2-HEXANONE	10	UJ	IS>UCL, 209%
Y1G09	4-METHYL-2-PENTANONE	10	UJ	IS>UCL, 209%
Y1G09	ACETONE	80	J	Sur>UCL - bias high
Y1G09	CARBON DISULFIDE	8	J	Sur>UCL - bias high
Y1G09	CHLOROBENZENE	48	J	Sur>UCL - bias high/IS>UCL, 209%
Y1G09	CHLOROETHANE	75	J	Sur>UCL - bias high
Y1G09	CIS-1,2-DICHLOROETHENE	7	J	Sur>UCL - bias high
Y1G09	METHYLENE CHLORIDE	9	J	Sur>UCL - bias high
Y1G09	STYRENE	10	UJ	IS>UCL, 209%
Y1G09	TETRACHLOROETHENE	10	UJ	IS>UCL, 209%
Y1G09	TOLUENE	25	J	Sur>UCL - bias high/IS>UCL, 209%
Y1G09	XYLENES (TOTAL)	50	J	Sur>UCL - bias high/IS>UCL, 209%
Y1G11	1,2-DICHLOROETHANE	94	J	Sur>UCL - bias high
Y1G11	1,4-DICHLOROETHANE	4	J	Sur>UCL - bias high
Y1G11	2-BUTANONE	140	J	Sur>UCL - bias high
Y1G11	ACETONE	370	J	Sur>UCL - bias high/>ICLinearrange, diluted out in reanalysis
Y1G11	CARBON DISULFIDE	3	J	Sur>UCL - bias high
Y1G11	CHLOROBENZENE	44	J	Sur>UCL - bias high
Y1G11	CYCLOHEXANE	7	J	Sur>UCL - bias high
Y1G11	ETHYLBENZENE	3	J	Sur>UCL - bias high
Y1G11	ISOPROPYLBENZENE	31	J	Sur>UCL - bias high
Y1G11	METHYLCYCLOHEXANE	43	J	Sur>UCL - bias high
Y1G11DL	CHLOROMETHANE	480	J	CCV>UCL, 39%
Y1G12	ACETONE	30	J	ICAL%RSD>UCL, 31%
Y1G13	ACETONE	120	J	ICAL%RSD>UCL, 31%
Y1G14	2-HEXANONE	11	UJ	ICAL%RSD>UCL, 38%
Y1G14	4-METHYL-2-PENTANONE	11	UJ	ICAL%RSD>UCL, 34%
Y1G14	ACETONE	11	UJ	ICAL%RSD>UCL, 69%
Y1G14	t-Butanol	54	UJ	ICAL%RSD>UCL, 31%
Y1G15	2-HEXANONE	12	UJ	ICAL%RSD>UCL, 38%
Y1G15	4-METHYL-2-PENTANONE	12	UJ	ICAL%RSD>UCL, 34%
Y1G15	ACETONE	35	J	Sur>UCL - bias high/ICAL%RSD>UCL, 69%
Y1G15	t-Butanol	61	UJ	ICAL%RSD>UCL, 31%
Y1G16	2-HEXANONE	11	UJ	ICAL%RSD>UCL, 38%
Y1G16	4-METHYL-2-PENTANONE	11	UJ	ICAL%RSD>UCL, 34%
Y1G16	ACETONE	11	UJ	ICAL%RSD>UCL, 69%
Y1G16	t-Butanol	56	UJ	ICAL%RSD>UCL, 31%

Field ID	Analyte	Final Result	Final Flag	Validation Comments
Y1G17	2-HEXANONE	13	UJ	ICAL%RSD>UCL, 38%
Y1G17	4-METHYL-2-PENTANONE	13	UJ	ICAL%RSD>UCL, 34%
Y1G17	ACETONE	24	J	ICAL%RSD>UCL, 69%
Y1G17	t-Butanol	63	UJ	ICAL%RSD>UCL, 31%
Y1G18	2-HEXANONE	11	UJ	ICAL%RSD>UCL, 38%
Y1G18	4-METHYL-2-PENTANONE	11	UJ	ICAL%RSD>UCL, 34%
Y1G18	ACETONE	11	UJ	ICAL%RSD>UCL, 69%
Y1G18	CIS-1,2-DICHLOROETHENE	9	J	Sur>UCL - bias high
Y1G18	t-Butanol	56	UJ	ICAL%RSD>UCL, 31%
Y1G18	TETRACHLOROETHENE	11	J	Sur>UCL - bias high
Y1G18	TRICHLOROETHENE	3	J	Sur>UCL - bias high
Y1G19	2-HEXANONE	12	UJ	ICAL%RSD>UCL, 38%
Y1G19	4-METHYL-2-PENTANONE	12	UJ	ICAL%RSD>UCL, 34%
Y1G19	ACETONE	79	J	ICAL%RSD>UCL, 69%
Y1G19	t-Butanol	58	UJ	ICAL%RSD>UCL, 31%
Y1G20	2-HEXANONE	12	UJ	ICAL%RSD>UCL, 38%
Y1G20	4-METHYL-2-PENTANONE	12	UJ	ICAL%RSD>UCL, 34%
Y1G20	ACETONE	12	UJ	ICAL%RSD>UCL, 69%
Y1G20	t-Butanol	59	UJ	ICAL%RSD>UCL, 31%
Y1G21	2-HEXANONE	12	UJ	ICAL%RSD>UCL, 38%
Y1G21	4-METHYL-2-PENTANONE	12	UJ	ICAL%RSD>UCL, 34%
Y1G21	ACETONE	49	J	ICAL%RSD>UCL, 69%
Y1G21	t-Butanol	58	UJ	ICAL%RSD>UCL, 31%
Y1G22	ACETONE	73	J	ICAL%RSD>UCL, 31%
Y1G23	ACETONE	37	J	ICAL%RSD>UCL, 31%
Y1G23	CHLOROMETHANE	11	UJ	CCV<LCL, -27%
Y1G23	METHYLENE CHLORIDE	11	U	MB<RL
Y1G24	ACETONE	31	J	ICAL%RSD>UCL, 31%
Y1G25	ACETONE	89	J	ICAL%RSD>UCL, 31%
Y1G25	CHLOROMETHANE	12	UJ	CCV<LCL, -27%
Y1G25	METHYLENE CHLORIDE	12	U	MB<RL

## Data Validation Report

**Project/Site Name:** AMCO  
**Collection Date:** September 29-30, 2004  
**Report Date:** March 28, 2005  
**Parameters:** Volatile Organic Compounds  
**Laboratory:** CompuChem  
**Sample Delivery Group:** SDG Y1G72

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## Introduction

This data review covers the sample delivery group (SDG) listed on the cover sheet. This SDG represents project samples analyzed for Volatile Organics by EPA VOC LL OLMO 4.3 Soils (as modified by the request for quotation September 16, 2004). The USEPA National Functional Guidelines for Organic Data Review, October, 1999 were mainly used as the basis for this review as defined in the Remedial Investigation Sampling and Analysis Plan AMCO Chemical Superfund Site (August 2004).

Tier II data validation was performed by CH2M HILL chemists as required by the SAP. The CH2M HILL chemists consulted the CADRE automated data validation reports as needed to complete the Tier II data validation. The intended objective of the data review process was to provide a technical review of the data. It was not intended to determine contract compliance.

The scope of the data review was limited to the chain-of-custody records, the case narrative and completed CLP data summary forms only.

Data qualifiers were applied to the sample results when indicated by the data review process. A summary table at the end of the report shows all sample results and the required data qualifiers.

The data qualifiers are defined below:

- U The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample result is 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.

### I. Technical Holding Time and Sample Custody

Samples were received at the laboratory within control temperatures and with appropriate chain of custody forms (COC) and custody seals intact. Individual sample bottles did not contain sample tag ID numbers.

The case narrative references EPA CLP SOW Document OLM04.3 flex clause 1148.1, and EnCore Preparation Worksheets are present in the package, but it is not clearly stated that the samples were received in EnCores. Samples were prepared for VOC analysis according to modified SW-846 method 5035.

All samples were analyzed within the required holding time.

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## II. Instrument Performance Check

Instrument tuning was performed as required by the method.

## III. Calibration

The initial calibration (ICAL) analyzed on 9/24/05 has acetone out of control at 31% relative standard deviation (RSD) and linear regression was not attempted. Acetone is qualified as an estimated concentration and flagged J/UJ in all samples except the dilutions of samples 82 and 83.

The overall response factor mean of 1,4-dioxane meets the minimum method requirements of 0.01 but the low standard of the ICAL is at 0.006. No action was taken and the final reporting limit used for 1,4-dioxane of 280 ug/kg is sufficiently high enough that if present in a sample, detection would be noted.

The CCAL associated with samples 72, 73, 74, 76, 77, 78, 79, 80, 82 and 83 has bromomethane (30%) and acetone (33%), and trichlorotrifluoromethane (26%) out of control with a low bias. Results are qualified as estimated concentrations flagged "J/UJ".

The CCAL associated with samples 75, 77RE, 78RE and 85 have acetone (35%) and carbon disulfide (26%) out of control with a low bias. Results are qualified as estimated concentrations flagged "J/UJ".

## IV. Method Blanks

Acetone was detected below the reporting limits in the method blanks of 10/7/04 (9 ug/l), 9/30/04 (6 ug/l), and 10/01/04 (8 ug/l). Toluene was detected below the reporting limit in the method blanks of 9/30/04 (6 ug/l) and 10/01/04 (2 ug/l). All detected results associated with these two detections at less than 10 times the blank concentrations are qualified as non-detected results at the detected concentration and flagged "U"

## V. Field Blanks

No trip blanks were included with the samples. Equipment blanks were collected but were not requested for this method on the COC.

## VI. Laboratory Control Sample (LCS)

The applicable Statement of Work does not require analysis of a laboratory control sample. No LCS was analyzed.

## VII. Surrogate Spikes

Surrogate spikes were out of control with a high bias in samples Y1G78, 82, 83, and 85RE. Detected results from each of these samples are qualified as estimated and flagged "J".

## VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A matrix spike and matrix spike duplicate was performed on sample Y1G80 and acceptance criteria were met.

## IX. Field Duplicates

Four duplicate pairs were collected and analyzed.

Several detected analytes exceeded the FDRPD criteria in the Y1G82/Y1G83 FD pair. The detected results of benzene, cyclohexane, isopropylbenzene, methylcyclohexane, trichloroethene, 1,1-dichloroethene, and 2-butanone in the normal and duplicate were flagged "J".

#### **X. Internal Standards (IS)**

All three internal standards (IS) were recovered less than method specified limits in the initial analysis of samples Y1G77 and Y1G85. The low recoveries appear to be due to the sample purging properly during sample introduction to the instrument. The reanalyses of these samples have improved recoveries for the chlorobenzene-d5 IS, but still recovered less than method specified limits. The reanalyses should provide the more reliable data and the initial analyses should not be used. All results from the reanalyses associated to the chlorobenzene -d5 IS are qualified as estimated concentrations and flagged "J/UJ" respectively for detect/nondetect results.

All three internal standards (IS) were recovered less than method specified limits in the initial analysis of sample Y1G78 and the reanalysis. The reanalysis of this sample should not be used. All results from the initial analysis are qualified as estimated concentrations and flagged "J/UJ" respectively for detect/nondetect results.

#### **XI. Confirmation**

Not applicable.

#### **XII. Target Compound Identification and Quantitation**

Raw data were not reviewed as part of this scope.

Several analytes were detected over the calibration range and were diluted out of the subsequent diluted reanalysis. These analytes are reported from the initial analysis and flagged "J".

#### **XIII. Overall Assessment of Data**

- Calibration control required qualification of a limited amount of results with no significant impact to the data overall.
- Blank contamination was minimal and indicative of standard laboratory operating conditions.
- The lack of trip blanks does not appear to have impacted sample results. In the judgement of this reviewer, there are no concentrations significantly high enough to possibly carry over from sample to sample. The impact of the lack of equipment blanks can not be determined from this review.
- The results of laboratory and matrix related accuracy and precision indicators are generally acceptable and therefore, the data are both accurate and precise.
- Samples were collected and analyzed based on approved methods/procedures and results are reported using industry-standardized units. The data are representative and comparable to past sample results.

- Sample results are complete; no results have been rejected from project use.

## Data Qualification Summary Y1G72

Field ID	Analyte	Result	Final Flag	Validation Comments
Y1G72	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	11	UJ	CCV<LCL %D 26% vs 25%
Y1G72	ACETONE	15	U	MB<RL/ICAL%RSD31% vs 30%/CCV<LCL %D33% vs 25%
Y1G72	BROMOMETHANE	11	UJ	CCV<LCL %d 30% vs 25%
Y1G72	TOLUENE	11	U	MB<RL
Y1G73	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	12	UJ	CCV<LCL %D 26% vs 25%
Y1G73	ACETONE	27	U	MB<RL/ICAL%RSD31% vs 30%/CCV<LCL %D33% vs 25%
Y1G73	BROMOMETHANE	12	UJ	CCV<LCL %d 30% vs 25%
Y1G73	TOLUENE	12	U	MB<RL
Y1G74	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	11	UJ	CCV<LCL %D 26% vs 25%
Y1G74	ACETONE	11	U	MB<RL/ICAL%RSD31% vs 30%/CCV<LCL %D33% vs 25%
Y1G74	BROMOMETHANE	11	UJ	CCV<LCL %d 30% vs 25%
Y1G74	TOLUENE	11	U	MB<RL
Y1G75	ACETONE	12	UJ	ICAL%RSD31% vs 30%/CCV<LCL %D33% vs 25%/CCV<LCL %D 35% vs 25%
Y1G75	CARBON DISULFIDE	12	UJ	CCV<LCL %D 26% vs 25%
Y1G75	TOLUENE	12	U	MB<RL
Y1G76	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	11	UJ	CCV<LCL %D 26% vs 25%
Y1G76	ACETONE	74	U	MB<RL/ICAL%RSD31% vs 30%/CCV<LCL %D33% vs 25%
Y1G76	BROMOMETHANE	11	UJ	CCV<LCL %d 30% vs 25%
Y1G76	TOLUENE	11	U	MB<RL
Y1G77RE	ACETONE	92	J	ICAL%RSD31% vs 30%/CCV<LCL %D 35% vs 25%
Y1G77RE	CARBON DISULFIDE	12	UJ	CCV<LCL %D 26% vs 25%
Y1G77RE	TOLUENE	12	U	MB<RL
Y1G78	1,1,1-TRICHLOROETHANE	11	UJ	IS<LCL
Y1G78	1,1,2,2-TETRACHLOROETHANE	11	UJ	IS<LCL
Y1G78	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	11	UJ	IS<LCL/CCV<LCL %D 26% vs 25%
Y1G78	1,1,2-TRICHLOROETHANE	11	UJ	IS<LCL
Y1G78	1,1-DICHLOROETHANE	11	UJ	IS<LCL
Y1G78	1,1-DICHLOROETHENE	11	UJ	IS<LCL
Y1G78	1,2,4-TRICHLOROBENZENE	11	UJ	IS<LCL
Y1G78	1,2-DIBROMO-3-CHLOROPROPANE	11	UJ	IS<LCL
Y1G78	1,2-DIBROMOETHANE	11	UJ	IS<LCL
Y1G78	1,2-DICHLOROBENZENE	11	UJ	IS<LCL
Y1G78	1,2-DICHLOROETHANE	11	UJ	IS<LCL
Y1G78	1,2-DICHLOROPROPANE	11	UJ	IS<LCL
Y1G78	1,3-DICHLOROBENZENE	11	UJ	IS<LCL
Y1G78	1,4-DICHLOROBENZENE	11	UJ	IS<LCL
Y1G78	2-BUTANONE	41	J	Sur>UCL bias high, IS<LCL
Y1G78	2-HEXANONE	11	UJ	IS<LCL
Y1G78	4-METHYL-2-PENTANONE	11	UJ	IS<LCL
Y1G78	ACETONE	150	J	Sur>UCL bias high, IS<LCL/ICAL%RSD31% vs 30%/CCV<LCL %D33% vs 25%
Y1G78	BENZENE	11	UJ	IS<LCL
Y1G78	BROMODICHLOROMETHANE	11	UJ	IS<LCL
Y1G78	BROMOFORM	11	UJ	IS<LCL
Y1G78	BROMOMETHANE	11	UJ	IS<LCL/CCV<LCL %d 30% vs 25%

Field ID	Analyte	Result	Final Flag	Validation Comments
Y1G78	CARBON DISULFIDE	11	UJ	IS<LCL
Y1G78	CARBON TETRACHLORIDE	11	UJ	IS<LCL
Y1G78	CHLOROBENZENE	11	UJ	IS<LCL
Y1G78	CHLOROETHANE	11	UJ	IS<LCL
Y1G78	CHLOROFORM	11	UJ	IS<LCL
Y1G78	CHLOROMETHANE	11	UJ	IS<LCL
Y1G78	CIS-1,2-DICHLOROETHENE	11	UJ	IS<LCL
Y1G78	CIS-1,3-DICHLOROPROPENE	11	UJ	IS<LCL
Y1G78	CYCLOHEXANE	11	UJ	IS<LCL
Y1G78	DIBROMOCHLOROMETHANE	11	UJ	IS<LCL
Y1G78	DICHLORODIFLUOROMETHANE	11	UJ	IS<LCL
Y1G78	ETHYLBENZENE	11	UJ	IS<LCL
Y1G78	ISOPROPYLBENZENE	11	UJ	IS<LCL
Y1G78	METHYL ACETATE	11	UJ	IS<LCL
Y1G78	METHYL TERT-BUTYL ETHER	11	UJ	IS<LCL
Y1G78	METHYLCYCLOHEXANE	11	UJ	IS<LCL
Y1G78	METHYLENE CHLORIDE	11	UJ	IS<LCL
Y1G78	STYRENE	11	UJ	IS<LCL
Y1G78	t-Butanol	110	UJ	IS<LCL
Y1G78	TETRACHLOROETHENE	11	UJ	IS<LCL
Y1G78	TOLUENE	11	U	Sur>UCL bias high, IS<LCL, MB<RL
Y1G78	TRANS-1,2-DICHLOROETHENE	11	UJ	IS<LCL
Y1G78	TRANS-1,3-DICHLOROPROPENE	11	UJ	IS<LCL
Y1G78	TRICHLOROETHENE	11	UJ	IS<LCL
Y1G78	TRICHLOROFLUOROMETHANE	11	UJ	IS<LCL
Y1G78	VINYL CHLORIDE	11	UJ	IS<LCL
Y1G78	XYLENES (TOTAL)	11	UJ	IS<LCL
Y1G79	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	11	UJ	CCV<LCL %D 26% vs 25%
Y1G79	ACETONE	21	U	MB<RL/ICAL%RSD31% vs 30%/CCV<LCL %D33% vs 25%
Y1G79	BROMOMETHANE	11	UJ	CCV<LCL %d 30% vs 25%
Y1G79	TOLUENE	11	U	MB<RL
Y1G80	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	11	UJ	CCV<LCL %D 26% vs 25%
Y1G80	ACETONE	78	U	MB<RL/ICAL%RSD31% vs 30%/CCV<LCL %D33% vs 25%
Y1G80	BROMOMETHANE	11	UJ	CCV<LCL %d 30% vs 25%
Y1G80	TOLUENE	11	U	MB<RL
Y1G82	1,1,1-TRICHLOROETHANE	43	J	Sur>UCL bias high
Y1G82	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	12	UJ	CCV<LCL %D 26% vs 25%
Y1G82	1,1-DICHLOROETHENE	240	J	>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 53% vs 50%
Y1G82	1,2,4-TRICHLOROBENZENE	30	J	Sur>UCL bias high
Y1G82	1,2-DICHLOROETHANE	220	J	Sur>UCL bias high
Y1G82	1,3-DICHLOROBENZENE	150	J	Sur>UCL bias high
Y1G82	1,4-DICHLOROBENZENE	790	J	>ICLinearrange, diluted out in reanalysis
Y1G82	2-BUTANONE	570	J	>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 65% vs 50%
Y1G82	ACETONE	860	J	>ICLinearrange, diluted out in reanalysis/CCV<LCL %D33% vs 25%
Y1G82	BENZENE	3500	J	>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 80% vs 50%

Field ID	Analyte	Result	Final Flag	Validation Comments
Y1G82	BROMOMETHANE	12	UJ	CCV<LCL %d 30% vs 25%
Y1G82	CARBON DISULFIDE	4	J	Sur>UCL bias high
Y1G82	CHLOROBENZENE	2400	J	>ICLinearrange, diluted out in reanalysis
Y1G82	CYCLOHEXANE	3300	J	>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 74% vs 50%
Y1G82	TETRACHLOROETHENE	64	J	Sur>UCL bias high
Y1G82	TRANS-1,2-DICHLOROETHENE	1200	J	>ICLinearrange, diluted out in reanalysis
Y1G82	TRICHLOROETHENE	920	J	>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 61% vs 50%
Y1G82	VINYL CHLORIDE	950	J	>ICLinearrange, diluted out in reanalysis
Y1G82DL	ISOPROPYLBENZENE	9300	J	FDRPD>UCL, 151% vs 50%
Y1G82DL	METHYLCYCLOHEXANE	20000	J	FDRPD>UCL, 81% vs 50%
Y1G83	1,1,1-TRICHLOROETHANE	81	J	Sur>UCL bias high
Y1G83	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	12	UJ	CCV<LCL %D 26% vs 25%
Y1G83	1,1-DICHLOROETHENE	140	J	Sur>UCL bias high//FDRPD>UCL, 53% vs 50%
Y1G83	1,2,4-TRICHLOROBENZENE	14	J	Sur>UCL bias high
Y1G83	1,2-DICHLOROETHANE	140	J	Sur>UCL bias high
Y1G83	1,3-DICHLOROBENZENE	160	J	Sur>UCL bias high
Y1G83	1,4-DICHLOROBENZENE	840	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis
Y1G83	2-BUTANONE	290	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 65% vs 50%
Y1G83	ACETONE	730	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis/ICAL%RSD31% vs 30%/CCV<LCL %D33% vs
Y1G83	BENZENE	1500	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 80% vs 50%
Y1G83	BROMOMETHANE	12	UJ	CCV<LCL %d 30% vs 25%
Y1G83	CARBON DISULFIDE	4	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis
Y1G83	CHLOROBENZENE	2500	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis
Y1G83	CYCLOHEXANE	1500	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 74% vs 50%
Y1G83	ISOPROPYLBENZENE	1300	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 151% vs 50%
Y1G83	TETRACHLOROETHENE	110	J	Sur>UCL bias high
Y1G83	TRANS-1,2-DICHLOROETHENE	900	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis
Y1G83	TRICHLOROETHENE	490	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis/FDRPD>UCL, 61% vs 50%
Y1G83	VINYL CHLORIDE	600	J	Sur>UCL bias high,>ICLinearrange, diluted out in reanalysis
Y1G83DL	METHYLCYCLOHEXANE	8500	J	FDRPD>UCL, 81% vs 50%
Y1G84	ACETONE	12	UJ	ICAL%RSD31% vs 30%
Y1G85RE	1,1,1-TRICHLOROETHANE	7	J	Sur>UCL bias high
Y1G85RE	ACETONE	12	UJ	ICAL%RSD31% vs 30%
Y1G85RE	TOLUENE	3	J	Sur>UCL bias high
Y1G85RE	TRICHLOROETHENE	21	J	Sur>UCL bias high