LABORATORY DATA CONSULTANTS, INC.
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ERM
2525 Natomas Park Drive, Suite 350
Sacramento, CA 95833
ATTN: Ms. Maria Barajas-Albalawi

January 22, 2008

SUBJECT: BRC Tronox Parcel C/D/F/G, Data Validation

Dear Ms. Barajas-Albalawi

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on January 4, 2008. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 18054:

SDG #	Fraction
F7K270268, F7K280229, F7K290114, F7K290369	Volatiles

The data validation was performed under EPA Level III and Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

943 Pages-CD

Attachment 1

80/20

LDC #18054 (ERM - Sacramento / BRC Tronox Parcel C/D/F/G)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (TO-14A)																															
Matrix:	Air/Water/Soil			A	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	F7K270268	01/04/08	01/25/08	4	0																														
B	F7K280229	01/04/08	01/25/08	7	0																														
C	F7K290114	01/04/08	01/25/08	8	0																														
D	F7K290369	01/04/08	01/25/08	5	0																														
Total	T/LR			24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24

Shaded cells indicate Level IV validation (all other cells are Level IIII validation). These sample counts do not include MS/MSD, and DUPs

BRC Tronox Parcel C/D/F/G
Data Validation Reports
LDC# 18054

Volatiles

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: BRC Tronox Parcel C/D/F/G

Collection Date: November 21, 2007

LDC Report Date: January 15, 2008

Matrix: Air

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): F7K270268

Sample Identification

TSB-CR-07
TSB-CR-06
TSB-DR-06
TSB-CJ-08

Introduction

This data review covers 4 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method TO-14A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
11/27/07	4-Ethyltoluene	32.177	All samples in SDG F7K270268	J (all detects) UJ (all non-detects)	P

Average relative response factors (RRF) for all volatile target compounds and system monitoring compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/03/07	4-Ethyltoluene 1,2,4-Trimethylbenzene	32.4 34.0	All samples in SDG F7K270268	J+ (all detects) J+ (all detects)	P

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blank analyses were performed at the required frequency. No volatile contaminants were found in the method blanks.

No field blanks were identified in this SDG.

VI. Surrogate Spikes

Surrogates were not required by the method.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Although laboratory control samples were not required by the method, laboratory control samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G
Volatiles - Data Qualification Summary - SDG F7K270268

SDG	Sample	Compound	Flag	A or P	Reason
F7K270268	TSB-CR-07 TSB-CR-06 TSB-DR-06 TSB-CJ-08	4-Ethyltoluene	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
F7K270268	TSB-CR-07 TSB-CR-06 TSB-DR-06 TSB-CJ-08	4-Ethyltoluene 1,2,4-Trimethylbenzene	J+ (all detects) J+ (all detects)	P	Continuing calibration (%D)

BRC Tronox Parcel C/D/F/G
Volatiles - Laboratory Blank Data Qualification Summary - SDG F7K270268

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G
Volatiles - Field Blank Data Qualification Summary - SDG F7K270268

No Sample Data Qualified in this SDG

LDC #: 18054A48
SDG #: F7K270268
Laboratory: Test America

VALIDATION COMPLETENESS WORKSHEET
Level III

Date: 1/14/08
Page: 1 of 1
Reviewer: JVB
2nd Reviewer: A

METHOD: GC/MS Volatiles (EPA Method TO-14A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/21/07
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	
IV.	Continuing calibration/ICV	SW	
V.	Blanks	A	
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Air

1 +	TSB-CR-07	11		21		31	
2 +	TSB-CR-06	12		22		32	
3 +	TSB-DR-06	13		23		33	
4 +	TSB-CJ-08	14		24		34	
5 −	7338609 MB	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA Method TO-14/TO-14A)

A. Chloromethane*	S. Trichloroethene	KK. Trichlorofluoromethane	CCC. tert-Butylbenzene	UUU. Benzyl chloride
B. Bromomethane	T. Dibromochloromethane	LL. Methyl-tert-butyl ether	DDD. 1,2,4-Trimethylbenzene	VVV. 4-Ethyltoluene
C. Vinyl choride**	U. 1,1,2-Trichloroethane	MM. 1,2-Dibromo-3-chloropropane	EEE. sec-Butylbenzene	WWW. Ethanol
D. Chloroethane	V. Benzene	NN. Diethyl ether	FFF. 1,3-Dichlorobenzene	XXX. Ethyl ether
E. Methylene chloride	W. trans-1,3-Dichloropropene	OO. 2,2-Dichloropropane	GGG. p-Isopropyltoluene	YYY. tert-Butanol
F. Acetone	X. Bromoform*	PP. Bromochloromethane	HHH. 1,4-Dichlorobenzene	ZZZ. tert-Butyl alcohol
G. Carbon disulfide	Y. 4-Methyl-2-pentanone	QQ. 1,1-Dichloropropene	III. n-Butylbenzene	AAAA. Ethyl tert-butyl ether
H. 1,1-Dichloroethene**	Z. 2-Hexanone	RR. Dibromomethane	JJJ. 1,2-Dichlorobenzene	BBBB. tert-Amyl methyl ether
I. 1,1-Dichloroethane*	AA. Tetrachloroethene	SS. 1,3-Dichloropropane	KKK. 1,2,4-Trichlorobenzene	CCCC.1-Chlorohexane
J. 1,2-Dichloroethene, total	BB. 1,1,2,2-Tetrachloroethane*	TT. 1,2-Dibromoethane	LLL. Hexachlorobutadiene	DDDD. Isopropyl alcohol
K. Chloroform**	CC. Toluene**	UU. 1,1,1,2-Tetrachloroethane	MMM. Naphthalene	EEEE. Acetonitrile
L. 1,2-Dichloroethane	DD. Chlorobenzene*	VV. Isopropylbenzene	NNN. 1,2,3-Trichlorobenzene	FFFF. Acrolein
M. 2-Butanone	EE. Ethylbenzene**	WW. Bromobenzene	OOO. 1,3,5-Trichlorobenzene	GGGG. Acrylonitrile
N. 1,1,1-Trichloroethane	FF. Styrene	XX. 1,2,3-Trichloropropane	PPP. trans-1,2-Dichloroethene	HHHH. 1,4-Dioxane
O. Carbon tetrachloride	GG. Xylenes, total	YY. n-Propylbenzene	QQQ. cis-1,2-Dichloroethene	IIII. Isobutyl alcohol
P. Bromodichloromethane	HH. Vinyl acetate	ZZ. 2-Chlorotoluene	RRR. m,p-Xylenes	JJJJ. Methacrylonitrile
Q. 1,2-Dichloropropane**	II. 2-Chloroethylvinyl ether	AAA. 1,3,5-Trimethylbenzene	SSS. o-Xylene	KKKK. Propionitrile
R. cis-1,3-Dichloropropene	JJ. Dichlorodifluoromethane	BBB. 4-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	LLLL.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 18054A48
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: JVG
2nd Reviewer: ✓

METHOD: GC/MS VOA (EPA TO-14/TO-14A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?

Y (N) N/A Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	11/27/07	ICAL	VYY	32.177		All + Blk	J/UJ/P

LDC #: 18054 A48
SDG #: see Cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: JVG
2nd Reviewer: Q

METHOD: GC/MS VOA (EPA TO-14/TO-14A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Y (N) N/A Were all percent differences (%D) ≤ 30% and relative response factors (RRF) ≥ 0.05?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	12/03/07	CC 12033	VVV (+)	32.4		All + Blk	J+ dets / P
			DDD (+)	34.0		↓	↓

LDC Report# 18054B48

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: BRC Tronox Parcel C/D/F/G

Collection Date: November 27, 2007

LDC Report Date: January 15, 2008

Matrix: Air

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): F7K280229

Sample Identification

TSB-CR-02
TSB-CR-03
TSB-DR-02
TSB-DJ-01
TSB-DR-04
TSB-DR-03
TSB-DR-05

Introduction

This data review covers 7 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method TO-14A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

Average relative response factors (RRF) for all volatile target compounds and system monitoring compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blank analyses were performed at the required frequency. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
7351601-MB	12/14/07	Methylene chloride	1.6 ppb(v/v)	All samples in SDG F7K280229

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
TSB-CR-02	Methylene chloride	7.4 ppb(v/v)	7.4U ppb(v/v)
TSB-DR-02	Methylene chloride	2.6 ppb(v/v)	2.6U ppb(v/v)
TSB-DJ-01	Methylene chloride	3.6 ppb(v/v)	3.6U ppb(v/v)
TSB-DR-04	Methylene chloride	2.1 ppb(v/v)	2.1U ppb(v/v)
TSB-DR-03	Methylene chloride	1.6 ppb(v/v)	2.0U ppb(v/v)
TSB-DR-05	Methylene chloride	2.6 ppb(v/v)	2.6U ppb(v/v)

No field blanks were identified in this SDG.

VI. Surrogate Spikes

Surrogates were not required by the method.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Although laboratory control samples were not required by the method, laboratory control samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G
Volatiles - Data Qualification Summary - SDG F7K280229

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G
Volatiles - Laboratory Blank Data Qualification Summary - SDG F7K280229

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
F7K280229	TSB-CR-02	Methylene chloride	7.4U ppb(v/v)	A
F7K280229	TSB-DR-02	Methylene chloride	2.6U ppb(v/v)	A
F7K280229	TSB-DJ-01	Methylene chloride	3.6U ppb(v/v)	A
F7K280229	TSB-DR-04	Methylene chloride	2.1U ppb(v/v)	A
F7K280229	TSB-DR-03	Methylene chloride	2.0U ppb(v/v)	A
F7K280229	TSB-DR-05	Methylene chloride	2.6U ppb(v/v)	A

BRC Tronox Parcel C/D/F/G
Volatiles - Field Blank Data Qualification Summary - SDG F7K280229

No Sample Data Qualified in this SDG

LDC #: 18054B48
SDG #: F7K280229
Laboratory: Test America

VALIDATION COMPLETENESS WORKSHEET
Level III

Date: 1/14/08
Page: 1 of 1
Reviewer: JR
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA Method TO-14A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/27/07
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	
V.	Blanks	SW	
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	A	LCS ID
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

Air

1	TSB-CR-02	11	735 1601 MB	21		31	
2	TSB-CR-03	12	735 1608 MB (K)	22		32	
3	TSB-DR-02	13		23		33	
4	TSB-DJ-01	14		24		34	
5	TSB-DR-04	15		25		35	
6	TSB-DR-03	16		26		36	
7	TSB-DR-05	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA Method TO-14/TO-14A)

A. Chloromethane*	S. Trichloroethene	KK. Trichlorofluoromethane	CCC. tert-Butylbenzene	UUU. Benzyl chloride
B. Bromomethane	T. Dibromochloromethane	LL. Methyl-tert-butyl ether	DDD. 1,2,4-Trimethylbenzene	VVV. 4-Ethyltoluene
C. Vinyl choride**	U. 1,1,2-Trichloroethane	MM. 1,2-Dibromo-3-chloropropane	EEE. sec-Butylbenzene	WWW. Ethanol
D. Chloroethane	V. Benzene	NN. Diethyl ether	FFF. 1,3-Dichlorobenzene	XXX. Ethyl ether
E. Methylene chloride	W. trans-1,3-Dichloropropene	OO. 2,2-Dichloropropane	GGG. p-Isopropyltoluene	YYY. tert-Butanol
F. Acetone	X. Bromoform*	PP. Bromochloromethane	HHH. 1,4-Dichlorobenzene	ZZZ. tert-Butyl alcohol
G. Carbon disulfide	Y. 4-Methyl-2-pentanone	QQ. 1,1-Dichloropropene	III. n-Butylbenzene	AAAA. Ethyl tert-butyl ether
H. 1,1-Dichloroethene**	Z. 2-Hexanone	RR. Dibromomethane	JJJ. 1,2-Dichlorobenzene	BBBB. tert-Amyl methyl ether
I. 1,1-Dichloroethane*	AA. Tetrachloroethene	SS. 1,3-Dichloropropane	KKK. 1,2,4-Trichlorobenzene	CCCC.1-Chlorohexane
J. 1,2-Dichloroethene, total	BB. 1,1,2,2-Tetrachloroethane*	TT. 1,2-Dibromoethane	LLL. Hexachlorobutadiene	DDDD. Isopropyl alcohol
K. Chloroform**	CC. Toluene**	UU. 1,1,1,2-Tetrachloroethane	MMM. Naphthalene	EEEE. Acetonitrile
L. 1,2-Dichloroethane	DD. Chlorobenzene*	VV. Isopropylbenzene	NNN. 1,2,3-Trichlorobenzene	FFFF. Acrolein
M. 2-Butanone	EE. Ethylbenzene**	WW. Bromobenzene	OOO. 1,3,5-Trichlorobenzene	GGGG. Acrylonitrile
N. 1,1,1-Trichloroethane	FF. Styrene	XX. 1,2,3-Trichloropropane	PPP. trans-1,2-Dichloroethene	HHHH. 1,4-Dioxane
O. Carbon tetrachloride	GG. Xylenes, total	YY. n-Propylbenzene	QQQ. cis-1,2-Dichloroethene	IIII. Isobutyl alcohol
P. Bromodichloromethane	HH. Vinyl acetate	ZZ. 2-Chlorotoluene	RRR. m,p-Xylenes	JJJJ. Methacrylonitrile
Q. 1,2-Dichloropropane**	II. 2-Chloroethylvinyl ether	AAA. 1,3,5-Trimethylbenzene	SSS. o-Xylene	KKKK. Propionitrile
R. cis-1,3-Dichloropropene	JJ. Dichlorodifluoromethane	BBB. 4-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	LLLL.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 18054B48
SDG #: Gc Cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: JW
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA TO-14/TO-14A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 12/14/07
Conc. units: ppb (v/v)
Associated Samples: All

Compound	Blank ID	Sample Identification								
	7351601 MB	1	3	4	5	6	7			
E	1.6	7.4 / U	2.6 / U	3.6 / U	2.1 / U	1.6 / 2.0 U	2.6 / U			
CRQL										

Blank analysis date:
Conc. units:
Associated Samples:

Compound	Blank ID	Sample Identification								
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: BRC Tronox Parcel C/D/F/G

Collection Date: November 26, 2007

LDC Report Date: January 15, 2008

Matrix: Air

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): F7K290114

Sample Identification

TSB-CJ-04
TSB-CJ-07
TSB-CJ-03
TSB-CJ-05
TSB-CJ-02
TSB-CJ-01
TSB-CJ-01(FD)
TSB-CR-01

Introduction

This data review covers 8 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method TO-14A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
11/27/07	4-Ethyltoluene	32.177	All samples in SDG F7K290114	J (all detects) UJ (all non-detects)	P

Average relative response factors (RRF) for all volatile target compounds and system monitoring compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blank analyses were performed at the required frequency. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
7339519-MB	12/4/07	Methylene chloride	1.2 ppb(v/v)	All samples in SDG F7K290114

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
TSB-CJ-04	Methylene chloride	1.5 ppb(v/v)	2.0U ppb(v/v)
TSB-CJ-07	Methylene chloride	1.6 ppb(v/v)	2.0U ppb(v/v)
TSB-CJ-03	Methylene chloride	2.5 ppb(v/v)	2.5U ppb(v/v)
TSB-CJ-05	Methylene chloride	2.5 ppb(v/v)	2.5U ppb(v/v)
TSB-CJ-02	Methylene chloride	8.2 ppb(v/v)	8.2U ppb(v/v)
TSB-CJ-01	Methylene chloride	7.7 ppb(v/v)	7.7U ppb(v/v)
TSB-CJ-01 (FD)	Methylene chloride	7.8 ppb(v/v)	7.8U ppb(v/v)
TSB-CR-01	Methylene chloride	10 ppb(v/v)	10U ppb(v/v)

No field blanks were identified in this SDG.

VI. Surrogate Spikes

Surrogates were not required by the method.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Although laboratory control samples were not required by the method, laboratory control samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples TSB-CJ-01 and TSB-CJ-01(FD) were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ppb(v/v))		RPD (Limits)	Difference (Limits)	Flag	A or P
	TSB-CJ-01	TSB-CJ-01(FD)				
Chloromethane	1.4	1.6	-	0.2 (≤4.0)	-	-
Vinyl chloride	4.0	4.4	-	0.4 (≤3.0)	-	-
Chloroethane	35	39	11 (≤50)	-	-	-
Acetone	32	41	-	9 (≤10.0)	-	-
Methylene chloride	7.7	7.8	-	0.1 (≤2.0)	-	-
1,1-Dichloroethane	56	64	13 (≤50)	-	-	-
Benzene	1.7	2.1	-	0.4 (≤3.0)	-	-

Compound	Concentration (ppb(v/v))		RPD (Limits)	Difference (Limits)	Flag	A or P
	TSB-CJ-01	TSB-CJ-01(FD)				
1,2-Dichloroethane	11	13	17 (≤50)	-	-	-
Trichloroethene	3.2	4.0	-	0.8 (≤2.0)	-	-
Bromodichloromethane	5.2	6.4	-	1.2 (≤2.0)	-	-
Toluene	1.7	2.0	-	0.3 (≤2.0)	-	-
1,1,2-Trichloroethane	3.4	3.9	-	0.5 (≤2.0)	-	-
Tetrachloroethene	210	230	9 (≤50)	-	-	-
Chlorobenzene	2.0U	1.2	-	0.8 (≤2.0)	-	-
1,3-Dichlorobenzene	1.4	1.6	-	0.2 (≤2.0)	-	-
Chloroform	3100	3700	18 (≤50)	-	-	-

BRC Tronox Parcel C/D/F/G
Volatiles - Data Qualification Summary - SDG F7K290114

SDG	Sample	Compound	Flag	A or P	Reason
F7K290114	TSB-CJ-04 TSB-CJ-07 TSB-CJ-03 TSB-CJ-05 TSB-CJ-02 TSB-CJ-01 TSB-CJ-01(FD) TSB-CR-01	4-Ethyltoluene	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)

BRC Tronox Parcel C/D/F/G
Volatiles - Laboratory Blank Data Qualification Summary - SDG F7K290114

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
F7K290114	TSB-CJ-04	Methylene chloride	2.0U ppb(v/v)	A
F7K290114	TSB-CJ-07	Methylene chloride	2.0U ppb(v/v)	A
F7K290114	TSB-CJ-03	Methylene chloride	2.5U ppb(v/v)	A
F7K290114	TSB-CJ-05	Methylene chloride	2.5U ppb(v/v)	A
F7K290114	TSB-CJ-02	Methylene chloride	8.2U ppb(v/v)	A
F7K290114	TSB-CJ-01	Methylene chloride	7.7U ppb(v/v)	A
F7K290114	TSB-CJ-01(FD)	Methylene chloride	7.8U ppb(v/v)	A
F7K290114	TSB-CR-01	Methylene chloride	10U ppb(v/v)	A

BRC Tronox Parcel C/D/F/G
Volatiles - Field Blank Data Qualification Summary - SDG F7K290114

No Sample Data Qualified in this SDG

LDC #: 18054C48
SDG #: F7K290114
Laboratory: Test America

VALIDATION COMPLETENESS WORKSHEET
Level III

Date: 1/14/08
Page: 1 of 1
Reviewer: JVC
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA Method TO-14A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/26/07
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	
IV.	Continuing calibration/ICV	A	
V.	Blanks	SW	
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D = 6, 7
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Air

+ 1 1	TSB-CJ-04	+ 11 1	7339519 MB	21		31	
+ 2 1	TSB-CJ-07	- 12 Y	7340411 MB	22		32	
+ 3 1	TSB-CJ-03	13		23		33	
+ 4 1	TSB-CJ-05	14		24		34	
+ 5 1/2	TSB-CJ-02	15		25		35	
+ 6 1/2	TSB-CJ-01	16		26		36	
+ 7 1/2	TSB-CJ-01(FD)	17		27		37	
+ 8 12	TSB-CR-01	18		28		38	
9		19		29		39	
10		20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA Method TO-14/TO-14A)

A. Chloromethane*	S. Trichloroethene	KK. Trichlorofluoromethane	CCC. tert-Butylbenzene	UUU. Benzyl chloride
B. Bromomethane	T. Dibromochloromethane	LL. Methyl-tert-butyl ether	DDD. 1,2,4-Trimethylbenzene	VVV. 4-Ethyltoluene
C. Vinyl choride**	U. 1,1,2-Trichloroethane	MM. 1,2-Dibromo-3-chloropropane	EEE. sec-Butylbenzene	WWW. Ethanol
D. Chloroethane	V. Benzene	NN. Diethyl ether	FFF. 1,3-Dichlorobenzene	XXX. Ethyl ether
E. Methylene chloride	W. trans-1,3-Dichloropropene	OO. 2,2-Dichloropropane	GGG. p-Isopropyltoluene	YYY. tert-Butanol
F. Acetone	X. Bromoform*	PP. Bromochloromethane	HHH. 1,4-Dichlorobenzene	ZZZ. tert-Butyl alcohol
G. Carbon disulfide	Y. 4-Methyl-2-pentanone	QQ. 1,1-Dichloropropene	III. n-Butylbenzene	AAAA. Ethyl tert-butyl ether
H. 1,1-Dichloroethene**	Z. 2-Hexanone	RR. Dibromomethane	JJJ. 1,2-Dichlorobenzene	BBBB. tert-Amyl methyl ether
I. 1,1-Dichloroethane*	AA. Tetrachloroethene	SS. 1,3-Dichloropropane	KKK. 1,2,4-Trichlorobenzene	CCCC.1-Chlorohexane
J. 1,2-Dichloroethene, total	BB. 1,1,2,2-Tetrachloroethane*	TT. 1,2-Dibromoethane	LLL. Hexachlorobutadiene	DDDD. Isopropyl alcohol
K. Chloroform**	CC. Toluene**	UU. 1,1,1,2-Tetrachloroethane	MMM. Naphthalene	EEEE. Acetonitrile
L. 1,2-Dichloroethane	DD. Chlorobenzene*	VV. Isopropylbenzene	NNN. 1,2,3-Trichlorobenzene	FFFF. Acrolein
M. 2-Butanone	EE. Ethylbenzene**	WW. Bromobenzene	OOO. 1,3,5-Trichlorobenzene	GGGG. Acrylonitrile
N. 1,1,1-Trichloroethane	FF. Styrene	XX. 1,2,3-Trichloropropane	PPP. trans-1,2-Dichloroethene	HHHH. 1,4-Dioxane
O. Carbon tetrachloride	GG. Xylenes, total	YY. n-Propylbenzene	QQQ. cis-1,2-Dichloroethene	IIII. Isobutyl alcohol
P. Bromodichloromethane	HH. Vinyl acetate	ZZ. 2-Chlorotoluene	RRR. m,p-Xylenes	JJJJ. Methacrylonitrile
Q. 1,2-Dichloropropane**	II. 2-Chloroethylvinyl ether	AAA. 1,3,5-Trimethylbenzene	SSS. o-Xylene	KKKK. Propionitrile
R. cis-1,3-Dichloropropene	JJ. Dichlorodifluoromethane_	BBB. 4-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	LLLL.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 18054 C 48
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: JVG
2nd Reviewer: ____

METHOD: GC/MS VOA (EPA TO-14/TO-14A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A — Did the laboratory perform a 5 point calibration prior to sample analysis?

Y (N) N/A — Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	11/27/07	ICAL	VVV	32.177		All + Blk	J/UJ/P

LDC #: 18054 C48
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: JV2
2nd Reviewer:

METHOD: GC/MS VOA (EPA TO-14/TO-14A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 12/04/07
Conc. units: ppb (V/V)
Associated Samples: All

Compound	Blank ID	Sample Identification								
	7339519MB	1	2	3	4	5	6	7	8	
E	1.2	1.5/2.0U	1.6/2.0U	2.5/U	2.5/U	8.2/U	7.7/U	7.8/U	10/U	
CRQL										

Blank analysis date:
Conc. units:
Associated Samples:

Compound	Blank ID	Sample Identification								
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC#: 18054C48
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: ___ of ___
Reviewer: _____
2nd Reviewer: _____

METHOD: GCMS VOA (EPA TO-14A)

(Y) N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ppb(v/v)) 6	7	(≤50) RPD	Difference	Diff Limits	Qualifications (Parent Only)
Chloromethane	1.4	1.6		0.2	(≤ 4.0)	
Vinyl Chloride	4.0	4.4		0.4	(≤ 3.0)	
Chloroethane	35	39	11			
Acetone	32	41		9	(≤ 10.0)	
Methylene chloride	7.7	7.8		0.1	(≤ 2.0)	
1,1-Dichoroethane	56	64	13			
Benzene	1.7	2.1		0.4	(≤ 3.0)	
1,2-Dichloroetane	11	13	17			
Trichloroethene	3.2	4.0	~~22~~	0.8	(≤ 2.0)	
Bromodichloromethane	5.2	6.4		1.2	↓	
Toluene	1.7	2.0		0.3	↓	
1,1,2-Trichoroethane	3.4	3.9		0.5	↓	
Tetrachloroethene	210	230	9			
Chlorobenzene	2.0U	1.2		0.8	(≤ 2.0)	
1,3-Dchlorobenzene	1.4	1.6		0.2	↓	
Chloroform	3100	3700	18			

V:\FIELD DUPLICATES\18054C48.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: BRC Tronox Parcel C/D/F/G

Collection Date: November 28, 2007

LDC Report Date: January 21, 2008

Matrix: Air

Parameters: Volatiles

Validation Level: EPA Level IV

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): F7K290369

Sample Identification

TSB-CR-04
TSB-CR-05
TSB-CJ-06
TSB-DR-01
TSB-DR-01(FD)

Introduction

This data review covers 5 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method TO-14A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
11/27/07	4-Ethyltoluene	32.177	All samples in SDG F7K290369	J (all detects) UJ (all non-detects)	P

Average relative response factors (RRF) for all volatile target compounds and system monitoring compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/5/07	1,2,4-Trichlorobenzene	39.7	TSB-DR-01(FD) 7340411MB	J- (all detects) UJ (all non-detects)	P

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blank analyses were performed at the required frequency. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
7339521-MB	12/4/07	Methylene chloride	1.2 ppb(v/v)	TSB-CR-04 TSB-CR-05 TSB-CJ-06 TSB-DR-01
7340411-MB	12/5/07	Methylene chloride	2.7 ppb(v/v)	TSB-DR-01(FD)

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
TSB-CR-04	Methylene chloride	3.2 ppb(v/v)	3.2U ppb(v/v)
TSB-CR-05	Methylene chloride	2.8 ppb(v/v)	2.8U ppb(v/v)
TSB-CJ-06	Methylene chloride	5.2 ppb(v/v)	5.2U ppb(v/v)
TSB-DR-01	Methylene chloride	8.9 ppb(v/v)	8.9U ppb(v/v)
TSB-DR-01(FD)	Methylene chloride	11 ppb(v/v)	11U ppb(v/v)

No field blanks were identified in this SDG.

VI. Surrogate Spikes

Surrogates were not required by the method.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Although laboratory control samples were not required by the method, laboratory control samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples TSB-DR-01 and TSB-DR-01(FD) were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ppb(v/v))		RPD (Limits)	Difference (Limits)	Flag	A or P
	TSB-DR-01	TSB-DR-01(FD)				
Chloromethane	4.0U	1.6	-	2.4 (≤4.0)	-	-
Bromomethane	4.0U	2.5	-	1.5 (≤4.0)	-	-
Chloroethane	20	27	30 (≤50)	-	-	-
Acetone	34	36	-	2 (≤10.0)	-	-
Methylene chloride	8.9	11	-	2.1 (≤2.0)	J (all detects)	A

Compound	Concentration (ppb(v/v))		RPD (Limits)	Difference (Limits)	Flag	A or P
	TSB-DR-01	TSB-DR-01(FD)				
1,1-Dichloroethane	1.6	1.9	-	0.3 (≤2.0)	-	-
Chloroform	33	40	19 (≤50)	-	-	-
Benzene	3.0U	1.6	-	1.4 (≤3.0)	-	-
Trichloroethene	1.1	1.3	-	0.2 (≤2.0)	-	-
Toluene	1	2.0U	-	1 (≤2.0)	-	-
Tetrachloroethene	13	15	14 (≤50)	-	-	-

BRC Tronox Parcel C/D/F/G
Volatiles - Data Qualification Summary - SDG F7K290369

SDG	Sample	Compound	Flag	A or P	Reason
F7K290369	TSB-CR-04 TSB-CR-05 TSB-CJ-06 TSB-DR-01 TSB-DR-01 (FD)	4-Ethyltoluene	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
F7K290369	TSB-DR-01 (FD)	1,2,4-Trichlorobenzene	J- (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
F7K290369	TSB-DR-01 TSB-DR-01 (FD)	Methylene chloride	J (all detects)	A	Field duplicates (Difference)

BRC Tronox Parcel C/D/F/G
Volatiles - Laboratory Blank Data Qualification Summary - SDG F7K290369

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
F7K290369	TSB-CR-04	Methylene chloride	3.2U ppb(v/v)	A
F7K290369	TSB-CR-05	Methylene chloride	2.8U ppb(v/v)	A
F7K290369	TSB-CJ-06	Methylene chloride	5.2U ppb(v/v)	A
F7K290369	TSB-DR-01	Methylene chloride	8.9U ppb(v/v)	A
F7K290369	TSB-DR-01 (FD)	Methylene chloride	11U ppb(v/v)	A

BRC Tronox Parcel C/D/F/G
Volatiles - Field Blank Data Qualification Summary - SDG F7K290369

No Sample Data Qualified in this SDG

LDC #: 18054D48
SDG #: F7K290369
Laboratory: Test America

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 1/14/08
Page: 1 of 1
Reviewer: JV6
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA Method TO-14A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/28/07
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	
IV.	Continuing calibration/ICV	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D = 4.5
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Air

1	TSB-CR-04	11	7339521 MB	21		31	
2	TSB-CR-05	12	7340411 MB	22		32	
3	TSB-CJ-06	13		23		33	
4	TSB-DR-01	14		24		34	
5	TSB-DR-01(FD)	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 18054 D48
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: JN
2nd Reviewer: L

Method: Volatiles (EPA Method TO-14/TO-14A)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Canister pressure criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?		✓		
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

LDC #: 18054 D48
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: JV
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within +/-40% from the associated calibration standard?	✓			
Were retention times within +/- 30.0 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?		✓		
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?		✓		
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA Method TO-14/TO-14A)

A. Chloromethane*	S. Trichloroethene	KK. Trichlorofluoromethane	CCC. tert-Butylbenzene	UUU. Benzyl chloride
B. Bromomethane	T. Dibromochloromethane	LL. Methyl-tert-butyl ether	DDD. 1,2,4-Trimethylbenzene	VVV. 4-Ethyltoluene
C. Vinyl choride**	U. 1,1,2-Trichloroethane	MM. 1,2-Dibromo-3-chloropropane	EEE. sec-Butylbenzene	WWW. Ethanol
D. Chloroethane	V. Benzene	NN. Diethyl ether	FFF. 1,3-Dichlorobenzene	XXX. Ethyl ether
E. Methylene chloride	W. trans-1,3-Dichloropropene	OO. 2,2-Dichloropropane	GGG. p-Isopropyltoluene	YYY. tert-Butanol
F. Acetone	X. Bromoform*	PP. Bromochloromethane	HHH. 1,4-Dichlorobenzene	ZZZ. tert-Butyl alcohol
G. Carbon disulfide	Y. 4-Methyl-2-pentanone	QQ. 1,1-Dichloropropene	III. n-Butylbenzene	AAAA. Ethyl tert-butyl ether
H. 1,1-Dichloroethene**	Z. 2-Hexanone	RR. Dibromomethane	JJJ. 1,2-Dichlorobenzene	BBBB. tert-Amyl methyl ether
I. 1,1-Dichloroethane*	AA. Tetrachloroethene	SS. 1,3-Dichloropropane	KKK. 1,2,4-Trichlorobenzene	CCCC.1-Chlorohexane
J. 1,2-Dichloroethene, total	BB. 1,1,2,2-Tetrachloroethane*	TT. 1,2-Dibromoethane	LLL. Hexachlorobutadiene	DDDD. Isopropyl alcohol
K. Chloroform**	CC. Toluene**	UU. 1,1,1,2-Tetrachloroethane	MMM. Naphthalene	EEEE. Acetonitrile
L. 1,2-Dichloroethane	DD. Chlorobenzene*	VV. Isopropylbenzene	NNN. 1,2,3-Trichlorobenzene	FFFF. Acrolein
M. 2-Butanone	EE. Ethylbenzene**	WW. Bromobenzene	OOO. 1,3,5-Trichlorobenzene	GGGG. Acrylonitrile
N. 1,1,1-Trichloroethane	FF. Styrene	XX. 1,2,3-Trichloropropane	PPP. trans-1,2-Dichloroethene	HHHH. 1,4-Dioxane
O. Carbon tetrachloride	GG. Xylenes, total	YY. n-Propylbenzene	QQQ. cis-1,2-Dichloroethene	IIII. Isobutyl alcohol
P. Bromodichloromethane	HH. Vinyl acetate	ZZ. 2-Chlorotoluene	RRR. m,p-Xylenes	JJJJ. Methacrylonitrile
Q. 1,2-Dichloropropane**	II. 2-Chloroethylvinyl ether	AAA. 1,3,5-Trimethylbenzene	SSS. o-Xylene	KKKK. Propionitrile
R. cis-1,3-Dichloropropene	JJ. Dichlorodifluoromethane_	BBB. 4-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	LLLL

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 18054 D48
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA TO-14/TO-14A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?

Y (N) N/A Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?

#	Date	Standard ID	Compound	Finding %RSD (Limit: <30.0%)	Finding RRF (Limit: >0.05)	Associated Samples	Qualifications
	12/27/07	ICAL	VVV	32.177		All + Blks	J/UJ/P

INICAL.1A

LDC #: 18054 D48
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: JVG
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA TO-14/TO-14A)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y (N) N/A Were all percent differences (%D) ≤ 30% and relative response factors (RRF) ≥ 0.05?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	12/05/07	CC12053	KKK (-)	39.7		5, 7340411 MB	J- /UJ /P

LDC #: 18054 DAB

SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: JVL

2nd Reviewer:

METHOD: GC/MS VOA (EPA TO-14/TO-14A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?

Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?

Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 12/04/07

Conc. units: ppb (v/v)

Associated Samples: 1 - 4

Compound	Blank ID	Sample Identification								
	7339521-MB	1	2	3	4					
E	1.2	3.2/U	2.8/U	5.2/U	8.9/U					
CRQL										

Blank analysis date: 12/05/07

Conc. units: ppb (v/v)

Associated Samples: 5

Compound	Blank ID	Sample Identification								
	7340411-MB	5								
E	2.7	11/U								
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC#: 18054D48
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: JV6
2nd Reviewer: [illegible]

METHOD: GCMS VOA (EPA TO-14A)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ppb(v/v)) 4	5	(≤50) RPD	Difference	Diff Limits	Qualifications (Parent Only)
Chloromethane	4.0U	1.6		2.4	≤4.0	
Bromomethane	4.0U	2.5		1.5	↓	
Chloroethane	20	27	30			
Acetone	34	36		2	≤ 10.0	
Methylene chloride	8.9	11		2.1	≤ 2.0	J dets/A
1,1-Dichloroethane	1.6	1.9		0.3	↓	
Chloroform	33	40	19			
Benzene	3.0U	1.6		1.4	≤ 3.0	
Trichloroethene	1.1	1.3		0.2	≤ 2.0	
Toluene	1.0	2.0U		1	↓	
Tetrachloroethene	13	15	14			

V:\FIELD DUPLICATES\18054D48.wpd

LDC #: 18054 D48
SDG #: Sep Cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: JW
2nd Reviewer: R

METHOD: GC/MS VOA (EPA TO-14/TO-14A)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (50 std)	Recalculated RRF (50 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	11/27/07	Methylene chloride (1st internal standard)	0.4468	0.4468	0.44705	0.44705	16.689	16.687
			Trichlorethene (2nd internal standard)	0.49229	0.49229	0.49029	0.49029	13.011	13.011
			Toluene (3rd internal standard)	1.48850	1.48850	1.35277	1.35277	10.137	10.137
2			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						
3			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						
4			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 18054 D48
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: JVC
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA TO-14/TO14A)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC120411	12/04/07	~~Methylene chloride~~ C (1st internal standard)	0.44704	0.49259	0.49259	10.2	10.2
			~~Trichlorethene~~ C (2nd internal standard)	0.49029	0.48657	0.48657	0.8	0.8
			~~Toluene~~ EE (3rd internal standard)	1.3527 ✓	1.48933	1.48933	10.1	10.1
2	CC120533	12/05/07	~~Methylene chloride~~ C (1st internal standard)	0.44704	0.45459	0.45459	1.7	1.7
			Trichlorethene (2nd internal standard)	0.49029	0.46351	0.46351	5.5	5.5
			~~Toluene~~ EE (3rd internal standard)	1.3527 ✓	1.43247	1.43247	5.9	5.9
3			Methylene chloride (1st internal standard)					
			Trichlorethene (2nd internal standard)					
			Toluene (3rd internal standard)					
4			Methylene chloride (1st internal standard)					
			Trichlorethene (2nd internal standard)					
			Toluene (3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 18054 D48
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: JVG
2nd reviewer: [signature]

14A

METHOD: GC/MS VOA (EPA Method TO-~~15~~)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1 , AA :

Conc. = $\frac{(50990)(50)(23.90)(500)}{(1036232)(0.91807)(12.200)(900)}$

= 2.6786

≈ 2.7 ppb (v/v)

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification