Chem-Solv, Inc. Site
Cheswold, Kent County, Delaware

Remedial Investigation Report

Volume IV

May 1991

BCM
Engineers, Planners, Scientists
and Laboratory Services

REPORT

AR300026

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BCM

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IEA Assigned Number Index

Organic Analyses

Case No. 868-006

IEA Assigned "EPA" Number	BCM Engineers Sample ID
BC001	41A
BC002	26AU
BC004	33ADU
BC006	33AU
BC008	Equipment Blank U (2/19/91)
BC010	Trip Blank U (2/19/91)

AR309032

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APPENDIX M

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BCM

APPENDIX M

GROUNDWATER ANALYTICAL RESULTS AND QUALITY ASSURANCE REVIEW
FEBRUARY 1991

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IEA, INC.
CASE 868-6
SDG BC001
CASE NARRATIVE & VOLATILES

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Industrial & Environmental Analysts, Inc.
P.O. Box 12646
Research Triangle Park, North Carolina 27709
(919) 677-0090
FAX (919) 677-0427

CASE: 868-006

SDG No.: BC001

SAMPLES: 6 Water Samples for CLP Volatile Analyse

The samples were received on February 20, 1991 in good condition. Upon receipt at IEA, each sample was assigned a 5-character "EPA" sample number for simplicity in forms generation. This package makes reference only to those 5-character ID's. Please consult the IEA Assigned Number Index for sample cross-identification. The letter "U" was added to the end of some of the client ID's to indicate that the sample was not filtered.

Some of the volatile RICs were not normalized to the largest non-solvent peak. The raw data for many volatile samples has Lab File ID that exceeds seven digits. This occurred when the autosampler was utilized, and we are in the process of obtaining software that will correct the filename.

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

Becky E. Linvill 4/4/91

Becky E. Linvill 4/4/91
CLP Organic Assistant Program Manager

AR309031

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IEA INDUSTRIAL & ENVIRONMENTAL ANALYSTS, INC.
3000 WESTON PKWY.
CARY, N.C. 27513

CHAIN OF CUSTODY RECORD

NO: 12183

REGULATORY CLASSIFICATION - PLEASE SPECIFY
☐ NPDES ☐ DRINKING WATER ☐ RCRA ☑ OTHER CERCLA / SARA

PROJECT # RM 00-6012-02
PROJECT NAME: Chem-Solv, Inc
SAMPLERS: (SIGNATURE) Marguerite Bonaker, Russell Mehalek, Andrew Stamm

SAMPLE I.D.	DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	MATRIX SOIL	MATRIX WATER	REQUESTED PARAMETERS: VOA CLP Volatiles	250 ml Amber Unfiltered Mn	250 ml Amber Filtered Mn	500 ml PL NH3	250 ml PL NO3	250 ml PL NO2	500 ml PL SO4	500 ml PL Sulfide	250 ml PL Cl	1 L PL BOD	1 L PL COD	250 ml Amber Unfiltered Mn/Zn	250 ml Amber Filtered Mn/Zn
	2/19/91	1330		Y	26A	15		X	3	2	2	1	1	1	1	1	1	1	1		
		1445			41A	6		X	6												
		1700			33A	17		X	3			1	1	1	1	1	1	1	1	4	2
		1700			33AD	15		X	3			1	1	1	1	1	1	1	1	2	2
		1530			Trip Blank	8		X	6											2	
		1540			Equipment Blank	18		X	6			1	1	1	1	1	1	1	1	2	2

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
			Russell Mehalek	2/18/91	15:00
RELINQUISHED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED FOR LAB BY**	**DATE**	**TIME**
Russell Mehalek	2/18/91	18:30	[illegible]	2/20/91	910

IEA QUOTE NO.: 91-0115-05
IEA RUSH NO.:
PROJECT MANAGER (PLEASE PRINT): IEA Becky Tessmann
P.O. NO.:

IEA REMARKS: Hides (...) rec'd in-house @ 9:20 2/20/91 CQ. IEA # 868-00[illegible] 868-006(7): others

FIELD REMARKS: VOA MS/MSD on 41A, Zn/Mn MS/MSD on 33A. Shipped in 4 boxes via Federal Express. (Airbill [illegible])

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
1	VBLK01	99	99	100		0
2	BC006	100	103	96		0
3	BC004	99	100	99		0
4	BC008	99	92	96		0
5	BC010	106	98	97		0
6	BC001	108	97	100		0
7	BC001MSD	102	101	99		0
8	BC001MS	101	100	99		0
9	BC002	100	100	98		0
10						
11						
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		QC LIMITS
S1 (TOL)	= TOLUENE-d8	(88-110)
S2 (BFB)	= BROMOFLUOROBENZENE	(86-115)
S3 (DCE)	= 1,2-DICHLOROETHANE-D4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-1

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3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix Spike - EPA Sample No.: BC001

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
1,1-DICHLOROETHENE	50.	0.	71.	143	61-145
TRICHLOROETHENE	50.	0.	59.	118	71-120
BENZENE	50.	0.	61.	122	76-127
TOLUENE	50.	0.	59.	118	76-125
CHLOROBENZENE	50.	0.	56.	113	75-130

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	% RPD #	QC LIM RPD	
1,1-DICHLOROETHENE	50.	72.	144	1	14	61-145
TRICHLOROETHENE	50.	60.	120	1	14	71-120
BENZENE	50.	59.	118	3	11	76-127
TOLUENE	50.	58.	117	1	13	76-125
CHLOROBENZENE	50.	57.	115	1	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

FORM III VOA-1 1/87 Rev.

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1 0002

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4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Lab File ID: 0301E02 Lab Sample ID:

Date Analyzed: 3/ 1/91 Time Analyzed: 22:01

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: msd5

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1	BC006		0301E03	22:36
2	BC004		0301E04	23:10
3	BC008		0301E05	23:50
4	BC010		0301E06	0:26
5	BC001		0301E07	1:05
6	BC001MSD		0301E09	2:29
7	BC001MS		0301E10	3:32
8	BC002		0301E11	4:07
9				
10				
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COMMENTS:

FORM IV VOA 1/87 Rev.

1 00 AR009036

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5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Lab File ID: 02205BF BFB Injection Date: 2/20/91

Instrument ID.: msd5 BFB Injection Time: 0:11

Matrix:(soil/water) WATER Level:(low/med): LOW Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.1
75	30.0 - 60.0% of mass 95	44.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	.0 (.0)1
174	Greater than 50.0% of mass 95	63.9
175	5.0 - 9.0% of mass 174	5.6 (8.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	64.4 (100.8)1
177	5.0 - 9.0% of mass 176	5.6 (8.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDAF

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	VSTD50		0220502	2/20/91	1:18
2	VSTD100		0220503	2/20/91	2:08
3	VSTD150		0220504	2/20/91	2:42
4	VSTD200		0220505	2/20/91	3:17
5	VSTD20		0220506	2/20/91	3:52
6					
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FORM V VOA 1 0004 1/87 Rev.

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5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Lab File ID: 0301EBF BFB Injection Date: 3/ 1/91

Instrument ID.: msd5 BFB Injection Time: 20:50

Matrix:(soil/water) WATER Level:(low/med): LOW Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.8
75	30.0 - 60.0% of mass 95	43.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	.0 (.0)1
174	Greater than 50.0% of mass 95	63.6
175	5.0 - 9.0% of mass 174	4.0 (6.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	63.8 (100.3)1
177	5.0 - 9.0% of mass 176	5.5 (8.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	VSTD50		0301E01	3/ 1/91	21:24
2	VBLK01		0301E02	3/ 1/91	22:01
3	BC006		0301E03	3/ 1/91	22:36
4	BC004		0301E04	3/ 1/91	23:10
5	BC008		0301E05	3/ 1/91	23:50
6	BC010		0301E06	3/ 2/91	0:26
7	BC001		0301E07	3/ 2/91	1:05
8	BC001MSD		0301E09	3/ 2/91	2:29
9	BC001MS		0301E10	3/ 2/91	3:32
10	BC002		0301E11	3/ 2/91	4:07
11					
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FORM V VOA

AR309038

1/87 Rev.

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8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Lab File ID (Standard): 0301E01 Date Analyzed: 3/ 1/91

Instrument ID: msd5 Time Analyzed: 21:24

Matrix:(soil/water) WATER Level:(low/med): LOW Column:(pack/cap) CAP

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	192811.	11.04	864705.	12.91	767497.	18.33
	UPPER LIMIT	385622.	11.54	1729410.	13.41	1534994.	18.83
	LOWER LIMIT	96406.	10.54	432353.	12.41	383749.	17.83
	EPA SAMPLE NO.						
1	VBLK01	191178.	11.05	854111.	12.91	765215.	18.32
2	BC006	188186.	11.06	820858.	12.91	726115.	18.33
3	BC004	191897.	11.06	852931.	12.92	756641.	18.33
4	BC008	199142.	11.06	855639.	12.92	745576.	18.33
5	BC010	189489.	11.05	832828.	12.91	678005.	18.33
6	BC001	182518.	11.06	793181.	12.92	655112.	18.3[illegible]
7	BC001MSD	191500.	11.07	837886.	12.93	740878.	18.3
8	BC001MS	201213.	11.10	874366.	12.96	781565.	18.3[illegible]
9	BC002	129449.	11.07	519782.	12.92	455633.	18.34
10							
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12							
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15							
16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = BROMOCHLOROMETHANE
IS2 (DFB) = 1,4-DIFLUOROBENZENE
IS3 (CBZ) = CHLOROBENZENE-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

AR309039

FORM VIII VOA 1 0006 1/8[illegible]

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SURROGATE AND INTERNAL STANDARD KEY SHEET

FOR VOLATILES

(AS THEY APPEAR ON THE RIC)

A = Bromochloromethane (Internal Standard)
B = 1,2-Dichloroethane-d4 (Surrogate)
C = 1,4-Difluorobenzene (Internal Standard)
D = Toluene-d8 (Surrogate)
E = Chlorobenzene-d5 (Internal Standard)
F = 4-Bromofluorobenzene (Surrogate)

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BC001

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E07

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 2/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	U
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
540-59-0	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

FORM I VOA

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1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BC001

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E07

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 2/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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FORM I VOA-TIC 1/87 Rev.

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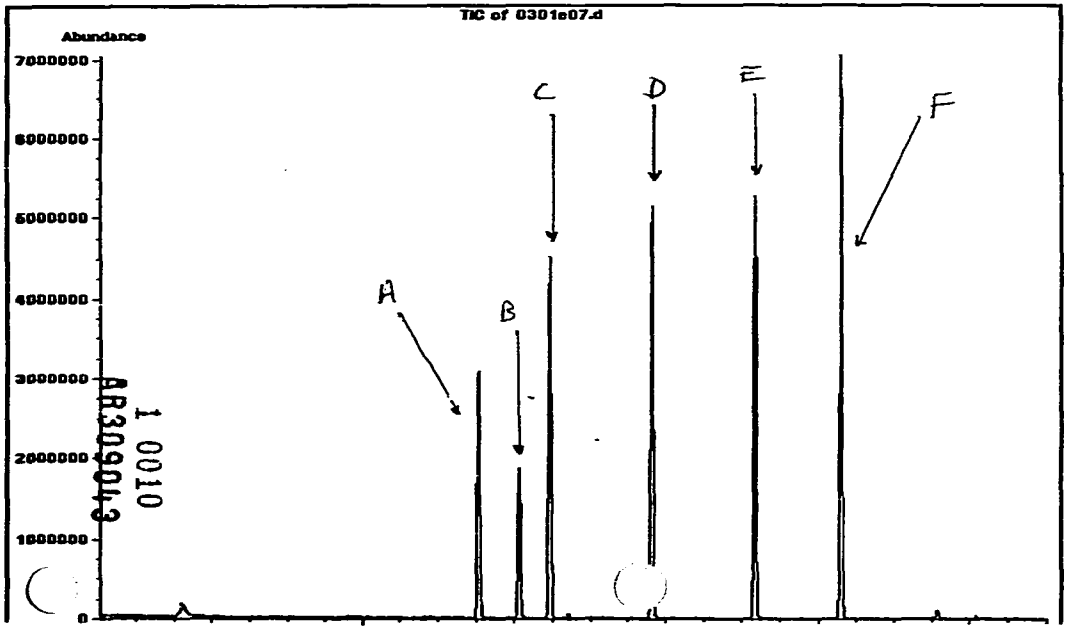

BCQ&I
3/2/91 1:0
MSD5
clr
3/25/91

AR309043
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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/0219505.d
Date : 02 Mar 91 01:05 Inst ID: msd5
Data file: 0301e07.d Tune Date: 23 Jan 91 10:10
Name Info: BC001 868-006-1 41A 5ml undil iea msd5
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 0
Als bottle num : 0
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	%REC	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5		
11.06(1.000)	128	182518	50.00			100.00
11.05	49	361369			160.78 - 210.78	197.99
11.06	130	238434			106.54 - 156.54	130.63
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.12(1.097)	65	277691	50.23	100.46		100.00
12.12	102	63956			1.65 - 51.65	23.03
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.92(1.000)	114	793181	50.00			100.00
12.92	63	196519			0.00 - 47.22	24.77
12.92	88	178303			0.00 - 45.47	22.47
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.42(1.040)	130	4647	~~0.67~~ BQL			100.00
27 2-CHLOROETHYLVINYL ETHER				CAS #: 110-75-8		
14.42(1.117)	63	537	~~0.12~~ ~~BQL~~ NT			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.33(1.000)	117	655112	50.00			100.00
18.33	82	419761			37.16 - 87.16	64.07
18.33	119	209066			7.90 - 57.90	31.91
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.63(0.853)	98	745247	53.81	107.63		100.00
$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4		
20.58(1.122)	95	636176	48.46	96.92		100.00
20.58	174	423694			41.39 - 91.39	66.60
20.58	176	422036			41.62 - 91.62	66.33

CKN 3/25/91

CKN 4/3/91

AR309044

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BC002

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E11

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 2/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	U
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
540-59-0	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	29.	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

AR309045

FORM I VOA 1 0012 1/87 Rev.

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1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BC002

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E11

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 2/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	78-78-4	Butane, 2-methyl-	5.49	100.	J
2.	- -	UNKNOWN	5.66	100.	J
3.	96-14-0	Pentane, 3-methyl-	8.67	100.	J
4.	96-37-7	Cyclopentane, methyl-	10.43	100.	J
5.	- -	UNKNOWN HYDROCARBON	11.72	100.	J
6.	- -	UNKNOWN	12.44	100.	J
7.	108-87-2	Cyclohexane, methyl-	13.78	40.	J
8.	- -	UNKNOWN HYDROCARBON	14.53	30.	J
9.	560-21-4	Pentane, 2,3,3-trimethyl-	14.78	40.	J
10.	767-58-8	IH-Indene, 2,3-dihydro-1-met	25.58	50.	J
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
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FORM I VOA-TIC 1/87 Rev.

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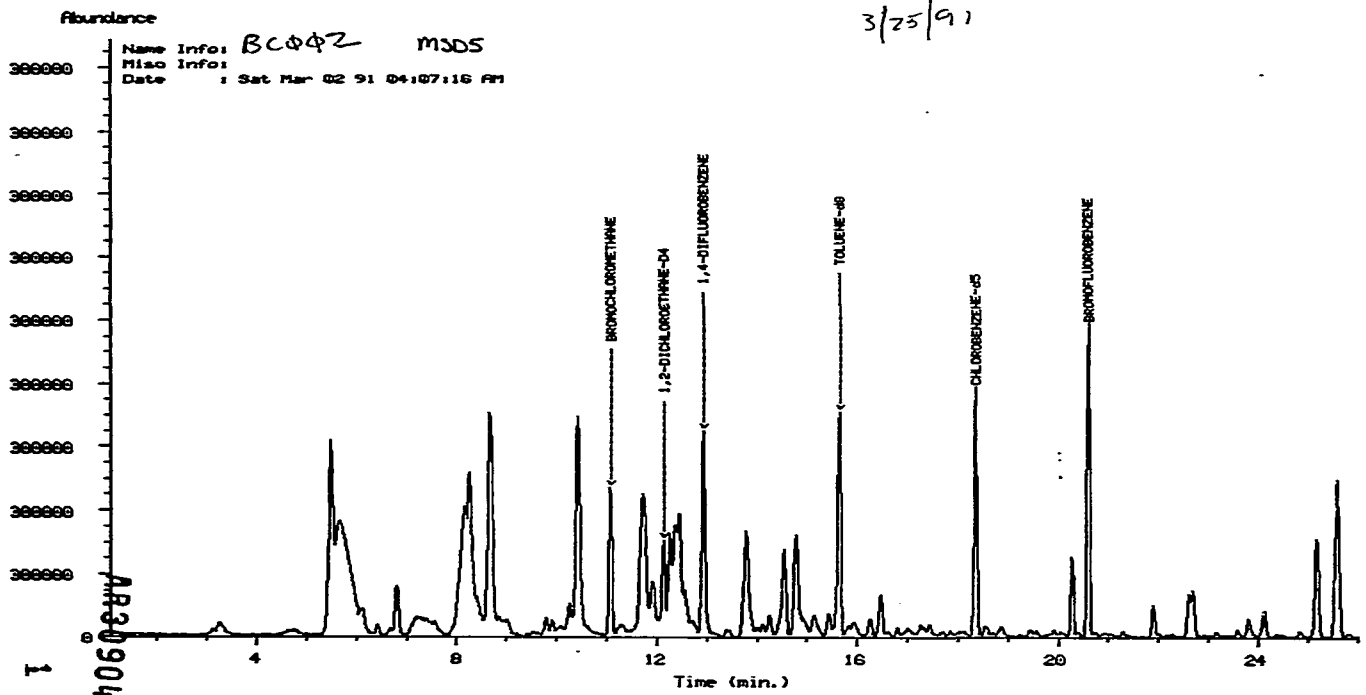
TIC of 0301e1101011.d

CW 3/25/91



AB30047

1 0014

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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/0219505.d
Date : 02 Mar 91 04:07 Inst ID: msd5
Data file: 0301e1101011.d Tune Date: 23 Jan 91 10:10
Name Info: BCQQZ
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 1
Als bottle num : 11
Replicate num : 1

CKM 4/5/91

RETENTION TIME MIN. (REL)	MASS	AREA	AMT(UG/L)	%REC	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5		
11.07(1.000)	128	129449	50.00			100.00
11.06	49	257048			160.78 - 210.78	198.57
11.07	130	169067			106.54 - 156.54	130.60
7 ACETONE				CAS #: 67-64-1		
7.20(0.652)	43	66493	~~145.42~~	F.P		100.00
9 METHYLENE CHLORIDE				CAS #: 75-09-2		
8.26(0.748)	84	17191	~~5.00~~	F.P		100.00
17 CHLOROFORM				CAS #: 67-66-3		
11.23(1.017)	83	11421	~~1.48~~	BQL		100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.13(1.098)	65	191895	48.94	97.89		100.00
12.13	102	45049			1.65 - 51.65	23.47
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.92(1.000)	114	519782	50.00			100.00
12.92	63	133888			0.00 - 47.22	25.75
12.92	88	115986			0.00 - 45.47	22.31
21 BENZENE				CAS #: 71-43-2		
12.25(0.949)	78	249973	29.27			100.00
33 1,1,2-TRICHLOROETHANE				CAS #: 79-00-5		
16.46(1.275)	97	35678	~~10.02~~	F.P		100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.34(1.000)	117	455633	50.00			100.00
18.34	82	302103			37.16 - 87.16	66.30
18.34	119	143753			7.90 - 57.90	31.55
29 4-METHYL-2-PENTANONE				CAS #: 108-10-1		
15.47(0.844)	43	7455	~~3.27~~	BQL		100.00
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.64(0.853)	98	480636	49.90	99.80		100.00
34 TETRACHLOROETHENE				CAS #: 127-18-4		
16.79(0.916)	164	6349	~~1.47~~	BQL		100.00
35 2-HEXANONE				CAS #: 591-78-6		
16.86(0.919)	43	8217	~~5.36~~	BQL		100.00

AR309948

1 8015

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$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4			
20.59(1.123)	95	458815	50.25	100.50			100.00
20.59	174	298891			41.39 -	91.39	65.14
20.59	176	296522			41.62 -	91.62	64.62

TENTATIVELY IDENTIFIED COMPOUNDS

RET TIME	AREA	AMT(UG/L)	QUALITY	LIBRARY	LIB ENTRY
Butane, 2-methyl-			CAS #: 78-78-4		
5.49	189721300	97.95	87	WILEY.1	114154
UNKNOWN			CAS #:		
5.66	285280300	147.29	0		0
Pentane, 3-methyl-			CAS #: 96-14-0		
8.67	282444600	145.82	90	WILEY.1	1031
Cyclopentane, methyl-			CAS #: 96-37-7		
10.43	225870400	116.62	91	WILEY.1	114549
Cyclohexane(DOT			CAS #: 110-82-7		
11.72	202195000	104.39	72	WILEY.1	868
1-Butanol, 2-methyl-			CAS #: 137-32-6		
12.44	343224500	112.94	64	WILEY.1	114845
Cyclohexane, methyl-			CAS #: 108-87-2		
13.78	120067100	39.51	72	WILEY.1	1856
Pentane, 2,3,4-trimethyl-			CAS #: 565-75-3		
14.53	89133060	29.33	72	WILEY.1	4129
Pentane, 2,3,3-trimethyl-			CAS #: 560-21-4		
14.78	122557500	40.33	90	WILEY.1	116590
1H-Indene, 2,3-dihydro-1-methy			CAS #: 767-58-8		
25.58	143853700	49.00	87	WILEY.1	7898

BCØØZ
Ø3Ø1E11
MSD5

AR309049
1 001

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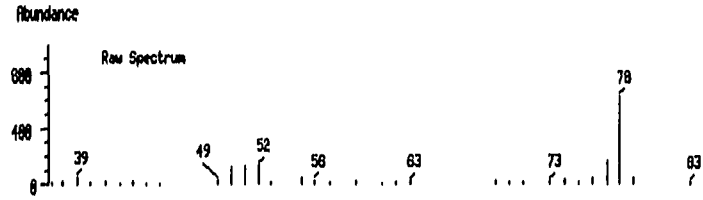
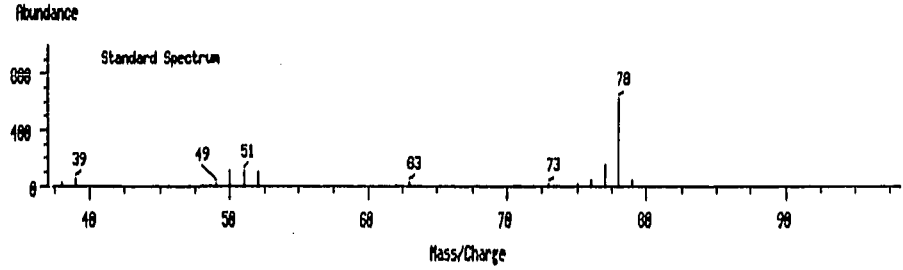
#21 BENZENE
Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

Scan 1154 (12.241 min) of 0381e1101011.d SCALED

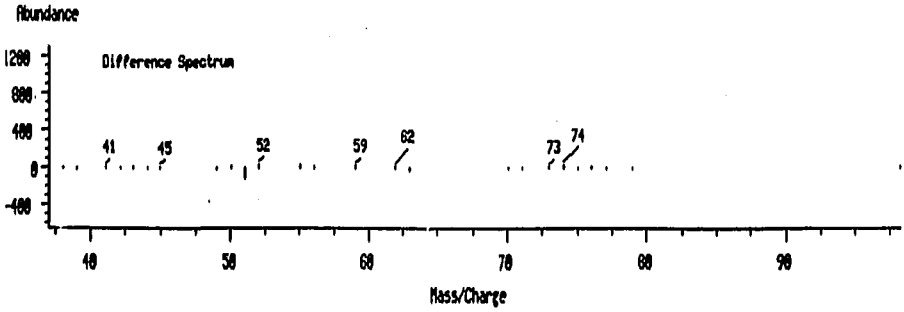


Scan 1154 (12.241 min) of 0381e1101011.d SUBTRACTED SCALED

#18: Benzene SCALED



Scan 1154 (12.241 min) of 0381e1101011.d SUBTRACTED SCALED



AR309005107

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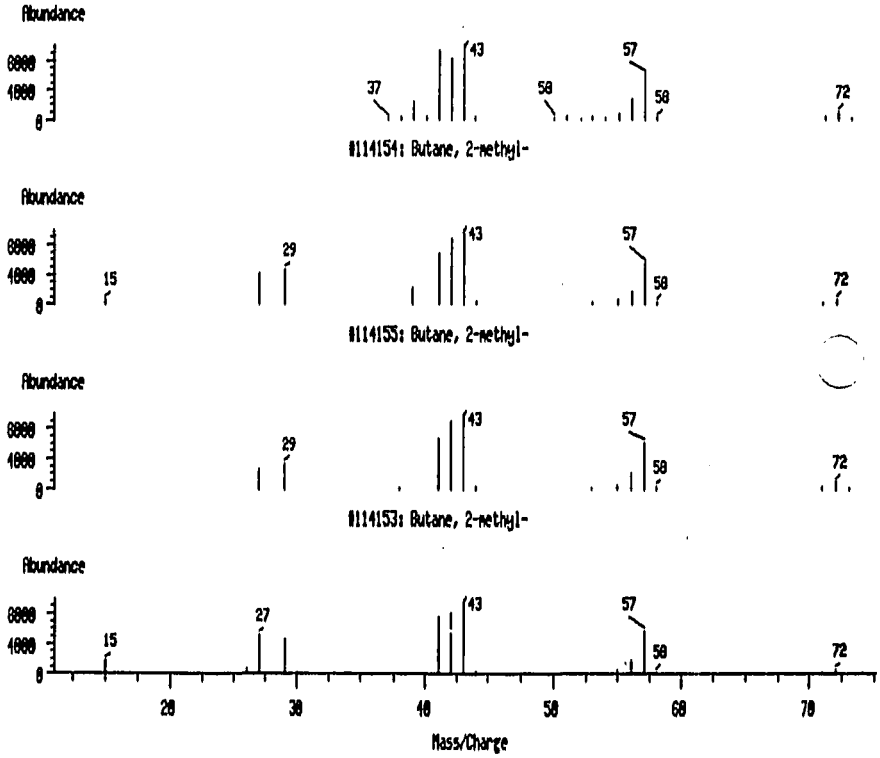
Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

PBM Library File: /chem/database/WILEY.1

	CAS #	LIB INDEX	MATCH QUALITY
1. Butane, 2-methyl-	78-78-4	114154	87
2. Butane, 2-methyl-	78-78-4	114155	86
3. Butane, 2-methyl-	78-78-4	114153	86
4. Butane, 2-methyl-	78-78-4	424	80
5. Pentane	109-66-0	114156	64

Scan 458 (5.486 min) of 8381e1181811.d SUBTRACTED SCALED



AR309051

1 0018

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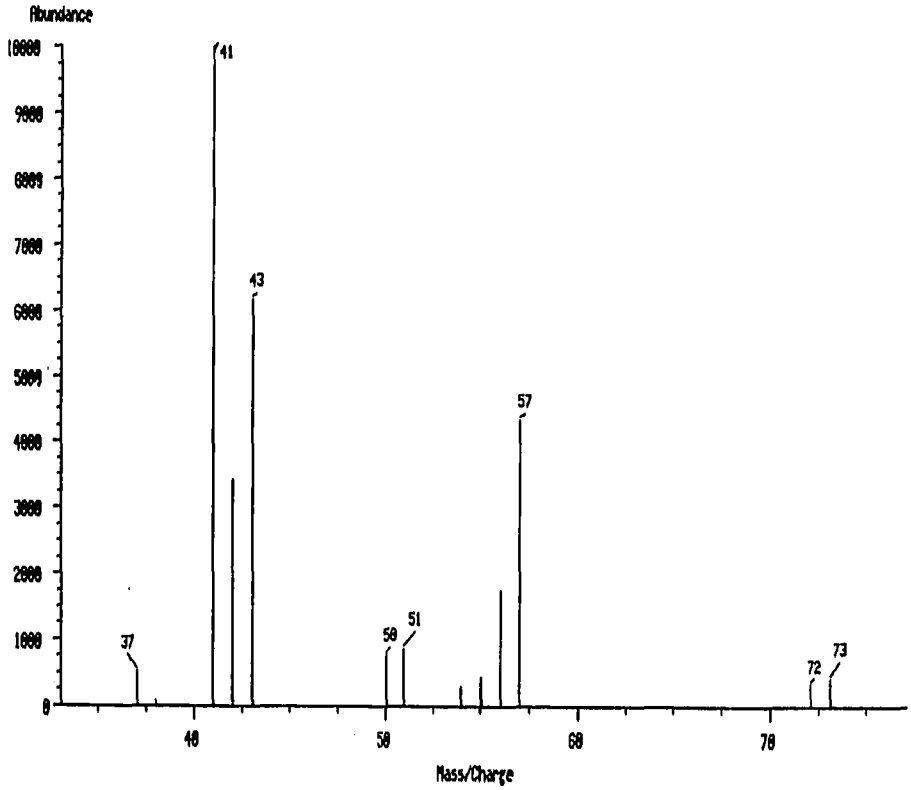
Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

Scan 476 (5.668 min) of 8381e1101011.d SUBTRACTED SCALED



AR309052
1 0019

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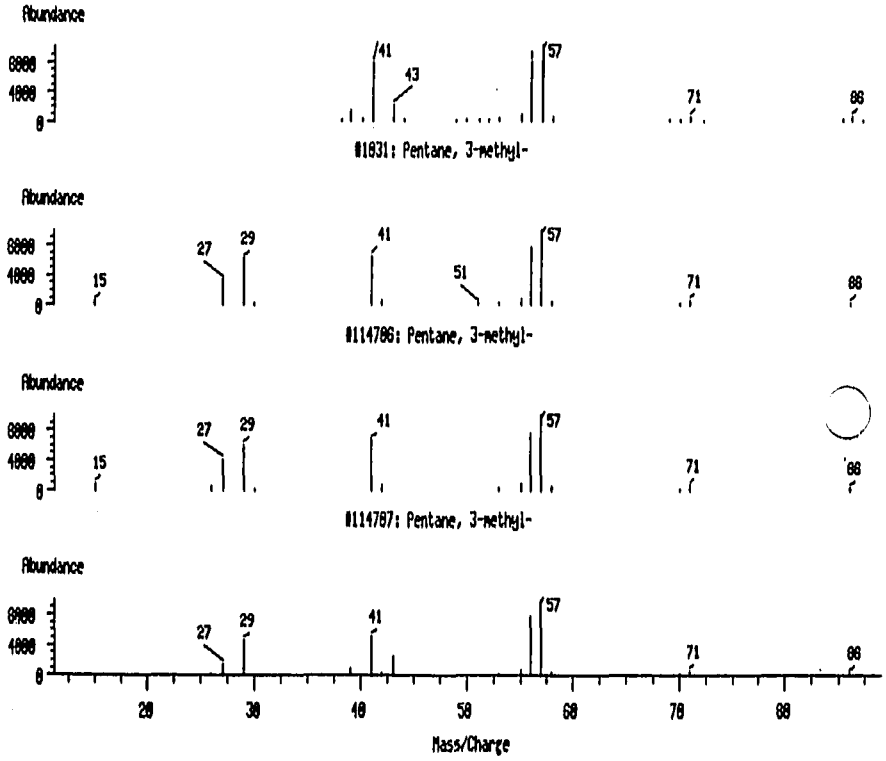
Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

PBM Library File: /chem/database/WILEY.l

	CAS #	LIB INDEX	MATCH QUALITY
1. Pentane, 3-methyl-	96-14-0	1031	90
2. Pentane, 3-methyl-	96-14-0	114706	90
3. Pentane, 3-methyl-	96-14-0	114707	86

Scan 786 (8.669 min) of 0381e1101011.d SUBTRACTED SCALED



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Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

PBM Library File: /chem/database/WILEY.1

	CAS #	LIB INDEX	MATCH QUALITY
1. Cyclopentane, methyl-	96-37-7	114549	91
2. Cyclopentane, methyl-	96-37-7	114548	91
3. Cyclopentane, methyl-	96-37-7	867	86
4. Cyclopentane, methyl-	96-37-7	114550	78
5. Cyclobutane, ethyl-	4806-61-5	866	72

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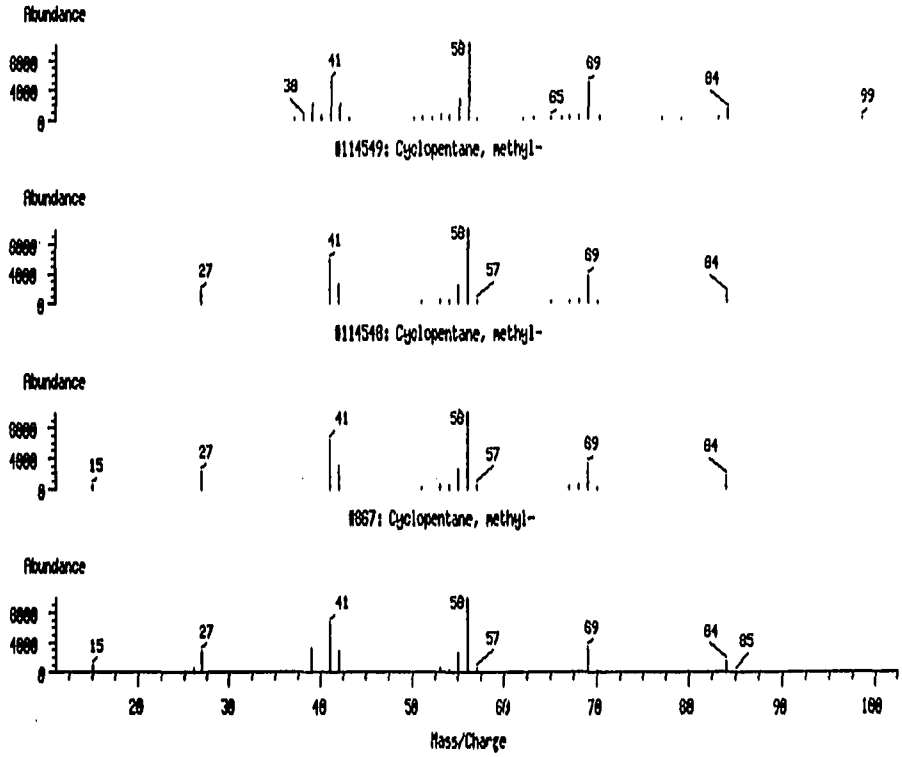

AR300054

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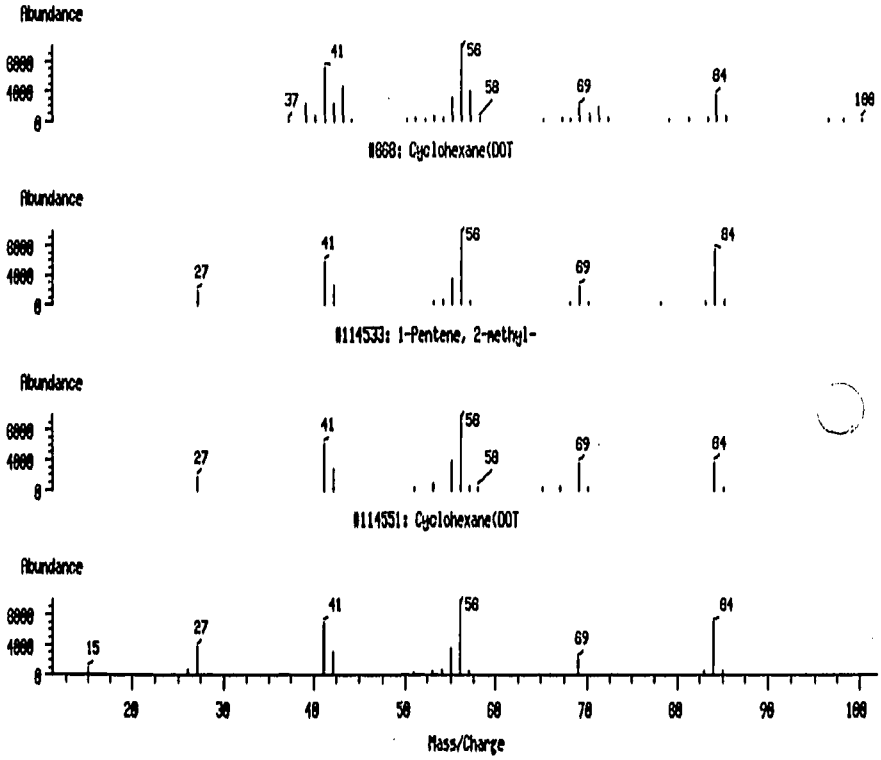
Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

PBM Library File: /chem/database/WILEY.1

		CAS #	LIB INDEX	MATCH QUAL
1.	Cyclohexane(DOT	110-82-7	868	72
2.	1-Pentene, 2-methyl-	763-29-1	114533	64
3.	Cyclohexane(DOT	110-82-7	114551	56
4.	Cyclopentane, methyl-	96-37-7	114548	53

Scan 1100 (11.716 min) of 6381e1101011.d SUBTRACTED SCALED



AR309055
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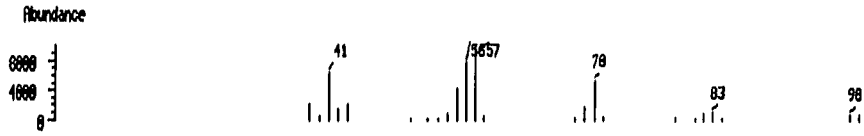
Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

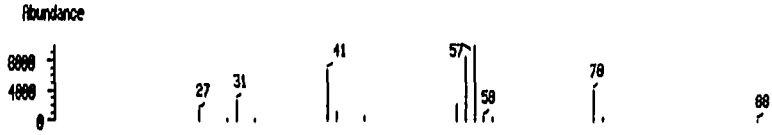
PBM Library File: /chem/database/WILEY.l

	CAS #	LIB INDEX	MATCH QUALITY
1. 1-Butanol, 2-methyl-	137-32-6	114845	64
2. Cyclopentane, 1,2-dimethyl-, trans-	822-50-4	1851	59
3. CYCLOBUTANE, ISOPROPYL-		1860	59
4. 1-Butanol, 2-methyl-	137-32-6	114848	56
5. Cyclopentane, 1,3-dimethyl-, cis-	2532-58-3	1854	56

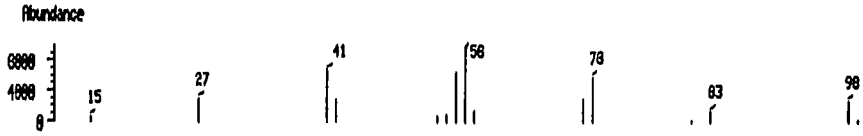
Scan 1174 (12.436 min) of 8361e1181011.d SUBTRACTED SCALED



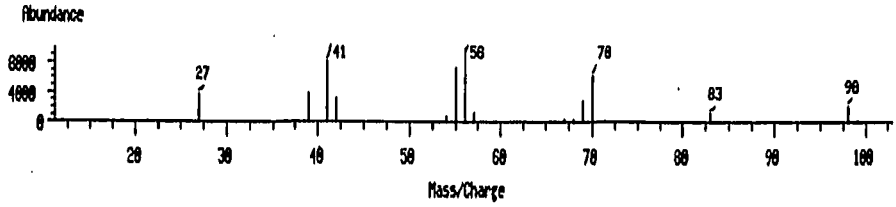
#114845: 1-Butanol, 2-methyl-



#1851: Cyclopentane, 1,2-dimethyl-, trans-



#1868: CYCLOBUTANE, ISOPROPYL-



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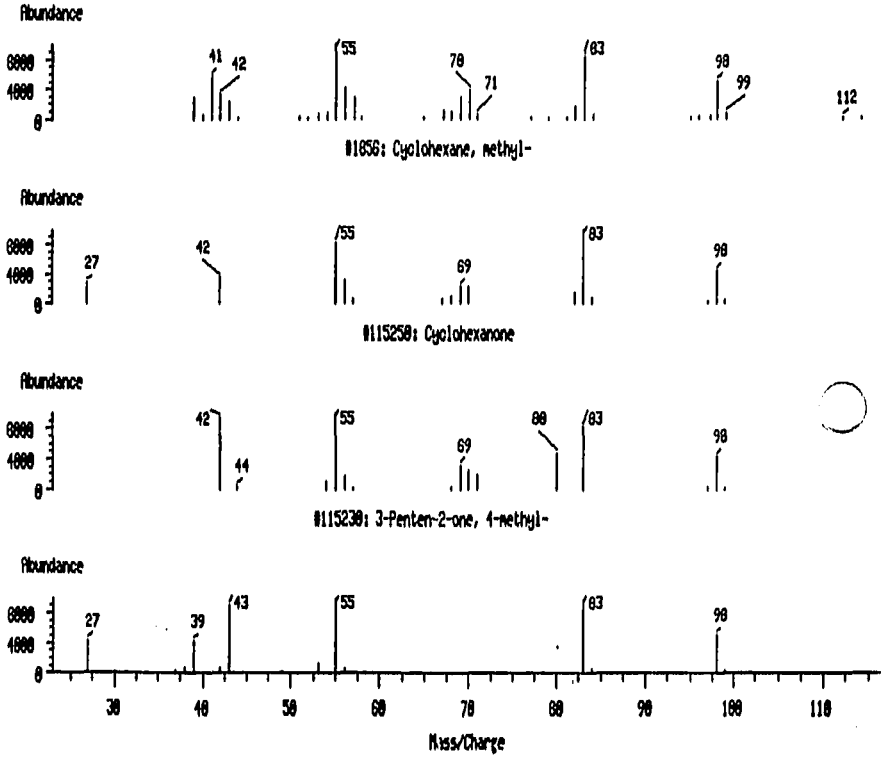
Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

PBM Library File: /chem/database/WILEY.1

	CAS #	LIB INDEX	MATCH QUALITY
1. Cyclohexane, methyl-	108-87-2	1856	72
2. Cyclohexanone	108-94-1	115250	53
3. 3-Penten-2-one, 4-methyl-	141-79-7	115230	50

Scan 1313 (13.785 min) of 8301e1101811.d SUBTRACTED SCALED



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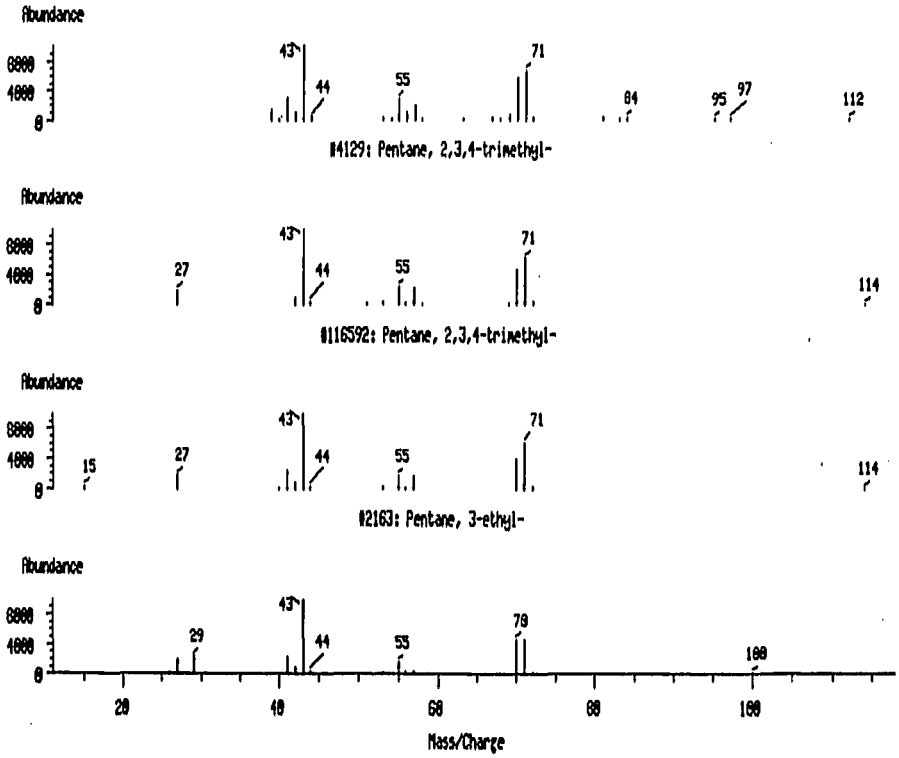
Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

PBM Library File: /chem/database/WILEY.1

		CAS #	LIB INDEX	MATCH QUALITY
1.	Pentane, 2,3,4-trimethyl-	565-75-3	4129	72
2.	Pentane, 2,3,4-trimethyl-	565-75-3	116592	72
3.	Pentane, 3-ethyl-	617-78-7	2163	72
4.	Propanoic acid, 2-methyl-, pentyl e	2445-72-9	120915	72
5.	Pentane, 2,3,4-trimethyl-	565-75-3	116593	72

Scan 1390 (14.533 min) of 0381e1101011.d SUBTRACTED SCALED



AR309058
1 0025

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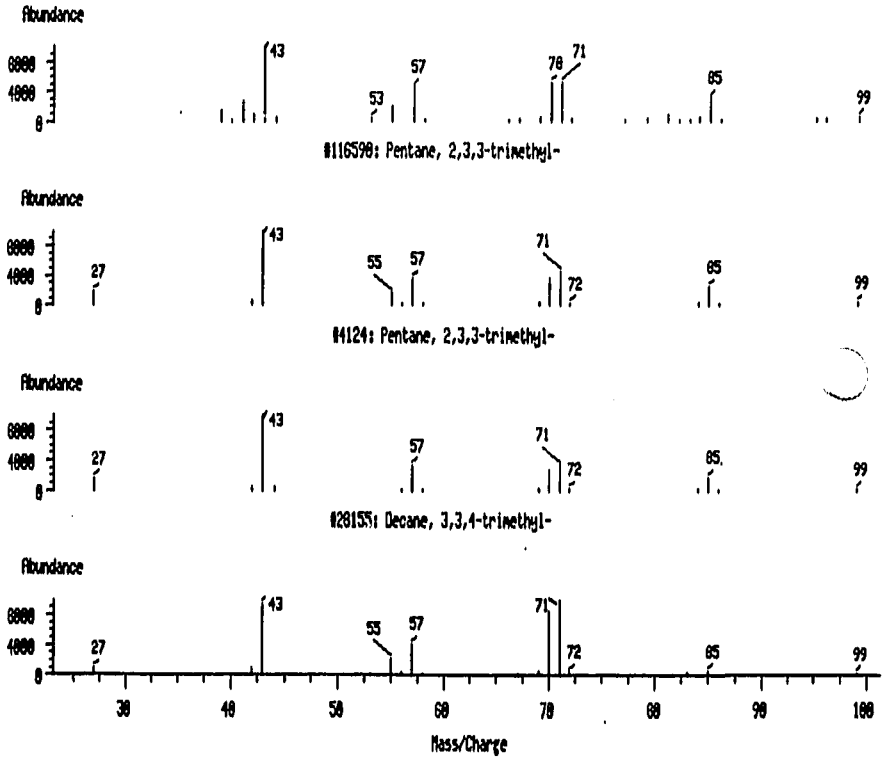
Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

PBM Library File: /chem/database/WILEY.1

	CAS #	LIB INDEX	MATCH QUALITY
1. Pentane, 2,3,3-trimethyl-	560-21-4	116590	90
2. Pentane, 2,3,3-trimethyl-	560-21-4	4124	83
3. Decane, 3,3,4-trimethyl-	49622-18-6	28155	59
4. Hexane, 2,3,4-trimethyl-	921-47-1	6966	59
5. Pentane, 2,3,4-trimethyl-	565-75-3	4129	59

Scan 1415 (14.776 min) of 0381e1101011.d SUBTRACTED SCALED



AR309059
1 0026

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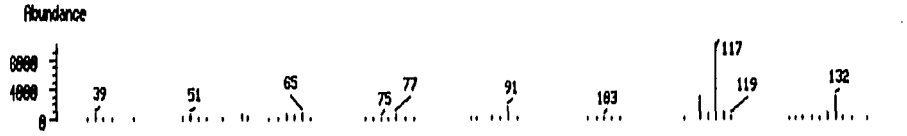
Tentatively Identified Compound

Name Info:
Misc Info:
Date : Sat Mar 02 91 04:07:16 AM

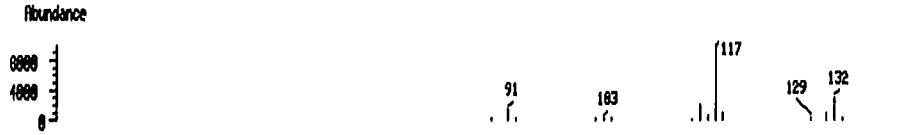
PBM Library File: /chem/database/WILEY.l

		CAS #	LIB INDEX	MATCH QUALITY
1.	1H-Indene, 2,3-dihydro-1-methyl-	767-58-8	7898	87
2.	Benzene, 1-ethenyl-3-ethyl-, mixt.	55319-72-7	118264	87
3.	1H-Indene, 2,3-dihydro-1-methyl-	767-58-8	118283	87
4.	Benzene, (2-methyl-2-propenyl)-	3290-53-7	7884	86
5.	1H-Indene, 2,3-dihydro-1-methyl-	767-58-8	118284	76

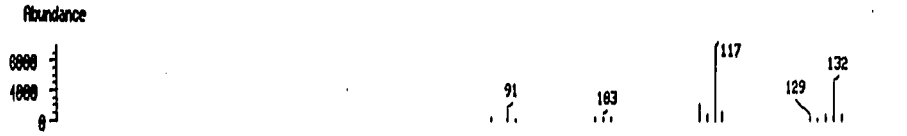
Scan 2528 (25.577 min) of 0381e1181011.d SUBTRACTED SCALED



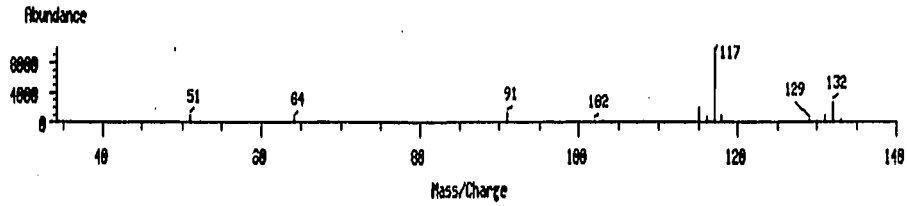
#7898: 1H-Indene, 2,3-dihydro-1-methyl-



#118264: Benzene, 1-ethenyl-3-ethyl-, mixt. with 1-ethenyl-4-



#118283: 1H-Indene, 2,3-dihydro-1-methyl-



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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BC004

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E04

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 1/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	U
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
540-59-0	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	8.	
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	110.	
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

AR309

FORM I VOA 1/87 Rev

1 0028

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BC004

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 863-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E04

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 1/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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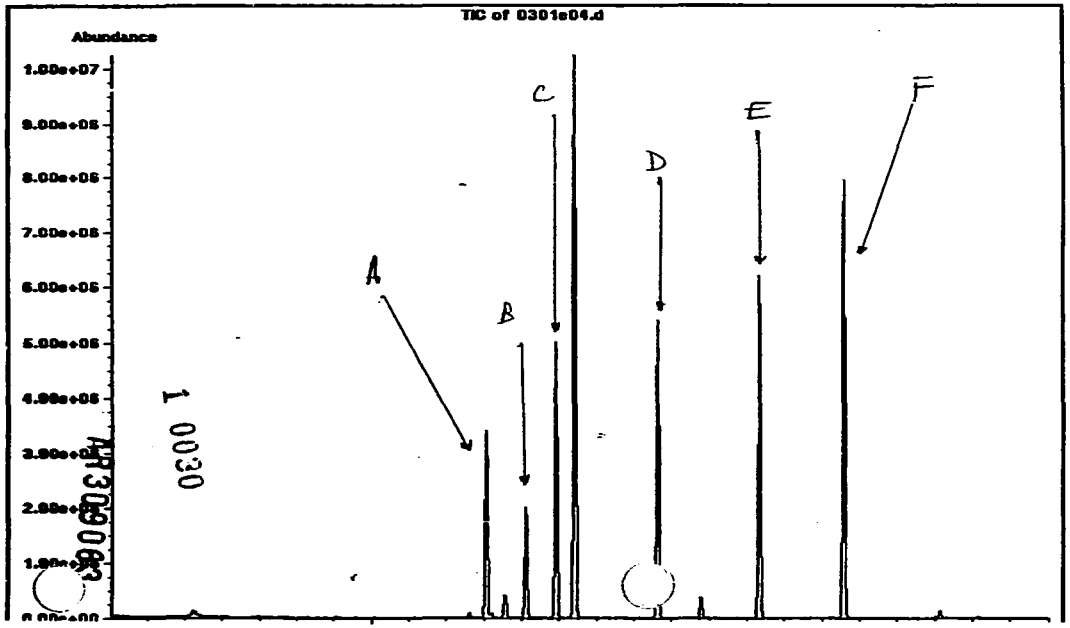
FORM I VOA-TIC 1/87 Rev.

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.



BCDDH
3/1/91 23:10
MSDS
clk
3/25/91

1 0030

APR 30 0 0 3

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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/0219505.d
Date : 01 Mar 91 23:10 Inst ID: msd5
Data file: 0301e04.d Tune Date: 23 Jan 91 10:10
Name Info: BC004 868-006-4 33ADU 5ml undil iea msd5
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 0
Als bottle num : 0
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	%REC	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5		
11.06(1.000)	128	191897	50.00			100.00
11.06	49	397900			160.78 - 210.78	207.35
11.06	130	248107			106.54 - 156.54	129.29
13 cis-1,2-DICHLOROETHENE				CAS #: 156-59-2		
10.61(0.961)	96	6723	~~1.14~~ BQL			100.00
14 1,2-DICHLOROETHENE (TOTAL)				CAS #:		
10.61(0.961)	96	6723	~~1.14~~ BQL			100.00
17 CHLOROFORM				CAS #: 67-66-3		
11.21(1.015)	83	13915	~~1.32~~ BQL			100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.12(1.097)	65	286724	49.33	98.66		100.00
12.12	102	67727			1.65 - 51.65	23.62
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.92(1.000)	114	852931	50.00			100.00
12.91	63	207356			0.00 - 47.22	24.31
12.92	88	184017			0.00 - 45.47	21.57
18 1,1,1-TRICHLOROETHANE				CAS #: 71-55-6		
11.56(0.896)	97	66047	8.11			100.00
19 CARBON TETRACHLORIDE				CAS #: 56-23-5		
11.56(0.896)	117	10082	~~1.24~~ BQL			100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.41(1.039)	130	803346	108.28			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.33(1.000)	117	756641	50.00			100.00
18.33	82	488385			37.16 - 87.16	64.54
18.33	119	249876			7.90 - 57.90	33.02
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.63(0.852)	98	791203	49.46	98.93		100.00
34 TETRACHLOROETHENE				CAS #: 127-18-4		
16.78(0.915)	164	20994	~~2.93~~ BQL			100.00
$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4		
20.57(1.122)	95	756145	49.87	99.73		

1 0031
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20.58	174	494272	41.39 - 91.39	65.36
20.58	176	492010	41.62 - 91.62	65.06

dm
4/3/91

D3Φ1EΦ4
BCΦΦ4
MSD5

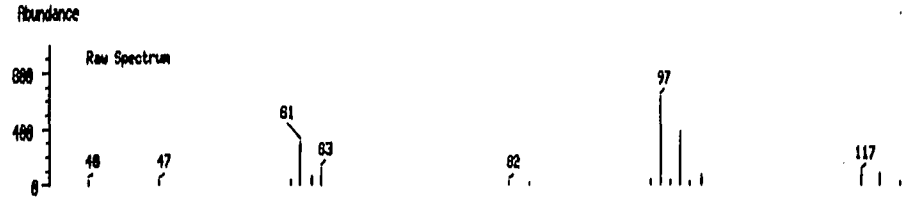
AR309065

1 00

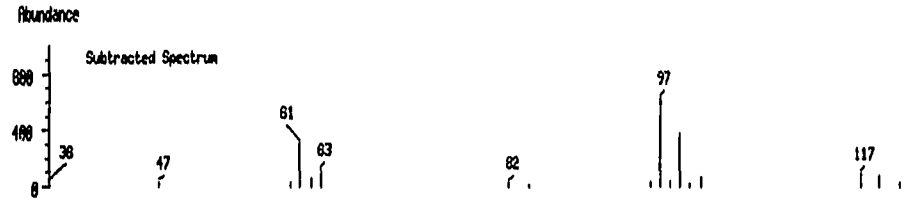
If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

#18 1,1,1-TRICHLOROETHANE
Name Info: BC004 868-006-4 33ADU 5ml undil iea msd5
Misc Info:
Date : Fri Mar 01 91 11:10:58 PM

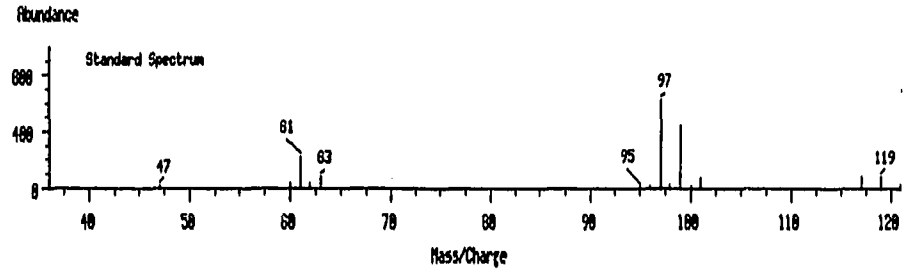
Scan 1065 (11.559 min) of 0381e04.d SCALED



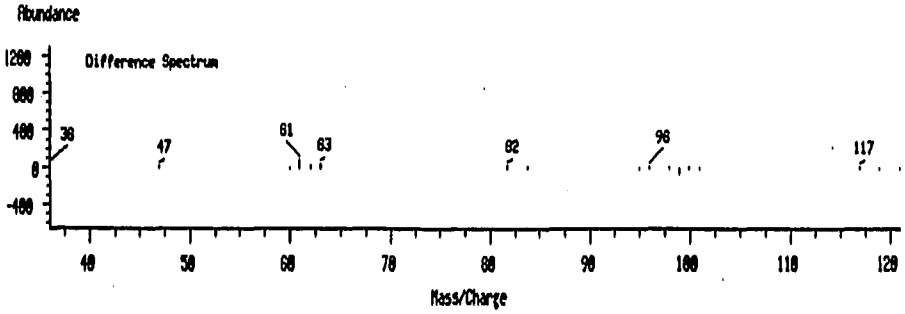
Scan 1065 (11.559 min) of 0381e04.d SUBTRACTED SCALED



#38: 1,1,1-Trichloroethane SCALED



Scan 1065 (11.559 min) of 0381e04.d SUBTRACTED SCALED

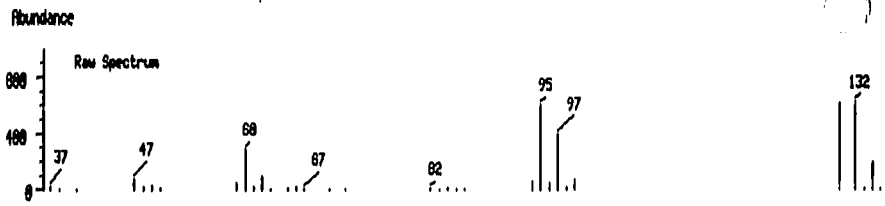


AR309063

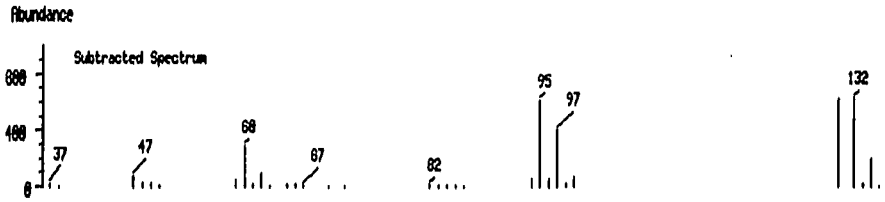
If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

#24 TRICHLOROETHENE
Name Info: BC004 868-006-4 33ADU 5ml undil iea msd5
Misc Info:
Date : Fri Mar 01 91 11:10:58 PM

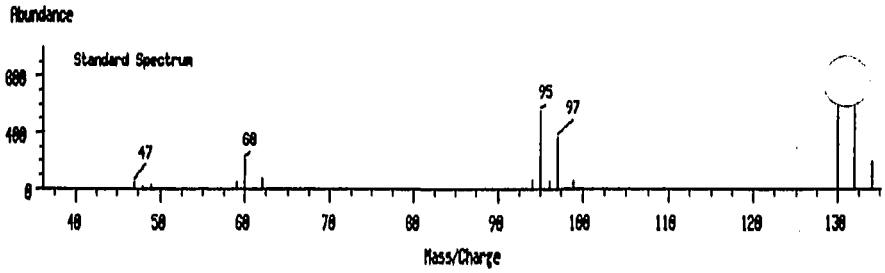
Scan 1276 (13.411 min) of 0381e04.d SCALED



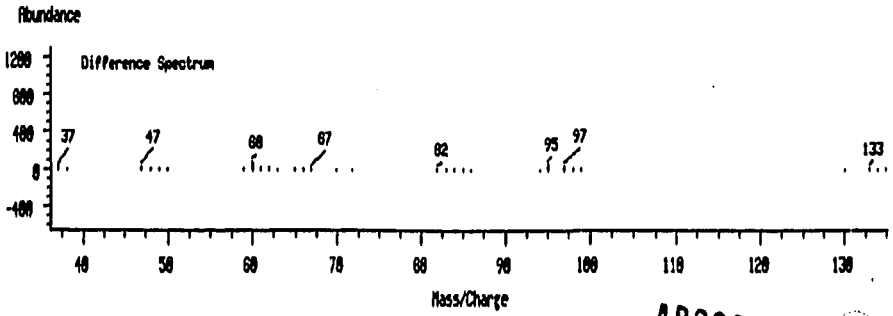
Scan 1276 (13.411 min) of 0381e04.d SUBTRACTED SCALED



814: Trichloroethene SCALED



Scan 1276 (13.411 min) of 0381e04.d SUBTRACTED SCALED



AR309067
1 0034

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BC006

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E03

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 1/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	U
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
540-59-0	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	10.	
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	120.	
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	4.	J
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

FORM I VOA

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BC006

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 863-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E03

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 1/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC 1/87 Rev

1 0036

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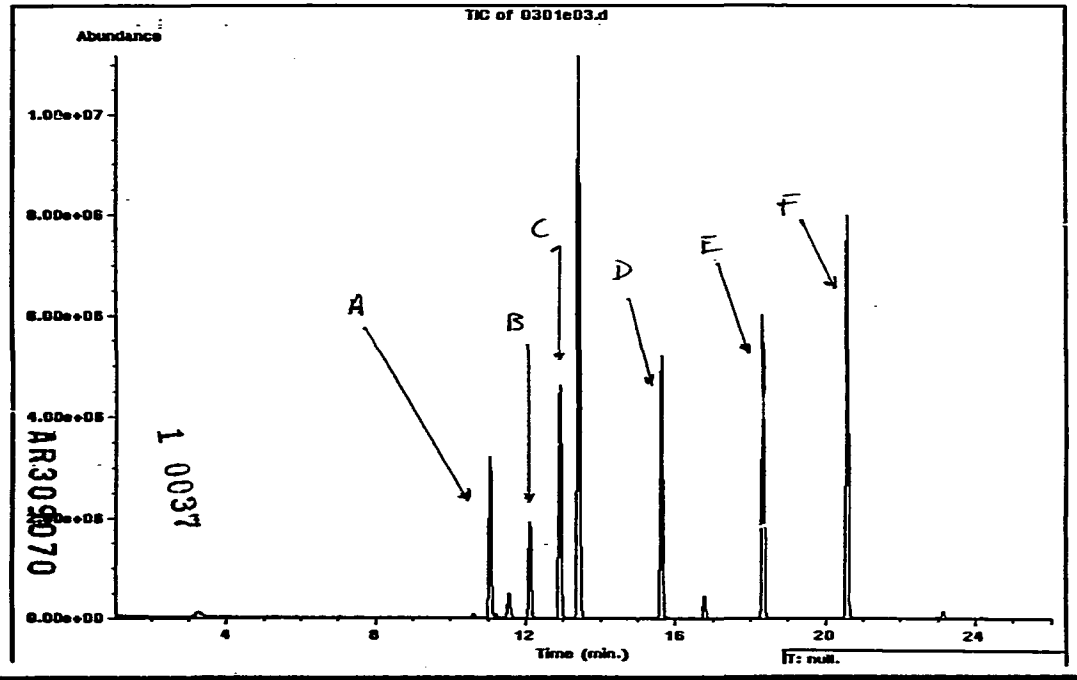


AR309070

1 0037

4/2/91

BC004 22
3/1/91 TQ:36
MSD5
clr
3/25/91

IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/02195
Date : 01 Mar 91 22:36 Inst ID: msd5
Data file: 0301e03.d Tune Date: 23 Jan 91 10:10
Name Info: BC006 33AU 868-006-6 5ml undil iea msd5
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 0
Als bottle num : 0
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	%REC	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5		
11.06(1.000)	128	188186	50.00			100.00
11.05	49	380558			160.78 - 210.78	202.22
11.06	130	239864			106.54 - 156.54	127.46
13 cis-1,2-DICHLOROETHENE				CAS #: 156-59-2		
10.60(0.960)	96	8326	~~1.44~~ BQL			100.00
14 1,2-DICHLOROETHENE (TOTAL)				CAS #:		
10.60(0.960)	96	8326	~~1.44~~ BQL			100.00
17 CHLOROFORM				CAS #: 67-66-3		
11.21(1.015)	83	15294	~~1.36~~ BQL			100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.11(1.097)	65	273099	47.91	95.83		100.00
12.11	102	68468			1.65 - 51.65	25.07
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.91(1.000)	114	820858	50.00			100.00
12.91	63	200590			0.00 - 47.22	24.43
12.91	88	174305			0.00 - 45.47	21.23
18 1,1,1-TRICHLOROETHANE				CAS #: 71-55-6		
11.55(0.895)	97	76477	9.76			100.00
19 CARBON TETRACHLORIDE				CAS #: 56-23-5		
11.56(0.896)	117	11210	~~1.43~~ BQL			100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.41(1.039)	130	869828	121.83			100.00
25 1,2-DICHLOROPROPANE				CAS #: 78-87-5		
13.42(1.040)	63	1637	~~0.21~~ BQL			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.33(1.000)	117	726115	50.00			100.00
18.33	82	471053			37.16 - 87.16	64.87
18.33	119	248055			7.90 - 57.90	34.16
29 4-METHYL-2-PENTANONE				CAS #: 108-10-1		
15.62(0.852)	43	4696	~~1.29~~ BQL			
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.63(0.852)	98	768478	50.06	100.13		100.00

Ck 3/2

AR303907

1 0038

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

34 TETRACHLOROETHENE				CAS #: 127-18-4			
16.78(0.915)	164	27478	4.00				100.00
$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4			
20.57(1.122)	95	747235	51.35	102.70			100.00
20.57	174	486529			41.39 -	91.39	65.11
20.57	176	481510			41.62 -	91.62	64.43

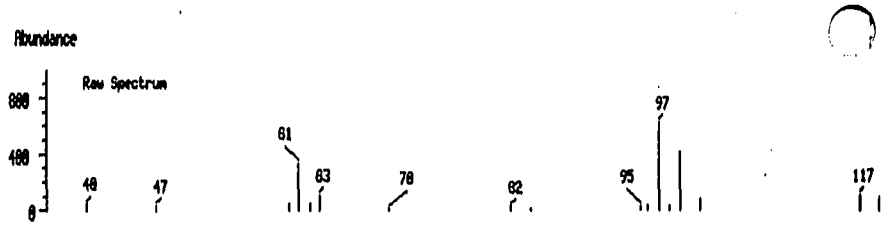
BC006
030E03
MSD5

AR309073

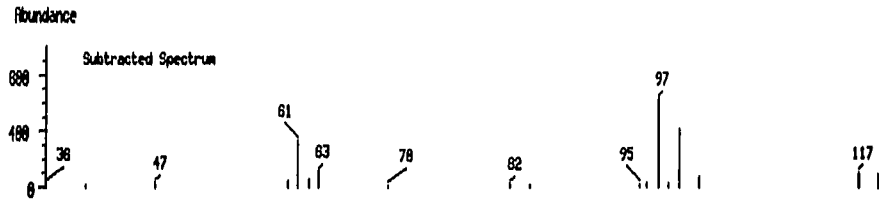
If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

#18 1,1,1-TRICHLOROETHANE
Name Info: BC006 33AU 868-006-6 5ml undil iea msd5
Misc Info:
Date : Fri Mar 01 91 10:36:02 PM

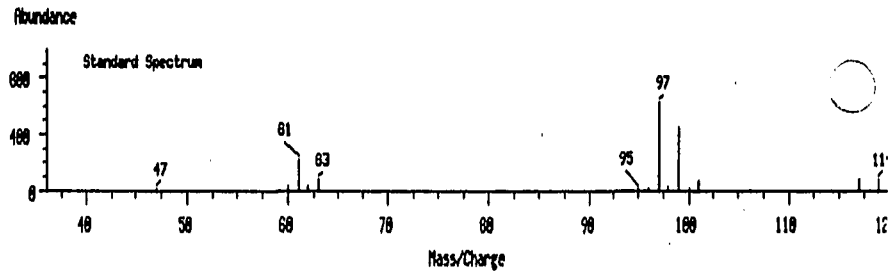
Scan 1865 (11.554 min) of 0301e03.d SCALED



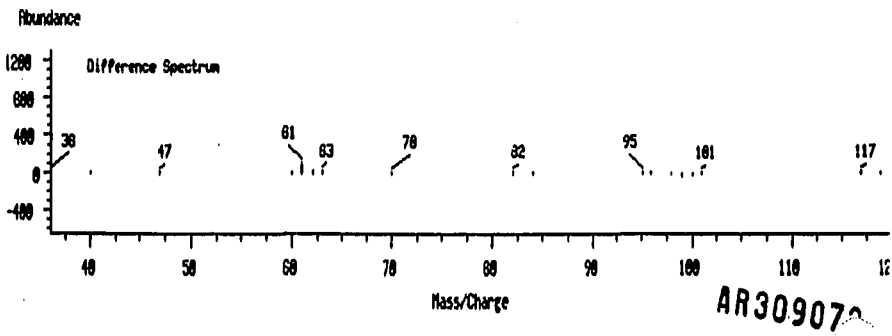
Scan 1865 (11.554 min) of 0301e03.d SUBTRACTED SCALED



#38: 1,1,1-Trichloroethane SCALED



Scan 1865 (11.554 min) of 0301e03.d SUBTRACTED SCALED



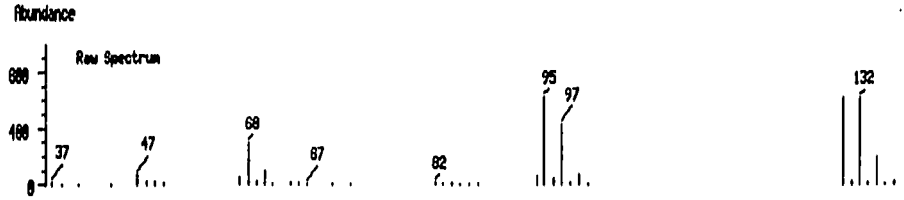
AR309070

1 0040

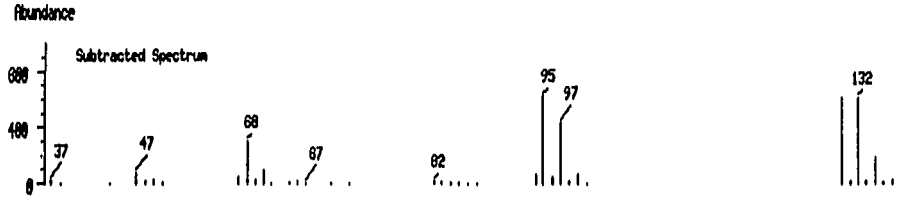
If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

#24 TRICHLOROETHENE
Name Info: BC006 33AU 868-006-6 5ml undil iea msd5
Misc Info:
Date : Fri Mar 01 91 10:36:02 PM

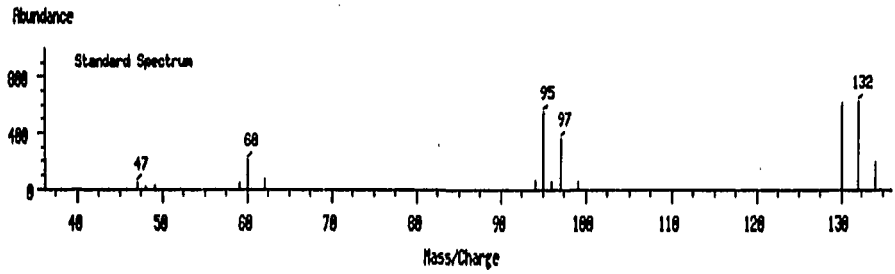
Scan 1276 (13.465 min) of 0301e03.d SCALED



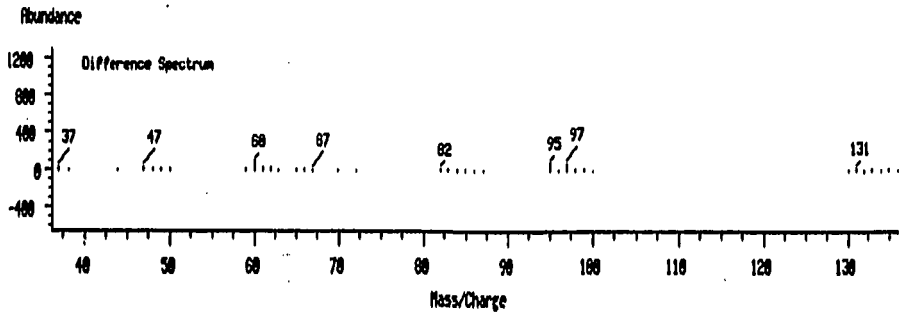
Scan 1276 (13.465 min) of 0301e03.d SUBTRACTED SCALED



#14: Trichloroethene SCALED



Scan 1276 (13.465 min) of 0301e03.d SUBTRACTED SCALED



AR309074
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If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

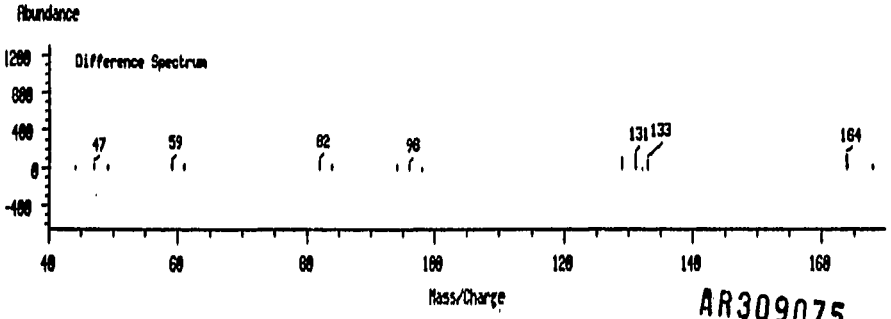
#34 TETRACHLOROETHENE
Name Info: BC006 33AU 868-006-6 5ml undil iea msd5
Misc Info:
Date : Fri Mar 01 91 10:36:02 PM

Scan 1624 (16.776 min) of 0301e03.d SCALED

Scan 1624 (16.776 min) of 0301e03.d SUBTRACTED SCALED

#17: Tetrachloroethene SCALED

Scan 1624 (16.776 min) of 0301e03.d SUBTRACTED SCALED



AR309075
1 0042

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BC008

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E05

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 1/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	U
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
540-59-0	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

AR309076

FORM I VOA 1 0043 1/87 Rev.

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1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BC008

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E05

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 1/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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FORM I VOA-TIC 1/87 Rev.

AR309077

1 0044

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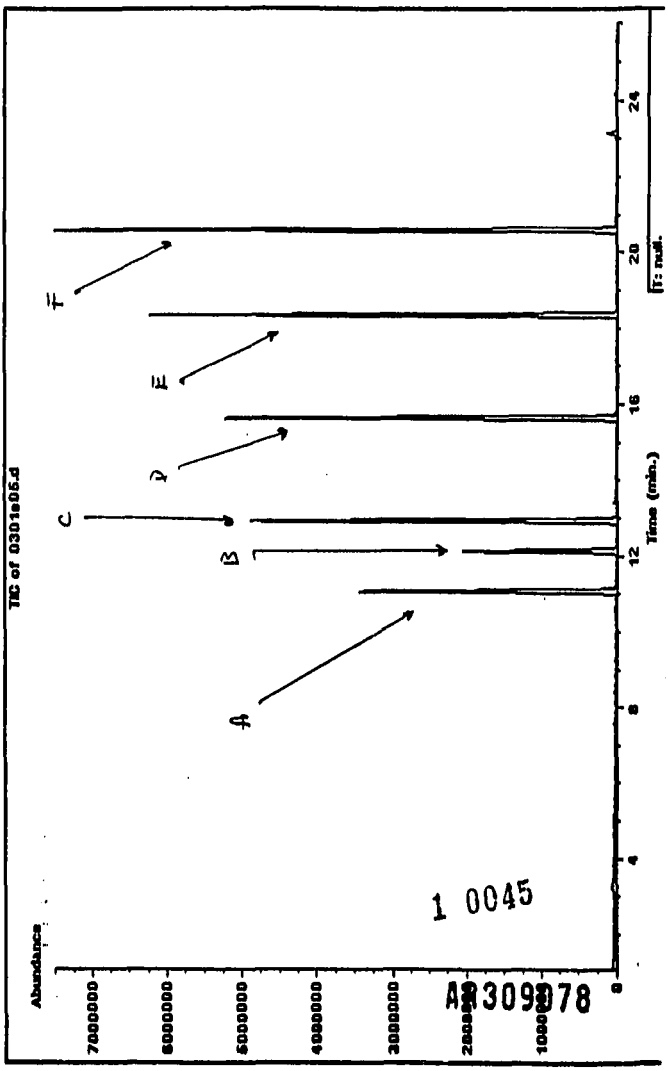
BC&B
3/1/91 23:5
MSDS
CK
3/25/91



If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/021950
Date : 01 Mar 91 23:50 Inst ID: msd5
Data file: 0301e05.d Tune Date: 23 Jan 91 10:10
Name Info: BC008 868-006-8 EQUIPMENT BLANK U 5ml undil iea msd5
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 0
Als bottle num : 0
Replicate num : 1

RETENTION TIME MIN. (REL)	MASS	AREA	AMT(UG/L)	%REC	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5		
11.06(1.000)	128	199142	50.00			100.00
11.06	49	401057			160.78 - 210.78	201.39
11.06	130	264064			106.54 - 156.54	132.60
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.12(1.098)	65	290628	48.18	96.37		100.00
12.12	102	72545			1.65 - 51.65	24.96
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.92(1.000)	114	855639	50.00			100.00
12.92	63	205218			0.00 - 47.22	23.98
12.92	88	180391			0.00 - 45.47	21.08
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.33(1.000)	117	745576	50.00			100.00
18.33	82	488271			37.16 - 87.16	65.48
18.34	119	239286			7.90 - 57.90	32.09
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.63(0.853)	98	782129	49.62	99.25		100.00
$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4		
20.58(1.122)	95	684760	45.83	91.66		100.00
20.58	174	431224			41.39 - 91.39	62.97
20.58	176	431962			41.62 - 91.62	63.08

1 0AA90

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BC010

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E06

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 2/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	U
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
540-59-0	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

FORM I VOA

AR309080

1/87 Rev.

1 0047

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1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BC010

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E06

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 2/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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AR309081

FORM I VOA-TIC 1/87 Rev.

1 0048

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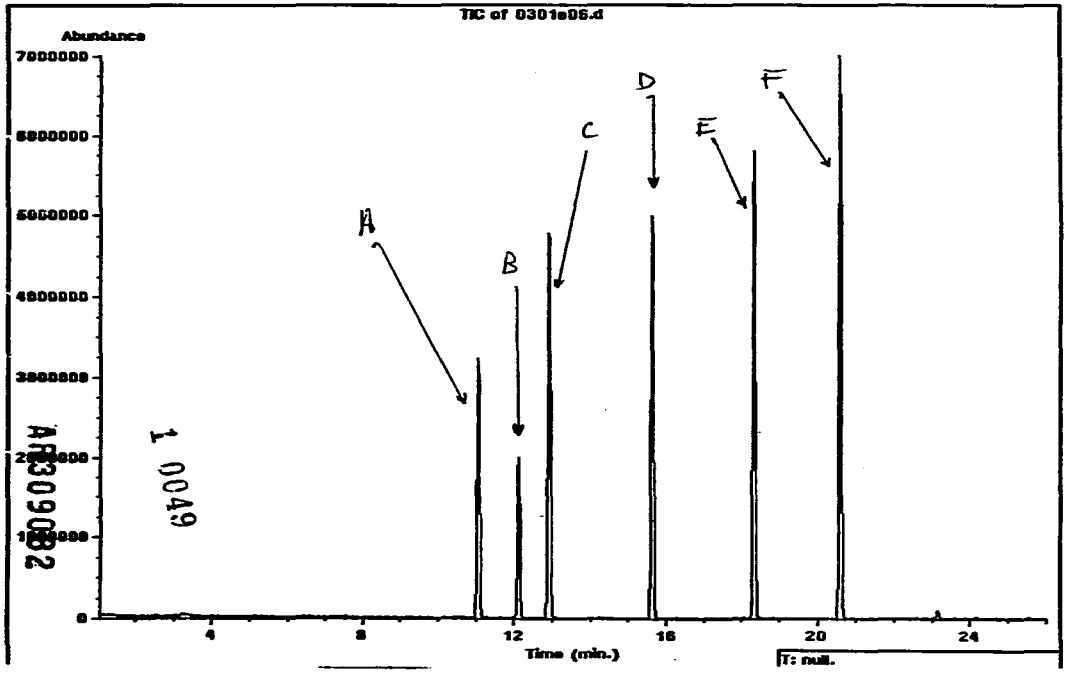

BC 01Q
MSDS
3/2/91 00:20

1 0049

AR309082

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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/021950...d
Date : 02 Mar 91 00:26 Inst ID: msd5
Data file: 0301e06.d Tune Date: 23 Jan 91 10:10
Name Info: BC 010 868-006-10 TRIP BLANK U 5ml undil iea msd5
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 0
Als bottle num : 0
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	%REC	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5		
11.05(1.000)	128	189489	50.00			100.00
11.05	49	382007			160.78 - 210.78	201.59
11.05	130	241506			106.54 - 156.54	127.45
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.11(1.097)	65	277808	48.40	96.81		100.00
12.11	102	65805			1.65 - 51.65	23.68
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.91(1.000)	114	832828	50.00			100.00
12.91	63	204739			0.00 - 47.22	24.58
12.91	88	184184			0.00 - 45.47	22.11
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.33(1.000)	117	678005	50.00			100.00
18.33	82	460971			37.16 - 87.16	67.98
18.33	119	236993			7.90 - 57.90	34.95
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.63(0.852)	98	761306	53.12	106.23		100.00
$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4		
20.57(1.122)	95	668534	49.20	98.41		100.00
20.58	174	433906			41.39 - 91.39	64.90
20.58	176	435011			41.62 - 91.62	65.06

AR309083

1 0050

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6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Instrument ID: msd5 Calibration Date(s): 2/20/91 2/20/91

Matrix:(soil/water) WATER Level:(low/med): LOW Column:(pack/cap) CAP

Min $\overline{RRF}$ for SPCC(#) = .300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = 0220506 RRF50 = 0220502
RRF100= 0220503 RRF150= 0220504 RRF200= 0220505

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
CHLOROMETHANE #	.826	.860	.853	.826	.845	.842	1.9#
BROMOMETHANE	1.001	1.091	1.109	.906	.849	.991	11.4
VINYL CHLORIDE *	1.001	1.073	1.078	.989	1.022	1.032	4.0*
CHLOROETHANE	.690	.732	.725	.622	.552	.664	11.4
METHYLENE CHLORIDE	1.197	1.214	1.265	1.157	1.178	1.202	3.4
ACETONE	.183	.132	.104	.124	.147	.138	21.6
CARBON DISULFIDE	2.709	2.588	2.803	2.667	2.619	2.677	3.1
1,1-DICHLOROETHENE *	1.025	1.017	1.067	.979	.923	1.002	5.4*
1,1-DICHLOROETHANE #	2.540	2.451	2.603	2.388	2.460	2.488	3.4#
1,2-DICHLOROETHENE (TOTAL)	1.300	1.313	1.367	1.234	1.225	1.288	4.6
CHLOROFORM *	2.706	2.641	2.722	2.498	2.421	2.598	5.1*
1,2-DICHLOROETHANE	1.530	1.445	1.400	1.321	1.309	1.401	6.5
2-BUTANONE	.072	.068	.053	.066	.066	.065	11.3
1,1,1-TRICHLOROETHANE	.447	.430	.430	.418	.407	.426	3.6
CARBON TETRACHLORIDE	.470	.411	.419	.418	.405	.424	6.1
VINYL ACETATE	.408	.372	.302	.374	.403	.372	11.4
BROMODICHLOROMETHANE	.652	.661	.613	.589	.569	.617	6.4
1,2-DICHLOROPROPANE *	.398	.391	.384	.373	.377	.385	2.7*
CIS-1,3-DICHLOROPROPENE	.578	.579	.537	.543	.526	.553	4.4
TRICHLOROETHENE	.458	.409	.392	.367	.351	.395	10.5
DIBROMOCHLOROMETHANE	.567	.555	.492	.502	.469	.517	8.1
1,1,2-TRICHLOROETHANE	.342	.317	.270	.282	.278	.298	10.3
BENZENE	.815	.750	.744	.705	.699	.743	6.3
TRANS-1,3-DICHLOROPROPENE	.467	.448	.411	.426	.414	.433	5.5
BROMOFORM #	.435	.420	.348	.371	.361	.387	9.9#
4-METHYL-2-PENTANONE	.238	.203	.136	.214	.230	.204	19.7
2-HEXANONE	.157	.133	.106	.139	.154	.138	14.7
TETRACHLOROETHENE	.524	.441	.418	.401	.363	.429	14.0
1,1,2,2-TETRACHLOROETHANE #	.649	.581	.493	.564	.573	.572	9.7#
TOLUENE *	.651	.602	.604	.596	.584	.607	4.2*
CHLOROBENZENE #	.961	.894	.888	.856	.828	.885	5.6#
ETHYLBENZENE *	.410	.370	.378	.377	.371	.381	4.4*
STYRENE	.868	.781	.726	.683	.651	.742	11.6
XYLENE (TOTAL)	.492	.451	.453	.426	.420	.448	6.3
TOLUENE-d8	1.263	1.061	1.061	1.036	.978	1.080	10.0
BROMOFLUOROBENZENE	1.142	.962	.910	.872	.834	.944	12.8
1,2-DICHLOROETHANE-D4	1.473	1.269	1.349	1.289	1.296	1.335	6.2

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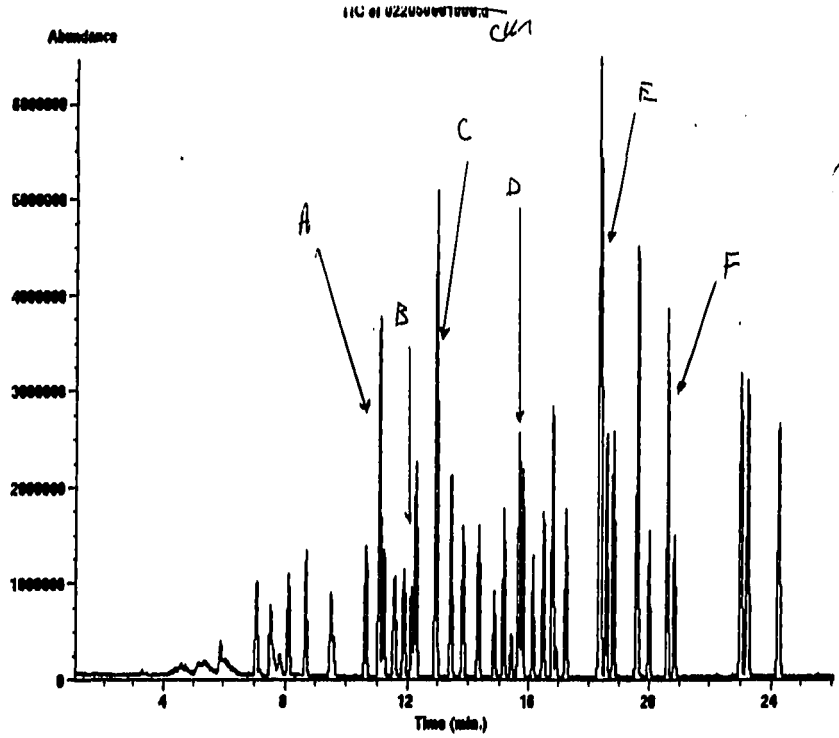

VSTD20

2/20/91 03:52

MSD5

AR309085

1 0052

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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 20 Feb 91 03:52 Cal Operator : es
Cal Date : 20 Feb 91 08:06 INSTRUMENT Cal File: d5.i/022091.b/022050601006.d
Date : 20 Feb 91 03:52 Inst ID: msd5
Data file: 022050601006.d Tune Date: 23 Jan 91 10:10
Name Info:
Misc Info: VSTD 20
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 4 Calibration Sample, Level: 1
Als bottle num : 6
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5	
11.05(1.000)	128	215696	50.00		100.00
11.05	49	443494		180.61 - 230.61	205.61
11.05	130	281734		105.61 - 155.61	130.61
1 CHLOROMETHANE				CAS #: 74-87-3	
4.38(0.396)	50	71245	19.62		100.00 (M)
2 VINYL CHLORIDE				CAS #: 75-01-4	
4.67(0.423)	62	86367	19.39		100.00 (M)
3 BROMOMETHANE				CAS #: 74-83-9	
5.19(0.470)	94	86402	20.20		100.00
4 CHLOROETHANE				CAS #: 75-00-3	
5.41(0.490)	64	59559	20.78		100.00
5 TRICHLOROFLUOROMETHANE				CAS #: 75-69-4	
5.87(0.531)	101	205772	21.78		100.00
6 1,1-DICHLOROETHENE				CAS #: 75-35-4	
7.03(0.637)	96	88411	20.45		100.00
7 ACETONE				CAS #: 67-64-1	
7.16(0.648)	43	15811	26.58		100.00
8 CARBON DISULFIDE				CAS #: 75-15-0	
7.49(0.678)	76	233730	20.24		100.00
9 METHYLENE CHLORIDE				CAS #: 75-09-2	
8.08(0.73.)	84	103274	19.91		100.00
10 trans-1,2-DICHLOROETHENE				CAS #: 540-59-0	
8.65(0.783)	96	105103	20.13		100.00
11 1,1-DICHLOROETHANE				CAS #: 75-34-3	
9.48(0.858)	63	219160	20.42		100.00
13 cis-1,2-DICHLOROETHENE				CAS #: 156-59-2	
10.61(0.960)	96	119257	20.25		100.00
14 1,2-DICHLOROETHENE (TOTAL)				CAS #: AR309086	
10.61(0.960)	96	~~119257~~ 224,360	~~20.25~~ ~~20.0~~ 40.00		100.00
15 2-BUTANONE				CAS #: 78-93-3	

1 0053

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10.62(0.961)	72	6246	22.26			100.00
17 CHLOROFORM				CAS #: 67-66-3		
11.20(1.014)	83	233442	20.83			100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.12(1.096)	65	127083	22.06			100.00
12.12	102	31963			0.15 - 50.15	25.15
22 1,2-DICHLOROETHANE				CAS #: 107-06-2		
12.26(1.109)	62	132007	21.84			100.00
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.92(1.000)	114	905772	50.00			100.00
12.92	63	220761			0.00 - 49.37	24.37
12.92	88	197404			0.00 - 46.79	21.79
12 VINYL ACETATE				CAS #: 108-05-4		
9.57(0.741)	43	147872	21.96			100.00
18 1,1,1-TRICHLOROETHANE				CAS #: 71-55-6		
11.55(0.894)	97	162107	20.99			100.00
19 CARBON TETRACHLORIDE				CAS #: 56-23-5		
11.88(0.919)	117	170153	22.13			100.00
21 BENZENE				CAS #: 71-43-2		
12.24(0.948)	78	295399	21.96			100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.42(1.038)	130	165949	23.17			100.00
25 1,2-DICHLOROPROPANE				CAS #: 78-87-5		
13.82(1.070)	63	144347	20.71			100.00
26 BROMODICHLOROMETHANE				CAS #: 75-27-4		
14.31(1.108)	83	236074	21.13			100.00
27 2-CHLOROETHYLVINYL ETHER				CAS #: 110-75-8		
14.83(1.148)	63	97625	23.36			100.00
28 CIS-1,3-DICHLOROPROPENE				CAS #: 10061-01-5		
15.13(1.171)	75	221943	22.16			100.00
32 TRANS-1,3-DICHLOROPROPENE				CAS #: 10061-02-6		
16.13(1.249)	75	155691	19.84			100.00
33 1,1,2-TRICHLOROETHANE				CAS #: 79-00-5		
16.48(1.276)	97	124019	22.97			100.00
36 DIBROMOCHLOROMETHANE				CAS #: 124-48-1		
17.24(1.334)	129	205424	21.94			100.00
44 BROMOFORM				CAS #: 75-25-2		
19.97(1.546)	173	157732	22.50			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.33(1.000)	117	758547	50.00			100.00
18.33	82	480807			38.38 - 88.38	63.38
18.33	119	248564			[illegible]	32.76
$ 29 TOLUENE-d8				CAS #: 2037-26-5		
15.63(0.853)	98	383296	23.40			100.00
30 TOLUENE				CAS #: 108-88-3		
15.76(0.859)	92	197652	21.45			100.00

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31	4-METHYL-2-PENTANONE			CAS #: 108-10-1		
15.39(0.839)	43	72312	23.33			100.00
34	TETRACHLOROETHENE			CAS #: 127-18-4		
16.78(0.915)	164	159119	24.42			100.00
35	2-HEXANONE			CAS #: 591-78-6		
16.92(0.923)	43	47780	22.83			100.00
38	CHLOROBENZENE			CAS #: 108-90-7		
18.39(1.003)	112	291523	21.71			100.00
39	ETHYLBENZENE			CAS #: 100-41-4		
18.57(1.013)	106	124465	21.53			100.00
40	m-, p-XYLENE			CAS #: 108-38-3		
18.80(1.025)	106	154201	21.73			100.00
41	o-XYLENE			CAS #: 95-47-6		
19.56(1.067)	106	144244	22.17			100.00
42	XYLENE (TOTAL)	298 445	40	CAS #: 1330-20-7		
19.56(1.067)	106	~~144264~~	~~22.17~~			100.00
				3/28/91		
43	STYRENE			CAS #: 100-42-5		
19.58(1.068)	104	263486	23.42			100.00
$ 45	BROMOFLUOROBENZENE			CAS #: 460-00-4		
20.58(1.122)	95	346462	24.19			100.00
20.58	174	232076			41.98 - 91.98	66.98
20.58	176	226442			40.35 - 90.35	65.35
46	1,1,2,2-TETRACHLOROETHANE			CAS #: 79-34-5		
20.82(1.135)	83	196827	22.69			100.00
47	1,3-DICHLOROBENZENE			CAS #: 541-73-1		
23.20(1.266)	146	338704	23.52			100.00
48	1,4-DICHLOROBENZENE			CAS #: 106-46-7		
24.22(1.321)	146	320845	23.29			100.00
49	1,2-DICHLOROBENZENE			CAS #: 95-50-1		
24.22(1.321)	146	320845	23.29			100.00

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1 0055

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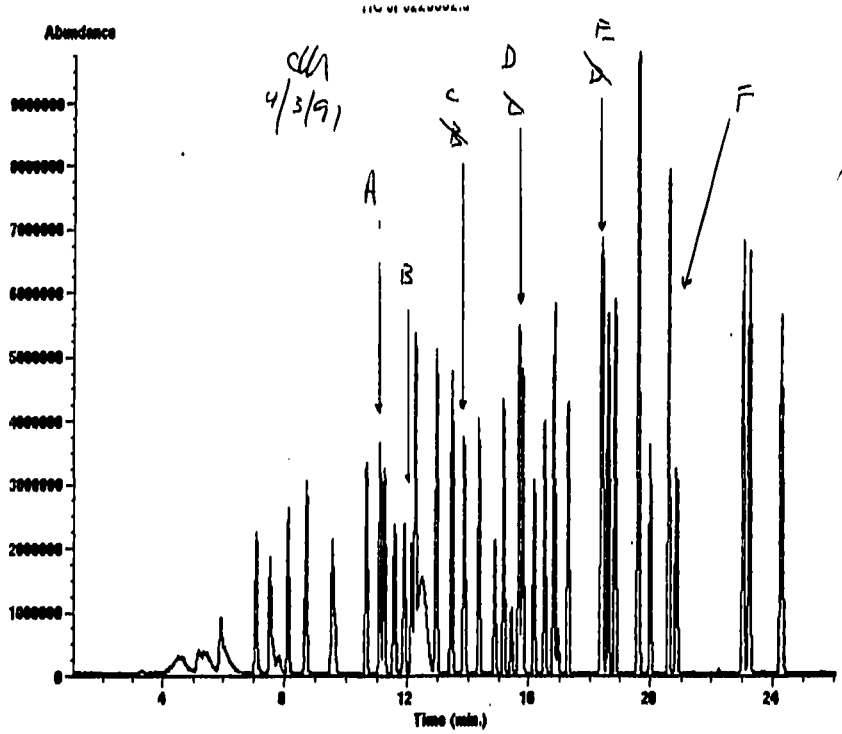

VSTD5Φ
MSD5
2/20/91 1:18

1 0A8809009

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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 20 Feb 91 01:18 Cal Operator : es
Cal Date : 20 Feb 91 07:37 INSTRUMENT Cal File: em/msd5.i/022091.b/0220502.d
Date : 20 Feb 91 01:18 Inst ID: msd5
Data file: 0220502.d Tune Date: 23 Jan 91 10:10
Name Info: vstd50 iea msd5
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 0 Calibration Sample, Level: 2
Als bottle num : 0
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5	
11.07(1.000)	128	214697	50.00		100.00
11.07	49	416544		169.01 - 219.01	194.01
11.07	130	283341		106.97 - 156.97	131.97
1 CHLOROMETHANE				CAS #: 74-87-3	
4.42(0.399)	50	184693	61.90		100.00
2 VINYL CHLORIDE				CAS #: 75-01-4	
4.59(0.414)	62	230303	59.09		100.00 (M)
3 BROMOMETHANE				CAS #: 74-83-9	
5.17(0.467)	94	234232	55.09		100.00
4 CHLOROETHANE				CAS #: 75-00-3	
5.42(0.489)	64	157072	55.07		100.00
5 TRICHLOROFLUOROMETHANE				CAS #: 75-69-4	
5.90(0.533)	101	483641	58.21		100.00 (M)
6 1,1-DICHLOROETHENE				CAS #: 75-35-4	
7.06(0.638)	96	218430	50.76		100.00
7 ACETONE				CAS #: 67-64-1	
7.18(0.648)	43	28256	47.73		100.00
8 CARBON DISULFIDE				CAS #: 75-15-0	
7.52(0.679)	76	555682	48.34		100.00
9 METHYLENE CHLORIDE				CAS #: 75-09-2	
8.10(0.732)	84	260736	50.51		100.00
10 trans-1,2-DICHLOROETHENE				CAS #: 540-59-0	
8.67(0.783)	96	264551	50.91		100.00
11 1,1-DICHLOROETHANE				CAS #: 75-34-3	
9.51(0.858)	63	526264	49.25		100.00
13 cis-1,2-DICHLOROETHENE				CAS #: 156-59-2	
10.63(0.960)	96	299334	51.06		100.00
14 1,2-DICHLOROETHENE (TOTAL)				CAS #:	
10.63(0.960)	96	~~299334~~ 563,335	~~51.06~~ 100		100.00
15 2-BUTANONE				CAS #: 78-93-3	

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If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

10.64(0.961)	72	14691	52.59			100.00
17 CHLOROFORM				CAS #: 67-66-3		
11.22(1.013)	83	566972	50.83			100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.14(1.096)	65	272545	47.53			100.00
12.14	102	73521			1.97 - 51.97	26.97
22 1,2-DICHLOROETHANE				CAS #: 107-06-2		
12.28(1.109)	62	310147	51.56			100.00
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.94(1.000)	114	906608	50.00			100.00
12.93	63	203520			0.00 - 47.44	22.44
12.93	88	192577			0.00 - 46.24	21.24
12 VINYL ACETATE				CAS #: 108-05-4		
9.60(0.742)	43	337147	50.02			100.00
18 1,1,1-TRICHLOROETHANE				CAS #: 71-55-6		
11.58(0.895)	97	389745	50.41			100.00
19 CARBON TETRACHLORIDE				CAS #: 56-23-5		
11.90(0.920)	117	372323	48.39			100.00
21 BENZENE				CAS #: 71-43-2		
12.26(0.948)	78	679931	50.50			100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.43(1.038)	130	370729	51.72			100.00
25 1,2-DICHLOROPROPANE				CAS #: 78-87-5		
13.83(1.069)	63	354775	50.86			100.00
26 BROMODICHLOROMETHANE				CAS #: 75-27-4		
14.33(1.108)	83	599437	53.62			100.00
27 2-CHLOROETHYLVINYL ETHER				CAS #: 110-75-8		
14.85(1.148)	63	228378	54.59			100.00
28 CIS-1,3-DICHLOROPROPENE				CAS #: 10061-01-5		
15.14(1.171)	75	556783	55.55			100.00
32 TRANS-1,3-DICHLOROPROPENE				CAS #: 10061-02-6		
16.15(1.248)	75	373267	47.53			100.00
33 1,1,2-TRICHLOROETHANE				CAS #: 79-00-5		
16.50(1.275)	97	287835	53.26			100.00
36 DIBROMOCHLOROMETHANE				CAS #: 124-48-1		
17.25(1.334)	129	503024	53.67			100.00
44 BROMOFORM				CAS #: 75-25-2		
19.98(1.545)	173	380382	54.22			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.35(1.000)	117	769054	50.00			100.00
18.35	82	474179			36.65 - 86.65	61.65
18.35	119	260311			8.84 - 58.84	33.84
$ 29 TOLUENE-d8				CAS #: 2037-26-5		
15.65(0.853)	98	815608	49.11			
30 TOLUENE				CAS #: 108-88-3		
15.77(0.860)	92	463095	49.57			100.00

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31 4-METHYL-2-PENTANONE				CAS #: 108-10-1	
15.40(0.839)	43	155976	107.24		100.00
34 TETRACHLOROETHENE				CAS #: 127-18-4	
16.80(0.916)	164	339338	51.37		100.00
35 2-HEXANONE				CAS #: 591-78-6	
16.93(0.923)	43	102245	48.19		100.00
38 CHLOROBENZENE				CAS #: 108-90-7	
18.41(1.003)	112	687606	50.50		100.00
39 ETHYLBENZENE				CAS #: 100-41-4	
18.59(1.013)	106	284372	48.51		100.00
40 m-, p-XYLENE				CAS #: 108-38-3	
18.81(1.025)	106	353186	49.09		100.00
41 o-XYLENE				CAS #: 95-47-6	
19.57(1.067)	106	340593	51.64		100.00
42 XYLENE (TOTAL)				CAS #: 1330-20-7	
19.57(1.067)	106	~~340631~~ 693,779	~~51.64~~ 100	ck 4/2/91	100.00
43 STYRENE				CAS #: 100-42-5	
19.59(1.068)	104	600579	52.64		100.00
$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4	
20.59(1.122)	95	740052	50.97		100.00
20.59	174	489949		41.20 - 91.20	66.20
20.59	176	479546		39.79 - 89.79	64.79
46 1,1,2,2-TETRACHLOROETHANE				CAS #: 79-34-5	
20.83(1.135)	83	446527	50.77		100.00
47 1,3-DICHLOROBENZENE				CAS #: 541-73-1	
23.23(1.266)	146	752766	51.55		100.00
48 1,4-DICHLOROBENZENE				CAS #: 106-46-7	
24.25(1.321)	146	717135	51.34		100.00
49 1,2-DICHLOROBENZENE				CAS #: 95-50-1	
24.25(1.321)	146	717135	51.34		100.00

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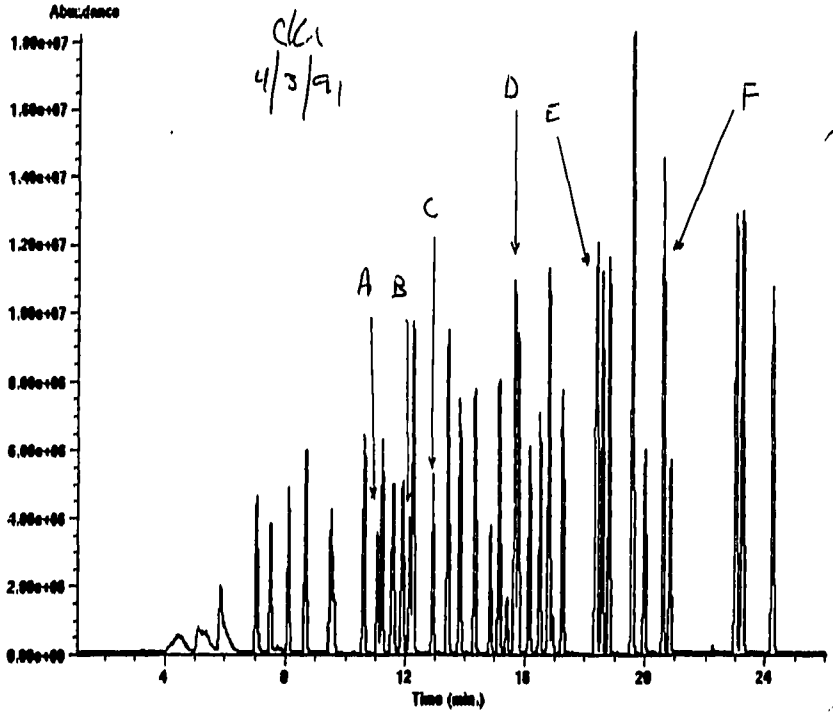

VSTD100
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1 AR30909

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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 20 Feb 91 02:08 Cal Operator : es
Cal Date : 20 Feb 91 07:44 INSTRUMENT Cal File: d5.i/022091.b/022050301003.d
Date : 20 Feb 91 02:08 Inst ID: msd5
Data file: 022050301003.d Tune Date: 23 Jan 91 10:10
Name Info: 1STD 100 CKC 3/25/91
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 1 Calibration Sample, Level: 3
Als bottle num : 3
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5	
11.06(1.000)	128	205957	50.00		100.00
11.06	49	402758		170.55 - 220.55	195.55
11.06	130	266878		104.57 - 154.57	129.57
1 CHLOROMETHANE				CAS #: 74-87-3	
4.30(0.389)	50	351478	112.52		100.00 (M)
2 VINYL CHLORIDE				CAS #: 75-01-4	
4.51(0.408)	62	444098	118.77		100.00
3 BROMOMETHANE				CAS #: 74-83-9	
5.13(0.464)	94	457004	112.04		100.00
4 CHLOROETHANE				CAS #: 75-00-3	
5.36(0.485)	64	298471	109.08		100.00
5 TRICHLOROFLUOROMETHANE				CAS #: 75-69-4	
5.87(0.531)	101	1003328	125.88		100.00
6 1,1-DICHLOROETHENE				CAS #: 75-35-4	
7.05(0.637)	96	439510	106.48		100.00
7 ACETONE				CAS #: 67-64-1	
7.16(0.647)	43	42754	75.29		100.00
8 CARBON DISULFIDE				CAS #: 75-15-0	
7.50(0.678)	76	1154464	104.69		100.00
9 METHYLENE CHLORIDE				CAS #: 75-09-2	
8.09(0.731)	84	520929	105.20		100.00
10 trans-1,2-DICHLOROETHENE				CAS #: 540-59-0	
8.66(0.783)	96	525961	105.52		100.00
11 1,1-DICHLOROETHANE				CAS #: 75-34-3	
9.49(0.858)	63	1072208	104.60		100.00
13 cis-1,2-DICHLOROETHENE				CAS #: 156-59-2	
10.61(0.959)	96	599914	106.68		100.00
14 1,2-DICHLOROETHENE (TOTAL)			200	CAS #:	
10.61(0.959)	96	~~599914~~ 1125875	~~106.68~~ ~~100~~		
15 2-BUTANONE				CAS #: 78-93-3	

CKC 3/25/91

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10.63(0.961)	72	21778	81.27			100.00
17 CHLOROFORM				CAS #: 67-66-3		
11.21(1.014)	83	1121346	104.80			100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.12(1.096)	65	555685	101.02			100.00
12.12	102	145123			1.11 - 51.11	26.11
22 1,2-DICHLOROETHANE				CAS #: 107-06-2		
12.26(1.109)	62	576870	99.97			100.00
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.92(1.000)	114	947948	50.00			100.00
12.92	63	223008			0.00 - 48.52	23.52
12.92	88	200184			0.00 - 46.11	21.11
12 VINYL ACETATE				CAS #: 108-05-4		
9.58(0.742)	43	572184	81.19			100.00
18 1,1,1-TRICHLOROETHANE				CAS #: 71-55-6		
11.56(0.895)	97	814948	100.81			100.00
19 CARBON TETRACHLORIDE				CAS #: 56-23-5		
11.88(0.919)	117	794425	98.74			100.00
21 BENZENE				CAS #: 71-43-2		
12.24(0.947)	78	1410180	100.16			100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.42(1.038)	130	742320	99.04			100.00
25 1,2-DICHLOROPROPANE				CAS #: 78-87-5		
13.82(1.070)	63	727660	99.76			100.00
26 BROMODICHLOROMETHANE				CAS #: 75-27-4		
14.32(1.108)	83	1161322	99.34			100.00
27 2-CHLOROETHYLVINYL ETHER				CAS #: 110-75-8		
14.84(1.148)	63	405831	92.79			100.00
28 CIS-1,3-DICHLOROPROPENE				CAS #: 10061-01-5		
15.13(1.171)	75	1080181	103.07			100.00
32 TRANS-1,3-DICHLOROPROPENE				CAS #: 10061-02-6		
16.13(1.248)	75	716256	87.23			100.00
33 1,1,2-TRICHLOROETHANE				CAS #: 79-00-5		
16.48(1.275)	97	512470	90.69			100.00
36 DIBROMOCHLOROMETHANE				CAS #: 124-48-1		
17.24(1.334)	129	932167	95.12			100.00
44 BROMOFORM				CAS #: 75-25-2		
19.97(1.546)	173	659236	89.86			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.34(1.000)	117	783711	50.00			100.00
18.34	82	485687			36.97 - 86.97	61.97
18.34	119	258326			7.96 - 57.96	32.96
$ 29 TOLUENE-d8				CAS #: 2037-26-5		
15.64(0.853)	98	1663412	98.29			100.00
30 TOLUENE				CAS #: 108-88-3		
15.76(0.860)	92	946425	99.40			100.00

VST
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If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

31	4-METHYL-2-PENTANONE				CAS #: 108-10-1	
15.39(0.839)	43	213878	113.91			100.00 (M)
34	TETRACHLOROETHENE				CAS #: 127-18-4	
16.79(0.916)	164	654525	97.23			100.00
35	2-HEXANONE				CAS #: 591-78-6	
16.92(0.923)	43	166906	77.19			100.00
38	CHLOROBENZENE				CAS #: 108-90-7	
18.40(1.003)	112	1391828	100.31			100.00
39	ETHYLBENZENE				CAS #: 100-41-4	
18.58(1.013)	106	592033	99.11			100.00
40	m-, p-XYLENE				CAS #: 108-38-3	
18.80(1.025)	106	745831	101.72			100.00
41	o-XYLENE				CAS #: 95-47-6	
19.57(1.067)	106	673310	100.17			100.00
42	XYLENE (TOTAL)	14/9141	200		CAS #: 1330-20-7	
19.57(1.067)	106	~~673384~~	~~100.18~~		3/28/91	100.00
43	STYRENE				CAS #: 100-42-5	
19.59(1.068)	104	1137585	97.85			100.00
$ 45	BROMOFLUOROBENZENE				CAS #: 460-00-4	
20.58(1.122)	95	1426061	96.39			100.00
20.58	174	922433			39.68 - 89.68	64.68
20.58	176	930419			40.24 - 90.24	65.24
46	1,1,2,2-TETRACHLOROETHANE				CAS #: 79-34-5	
20.82(1.136)	83	773369	86.28			100.00
47	1,3-DICHLOROBENZENE				CAS #: 541-73-1	
23.21(1.266)	146	1442547	96.94			100.00
48	1,4-DICHLOROBENZENE				CAS #: 106-46-7	
24.23(1.321)	146	1371209	96.33			100.00
49	1,2-DICHLOROBENZENE				CAS #: 95-50-1	
24.23(1.321)	146	1371209	96.33			100.00

dlr
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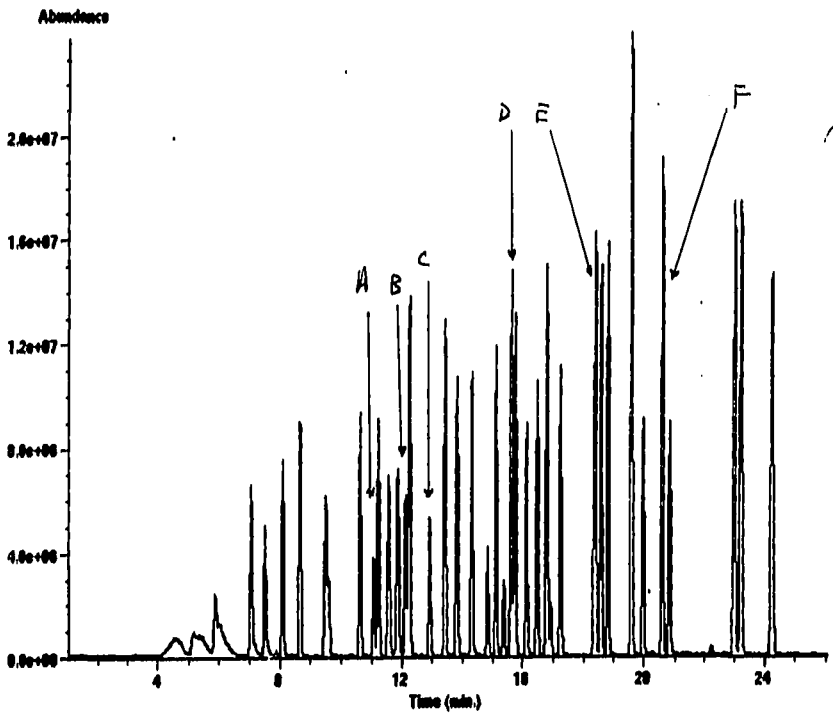
If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.



VSTD150
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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 20 Feb 91 02:42 Cal Operator : es
Cal Date : 20 Feb 91 07:51 INSTRUMENT Cal File: d5.i/022091.b/022050401004.d
Date : 20 Feb 91 02:42 Inst ID: msd5
Data file: 022050401004.d Tune Date: 23 Jan 91 10:10
Name Info: 1 STD 150 CK 3/25/91
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 2 Calibration Sample, Level: 4
Als bottle num : 4
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5	
11.04(1.000)	128	218777	50.00		100.00
11.04	49	432245		172.57 - 222.57	197.57
11.04	130	285560		105.52 - 155.52	130.52
1 CHLOROMETHANE				CAS #: 74-87-3	
4.41(0.400)	50	541892	163.31		100.00
2 VINYL CHLORIDE				CAS #: 75-01-4	
4.61(0.417)	62	648871	163.37		100.00
3 BROMOMETHANE				CAS #: 74-83-9	
5.15(0.466)	94	594947	137.33		100.00 (M)
4 CHLOROETHANE				CAS #: 75-00-3	
5.39(0.488)	64	408565	140.56		100.00
5 TRICHLOROFLUOROMETHANE				CAS #: 75-69-4	
5.86(0.531)	101	1491124	155.58		100.00 (M)
6 1,1-DICHLOROETHENE				CAS #: 75-35-4	
7.02(0.636)	96	642255	146.48		100.00
7 ACETONE				CAS #: 67-64-1	
7.15(0.648)	43	81163	134.55		100.00
8 CARBON DISULFIDE				CAS #: 75-15-0	
7.48(0.677)	76	1750675	149.45		100.00
9 METHYLENE CHLORIDE				CAS #: 75-09-2	
8.07(0.731)	84	759284	144.35		100.00
10 trans-1,2-DICHLOROETHENE				CAS #: 540-59-0	
8.64(0.782)	96	761002	143.72		100.00
11 1,1-DICHLOROETHANE				CAS #: 75-34-3	
9.47(0.857)	63	1567485	143.96		100.00
13 cis-1,2-DICHLOROETHENE				CAS #: 156-59-2	
10.59(0.959)	96	858257	143.67		100.00
14 1,2-DICHLOROETHENE (TOTAL)			300	CAS #:	
10.59(0.959)	96	~~858257~~ 1619259	~~143.67~~ ~~150~~		100.00
15 2-BUTANONE				CAS #: 78-93-3	

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CK 3/25

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10.61(0.961)	72	43047	151.23			100.00
17 CHLOROFORM				CAS #: 67-66-3		
11.19(1.014)	83	1639374	144.24			100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.11(1.096)	65	846273	144.84			100.00
12.11	102	223324			1.38 - 51.38	26.38
22 1,2-DICHLOROETHANE				CAS #: 107-06-2		
12.25(1.109)	62	866698	141.39			100.00
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.91(1.000)	114	932511	50.00			100.00
12.91	63	222405			0.00 - 48.85	23.85
12.91	88	201389			0.00 - 46.59	21.59
12 VINYL ACETATE				CAS #: 108-05-4		
9.56(0.741)	43	1044909	150.73			100.00
18 1,1,1-TRICHLOROETHANE				CAS #: 71-55-6		
11.55(0.895)	97	1169819	147.11			100.00
19 CARBON TETRACHLORIDE				CAS #: 56-23-5		
11.86(0.919)	117	1168790	147.67			100.00
21 BENZENE				CAS #: 71-43-2		
12.23(0.947)	78	1972369	142.41			100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.40(1.038)	130	1026782	139.26			100.00
25 1,2-DICHLOROPROPANE				CAS #: 78-87-5		
13.81(1.070)	63	1044431	145.55			100.00
26 BROMODICHLOROMETHANE				CAS #: 75-27-4		
14.30(1.108)	83	1646381	143.17			100.00
27 2-CHLOROETHYLVINYL ETHER				CAS #: 110-75-8		
14.82(1.148)	63	478395	111.19			100.00 (M)
28 CIS-1,3-DICHLOROPROPENE				CAS #: 10061-01-5		
15.12(1.171)	75	1610183	156.18			100.00
32 TRANS-1,3-DICHLOROPROPENE				CAS #: 10061-02-6		
16.12(1.249)	75	1096667	135.77			100.00
33 1,1,2-TRICHLOROETHANE				CAS #: 79-00-5		
16.47(1.276)	97	788247	141.80			100.00
36 DIBROMOCHLOROMETHANE				CAS #: 124-48-1		
17.23(1.335)	129	1403208	145.55			100.00
44 BROMOFORM				CAS #: 75-25-2		
19.97(1.547)	173	1037165	143.72			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.33(1.000)	117	746504	50.00			100.00
18.33	82	467837			37.67 - 87.67	62.67
18.33	119	245225			7.84 - [illegible]	[illegible]
$ 29 TOLUENE-d8				CAS #: 2037-26-5		
15.63(0.852)	98	2319591	143.89			100.00
30 TOLUENE				CAS #: 108-88-3		
15.75(0.859)	92	1334069	147.10			100.00

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31	4-METHYL-2-PENTANONE				CAS #: 108-10-1	
15.38(0.839)	43	479621	200.19			100.00 (M)
34	TETRACHLOROETHENE				CAS #: 127-18-4	
16.78(0.915)	164	897505	139.97			100.00
35	2-HEXANONE				CAS #: 591-78-6	
16.91(0.922)	43	311162	151.07			100.00
38	CHLOROBENZENE				CAS #: 108-90-7	
18.39(1.003)	112	1916353	144.99			100.00
39	ETHYLBENZENE				CAS #: 100-41-4	
18.57(1.013)	106	844680	148.45			100.00
40	m-, p-XYLENE				CAS #: 108-38-3	
18.80(1.025)	106	1004320	143.80			100.00
41	o-XYLENE				CAS #: 95-47-6	
19.56(1.067)	106	903444	141.11			100.00
42	XYLENE (TOTAL)		300		CAS #: 1330-20-7	
19.56(1.067)	106	~~903444~~ 1907764	~~141.10~~ ~~150~~		3/28/91	100.00
43	STYRENE				CAS #: 100-42-5	
19.59(1.068)	104	1528541	138.03			100.00
$ 45	BROMOFLUOROBENZENE				CAS #: 460-00-4	
20.58(1.123)	95	1953180	138.59			100.00
20.58	174	1214784			37.19 - 87.19	62.19
20.58	176	1226101			37.77 - 87.77	62.77
46	1,1,2,2-TETRACHLOROETHANE				CAS #: 79-34-5	
20.82(1.136)	83	1263113	147.94			100.00
47	1,3-DICHLOROBENZENE				CAS #: 541-73-1	
23.21(1.266)	146	1974387	139.30			100.00
48	1,4-DICHLOROBENZENE				CAS #: 106-46-7	
24.23(1.322)	146	1911880	141.01			100.00
49	1,2-DICHLOROBENZENE				CAS #: 95-50-1	
24.23(1.322)	146	1911880	141.01			100.00

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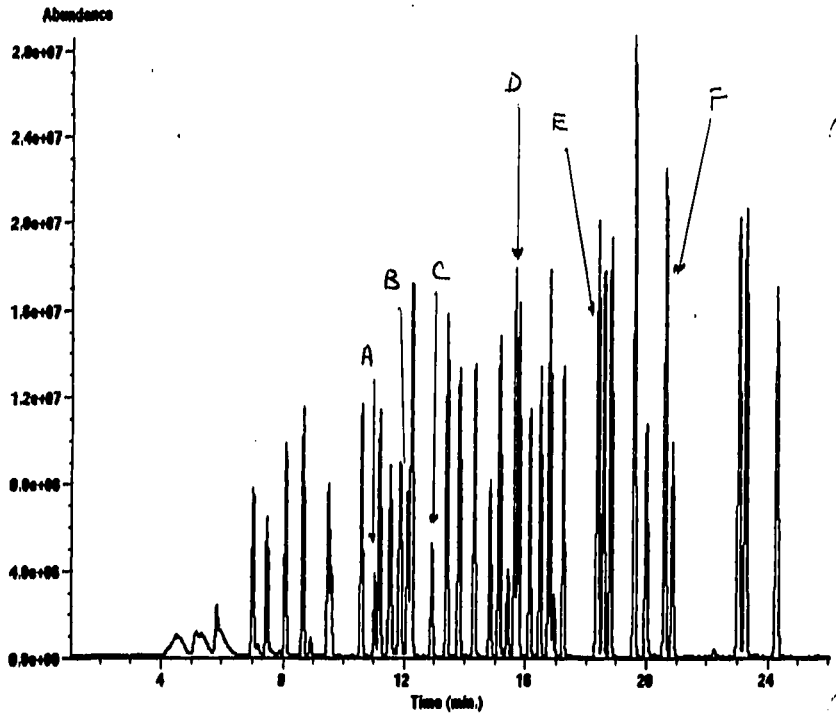

VSTD200
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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 20 Feb 91 03:17 Cal Operator : es
Cal Date : 20 Feb 91 08:02 INSTRUMENT Cal File: d5.i/022091.b/022050501005.d
Date : 20 Feb 91 03:17 Inst ID: msd5
Data file: 022050501005.d Tune Date: 23 Jan 91 10:10
Name Info: VSTD 200 CKL 3/25/91
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 3 Calibration Sample, Level: 5
Als bottle num : 5
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5	
11.03(1.000)	128	208629	50.00		100.00
11.03	49	446319		188.92 - 238.92	213.92
11.04	130	275713		107.15 - 157.15	132.15
1 CHLOROMETHANE				CAS #: 74-87-3	
4.39(0.397)	50	704924	222.78		100.00
2 VINYL CHLORIDE				CAS #: 75-01-4	
4.61(0.418)	62	852644	225.12		100.00
3 BROMOMETHANE				CAS #: 74-83-9	
5.14(0.466)	94	708510	171.26		100.00 (M)
4 CHLOROETHANE				CAS #: 75-00-3	
5.36(0.486)	64	461007	166.32		100.00
5 TRICHLOROFLUOROMETHANE				CAS #: 75-69-4	
5.82(0.528)	101	1340620	146.68		100.00
6 1,1-DICHLOROETHENE				CAS #: 75-35-4	
6.98(0.633)	96	770107	184.18		100.00
7 ACETONE				CAS #: 67-64-1	
7.15(0.648)	43	122679	213.26		100.00
8 CARBON DISULFIDE				CAS #: 75-15-0	
7.43(0.674)	76	2185186	195.62		100.00
9 METHYLENE CHLORIDE				CAS #: 75-09-2	
8.04(0.729)	84	982948	195.96		100.00
10 trans-1,2-DICHLOROETHENE				CAS #: 540-59-0	
8.61(0.781)	96	971305	192.36		100.00
11 1,1-DICHLOROETHANE				CAS #: 75-34-3	
9.45(0.857)	63	2052693	197.69		100.00
13 cis-1,2-DICHLOROETHENE				CAS #: 156-59-2	
10.58(0.959)	96	1072875	188.34		100.00
14 1,2-DICHLOROETHENE (TOTAL)			400	CAS #:	
10.58(0.959)	96	~~1072875~~ 2044180	~~188.34~~ ~~200~~		100.00
15 2-BUTANONE				CAS #: 78-93-3	

CKL 3/25/91

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10.61(0.962)	72	55084	202.92			100.00
17 CHLOROFORM				CAS #: 67-66-3		
11.19(1.014)	83	2020722	186.44			100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.10(1.097)	65	1081511	194.10			100.00
12.10	102	280500			0.93 - 50.93	25.93
22 1,2-DICHLOROETHANE				CAS #: 107-06-2		
12.24(1.110)	62	1092393	186.88			100.00
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.90(1.000)	114	906061	50.00			100.00
12.90	63	219406			0.00 - 49.21	24.21
12.90	88	196816			0.00 - 46.72	21.72
12 VINYL ACETATE				CAS #: 108-05-4		
9.56(0.741)	43	1461334	216.95			100.00
18 1,1,1-TRICHLOROETHANE				CAS #: 71-55-6		
11.54(0.894)	97	1473457	190.70			100.00
19 CARBON TETRACHLORIDE				CAS #: 56-23-5		
11.85(0.919)	117	1467063	190.77			100.00
21 BENZENE				CAS #: 71-43-2		
12.22(0.947)	78	2532970	188.23			100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.40(1.038)	130	1272464	177.63			100.00
25 1,2-DICHLOROPROPANE				CAS #: 78-87-5		
13.80(1.070)	63	1365714	195.89			100.00
26 BROMODICHLOROMETHANE				CAS #: 75-27-4		
14.30(1.108)	83	2062778	184.61			100.00
27 2-CHLOROETHYLVINYL ETHER				CAS #: 110-75-8		
14.82(1.149)	63	895532	214.21			100.00
28 CIS-1,3-DICHLOROPROPENE				CAS #: 10061-01-5		
15.11(1.172)	75	2021486	201.80			100.00
32 TRANS-1,3-DICHLOROPROPENE				CAS #: 10061-02-6		
16.12(1.250)	75	1380702	175.93			100.00
33 1,1,2-TRICHLOROETHANE				CAS #: 79-00-5		
16.47(1.277)	97	1009007	186.82			100.00
36 DIBROMOCHLOROMETHANE				CAS #: 124-48-1		
17.22(1.335)	129	1701476	181.64			100.00
44 BROMOFORM				CAS #: 75-25-2		
19.97(1.548)	173	1309406	186.75			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.32(1.000)	117	726087	50.00			100.00
18.32	82	476612			40.64 - 90.64	65.64
18.32	119	243045			8.47 - 58.47	33.47
$ 29 TOLUENE-d8				CAS #: 2037-26-5		
15.62(0.853)	98	2839840	181.12			100.00
30 TOLUENE				CAS #: 108-88-3		
15.75(0.860)	92	1696553	192.33			100.00

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31 4-METHYL-2-PENTANONE CAS #: 108-10-1
15.38(0.840) 43 666851 224.80 100.00 (M)

34 TETRACHLOROETHENE CAS #: 127-18-4
16.77(0.915) 164 1055461 169.23 100.00

35 2-HEXANONE CAS #: 591-78-6
16.90(0.922) 43 447039 223.15 100.00

38 CHLOROBENZENE CAS #: 108-90-7
18.38(1.003) 112 2403916 187.00 100.00

39 ETHYLBENZENE CAS #: 100-41-4
18.56(1.013) 106 1076747 194.55 100.00

40 m-, p-XYLENE CAS #: 108-38-3
18.79(1.025) 106 1298754 191.19 100.00

41 o-XYLENE CAS #: 95-47-6
19.55(1.067) 106 1141101 183.24 100.00

42 XYLENE (TOTAL) 2437855 400 CAS #: 1330-20-7
19.55(1.067) 106 ~~1141101~~ ~~183.23~~ 3/28/91 100.00

43 STYRENE CAS #: 100-42-5
19.58(1.069) 104 1890491 175.52 100.00

$ 45 BROMOFLUOROBENZENE CAS #: 460-00-4
20.58(1.123) 95 2420866 176.61 100.00
20.58 174 1480595 36.15 - 86.15 61.15
20.58 176 1505228 37.17 - 87.17 62.17

46 1,1,2,2-TETRACHLOROETHANE CAS #: 79-34-5
20.83(1.137) 83 1662956 200.25 100.00

47 1,3-DICHLOROBENZENE CAS #: 541-73-1
23.23(1.268) 146 2467573 178.99 100.00

48 1,4-DICHLOROBENZENE CAS #: 106-46-7
24.25(1.324) 146 2388404 181.10 100.00

49 1,2-DICHLOROBENZENE CAS #: 95-50-1
24.25(1.324) 146 2388404 181.10 100.00

CK 4/2/91

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7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Instrument ID: msd5 Calibration Date: 3/ 1/91 Time: 21:24

Lab File ID: 0301E01 Init. Calib. Date(s): 2/20/91 2/20/91

Matrix:(soil/water) WATER Level:(low/med): LOW Column:(pack/cap) CAP

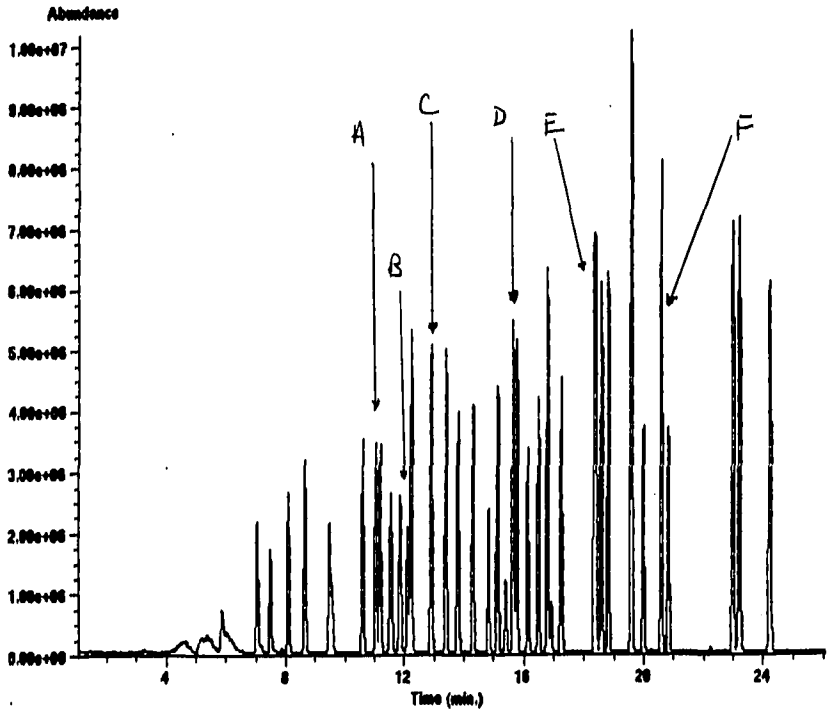
Min RRF50 for SPCC(#) = .300 (0.250 for Bromoform) Max %D for CCC(*) = 25.(

COMPOUND		$\overline{RRF}$	RRF50	%D	
CHLOROMETHANE	#	.842	.672	20.2	#
BROMOMETHANE		.991	.540	45.5	
VINYL CHLORIDE	*	1.032	.889	13.9	*
CHLOROETHANE		.664	.692	4.2	
METHYLENE CHLORIDE		1.202	1.329	10.5	
ACETONE		.138	.177	28.1	
CARBON DISULFIDE		2.677	2.668	.4	
1,1-DICHLOROETHENE	*	1.002	1.031	2.9	*
1,1-DICHLOROETHANE	#	2.488	2.730	9.7	#
1,2-DICHLOROETHENE (TOTAL)		1.288	1.437	11.6	
CHLOROFORM	*	2.598	2.982	14.8	*
1,2-DICHLOROETHANE		1.401	1.716	22.5	
2-BUTANONE		.065	.092	42.0	
1,1,1-TRICHLOROETHANE		.426	.477	12.0	
CARBON TETRACHLORIDE		.424	.476	12.3	
VINYL ACETATE		.372	.433	16.4	
BROMODICHLOROMETHANE		.617	.715	15.9	
1,2-DICHLOROPROPANE	*	.385	.421	9.3	*
CIS-1,3-DICHLOROPROPENE		.553	.608	10.0	
TRICHLOROETHENE		.395	.435	10.0	
DIBROMOCHLOROMETHANE		.517	.612	18.5	
1;1,2-TRICHLOROETHANE		.298	.343	14.9	
BENZENE		.743	.822	10.6	
TRANS-1,3-DICHLOROPROPENE		.433	.466	7.7	
BROMOFORM	#	.387	.465	20.1	#
4-METHYL-2-PENTANONE		.204	.250	22.5	
2-HEXANONE		.138	.168	21.9	
TETRACHLOROETHENE		.429	.473	10.1	
1,1,2,2-TETRACHLOROETHANE	#	.572	.642	12.3	#
TOLUENE	*	.607	.618	1.8	*
CHLOROBENZENE	#	.885	.901	1.7	#
ETHYLBENZENE	*	.381	.384	.8	*
STYRENE		.742	.789	6.4	
XYLENE (TOTAL)		.448	.466	3.9	
TOLUENE-d8		1.080	1.057	2.1	
BROMOFLUOROBENZENE		.944	1.002	6.2	
1,2-DICHLOROETHANE-D4		1.335	1.514	13.4	

AR309105

FORM VII VOA 1/87 Rev

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.



VSTD50
MSD5
3/1/91 21:24

4/3/91

AR309706

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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/02195
Date : 01 Mar 91 21:24 Inst ID: msd5
Data file: 0301e01.d Tune Date: 23 Jan 91 10:10
Name Info: vstd50 iea msd5
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 0
Als bottle num : 0
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5	
11.04(1.000)	128	192811	50.00		100.00
11.04	49	397189		160.78 - 210.78	205.99
11.05	130	254254		106.54 - 156.54	131.86
1 CHLOROMETHANE				CAS #: 74-87-3	
4.42(0.400)	50	129570	50.00		100.00
2 VINYL CHLORIDE				CAS #: 75-01-4	
4.64(0.420)	62	171377	50.00		100.00
3 BROMOMETHANE				CAS #: 74-83-9	
5.16(0.468)	94	104211	50.00		100.00
4 CHLOROETHANE				CAS #: 75-00-3	
5.37(0.486)	64	133421	50.00		100.00
5 TRICHLOROFLUOROMETHANE				CAS #: 75-69-4	
6.00(0.543)	101	231786	50.00		100.00
6 1,1-DICHLOROETHENE				CAS #: 75-35-4	
7.04(0.638)	96	198799	50.00		100.00
7 ACETONE				CAS #: 67-64-1	
7.16(0.648)	43	34054	50.00		100.00
8 CARBON DISULFIDE				CAS #: 75-15-0	
7.49(0.678)	76	514376	50.00		100.00
9 METHYLENE CHLORIDE				CAS #: 75-09-2	
8.08(0.732)	84	256215	50.00		100.00
10 trans-1,2-DICHLOROETHENE				CAS #: 540-59-0	
8.65(0.783)	96	258178	50.00		100.00
11 1,1-DICHLOROETHANE				CAS #: 75-34-3	
9.48(0.858)	63	526365	50.00		100.00
13 cis-1,2-DICHLOROETHENE				CAS #: 156-59-2	
10.60(0.960)	96	296121	50.00		100.00
14 1,2-DICHLOROETHENE (TOTAL)				CAS #:	
10.60(0.960)	96	~~296121~~ 554,299	~~50.00~~ 100		100.00
15 2-BUTANONE				CAS #: 78-93-3	

AR309107

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If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

10.61(0.961)	72	17815	50.00			100.00
17 CHLOROFORM				CAS #: 67-66-3		
11.19(1.014)	83	575049	50.00			100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.11(1.096)	65	292000	50.00			100.00
12.11	102	71558			1.65 - 51.65	24.50
22 1,2-DICHLOROETHANE				CAS #: 107-06-2		
12.24(1.109)	62	330788	50.00			100.00
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.91(1.000)	114	864705	50.00			100.00
12.90	63	215262			0.00 - 47.22	24.89
12.91	88	191796			0.00 - 45.47	22.18
12 VINYL ACETATE				CAS #: 108-05-4		
9.57(0.742)	43	374137	50.00			100.00
18 1,1,1-TRICHLOROETHANE				CAS #: 71-55-6		
11.54(0.894)	97	412762	50.00			100.00
19 CARBON TETRACHLORIDE				CAS #: 56-23-5		
11.86(0.919)	117	411981	50.00			100.00
21 BENZENE				CAS #: 71-43-2		
12.23(0.947)	78	710410	50.00			100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.41(1.039)	130	376067	50.00			100.00
25 1,2-DICHLOROPROPANE				CAS #: 78-87-5		
13.81(1.070)	63	363687	50.00			100.00
26 BROMODICHLOROMETHANE				CAS #: 75-27-4		
14.31(1.108)	83	618016	50.00			100.00
27 2-CHLOROETHYLVINYL ETHER				CAS #: 110-75-8		
14.82(1.148)	63	244690	50.00			100.00
28 CIS-1,3-DICHLOROPROPENE				CAS #: 10061-01-5		
15.12(1.171)	75	557362	53.00			100.00
32 TRANS-1,3-DICHLOROPROPENE				CAS #: 10061-02-6		
16.13(1.249)	75	370894	46.00			100.00
33 1,1,2-TRICHLOROETHANE				CAS #: 79-00-5		
16.48(1.277)	97	296241	50.00			100.00
36 DIBROMOCHLOROMETHANE				CAS #: 124-48-1		
17.24(1.336)	129	529617	50.00			100.00
44 BROMOFORM				CAS #: 75-25-2		
19.97(1.547)	173	401870	50.00			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.33(1.000)	117	767497	50.00			100.00
18.33	82	486897			37.16 - 87.16	63.43
18.33	119	251673			7.90 - 57.90	32.79
29 4-METHYL-2-PENTANONE				CAS #: 108-10-1		
15.38(0.839)	43	192107	50.00			100.00 (M)
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.63(0.852)	98	811237	50.00			100.00

ck 4/3/c

D301E1
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MSD5

AR309108

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If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

31 TOLUENE				CAS #: 108-88-3	
15.75(0.859)	92	474642	50.00		100.00
34 TETRACHLOROETHENE				CAS #: 127-18-4	
16.78(0.915)	164	362867	50.00		100.00
35 2-HEXANONE				CAS #: 591-78-6	
16.91(0.922)	43	129036	50.00		100.00
38 CHLOROBENZENE				CAS #: 108-90-7	
18.39(1.003)	112	691169	50.00		100.00
39 ETHYLBENZENE				CAS #: 100-41-4	
18.57(1.013)	106	294730	50.00		100.00
40 m-, p-XYLENE				CAS #: 108-38-3	
18.80(1.025)	106	365972	50.00		100.00
41 o-XYLENE				CAS #: 95-47-6	
19.56(1.067)	106	348954	50.00		100.00
42 XYLENE (TOTAL)		714926	100	CAS #: 1330-20-7	
19.56(1.067)	106	~~348954~~	~~50.00~~	3/22/91	100.00
43 STYRENE				CAS #: 100-42-5	
19.58(1.068)	104	605695	50.00		100.00
$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4	
20.57(1.122)	95	769032	50.00		100.00
20.58	174	495033		41.39 - 91.39	64.37
20.58	176	487000		41.62 - 91.62	63.32
46 1,1,2,2-TETRACHLOROETHANE				CAS #: 79-34-5	
20.82(1.135)	83	492999	50.00		100.00
47 1,3-DICHLOROBENZENE				CAS #: 541-73-1	
23.19(1.265)	146	792560	50.00		100.00
48 1,4-DICHLOROBENZENE				CAS #: 106-46-7	
24.21(1.320)	146	754777	50.00		100.00
49 1,2-DICHLOROBENZENE				CAS #: 95-50-1	
24.21(1.320)	146	754835	50.00		100.00

dn
4/2/91

D3D1EQ1
VSTD50
MSD5

AR309109
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If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Lab File ID (Standard): 0301E01 Date Analyzed: 3/ 1/91

Instrument ID: msd5 Time Analyzed: 21:24

Matrix:(soil/water) WATER Level:(low/med): LOW Column:(pack/cap) CAP

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	192811.	11.04	864705.	12.91	767497.	18.33
	UPPER LIMIT	385622.	11.54	1729410.	13.41	1534994.	18.83
	LOWER LIMIT	96406.	10.54	432353.	12.41	383749.	17.83
	EPA SAMPLE NO.						
1	VBLK01	191178.	11.05	854111.	12.91	765215.	18.32
2	BC006	188186.	11.06	820858.	12.91	726115.	18.33
3	BC004	191897.	11.06	852931.	12.92	756641.	18.33
4	BC008	199142.	11.06	855639.	12.92	745576.	18.33
5	BC010	189489.	11.05	832828.	12.91	678005.	18.33
6	BC001	182518.	11.06	793181.	12.92	655112.	18.33
7	BC001MS	191500.	11.07	837886.	12.93	740878.	18.34
8	BC001MSD	201213.	11.10	874366.	12.96	781565.	18.37
9	BC002	129449.	11.07	519782.	12.92	455633.	18.34
10							
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18							
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20							
21							
22							

IS1 (BCM) = BROMOCHLOROMETHANE
IS2 (DFB) = 1,4-DIFLUOROBENZENE
IS3 (CBZ) = CHLOROBENZENE-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

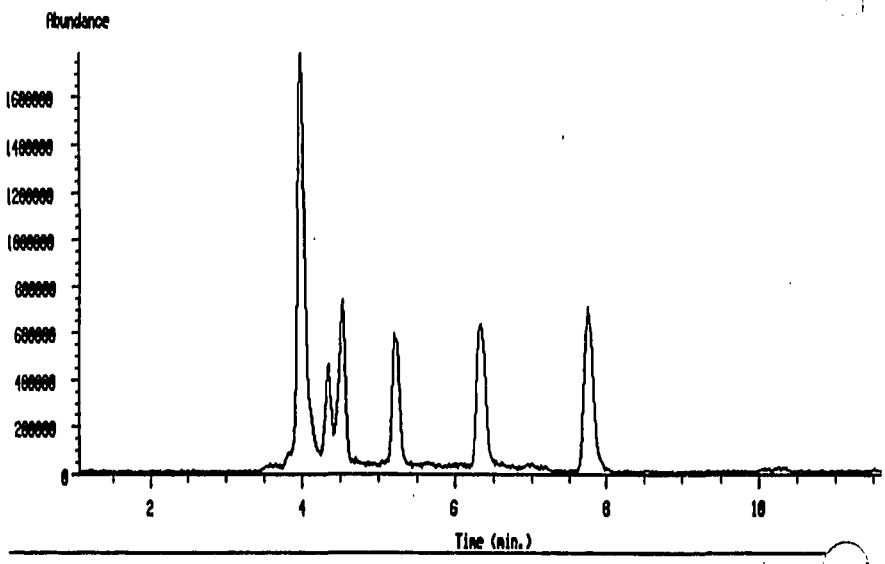
AR309110

FORM VIII VOA 1 0077 1/87 Rev.

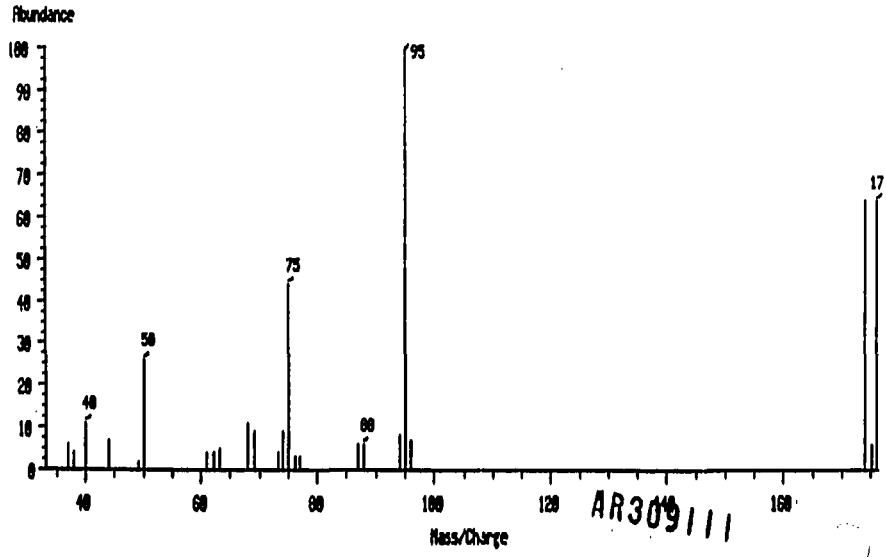
If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

Name Info: 50 ng bfb iea msd5
Misc Info:
Date : Wed Feb 20 91 12:11:04 AM

TIC of 02285bf.d



Scan 414 (7.692 min) of 02285bf.d SCALED



AR309111

1 0078

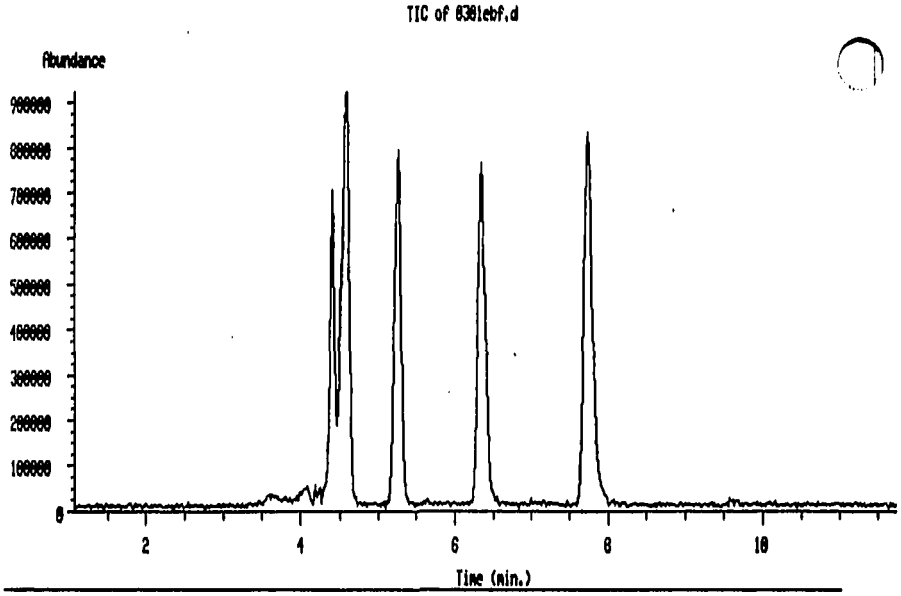
If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

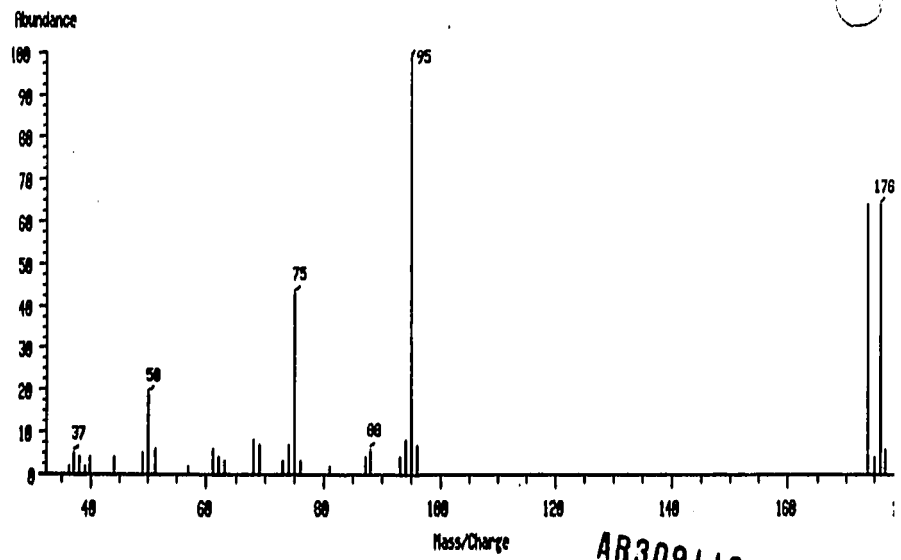
Scan 414 (7.692 min) of 02205bf.d
50 ng bfb lea msd5
Modified: scaled

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
37.00	6	62.10	4	75.05	44	95.05	100
38.10	4	63.10	5	76.25	3	96.05	7
40.00	11	67.90	11	77.05	3	173.95	64
44.00	7	69.00	9	86.95	6	175.05	6
49.10	2	73.25	4	87.85	6	175.95	64
50.10	26	74.05	9	94.05	8	176.95	6
60.90	4						

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

Name Info: 50 ng bfb iea msd5
Misc Info:
Date : Fri Mar 01 91 08:50:41 PM





AR309113 0060

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

Scan 418 (7.756 min) of 0301ebf.d
50 ng bfb iea msd5
Modified: scaled

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.20	2	51.10	6	74.05	7	94.05	8
37.10	5	57.00	2	75.05	43	95.05	100
38.00	4	61.10	6	75.95	3	96.05	7
39.10	2	62.00	4	80.95	2	173.85	64
39.90	4	63.00	3	87.05	4	174.95	4
44.00	4	68.00	8	87.85	6	175.95	64
49.00	5	69.00	7	93.05	4	176.85	6
50.00	19	72.95	3				

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK01

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E02

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 3/ 1/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	U
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
540-59-0	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK01

Lab Name: ILA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E02

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 3/ 1/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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FORM I VOA-TIC 1/87 Rev.

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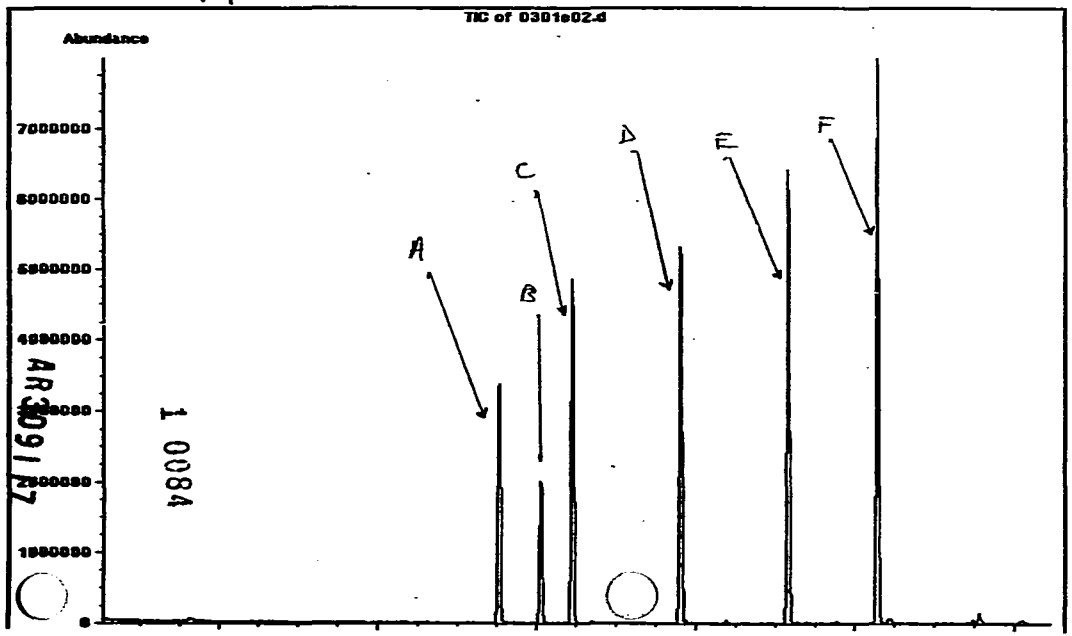
VBLK91
3/1/91 22:01 MSD5



1 0084

AR309127

clk
3/25/91

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/0219505.d
Date : 01 Mar 91 22:01 Inst ID: msd5
Data file: 0301e02.d Tune Date: 23 Jan 91 10:10
Name Info: ~~vblk~~ iea msd5 VBLK01
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 0
Als bottle num : 0
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	%REC	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5		
11.05(1.000)	128	191178	50.00			100.00
11.05	49	398816			160.78 - 210.78	208.60
11.05	130	252171			106.54 - 156.54	131.90
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.11(1.097)	65	289764	50.04	100.08		100.00
12.11	102	71236			1.65 - 51.65	24.58
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.91(1.000)	114	854111	50.00			100.00
12.91	63	211487			0.00 - 47.22	24.76
12.91	88	194166			0.00 - 45.47	22.73
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.32(1.000)	117	765215	50.00			100.00
18.32	82	494267			37.16 - 87.16	64.59
18.32	119	247048			7.90 - 57.90	32.28
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.62(0.852)	98	799714	49.44	98.87		100.00
31 TOLUENE				CAS #: 108-88-3		
15.75(0.859)	92	3155	~~0.39~~ BQL			100.00
$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4		
20.57(1.122)	95	757623	49.41	98.81		100.00
20.57	174	487557			41.39 - 91.39	64.35
20.57	176	484367			41.62 - 91.62	63.93
47 1,3-DICHLOROBENZENE				CAS #: 541-73-1		
23.19(1.265)	146	6220	~~0.39~~ NT			100.00
48 1,4-DICHLOROBENZENE				CAS #: 106-46-7		
24.20(1.320)	146	6024	~~0.40~~ NT			100.00
49 1,2-DICHLOROBENZENE				CAS #: 95-50-1		
24.20(1.320)	146	6024	~~0.40~~ NT			100.00

CK 3/25/91

AR309118
1 0085

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BC001MS

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E10

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 2/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	U
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE		
75-34-3	1,1-DICHLOROETHANE	5.	U
540-59-0	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE		
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE		
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE		
108-90-7	CHLOROBENZENE		
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

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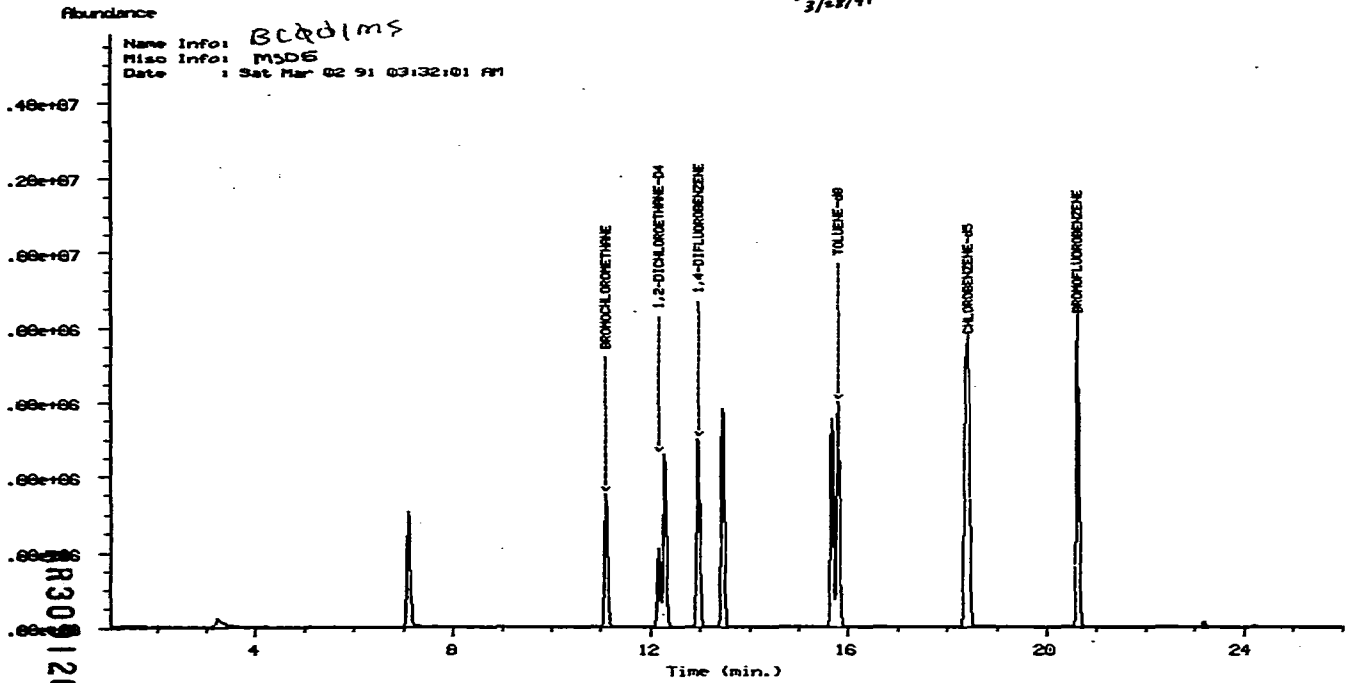
TIC of 0301e1001010.d

3/28/91



R30912001 0087

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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/02195.d
Date : 02 Mar 91 03:32 Inst ID: msd5
Data file: 0301e100~~1010.d~~ Tune Date: 23 Jan 91 10:10
Name Info:
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 1
Als bottle num : 10
Replicate num : 1

CLW 3/25/91

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	%REC	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5		
11.10(1.000)	128	201213	50.00			100.00
11.10	49	408103			160.78 - 210.78	202.82
11.10	130	265350			106.54 - 156.54	131.87
6 1,1-DICHLOROETHENE				CAS #: 75-35-4		
7.09(0.642)	96	296042	71.35	143%		100.00
8 CARBON DISULFIDE				CAS #: 75-15-0		
7.08(0.641)	76	432	~~0.04~~	BQL		100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.16(1.101)	65	301539	49.48	98.96		100.00
12.16	102	74608			1.65 - 51.65	24.74
22 1,2-DICHLOROETHANE				CAS #: 107-06-2		
12.30(1.113)	62	9031	~~1.31~~	BQL		100.00
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.96(1.000)	114	874366	50.00			100.00
12.96	63	211230			0.00 - 47.22	24.15
12.96	88	189794			0.00 - 45.47	21.70
21 BENZENE				CAS #: 71-43-2		
12.28(0.952)	78	875778	60.96	122%		100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.46(1.043)	130	449788	59.14	118%		100.00
32 TRANS-1,3-DICHLOROPROPENE				CAS #: 10061-02-6		
15.79(1.224)	75	5632	~~0.69~~	BQL		100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.37(1.000)	117	781565	50.00			100.00
18.37	82	502453			37.16 - 87.16	64.28
18.37	119	258660			7.90 - 57.90	33.09
29 4-METHYL-2-PENTANONE				CAS #: 108-10-1		
15.80(0.862)	43	6966	~~1.79~~	BQL		100.00
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.67(0.855)	98	834130	50.49	100.97		100.00
31 TOLUENE				CAS #: 108-88-3		
15.79(0.861)	92	571994	59.17	118%		100.00

C1 3

AR309123
1 0088

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38 CHLOROBENZENE				CAS #: 108-90-7		
18.42(1.005)	112	794188	56.42	1137		100.00
$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4		
20.61(1.124)	95	780641	49.84	99.68		100.00
20.61	174	516507			41.39 - 91.39	66.16
20.61	176	516593			41.62 - 91.62	66.17

TENTATIVELY IDENTIFIED COMPOUNDS

RET TIME	AREA	AMT(UG/L)	QUALITY	LIBRARY	LIB ENTRY
TOLUOL, PERDEUTERO-			CAS #:		
15.67	221854600	52.58	52	WILEY.1	1352

D3Φ1E1Q
BCQΦ1MS
MSD5
clr
3/25/91

AR309122 0089

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BC001MSD

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E09

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 2/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	U
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE		
75-34-3	1,1-DICHLOROETHANE	5.	U
540-59-0	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE		
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE		
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE		
108-90-7	CHLOROBENZENE		
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

AR309123

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FORM I VOA 1/87 Rev

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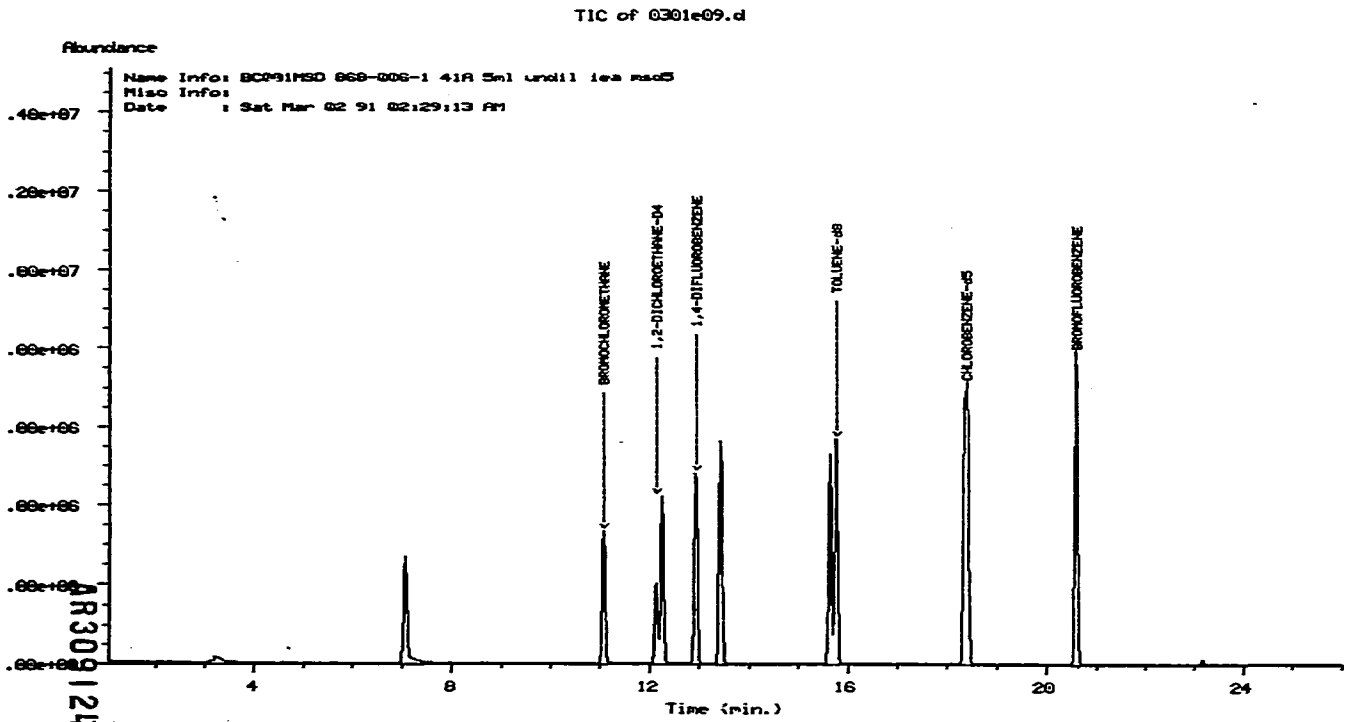

AR309124 0091

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IEA INC CARY,NC

VOLATILE QUANTITATION REPORT MSD5

Cal Inj Date : 19 Feb 91 16:29 Cal Operator : es
Cal Date : 1 Mar 91 23:03 chemist Cal File: em/msd5.i/021991.b/021950
Date : 02 Mar 91 02:29 Inst ID: msd5
Data file: 0301e09.d Tune Date: 23 Jan 91 10:10
Name Info: BC001MSD 868-006-1 41A 5ml undil iea msd5
Misc Info:
Operator : es Dilution Factor: 1.000
Comment : voaCLP Method
Sequence index : 0
Als bottle num : 0
Replicate num : 1

RETENTION TIME MIN.(REL)	MASS	AREA	AMT(UG/L)	%REC	TARGET RANGE	RATIO
* 16 BROMOCHLOROMETHANE				CAS #: 74-97-5		
11.07(1.000)	128	191500	50.00			100.00
11.06	49	390607			160.78 - 210.78	203.97
11.07	130	254728			106.54 - 156.54	133.01
6 1,1-DICHLOROETHENE				CAS #: 75-35-4		
7.06(0.639)	96	284927	72.15	144%		100.00
$ 20 1,2-DICHLOROETHANE-D4				CAS #: 17060-07-0		
12.13(1.098)	65	288205	49.69	99.38		100.00
12.13	102	70941			1.65 - 51.65	24.61
22 1,2-DICHLOROETHANE				CAS #: 107-06-2		
12.24(1.108)	62	9579	~~1.46~~ BQL			100.00
* 23 1,4-DIFLUOROBENZENE				CAS #: 540-36-3		
12.93(1.000)	114	837886	50.00			100.00
12.92	63	204942			0.00 - 47.22	24.45
12.93	88	187755			0.00 - 45.47	22.40
21 BENZENE				CAS #: 71-43-2		
12.25(0.949)	78	812230	59.00	118%		100.00
24 TRICHLOROETHENE				CAS #: 79-01-6		
13.42(1.040)	130	436419	59.88	120%		100.00
32 TRANS-1,3-DICHLOROPROPENE				CAS #: 10061-02-6		
15.76(1.221)	75	5123	~~0.86~~ BQL			100.00
* 37 CHLOROBENZENE-d5				CAS #: 3114-55-4		
18.34(1.000)	117	740878	50.00			100.00
18.34	82	477550			37.16 - 87.16	64.45
18.34	119	241609			7.90 - 57.90	32.61
29 4-METHYL-2-PENTANONE				CAS #: 108-10-1		
15.75(0.859)	43	9429	~~2.54~~ BQL			100.00
$ 30 TOLUENE-d8				CAS #: 2037-26-5		
15.64(0.853)	98	797716	50.93	101.87		100.00
31 TOLUENE				CAS #: 108-88-3		
15.76(0.860)	92	535756	58.47	117%		100.00
38 CHLOROBENZENE				CAS #: 108-90-7		
18.40(1.004)	112	764153	57.27	115%		100.00

AR309125

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$ 45 BROMOFLUOROBENZENE				CAS #: 460-00-4			
20.59(1.123)	95	753013	50.72	101.44			100.00
20.59	174	483734			41.39 -	91.39	64.23
20.59	176	484182			41.62 -	91.62	64.29

TENTATIVELY IDENTIFIED COMPOUNDS

RET TIME	AREA	AMT(UG/L)	QUALITY	LIBRARY	LIB ENTRY
TOLUOL, PERDEUTERO-			CAS #:		
15.64	211638900	52.03	78	WILEY.1	1352

BC002 | MSD
D301E09
MS05

clr
3/25/91

1AA003126

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IEA, INC.
CASE 868-006
SDG BC_001
METALS DATA

1 OF 1

AR309128

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Industrial & Environmental Analysts, Inc.
P.O. Box 12848
Research Triangle Park, North Carolina 27709
(919) 677-0090
FAX (919) 677-0427

CASE: 868-006

SDG No: BC_001

SAMPLES: Twenty-six (26) filtered and un-filtered Water Samples for the following analyses: Four Samples for manganese, seven samples for manganese and zinc, six samples for mercury, six samples for inorganic mercury, and three samples for mercury and manganese.

This case was closed on February 21, 1991. Samples BC_013 and BC_025 were received in broken bottles. Samples BC_018 and BC_021 were received without lids. Although samples had leaked out into the cooler during transition, the client requested that the analyses proceed as normal. The remaining samples were received intact. Upon receipt at IEA, each sample was assigned a 6-character "EPA" sample number for simplicity in forms generation. This package makes reference only to those 6-character IDs. Please consult the IEA Assigned Number Index for sample cross-identification.

On samples analyzed for mercury only, the color after and clarity after are noted as not applicable (NA) on Forms I. Due to procedural requirements, the samples are normally purple following mercury digestion. No significant changes occurred during sample preparation

Due to Plasma2 instrument problems during the first quarter (January - March), the Linear Range has not been determined for manganese and zinc. The Instrument Detection Limits (IDL), however, were determined. The IDL for the inorganic form of mercury has not been determined.

Sample BC_006 was initially prepared on 03/05/91. Software limitations would not allow this preparation to be recorded on Form XIII.

The remaining analyses proceeded with no notable difficulties.

Anna Feather
Anna Feather
Assistant CLP Manager
April 1, 1991

AR309129

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IEA Assigned Number Index

Inorganic Analyses

Case No. 868-006

IEA Assigned "EPA" Number	BCM Sample ID
BC_002	26AU
BC_003	26AF
BC_004	33ADU
BC_005	33ADF
BC_006	33AU
BC_007	33AF
BC_008	EQUIPMENT BLANK U (02/19/91)
BC_009	EQUIPMENT BLANK F (02/19/91)
BC_010	TRIP BLANK U (02/19/91)
BC_011	39AU
BC_012	39AF
BC_013	9ADU
BC_014	9ADF
BC_015	9ADIU
BC_016	9ADIF
BC_017	9BU
BC_018	9BF
BC_019	9BIU
BC_020	9BIF
BC_021	9AU
BC_022	9AF
BC_023	9AIU
BC_024	9AIF
BC_025	EQUIPMENT BLANK U (02/20/91)
BC_026	EQUIPMENT BLANK F (02/20/91)
BC_027	TRIP BLANK U (02/20/91)

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INDUSTRIAL & ENVIRONMENTAL ANALYSTS, INC.
3000 WESTON PKWY.
CARY, N.C. 27513

CHAIN OF CUSTODY RECORD

NO: 12183

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☑ OTHER CERCLA / SARA

PROJECT #: BXM 00-6012-02

PROJECT NAME: Chem-Solv, Inc

SAMPLERS: (SIGNATURE) Marguerite Bonaker, Russell Mehalik, Andrew Hanna

REQUESTED PARAMETERS

SAMPLE I.D.	DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	SOIL	WATER	VOA CLP Volatiles	250 ml Amber Unfiltered Hg	250 ml Amber Filtered Hg	500 ml PL NH3	250 ml PL NO3	250 ml PL NO2	500 ml PL SO4	500 ml PL Sulfide	250 ml PL Cl	1 L PL BOD	1 L PL COD	250 ml Amber Unfiltered Zn	250 ml Amber Filtered Zn
	2/19/91	1330		X	26A	15		X	3	2	2	1	1	1	1	1	1	1	1		
		1445			41A	6		X	6												
		1700			33A	17		X	3			1	1	1	1	1	1	1	1	4	2
		1700			33AD	15		X	3			1	1	1	1	1	1	1	1	2	2
		1530			Trip Blank	8		X	6											2	
		1540			Equipment Blank	18		X	6			1	1	1	1	1	1	1	1	2	2

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
			Russell Mehalik	2/19/91	15:00
Russell Mehalik	2/19/91	18:30		2/20/91	910

IEA QUOTE NO.	IEA RUSH NO.
91-0115-05	

PROJECT MANAGER (PLEASE PRINT)	P.O. NO.
IEA Becky Teismann	

IEA REMARKS: Res prepared in-house @9:20 2/20/91 QL. IEA # 006:CLP

FIELD REMARKS: Vol MS/MSD on 41A, Filtrn MS/M 33A. Shipped in 4 boxes via Federal Express

ENVIROFORMS/CLP 788

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

SOW No.: 7/88

Sample No.	Lab Sample ID.
BC 002	868-006-2
BC 003	868-006-3
BC 004	868-006-4
BC 004D	868-006-4D
BC 004S	868-006-4S
BC 005	868-006-5
BC 005D	868-006-5D
BC 005S	868-006-5S
BC 006	868-006-6
BC 006D	868-006-6D
BC 006S	868-006-6S
BC 007	868-006-7
BC 008	868-006-8
BC 009	868-006-9
BC 010	868-006-10
BC 011	868-006-11
BC 012	868-006-12
BC 013	868-006-13
BC 014	868-006-14
BC 015	868-006-15

Were ICP interelement corrections applied? Yes/No NO

Were ICP background corrections applied? Yes/No YES

If yes, were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms, and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Mark R. Bore Name: Mark R. Bore AR309132

Date: 7-1-91 Title: CLP Manager

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ENVIROFORMS/CLP 788

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

SOW No.: 7/88

Sample No.	Lab Sample ID.
BC 016	868-006-16
BC 016D	868-006-16D
BC 016S	868-006-16S
BC 017	868-006-17
BC 018	868-006-18
BC 019	868-006-19
BC 019D	868-006-19D
BC 019S	868-006-19S
BC 020	868-006-20
BC 021	868-006-21
BC 021D	868-006-21D
BC 021S	868-006-21S
BC 022	868-006-22
BC 022D	868-006-22D
BC 022S	868-006-22S
BC 023	868-006-23
BC 023D	868-006-23D
BC 023S	868-006-23S
BC 024	868-006-24
BC 025	868-006-25

Were ICP interelement corrections applied? Yes/No NO

Were ICP background corrections applied? Yes/No YES
If yes, were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms, and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Mark R. Ber Name: Mark R. AR309913

Date: 4-1-91 Title: CLP Manager

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ENVIROFORMS/CLP 788

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

SOW No.: 7/88

Sample No.	Lab Sample ID.
BC 026	868-006-26
BC 027	868-006-27

Were ICP interelement corrections applied? Yes/No NO

Were ICP background corrections applied? Yes/No YES

If yes, were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms, and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Mark R. Bero Name: Mark R. Bero

Date: 4-1-91 Title: CLP Manager

AR309134

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ENVIROFORMS/CLP 788

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_002

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 26AU

Level (low/med): LOW Date Received: 02/20/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	23400			P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

26AU

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_003

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 26AF

Level (low/med): LOW Date Received: 02/20/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	20300			P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

AR309136

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SAMPLE NO.

BC_00-

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 33ADU

Level (low/med): LOW Date Received: 02/20/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	27.3			P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	3280			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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33ADU

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_005

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 33ADF

Level (low/med): LOW Date Received: 02/20/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	30.1			P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	2180		E	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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SAMPLE NO.

BC_006

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 33AU

Level (low/med): LOW Date Received: 02/20/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	30.8			P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	3340			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

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Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_007

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 33AF

Level (low/med): LOW Date Received: 02/20/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	31.6			P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	2240		E	P
	Cyanide				NR

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Comments:

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SAMPLE NO.

BC_008

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: EQUIPMENT BLANK U

Level (low/med): LOW Date Received: 02/20/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	10.5	B		P
	Cyanide				NR

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_009

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: EQUIPMENT BLANK F

Level (low/med): LOW Date Received: 02/20/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	7.0	U	E	P
	Cyanide				NR

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Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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SAMPLE NO.

BC_010

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: IEA, INC. Case No.: 868-CC6

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: TRIP BLANK U

Level (low/med): LOW Date Received: 02/20/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc	16.4	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_011

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 39AU

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	768			P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_012

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 39AF

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	647			P
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: YELLOW Clarity After: CLEAR

Comments:

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39AF

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SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BC_013

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9ADU

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

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SAMPLE NO.

BC_014

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9ADF

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_015

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9ADIU

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

AR309148

9ADIU

FORM I - IN 7/88

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ENVIROFORMS/CLP 788

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_016

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9ADIF

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA

Comments:

AR300149

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ENVIROFORMS/CLP 788

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_017

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9BU

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	2.2			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

AR309150

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SAMPLE

BC_018

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9BF

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	2.1			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA

ARC091:51

Comments:

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ENVIROFORMS/CLP 788

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_019

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 98IU

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	2.6			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

AR309152

98IU

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_020

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 98IF

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.27			CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

AR309153

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_021

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9AU

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

AR309154

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_0.

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9AF

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

AR309155

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_023

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9AIU

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

AR309156

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_024

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: 9AIF

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLURLESS Clarity Before: CLEAR Texture:

Color After: NA Clarity After: NA Artifacts:

Comments:

AR309157

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SAMPLE NO.

BC_025

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: IEA, INC. Case No.: 868-cc6

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: EQUIPMENT BLANK U

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_026

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: EQUIPMENT BLANK F

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

AR309159

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BC_027

Lab Name: IEA, INC. Case No.: 868-006

Lab Code: IEA SDG No.: BC_001 Lab Sample ID:

Matrix (soil/water): WATER Client ID: TRIP BLANK U

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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ENVIROFORMS/CLP 788

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	4000.0			10000.0					
Antimony	2400.0			4000.0					
Arsenic	24.0			40.0					
Barium	4000.0			10000.0					
Beryllium	320.0			200.0					
Cadmium	400.0			2000.0					
Calcium	4000.0			10000.0					
Chromium	400.0			500.0					
Cobalt	2000.0			2000.0					
Copper	1000.0			1000.0					
Iron	4000.0			4000.0					
Lead	4000.0			4000.0					
Magnesium	4000.0			10000.0					
Manganese	600.0	593.80	99.0	1000.0	1005.48	100.5	999.92	100.0	P
Mercury	4.0	3.99	99.8	6.0	5.89	98.2	5.75	95.8	CV
Nickel	1600.0			2000.0					
Potassium	9000.0			10000.0					
Selenium	15.0			25.0					
Silver	800.0			500.0					
Sodium	4000.0			10000.0					
Thallium	25.0			40.0					
Vanadium	2000.0			2000.0					
Zinc	800.0	769.17	96.1	1000.0	959.65	96.0	971.64	97.2	P
Cyanide	100.0			200.0					

AR309161

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN 7/88

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ENVIROFORMS/CLP 788

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	4000.0			10000.0					
Antimony	2400.0			4000.0					
Arsenic	24.0			40.0					
Barium	4000.0			10000.0					
Beryllium	320.0			200.0					
Cadmium	400.0			2000.0					
Calcium	4000.0			10000.0					
Chromium	400.0			500.0					
Cobalt	2000.0			2000.0					
Copper	1000.0			1000.0					
Iron	4000.0			4000.0					
Lead	4000.0			4000.0					
Magnesium	4000.0			10000.0					
Manganese	600.0			1000.0	980.46	98.0	978.95	97.9	P
Mercury	4.0			6.0	5.75	95.8	5.82	97.0	CV
Nickel	1600.0			2000.0					
Potassium	9000.0			10000.0					
Selenium	15.0			25.0					
Silver	800.0			500.0					
Sodium	4000.0			10000.0					
Thallium	25.0			40.0					
Vanadium	2000.0			2000.0					
Zinc	800.0			1000.0	971.74	97.2	967.03	96.7	P
Cyanide	100.0			200.0					

AR309162

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN 7/88

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ENVIROFORMS/CLP 7B8

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: B6B-006 SAS No.: SDG No.: BC_00

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	4000.0			10000.0					-
Antimony	2400.0			4000.0					-
Arsenic	24.0			40.0					-
Barium	4000.0			10000.0					-
Beryllium	320.0			200.0					-
Cadmium	400.0			2000.0					-
Calcium	4000.0			10000.0					-
Chromium	400.0			500.0					-
Cobalt	2000.0			2000.0					-
Copper	1000.0			1000.0					-
Iron	4000.0			4000.0					-
Lead	4000.0			4000.0					-
Magnesium	4000.0			10000.0					-
Manganese	600.0			1000.0					-
Mercury	4.0			6.0	5.78	96.3	5.72	95.3	C
Nickel	1600.0			2000.0					-
Potassium	9000.0			10000.0					-
Selenium	15.0			25.0					-
Silver	800.0			500.0					-
Sodium	4000.0			10000.0					-
Thallium	25.0			40.0					-
Vanadium	2000.0			2000.0					-
Zinc	800.0			1000.0					-
Cyanide	100.0			200.0					-

AR309163

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN 7/88

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ENVIROFORMS/CLP 788

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	4000.0			10000.0					
Antimony	2400.0			4000.0					
Arsenic	24.0			40.0					
Barium	4000.0			10000.0					
Beryllium	320.0			200.0					
Cadmium	400.0			2000.0					
Calcium	4000.0			10000.0					
Chromium	400.0			500.0					
Cobalt	2000.0			2000.0					
Copper	1000.0			1000.0					
Iron	4000.0			4000.0					
Lead	4000.0			4000.0					
Magnesium	4000.0			10000.0					
Manganese	600.0			1000.0					
Mercury	4.0	3.96	99.0	6.0	6.16	102.7	6.20	103.3	CV
Nickel	1600.0			2000.0					
Potassium	9000.0			10000.0					
Selenium	15.0			25.0					
Silver	800.0			500.0					
Sodium	4000.0			10000.0					
Thallium	25.0			40.0					
Vanadium	2000.0			2000.0					
Zinc	800.0			1000.0					
Cyanide	100.0			200.0					

AR309164

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN 7/88

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ENVIROFORMS/CLP 788

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-CC6 SAS No.: SDG No.: 8C_00.

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	4000.0			10000.0					
Antimony	2400.0			4000.0					
Arsenic	24.0			40.0					
Barium	4000.0			10000.0					
Beryllium	320.0			200.0					
Cadmium	400.0			2000.0					
Calcium	4000.0			10000.0					
Chromium	400.0			500.0					
Cobalt	2000.0			2000.0					
Copper	1000.0			1000.0					
Iron	4000.0			4000.0					
Lead	4000.0			4000.0					
Magnesium	4000.0			10000.0					
Manganese	600.0			1000.0					
Mercury	4.0	4.07	101.8	6.0	5.79	96.5	5.63	93.8	C\
Nickel	1600.0			2000.0					
Potassium	9000.0			10000.0					
Selenium	15.0			25.0					
Silver	800.0			500.0					
Sodium	4000.0			10000.0					
Thallium	25.0			40.0					
Vanadium	2000.0			2000.0					
Zinc	800.0			1000.0					
Cyanide	100.0			200.0					

AR309165

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN 7/88

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ENVIROFORMS/CLP 788

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum	4000.0			10000.0					
Antimony	2400.0			4000.0					
Arsenic	24.0			40.0					
Barium	4000.0			10000.0					
Beryllium	320.0			200.0					
Cadmium	400.0			2000.0					
Calcium	4000.0			10000.0					
Chromium	400.0			500.0					
Cobalt	2000.0			2000.0					
Copper	1000.0			1000.0					
Iron	4000.0			4000.0					
Lead	4000.0			4000.0					
Magnesium	4000.0			10000.0					
Manganese	600.0			1000.0					
Mercury	4.0			6.0	5.67	94.5	5.71	95.2	CV
Nickel	1600.0			2000.0					
Potassium	9000.0			10000.0					
Selenium	15.0			25.0					
Silver	800.0			500.0					
Sodium	4000.0			10000.0					
Thallium	25.0			40.0					
Vanadium	2000.0			2000.0					
Zinc	800.0			1000.0					
Cyanide	100.0			200.0					

AR309166

(1) Control Limits: Mercury 80-120; Other Metals 90-110;
Cyanide 85-115

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ENVIROFORMS/CLP 788

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum	4000.0			10000.0					-
Antimony	2400.0			4000.0					-
Arsenic	24.0			40.0					-
Barium	4000.0			10000.0					-
Beryllium	320.0			200.0					-
Cadmium	400.0			2000.0					-
Calcium	4000.0			10000.0					-
Chromium	400.0			500.0					-
Cobalt	2000.0			2000.0					-
Copper	1000.0			1000.0					-
Iron	4000.0			4000.0					-
Lead	4000.0			4000.0					-
Magnesium	4000.0			10000.0					-
Manganese	600.0			1000.0					-
Mercury	4.0			6.0	5.67	94.5	5.48	91.3	C
Nickel	1600.0			2000.0					-
Potassium	9000.0			10000.0					-
Selenium	15.0			25.0					-
Silver	800.0			500.0					-
Sodium	4000.0			10000.0					-
Thallium	25.0			40.0					-
Vanadium	2000.0			2000.0					-
Zinc	800.0			1000.0					-
Cyanide	100.0			200.0					-

AR309167

(1) Control Limits: Mercury 80-120; Other Metals 90-110;
Cyanide 85-115

FORM II (PART 1) - IN 7/88

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ENVIROFORMS/CLP 788

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum	4000.0			10000.0					
Antimony	2400.0			4000.0					
Arsenic	24.0			40.0					
Barium	4000.0			10000.0					
Beryllium	320.0			200.0					
Cadmium	400.0			2000.0					
Calcium	4000.0			10000.0					
Chromium	400.0			500.0					
Cobalt	2000.0			2000.0					
Copper	1000.0			1000.0					
Iron	4000.0			4000.0					
Lead	4000.0			4000.0					
Magnesium	4000.0			10000.0					
Manganese	600.0			1000.0					
Mercury	4.0			6.0	5.60	93.3	5.71	95.2	CV
Nickel	1600.0			2000.0					
Potassium	9000.0			10000.0					
Selenium	15.0			25.0					
Silver	800.0			500.0					
Sodium	4000.0			10000.0					
Thallium	25.0			40.0					
Vanadium	2000.0			2000.0					
Zinc	800.0			1000.0					
Cyanide	100.0			200.0					

AR309168

(1) Control Limits: Mercury 80-120; Other Metals 90-110;
Cyanide 85-115

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ENVIROFORMS/CLP 788

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00.

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum	4000.0			10000.0					
Antimony	2400.0			4000.0					
Arsenic	24.0			40.0					
Barium	4000.0			10000.0					
Beryllium	320.0			200.0					
Cadmium	400.0			2000.0					
Calcium	4000.0			10000.0					
Chromium	400.0			500.0					
Cobalt	2000.0			2000.0					
Copper	1000.0			1000.0					
Iron	4000.0			4000.0					
Lead	4000.0			4000.0					
Magnesium	4000.0			10000.0					
Manganese	600.0			1000.0					
Mercury	4.0	3.86	96.5	6.0	5.63	93.8	5.17	86.2	C\
Nickel	1600.0			2000.0					
Potassium	9000.0			10000.0					
Selenium	15.0			25.0					
Silver	800.0			500.0					
Sodium	4000.0			10000.0					
Thallium	25.0			40.0					
Vanadium	2000.0			2000.0					
Zinc	800.0			1000.0					
Cyanide	100.0			200.0					

AR309169

(1) Control Limits: Mercury 80-120; Other Metals 90-110;
Cyanide 85-115

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ENVIROFORMS/CLP 788

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Initial Calibration Source: SOL.PLUS

Continuing Calibration Source: SOL.PLUS

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum	4000.0			10000.0					
Antimony	2400.0			4000.0					
Arsenic	24.0			40.0					
Barium	4000.0			10000.0					
Beryllium	320.0			200.0					
Cadmium	400.0			2000.0					
Calcium	4000.0			10000.0					
Chromium	400.0			500.0					
Cobalt	2000.0			2000.0					
Copper	1000.0			1000.0					
Iron	4000.0			4000.0					
Lead	4000.0			4000.0					
Magnesium	4000.0			10000.0					
Manganese	600.0			1000.0					
Mercury	4.0	3.51	87.8	6.0	6.31	105.2	6.22	103.7	CV
Nickel	1600.0			2000.0					
Potassium	9000.0			10000.0					
Selenium	15.0			25.0					
Silver	800.0			500.0					
Sodium	4000.0			10000.0					
Thallium	25.0			40.0					
Vanadium	2000.0			2000.0					
Zinc	800.0			1000.0					
Cyanide	100.0			200.0					

AR309170

(1) Control Limits: Mercury 80-120; Other Metals 90-110;
Cyanide 85-115

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ENVIROFORMS/CLP 788

2B

CRDL STANDARD FOR AA AND ICP

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

AA CRDL Standard Source: INORG. VENT.

ICP CRDL Standard Source: SPEX

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	True	Initial Found	%R	Found	%R
Aluminum								
Antimony				120.0				
Arsenic	10.0							
Barium								
Beryllium				10.0				
Cadmium				10.0				
Calcium								
Chromium				20.0				
Cobalt				100.0				
Copper				50.0				
Iron								
Lead	3.0			60.0				
Magnesium								
Manganese				30.0	28.12	93.7	28.94	96.
Mercury	0.2							
Nickel				80.0				
Potassium								
Selenium	5.0							
Silver				20.0				
Sodium								
Thallium	10.0							
Vanadium				100.0				
Zinc				40.0	39.35	98.4	36.79	92.

AR309171

FORM II (PART 2) - IN 7/88

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ENVIROFORMS/CLP 788

3
BLANKS

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc	7.0	U	7.0	U	7.0	U	7.0	U	7.0	U	P
Cyanide											

AR309172

1 041

FORM III - IN 7/88

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ENVIROFORMS/CLP 788

3
BLANKS

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese			2.0	U					2.0	U	P
Mercury			0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc			7.0	U					7.0	U	P
Cyanide											

AR309173

1 04

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ENVIROFORMS/CLP 788

3
BLANKS

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U			0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

AR309174

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ENVIROFORMS/CLP 788

3
BLANKS

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_OC

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

AR309175

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ENVIROFORMS/CLP 788

3
BLANKS

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

AR309176

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ENVIROFORMS/CLP 788

3
BLANKS

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.2	U	0.2	U					CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

AR309177

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ENVIROFORMS/CLP 788

3
BLANKS

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U					CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

AR309178

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ENVIROFORMS/CLP 788

3
BLANKS

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00.

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U					CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

AR309179

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ENVIROFORMS/CLP 788

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

ICP ID Number: PLAMSA2 ICS Source: SOL.PLUS

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000						
Antimony								
Arsenic								
Barium		500						
Beryllium		500						
Cadmium		1000						
Calcium	500000	500000						
Chromium		500						
Cobalt		500						
Copper		500						
Iron	200000	200000						
Lead		1000						
Magnesium	500000	500000						
Manganese		500	19	478.6	95.7	20	469.6	93.9
Mercury								
Nickel		1000						
Potassium								
Selenium								
Silver		1000						
Sodium								
Thallium								
Vanadium		500						
Zinc		1000	73	954.2	95.4	72	990.0	99.0

AR309180

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ENVIROFORMS/CLP 788

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_0045

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									N
Antimony									N
Arsenic									N
Barium									N
Beryllium									N
Cadmium									N
Calcium									N
Chromium									N
Cobalt									N
Copper									N
Iron									N
Lead									N
Magnesium									N
Manganese	75-125	452.4405		27.3382		500.00	85.0		P
Mercury									N
Nickel									N
Potassium									N
Selenium									N
Silver									NF
Sodium									NF
Thallium									NF
Vanadium									NF
Zinc		3558.7433		3284.0897		500.00	54.9		P
Cyanide									N

AR309188

Comments:

1 050

FORM V (PART 1) - IN 7

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ENVIROFORMS/CLP 788

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_005S

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese	75-125	522.4696		30.1433		500.00	98.5		P
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc		2904.3584		2182.3537		500.00	144.4		P
Cyanide									NR

AR309182

Comments:

1 051

FORM V (PART 1) - IN 7/88

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ENVIROFORMS/CLP 788

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_006S

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_0C

Matrix (soil/water): WATER Level (low/med): LOW
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									N
Antimony									N
Arsenic									N
Barium									N
Beryllium									N
Cadmium									N
Calcium									N
Chromium									N
Cobalt									N
Copper									N
Iron									N
Lead									N
Magnesium									N
Manganese	75-125	529.9856		30.7628		500.00	99.8		E
Mercury									N
Nickel									N
Potassium									N
Selenium									N
Silver									N
Sodium									N
Thallium									N
Vanadium									N
Zinc		3700.2090		3344.1034		500.00	71.2		F
Cyanide									N

AR309183

Comments:

1 052

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ENVIROFORMS/CLP 788

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_016S

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury	75-125	1.0300		0.2000	U	1.00	103.0		CV
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

AR309184

Comments:

1 053

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ENVIROFORMS/CLP 788

5A
SPIKE SAMPLE RECOVERY

SAMPLE

BC_019S

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									N
Antimony									N
Arsenic									N
Barium									N
Beryllium									N
Cadmium									N
Calcium									N
Chromium									N
Cobalt									N
Copper									N
Iron									N
Lead									N
Magnesium									N
Manganese									N
Mercury	75-125	3.7800		2.6000		1.00	118.0		C
Nickel									N
Potassium									N
Selenium									N
Silver									N
Sodium									N
Thallium									N
Vanadium									N
Zinc									N
Cyanide									N

AR309185

Comments:

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ENVIROFORMS/CLP 7B3

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_021S

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury	75-125	0.9500		0.2000	U	1.00	95.0		CV
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

AR309186

Comments:

1 055

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ENVIROFORMS/CLP 788

5A
SPIKE SAMPLE RECOVERY

SAMPLE

BC_022S

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: B68-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									N
Antimony									N
Arsenic									N
Barium									N
Beryllium									N
Cadmium									N
Calcium									N
Chromium									N
Cobalt									N
Copper									N
Iron									N
Lead									N
Magnesium									N
Manganese									N
Mercury	75-125	0.9300		0.2000	U	1.00	93.0		C
Nickel									N
Potassium									N
Selenium									N
Silver									N
Sodium									N
Thallium									N
Vanadium									N
Zinc									N
Cyanide									N

AR309187

Comments:

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ENVIROFORMS/CLP 788

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_023S

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury	75-125	1.0200		0.2000	U	1.00	102.0		CV
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

AR309188

Comments:

1 057

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ENVIROFORMS/CLP 788

5B

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO

BC_004A

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)		Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

AR30918

Comments:

1 058

FORM V (PART 2) - IN REV. 7/

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ENVIROFORMS/CLP 788

5B
POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_005A

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)		Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

AR309190

Comments:

1 059

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5B

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_006A

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									N
Antimony									N
Arsenic									N
Barium									N
Beryllium									N
Cadmium									N
Calcium									N
Chromium									N
Cobalt									N
Copper									N
Iron									N
Lead									N
Magnesium									N
Manganese									N
Mercury									N
Nickel									N
Potassium									N
Selenium									N
Silver									N
Sodium									N
Thallium									N
Vanadium									N
Zinc									N
Cyanide									N

AR309191

Comments:

1 060

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5B
POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_016A

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)		Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

AR309192

Comments:

1 061

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ENVIROFORMS/CLP 788

58

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO

BC_019A

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)		Spike Added (SA)	%R	Q	M
Aluminum									N
Antimony									N
Arsenic									N
Barium									N
Beryllium									N
Cadmium									N
Calcium									N
Chromium									N
Cobalt									N
Copper									N
Iron									N
Lead									N
Magnesium									N
Manganese									N
Mercury									N
Nickel									N
Potassium									N
Selenium									N
Silver									N
Sodium									N
Thallium									N
Vanadium									N
Zinc									N
Cyanide									N

AR309193

Comments:

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ENVIROFORMS/CLP 788

5B
POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_021A

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)		Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

AR309194

Comments:

1 063

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58

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE N

BC_022A

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-CC6 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)		Spike Added (SA)	%R	Q	M
Aluminum									N
Antimony									N
Arsenic									N
Barium									N
Beryllium									N
Cadmium									N
Calcium									N
Chromium									N
Cobalt									N
Copper									N
Iron									N
Lead									N
Magnesium									N
Manganese									N
Mercury									N
Nickel									N
Potassium									N
Selenium									N
Silver									N
Sodium									N
Thallium									N
Vanadium									N
Zinc									N
Cyanide									N

AR309195

Comments:

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5B
POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

BC_023A

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)		Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

AR309196

Comments:

1 065

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ENVIROFORMS/CLP 788

6
DUPLICATES

SAMPLE NO

BC_004D

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese	15.0	27.3382		25.4323		7.2		P
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc		3284.0897		3258.4606		0.8		P
Cyanide								

AR309197

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ENVIROFORMS/CLP 728

6
DUPLICATES

SAMPLE NO.

BC_005D

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese	15.0	30.1433		34.3376		13.0		P
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc		2182.3537		2355.3897		7.6		P
Cyanide								

AR309198

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ENVIROFORMS/CLP 788

6
DUPLICATES

SAMPLE N

BC_006D

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese	15.0	30.7628		32.0664		4.1		P
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc		3344.1034		3338.9517		0.2		P
Cyanide								

AR309100

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ENVIROFORMS/CLP 788

6
DUPLICATES

SAMPLE NO.

BC_016D

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		0.2000	U	0.2000	U			CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

AR309200

1 069

FORM VI - IN 7/88

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ENVIROFORMS/CLP 788

6
DUPLICATES

SAMPLE NO.

BC_019D

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		2.6000		2.5500		1.9		CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

AR309201

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ENVIROFORMS/CLP 788

6
DUPLICATES

SAMPLE NO.

BC_021D

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		0.2000	U	0.2000	U			CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

AR309202

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ENVIROFORMS/CLP 788

6
DUPLICATES

SAMPLE NO.

BC_022D

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		0.2000	U	0.2000	U			CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

AR309200

1 072

FORM VI - IN 7/88

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ENVIROFORMS/CLP 788

6
DUPLICATES

SAMPLE NO.

BC_023D

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury		0.2000	U	0.2000	U			CV
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

AR309204

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ENVIROFORMS/CLP 788

7

LABORATORY CONTROL SAMPLE

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Solid LCS Source: ERA

Aqueous LCS Source: SOL.PLUS

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%
Aluminum	4000.0			11400.0			8600.0	14200.0	
Antimony	2400.0			32.0			0.0	48.0	
Arsenic	40.0			40.0			15.0	65.0	
Barium	4000.0			372.0			311.0	481.0	
Beryllium	320.0			13.0			9.6	16.	
Cadmium	400.0			52.0			33.0	64.0	
Calcium	4000.0			8310.0			6940.0	10100.0	
Chromium	400.0			58.0			44.0	70.0	
Cobalt	2000.0			27.0			21.0	32.0	
Copper	1000.0			201.0			158.0	245.0	
Iron	4000.0			16400.0			12800.0	20100.0	
Lead	20.0			38.0			19.0	46.0	
Magnesium	4000.0			4090.0			3050.0	5110.0	
Manganese	600.0	573.59	95.6	326.0			244.0	392.0	
Mercury				1.4			0.7	2.1	
Nickel	1600.0			160.0			122.0	201.0	
Potassium	9000.0			3680.0			3060.0	4440.0	
Selenium	10.0			38.0			19.0	48.0	
Silver	800.0			74.0			0.0	94.0	
Sodium	4000.0			524.0			262.0	786.0	
Thallium	50.0			10.0			5.0	15.0	
Vanadium	2000.0			57.0			45.0	69.0	
Zinc	800.0	746.20	93.3	325.0			276.0	421.0	
Cyanide				98.0			39.0	157.0	

AR309205

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ENVIROFORMS/CLP 788

7

LABORATORY CONTROL SAMPLE

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Solid LCS Source: ERA

Aqueous LCS Source: SOL.PLUS

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum	4000.0			11400.0			8600.0	14200.0	
Antimony	2400.0			32.0			0.0	48.0	
Arsenic	40.0			40.0			15.0	65.0	
Barium	4000.0			372.0			311.0	481.0	
Beryllium	320.0			13.0			9.6	16.0	
Cadmium	400.0			52.0			33.0	64.0	
Calcium	4000.0			8310.0			6940.0	10100.0	
Chromium	400.0			58.0			44.0	70.0	
Cobalt	2000.0			27.0			21.0	32.0	
Copper	1000.0			201.0			158.0	245.0	
Iron	4000.0			16400.0			12800.0	20100.0	
Lead	20.0			38.0			19.0	46.0	
Magnesium	4000.0			4090.0			3050.0	5110.0	
Manganese	600.0	578.36	96.4	326.0			244.0	392.0	
Mercury				1.4			0.7	2.1	
Nickel	1600.0			160.0			122.0	201.0	
Potassium	9000.0			3680.0			3060.0	4440.0	
Selenium	10.0			38.0			19.0	48.0	
Silver	800.0			74.0			0.0	94.0	
Sodium	4000.0			524.0			262.0	786.0	
Thallium	50.0			10.0			5.0	15.0	
Vanadium	2000.0			57.0			45.0	69.0	
Zinc	800.0	749.77	93.7	325.0			276.0	421.0	
Cyanide				98.0			39.0	157.0	

AR309206

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ENVIROFORMS/CLP 788

8

STANDARD ADDITION RESULTS

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q

AR309207

FORM VIII - IN 7/8

1 076

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ENVIROFORMS/CLP 788

9

ICP SERIAL DILUTIONS

SAMPLE NO.

BC_004L

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum							
Antimony							
Arsenic							
Barium							
Beryllium							
Cadmium							
Calcium							
Chromium							
Cobalt							
Copper							
Iron							
Lead							
Magnesium							
Manganese	27.34		19.43	B	28.9		P
Mercury							
Nickel							
Potassium							
Selenium							
Silver							
Sodium							
Thallium							
Vanadium							
Zinc	3284.09		3148.28		4.1		P

AR309208

1 077

FORM IX - IN 7/86

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ENVIROFORMS/CLP 788

9

ICP SERIAL DILUTIONS

SAMPLE N

BC_005L

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum							
Antimony							
Arsenic							
Barium							
Beryllium							
Cadmium							
Calcium							
Chromium							
Cobalt							
Copper							
Iron							
Lead							
Magnesium							
Manganese	30.14		21.25	B	29.5		P
Mercury							
Nickel							
Potassium							
Selenium							
Silver							
Sodium							
Thallium							
Vanadium							
Zinc	2182.35		1922.85		11.9	E	P

AR309209

1 078

FORM IX - IN 7/88

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ENVIROFORMS/CLP 788

9

ICP SERIAL DILUTIONS

SAMPLE NO.

BC_006L

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum							
Antimony							
Arsenic							
Barium							
Beryllium							
Cadmium							
Calcium							
Chromium							
Cobalt							
Copper							
Iron							
Lead							
Magnesium							
Manganese	30.76		25.46	B	17.2		P
Mercury							
Nickel							
Potassium							
Selenium							
Silver							
Sodium							
Thallium							
Vanadium							
Zinc	3344.10		3274.53		2.1		P

AR309210

1 079

FORM IX - IN 7/88

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ENVIROFORMS/CLP 788

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_OC

ICP ID Number: PLASMA2 Date: 03/13/91

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.22				
Antimony	206.85				
Barium	455.41				
Beryllium	313.04				
Cadmium	226.50				
Calcium	317.93				
Chromium	267.73				
Cobalt	228.80				
Copper	324.76				
Iron	259.94				
Lead					
Magnesium	279.56				
Manganese	257.62		15.0	2.0	P
Mercury					
Nickel	231.60				
Potassium	766.49				
Selenium					
Silver	328.08				
Sodium	589.59				
Thallium					
Vanadium	292.40				
Zinc	213.87		20.0	7.0	P
Cyanide					

AR309211

Comments:

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ENVIROFORMS/CLP 788

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

ICP ID Number: Date: 01/15/91

Flame AA ID Number: 5000

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Mercury	253.70		0.2	0.2	CV
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					

Comments:

AR309212

1 081

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ENVIROFORMS/CLP 788

11A

ICP INTERELEMENT CORRECTION FACTORS (Annually)

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_00

ICP ID Number: PLASMA2 Date: 01/16/90

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Mercury						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Thallium						
Vanadium						
Zinc						
Cyanide						

Comment:
THE PERKIN-ELMER PLASMA II IS A SEQUENTIAL INSTRUMENT THAT DOES REQUIRE INTERELEMENT CORRECTION

AR309213

FORM XI (PART 1) - IN 7/8

1 082

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ENVIROFORMS/CLP 788

12

ICP LINEAR RANGE (QUARTERLY)

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

ICP ID Number: PLASMA2 Date: 10/03/90

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Aluminum	1.50	550000.0	P
Antimony	9.00	50000.0	P
Arsenic			NR
Barium	1.25	100000.0	P
Beryllium	1.25	5000.0	P
Cadmium	4.50	10000.0	P
Calcium	1.25	550000.0	P
Chromium	10.00	10000.0	P
Cobalt	1.75	30000.0	P
Copper	2.00	50000.0	P
Iron	1.25	250000.0	P
Lead			NR
Magnesium	1.25	550000.0	P
Manganese	1.25	5000.0	P
Mercury			NR
Nickel	1.50	30000.0	P
Potassium	6.50	50000.0	P
Selenium			NR
Silver	3.50	1000.0	P
Sodium	2.50	200000.0	P
Thallium			NR
Vanadium	1.25	20000.0	P
Zinc	1.50	25000.0	P
Cyanide			NR

Comment:

AR309214

FORM XII - IN 7/88

1 083

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ENVIROFORMS/CLP 788

13

Preparation Log

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Method: P

Sample No.	Preparation Date	Weight (gram)	Volume (ml)
BC 002	03/05/91		100
BC 003	03/05/91		100
BC 004	03/05/91		100
BC 004D	03/05/91		100
BC 004S	03/05/91		100
BC 005	03/05/91		100
BC 005D	03/05/91		100
BC 005S	03/05/91		100
BC 006	03/19/91		100
BC 006D	03/19/91		100
BC 006S	03/19/91		100
BC 007	03/05/91		100
BC 008	03/05/91		100
BC 009	03/05/91		100
BC 010	03/05/91		100
BC 011	03/05/91		100
BC 012	03/05/91		100
BC 025	03/05/91		100
BC 026	03/05/91		100
BC 027	03/05/91		100
LCSW	03/05/91		100
LCSW1	03/19/91		100
PBW	03/05/91		100
PBW1	03/19/91		100

AR309215

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ENVIROFORMS/CLP 788

13
Preparation Log

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Method: CV

Sample No.	Preparation Date	Weight (gram)	Volume (ml)
BC 013	03/06/91		100
BC 014	03/06/91		100
BC 015	03/10/91		100
BC 016	03/10/91		100
BC 016	03/15/91		100
BC 016D	03/15/91		100
BC 016S	03/15/91		100
BC 017	03/06/91		100
BC 018	03/06/91		100
BC 019	03/10/91		100
BC 019D	03/10/91		100
BC 019S	03/10/91		100
BC 020	03/10/91		100
BC 021	03/06/91		100
BC 021D	03/06/91		100
BC 021S	03/06/91		100
BC 022	03/06/91		100
BC 022	03/14/91		100
BC 022D	03/14/91		100
BC 022S	03/14/91		100
BC 023	03/10/91		100
BC 023	03/19/91		100
BC 023D	03/19/91		100
BC 023S	03/19/91		100
BC 024	03/10/91		100
BC 025	03/06/91		100
BC 026	03/06/91		100
BC 027	03/06/91		100
PBW	03/06/91		100
PBW1	03/10/91		100
PBW2	03/14/91		100
PBW3	03/15/91		100

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ENVIROFORMS/CLP 788

13

Preparation Log

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Method: CV

Sample No.	Preparation Date	Weight (gram)	Volume (ml)
P8W4	03/19/91		100

AR309217

FORM XIII - IN 7/88 1 086

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:

Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001

Instrument ID Number: Plasma2 Method: P

Start Date: 03/22/91 End Date: 03/22/91

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S	1.00	1541															X									X	
S	1.00	1543															X									X	
S	1.00	1545															X									X	
SO	1.00	1548															X									X	
SO	1.00	1550															X									X	
ICV1	1.00	1552															X									X	
ICB1	1.00	1554															X									X	
CRI1	1.00	1557															X									X	
ICSA1	1.00	1559															X									X	
ICSAB1	1.00	1601															X									X	
LCSW	1.00	1604															X									X	
PBW	1.00	1606															X									X	
LCSW	1.00	1609															X									X	
PBW	1.00	1611															X									X	
BC 002	1.00	1613																									
BC 002	10.00	1616															X										
CCV1	1.00	1618															X									X	
CCB1	1.00	1620															X									X	
BC 003	1.00	1623																									
BC 003	10.00	1625															X										
BC 004	1.00	1627															X									X	
BC 004D	1.00	1630															X									X	
BC 004S	1.00	1632															X									X	
BC 004L	5.00	1635															X									X	
BC 005	1.00	1638															X									X	
BC 005D	1.00	1640															X									X	
BC 005S	1.00	1643															X									X	
BC 005L	5.00	1646															X									X	
CCV2	1.00	1648															X									X	
CCB2	1.00	1651															X									X	
BC 006	1.00	1653															X									X	
BC 006D	1.00	1656															X									X	

AR309218

FORM XIV - IN 7/88

1 087

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:
Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001
Instrument ID Number: Plasma2 Method: P
Start Date: 03/22/91 End Date: 03/22/91

Sample No.	D/F	Time	% R	AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
				Analytes																							
BC 006S	1.00	1659															X									X	
BC 006L	5.00	1701															X									X	
BC 007	1.00	1704															X									X	
BC 008	1.00	1706															X									X	
BC 009	1.00	1709															X									X	
BC 010	1.00	1711															X									X	
ZZZZZ	1.00	1714																									
CCV3	1.00	1716															X									X	
CCB3	1.00	1718															X									X	
BC 011	1.00	1721															X										
BC 012	1.00	1723															X										
BC 025	1.00	1725															X										
BC 026	1.00	1727															X										
BC 027	1.00	1729															X										
ICSA2	1.00	1731															X									X	
ICSAB2	1.00	1734															X									X	
CRI2	1.00	1736															X									X	
CCV4	1.00	1738															X									X	
CCB4	1.00	1741															X									X	

AR309219

FORM XIV - IN

1 088

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:
Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001
Instrument ID Number: 5000 Method: CV
Start Date: 03/06/91 End Date: 03/06/91

Sample No.	D/F	Time	% R	Analytes																				
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1455																X									
S0.5	1.00	1456																X									
S1.0	1.00	1457																X									
S3.0	1.00	1459																X									
S5.0	1.00	1500																X									
S10.0	1.00	1502																X									
ICV1	1.00	1504																X									
ICB1	1.00	1505																X									
CRA1	1.00	1507																X									
CCV1	1.00	1508																X									
CCB1	1.00	1510																X									
PBW	1.00	1511																X									
BC 013	1.00	1512																X									
BC 014	1.00	1513																X									
BC 017	1.00	1515																X									
BC 018	1.00	1516																X									
BC 021	1.00	1517																X									
BC 021D	1.00	1519																X									
BC 021S	1.00	1520																X									
CCV2	1.00	1521																X									
CCB2	1.00	1523																X									
BC 022	1.00	1524																									
BC 025	1.00	1525																X									
BC 026	1.00	1526																X									
BC 027	1.00	1528																X									
CCV3	1.00	1529																X									
CCB3	1.00	1530																X									
ZZZZZ	5.00	1532																									
ZZZZZ	5.00	1533																									
ZZZZZ	5.00	1535																									
ZZZZZ	5.00	1536																									
ZZZZZ	5.00	1537																									

AR309220

FORM XIV - IN 7/88

1 089

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:
Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001
Instrument ID Number: 5000 Method: CV
Start Date: 03/06/91 End Date: 03/06/91

Sample No.	D/F	Time	% R	Analytes																					
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	VN	ZN	CN
ZZZZZ	5.00	1538																									
ZZZZZ	5.00	1539																									
ZZZZZ	5.00	1541																									
ZZZZZ	5.00	1542																									
CCV4	1.00	1543																X									
CCB4	1.00	1545																X									
ZZZZZ	5.00	1546																									
ZZZZZ	5.00	1547																									
ZZZZZ	1.00	1548																									
ZZZZZ	1.00	1549																									
ZZZZZ	1.00	1551																									
ZZZZZ	1.00	1552																									
ZZZZZ	1.00	1553																									
ZZZZZ	1.00	1554																									
ZZZZZ	1.00	1555																									
CCV5	1.00	1557																X									
CCB5	1.00	1558																X									
ZZZZZ	1.00	1559																									
ZZZZZ	1.00	1600																									
ZZZZZ	1.00	1601																									
ZZZZZ	1.00	1603																									
ZZZZZ	1.00	1604																									
ZZZZZ	1.00	1605																									
ZZZZZ	1.00	1606																									
ZZZZZ	1.00	1608																									
CCV6	1.00	1609																X									
CCB6	1.00	1610																X									

AR309221

FORM XIV - IN

1 090

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:
Lab Code: IEA Case No.: B6B-006 SAS No.: SDG No.: BC_001
Instrument ID Number: 5000 Method: CV
Start Date: 03/10/91 End Date: 03/10/91

Sample No.	D/F	Time	% R	Analytes																						
				ALB	SBS	ABA	BBE	CDA	CAR	COU	CUE	FEB	PBG	MMN	HGI	NIK	SEG	ANA	TLV	ZNC	CN					
S0	1.00	1929													X											
S0.5	1.00	1930													X											
S1.0	1.00	1933													X											
S3.0	1.00	1935													X											
S5.0	1.00	1937													X											
S10.0	1.00	1941													X											
ICV4	1.00	1945													X											
ICB3	1.00	1947													X											
CRA2	1.00	1948													X											
CCV7	1.00	1950													X											
CCB7	1.00	1953													X											
PBW1	1.00	1954													X											
BC 015	1.00	1956													X											
BC 016	1.00	1958																								
BC 019	1.00	2000													X											
BC 019D	1.00	2003													X											
BC 019S	1.00	2005													X											
BC 020	1.00	2007													X											
BC 023	1.00	2008																								
BC 024	1.00	2010													X											
CCV8	1.00	2013													X											
CCB8	1.00	2016													X											

AR309222

FORM XIV - IN 7/88

1 091

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:
Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001
Instrument ID Number: 5000 Method: CV
Start Date: 03/14/91 End Date: 03/14/91

Sample No.	D/F	Time	% R	AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
				Analytes																							
S0	1.00	2025																X									
S0.5	1.00	2026																X									
S1.0	1.00	2028																X									
S3.0	1.00	2030																X									
S5.0	1.00	2032																X									
S10.0	1.00	2034																X									
ICV5	1.00	2036																X									
ICB4	1.00	2040																X									
CRA3	1.00	2042																X									
CCV9	1.00	2045																X									
CCB10	1.00	2046																X									
ZZZZZ	2.00	2047																									
ZZZZZ	1.00	2048																									
ZZZZZ	1.00	2049																									
ZZZZZ	1.00	2051																									
ZZZZZ	1.00	2052																									
ZZZZZ	1.00	2054																									
ZZZZZ	1.00	2055																									
ZZZZZ	1.00	2056																									
CCV10	1.00	2058																X									
CCB11	1.00	2059																X									
ZZZZZ	1.00	2100																									
ZZZZZ	1.00	2102																									
ZZZZZ	1.00	2103																									
ZZZZZ	1.00	2105																									
CCV11	1.00	2106																X									
CCB12	1.00	2108																X									
ZZZZZ	1.00	2109																									
ZZZZZ	1.00	2110																									
ZZZZZ	1.00	2112																									
ZZZZZ	1.00	2114																									
ZZZZZ	1.00	2115																									

AR309223

FORM XIV - IN

1 092

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:
Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001
Instrument ID Number: 5000 Method: CV
Start Date: 03/14/91 End Date: 03/14/91

Sample No.	D/F	Time	% R	Analytes																					
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZ	1.00	2116																									
ZZZZZ	1.00	2118																									
ZZZZZ	1.00	2119																									
ZZZZZ	1.00	2121																									
CCV12	1.00	2122																X									
CCB13	1.00	2124																X									
ZZZZZ	5.00	2125																									
ZZZZZ	5.00	2127																									
ZZZZZ	5.00	2128																									
ZZZZZ	5.00	2130																									
ZZZZZ	5.00	2131																									
ZZZZZ	5.00	2133																									
ZZZZZ	5.00	2135																									
ZZZZZ	5.00	2136																									
CCV13	1.00	2138																X									
CCB14	1.00	2139																X									
ZZZZZ	5.00	2140																									
ZZZZZ	5.00	2141																									
ZZZZZ	1.00	2143																									
ZZZZZ	1.00	2144																									
ZZZZZ	1.00	2145																									
CCV14	1.00	2148																X									
CCB15	1.00	2150																X									
ZZZZZ	1.00	2151																									
ZZZZZ	1.00	2152																									
ZZZZZ	1.00	2153																									
CCV15	1.00	2156																X									
CCB16	1.00	2157																X									
PBW2	1.00	2159																X									
BC 022	1.00	2201																X									
BC 022D	1.00	2203																X									
BC 022S	1.00	2204																X									

AR309224

FORM XIV - IN 7/88

1 093

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:
Lab Code: IEA Case No.: 868-CCC SAS No.: SDG No.: BC_001
Instrument ID Number: 5000 Method: CV
Start Date: 03/14/91 End Date: 03/14/91

Sample No.	D/F	Time	% R	Analytes																						
				ALB	SBS	ASA	BAE	BDA	CAD	CAR	CRO	CUE	FEB	PBG	MGN	MNG	HGI	NIK	SEG	AGA	NAL	TL	VN	ZN	CN
CCV16	1.00	2206															X								
CCB17	1.00	2208															X								

AR309225

FORM XIV - IN

1 094

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:
Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001
Instrument ID Number: 5000 Method: CV
Start Date: 03/15/91 End Date: 03/15/91

Sample No.	D/F	Time	% R	Analytes																						
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1005																X								
S0.5	1.00	1006																X								
S1.0	1.00	1007																X								
S3.0	1.00	1009																X								
S5.0	1.00	1011																X								
S10.0	1.00	1013																X								
ICV9	1.00	1015																X								
ICB7	1.00	1017																X								
CRA4	1.00	1018																X								
CCV17	1.00	1020																X								
CCB19	1.00	1021																X								
PBW3	1.00	1022																X								
BC 016	1.00	1024																X								
BC 016D	1.00	1025																X								
BC 016S	1.00	1027																X								
CCV18	1.00	1029																X								
CCB20	1.00	1030																X								

AR309226

FORM XIV - IN 7/88

1 095

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ENVIROFORMS/CLP 788

14

Analysis Run Log

Lab Name: IEA, INC. Contract:
Lab Code: IEA Case No.: 868-006 SAS No.: SDG No.: BC_001
Instrument ID Number: 5000 Method: CV
Start Date: 03/19/91 End Date: 03/19/91

Sample No.	D/F	Time	% R	Analytes																						
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1130																X									
S0.5	1.00	1131																X									
S1.0	1.00	1132																X									
S3.0	1.00	1133																X									
S5.0	1.00	1135																X									
S10.0	1.00	1137																X									
ICV10	1.00	1139																X									
ICB8	1.00	1140																X									
CRA5	1.00	1141																X									
CCV19	1.00	1142																X									
CCB22	1.00	1144																X									
PBW5	1.00	1145																X									
BC 023	1.00	1146																X									
BC 023D	1.00	1147																X									
BC 023S	1.00	1149																X									
CCV20	1.00	1150																X									
CCB23	1.00	1152																X									

AR309227

FORM XIV - IN

1 096

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IEA, INC.
CASE 868-006
SDG BC_001
METALS RAW DATA

1 OF 1

AR309228

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ICP RAW DATA

AR309229

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BC-001#1 jmo 3-22-91

Lab ~~GN-001~~ ICP DATA SHEET As: 3-22-91

Lead 86A-6 Prep Date: 3-5-91 / 3-13-91 Method ~~GN-001#1~~ BC-001# jmo 3-22-91

Analysis	Cmpl	Sample ID	Batch	Initial Weight/Volume	Final Volume	Dilution Factor
1	1	WCal STD				
2	2	WCal STD				
3	3	STD				
4	4	blank				
5	5	blank				
6	6	ICV 1				
7	7	ICB 1				
8	8	CRI 1				
9	9	ICSA 1				
10	10	ICSAB 1				
11	11	LCSW	64-4			
12	12	PBW	↓			
13	13	LCSW	~~72-4~~ 73-1	01/26/91		
14	14	PBW	↓			
15	15	BC-002	64-4			
16	16	BC-002	↓			1:10
17	17	CCV 1				
18	18	CCB1				
19	19	BC-003	64-4			
20	20	BC-003				1:10
21	21	BC-004				
22	22	BC-004D				
23	23	BC-004S				
24	24	BC-004L				5X
25	25	BC-005				
26	26	BC-005D				
27	27	BC-005S				
28	28	BC-005L	↓			5X
29	29	CCV2				
30	30	CCB2				
31	31	BC-006	~~72-4~~ 73-1			
32	32	BC-006D				
33	33	BC-006S				
34	34	BC-006L	↓			5X
35	35	BC-007	64-4			

Analyst: Mark Ale Reviewed by: Michael One Date: 3-25-91

Instrument: ICP Reviewed by: Date:

AR300230

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ICP DATA SHEET
(CONT.)

Analysis	Cmpd.	Sample ID#	Batch#	Initial Weight/ Volume	Final Volume	Dilution Factor
36	36	BC-008	64-4			
37	37	BC-009	↓			
38	38	BC-010	↓			
39	39	BLK				
40	40	CCV 3				
41	41	CCB 3				
42	42	BC-011	64-4			
43	43	BC-012	↓			
44	44	BC-025	↓			
45	45	BC-026	↓			
46	46	BC-027	↓			
47	47	ICSA 2				
48	48	ICSAB2				
49	49	CRI 2				
50	50	CCV-2mf 4				
51	51	CCB 4				
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
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66						
67						
68						
69						

AR309231

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Method Name: GN_00101

Comment:

Read Delay : 40 sec Replicates : 2 Format name : display

Analysis Number	AS Posn	Sample ID	Sequence Name	Dilution	Weight / Volux
1	1	wcal std	blkseq		
2	2	wcal std	blkseq		
3	3	std	blkseq		
4	4	blank	blkseq		
5	5	blank	blkseq		
6	6	ICV1	blkseq		
7	7	ICB1	blkseq		
8	8	CRI1	blkseq		
9	9	ICSA1	blkseq		
10	10	ICSAB1	blkseq		
11	11	LCSW	blkseq		
12	12	PBW	blkseq		
13	13	LCSW	blkseq		
14	14	PBW	blkseq		
15	15	BC_002	Mn		
16	16	BC_002	Mn	1:10	
17	17	CCV1	blkseq		
18	18	CCB1	blkseq		
19	19	BC_003	Mn		
20	20	BC_003	Mn	1:10	
21	21	BC_004	blkseq		
22	22	BC_004D	blkseq		
23	23	BC_004S	blkseq		
24	24	BC_004L	blkseq		
25	25	BC_005	blkseq		
26	26	BC_005D	blkseq		
27	27	BC_005S	blkseq		
28	28	BC_005L	blkseq		
29	29	CCV2	blkseq		
30	30	CCB2	blkseq		
31	31	BC_006	blkseq		
32	32	BC_006D	blkseq		
33	33	BC_006S	blkseq		
34	34	BC_006L	blkseq		
35	35	BC_007	blkseq		
36	36	BC_008	blkseq		
37	37	BC_009	blkseq		
38	38	BC_010	blkseq		
39	39	BLK	blkseq		
40	40	CCV3	blkseq		
41	41	CCB3	blkseq		
42	42	BC_011	Mn		
43	43	BC_012	Mn		
44	44	BC_025	Mn		
45	45	BC_026	Mn		
46	46	BC_027	Mn		
47	47	ICSA2	blkseq		
48	48	ICSAB2	blkseq		
49	49	CRI2	blkseq		
50	50	CCV4	blkseq		
51	51	CCB4	blkseq		

AR309232

2 0003

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ICP STANDARDS LOG

Method# ~~BN-001#1~~ BC-001#1 JMO 3-26-91 Instrument# ICP Prep date: 3-5-91/3-13-91

SDG# ~~BN-001~~ BC-001 JMO 3-26-91 Analyst: Mel Hill Date: 3-22-91

IEA# B68-6

Standards	Manufacturer	Prep Date	
Cal. Std.	Baker / Ricca / Perkin Elmer	3-19-91	STD #407
ICV	Solns. plus / Ricca	3-20-91	STD #410
CCV	Ricca / Baker / Solns. plus	3-11-91	STD # 368
ICSA	Perkin Elmer	3-11-91	STD # 36[illegible]
ICSAB	Perkin Elmer / Solns plus	3-11-91	STD # 36[illegible]
CRI	Spex	3-19-91	STD # 404
Blank	Baker	3-20-91	STD # 421

AR309233

Reviewed by: Michael Bal Date: 3-25-91

Reviewed by: _____ Date: _____

COMMENTS:

USE: Zn, Mn

2 0004

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```
03/22/91 15:42
wcal std        rep   1  ZNa213     em      17809.9 conc 2000.0
                rep   1  MNa257     em      24472.7 conc 1500.0
                rep   2  ZNa213     em      18314.2 conc 2000.0
                rep   2  MNa257     em      27007.5 conc 1500.0
wcal std
03/22/91 15:42
    ZNa213      av   18062.0              sd    356.56 %cv   1.97 conc  2000.0
    MNa257      av   24840.1              sd    234.68 %cv   0.88 conc  1500.0

03/22/91 15:44
wcal std        rep   1  ZNa213     em      20237.5 conc 2000.0
                rep   1  MNa257     em      29088.8 conc 1500.0
                rep   2  ZNa213     em      20027.9 conc 2000.0
                rep   2  MNa257     em      29135.8 conc 1500.0
wcal std
03/22/91 15:44
    ZNa213      av   20132.7              sd    148.25 %cv   0.74 conc  2000.0
    MNa257      av   29112.3              sd     33.21 %cv   0.11 conc  1500.0

03/22/91 15:46
std             rep   1  ZNa213     em      22119.2 conc 2000.0
                rep   1  MNa257     em      31330.9 conc 1500.0
                rep   2  ZNa213     em      22040.4 conc 2000.0
                rep   2  MNa257     em      31282.2 conc 1500.0
std
03/22/91 15:47
    ZNa213      av   22079.8              sd     55.77 %cv   0.25 conc  2000.0
    MNa257      av   31306.5              sd     34.37 %cv   0.11 conc  1500.0

03/22/91 15:49
blank           rep   1  ZNa213     em         21.3
                rep   1  MNa257     em         23.7
                rep   2  ZNa213     em         15.6
                rep   2  MNa257     em         49.1
blank
03/22/91 15:49
    ZNa213      av      18.5              sd      4.02 %cv  21.78
    MNa257      av      36.4              sd     17.96 %cv  49.38

03/22/91 15:51
blank           rep   1  ZNa213     em         36.9
                rep   1  MNa257     em         22.7
                rep   2  ZNa213     em         51.7
                rep   2  MNa257     em         39.9
blank
03/22/91 15:51
    ZNa213      av      44.3              sd     10.44 %cv  23.56
    MNa257      av      31.3              sd     12.18 %cv  38.95

03/22/91 15:53
ICV1            rep   1  ZNa213     conc     770.5 ppb
                rep   1  MNa257     conc     600.5 ppb
                rep   2  ZNa213     conc     747.8 ppb
                rep   2  MNa257     conc     587.1 ppb
ICV1
03/22/91 15:53
    ZNa213      av     769.2 ppb           sd      1.88 %cv   0.24
    MNa257      av     593.8 ppb           sd      9.45 %cv   1.59
```

AR309234

2 0005

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```
03/22/91 15:55
ICB1            rep   1  ZNa213     conc       1.1 ppb
                rep   1  MNa257     conc      -1.4 ppb
                rep   2  ZNa213     conc      -1.5 ppb
                rep   2  MNa257     conc       0.3 ppb
ICB1
03/22/91 15:56
    ZNa213      av      -0.2 ppb          sd       1.84 %cv 1010.5
    MNa257      av      -0.5 ppb          sd       1.19 %cv 214.48

03/22/91 15:58
CRI1            rep   1  ZNa213     conc      38.7 ppb
                rep   1  MNa257     conc      28.3 ppb
                rep   2  ZNa213     conc      40.0 ppb
                rep   2  MNa257     conc      27.9 ppb
CRI1
03/22/91 15:58
    ZNa213      av      39.3 ppb          sd       0.96 %cv   2.47
    MNa257      av      28.1 ppb          sd       0.24 %cv   0.91

03/22/91 16:00
ICSA1           rep   1  ZNa213     conc      74.3 ppb
                rep   1  MNa257     conc      18.5 ppb
                rep   2  ZNa213     conc      70.7 ppb
                rep   2  MNa257     conc      19.3 ppb
ICSA1
03/22/91 16:00
    ZNa213      av      72.5 ppb          sd       2.55 %cv   3.51
    MNa257      av      18.9 ppb          sd       0.57 %cv   3.04

03/22/91 16:02
ICSAB1          rep   1  ZNa213     conc     953.2 ppb
                rep   1  MNa257     conc     478.5 ppb
                rep   2  ZNa213     conc     955.2 ppb
                rep   2  MNa257     conc     478.7 ppb
ICSAB1
03/22/91 16:03
    ZNa213      av     954.2 ppb          sd       1.38 %cv   0.14
    MNa257      av     478.6 ppb          sd       0.15 %cv   0.03

03/22/91 16:05
LCSW            rep   1  ZNa213     conc     741.2 ppb
                rep   1  MNa257     conc     574.1 ppb
                rep   2  ZNa213     conc     751.2 ppb
                rep   2  MNa257     conc     571.1 ppb
LCSW
03/22/91 16:05
    ZNa213      av     746.2 ppb          sd       7.08 %cv   0.95
    MNa257      av     573.6 ppb          sd       3.58 %cv   0.62

03/22/91 16:07
FBW             rep   1  ZNa213     conc       4.3 ppb
                rep   1  MNa257     conc       0.4 ppb
                rep   2  ZNa213     conc       2.7 ppb
                rep   2  MNa257     conc      -0.6 ppb
FBW
03/22/91 16:07
    ZNa213      av       3.5 ppb          sd       1.14 %cv  32.33
    MNa257      av      -0.1 ppb          sd       0.71 %cv 654.28
```

AR309235

2-0006

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```
03/22/91 16:09
LCSW            rep   1  ZNa213     conc      743.3 ppb
                rep   1  MNa257     conc      580.6 ppb
                rep   2  ZNa213     conc      756.2 ppb
                rep   2  MNa257     conc      574.1 ppb
LCSW
03/22/91 16:10
    ZNa213      av     749.8 ppb         sd      9.09 %cv   1.21
    MNa257      av     578.4 ppb         sd      3.19 %cv   0.55

03/22/91 16:12
PBW             rep   1  ZNa213     conc        2.6 ppb
                rep   1  MNa257     conc        0.5 ppb
                rep   2  ZNa213     conc        3.1 ppb
                rep   2  MNa257     conc       -1.2 ppb
PBW
03/22/91 16:12
    ZNa213      av       2.9 ppb         sd      0.35 %cv  12.13
    MNa257      av      -0.4 ppb         sd      1.24 %cv 355.17

03/22/91 16:14
BC_002          rep   1  MNa257     conc   25475.6 ppb
                rep   2  MNa257     conc   25147.0 ppb
BC_002
03/22/91 16:14
    MNa257      av   25311.3 ppb         sd    232.37 %cv   0.92

03/22/91 16:16
BC_002          rep   1  MNa257     conc   23678.2 ppb
                rep   2  MNa257     conc   23108.9 ppb
BC_002
03/22/91 16:17
    MNa257      av   23393.5 ppb         sd    402.60 %cv   1.72

03/22/91 16:19
CCV1            rep   1  ZNa213     conc      957.3 ppb
                rep   1  MNa257     conc     1020.1 ppb
                rep   2  ZNa213     conc      962.0 ppb
                rep   2  MNa257     conc      990.9 ppb
CCV1
03/22/91 16:19
    ZNa213      av     959.7 ppb         sd      3.34 %cv   0.35
    MNa257      av    1005.5 ppb         sd     20.69 %cv   2.06

03/22/91 16:21
CCB1            rep   1  ZNa213     conc        1.1 ppb
                rep   1  MNa257     conc        0.5 ppb
                rep   2  ZNa213     conc        0.8 ppb
                rep   2  MNa257     conc        0.9 ppb
CCB1
03/22/91 16:21
    ZNa213      av       0.8 ppb         sd      0.47 %cv  59.47
    MNa257      av       0.7 ppb         sd      0.29 %cv  39.
```

AR309236

```
03/22/91 16:24
BC_003          rep   1  MNa257     conc   21974.5 ppb
                rep   2  MNa257     conc   21614.7 ppb
BC_003
03/22/91 16:24
    MNa257      av   21794.6 ppb         sd    254.48 %cv   1.17
```

2 0007

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```
03/22/91 16:26
BC_003          rep   1  MNa257     conc   20307.4 ppb
                rep   2  MNa257     conc   20234.5 ppb
BC_003
03/22/91 16:26
    MNa257      av   20271.0 ppb         sd      51.53 %cv   0.25

03/22/91 16:28
BC_004          rep   1  ZNa213     conc    3291.1 ppb
                rep   1  MNa257     conc      28.8 ppb
                rep   2  ZNa213     conc    3277.0 ppb
                rep   2  MNa257     conc      25.9 ppb
BC_004
03/22/91 16:28
    ZNa213      av    3284.1 ppb         sd       9.97 %cv   0.30
    MNa257      av      27.3 ppb         sd       2.00 %cv   7.33

03/22/91 16:31
BC_004D         rep   1  ZNa213     conc    3245.2 ppb
                rep   1  MNa257     conc      25.2 ppb
                rep   2  ZNa213     conc    3251.8 ppb
                rep   2  MNa257     conc      25.6 ppb
BC_004D
03/22/91 16:31
    ZNa213      av    3258.5 ppb         sd       9.47 %cv   0.29
    MNa257      av      25.4 ppb         sd       0.26 %cv   1.02

03/22/91 16:33
BC_004E         rep   1  ZNa213     conc    3583.4 ppb
                rep   1  MNa257     conc     451.7 ppb
                rep   2  ZNa213     conc    3534.1 ppb
                rep   2  MNa257     conc     453.2 ppb
BC_004E
03/22/91 16:34
    ZNa213      av    3558.7 ppb         sd      34.85 %cv   0.98
    MNa257      av     452.4 ppb         sd       1.01 %cv   0.22

03/22/91 16:36
BC_004L         rep   1  ZNa213     conc     628.5 ppb
                rep   1  MNa257     conc       3.3 ppb
                rep   2  ZNa213     conc     630.8 ppb
                rep   2  MNa257     conc       4.5 ppb
BC_004L
03/22/91 16:36
    ZNa213      av     629.7 ppb         sd       1.65 %cv   0.26
    MNa257      av       3.9 ppb         sd       0.81 %cv  20.74

03/22/91 16:39
BC_005          rep   1  ZNa213     conc    2209.3 ppb
                rep   1  MNa257     conc      30.5 ppb
                rep   2  ZNa213     conc    2155.4 ppb
                rep   2  MNa257     conc      29.7 ppb
BC_005
03/22/91 16:39
    ZNa213      av    2182.4 ppb         sd      38.15 %cv   1.75
    MNa257      av      30.1 ppb         sd       0.57 %cv   1.88

03/22/91 16:41
BC_005D         rep   1  ZNa213     conc    2361.9 ppb
```

AR309237

2 0008

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	rep	1	MNa257	conc	34.4 ppb			
	rep	2	ZNa213	conc	2348.9 ppb			
	rep	2	MNa257	conc	34.3 ppb			
BC_005D								
03/22/91 16:41								
ZNa213	av	2355.4 ppb		sd	9.17	%cv	0.39	
MNa257	av	34.3 ppb		sd	0.06	%cv	0.19	
03/22/91 16:44								
BC_005S	rep	1	ZNa213	conc	2902.0 ppb			
	rep	1	MNa257	conc	522.3 ppb			
	rep	2	ZNa213	conc	2906.8 ppb			
	rep	2	MNa257	conc	522.6 ppb			
BC_005S								
03/22/91 16:44								
ZNa213	av	2904.4 ppb		sd	3.40	%cv	0.12	
MNa257	av	522.5 ppb		sd	0.18	%cv	0.03	
03/22/91 16:46								
BC_005L	rep	1	ZNa213	conc	383.4 ppb			
	rep	1	MNa257	conc	4.0 ppb			
	rep	2	ZNa213	conc	385.8 ppb			
	rep	2	MNa257	conc	4.5 ppb			
BC_005L								
03/22/91 16:47								
ZNa213	av	384.6 ppb		sd	1.69	%cv	0.44	
MNa257	av	4.3 ppb		sd	0.33	%cv	7.84	
03/22/91 16:49								
CCV2	rep	1	ZNa213	conc	963.8 ppb			
	rep	1	MNa257	conc	1004.2 ppb			
	rep	2	ZNa213	conc	979.5 ppb			
	rep	2	MNa257	conc	995.6 ppb			
CCV2								
03/22/91 16:49								
ZNa213	av	971.6 ppb		sd	11.05	%cv	1.14	
MNa257	av	999.9 ppb		sd	6.05	%cv	0.61	
03/22/91 16:52								
CCB2	rep	1	ZNa213	conc	0.1 ppb			
	rep	1	MNa257	conc	0.6 ppb			
	rep	2	ZNa213	conc	-2.6 ppb			
	rep	2	MNa257	conc	0.1 ppb			
CCB2								
03/22/91 16:52								
ZNa213	av	-1.3 ppb		sd	1.95	%cv	155.50	
MNa257	av	0.3 ppb		sd	0.35	%cv	105.23	
03/22/91 16:54								
BC_006	rep	1	ZNa213	conc	3384.0 ppb			
	rep	1	MNa257	conc	30.9 ppb			
	rep	2	ZNa213	conc	3304.2 ppb			
	rep	2	MNa257	conc	30.6 ppb			
BC_006								
03/22/91 16:55								
ZNa213	av	3344.1 ppb		sd	56.44	%cv	1.69	
MNa257	av	30.8 ppb		sd	0.17	%cv	0.56	
03/22/91 16:57								
BC_006D	rep	1	ZNa213	conc	3335.7 ppb			

AR309238

2 0009

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```
                rep   1  MNa257     conc      31.3 ppb
                rep   2  ZNa213     conc    3342.2 ppb
                rep   2  MNa257     conc      32.9 ppb
BC_004D
03/22/91 16:57
    ZNa213      av    3339.0 ppb        sd      4.63 %cv   0.14
    MNa257      av      32.1 ppb        sd      1.13 %cv   3.53

03/22/91 16:59
BC_004E         rep   1  ZNa213     conc    3709.2 ppb
                rep   1  MNa257     conc     524.8 ppb
                rep   2  ZNa213     conc    3691.2 ppb
                rep   2  MNa257     conc     533.2 ppb
BC_004E
03/22/91 17:00
    ZNa213      av    3700.2 ppb        sd     12.76 %cv   0.34
    MNa257      av     530.0 ppb        sd      4.53 %cv   0.86

03/22/91 17:02
BC_004L         rep   1  ZNa213     conc     457.5 ppb
                rep   1  MNa257     conc       5.0 ppb
                rep   2  ZNa213     conc     452.3 ppb
                rep   2  MNa257     conc       5.2 ppb
BC_004L
03/22/91 17:02
    ZNa213      av     454.9 ppb        sd      3.65 %cv   0.56
    MNa257      av       5.1 ppb        sd      0.11 %cv   2.23

03/22/91 17:05
BC_007          rep   1  ZNa213     conc    2236.8 ppb
                rep   1  MNa257     conc      32.2 ppb
                rep   2  ZNa213     conc    2246.8 ppb
                rep   2  MNa257     conc      31.0 ppb
BC_007
03/22/91 17:05
    ZNa213      av    2241.8 ppb        sd      7.07 %cv   0.32
    MNa257      av      31.6 ppb        sd      0.90 %cv   2.83

03/22/91 17:07
BC_008          rep   1  ZNa213     conc      12.0 ppb
                rep   1  MNa257     conc       0.9 ppb
                rep   2  ZNa213     conc       9.0 ppb
                rep   2  MNa257     conc      -0.1 ppb
BC_008
03/22/91 17:07
    ZNa213      av      10.5 ppb        sd      2.15 %cv  20.43
    MNa257      av       0.4 ppb        sd      0.75 %cv 177.89

03/22/91 17:10
BC_009          rep   1  ZNa213     conc       5.6 ppb
                rep   1  MNa257     conc       1.8 ppb
                rep   2  ZNa213     conc       7.6 ppb
                rep   2  MNa257     conc       0.1 ppb
BC_009
03/22/91 17:10
    ZNa213      av       6.6 ppb        sd      1.39 %cv  21.22
    MNa257      av       0.9 ppb        sd      1.20 %cv 126.57

03/22/91 17:12
BC_010          rep   1  ZNa213     conc      18.9 ppb
```

AR309239

2 0010

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```
                rep   1  MNa257     conc        1.0 ppb
                rep   2  ZNa213     conc       13.9 ppb
                rep   2  MNa257     conc        0.4 ppb
BC_010
03/22/91 17:12
    ZNa213      av      16.4 ppb        sd      3.54 %cv  21.53
    MNa257      av       0.8 ppb        sd      0.29 %cv  35.09

03/22/91 17:14
BLK             rep   1  ZNa213     conc        0.8 ppb
                rep   1  MNa257     conc       -1.3 ppb          window edge
                rep   2  ZNa213     conc        2.7 ppb
                rep   2  MNa257     conc        0.2 ppb
BLK
03/22/91 17:15
    ZNa213      av       1.8 ppb        sd      1.34 %cv  74.51
    MNa257      av      -0.5 ppb        sd      1.04 %cv 192.34

03/22/91 17:17
CCV3            rep   1  ZNa213     conc      961.6 ppb
                rep   1  MNa257     conc      987.1 ppb
                rep   2  ZNa213     conc      981.8 ppb
                rep   2  MNa257     conc      973.8 ppb
CCV3
03/22/91 17:17
    ZNa213      av     971.7 ppbv       sd     14.29 %cv   1.47
    MNa257      av     980.5 ppbv       sd      9.40 %cv   0.96

03/22/91 17:19
CCB3            rep   1  ZNa213     conc        0.6 ppb
                rep   1  MNa257     conc       -2.1 ppb          window edge
                rep   2  ZNa213     conc       -0.2 ppb
                rep   2  MNa257     conc        0.6 ppb
CCB3
03/22/91 17:20
    ZNa213      av       0.2 ppb        sd      0.57 %cv 282.43
    MNa257      av      -0.8 ppb        sd      1.91 %cv 254.27

03/22/91 17:22
BC_011          rep   1  MNa257     conc      749.0 ppb
                rep   2  MNa257     conc      747.2 ppb
BC_011
03/22/91 17:22
    MNa257      av     748.1 ppb        sd      1.24 %cv   0.16

03/22/91 17:24
BC_012          rep   1  MNa257     conc      648.8 ppb
                rep   2  MNa257     conc      645.0 ppb
BC_012
03/22/91 17:24
    MNa257      av     646.9 ppb        sd      2.71 %cv   0.42

03/22/91 17:26
BC_025          rep   1  MNa257     conc       -0.1 ppb
                rep   2  MNa257     conc       -1.6 ppb          window edge
BC_025
03/22/91 17:26
    MNa257      av      -0.8 ppb        sd      1.07 %cv 125.40

03/22/91 17:28
```

AR309240

2 0011

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```
BC_024          rep   1  MNa257     conc        0.3 ppb
                rep   2  MNa257     conc       -0.1 ppb
BC_024
03/22/91 17:28
    MNa257      av        0.1 ppb          sd       0.29 %cv 347.41

03/22/91 17:30
BC_027          rep   1  MNa257     conc       -0.7 ppb
                rep   2  MNa257     conc        1.7 ppb
BC_027
03/22/91 17:30
    MNa257      av        0.5 ppb          sd       1.73 %cv 350.06

03/22/91 17:32
ICSA2           rep   1  ZNa213     conc       70.5 ppb
                rep   1  MNa257     conc       21.0 ppb
                rep   2  ZNa213     conc       73.6 ppb
                rep   2  MNa257     conc       18.9 ppb
ICSA2
03/22/91 17:33
    ZNa213      av       72.0 ppb          sd       2.17 %cv   3.01
    MNa257      av       20.0 ppb          sd       1.52 %cv   7.62

03/22/91 17:35
ICSAB2          rep   1  ZNa213     conc      965.7 ppb
                rep   1  MNa257     conc      471.3 ppb
                rep   2  ZNa213     conc     1014.3 ppb
                rep   2  MNa257     conc      467.8 ppb
ICSAB2
03/22/91 17:35
    ZNa213      av      990.0 ppb/        sd      34.41 %cv   3.48
    MNa257      av      469.6 ppb/        sd       2.52 %cv   0.54

03/22/91 17:37
CRI2            rep   1  ZNa213     conc       34.8 ppb
                rep   1  MNa257     conc       28.1 ppb
                rep   2  ZNa213     conc       36.7 ppb
                rep   2  MNa257     conc       29.8 ppb
CRI2
03/22/91 17:37
    ZNa213      av       36.8 ppb/        sd       2.78 %cv   7.55
    MNa257      av       28.9 ppb/        sd       1.22 %cv   4.22

03/22/91 17:39
CCV4            rep   1  ZNa213     conc      953.3 ppb
                rep   1  MNa257     conc      979.7 ppb
                rep   2  ZNa213     conc      980.6 ppb
                rep   2  MNa257     conc      978.2 ppb
CCV4
03/22/91 17:40
    ZNa213      av      947.0 ppb/        sd      19.43 %cv   2.01
    MNa257      av      978.9 ppb/        sd       1.11 %cv   0.11
```

AR309241

```
03/22/91 17:41
CCB4            rep   1  ZNa213     conc       -0.2 ppb
                rep   1  MNa257     conc       -0.3 ppb
                rep   2  ZNa213     conc       -2.3 ppb
                rep   2  MNa257     conc        0.3 ppb
CCB4
03/22/91 17:42
```

2 0012

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ZNa213	av	-1.3 ppb	sd	1.45 %cv 114.65
MNa257	av	0.0 ppb	sd	0.47 %cv 3483.8

AR309242

2 0013

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MERCURY

AR309243

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MERCURY PREP and ANALYSIS

00162

Prep date 6 mar 91
Bath Temp 95°C
Spike Conc. 1ppb
Vendor MALLINCKRODT

Analysis Date 6 mar 91
Lamp Energy 61
Corr Coeff. 0.99964

	Sample ID #	Weight	Volume	Dil. factor	ABS.	Time	Value from curve	Reported Value	% Recovery
	S 0				0.001	1455			
	S 0.5 (A)				0.017	1456			
	S 1.0				0.032	1457			
	S 3.0				0.094	1459			
	S 5.0				0.152	1500			
	S 10.0				0.290	1502			
†	ICV (E) 4.0 ppb				0.119	1504	3.99		99.7%
	ICB				0.001	1505			
†	CRA (E) 0.2 ppb				0.009	1507	0.19		92.7%
†	CCV 1 (E) 6.0 ppb				0.174	1508	5.89		98.1%
	CCB 1				0.001	1510	-0.09		
	PBW				0.001	1511	-0.09		
	BC013		100mL		0.001	1512	-0.09	<0.0005	
	BC014				0.001	1513	-0.09	<0.0005	
	BC017				0.067	1515	2.19	0.0022	
	BC018				0.065	1516	2.12	0.0021	
	BC021				0.001	1517	-0.09	<0.0005	
	BC021 D				0.001	1519	-0.09	<0.0005	
	BC021 S				0.031	1520	0.95	—	94.6%
†	CCV 2				0.170	1521	5.75		95.8%
	CCB 2				0.001	1523	-0.09		
	BC022		100mL		0.001	1524	-0.09	<0.0005	
	BC025				0.001	1525	-0.09	<0.0005	
	BC026				0.001	1526	-0.09	<0.0005	
	BC027				0.001	1528	-0.09	<0.0005	
†	CCV 3				0.170	1529	5.75		95.8%
	CCB 3				0.001	1530	-0.09		

Reviewed by: Dianne Saunders
Date: 3-9-91

Prep Analyst: M.B.
Analyst: M.B.

AR309244

* STD # 333
† STD # 336

2 0014

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MERCURY PREP and ANALYSIS

Prep date 6 MAR 91
Bath Temp 95°C
Spike Conc. 1 ppb Vendor MALLINCKRODT

Analysis Date 6 MAR 91
Lamp Energy MBS 95°C G1
Corr Coeff. 0.99964

Sample ID #	Weight	Volume	Dil. factor	ABS.	Time	Value from curve	Reported Value	% Recovery
T267-58(0)-1	(5X)	100mL	5X	0.001	1532	-0.09	<0.0025	
-1S				0.090	1533	2.99	—	74.6%
T747-27-1				0.001	1535	-0.09	<0.0025	
-1D				0.001	1536	-0.09	<0.0025	
-1S				0.098	1537	3.26	—	81.5%
T1167-1-4				0.002	1538	-0.06	<0.0025	
-4S				0.113	1539	3.78	—	94.5%
T-BLANK-198				0.002	1541	-0.06	<0.0025	
-198S				0.115	1542	3.85	—	96.2
T CCV4				0.172	1543	5.82		96.9%
CCB4				0.001	1545	-0.09		
T-BLANK-199	(5X)	100mL	5X	0.001	1546	-0.09	<0.0025	
-199S				0.110	1547	3.68	—	91.9%
E860-102(0)-1		100mL		0.001	1548	-0.09	<0.0005	
-1D				0.001	1549	-0.09	<0.0005	
-2				0.001	1551	-0.09	<0.0005	
-2S				0.031	1552	0.95	—	94.6%
E-BLANK-82				0.001	1553	-0.09	<0.0005	
204-428(0)-1E				0.001	1554	-0.09	<0.0005	
-2E				0.001	1555	-0.09	<0.0005	
T CCV5				0.171	1557	5.78		96.4%
CCB5				0.001	1558	-0.09		
204-429(0)-1		100mL		0.001	1559	-0.09	<0.0005	
-2				0.001	1600	-0.09	<0.0005	
-3				0.001	1601	-0.09	<0.0005	
-3D				0.001	1603	-0.09	<0.0005	
-3S				0.032	1604	0.98	—	98.0

Reviewed by: Diane Hounday
Date: 3-8-91

Prep Analyst: [illegible]
Analyst: [illegible]

T STD # 336

2 0015

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MERCURY PREP and ANALYSIS

0016

Prep date 6 MAR 91
Bath Temp 95°C
Spike Conc. 1 ppb Vendor MALLINCKRODT

Analysis Date 6 MAR 91
Lamp Energy 61
Corr Coeff. 0.99964

Sample ID #	Weight	Volume	Dil. factor	ABS.	Time	Value from curve	Reported Value	% Recovery
204-429(0)-4		100mL		0.001	1605	-0.09	<0.0005	
147-169-1				0.001	1606	-0.09	<0.0005	
1176-1-1				0.005	1608	0.05	<0.0005	
+ CCV6				0.169	1609	5.72		95.3%
CCB6				0.001	1610	-0.09		
(HOOD DUST)	0.20g			0.015		0.39	0.19 mg/kg	

AR309246

Reviewed by: Dianne Hundley
Date: 3-8-91
+ STD # 336

Prep Analyst: [illegible]
Analyst: [illegible]

2 0016

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MERCURY PREP and ANALYSIS

00160

Prep date 3-10-91 | Analysis Date 3-10-91
Bath Temp N.A. | Lamp Energy 61
Spike Conc. 1.0 ppb Vendor MALLINCKRODT | Corr Coeff. 0.9997

	Sample ID #	Weight	Volume	Dil. factor	ABS.	Time	Value from curve	Reported Value	% Recovery
	S0		100ml		0.000	1929			
	S0.5				0.011	1930			
*	S 1.0				0.022	1933			
*	S 3.0				0.069	1935			
*	S 5.0				0.114	1937			
*	S 10.0				0.218	1941			
+	ICV 4.0 ppb				0.088	1945	3.96		99.0
	ICB				0.001	1947	<		
+	CRA 0.2 ppb				0.005	1948	0.177		88.5
+	CCV1 6.0 ppb				0.136	1950	6.16		102.6
	CCB1				0.000	1953	<		
	PBW1				0.000	1954	<		
	BC-015		100ml		0.000	1956	<		
	BC-016				0.001	1958	<		
	BC-017				0.058	2000	2.60	0.0026 mg/L	
	BC-019D				0.057	2003	2.55		1.94% * RPD
	BC-019S				0.084	2005	3.78		123.0
	BC-020				0.007	2007	0.27	0.00027 mg/L	
	BC-023				0.000	2008	<		
	BC-024				0.000	2010	<		
+	CCV2				0.137	2013	6.20		103.3
	CCB2				0.001	2016	<		

AR309244

Reviewed by: [signature]
Date: 3-11-91

Prep Analyst: [signature]
Analyst: [signature]

* Std # 353
+ Std # 356

2 0017

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MERCURY PREP and ANALYSIS

Prep date 14 MAR 91
Bath Temp 95°C
Spike Conc. 1 ppb Vendor MALLINCKRODT

Analysis Date 3-14-91
Lamp Energy 61
Corr Coeff. 0.99991

SDG : GN-155

	Sample ID #	Weight	Volume	Dil. factor	ABS.	Time	Value from curve	Reported Value	% Recovery
	S 0				0.001	20:25			
*	S 0.5 (A)				0.015	20:26			
*	S 1.0				0.029	20:28			
*	S 3.0				0.081	20:30			
*	S 5.0				0.130	20:32			
*	S 10.0				0.264	20:34			
+	ICV (E) 4.0ppb				0.108	20:36	4.07		101.6
	ICB				0.001	20:40			
+	CRA (E) 0.2 ppb				0.006	20:43	0.166		82.9
+	CCV1 (E) 6.0ppb				0.153	20:45	5.79		96.4
	CCB1				0.001	20:46	-0.025		
	LCSS (ERA209)	0.25g	50mL	2X	0.137	20:47	5.12		
	PBS (896651)	0.20g			0.000	20:49	-0.064		
	GN-155	0.21g			0.007	20:49	0.204		
	GN-156	0.23g			0.002	20:51	0.013		
	GN-157	0.22g			0.003	20:52	0.051		
	GN-158	0.24g			0.003	20:54	0.051		
	GN-159	0.23g			0.005	20:55	0.128		
	GN-160	0.25g			0.008	20:56	0.242		
+	CCV2				0.149	20:58	5.633		93.9
	CCB2				0.003	20:59	0.051		
	GN-161	0.25g			0.011	21:00	0.357		
	GN-162	0.21g			0.004	21:02	0.089		
	GN-162 D	0.25g			0.004	21:03	0.089		
	GN-162 S	0.25g			0.027	21:05	0.969		
+	CCV3				0.150	21:06	5.67		94.5
	CCB3				0.001	21:08	-0.025		

Reviewed by: Diane Hamilton
Date: 3-15-91

Prep Analyst: M Bonner
Analyst: Mark Fella

* STD # 379
\+ STD # 382

BC-001 total Hg

AR309248

2 0018

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MERCURY PREP and ANALYSIS

00

Prep date 14 MAR 91
Bath Temp 95°C
Spike Conc. 1 ppb Vendor MALLINCKRODT

Analysis Date 3-14-91
Lamp Energy 61
Corr Coeff. 0.99991

Sample ID #	Weight	Volume	Dil. factor	ABS.	Time	Value from curve	Reported Value	% Recovery
~~GN-163~~ MBS PBW				0.001	21:09	-0.025		
GN-~~164~~ MBS-163		100mL		0.005	21:10	0.128		
GN-~~165~~ MBS-164				0.010	21:12	3.76		
GN-165				0.001	21:14	-0.025		
GN-166				0.002	21:15	0.013		
GN-167				0.005	21:16	0.128		
GN-168				0.005	21:18	0.128		
GN-168 D				0.005	21:19	0.128		
GN-168 S				0.034	21:21	1.936		
† CCV4				0.151	21:22	5.709		95.[illegible]
CCB4				0.004	21:24	0.089		
✓T186-271-1	(5X)	100mL	5X	0.001	21:25	-0.025	<0.0025	
-1 S				0.097	21:27	3.645		91%
✓T186-272-1				0.000	21:28	-0.064	<0.0025	
-1 S				0.099	21:30	3.722		93%
✓T381-733-1				0.001	21:31	-0.025	<0.0025	
-1 S				0.106	21:33	3.989		99%
✓T747-28-1				0.001	21:35	-0.025	<0.0025	
-1 S				0.097	21:36	3.645		91%
† CCV5				0.150	21:38	5.671		94.5
CCB5				0.003	21:39	0.051		
T186-~~267~~ 269-1	(5X)	100mL	5X	0.000	21:40	-0.064	<0.0025	
-1 S				0.013	21:41	~~4.971~~	8.93	10.8%
✓860-110-2				-0.001	21:43	-0.446	<0.0025	
-2 D				0.000	21:44	-0.064	↓	0% = ND
-2 S				0.020	21:45	0.701		70%
† CCV6				0.145	21:48	5.480		91.3

Reviewed by: [signature]
Date: 3-15-91

Prep Analyst: [signature]
Analyst: [signature]

† STD # 382

2 0019

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MERCURY PREP and ANALYSIS

Prep date 14 MAR 91
Bath Temp 95°C
Spike Conc. 1 ppb Vendor MALLINCKRODT

Analysis Date 3-14-91
Lamp Energy 41
Corr Coeff. 0.99991

Sample ID #	Weight	Volume	Dil. factor	ABS.	Time	Value from curve	Reported Value	% Recovery
CCB6				0.004	21:50	0.0893		
860-110-1	0.21g			0.000	21:51	-0.064	<0.25 ug/g	
-1 D	0.21g			-0.000	21:52	-0.064	<0.25 ug/g	RPD=0%
-1 S	0.21g			0.021	21:53	0.739	0.35	74%
+ CCV7				0.148	21:56	5.575		93.3
CCB7				0.002	21:57	0.012		
ABW2				0.001	21:59	-0.025		
BC-022		100mL		0.001	22:01	-0.025		
BC-022 D		↓		-0.001	22:03	-0.102		
BC-022 S				0.026	22:04	0.930		
CCV8				0.151	22:06	5.709		95.2
CCB8				0.001	22:08	-0.025		

Reviewed by: [signature]
Date: 3-15-91

Prep Analyst: [signature]
Analyst: [signature] AR309250

+ STD # 382

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MERCURY PREP and ANALYSIS

Prep date 15 MAR 91
Bath Temp N/A
Spike Conc. 1 ppb Vendor MALLINCKRODT

Analysis Date 15 MAR 91
Lamp Energy 61
Corr Coeff. 0.99998

	Sample ID #	Weight	Volume	Dil. factor	ABS.	Time	Value from curve	Reported Value	% Recovery
	S 0				0.001	1005			
*	S 0.5 (A)				0.013	1006			
*	S 1.0				0.026	1007			
*	S 3.0				0.077	1009			
*	S 5.0				0.130	1011			
*	S 10.0 ↓				0.259	1013			
+	ICV(E) 4.0 ppb				0.100	1015	3.86		96.4%
	ICB				0.000	1017	-0.01		
+	CRA(E) 0.2 ppb				0.005	1018	0.18		9[illegible]%
+	CCV1(E) 6.0 ppb				0.146	1020	5.63		93.9%
	CCB1				0.001	1021	0.03		
	PBW				0.001	1022	0.03		
	BC-016A		100 mL		0.001	1024	0.03		
	BC-016A D		↓		0.000	1025	-0.01		
	BC-016A S		↓		0.027	1027	1.03		103.3%
+	CCV2				0.134	1029	5.17		86.2%
	CCB2				0.000	1030	-0.01		

Reviewed by: Dianne Saunders
Date: 3-15-91
Prep Analyst: [illegible]
Analyst: MB Brown

* STD # 386 inorganic Hg
+ [illegible] # 709 filtered sample QC BC-001

2 0021

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MERCURY PREP and ANALYSIS

00179

Prep date 19 MAR 91
Bath Temp N/A
Spike Conc. 1 ppb Vendor MALLINCKRODT

Analysis Date 19 MAR 91
Lamp Energy 61
Corr Coeff. 0.9990

	Sample ID #	Weight	Volume	Dil. factor	ABS.	Time	Value from curve	Reported Value	% Recovery
	S 0				0.001	1130			
*	S 0.5 (A)				0.011	1131			
*	S 1.0				0.027	1132			
*	S 3.0				0.080	1133			
*	S 5.0				0.121	1135			
*	S 10.0				0.233	1137			
+	ICV2 (E) 4.0 ppb				0.085	1139	3.51		87.9%
	ICB2				0.001	1140	-0.09		
+	CRA2 (E) 0.2 ppb				0.005	1141	0.08		39.6%
+	CCV1 (E) 6.0 ppb				0.150	1142	6.31		105.1%
	CCB1				0.001	1144	-0.09		
	PBW				0.001	1145	-0.09		
	BC-023		100mL		0.001	1146	-0.09		
	BC-023 D		↓		0.001	1147	-0.09		
	BC-023 S		↓		0.027	1149	1.02		102.4%
+	CCV2				0.148	1150	6.22		103.7%
	CCB2				0.001	1152	-0.09		

AH309252

Reviewed by: Beth Turner
Date: 3-19-91

Prep Analyst: MBRwm
Analyst: MBRwm

* STD # 400
\+ STD # 403

Inorganic unfiltered sample QC. BC-001

2 0022

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Batch 64-4

Balance serial #057461
Analyst: Rebekah Mafey
Date: March 05, 1991

1:1 HNO_3 lot # 044052, conc HNO_3 Reg. #6
1:1 HCl lot # 034044
*1ml std # 103 = 1ml conc HNO_3 → 100ml DI H_2O in taylor
⊛ 1ml std # 264 added

Book # 3
Page # 103

IRA Sample #	EPA Sample #	Matrix	pH	Volume / Weight	Final Volume	Method H or N	Filtered	Color Before	Color After	Clarity Before	Clarity After	Texture / Artifacts
8108-6-2A	BC002	H_2O	2	100ml	100ml	HCl	X	colorless	yellow	clear	clear	X
-3A	BC003		2				yes	colorless	yellow	clear	clear	X
-4B	BC004		2				yes	colorless	colorless	clear	clear	X
Dup -4B	BC004D						yes	colorless	colorless	clear	clear	X
⊛ Spk -4B	BC004S						yes	colorless	colorless	clear	clear	X
-5A	BC005		2				X	colorless	colorless	clear	clear	X
Dup -5A	BC005D						X	colorless	colorless	clear	clear	X
⊛ Spk -5A	BC005S						X	colorless	colorless	clear	clear	X
-6D	BC006		2				yes	colorless	colorless	clear	clear	X
-7A	BC007		2				X	colorless	colorless	clear	clear	X
-8B	BC008		2				X	colorless	colorless	clear	clear	X
-9A	BC009		2				X	colorless	colorless	clear	clear	X
-10B	~~BC010~~ BC010		2				yes	colorless	colorless	clear	clear	X
-11B	BC011		2				yes	colorless	yellow	clear	clear	X
-12B	BC012		2				yes	colorless	yellow	cloudy	clear	X
-25A	BC025		2				yes	colorless	colorless	cloudy	clear	X
-26D	BC026		2				yes	colorless	colorless	cloudy	clear	X
-27D	BC027						yes	colorless	colorless	clear	clear	X
* LCSW	BH-4		X				X	X	X	X	X	X
PBW	BH-4		X				X	X	X	X	X	X
	8258											

2 002

Balance serial # 05761
Analyst: Betty Turner
Date: 3-19-91

Batch 78-1
+ 0.5 ml std 2C4 added

Conc. HNO_3 RG
1:1 HNO_3 RG
1:1 HCl LG #
D11090

Book # 4
Page # 6

IBA Sample #	EPA Sample #	Matrix	pH	Volume / Weight	Final Volume	Method H or N	Filtered	Color Before	Color After	Clarity Before	Clarity After	Texture / Artifacts
868-6-6D	BC-006	H_2O	2	50ml	50ml	HCl	X	colorless	colorless	clear	clear	
(Dup)-6D	BC-006D	↓	2	↓	↓	↓	X	colorless	colorless	clear	clear	
(MS)(MSD)-6D	BC-006S	↓	2	↓	↓	↓	X	colorless	colorless	clear	clear	
* LCSW	78-1		X				X	X	X	X	X	X
PBW	78-1	↓	X	↓	↓	↓	X	X	X	X	X	X

* 2ml std #155, 0.5 ml conc HNO_3, Teflon Beaker used

AR300254

2 0024

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U.S. EPA - CLP
13
PREPARATION LOG

Lab Name: _____ Contract: 868-6

Lab Code: Mercury Case No.: _____ SAS No.: _____ SDG No.: BC-001

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)	NA	
				Color	Clarity
BC-013 (LT)	3-6-91		100 mL	colorless	clear
BC-014 (FT)	3-6-91				
BC-015 (LI)	3-10-91				
BC-016 (FI)	3-10-91 / 3-15-91				
BC-017 (LT)	3-6-91				
BC-018 (FT)	3-6-91				
BC-019 (LI)	3-10-91				
BC-020 (FI)	3-10-91				
BC-021 (LT)	3-6-91				
BC-022 (FT)	3-6-91 / 3-14-91				
BC-023 (LI)	3-10-91 / 3-19-91				
BC-024 (FI)	3-10-91				
BC-025 (LT)	3-6-91				
BC-026 (FT)	3-6-91				
BC-027 (LT)	3-6-91				

BC-019 - unfiltered inorganic QC
BC-023 - unfiltered inorganic QC
BC-016 - filtered inorganic QC

FORM XIII - IN 3/90

AR309255

BC-021 - unfiltered total QC
BC-022 - filtered total QC

2 0025

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868-6

	II8 PA
BC.013	2
BC.014	2
BC.015	2
BC.016	2
BC.017	2
BC.018	2
BC.019	2
BC.020	2
BC.021	2
BC.022	2
BC.023	2
BC.024	2
BC.027	2

AR309256

2 0026

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iea
an environmental testing company
P.O. Box 12846
Research Triangle Park, North Carolina 27709
(919) 677-0090
FAX (919) 677-0427

April 3, 1991

APR 4 1991

[redacted]

M. Bonaker
A. Davis

Peg Bonaker
BCM Engineers, Inc.
One Plymouth Meeting Hall
Plymouth Meeting, PA 19462

Reference IEA Report No.: 868006(0), 868007, & 868008
Project ID: BCM 00-6012-02

Dear Ms. Bonaker,

Transmitted herewith are the results of analyses on 19 samples submitted to our laboratory.

Please see the enclosed reports for your results.

Very truly yours,

INDUSTRIAL & ENVIRONMENTAL ANALYSTS, INC.

Linda F. Mitchell
Director, Technical Support Services

State Certification:

Alabama - #40210	New Jersey - #67719	South Carolina - #99021
Georgia - #816	Tennessee - #00296	North Carolina - #[illegible]
Kansas - #E-158	Virginia - #00179	

AR 309257

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iea

IEA LABORATORY RESULTS

IEA Project #: 868-006(0)
Client Name: BCM Engineers, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
1	26A	Ammonia-N	<0.01	mg/L	03/12/91
2	33A	Ammonia-N	0.1	mg/L	03/12/91
3	33AD	Ammonia-N	<0.01	mg/L	03/12/91
4	Equipment Blank	Ammonia-N	<0.01	mg/L	03/12/91
1	26A	Biochemical Oxygen Demand	<2.0	mg/L	02/20/91
2	33A	Biochemical Oxygen Demand	<2.0	mg/L	02/20/91
3	33AD	Biochemical Oxygen Demand	<2.0	mg/L	02/20/91
4	Equipment Blank	Biochemical Oxygen Demand	<2.0	mg/L	02/20/91
1	26A	Chloride	15	mg/L	03/01/91
2	33A	Chloride	14	mg/L	03/01/91
3	33AD	Chloride	14	mg/L	03/01/91
4	Equipment Blank	Chloride	<1.0	mg/L	03/01/91
1	26A	Chemical Oxygen Demand	32	mg/L	03/15/91
2	33A	Chemical Oxygen Demand	<25	mg/L	03/15/91
3	33AD	Chemical Oxygen Demand	<25	mg/L	03/15/91
4	Equipment Blank	Chemical Oxygen Demand	<25	mg/L	03/15/91
1	26A	Nitrite	0.02	mg/L	02/21/91
2	33A	Nitrite	<0.02	mg/L	02/21/91
3	33AD	Nitrite	<0.02	mg/L	02/21/91
4	Equipment Blank	Nitrite	<0.02	mg/L	02/21/91
1	26A	Nitrate	<0.02	mg/L	02/21/91
2	33A	Nitrate	10	mg/L	02/21/91
3	33AD	Nitrate	7.4	mg/L	02/21/91
4	Equipment Blank	Nitrate	<0.02	mg/L	02/21/91
1	26A	Sulfate	46	mg/L	03/11/91
2	33A	Sulfate	46	mg/L	03/11/91
3	33AD	Sulfate	43	mg/L	03/11/91
4	Equipment Blank	Sulfate	<3.0	mg/L	03/11/91
1	26A	Sulfide	<1.0	mg/L	02/26/91
2	33A	Sulfide	<1.0	mg/L	02/26/91
3	33AD	Sulfide	1.2	mg/L	02/26/91
4	Equipment Blank	Sulfide	<1.0	mg/L	02/26/91

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METHOD BLANK SUMMARY

Parameter: Ammonia
IEA Project No.: 868-006(0)

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	0.1 mg/L	03/12/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

AR309259

FORM MBLKSUM Rev 022790

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iea

INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-006(0)-1	Ammonia	<0.1	<0.1	0	EPA #350.3

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM IQCSUM Rev 082990

AR309260

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-006(0)-1	03/12/91	Ammonia	20	<0.1	19	95	EPA #350.3

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM QCSPK Rev 082890

AR309261

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iea

METHOD BLANK SUMMARY

Parameter: Biochemical Oxygen Demand
IEA Project No.: 868-006(0)

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	2.0 mg/L	02/20/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM MBLKSUM Rev 022790

AR309262

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
296-236-1	BOD	680	790	15	Std. Method #507

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM IQCSUM Rev 082990

AR309263

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iea

METHOD BLANK SUMMARY

Parameter: Chloride
IEA Project No.: 868-006(0)

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	1.0 mg/L	03/01/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

AR309264

FORM MBLKSUM Rev 022790

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-006-4	Chloride	8.0	8.0	0	EPA #325.3

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM IQCSUM Rev 082990

AR309265

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-008-4	03/01/91	Chloride	50	8.0	58	100	EPA #325.3

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM QCSPK Rev 082890

AR309266

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METHOD BLANK SUMMARY

Parameter: Chemical Oxygen Demand
IEA Project No.: 868-006(0)

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	25 mg/L	03/15/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

AR309267

FORM MBLKSUM Rev 022790

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
860-006(0)-1	COD	32	36	12	EPA #410.4

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM IQCSUM Rev 082990

AR309268

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-006(0)-2	03/15/91	COD	250	<25	240	96	EPA #410.4

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM QCSPK Rev 082890

AR309269

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iea

METHOD BLANK SUMMARY

Parameter: Nitrate/Nitrite
IEA Project No.: 868-006(0)

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	0.02 mg/L	02/21/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM MBLKSUM Rev 022790

AR309270

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
860-006(0)-3	Nitrite/Nitrate	7.4	7.2	3	EPA #353.2

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM IQCSUM Rev 082990

AR30927

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
196-221-2	02/21/91	Nitrate/Nitrite	0.25	0.03	0.27	96	EPA #353.2

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM QCSPK Rev 082890

AR309272

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iea

METHOD BLANK SUMMARY

Parameter: Sulfate
IEA Project No.: 868-006(0)

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	3.0 mg/L	03/11/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

AR309273

FORM MBLKSUM Rev 022790

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
860-006(0)-3	Sulfate	43	46	7	Std. Methods #426C

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM IQCSUM Rev 082990

AR309274

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-006(0)-1	03/11/91	Sulfate	*	46	*	*	Std. Methods #426C

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

*Percent recovery not calculated due to the sample concentration being greater than four times the spiking concentration.

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM QCSPK Rev 082890

AR309275

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iea

METHOD BLANK SUMMARY

Parameter: Sulfide
IEA Project No.: 868-006(0)

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	1.0 mg/L	02/26/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM MBLKSUM Rev 022790

AR309276

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
860-006(0)-1	Sulfide	<1.0	<1.0	0	EPA #376.1

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-006(0)-1
868-006(0)-2
868-006(0)-3
868-006(0)-4

FORM IQCSUM Rev 082990

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IEA ANALYSTS, INC.
3000 WESTON PKWY.
CARY, N.C. 27513

REGULATORY CLASSIFICATION - PLEASE SPECIFY
☐ NPDES ☐ DRINKING WATER ☐ RCRA ☑ OTHER CERCLA / SARA

NO. 12183

PROJECT # EM 00-6012-02
PROJECT NAME: Chem-Solv, Inc

SAMPLERS (SIGNATURE): Marguerite Bonaker, Russell Mehall, Andrew Hanna

DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	SOIL	WATER	VOA CLP Volatile VOS	250 ml Amber Unfiltered Mn	250 ml Amber Filtered Mn	500 ml PL NH3	250 ml PL NO3	250 ml PL NO2	500 ml PL SO4	500 ml PL SULFIDE	250 ml PL Cl	1 L PL BOD	1 L PL COD	250 ml Amber Unfiltered Fe/Mn	250 ml Amber Filtered Fe/Mn
2/19/91	1330		X	26A	15		X	3	2	2	1	1	1	1	1	1	1	1		
	1445			41A	6		X	6												
	1700			33A	17		X	3			1	1	1	1	1	1	1	1	4	2
	1700			33AD	15		X	3			1	1	1	1	1	1	1	1	2	2
	1520			Trip Blank	8		X	6											2	
	1540			Equipment Blank	18		X	6			1	1	1	1	1	1	1	1	2	2

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
			Russell Mehall	2/19/91	15:00
Russell Mehall	2/19/91	18:30	C. Blake	2/20/91	910

IEA QUOTE NO.: 91-0115-05
IEA RUSH NO.:
PROJECT MANAGER (PLEASE PRINT): IEA Becky Tarsmann
P.O. NO.:

IEA REMARKS: Sulfides preserved in house @ 9:20 2/20/91 CR. IEA # 868-006: CLP 868-006(#): others

FIELD REMARKS: VOA MS/MSD on 41A, Fe/Mn MS/MSD on 33A. Shipped in 4 boxes via Federal Express (No. 4136346015)

Industrial and Environmental Analysts, Inc.

Case No.: 868-006L(0)

Sample Management Chain of Custody

EPA ID: 26A Log-in By: [illegible] Date: 2/20/__

Bottle Letters Avaliable: 1A-H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/20/91	1630	R18-60A, 37E 60B, 61B	CR
1B-C	2/21/91	8:00A	TR	RH	2/22/91	7:00A	37E	RH
1E	2/26	8:15A	TR	RH	2/27	7:00A	60B	RH
1G	2/20	8:00	TR	RH	2/21	8:45	61B	RH
1F	3-1	8:00	TR	RH	3/2	8:30	37E	RH
1D	3-11	8:00	TR	RH	3/12	8:00	60A	RH
1A	3-12	8:00	TR	RH	3/13	8:00	60A	RH
1H	3-15	8:00	TR	RH	3/16	8:00	37E	RH

Notes: *Applicable Codes Are
ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

AR309279

*Refer to SAM generated Work List for Bottle definitions

Verified by: RH (Init) 3/27/90 (Date)

Rev.

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Industrial and Environmental Analysts, Inc.

Case No.: 868-006 (Ø)

Sample Management Chain of Custody

EPA ID: 33A Log-in By: [illegible] Date: 2/20/91

Bottle Letters Avaliable: 2A-H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/20/91	1030	R1B-60A, 37E, 60B, 61B	OR
2C-B	2/21	8:00A	TR	RH	2/22/91	9:00A	37G	RH
2E	2/26	8:15A	TR	RH	2/27	9:00A	60E	RH
2G	2/20	8:00	TR	RH	2/21	8:45	61B	RH
2F	3/1	8:00	TR	RH	3/2	8:30	37G	RH
2D	3/11	8:00	TR	RH	3/12	8:00	60A	RH
2A	3/12	8:00	TR	RH	3/13	8:00	60A	RH
2H	3/15	8:00	TR	RH	3/16	8:00	37G	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose
*Refer to SAM generated Work List for Bottle definitions

AR309280

Verified by: RH (Init) 3/27/90 (Date)

REV. 11/90

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Industrial and Environmental Analysts, Inc.

Case No.: 868-004(0)

Sample Management Chain of Custody

EPA ID: 33AD Log-in By: CRKuhn Date: 2/20/91

Bottle Letters Avaliable: 3A - H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/20/91	1030	RIP-60A, 37E, 61B, 61B	CR
3 C-B	2/21	8:00A	TR	RH	2/22/91	7:00A	37E	RH
3E	2/26	8:15A	TR	RH	2/27	9:00A	60E	RH
3G	2/20	8:00	TR	RH	2/21	8:45	61B	RH
3F	3/1	8:00	TR	RH	3/2	8:30	37G	RH
3D	3/11	8:00	TR	RH	3/12	8:00	60A	RH
3A	3/12	8:00	TR	RH	3/13	8:00	60A	RH
3H	3/15	8:00	TR	RH	3/16	8:00	37G	RH

Notes: *Applicable Codes Are
ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

AR309281

*Refer to SAM generated Work List for Bottle definitions

Verified by: RH (Init) 3/27/90 (Date)

Rev. 6

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Industrial and Environmental Analysts, Inc.

Case No.: 868-006(0)

Sample Management Chain of Custody

EPA ID: Equipment Blank Log-in By: [illegible] Date: 2/20/91

Bottle Letters Avaliable: 4A-H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/20/91	1030	R18-60A, 37E, 60B 61B	CR
4C-B	2/21	8:00A	TR	RH	2/22	9:00A	R18-60A 37E 60B 61B	RH
4E	2/26	8:15A	TR	RH	2/27	9:00A	60E	RH
4G	2/20	8:00	TR	RH	2/21	8:45	61B	RH
4F	3/1	8:00	TR	RH	3/2	8:30	37E	RH
4D	3/11	8:00	TR	RH	3/12	8:00	60A	RH
4A	3/12	8:00	TR	RH	3/13	8:00	60A	RH
4H	3/15	8:00	TR	RH	3/15	8:00	37E	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

*Refer to SAM generated Work List for Bottle definition

AR309282

Verified by: RH (Init) 3/27/90 (Date)

Rev. 10/90

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-007
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-007-1	BOD	<2.0	<2.0	0	Std. Methods #507

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

FORM IQCSUM Rev 082990

AR309283

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iea

METHOD BLANK SUMMARY

Parameter: Biochemical Oxygen Demand
IEA Project No.: 868-007

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	2.0 mg/L	02/22/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

AR309284

FORM MBLKSUM Rev 022790

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IEA LABORATORY RESULTS

IEA Project #: 868-007
Client Name: BCM Engineers, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
1	9A	Ammonia-N	<0.01	mg/L	03/12/91
2	39A	Ammonia-N	0.2	mg/L	03/12/91
3	9AD	Ammonia-N	<0.01	mg/L	03/12/91
4	9B	Ammonia-N	<0.01	mg/L	03/12/91
5	22A	Ammonia-N	<0.01	mg/L	03/12/91
6	MWI-1-43	Ammonia-N	<0.01	mg/L	03/12/91
7	5A	Ammonia-N	<0.01	mg/L	03/12/91
8	5B	Ammonia-N	<0.01	mg/L	03/12/91
9	Equipment Blank	Ammonia-N	<0.01	mg/L	03/12/91
10	48A	Ammonia-N	<0.01	mg/L	03/12/91
1	9A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
2	39A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
3	9AD	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
4	9B	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
5	22A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
6	MWI-1-43	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
7	5A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
8	5B	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
9	Equipment Blank	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
10	48A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
1	9A	Chloride	15	mg/L	03/01/91
2	39A	Chloride	150	mg/L	03/01/91
3	9AD	Chloride	15	mg/L	03/01/91
4	9B	Chloride	13	mg/L	03/01/91
5	22A	Chloride	15	mg/L	03/01/91
6	MWI-1-43	Chloride	17	mg/L	03/01/91
7	5A	Chloride	3.0	mg/L	03/01/91
8	5B	Chloride	9.0	mg/L	03/01/91
9	Equipment Blank	Chloride	<1.0	mg/L	03/01/91
10	48A	Chloride	8.0	mg/L	03/12/91
1	9A	Chemical Oxygen Demand	<25	mg/L	03/12/91
2	39A	Chemical Oxygen Demand	<25	mg/L	03/12/91
3	9AD	Chemical Oxygen Demand	<25	mg/L	03/12/91
4	9B	Chemical Oxygen Demand	<25	mg/L	03/12/91
5	22A	Chemical Oxygen Demand	<25	mg/L	03/12/91
6	MWI-1-43	Chemical Oxygen Demand	<25	mg/L	03/12/91
7	5A	Chemical Oxygen Demand	<25	mg/L	03/12/91
8	5B	Chemical Oxygen Demand	<25	mg/L	03/12/91
9	Equipment Blank	Chemical Oxygen Demand	<25	mg/L	03/12/91
10	48A	Chemical Oxygen Demand	<25	mg/L	03/12/91
1	9A	Nitrite	<0.02	mg/L	02/22/91
2	39A	Nitrite	0.05	mg/L	02/22/91
3	9AD	Nitrite	<0.02	mg/L	02/22/91
4	9B	Nitrite	<0.02	mg/L	02/22/91
5	22A	Nitrite	<0.02	mg/L	02/22/91

AR309285

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iea

IEA LABORATORY RESULTS

IEA Project #: 868-007
Client Name: BCM Engineers, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
6	MWI-1-43	Nitrite	<0.02	mg/L	02/22/91
7	5A	Nitrite	<0.02	mg/L	02/22/91
8	5B	Nitrite	<0.02	mg/L	02/22/91
9	Equipment Blank	Nitrite	<0.02	mg/L	02/22/91
1	9A	Nitrate	1.6	mg/L	02/22/91
2	39A	Nitrate	0.35	mg/L	02/22/91
3	9AD	Nitrate	1.6	mg/L	02/22/91
4	9B	Nitrate	11	mg/L	02/22/91
5	22A	Nitrate	9.0	mg/L	02/22/91
6	MWI-1-43	Nitrate	9.4	mg/L	02/22/91
7	5A	Nitrate	0.61	mg/L	02/22/91
8	5B	Nitrate	3.9	mg/L	02/22/91
9	Equipment Blank	Nitrate	<0.02	mg/L	02/22/91
1	9A	Sulfate	39	mg/L	03/13/91
2	39A	Sulfate	<3.0	mg/L	03/13/91
3	9AD	Sulfate	38	mg/L	03/13/91
4	9B	Sulfate	48	mg/L	03/13/91
5	22A	Sulfate	24	mg/L	03/13/91
6	MWI-1-43	Sulfate	3.7	mg/L	03/13/91
7	5A	Sulfate	50	mg/L	03/13/91
8	5B	Sulfate	22	mg/L	03/13/91
9	Equipment Blank	Sulfate	<3.0	mg/L	03/13/91
10	48A	Sulfate	26	mg/L	03/13/91
1	9A	Sulfide	<1.0	mg/L	02/26/91
2	39A	Sulfide	<1.0	mg/L	02/26/91
3	9AD	Sulfide	<1.0	mg/L	02/26/91
4	9B	Sulfide	<1.0	mg/L	02/26/91
5	22A	Sulfide	<1.0	mg/L	02/26/91
6	MWI-1-43	Sulfide	<1.0	mg/L	02/26/91
7	5A	Sulfide	<1.0	mg/L	02/26/91
8	5B	Sulfide	<1.0	mg/L	02/26/91
9	Equipment Blank	Sulfide	<1.0	mg/L	02/26/91
10	48A	Sulfide	<1.0	mg/L	02/26/91

AR309286

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METHOD BLANK SUMMARY

Parameter: Ammonia
IEA Project No.: 868-007

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	0.1 mg/L	03/12/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

AR309287

FORM MBLKSUM Rev 022790

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-007
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-007-1	Ammonia	<0.1	<0.1	0	EPA #350.3

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

FORM IQCSUM Rev 082990

AR309288

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-007
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-007-1	03/12/91	Ammonia	20	<0.1	18	90	EPA #350.3

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

FORM QCSPK Rev 082890

AR309289

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iea

METHOD BLANK SUMMARY

Parameter: Chloride
IEA Project No.: 868-007

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	1.0 mg/L	03/01/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

FORM MBLKSUM Rev 022790

AR309290

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-007
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-007-1	Chloride	15	15	0	EPA #325.3

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-007-1
868-007-2
868-007-3
868-007-4
868-007-5
868-007-6
868-007-7

AR309291

FORM IQCSUM Rev 082990

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-007
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-007-1	03/01/91	Chloride	50	15	65	100	EPA #325.3

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-007-1
868-007-2
868-007-3
868-007-4
868-007-5
868-007-6
868-007-7

FORM QCSPK Rev 082890

AR309292

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iea

INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-007
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-007-8	Chloride	9.0	10	10	EPA #325.3

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-007-8
868-007-9
868-007-10

FORM IQCSUM Rev 082990

AR3092

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-007
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-007-8	03/01/91	Chloride	50	9.0	60	102	EPA #325.3

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-007-8
868-007-9
868-007-10

FORM QCSPK Rev 082890

AR309294

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iea

METHOD BLANK SUMMARY

Parameter: Nitrate
IEA Project No.: 868-007

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	0.02 mg/L	02/22/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	

AR309295

FORM MBLKSUM Rev 022790

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-007
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-007-8	Nitrate	3.9	3.9	0	EPA #353.2

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	

FORM IQCSUM Rev 082990

AR309296

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-007
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-007-4	02/22/91	Nitrate	*	11	*	*	EPA #353.2

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

*Percent recovery not calculated due to the sample concentration being greater than four times the concentration of the spiking solution.

Corresponding Samples:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	

FORM QCSPK Rev 082890

AR309297

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iea

METHOD BLANK SUMMARY

Parameter: Nitrite
IEA Project No.: 868-007

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	0.02 mg/L	02/22/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	

AR309298

FORM MBLKSUM Rev 022790

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iea

INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-007
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-007-8	Nitrite	<0.02	<0.02	0	EPA #353.2

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	

FORM IQCSUM Rev 082990

AR309299

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-007
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-007-4	02/22/91	Nitrite	0.25	<0.02	0.24	96	EPA #353.2

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

%R = (SSR - SR)/ (SA) * 100

Corresponding Samples:

868-007-1
868-007-2
868-007-3
868-007-4
868-007-5
868-007-6
868-007-7
868-007-8
868-007-9

FORM QCSPK Rev 082890

AR309300

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iea

METHOD BLANK SUMMARY

Parameter: Sulfate
IEA Project No.: 868-007

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	3.0 mg/L	03/13/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

FORM MBLKSUM Rev 022790

AR309301

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-007
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-007-1	Sulfate	39	37	5	Std. Methods #426C

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

FORM IQCSUM Rev 082990

AR309302

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-007
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-007-4	03/13/91	Sulfate	10	12	22	100	Std. Methods #426C

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

FORM QCSPK Rev 082890

AR309303

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iea

METHOD BLANK SUMMARY

Parameter: Sulfide
IEA Project No.: 868-007

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	1.0 mg/L	02/26/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

AR309304

FORM MELKSUM Rev 022790

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-007
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-007-6	Sulfide	<1.0	<1.0	0	Std. Methods #426C

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-007-1	868-007-6
868-007-2	868-007-7
868-007-3	868-007-8
868-007-4	868-007-9
868-007-5	868-007-10

FORM IQCSUM Rev 082990

AR309305

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iea ANALYSTS, INC.
3000 WESTON PKWY.
CARY, N.C. 27513

REGULATORY CLASSIFICATION - PLEASE SPECIFY
☐ NPDES ☐ DRINKING WATER ☐ RCRA ☒ OTHER CERCLA/SARA

NO: 14019

PROJECT #: BLM 00-6012-02
PROJECT NAME: Chem-Solv, Inc.
SAMPLERS (SIGNATURE): Margaret E. Bonaker, Russell Mehdi, Andrew Hamm

SAMPLE I.D.	DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	SOIL	WATER	1L PL BOD	500 mL PL Sulfide, UHg, Surfactants	250 mL PL NO2, NO3, SO4	250 mL Amber CLP Mn (WH+)	250 mL Amber CLP Mn (FH+)	250 mL Amber CLP Hg (WH+)	250 mL Amber CLP Hg (FH+)	250 mL Amber Total Hg (WH+)	250 mL Amber Total Hg (FH+)	250 mL Amber CLP Mn+Hg (WH+)	250 mL Amber CLP Mn+Hg (FH+)	COD	C1		
	2/20/91	0815		X	39A	12		X	1	3	4	2	2										
		0955			9A	28			2	6	8			4	2	4	2						
		0955			9AD	16			1	3	4			2	2	2	2						
		1305			9B	16			1	3	4			2	2	2	2						
		1405			22A	8			1	3	4												
		1410			MWI-1-43	8			1	3	4												
		1550			5A	8			1	3	4												
		1535			5B	8			1	3	4												
		1655			48A	6			1	3										2			
		1730			Trip Blank	4													4				
		1110		X	Equipment Blank	16		✓	1	3	4	2	2	2	2								

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
			Russell Mehdi	2/21/91	15:00
RELINQUISHED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED FOR LAB BY**	**DATE**	**TIME**
Russell Mehdi	2/20/91	18:30	CAKnab	2/21/91	1000

IEA QUOTE NO.: Becky Tessmann 91-0115-05
IEA RUSH NO.:
PROJECT MANAGER (PLEASE PRINT):
P.O. NO.:

IEA REMARKS: IEA # 868-006 : CLP
868-007 : other

FIELD REMARKS: 39A LIMITED Sample. MS/MSD : - 94. Hg/Mn (CLP) pres. in field to pH<2 w/nitric acid; inorganic Hg pres. in field to pH<2 w/nitric acid. 5 Sub-samples preserved in field to pH<2 w/ NaOH. 7 Boxes - Fed Ex (No 9: [illegible])

A03806

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Industrial and Environmental Analysts, Inc.

Case No.: 868-007

Sample Management Chain of Custody

EPA ID: 9A Log-in By: [illegible] Date: 2/21/91

Bottle Letters Avaliable: 1A-P

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/21/91	1400	R18-25E, 88B, Shelf 3	CR
1A	2/22	8:00A	TR	RH	2/23	9:30A	85G	RH
1K	2/22	8:00A	TR	RH	2/23	9:36A	88B	RH
1C	2/26	8:15A	TR	RH	2/27	9:00A	Shelf 3	RH
1I	2/22	8:00A	TR	RH	2/23	8:15	88B	RH
RH 3-12 MA.O.G	3/12	8:05A	TR	RH	3/13	8:00	Shelf 3 88B	RH
1E	3/13	8:10A	TR	RH	3/14	8:30	Shelf 3	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

*Refer to SAM generated Work List for Bottle definitions

AR309307

Verified by: RH (Init) 3/27/90 (Date)

Rev. 10

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Industrial and Environmental Analysts, Inc.

Case No.: 868-007

Sample Management Chain of Custody

EPA ID: 39A Log-in By: [illegible] Date: 2/21/91

Bottle Letters Avaliable: 2A-H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/21/91	1400	RIF-25D, 86E, 86F, 86G, 86H, Shelf 3	CR
2A	2/22	8:00A	TR	RH	2/23	9:30A	25D	RH
2E-F	2/22	8:00A	TR	RH	2/23	9:30A	86E-86F	RH
2C	2/26	8:00A	TR	RH	2/27	9:00A	Shelf 3	RH
2H	3/1	8:00	TR	RH	3/2	8:30	86G	RH
2G+D	3/12	8:00	TR	RH	3/13	8:30	Shelf 3 86G	RH
2B	3/13	8:00	TR	RH	3/14	8:30	Shelf 3	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

AR309308

*Refer to SAM generated Work List for Bottle definitions

Verified by: RH (Init) 3/27/90 (Date)

Rev. 10/90

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Industrial and Environmental Analysts, Inc.

Case No.: 868-007

Sample Management Chain of Custody

EPA ID: 9AD Log-in By: [illegible] Date: 2/21/91

Bottle Letters Avaliable: 3A - H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/21/91	1400	RIF-25D, 88F, 81F, 88E, 81H-3, 86G, RIF	CQ
3A	2/22	8:00A	TR	RH	2/23	9:30A	25D	RH
3E-F	2/22	8:00A	TR	RH	2/23	9:30A	88E 88G	RH
3C	2/26	8:00A	TR	RH	2/27	9:00A	shelf 3	RH
3H	3/1	8:00	TR	RH	3/2	8:30	86G	RH
3G+D	3-12	8:00	TR	RH	3/13	8:00	shelf 3 86G	RH
3B	3-13	8:00	TR	RH	3/14	9:00	shelf 3	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

*Refer to SAM generated Work List for Bottle definitions

AR309300

Verified by: RH (Init) 3/27/91 (Date)

Rev. 10.

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Industrial and Environmental Analysts, Inc.

Case No.: 86F-007

Sample Management Chain of Custody

EPA ID: 9B Log-in By: [illegible] Date: 2/21/91

Bottle Letters Avaliable: 4A - H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/21/91	1400	R16-25D, 86E, 86F 86G 86G	QR
4A	2/22	8:00A	TR	RH	2/23	9:30A	Shelf 3 25D	RH
4E-F	2/22	8:00A	TR	RH	2/23	9:30A	86E 86G	RH
4C	2/26	8:00A	TR	RH	2/27	9:00A	shelf 3	RH
4H	3-1	8:00	TR	RH	3/2	8:00	86 G	RH
4G&D	3-12	8:00	TR	RH	3/13	8:30	shelf 3 86G	RH
4B	3-13	8:00	TR	RH	3/14	7:00	shelf 3	RH

Notes: *Applicable Codes Are
ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

AR309310

*Refer to SAM generated Work List for Bottle definitions

Verified by: RH (Init) 3/27/90 (Date)

Rev. 11/90

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Industrial and Environmental Analysts, Inc.

Case No.: 868-007

Sample Management Chain of Custody

EPA ID: 22A Log-in By: CQKuh Date: 2/21/91

Bottle Letters Avaliable: 5A - H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/21/91	1400	RIF-25D, 88E, 88G, RIF, 86G, Shelf 3	CQ
5A	2/22	8:00A	TR	RH	2/23	9:30A	25D	RH
5E.F	2/22	8:00A	TR	RH	2/23	9:30A	88E/88G	RH
5C	2/26	8:00A	TR	RH	2/27	9:00A	Shelf 3	RH
5H	3-1	8:00	TR	RH	3/2	8:00	86G	RH
5 GHD	3-12	8:00	TR	RH	3/13	8:30	Shelf B 86G	RH
5GB	3-13	8:00	TR	RH	3/14	9:00	Shelf 3	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

*Refer to SAM generated Work List for Bottle definitions

AR309311

Verified by: RH (Init) 3/27/91 (Date)

REV. 10/

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Industrial and Environmental Analysts, Inc.

Case No.: R68-007

Sample Management Chain of Custody

EPA ID: MWI-1-43 Log-in By: CWK Date: 2/21/91

Bottle Letters Avaliable: 6A-H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/21/91	1400	R16-25D, 8FE, 6H, 86F, 86G, 9-1-43	CW
6A	3/22	8:00A	TR	RH	2/23	9:30A	95D	RH
6GF	2/22	8:00A	TR	RH	2/23	9:30A	886-886	RH
6C	2/26	8:00A	TR	RH	2/27	9:00A	Shelf 3	RH
6H	3-1	8:00	TR	RH	3-2	8:00	RH 86G ~~Shelf 3~~	RH
6G+D	3-12	8:00	TR	RH	3-13	8:30	Shelf 3 86G	RH
6B	3-13	8:00	TR	RH	3-14	9:00	Shelf 3	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

AR309312

*Refer to SAM generated Work List for Bottle definitions

Verified by: RH (Init) 3/27/90 (Date)

Rev. 10/90

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Industrial and Environmental Analysts, Inc.

Case No.: 868-007

Sample Management Chain of Custody

EPA ID: SA Log-in By: [illegible] Date: 2/21/[illegible]

Bottle Letters Avaliable: 7A-H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/21/91	1400	RIF-2ED, SFB, 1HG, 1GF, 1GG, Shelf 3	CR
7A	2/22	8:00A	TR	RH	2/23	9:30A	2SD	RH
7G-F	2/22	8:00A	TR	RH	2/23	9:30A	8GE-8GG	RH
7C	2/26	8:00A	TR	RH	2/27	9:00A	shelf 3	RH
7H	3-1	8:00A	TR	RH	3-2	8:30	8GG	RH
7D-G	3-12	8:00	TR	RH	3-13	8:45	shelf 3 8GG	RH
7B	3-13	8:00	TR	RH	3-14	8:00	shelf 3	RH

Notes: *Applicable Codes Are
ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

AR309313

*Refer to SAM generated Work List for Bottle definitions

Verified by: RH (Init) 3/27/90 (Date)

Rev. 10/

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Industrial and Environmental Analysts, Inc.

Case No.: 868-007

Sample Management Chain of Custody

EPA ID: SB Log-in By: CRK Date: 2/21/91

Bottle Letters Avaliable: 8A-H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/21/91	1400	RH-25D, 8H-G, 8BG, 8GF, 8H-F, Shelf 3	CR
8A	3/22	8:00A	TR	RH	2/23	9:30	25D	RH
8GF	3/22	8:00A	TR	RH	2/23	9:30	8GE-8GG	RH
8C	3/26	8:00A	TR	RH	2/27	8:00A	Shelf 3	RH
8H	3-1	8:00	TR	RH	3-2	8:30	8BG	RH
8DHG	3-12	8:00	TR	RH	3-13	8:45	Shelf 3 8BG	RH
8B	3-13	8:00	TR	RH	3-14	8:00	Shelf 3	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

AR309314

*Refer to SAM generated Work List for Bottle definitions

Verified by: RH (Init) 3/27/90 (Date)

Rev. 11/90

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Industrial and Environmental Analysts, Inc.

Case No.: 868-007

Sample Management Chain of Custody

EPA ID: Equipment Blank Log-in By: CQKuhn Date: 2/21/91

Bottle Letters Avaliable: 9A -H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/21/91	1400	TRIP-25D, SEG, BIG, REFIG, Shelf 3	CQ
9A	2/22	8:60A	TR	RH	2/23	9:30A	25D	RH
9B	2/22	8:00A	TR	RH	2/23	9:30A	886-88G	RH
9C	2/26	8:60A	TR	RH	2/27	9:00A	Shelf 3	RH
9H	3-1	8:00	TR	RH	3-2	8:20	86G	RH
9D+G	3-12	8:00	TR	RH	3-13	8:45	Shelf 3 86G	RH
9B	3-13	8:00	TR	RH	3-14	8:00	Shelf 3	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

AR309315

*Refer to SAM generated Work List for Bottle definitions

Verified by: RH (Init) 3/20/90 (Date)

REV. 1/1

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Industrial and Environmental Analysts, Inc.

Case No.: 868-007

Sample Management Chain of Custody

EPA ID: 48A Log-in By: [illegible] Date: 2/21/91

Bottle Letters Avaliable: 10A-F

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL	[redacted]				2/21/91	1400	TIR-25D, 86F, 86G, Shelf 3	CR
10A	2/22	8:00A	TR	RH	2/23	9:30A	85D	RH
10C	2/26	8:00A	TR	RH	2/27	8:00A	Shelf 3	RH
10F	3-1	8:00A	TR	RH	3/2	8:45	86G	RH
10D&6	3-12	8:00A	TR	RH	3/13	8:30	Shelf 3 86F	RH
10B	3-13	8:00A	TR	RH	3/14	8:00	Shelf 3	RH

Notes: *Applicable Codes Are
ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

*Refer to SAM generated Work List for Bottle definition

AR309316

Verified by: RH (Init) 3/27/90 (Date)

REV. 10/90

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iea

IEA LABORATORY RESULTS

IEA Project #: BCM Engineers, Inc.
Client Name: 868-008

Sample #	Client ID	Parameter	Results		Date Analyzed
2	24A	Ammonia-N	<0.01	mg/L	03/12/91
3	Field Blank	Ammonia-N	<0.01	mg/L	03/12/91
4	19A	Ammonia-N	0.3	mg/L	03/12/91
5	16A	Ammonia-N	0.1	mg/L	03/12/91
2	24A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
3	Field Blank	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
4	19A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
5	16A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
2	24A	Chloride	21	mg/L	03/01/91
3	Field Blank	Chloride	<1.0	mg/L	03/01/91
4	19A	Chloride	8.0	mg/L	03/01/91
5	16A	Chloride	5.0	mg/L	03/01/91
2	24A	Chemical Oxygen Demand	<25	mg/L	03/15/91
3	Field Blank	Chemical Oxygen Demand	<25	mg/L	03/15/91
4	19A	Chemical Oxygen Demand	<25	mg/L	03/1[illegible]
5	16A	Chemical Oxygen Demand	<25	mg/L	03/15/[illegible]
1	48A	Nitrite	<0.02	mg/L	02/22/91
2	24A	Nitrite	<0.02	mg/L	02/22/91
3	Field Blank	Nitrite	<0.02	mg/L	02/22/91
4	19A	Nitrite	<0.02	mg/L	02/22/91
5	16A	Nitrite	<0.02	mg/L	02/22/91
1	48A	Nitrate	6.6	mg/L	02/22/91
2	24A	Nitrate	1.6	mg/L	02/22/91
3	Field Blank	Nitrate	<0.02	mg/L	02/22/91
4	19A	Nitrate	6.5	mg/L	02/22/91
5	16A	Nitrate	1.2	mg/L	02/22/91
2	24A	Sulfate	68	mg/L	03/11/91
3	Field Blank	Sulfate	<3.0	mg/L	03/11/91
4	19A	Sulfate	39	mg/L	03/11/91
5	16A	Sulfate	23	mg/L	03/11/91
2	24A	Sulfide	<1.0	mg/L	02/26/91
3	Field Blank	Sulfide	<1.0	mg/L	02/26/91
4	19A	Sulfide	<1.0	mg/L	02/26/91
5	16A	Sulfide	<1.0	mg/L	02/26/91

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IEA LABORATORY RESULTS

IEA Project #: 868-008
Client Name: BCM Engineers, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
2	24A	Ammonia-N	<0.01	mg/L	03/12/91
3	Field Blank	Ammonia-N	<0.01	mg/L	03/12/91
4	19A	Ammonia-N	0.3	mg/L	03/12/91
5	16A	Ammonia-N	0.1	mg/L	03/12/91
2	24A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
3	Field Blank	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
4	19A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
5	16A	Biochemical Oxygen Demand	<2.0	mg/L	02/22/91
2	24A	Chloride	21	mg/L	03/01/91
3	Field Blank	Chloride	<1.0	mg/L	03/01/91
4	19A	Chloride	8.0	mg/L	03/01/91
5	16A	Chloride	5.0	mg/L	03/01/91
2	24A	Chemical Oxygen Demand	<25	mg/L	03/15/91
3	Field Blank	Chemical Oxygen Demand	<25	mg/L	03/15/91
4	19A	Chemical Oxygen Demand	<25	mg/L	03/15/91
5	16A	Chemical Oxygen Demand	<25	mg/L	03/15/91
1	48A	Nitrite	<0.02	mg/L	02/22/91
2	24A	Nitrite	<0.02	mg/L	02/22/91
3	Field Blank	Nitrite	<0.02	mg/L	02/22/91
4	19A	Nitrite	<0.02	mg/L	02/22/91
5	16A	Nitrite	<0.02	mg/L	02/22/91
1	48A	Nitrate	6.6	mg/L	02/22/91
2	24A	Nitrate	1.6	mg/L	02/22/91
3	Field Blank	Nitrate	<0.02	mg/L	02/22/91
4	19A	Nitrate	6.5	mg/L	02/22/91
5	16A	Nitrate	1.2	mg/L	02/22/91
2	24A	Sulfate	68	mg/L	03/11/91
3	Field Blank	Sulfate	<3.0	mg/L	03/11/91
4	19A	Sulfate	39	mg/L	03/11/91
5	16A	Sulfate	23	mg/L	03/11/91
2	24A	Sulfide	<1.0	mg/L	02/26/91
3	Field Blank	Sulfide	<1.0	mg/L	02/26/91
4	19A	Sulfide	<1.0	mg/L	02/26/91
5	16A	Sulfide	<1.0	mg/L	02/26/91

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iea

METHOD BLANK SUMMARY

Parameter: Ammonia
IEA Project No.: 868-008

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	0.1 mg/L	03/12/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-008-2
868-008-3
868-008-4
868-008-5

AR309319

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-008
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-006(0)-1	Ammonia	<0.1	<0.1	0	EPA #350.3

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

FORM IQCSUM Rev 082990

AR309320

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-008
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-006(0)-1	03/12/91	Ammonia	20	<0.1	19	95	EPA 350.3

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

%R = (SSR - SR)/ (SA) * 100

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

FORM QCSPK Rev 082890

AR309321

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iea

METHOD BLANK SUMMARY

Parameter: Biochemical Oxygen Demand
IEA Project No.: 868-008

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	2.0 mg/L	02/22/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-008-2
868-008-3
868-008-4
868-008-5

FORM MBLKSUM Rev 022790

AR309322

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-008
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-008-2	BOD	<2.0	<2.0	0	Std. Methods #507

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

FORM IQCSUM Rev 082990

AR309323

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iea

METHOD BLANK SUMMARY

Parameter: Chloride
IEA Project No.: 868-008

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	1.0 mg/L	03/01/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-008-2
868-008-3
868-008-4
868-008-5

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AR309324

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-008
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-008-4	Chloride	8.0	8.0	0	EPA #325.3

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

FORM IQCSUM Rev 082990

AR309325

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-008
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-008-4	03/01/91	Chloride	50	8.0	58	100	EPA #325.3

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

FORM QCSPK Rev 082890

AR309326

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iea

METHOD BLANK SUMMARY

Parameter: Chemical Oxygen Demand
IEA Project No.: 868-008

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	25 mg/L	03/15/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-008-2
868-008-3
868-008-4
868-008-5

AR309327

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-008
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
860-008-4	COD	<25	<25	0	EPA #410.4

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

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AR309328

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-008
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-008-5	03/15/91	COD	250	<25	250	100	EPA #410.4

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

FORM QCSPK Rev 082890

AR309388

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iea

METHOD BLANK SUMMARY

Parameter: Nitrate
IEA Project No.: 868-008

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	0.02 mg/L	02/22/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-008-1
868-008-2
868-008-3
868-008-4
868-008-5

AR309330

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-008
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-008-1	Nitrate	6.6	6.6	0	EPA #353.2

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-008-1
868-008-2
868-008-3
868-008-4
868-008-5

FORM IQCSUM Rev 082990

AR309331

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-008
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-008-5	02/22/91	Nitrate	0.25	1.2	1.5	120	EPA #353.2

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-008-1
868-008-2
868-008-3
868-008-4
868-008-5

FORM QCSPK Rev 082890

AR309332

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iea

METHOD BLANK SUMMARY

Parameter: Nitrite
IEA Project No.: 868-008

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	0.02 mg/L	02/22/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-008-1
868-008-2
868-008-3
868-008-4
868-008-5

FORM MBLKSUM Rev 022790

AR30933

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-008
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-008-1	Nitrite	<0.02	<0.02	0	EPA #353.2

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-008-1
868-008-2
868-008-3
868-008-4
868-008-5

FORM IQCSUM Rev 082990

AR309334

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-008
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-008-5	02/22/91	Nitrite	0.25	<0.02	0.24	96	EPA #353.2

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-008-1
868-008-2
868-008-3
868-008-4
868-008-5

FORM QCSPK Rev 082890

AR309335

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iea

METHOD BLANK SUMMARY

Parameter: Sulfate
IEA Project No.: 868-008

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	3.0 mg/L	03/11/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-008-2
868-008-3
868-008-4
868-008-5

FORM MBLKSUM Rev 022790

AR309336

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iea

INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-008
Matrix: Water

IEA REFERENCE NO.	TEST PARAMETER	DUPLICATE RESULTS Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-008-2	Sulfate	68	68	0	Std. Methods #426C

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

FORM IQCSUM Rev 082990

AR309337

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INORGANIC QC SUMMARY
SPIKE RESULTS

IEA Project No.: 868-006(0)
Matrix: Water

IEA REF. NO.	ANALYSIS DATE	TEST PARAMETER	SPIKE RESULTS (mg/L) SA	SR	SSR	%R	METHOD
868-006(0)-1	03/11/91	Sulfate	*	46	*	*	Std. Methods #426C

%R = (SSR - SR) / (SA) * 100

SA = Spike Added
SR = Sample Results
SSR = Spike Sample Results

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

FORM QCSPK Rev 082890

AR309338

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iea

METHOD BLANK SUMMARY

Parameter: Sulfide
IEA Project No.: 868-008

BLANK RESULTS	QUANTITATION LIMIT	DATE ANALYZED
BQL	1.0 mg/L	03/26/91

BQL = Below Quantitation Limit

CORRESPONDING SAMPLES:

868-008-2
868-008-3
868-008-4
868-008-5

AR309339

FORM MBLKSUM Rev 022790

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INORGANIC QC SUMMARY
DUPLICATE ANALYSIS

IEA Project No.: 868-008
Matrix: Water

DUPLICATE RESULTS

IEA REFERENCE NO.	TEST PARAMETER	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	METHOD
868-007-6	Sulfide	<1.0	<1.0	0	Std. Methods #426C

$$RPD = \frac{S-D}{(S+D)/2 \times 100}$$

Corresponding Samples:

868-008-2
868-008-3
868-008-4
868-008-5

FORM IQCSUM Rev 082990

AR309340

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INDUSTRIAL & ENVIRONMENTAL ANALYSTS, INC.
3000 WESTON PKWY.
CARY, N.C. 27513

CHAIN OF CUSTODY RECORD

NO: 12184

REGULATORY CLASSIFICATION - PLEASE SPECIFY
☐ NPDES ☐ DRINKING WATER ☐ RCRA ☒ OTHER Cercla/SARA

PROJECT # Bart# 00-6012-02
PROJECT NAME: Chem-Solv Inc.
SAMPLERS (SIGNATURE): Russell Mehdi, Andrew Hamm

DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	SOIL	WATER	@pH 2 BOD	@pH 500ml Zinc Acetate Sulfide	@pH 500ml SOX	@pH 500ml H2SO4 Field COD	@pH 250ml H2SO4 Field	@pH 500ml Method NO3/NO2 CL						
2/20/91	10:20		X	48A	2		X						1 NO3 1 NO2						
2/21	10:45		X	24A	8		X	1	1	1	1	1	3						
2/21	11:00		X	Field Blank	8		X	1	1	1	1	1	3						
2/21	11:35		X	19A	8		X	1	1	1	1	1	3						
2/21	12:40		X	16A	8		X	1	1	1	1	1	3						

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
			Russell Mehdi	2/21/91	9:40
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LAB BY	DATE	TIME
Russell Mehdi	2/21/91	16:00	[illegible]	2/22/91	1030

IEA QUOTE NO.: 91-0115-05
IEA RUSH NO.:
PROJECT MANAGER (PLEASE PRINT): IEA - Betty Teismann
P.O. NO.:

IEA REMARKS: IEA 4868-008

FIELD REMARKS: Shipped Fed-X Airbill # 97349014 2 boxes

Industrial and Environmental Analysts, Inc.

Case No.: 868-008

Sample Management Chain of Custody

EPA ID: 48A Log-in By: [illegible] Date: 2/22/91

Bottle Letters Avaliable: 1A-B

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/22/91	1040	R18-90E	CR
1A-B	2/27/91	11:00	TR	RH	2/25/91	9:00A	R18 90E	RH

Notes: *Applicable Codes Are
ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

AR309342

*Refer to SAM generated Work List for Bottle definitions

Verified by: RH (Init) 3/20/90 (Date)

Rev. 10/90

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Industrial and Environmental Analysts, Inc.

Case No.: 868-008

Sample Management Chain of Custody

EPA ID: 24A Log-in By: CRK Date: 2/22/91

Bottle Letters Avaliable: 2A - H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/22/91	1040	RIE-10F, 90F, 90E Shelf 14	CR
2A.E.F	2/22/91	11:00	TR	RH	2/25/91	9:00A	RIE 10F RIE 90E	RH
2C	2/26	9:00A	TR	RH	2/27	8:00A	Shelf 14	RH
2H	3/1	8:50A	TR	RH	3/2	9:00A	Shelf 14	RH
2B	3-11	9:15A	TR	RH	3/12	8:00A	Shelf 14	RH
2D	3-12	8:00A	TR	RH	3/13	8:15A	Shelf 14	RH
2G	3-15	8:10A	TR	RH	3/16	8:30A	90F	RH
								/

Notes: *Applicable Codes Are
ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

*Refer to SAM generated Work List for Bottle definitions

AR309343

Verified by: RH (Init) 3/27/90 (Date)

REV. 10/90

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Industrial and Environmental Analysts, Inc.

Case No.: 868-008

Sample Management Chain of Custody

EPA ID: Field Blank Log-in By: CQK Date: 2/22/91

Bottle Letters Avaliable: 3A - H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/22/91	1040	R1F-10F, 90F, 90E, Shelf 14	CQ
3A, E-F	2-22-91	11:00	TR	RH	2/25/91	9:00	R1F 10F R1E 90E	RH
3C	2/26	9:00A	TR	RH	2/27	8:00A	shelf 14	RH
3H	3/1	8:00A	TR	RH	3/2	9:00A	90F	RH
3B	3/11	8:15A	TR	RH	3/12	8:00A	shelf 14	RH
3D	3/12	8:00A	TR	RH	3/13	8:15A	shelf 14	RH
3G	3/15	8:10	TR	RH	3/16	8:30A	90F	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

*Refer to SAM generated Work List for Bottle definitions

AR309344

Verified by: RH (Init) 3/27/90 (Date)

QEV 10/90

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Industrial and Environmental Analysts, Inc.

Case No.: 868-008

Sample Management Chain of Custody

EPA ID: 19A Log-in By: CQK Date: 2/22/91

Bottle Letters Avaliable: 4A - 4H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL					2/22/91	1040	R1A-10F, 90G, 90E, Shelf 14	CQ
4E-A	2/22/91	11:00	TR	RH	2/25/91	9:00	R1A 90E R1A 10F	RH
4C	2/26	9:00A	TR	RH	8/27	8:00A	shelf 14	RH
4H	3/1	8:00A	TR	RH	3/2	9:00A	90F	RH
4B	3/11	8:15A	TR	RH	3/12	8:00A	Shelf 14	RH
4D	3/12	8:00A	TR	RH	3/13	8:15A	Shelf 14	RH
4G	3/15	8:10A	TR	RH	3/16	8:30A	90F	RH

Notes: *Applicable Codes Are ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose
*Refer to SAM generated Work List for Bottle definitions

AR309345

Verified by: RH (Init) 3/21/90 (Date)

Rev. 6/90

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Industrial and Environmental Analysts, Inc.

Case No.: 868-008

Sample Management Chain of Custody

EPA ID: 16A Log-in By: [illegible] Date: 2/22/91

Bottle Letters Avaliable: SA - H

SAMPLE OUT					SAMPLE IN			
Bottle	Date	Time	Code	Init	Date	Time	Location	Init
ALL	[redacted]				2/22/91	1040	R18-10F, 90F, 92E Shelf 14	CL
SA-G-F	2/22/91	11:00	TR	RH	2/25/91	9:00	R18 90 E R18 10 F	RH
SC	2/26	9:00A	TR	RH	2/27	8:00A	Shelf 14	RH
SH	3/1	8:00A	TR	RH	3/2	9:00A	90F	RH
SB	3/11	8:15A	TR	RH	3/12	8:00A	Shelf 14	RH
SD	3/12	8:00A	TR	RH	3/13	8:15A	Shelf 14	RH
SG	3/15	8:10A	TR	RH	3/16	8:30A	90F	RH

Notes: *Applicable Codes Are
ST = Storage
TR = Transfer
EX = Extraction
DI = Dispose

*Refer to SAM generated Work List for Bottle definitions

AR309346

Verified by: RH (Init) 3/27/90 (Date)

QEV 11/90

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DATA VALIDATION REPORT
CHEM-SOLV, INC.
CHESWOLD, DELAWARE
GROUNDWATER SAMPLING EVENT

BCM PROJECT NO. 00-6012-02
APRIL, 1991

PREPARED BY

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BCM

DATA VALIDATION REPORT
INORGANIC DATA
GROUNDWATER SAMPLING EVENT
CHEM-SOLV INC.
CHESWOLD, DELAWARE

INTRODUCTION

This data validation report addresses inorganic data from the February 1991 groundwater sampling event at the Chem-Solv, Inc. site in Cheswold, Delaware. Case 868-006 contains six samples. Each has a filtered and unfiltered aliquot. Filtered and unfiltered samples 26A, 33A, 33AD, and 39A were analyzed for manganese. Filtered and unfiltered samples 33A and 33AD were analyzed for zinc. Filtered and unfiltered samples 9B and 9A were analyzed for both total and inorganic mercury. The sample set included two equipment blanks, filtered and unfiltered, and two unfiltered trip blanks. All samples were analyzed by a single subcontracted laboratory according to the United States Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis, July 1988, revisions 2/89 and 6/89.

These data were reviewed according to the EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, June 13, 1988, and EPA Region III Modifications to the Inorganic Functional Guidelines, June 1988. The review of the data included holding times, blank analysis results, initial and continuing calibrations, matrix spike results, laboratory and field duplicate results, detection limits, quantitative calculations, and a general review of analytical data. All data have been validated with regards to usability. Areas of concern with respect to usability are listed in the following section according to the seriousness of the problem. The data summary tables located at the end of this report have been annotated with the appropriate qualifier codes. Appendix A of this document summarizes the specifics of this review.

FINDINGS/QUALIFIERS

All Clean Water Act (40 CFR 136) holding times were met as specified. Laboratory and field blanks exhibited no contamination. Laboratory control samples and calibration verification samples were within control limits. Laboratory and field duplicates exhibited good reproducibility. Matrix spike recoveries were precise.

It is recommended that the data from Inorganic Case 868-006 be used with the following qualifier statement:

1. Filtered samples 33ADF (BC005), 33AF (BC007), and equipment blank 2/19/91 (BC009) are qualified as estimated for zinc due to serial dilution results that do not agree within 10 percent, indicating a physical or chemical interference or laboratory specific problem.

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BCM

It should be noted that unfiltered sample 9BU was analyzed for both total and inorganic mercury. The inorganic mercury result of 2.6 ug/l was slightly higher than the total mercury result of 2.2 ug/l. A modified method 245.1 CLP-M was used to analyze for inorganic mercury. This method deleted certain steps in the digestion procedure that liberate the organic mercury and eliminate interferences. This was done to measure only the inorganic mercury. Since the complete digestion procedure was not performed there may be possible organic interferences causing the inorganic mercury result to be higher than the total mercury. Alternatively, the difference between the two results is so small that it may just represent the analytical variability of the method.

Filtered sample 33ADF (BC005) had a manganese result of 30.1 ug/l while the unfiltered sample 33ADU (BC004) had a manganese result of 27.3 ug/l.

The linear range for manganese and zinc was last determined in October 1990. Although this is non-compliant with SOW 788, which states a linear range analysis must be determined every 3 calendar months for each element, there is no significant impact on the data.

SUMMARY

The laboratory performed the analysis in compliance with CLP including the required quality control samples.

Holding times were met for all samples. Analyses of laboratory and field blanks showed no contamination. Laboratory control and calibration verification samples were within acceptable control limits. Laboratory and field duplicates exhibited good reproducibility. Matrix spike recoveries were within control limits. A serial dilution result was outside the control limit indicating a possible matrix interference.

All data should be used with the limitations imposed by the assigned qualifier. For specific review forms see Appendix A.

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DATA SUMMARY

Site Chem-Solv, Inc.

Case No. 868-006

Laboratory IEA

Date of Sample 2/19/91 - 2/20/91

Page 1 of 3

BCM

Matrix aqueous

Units mg/l

CRDL	LAB IDL	FIELD I.D. / LAB I.D.	26AU BC002	26AF BC003	33ADU BC004	33ADF BC005	33AU BC006	33AF BC007	Eq. BlkU BC008	Eq. BlkF BC009	TripBlkU BC010	39AU BC011
		Aluminum										
		Antimony										
		Arsenic										
		Barium										
		Beryllium										
		Cadmium										
		Calcium										
		Chromium										
		Cobalt										
		Copper										
		Iron										
		Lead										
		Magnesium										
15	2	Manganese	23400	20300	27.3	30.1	31.8	31.6				7608
0.2	0.2	Mercury										
		Nickel										
		Potassium										
		Selenium										
		Silver										
		Sodium										
		Thallium										
		Vanadium										
20	7	Zinc			3280	2180 J	3340	2240 J	[10.5]		UJ [16.4]	
		Cyanide										

AR309351

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DATA SUMMARY

Site: Chem-Solv Inc

Case No.: 868-006

Laboratory: IEA

Date of Sample: 2/19/91 - 2/20/91

Page 2 of 3

BCM

Matrix: aqueous

Units: mg/l

CRDL	LAB IDL	FIELD I.D. / LAB I.D.	39AF BC012	9ADU BC013	9ADF BC014	9ADIU BC015	9ADIF BC016	9BU BC017	9BF BC018	9BIU BC019	9BIF BC020	9AU BC021
		Aluminum										
		Antimony										
		Arsenic										
		Barium										
		Beryllium										
		Cadmium										
		Calcium										
		Chromium										
		Cobalt										
		Copper										
		Iron										
		Lead										
		Magnesium										
15	2	Manganese										
0.2	0.2	Mercury						2.2	2.1	2.6	0.27	
		Nickel										
		Potassium										
		Selenium										
		Silver										
		Sodium										
		Thallium										
		Vanadium										
20		Zinc										
		Cyanide										
		% Solids										

AR309352

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DATA SUMMARY

Site: Chem-Solv Inc.

Case No.: 868-006

Laboratory: IEA

Date of Sample: 2/20/91

Page 3 of 3

BCM

Matrix: aqueous

Units: mg/l

CRDL	LAB MDL	FIELD I.D. / LAB I.D.	9AF BC022	9AIL BC023	9AIF BC024	Eq BIKL BC025	EqBIKF BC026	T.BIK.IL BC027				
		Aluminum										
		Antimony										
		Arsenic										
		Barium										
		Beryllium										
		Cadmium										
		Calcium										
		Chromium										
		Cobalt										
		Copper										
		Iron										
		Lead										
		Magnesium										
15	2	Manganese										
0.2	0.2	Mercury										
		Nickel										
		Potassium										
		Selenium										
		Silver										
		Sodium										
		Thallium										
		Vanadium										
20	7	Zinc										
		Cyanide										

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BCM

QUALIFIER CODES

J - Estimated value

UJ - Estimated detection limit

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BCM

DATA VALIDATION REPORT
VOLATILE ORGANICS DATA
GROUNDWATER SAMPLING EVENT
CHEM-SOLV INC.
CHESWOLD, DELAWARE

INTRODUCTION

This data validation report addresses volatile organic data from the February 1991 groundwater sampling event at the Chem-Solv, Inc. site in Cheswold, Delaware. Case 868-006 contains four samples, an equipment blank, and a trip blank. All samples were unfiltered and preserved with hydrochloric acid. The findings offered in this review are based upon a general review of sample data, analytical holding times, gas chromatography/mass spectrometry (GC/MS) tunes, initial and continuing calibrations, blank analysis results, matrix spike/matrix spike duplicate results (MS/MSD), field duplicate analysis results, surrogate spike results, internal standards performance, TCL volatile compound identifications, tentatively identified compound (TIC) identification, and quantitative calculations.

The samples in this report were analyzed by a subcontracted laboratory using the United States Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analyses, February 1988 with revisions 9/88 and 4/89. The quality assurance review was prepared in accordance with EPA Laboratory Data Validation Functional Guidelines for Evaluating Organic Analysis, February, 1988.

The support documentation appendix of this report summarizes the specifics of this review. The data summary lists only compound which were reported to be present. The constituents detected represent a small portion of the total analytical protocol. Analytical problems were minimal and are outlined in the following Findings/Qualifier Section.

FINDINGS/QUALIFIERS

No results were qualitatively questioned.

Clean Water Act (40 CFR 136) analytical holding times and CLP contract required holding times were met for all samples. GC/MS tune, internal standards performance, surrogate recovery, and MS/MSD results met criteria. Laboratory and field blanks were found to be free of contamination, the lab blank met CLP criteria for all target compounds. Target compound positive results were properly identified and quantitatively correct. Required quantitation limits were met. The field duplicate samples 33A (BC006) and 33AD (BC004) exhibited acceptable results.

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Initial calibration response factors, average response factors, and percent relative standard deviations were spot checked (all compounds with positive results), no errors were found. Continuing calibrations response factors and percent differences were spot checked (all compounds with positive results and all compounds with percent differences greater than 25 percent), no errors were found. Systems performance check compounds and continuing calibration compound met criteria for both initial and continuing calibrations.

It is recommended that the data from Organic Case 868-006 be used with the following qualifier statement:

1. Due to continuing calibration percent differences greater than 25 percent, quantitation limits for bromomethane, acetone, and 2-butanone are estimated in all samples.

   It should be noted that this effect is probably minor for acetone (28 percent) and 2-butanone (42 percent due to low response factors), especially since these compounds are common laboratory artifacts which may also contaminate standards causing the variability noted in the response factors.

The reviewer noted that sample 26A (BC002) which exhibited a positive result for benzene (29 ug/l) was analyzed immediately after the MS/MSD analysis (to which benzene is spiked at 50 ug/l). There is a possibility that the benzene result in 26A (BC002) is due to carryover; however, the reviewer assessment is that benzene is present. Its' presence is based upon the finding that similar volatile TICs were found to be present in 26A (BC002) and that the likelihood of a volatile carryover at greater than 50 percent of the spike component concentration is remote.

Sample 26A (BC002) was the only sample which exhibited TICs. The TIC spectra were reviewed and, in general, the reviewer concurred with the laboratory's interpretation. Reviewer comments on TIC interpretation are included in the attached support documentation appendix.

SUMMARY

The volatile organics analysis was performed in compliance with the referenced CLP SOW. All contractual/SOW criteria were met. No results were qualitatively questioned, no postive results were quantitatively questioned.

This review has identified continuing calibration percent differences as a concern for three compound quantitation limits. For specifics relating to this review, see the attached support documentation in Appendix B.

AR309356

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BCM Number 00-6012-02
SDG Number BC001 CASE 868-006

SAMPLE DATA SUMMARY
TARGET COMPOUNDS

☒ Organic ☐ Inorganic

Site Name Chem Solv
Date of Sample 2-19-91

VOLATILES ONLY

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	1,1,1-trichloroethane	Trichloroethene	Benzene	Tetrachloroethene										Remarks
BC001	41A	AQ	ug/L														
BC002	26A	AQ	ug/L			29											
BC004	33AD.	AQ	ug/L	8	110												
BC006	33 A	AQ	ug/L	10	120		4J										
BC008	EQUIPMENT BLANK	AQ	ug/L														
BC010	TRIP BLANK	AQ	ug/L														

AP306357

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

BCM

QUALIFIER CODES

J - Estimated value below contract required quantitation limit.

/22100

AR309358

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BCM

DATA VALIDATION REPORT
WET CHEMISTRY DATA
GROUNDWATER SAMPLING EVENT
CHEM-SOLV., INC.
CHESWOLD, DELAWARE

INTRODUCTION

This data validation report addresses wet chemistry data from the February 1991 groundwater sampling event at the Chem-Solv., Inc. site in Cheswold, Delaware. Case 868-006 contained two groundwater samples, an equipment blank, and a field duplicate sample. Case 868-007 contained eight groundwater samples, an equipment blank, and a field duplicate sample. Case 868-008 contained three samples and an equipment blank. All samples were analyzed by a single subcontracted laboratory according to the United States Environmental Protection Agency (EPA) Methods for Chemical Analysis of Water and Wastes, March 1983.

These data have been reviewed according to EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, June 13, 1988, and EPA Region III Modifications to the Inorganic Functional Guidelines, June 1988. The review of the data included holding times, blank analysis results, laboratory and field duplicate results and matrix spike results. All data have been validated with regards to usability. Areas of concern with respect to usability are listed in the following section. The data summary tables located at the end of this report have been annotated with the appropriate qualifier codes.

FINDINGS/QUALIFIERS

All Clean Water Act (40 CFR 136) holding times were met as specified. Laboratory and equipment blanks exhibited no contamination. Laboratory duplicates showed good reproducibility. Matrix spike recoveries were precise.

It is recommended that the data from Case 868-006 be used with the following qualifier statement.

1. Nitrate results for field duplicate samples 33A and 33AD exceeded the 20 percent RPD acceptance limits for duplicate precision. Reported results are qualified as estimated. The reported results may not reflect the true average concentration.

It should be noted that the laboratory reported a quantitation limit of 0.01 mg/l for ammonia on the laboratory results form, while on the method blank summary sheet a quantitation limit of 0.1 mg/l for ammonia is reported.

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BCM

The laboratory did not include a method blank, duplicate analysis, or a matrix spike result summary for C.O.D. for Case 868-007.

The reported sample, blank, duplicate, and matrix spike results cannot be verified due to an incomplete data package.

SUMMARY

Holding times were met for all samples. Analyses of laboratory and equipment blanks exhibited no contamination. Laboratory duplicates showed good reproducibility. Matrix spike recoveries were within control limits.

/22100

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BCM

QUALIFIER CODES

J - Estimated value

UJ - Estimated detection limit

AR309360

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SAMPLE DATA SUMMARY

TDD Number
EPA Number 8W8-006

Site Name Chem-Solv. Inc
Date of Sample 2/19/91
Laboratory IEA

Sample Number	Sample Description and Location	Phase	Units	AMMONIA-N	B.O.D	CHLORIDE	C.O.D	NITRITE	NITRATE	SULFATE	SULFIDE							Remarks
26A			mg/l			15	32	0.02	UJ	46								
33A			mg/l	0.1		14			10 J	46								
33AD			mg/l			14			7.4J	43	1.2							Field duplicate
B1K			mg/l															equipment Blk 2/19/91

AR309362

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SAMPLE DATA SUMMARY

TDD Number
EPA Number 028-007

Site Name Chem-Solv Inc
Date of Sample 2/20/91
Laboratory TEA

Sample Number	Sample Description and Location	Phase	Units	AMMONIA-N	B.O.D	CHLORIDE	C.O.D	NITRITE	NITRATE	SULFATE	SULFIDE							Remarks
9A			mg/l			15			1.6	39								
39A			mg/l	0.2		150		0.05	0.35									
9AD			mg/l			15			1.6	38								field duplicate
9B			mg/l			13			11	48								
22A			mg/l			15			9	24								
MW14	43		mg/l			17			9.4	3.7								
5A			mg/l			3			0.61	50								
5B			mg/l			9			3.9	22								
42A			mg/l			8			6.6									
BLK			mg/l							26								equipment Blk 2/20/91

AR309383

SAMPLE DATA SUMMARY

TDD Number
EPA Number R08-008

Site Name Chem-Solv Inc
Date of Sample 2/21/91
Laboratory IEA

Sample Number	Sample Description and Location	Phase	Units	AMMONIA-N	B.O.D	CHLORIDE	C.O.D	NITRITE	NITRATE	SULFATE	SULFIDE						Remarks
24A			mg/l			21			1.6	68							
19A			mg/l	0.3		8			6.5	39							
16A			mg/l	0.1		5			1.2	23							
Blk			mg/l														field Blk 2/21/91

AR309364

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BCM

APPENDIX A

AR309365

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BCM

BCM ENGINEERS, INC.
INORGANIC DATA VALIDATION SUMMARY
ICP ANALYSES

Project Name Chem-Solv Inc Case No. 868-006

BCM Project No. 6012-02 Sampling Date(s) 2/19/91 + 2/20/91

Field ID 26AU, 26AF, 33ADU, 33ADF, 33AU, 33AF, Equip. BLK 2/19 + 2/20 Date Review Completed 3/26/91

Eq. BLK F 2/19+20, Trip BLK 2/19, 20 Reviewer D. McGuire

MATRIX	CONCENTRATION Low	Med.	High	MATRIX RELATED COMMENTS
Soil/solid				
Aqueous	✓			2 Equip BLKs U+F / date Trip BLK U
Other				

QC CHECK	OK	FYI	ACTION	COMMENTS
Holding Time	✓			3/22
Calibration Blanks	✓			
Initial Calibration	✓			
Continuing Calibration	✓			
Preparation Blank	✓			
CRDL Standard (CRI)	✓			
Interference Check Sample	✓			Did not run for any [illegible]
Lab Control Sample	✓			
Lab Duplicate	✓			
Matrix Spike	✓			
Serial Dilution	✓			Zn 005 11.9

REVIEWER'S COMMENTS:

Linear range 10/3/90 over 3 months
ICSA + ICSAB only run for Mn & Zn therefore form II completed.
Zn - BC 005 11.9 serial dil J, 009 UJ (associated BLK)

AR309366

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BCM

BCM ENGINEERS, INC.
INORGANIC DATA VALIDATION SUMMARY
MERCURY ANALYSES

Project Name Chem-Solv Inc Case No. 868-006

BCM Project No. 6012-02 Sampling Date(s) 2/19,20

Field ID 26AU, 26AF, 28AU Date Review Completed 3/26/91

33AUF, 33AU, 33AF, 8, BLK 7, BLK Reveiwer D McGuire

MATRIX	CONCENTRATION Low	Med.	High	MATRIX RELATED COMMENTS
Soil/solid				
Aqueous	✓			
Other				

QC CHECK	OK	FYI	ACTION	COMMENTS
Holding Time	✓			
Calibration Blank	✓			
Initial Calibration	✓			
Continuing Calibration	✓			
CRDL Standard (CRA)	✓			
Preparation Blank	✓			
Lab Duplicate	✓			
Matrix Spike	✓			

r = 0.9996

REVIEWER'S COMMENTS:

13, 14, 17, 18, 21, 22 Total
15, 16, 19, 20, 23, 24 Inorg.

019 - Inorg mercury > Total

AR309367

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BCM

APPENDIX B

AR309368

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BCM

BCM ENGINEERS INC.

VOLATILE/~~SEMIVOLATILE~~ DATA VALIDATION SUMMARY

Project Name Chem Solv CASE 868-006 SDG BC001 Sampling Dates 2/19/91

BCM Project No. 00-6012-02 Date Review Completed 4/29/91

Field ID 26A, 41A, 33A, 33AD, TRIP BLANK, EQUIP BLANK Reviewer Atwood F. Davis

MATRIX	CONCENTRATION Low	Med	High	MATRIX-RELATED COMMENTS
Soil/Solid				
Aqueous	X			
Other				

VOLATILE/SEMIVOLATILE	OK	FYI	ACTION	COMMENTS
Holding Time	X			
GC/MS Tuning	X			
Calibration		X		ICAL RRF & %RSD OK. CCAL 3 compounds %D >25% SPECIAL OK
Blanks	X			
Surrogate Recovery	X			
MS/MSD	X			Aqueous well, TCE RPD = 8.7%
Field Duplicates	X			1,1,1-TCA = 22.2% (low level), PCE MS 4. OK due to low level results.
Internal Standards	X			
TCL Compound ID	X			Benzene was identified in BC002 Run after MS/MSD @ 60 ug/L each identified; See attached review TICs
TIC		X		
Quantitation and Detection Limits	X			

* Possible carryover of benzene in BC002; however, BC002 also has TICs of similar structures (perhaps [illegible]) [illegible] 50% carryover not likely - reviewer assesses positive hit in sample.

AP.01936

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SOP WORK SHEETS FOR VOLATILES

HOLDING TIMES

LAB	SAMPLE NO *	FIELD ID	HCL PRESERVED (GTB) YES	HCL PRESERVED (GTB) NO	CONC. LEVEL / MATRIX	DATE SAMPLED	DATE RECEIVED	DATE ANALYZED	TIME ANALYZED	INSTRUMENT I.D.	10 days UTSR CONTRACT HOLDING TIME MET ** YES	10 days UTSR CONTRACT HOLDING TIME MET ** NO	14 days 40 CFR 136 HOLDING TIME MET YES	14 days 40 CFR 136 HOLDING TIME MET NO	ACTION
BC001	41A		✓		L/A	2/19/91	2/20/91	3/2	1:05	MSD5	✓		✓		
BC002	26A		✓					3/2	4:07		✓		✓		
BC004	33AD		✓					3/1	23.10		✓		✓		
BC006	33A		✓					3/1	22:36		✓		✓		
BC008	EBLK		✓					3/1	23:50		✓		✓		
BC010	TBLK		✓					3/2	0:26		✓		✓		
BC001MS	41A		✓					3/2	3:32		✓		✓		
BC001MSD	41A		✓					3/2	2:29		✓		✓		
VBLK					L/A	NA	NA	3/1/91	22:01	MSD5					

** SAMPLES REC'D 2/20 @ 9:10A, 10 days UTSR = 3/2 9A

AR309370

* INCLUDE MATRIX SPIKES, BLANKS AND RE-RUNS HERE

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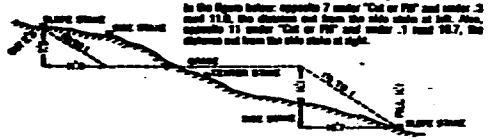
DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below, opposite 7 under "Cut or Fill" and under .3 and 11.8, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 and 10.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38

AR309371

Chem-Solv, Inc. Site
Cheswold, Delaware
Project No. 00-6012-02

Property of: BCM Engineers Inc.
1 Plymouth Meeting
Plymouth Meeting, PA 19462
(215) 825-3800

Volume I - Field activities
October 1989 - March 1990

Volume II - Field audit

Volume III - Field activities
March 1990 -

Volume IV - Groundwater Sampling

ATTACHMENT A

The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing.

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2/19/91

1124 1232 — 7.67

455 1235 — 1.21

[illegible] — 1.4

[illegible] — 1.75

[illegible] to Sample 26A for Vol, Mn, and wet chemistry parameters

HNU background = 1.4

- DTW = 6.67; 1 well volume = .13 gal
- Initial DO (after ~100 mls) = 0.8 ppm
- HNU of purge H_2O = 0.6
- 4 drops HCl to add to Volatiles

1305 Began purging PB 26A.

Split w/ CDMP

- Final DO = 0.7 ppm

1330 Sampling 26A for Volatiles, Mn, and wet chemistry parameters (ammonia, BOD, COD, chloride, DO, nitrate, sulfate, sulfide) plus pH, temperature, and specific conductance.

These samples will be split with CDM PPC for Volatiles and Mn.

Greg Bonacker Russell McIntosh Andrew Hanna

ATTACHMENT B

2/19/91

- All volatiles fixed in field w/ HCl to a pH < 2.0
- All metals (Mn, Zn, Hg) filtered and unfiltered and fixed in field w/ nitric acid (10%) to a pH of < 2.0 (except for mercury sampling samples which will be preserved to a pH of 2
- Well 26A sampled and purged w/ peristaltic pump.
- Field measurements (pH, DO, etc) recorded on Sequence forms
- Following purging, sample bottles filled in order: volatiles, DO (field measurement), nitrogen, wet chemistry

1415 Russ and Andrew to 41A to sample for volatiles. Greg observe to see IGA re addition of NaOH to sulfide samples. Darlene Bramoff will travel to Terra Lab or Atwood. Davis about this

1445 Began sampling 41A.

Greg Bonacker Russell McIntosh Andrew Hanna

AR309372

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7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Instrument ID: msd5 Calibration Date: 3/ 1/91 Time: 21:24

Lab File ID: 0301E01 Init. Calib. Date(s): 2/20/91 2/20/91

Matrix:(soil/water) WATER Level:(Low/med): LOW Column:(pack/cap) CAP

Min RRF50 for SPCC(#) = .300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

COMPOUND		RRF	RRF50	%D	
CHLOROMETHANE	#	.842	.672	20.2	#
BROMOMETHANE		.991	.540	45.5	
VINYL CHLORIDE	*	1.032	.889	13.9	*
CHLOROETHANE		.664	.692	4.2	
METHYLENE CHLORIDE		1.202	1.329	10.5	
ACETONE		.138	.177	28.1	
CARBON DISULFIDE		2.677	2.668	.4	
1,1-DICHLOROETHENE	*	1.002	1.031	2.9	*
1,1-DICHLOROETHANE	#	2.488	2.730	9.7	#
1,2-DICHLOROETHENE (TOTAL)		1.288	1.437	11.6	
CHLOROFORM	*	2.598	2.982	14.8	*
1,2-DICHLOROETHANE		1.401	1.716	22.5	
2-BUTANONE		.065	.092	42.0	
1,1,1-TRICHLOROETHANE		.426	.477	12.0	
CARBON TETRACHLORIDE		.424	.476	12.3	
VINYL ACETATE		.372	.433	16.4	
BROMODICHLOROMETHANE		.617	.715	15.9	
1,2-DICHLOROPROPANE	*	.385	.421	9.3	*
CIS-1,3-DICHLOROPROPENE		.553	.608	10.0	
TRICHLOROETHENE		.395	.435	10.0	
DIBROMOCHLOROMETHANE		.517	.612	18.5	
1,1,2-TRICHLOROETHANE		.298	.343	14.9	
BENZENE		.743	.822	10.6	
TRANS-1,3-DICHLOROPROPENE		.433	.466	7.7	
BROMOFORM	#	.387	.465	20.1	#
4-METHYL-2-PENTANONE		.204	.250	22.5	
2-HEXANONE		.138	.168	21.9	
TETRACHLOROETHENE		.429	.473	10.1	
1,1,2,2-TETRACHLOROETHANE	#	.572	.642	12.3	#
TOLUENE	*	.607	.618	1.8	*
CHLOROBENZENE	#	.885	.901	1.7	#
ETHYLBENZENE	*	.381	.384	.8	*
STYRENE		.742	.789	6.4	
XYLENE (TOTAL)		.448	.466	3.9	
TOLUENE-d8		1.080	1.057	2.1	
BROMOFLUOROBENZENE		.944	1.002	6.2	
1,2-DICHLOROETHANE-D4		1.335	1.514	13.4	

AR309373

FORM VII VOA

1/8

1 0072

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Initial Cal $\overline{RRF}$ check

ChemSolo
6012-02
4/29/91 [illegible]

Trichloroethene

RRF 20 $\frac{165949}{905772} \times \frac{50}{20} = .458$ ✓OK

RRF 50 $\frac{370729}{906608} \times \frac{50}{50} = .4089$ (.409) ✓OK

RRF 100 $\frac{742320}{947948} \times \frac{50}{100} = .3915$ (.392) ✓OK

RRF 150 $\frac{1026782}{932511} \times \frac{50}{150} = .367$ ✓OK

RRF 200 $\frac{1272464}{906061} \times \frac{50}{200} = .3511$ (.351) ✓OK

Check

$$\%RSD = \frac{.0415}{.3954} \times 100 = 10.4957 \ (10.5) \ ✓OK$$

$\overline{\pi} = .395$ ✓ OK

1,1,1-TCA

RRF 20 = $\frac{162167}{905772} \times \frac{50}{20} = .4474$ (.447) ✓OK

RRF 50 = $\frac{389745}{906608} \times \frac{50}{50} = .4299$ (.430) ✓OK

RRF 100 = $\frac{814948}{947948} \times \frac{50}{100} = .4298$ (.430) ✓OK

RRF 150 = $\frac{1169819}{932511} \times \frac{50}{150} = .4181$ (.418) ✓OK

RRF 200 = $\frac{1477457}{906061} \times \frac{50}{200} = .4066$ (.407) ✓OK

$\%RSD = \frac{.0150}{.4264} = 3.5178$ ✓OK rounding diff.

$\overline{\pi} = .4264 = .426$ ✓ OK

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Chem
6012-02
4/29/91

ICAL Check

Benzene

RRF 20 = $\frac{893399}{905772} \times \frac{50}{20}$ = .8152 (.815) ✓ OK

RRF 50 = $\frac{679931}{906605} \times \frac{50}{50}$ = .750 ✓ OK

RRF 100 = $\frac{1410180}{947948} \times \frac{50}{100}$ = .7438 (.744) ✓ OK

RRF 150 = $\frac{1922369}{932811} \times \frac{50}{150}$ = .705 ✓ OK

RRF 200 = $\frac{2532970}{906061} \times \frac{50}{200}$ = .6989 (.699) ✓ OK

%RSD = $\frac{.0464}{.7426} \times 100$ = 6.11 (6.3 ✓ OK round diff)

$\bar{X}$ = .7426 = .743 ✓ OK

Tetrachloroethene

RRF 20 = $\frac{159119}{757347} \times \frac{50}{20}$ = .5244 (.524) ✓ OK

RRF 50 = $\frac{339338}{769057} \times \frac{50}{50}$ = $\frac{4409}{.220}$ ($\frac{441}{.220}$) ✓ OK

RRF 100 = $\frac{654525}{783711} \times \frac{50}{100}$ = .4176 (.418) ✓ OK

RRF 150 = $\frac{897505}{746504} \times \frac{50}{150}$ = .4007 (.401) ✓ OK

RRF 200 = $\frac{1055461}{726087} \times \frac{50}{200}$ = .3634 (.363) ✓ OK

%RSD = $\frac{.0601}{.4294} \times 100$ = 13.996 (14) ✓ OK

$\bar{X}$ = .4294 ✓ OK

AR309375

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CCAL Check

Chem Solv
6012-02 ADD
4/25/91

TCE

$$RRF\ 50 = \frac{376067}{864705} \times \frac{50}{50} = .4349 \checkmark OK$$

$$\%D = \frac{.395-.435}{.395} \times 100 = -10.1 \quad \checkmark OK \quad \text{round diff.}$$

1,1,1 TCA

$$RRF\ 50 = \frac{412762}{864705} \times \frac{50}{50} = .4773 \checkmark OK$$

$$\%D = \frac{.426-.477}{.426} \times 100 = -11.97 \quad (12.0) \checkmark OK$$

Benzene

$$RRF\ 50 = \frac{710410}{864705} \times \frac{50}{50} = .8216 \checkmark OK$$

$$\%D = \frac{.743-.822}{.743} \times 100 = \cancel{7.1}\ -10.63 \ (10.6) \checkmark OK$$

Tetrachloroethene

$$\cancel{RRF\ 50} \ \%D = \frac{.429-.473}{.429} \times 100 = -10.256 \quad (10.1) \text{ round off } \checkmark OK$$

$$RRF\ 50 = \frac{362867}{767497} \times \frac{50}{50} = .4729 \quad \checkmark OK$$

$$\boxed{\%Ds > 25\%}$$

Bromomethane

$$RRF\ 50 = \frac{104211}{192911} \times \frac{50}{50} = .5405 \quad (.540) \checkmark OK$$

$$\%D = \frac{.991-.540}{.991} \times 100 = \cancel{44.64}\ 45.51 \ (45.5) \checkmark OK \qquad > 25\%$$

Acetone

$$RRF\ 50 = \frac{34054}{192911} \times \frac{50}{50} = .1766 \ (.177) \checkmark OK$$

$$\%D = \frac{.138-.177}{.138} \times 100 = -28.3 \quad \checkmark OK \qquad > 25\%$$

2-Butanone

$$RRF\ 50 = \frac{17815}{192911} \times \frac{50}{50} = .0924 \ (.092) \checkmark OK$$

$$\%D = \frac{.065-.092}{.065} \times 100 = -41.54 \ (42) \checkmark OK \quad > 25\%$$

AR309376

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SOP WORK SHEETS FOR VOLATILES

BLANKS

	SAMPLE NO.	DATE ANALYZED	TIME ANALYZED	APPROPRIATE METHOD BLANK FOR EACH GC/MS SYSTEM		BLANK ANALYSIS EVERY 12 HOURS OR EVERY 20 SAMPLES		CRITERIA OF <5XCRDL FOR MELTHYLENE CHLORIDE,ACETONE AND TOLUENE MET		CRITERIA OF < CRDL FOR ALL OTHER HSL COMPOUNDS MET		ACTION
				YES	NO	YES	NO	YES	NO	YES	NO	
	V BLK	3/1	22:01	X		X		X		X		
EB	BC008	3/1	23:50	X		X		X		X		
TB	BC010	3/2	0:26	X		X		X		X		

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SOP WORK SHEETS FOR VOLATILES

SURROGATES

SAMPLE NO.*	BLANK SURROGATES CRITERIA MET		IF "NO" WERE ALL ASSOCIATED SAMPLES RE-PURGED		SAMPLE SURROGATE RECOVERIES MET CRITERIA		IF "NO" WAS SAMPLE RE-PURGED		RE-PURGED SAMPLE MET CRITERIA		SURROGATES OUTSIDE CRITERIA	ACTION
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO		
BC001	NA				✓							
BC002	↓				✓							
BC004					✓							
BC006	✓				✓							
BC008	✓				✓							
BC010	✓				✓							
BC001MS	NA				✓							
BC001MSD	NA				✓							
VBLK01	✓				NA							

AR309378

* INCLUDE MATRIX SPIKES, BLANKS AND RE-RUNS HERE

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SOP WORK SHEETS FOR VOLATILES

MATRIX SPIKE / MATRIX SPIKE DUPLICATE

SAMPLE NO.*	MATRIX SPIKES FOR EVERY 20 SAMPLES		ADVISORY LIMITS FOR SPIKE RECOVERY MET		ADVISORY LIMITS FOR SPIKE RPD MET		ACTION
	YES	NO	YES	NO	YES	NO	
BC001MS	✓		✓		✓		
BC001MSD	✓		✓		✓		

AR309379

* INCLUDE MATRIX SPIKES, BLANKS AND RE-RUNS HERE

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1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BC002

Lab Name: IEA Contract: 68-W8-0045

Lab Code: IEA Case No.: 868-6 SAS No.: SDG No.: BC001

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0301E11

Level: (low/med) LOW Date Received: 2/20/91

% Moisture: not dec. 100. Date Analyzed: 3/ 2/91

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 10 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Rev. COMM
1.	78-78-4	Butane, 2-methyl-	5.49	100.	J	OK
2.	- -	UNKNOWN	5.66	100.	J	OK
3.	96-14-0	Pentane, 3-methyl-	8.67	100.	J	OK
4.	96-37-7	Cyclopentane, methyl-	10.43	100.	J	OK
5.	- -	UNKNOWN HYDROCARBON	11.72	100.	J	OK
6.	- -	UNKNOWN	12.44	100.	J	OK
7.	108-87-2	Cyclohexane, methyl-	13.78	40.	J	OK
8.	- -	UNKNOWN HYDROCARBON	14.53	30.	J	(4)
9.	560-21-4	Pentane, 2,3,3-trimethyl-	14.78	40.	J	(4)
10.	767-58-8	IH-Indene, 2,3-dihydro-1-met	25.58	50.	J	(5)
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						
27.						
28.						
29.						
30.						

(1) No match in library
(2) Appears to be hydrocarbon
(3) Match quality poor
(4) Possible trimethylpentane isomer
(5) Could also be an ethenyl, ethyl benzene isomer.

FORM I VOA-TIC 1/87 Rev.

AR309380

1 0013

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APPENDIX N

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BCM

APPENDIX N

GROUNDWATER ANALYTICAL RESULTS AND QUALITY ASSURANCE REVIEW
EPA SPLIT SAMPLES
FEBRUARY 1991

AR309383

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
CENTRAL REGIONAL LABORATORY
839 BESTGATE ROAD
ANNAPOLIS, MARYLAND 21401
(301) 266-9180

DATE: March 18, 1991

SUBJECT: NH_3N Determination of Chem Solv Samples
Superfund-Enforcement, (2/26/91 - 3/7/91), 910221-01,03,05

FROM: Wanda Boyd WB
Environmental Specialist

TO: Joseph L. Slayton
Acting Chief, Laboratory Branch

THRU: Khin C. Thaung KCT
Chief, Inorganic Section

Chem Solv samples, 910221-01,03,05 were analyzed for the determination of NH_3N (EPA Method 350.1). All samples were preserved and then their pH was adjusted to 6-7 using a 6N solution of sodium hydroxide. The results appear below.

Additional quality control data is available for review upon request.

Sample Description:

Lab No.	Description
910221-01	Chem Solv, Monitoring Well 9B, Sta. MW9B
910221-03	Chem Solv, Monitoring Well 9B-D, Sta. MW-9B-D
910221-05	Chem Solv, Field Blank, Sta. FB

Results:

Sample No.	NH_3N (mg/L)
910221-01	<0.040* (114%)
910221-03	<0.040
910221-05	<0.040

* Analyzed in duplicate, both values below specified detection limit. Number in parenthesis is a spike recovery.

WB:nc

cc: Norman Fritsche NF

AR309384

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
CENTRAL REGIONAL LABORATORY
839 BESTGATE ROAD
ANNAPOLIS, MARYLAND 21401
(301) 266-9180

DATE : March 25, 1991

SUBJECT: Mercury Determination of Chem Solv, Superfund Enforcement (TGB03NPN5), (2/28/91 - 3/14/91), 910221-01-06

FROM : Thomas H. Reppert
Environmental Scientist

TO : Frederick Dreisch
Chief, Laboratory Branch

THRU : Khin C. Thaung KCT
Chief, Inorganic Section

The results of the mercury analyses are by automated cold vapor atomic absorption spectroscopy, EPA Method 245.2.

Additional quality control results are available upon request.

The mercury analyses provided by the CRL are virtually all for Total Hg. O method, therefore, to determine separate organic and inorganic values was somewhat modified to accommodate this data request. Organic Hg values were to represent the difference between Total Hg values, which are obtained through analysis of digested sample, and inorganic values which are obtained by analysis of undigested sample.

The values for Total Hg and Inorganic Hg are listed below. The generally lower values for Total Hg can be attributed to the natural variability inherent in the two methods used, the digestion process, and the auto analyzer-detection equipment. While the actual Organic Hg percentage cannot be consistently quantified by our analysis methods, it's apparent that nearly all of the Total Hg is inorganic. The detection of the small amount of Organic Hg remaining is lost in the method precision variability. Analysis scans were repeated several times with the same results.

If you would like to discuss the analysis data further, please contact Tom Reppert at (301) 266-9180.

AR309385

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Sample Description and Results:

Lab No.	Description
910221-01	Chem Solv, Monitoring Well 9B, Sta. MW9B
-02	Chem Solv, Monitoring Well 9B, Sta. MW9B
-03	Chem Solv, Monitoring Well 9B-D, Sta. MW-9B-D
-04	Chem Solv, Monitoring Well 9B-D, Sta. MW-9B-D
-05	Chem Solv, Field Blank, Sta. FB
-06	Chem Solv, Field Blank, Sta. FB

Results:

Lab No.	Total Hg(ug/L)	Filtered Total Hg(ug/L)	Inorganic Hg(ug/L)	Filtered Inorganic Hg(ug/L)
910221-01	1.7	---	2.6[75%] RPD=4.9	---
-02	---	1.9	---	2.3[106%] RPD=3.5
-03	1.6[93%] RPD=2.9	---	2.5	---
-04	---	1.8[95%] RPD=1.9	---	2.2
-05	<0.2	---	<0.2	---
-06	---	<0.2	---	<0.2

*Analyzed in duplicate, both values below specified detection limit.
**Analyzed in duplicate, one value below and one above detection limit.
Numbers in brackets are pre-digestion [matrix] spike recoveries.
RPD = Method duplicates are reported as the Mean and the Relative Percent Difference. (|Replicate 1 - Replicate 2| / Mean) * 100

THR:nt

cc: Ronald H. Altman

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
CENTRAL REGIONAL LABORATORY
839 BESTGATE ROAD
ANNAPOLIS, MARYLAND 21401
(301) 266-6180

DATE : March 11, 1991

SUBJECT: Chloride, Sulfate, Sulfide, and Nitrate + Nitrite Determination of Chem Solv Samples 910221-01,03,05, Superfund Enforcement TGB03NPN5, (2/21/91-3/5/91)

FROM : Ronald H. Altman RHA
Chemist

TO : Joseph L. Slayton
Acting Chief, Laboratory Branch

THRU : Khin C. Thaung KCT
Chief, Inorganic Section

Chem Solv samples were analyzed for Sulfate, Chloride, and Nitrate + Nitrite using EPA Method 300.0[1] (Determination of Inorganic Anions in Water Ion Chromatography), and for Sulfide using EPA Method 376.1[1] (Titrimetric, Iodine). The Results are presented in the table below.

The Fluoride, Bromide, and Phosphate results are provided as additior information to the Data Users and to show additional uses of the Dionex.

Additional quality control information is available upon request.

Sample Description and Results:

Lab No.	Description
910221-01	Chem Solv, Monitoring Well 9B, Sta. MW9B
-03	Chem Solv, Monitoring Well 9B-D, Sta. MW-9B-D
-05	Chem Solv, Field Blank, Sta. FB

Lab No.	Cl(mg/L)	SO4(mg/L)	NO3(mg/L)	NO2(mg/L)	NO3+NO2(mg/L)
910221-01	13.5	51.3	9.82	<0.05	9.82
-03	13.2(91%)	50.0(105%)	9.81(105%)	<0.05*(96%)	9.81
	RPD=1.5	RPD=0.6	RPD=0.8		RPD=0.8
-05	<0.2	<0.5	<0.2	<0.05	<0.2

Lab No.	Sulfide (mg/L)	BR(mg/L)	F(mg/L)	PO4(mg/L)
910221-01	<0.2*(91%)	<0.5	<0.1	<0.2
-03	<0.2	<0.5*(99%)	<0.1*(104%)	<0.2*(101%)
-05	<0.2	<0.5	<0.1	<0.2

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Chem Solv

[1] Methods for Chemical Analysis of Water and Waste, EPA-600/4-79-020
RPD = values reported are the average of method duplicates and relative percent difference.
*Samples are analyzed in duplicate; both values below the detection limit.

RHA/sjc

cc: Norman Fritsche

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
CENTRAL REGIONAL LABORATORY
839 BESTGATE ROAD
ANNAPOLIS, MARYLAND 21401

DATE : March 5, 1991

SUBJECT : BOD_5 Determination of Chem Solv, 910221-01,03,05, Superfund Enforcement TGB03NI (2/21/91-2/26/91)

FROM : Norman Fritsche NF
Environmental Scientist

TO : Joseph L. Slayton
Acting Chief, Laboratory Branch

THRU : Khin C. Thaung KCT
Chief, Inorganic Section

BOD_5 Determinations (910221-01,03,05) EPA Method 405.1* of Chem Solv are listed below.

Additional quality control results are available upon request.

Sample Description and Results:

Lab No.	Description
910221-01	Chem Solv, Monitoring Well 9B, Sta. MW9B
-03	Chem Solv, Monitoring Well 9B-D, Sta. MW-9B-D
-05	Chem Solv, Field Blank, Sta. FB

Lab No.	BOD_5 mg/L
910221-01	<1.0**
-03	<1.0
-05	1.5

<1.0 - Detection limit of BOD_5 test using 300 mL of sample.
*Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020.
**Sample analyzed in duplicate, both values below detection limit.

NF:sjc

cc: Ronald Altman RA

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WESTON
MANAGERS DESIGNERS/CONSULTANTS
2568A RIVA ROAD
SUITE 300
ANNAPOLIS, MD 21401
PHONE: 301-266-9867

DATE: March 13, 1991

SUBJECT: Chemical Oxygen Demand (COD) of Chem Solv samples for Superfund-Enforcement. (TGB03NPN5). (02/25/91 thru 03/11/91). 910221-01,03,05.
ESAT TID #03910207. ESAT Task #2298.

FROM: Behrooz Khoshkhoo
ESAT Chemist

Tim Dawson
ESAT Chemist

TO: Joseph Slayton
Acting Chief, Laboratory Branch

THRU: Richard Dresser
ESAT Team Manager

The ESAT Laboratory Staff was assigned three (3) aqueous samples from Chem Solv for Chemical Oxygen Demand. All samples were successfully analyzed within the twenty eight (28) day holding time. Sample descriptions and results are presented in the following tables.

SAMPLE DESCRIPTIONS:

910221-01	Chem Solv, Monitoring Well 9B, Sta. MW9B
910221-03	Chem Solv, Monitoring Well 9B-D, Sta. MW-9B-D
910221-05	Chem Solv, Field Blank, Sta. FB

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WESTON

Site Name: Chem Solv
Sample Nos.: 910221-01,03,05.

SAMPLE RESULTS:

Lab No.	Chemical Oxygen Demand (mg/L)
910221-01	15.2*
910221-03	15.4
910221-05	36.8

Q.C. RESULTS:

Duplicates:

Lab.No.	Sample Result (mg/L)	Duplicate Result (mg/L)	SD
910221-01	15.4	15.0	0.3

Spikes:

Lab.No.	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	% Recovery
910221-01	15.2	50.4	37.5	94

Audit:

Lab No.	Found Value (mg/L)	True Value (mg/L)	% Recovery
WP1284(conc.1) (Range 7.27-22.3)	15.4	14.9	103

NOTE:

* The result for sample 910221-01 is the average of duplicate result.

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WESTON

Site Name: Chem Solv
Sample Nos.: 910221-01,03,05.

NOTE: The Q.C. samples provide an estimate of combined sample preparation and measurement variability and/or bias.

cc: Ron Altman, EPA Task Monitor RC
Terry Simpson, ESAT DPO

BK103A03.CHE

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WESTON
MANAGERS DESIGNERS/CONSULTANTS
2568A RIVA ROAD
SUITE 300
ANNAPOLIS, MD 21401
PHONE: 301-266-9887

DATE: March 22, 1990

SUBJECT: Volatile Gas Chromatography/Mass Spectrometry Analyses of Samples from the Chem Solv Site for Superfund-Enforcement (TGB03NPN5). (02/25/91 to 03/08/91); Samples: 910221-07 thru 910221-11; ESAT TID No.: 03910214; ESAT Task No.: 2299.

FROM: Sue Raupuk S.R.
Analytical Chemist

Fredrick Foreman
Senior Analytical Chemist

TO: Frederick Dreisch
Chief, Laboratory Branch

THRU: Richard D. Dresser
ESAT Team Manager

OVERVIEW

Five (5) aqueous samples were assigned to ESAT on February 25, 1991 for analyses of both hazardous substance list (HSL) and priority pollutant list (PPL) volatile organic compounds. They were analyzed on February 25 and 26, 1991 following methods from the "USEPA Contract Laboratory Program Statement of Work for Organics Analysis", February, 1988 and EPA Method 624, "Purgeables", Federal Register, October, 1984. Instrumentation utilized consisted of a purge and trap apparatus interfaced to a gas chromatograph/mass spectrometer equipped with a fused silica capillary column. The samples that were received for analyses are described in the following table.

SAMPLE IDENTIFICATION:

Sample No.	Description
910221-07	Chem Solv, Monitoring Well 26A, Sta. MW-26A
910221-08	Chem Solv, Monitoring Well 33A, Sta. MW-33A
910221-09	Chem Solv, Monitoring Well 33D, Sta. MW-33D
910221-10	Chem Solv, Trip Blank, Sta. TB
910221-11	Chem Solv, CRL Lab Blank

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WESTON

Site Name: Chem Solv
Sample Nos.: 910221-07 thru 910221-11

NOTES

- The target compounds' concentrations were calculated using relative response factors based on the closest eluting internal standard. The internal standard and surrogate mixes were added immediately prior to analyses.

- All HSL and PPL compounds which were positively identified are reported on the volatile analysis data sheet. The contaminants found below their nominal quantitation limit (NQL) are qualified "J" for estimated.

- All other eluting peaks with an area above ten percent of the nearest internal standard were compared to the NBS mass spectral library for tentative identification.

- All compounds which were found in both a method blank and/or a field blank and a sample were qualified "B" if the concentration of the compound in the sample was less than ten times (10x) the compound's concentration in the blank.

- All samples were analyzed only after correct system performance was confirmed to meet EPA approved tuning criteria for Bromofluorobenzene (BFB) (See Form Vs in Appendix C).

- All analyses exhibited surrogate recoveries within Region III CRL Q.C. limits. (See the Volatile Surrogate Recovery Data Sheet in Appendix C). A matrix spike and matrix spike duplicate was analyzed with this sample set and all recoveries and %RPDs were within Region III CRL Q.C. limits (See Matrix Spike %Recovery Data Sheets).

- Several compounds exhibited a %D greater than twenty-five (25) percent when comparing the daily calibration standard and the initial calibration curve. Also, the %RSDs for several compounds in the initial calibration standards were above thirty (30) percent. These compounds are either common laboratory contaminants or were not found to be present in these samples. They are qualified "UJ" in the affected samples (See support documentation in Appendix C).

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WESTON

Site Name: Chem Solv
Sample Nos.: 910221-07 thru 910221-11

Attachments

1. Appendix A - Glossary of Data Qualifier Codes
2. Appendix B - Data Summary; Results as Reported by the Laboratory and Qualified
3. Appendix C - Support Documentation

cc: Sue Warner, EPA Task Monitor SW
Terry Simpson, ESAT DPO

SR103A04.CHE

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APPENDIX A

Glossary of Data Qualifier Codes

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GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)

CODES RELATING TO IDENTIFICATION
(Confidence concerning presence or absence of compounds)

NO CODE = Confirmed identification

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

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

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

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

CODES RELATED TO QUANTITATION
(Can be used for both positive results and sample quantitation limits)

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

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

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

UJ = Not detected. Quantitation limit may be inaccurate or imprecise.

UL = Not detected. Quantitation limit is probably higher.

OTHER CODES

Q = No analytical results.

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APPENDIX B

Data and TIC Summary

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E.P.A. Region III Central Regional Laboratory

Volatile Organics Analysis Data Sheet

Site: Chem Solv
Program: Superfund-Enforcement
Units: ug/L

NQL	CAS #	Compound	Sta. MW-26A 910221-07	Sta. MW-33A 910221-08	Sta. MW-33D 910221-09	Trp. Blk., Sta. TB 910221-10	CRL Lab Blank 910221-11	(1)
		Date Sampled:	02/19/91	02/19/91	02/19/91	02/19/91	02/25/91	
		Date Analyzed:	02/25/91	02/25/91	02/25/91	02/25/91	02/25/91	
		Dilution Factor =	(1)	(1)	(1)	(1)	(1)	(1)
5	75-71-8	Dichlorodifluoromethane						
5	74-87-3	Chloromethane	UJ	UJ	UJ	6.0J	UJ	
5	75-01-4	Vinyl Chloride						
5	74-83-9	Bromomethane						
5	75-00-3	Chloroethane						
5	75-69-4	Trichlorofluoromethane	UJ	UJ	UJ	UJ	UJ	
5	75-35-4	1,1-Dichloroethene	UJ	UJ	UJ	UJ	UJ	
5	75-15-0	Carbon Disulfide						
10	67-64-1	Acetone				8.3J		
5	75-09-2	Methylene Chloride	UJ	UJ	UJ	UJ	5.6J	
5	156-60-5	trans-1,2-Dichloroethene						
5	75-34-3	1,1-Dichloroethane						
10	108-05-4	Vinyl Acetate						
5	594-20-7	2,2-Dichloropropane						
10	78-93-3	2-Butanone	3.4B	UJ	UJ	2.4J	UJ	
5	74-97-5	Bromochloromethane						
5	156-59-2	cis-1,2-Dichloroethene		1.4J	1.5J			
5	65-66-3	Chloroform		1.4B	1.3B	5.2		
5	71-55-6	1,1,1-Trichloroethane		11.6	11.6			
5	56-23-5	Carbon Tetrachloride						
5	563-58-6	1,1-Dichloro-1-propene						
5	71-43-2	Benzene	32.0					
5	107-06-2	1,2-Dichloroethane						
5	79-01-6	Trichloroethene		142	142			
5	78-87-5	1,2-Dichloropropane						
5	74-95-3	Dibromomethane						
5	75-27-4	Bromodichloromethane				0.4J		
10	100-75-8	2-Chloroethylvinyl ether						
5	10061-02-6	trans-1,3-Dichloropropene						
10	108-10-1	4-Methyl-2-pentanone						
5	108-88-3	Toluene						
5	10061-01-5	cis-1,3-Dichloropropene						
5	79-00-5	1,1,2-Trichloroethane						
5	127-18-4	Tetrachloroethene	1.3J	3.5J	3.5J			
5	142-28-9	1,3-Dichloropropane						
10	591-78-6	2-Hexanone						
5	124-48-1	Dibromochloromethane						
5	106-93-4	1,2-Dibromoethane (EDB)						
5	108-90-7	Chlorobenzene						
5	630-20-6	1,1,1,2-Tetrachloroethane						
5	100-41-4	Ethylbenzene						

NQL = Nominal Quantitation Limit
Actual Quantitation Limit = Dilution Factor x NQL

AR30939

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WESTON

E.P.A. Region III Central Regional Laboratory

Volatile Organics Analysis Data Sheet

Site: Chem Solv
Program: Superfund-Enforcement
Units: ug/L

NQL	CAS #	Compound	Sta. MW-26A 910221-07	Sta. MW-33A 910221-08	Sta. MW-33D 910221-09	Trp. Blk., Sta. TB 910221-10	CRL Lab Blank 910221-11	
		Date Sampled:	02/19/91	02/19/91	02/19/91	02/19/91	02/25/91	
		Date Analyzed:	02/25/91	02/25/91	02/25/91	02/25/91	02/25/91	
		Dilution Factor =	(1)	(1)	(1)	(1)	(1)	(1)
-5		(m & p)-Xylene isomers	0.4J					
5	95-47-6	o-Xylene						
5	100-42-5	Styrene						
5	75-25-2	Bromoform						
-5	98-82-8	Isopropylbenzene	15.8					
5	108-86-1	Bromobenzene						
5	79-34-5	1,1,2,2-Tetrachloroethane						
5	96-18-4	1,2,3-Trichloropropane						
5	103-65-1	n-Propylbenzene						
5	95-49-8	2-Chlorotoluene						
5	106-43-4	4-Chlorotoluene						
5	108-67-8	1,3,5-Trimethylbenzene						
-5	98-06-6	tert-Butylbenzene	0.4J					
-5	95-63-6	1,2,4-Trimethylbenzene	0.4J					
5	135-98-8	sec-Butylbenzene	8.8					
5	541-73-1	1,3-Dichlorobenzene						
5	106-46-7	1,4-Dichlorobenzene						
5	99-87-6	p-Isopropyltoluene						
5	95-50-1	1,2-Dichlorobenzene						
-5	104-51-8	n-Butylbenzene	6.2					
5	96-12-8	1,2-Dibromo-3-chloropropane						
5	120-82-1	1,2,4-Trichlorobenzene						
5	91-20-3	Naphthalene						
5	87-68-3	Hexachlorobutadiene						
5	87-61-6	1,2,3-Trichlorobenzene						

NQL = Nominal Quantitation Limit
Actual Quantitation Limit = Dilution Factor x NQL

AR309400

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WESTON

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Case Name: Chem Solv

Contractor: Region III CRL-ESAT

Sample ID: 910221-07 Sta. MW-26A

Lab File ID: >EA799

Date Rec: 02/25/91

Date/Time Analyzed: 02/25/91 13:49

Matrix: water Level: low

Number TIC's found 18

Concentration units: ug/L

CAS NUMBER	COMPOUND IDENTIFICATION	R.T.(min)	EST. CONC.
**********	Unknown, m/z = 43	9.09	12.0
78784	Butane, 2 methyl-(BCI9CI)	10.41	150
75832	Butane, 2,2-dimethyl-(BCI9I)	11.67	20.0
**********	Unknown, m/z = 43	12.40	45.0
**********	Unknown, m/z = 42	12.48	61.0
**********	Unknown, m/z = 57	12.86	69.0
96377	Cyclopentane, methyl-(BCI9CI)	14.23	64.0
**********	Unknown, m/z = 84	15.30	26.0
**********	Unknown, m/z = 56	15.41	26.0
**********	Unknown, m/z = 57	16.06	22.0
**********	Unknown, m/z = 55	17.31	32.0
565753	Pentane, 2,3,4-trimethyl-(BCI9CI)	18.14	24.0
560214	Pentane, 2,3,3-trimethyl-(BCI9CI)	18.38	31.0
535773	Benzene, 1-methyl-3-(1-methylethyl)-(9CI)	30.03	20.0
767588	1H-Indene, 2,3-dihydro-1-methyl-(9CI)	30.25	33.0
767588	1H-Indene, 2,3-dihydro-1-methyl-(9CI)	32.24	17.0
**********	Unknown aromatic, m/z = 119	32.59	6.0
17059482	1H-Indene, 2,3-dihydro-1,6-dimethyl-(9CI)	33.13	10.0

FORM 1 VOA-TIC

AR309401

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WESTON

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Case Name: Chem Solv

Contractor: Region III CRL-ESAT

Sample ID: 910221-10 Trip Blank

Lab File ID: >EA798

Date Rec: 02/25/91

Date/Time Analyzed: 02/25/91 13:01

Matrix: Water Level: Low

Number TIC's found 2

Concentration units: ug/L

CAS NUMBER	COMPOUND IDENTIFICATION	R.T.(min)	EST. CONC.
556672	Cyclotetrasiloxane, octamethyl-(8C19CI)	25.93	5.0
124196	Nonanal (8C19CI)	30.88	6.0

FORM I VOA-TIC

AR309402

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WESTON

APPENDIX C

Support Documentation

AR309403

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WESTON

E.P.A. Region III Central Regional Laboratory

Volatile Surrogate Recovery Data Sheet

Site : Chem Solv
Program : Superfund-Enforcement
Date Sampled: 02/19/91, 02/25/91 & 02/26/91
Date Analyzed: 02/25/91 & 02/26/91
Units : % Recovery

SAMPLE I.D.	1,2-Dichloro-ethane-d4	Fluoro-benzene	Toluene-d8	Bromofluoro-benzene
1. 910221-07	112	100	106	106
2. 910221-08	113	100	102	104
3. 910221-09	114	101	103	101
4. 910221-10	112	101	103	108
5. 910221-11 CRL Lab Blank	106	99	99	102
6. 910221-08MS	105	97	102	105
7. 910221-08MSD	99	97	108	94
8. VOA Method Blank (02/26/90)	98	99	98	97
CRL LIMITS:	76-114	80-120	88-110	86-115

% REC: 0 out of 32 outside limits

AR309404

C-1

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WESTON

E.P.A. Region III Central Regional Laboratory

Matrix Spike % Recovery Data Sheet

Site: Chem Solv
Program : Superfund-Enforcement

Sample I.D.: 910221-08
Date Sampled: 02/19/91
Date Analyzed: 02/26/91

CAS #	COMPOUND	SPIKE CONC.	MATRIX SPIKE CONC.	MATRIX SPIKE REC.	MATRIX SPIKE DUP CONC.	MATRIX SPIKE DUP REC.
75-35-4	1,1-Dichloroethene	50	51.7	103	51.0	102
71-43-2	Benzene	50	48.3	97	50.5	101
79-01-6	Trichloroethene	50	50.3	101	50.5	101
108-88-3	Toluene	50	50.6	101	57.4	115
108-90-7	Chlorobenzene	50	51.6	103	54.0	108

CAS #	COMPOUND	RPD	RPD QC LIMITS	RECOVERY QC LIMITS
75-35-4	1,1-Dichloroethene	1	14	61-145
71-43-2	Benzene	4	11	76-127
79-01-6	Trichloroethene	0	14	71-120
108-88-3	Toluene	13	13	76-125
108-90-7	Chlorobenzene	5	13	75-130

RPD = Relative percent difference

REC.: 0 out of 10 outside limits
RPD: 0 out of 5 outside limits

AR309405

C-2

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WESTON

GC/MS TUNING AND MASS CALIBRATION

4-Bromofluorobenzene (BFB)

Case No.: Chem Solv

Contractor: Region III CRL (ESAT)

Instrument ID: HP-5970MSD

Date/Time: 02/20/90 09:52

Lab File ID: >EA761

Date Release Authorized By:_____

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	15.68 OK
75	30.0 - 60.0% of the base peak	38.15 OK
95	Base peak, 100% relative abundance	100.00 OK
96	5.0 - 9.0% of the base peak	6.80 OK
173	Less than 2.0% of mass 174	0.00 OK
174	Greater than 50.0% of the base peak	86.71 OK
175	5.0 - 9.0 % of mass 174	6.54 OK (7.55)#1
176	Between 95.0 and 101.0% of mass 174	86.86 OK (100.18)#1
177	5.0 - 9.0% of mass 176	5.53 OK (6.37)#2

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

#1 - Value in parentheses is % mass 174
#2 - Value in parentheses is % mass 176

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
VOA BFB	>EA761	02/20/91	09:52
VOA 10-STD	>EA764	02/20/91	13:50
VOA 20-STD	>EA765	02/20/91	14:38
VOA 50-STD	>EA766	02/20/91	15:27
VOA 100-STD	>EA767	02/20/91	16:16
VOA 200-STD	>EA768	02/20/91	17:04

FORM V 7/85

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WESTON

GC/MS TUNING AND MASS CALIBRATION

4-Bromofluorobenzene (BFB)

Case No.: Chem Solv

Contractor: Region III CRL (ESAT)

Instrument ID: HP-5970MSD

Date/Time: 02/25/91 08:07

Lab File ID: >EA794

Date Release Authorized By:_____

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	18.99 OK
75	30.0 - 60.0% of the base peak	46.32 OK
95	Base peak, 100% relative abundance	100.00 OK
96	5.0 - 9.0% of the base peak	6.47 OK
173	Less than 2.0% of mass 174	0.00 OK
174	Greater than 50.0% of the base peak	92.36 OK
175	5.0 - 9.0 % of mass 174	7.03 OK (7.62)#1
176	Between 95.0 and 101.0% of mass 174	88.93 OK (96.29)#1
177	5.0 - 9.0% of mass 176	5.96 OK (6.70)#2

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

#1 - Value in parentheses is % mass 174
#2 - Value in parentheses is % mass 176

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
VOA BFB	>EA794	02/25/91	08:07
VOA 50-STD	>EA795	02/25/91	10:17
#910221-11	>EA797	02/25/91	12:05
#910221-10	>EA798	02/25/91	13:01
#910221-07	>EA799	02/25/91	13:49
#910221-08	>EA800	02/25/91	14:36
#910221-09	>EA801	02/25/91	15:24

FORM V 7/85

AR309407

C-4

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WESTON

GC/MS TUNING AND MASS CALIBRATION

4-Bromofluorobenzene (BFB)

Case No.: Chem Solv

Contractor: Region III CRL (ESAT)

Instrument ID: HP-5970MSD

Date/Time: 02/26/91 11:40

Lab File ID: >EA809

Date Release Authorized By:_____

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	22.26 OK
75	30.0 - 60.0% of the base peak	48.88 OK
95	Base peak, 100% relative abundance	100.00 OK
96	5.0 - 9.0% of the base peak	6.48 OK
173	Less than 2.0% of mass 174	0.00 OK
174	Greater than 50.0% of the base peak	86.40 OK
175	5.0 - 9.0 % of mass 174	6.56 OK (7.59)#1
176	Between 95.0 and 101.0% of mass 174	82.67 OK (95.68)#1
177	5.0 - 9.0% of mass 176	5.19 OK (6.28)#2

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

#1 - Value in parentheses is % mass 174
#2 - Value in parentheses is % mass 176

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
VOA BFB	>EA809	02/26/91	11:40
VOA 50-STD	>EA810	02/26/91	12:28
VOA Method Blank	>EA812	02/26/91	15:39
#910221-08MS	>EA813	02/26/91	16:28
#910221-08MSD	>EA815	02/26/91	18:03

FORM V 7/85

AR309408

C-5

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ISTD SS Mix prepared :
STO Mix prepared 2/1

Initial Calibration Data
HSL Compounds

Case No:

Instrument ID: HP 5970 MSD

Contractor: REGION III - CRL

Calibration Date: ~~02/21/91~~ 02/20/91 SR

Contract No: ESAT

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % RSD for CCC is 30.00%

Laboratory ID:	>EA764	>EA765	>EA766	>EA767	>EA768					
Compound	RF 10.00	RF 20.00	RF 50.00	RF 100.00	RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Dichlorodifluoromethane	.12809	.22429	.28658	.30216	.22189	[illegible]	.23260	29.520		
Chloromethane	.09252	.14976	.18487	.16572	.11692	.541	.14196	26.212		**
Vinyl Chloride	.10537	.17290	.23164	.23021	.16149	.565	.18032	29.279	*	
Bromomethane	.22254	.34103	.44682	.42000	.28803	.610	.34368	26.921		
Chloroethane	.08501	.12702	.17823	.17051	.11663	.625	.13548	28.657		
Trichlorofluoromethane	.41900	.69209	.92291	.93082	.62321	.654	.71760	30.077		
1,1-Dichloroethene	.06188	.09141	.13367	.12950	.08716	.704	.10072	30.167	*	
Carbon Disulfide	.46848	.73594	1.02650	.97905	.66581	.718	.77516	29.720		
Acetone	.08229	.08956	.11180	.10148	.07208	.716	.09144	17.096		
Methylene Chloride	.38997	.40351	.40751	.35244	.22578	.793	.35584	21.325		
Trans-1,2-Dichloroethene	.15048	.23623	.30404	.29915	.21047	.777	.24007	26.753		
1,1-Dichloroethane	.41222	.58984	.76785	.76577	.55682	.816	.61850	24.409		**
Vinyl Acetate	.04653	.05494	.05657	.06105	.06447	.826	.05672	12.016		
2,2-Dichloropropane	.25806	.35205	.40263	.40822	.27161	.870	.33851	24.942		
Cis-1,2-Dichloroethene	.23724	.32707	.40027	.41960	.30673	.872	.33818	21.623		
2-Butanone	.14707	.11500	.23037	.16874	.11419	.879	.15507	30.921		
Bromochloromethane	.27639	.38304	.46661	.44890	.34561	.895	.38410	20.298		
Chloroform	.56657	.74920	.93339	.98563	.76582	.905	.80012	20.772	*	
1,1,1-Trichloroethane	.47839	.66440	.80672	.85005	.65994	.919	.69190	21.138		
Carbon Tetrachloride	.52501	.71739	.87988	.93642	.72026	.935	.79499	21.258		
1,1-Dichloro-1-propene	.34772	.45561	.53303	.58626	.47214	.936	.47895	18.748		
1,2-Dichloroethane-d4(SURR)	.19316	.21950	.23368	.23659	.21241	.952	.21907	8.025		(Conc=50.0,50.0,5
Benzene	.49027	.60793	.68268	.72938	.64120	.957	.63028	14.361		
1,2-Dichloroethane	.36753	.45288	.53208	.52799	.48714	.960	.47352	14.261		
Fluorobenzene(SURR)	.93700	.96088	.97397	1.01117	.97817	.987	.97165	2.767		(Conc=50.0,50.0,5
Trichloroethene	.47346	.56177	.59367	.58511	.55636	1.025	.55347	8.844		
1,2-Dichloropropane	.28847	.36431	.43594	.46744	.33270	1.050	.37777	19.457	*	
Dibromomethane	.40061	.54226	.76461	.72057	.47935	1.064	.58148	26.859		
Bromodichloromethane	.62324	.86140	1.28119	1.24989	.85609	1.083	.97436	29.033		
2-Chloroethylvinylether	.15859	.26740	.34273	.25529	.21461	1.121	.24772	27.463		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

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Initial Calibration Data
HSL Compounds

Case No:

Instrument ID: HP 5970 MSD

Contractor: REGION III - CRL

Calibration Date: ~~03/21/91~~ 03/20/91 SR

Contract No: ESAT

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>EA764	>EA765	>EA766	>EA767	>EA768					
Compound	RF 10.00	RF 20.00	RF 50.00	RF 100.00	RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Trans-1,3-Dichloropropene	.55957	.88787	1.12848	1.05274	.70739	1.135	.86721	27.245		
4-Methyl-2-pentanone	.12786	.14385	.14888	.16715	.19284	.856	.15612	15.922		
Toluene-d8(SURR)	1.09082	1.06096	1.11816	1.18774	1.23931	.862	1.13940	6.402		(Conc=50.0,50.0,50.0,50
Toluene	.50377	.55910	.57011	.64422	.72638	.868	.60111	14.390	*	
Cis-1,3-Dichloropropene	.36064	.40475	.43202	.46630	.53956	.891	.44065	15.310		
1,1,2-Trichloroethane	.38686	.44038	.44190	.48760	.56407	.908	.46416	14.278		
Tetrachloroethene	.78600	.89287	.86407	.95062	1.10584	.918	.91988	13.010		
1,3-Dichloropropane	.54350	.61196	.63976	.70433	.81705	.923	.66332	15.406		
2-Hexanone	.12385	.14152	.14528	.16254	.19158	.934	.15295	16.734		
Dibromochloromethane	1.00952	1.18930	1.24966	1.36901	1.50634	.944	1.26477	14.808		
1,2-Dibromoethane (EDB)	.74674	.82195	.84515	.92408	1.06777	.954	.88114	13.846		
Chlorobenzene	.89744	.98504	1.02179	1.10049	1.26169	1.003	1.05329	13.052		**
1,1,1,2-Tetrachloroethane	.61410	.66571	.71444	.76680	.85363	1.012	.72294	12.790		
Ethylbenzene	1.15468	1.30403	1.32059	1.44001	1.43385	1.015	1.33063	8.763	*	
m&p-Xylenes	.87228	.99526	.97177	1.08286	1.29605	1.028	1.04364	15.310		
o-Xylene	.85596	.98215	.97462	1.05144	1.15206	1.069	1.00324	10.853		
Styrene	1.48696	1.67994	1.70272	1.82123	2.09680	1.071	1.75753	12.767		
Bromoform	1.09299	1.22846	1.27830	1.38673	1.52845	1.089	1.30299	12.617		**
Isopropylbenzene	1.28645	1.45197	1.50237	1.67850	1.92281	1.109	1.56842	15.459		
Bromofluorobenzene(SURR)	.97492	1.01005	.97626	1.03002	1.15168	1.124	1.02859	7.064		(Conc=50.0,50.0,50.0,50.
Bromobenzene	.88089	.95170	1.05068	1.03667	1.11292	.881	1.00657	9.019		
1,1,2,2-Tetrachloroethane	.89910	.98582	1.05676	1.12997	1.26567	.885	1.06747	13.108		**
1,2,3-Trichloropropane	.58213	.71233	.80714	.77011	.89201	.887	.75275	15.349		
n-Propylbenzene	.45570	.51111	.55679	.56464	.64797	.892	.54724	12.994		
2-Chlorotoluene	.52691	.57473	.63171	.62536	.67337	.898	.60641	9.331		
4-Chlorotoluene	.54297	.60585	.61119	.63395	.70552	.907	.61990	9.448		
1,3,5-Trimethylbenzene	1.50781	1.65777	1.78122	1.76692	1.89876	.908	1.72250	8.551		
tert-Butylbenzene	1.45592	1.79010	1.88611	1.90797	2.07969	.935	1.82315	12.594		
1,2,4-Trimethylbenzene	1.47842	1.64607	1.78269	1.78105	1.95050	.940	1.72777	10.205		
sec-Butylbenzene	2.00252	2.26833	2.38224	2.53806	2.72359	.954	2.38295	11.453		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

AR309410

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

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Initial Calibration Data
HSL Compounds

Case No:

Instrument ID: HP 5970 MSD

Contractor: REGION III - CRL

Calibration Date: ~~02/21/91~~ 02/20/91 SR

Contract No: ESAT

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % RSD for CCC is 30.00%

Laboratory ID:	>EA764	>EA765	>EA766	>EA767	>EA768					
	RF	RF	RF	RF	RF					
Compound	10.00	20.00	50.00	100.00	200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
1,3-Dichlorobenzene	1.37901	1.52028	1.58100	1.63094	1.80803	.962	1.58385	9.907		
1,4-Dichlorobenzene	1.49374	1.55017	1.70873	1.69568	1.81448	.970	1.69256	7.828		
p-Isopropyltoluene	1.70331	1.88936	2.01737	2.04193	2.15215	.968	1.96082	8.752		
1,2-Dichlorobenzene	1.33637	1.45998	1.50999	1.49694	1.58871	1.002	1.47840	6.238		
n-Butylbenzene	1.54097	1.72701	1.76624	1.80043	2.02146	1.004	1.77122	9.716		
1,2-Dibromo-3-chloropropane	.28529	.32039	.35984	.34792	.40020	1.071	.34273	12.567		
1,2,4-Trichlorobenzene	1.29610	1.41285	1.39396	1.35316	1.43525	1.145	1.37826	3.986		
Naphthalene	1.73240	1.89722	1.98662	1.92252	2.10027	1.166	1.92781	6.976		
Hexachlorobutadiene	1.17596	1.31583	1.24535	1.16952	1.17049	1.162	1.21543	5.310		
1,2,3-Trichlorobenzene	1.23074	1.31192	1.35004	1.23165	1.24169	1.189	1.27321	4.289		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

AR309411

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IS + SS Mix prepared 2/13/91 SR

STD Mix prepared 2/14/91

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 02/25/91

Contractor: REGION III - CRL Time: 10:17

Contract No: ESAT Laboratory ID:)EA795

Instrument ID: HP 5970 MSD Initial Calibration Date: ~~02/21/91~~ 02/20/91 SR

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % Diff for CCC is 25.00%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
Dichlorodifluoromethane	.23260	.18269	21.46		
Chloromethane	.14196	.10414	26.64		**
Vinyl Chloride	.18032	.13529	24.97	*	
Bromomethane	.34368	.26307	23.46		
Chloroethane	.13548	.10854	19.89		
Trichlorofluoromethane	.71760	.55660	22.44		
1,1-Dichloroethene	.10072	.08201	18.58	*	
Carbon Disulfide	.77916	.61377	20.82		
Acetone	.09144	.10699	17.00		
Methylene Chloride	.35984	.23692	33.59		
Trans-1,2-Dichloroethene	.24007	.19203	20.01		
1,1-Dichloroethane	.61850	.50428	18.47		**
Vinyl Acetate	.05672	.05770	1.74		
2,2-Dichloropropane	.33851	.33610	.71		
Cis-1,2-Dichloroethene	.33818	.28393	16.04		
2-Butanone	.15507	.17609	13.56		
Bromochloromethane	.38410	.31150	18.90		
Chloroform	.80012	.74749	6.58	*	
1,1,1-Trichloroethane	.69190	.65086	5.93		
Carbon Tetrachloride	.75499	.71843	4.84		
1,1-Dichloro-1-propene	.47895	.45677	4.63		
1,2-Dichloroethane-d4(SURR)	.21907	.21198	3.24		
Benzene	.63028	.58416	7.32		
1,2-Dichloroethane	.47352	.49176	3.85		
Fluorobenzene(SURR)	.97169	.94113	3.14		
Trichloroethene	.55347	.52259	5.58		
1,2-Dichloropropane	.37777	.30925	18.14	*	
Dibromomethane	.58148	.49048	15.63		
Bromodichloromethane	.97436	.85438	12.31		
2-Chloroethylvinylether	.24772	.19444	21.51		
Trans-1,3-Dichloropropene	.86721	.68017	21.57		
4-Methyl-2-pentanone	.15612	.15342	1.73		

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

AR309412

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Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 02/25/91

Contractor: REGION III - CRL Time: 10:17

Contract No: ESAT Laboratory ID: >EA795

Instrument ID: HP 5970 MSD Initial Calibration Date: ~~02/21/91~~ 02/20/91 SR

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % Diff for CCC is 25.00%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
Toluene-d8(SURR)	1.13940	1.14561	.55		
Toluene	.60111	.62204	3.48	*	
Cis-1,3-Dichloropropene	.44065	.47109	6.91		
1,1,2-Trichloroethane	.46416	.45276	2.46		
Tetrachloroethene	.91988	.89042	3.20		
1,3-Dichloropropane	.66332	.66101	.35		
2-Hexanone	.15295	.16076	5.11		
Dibromochloromethane	1.26477	1.30229	2.97		
1,2-Dibromoethane (EDB)	.88114	.85088	3.43		
Chlorobenzene	1.05329	1.01753	3.40		**
1,1,1,2-Tetrachloroethane	.72294	.74688	3.31		
Ethylbenzene	1.33063	1.40423	5.53	*	
m&p-Xylenes	1.04364	1.05362	.96		
o-Xylene	1.00324	1.01645	1.32		
Styrene	1.79753	1.80869	2.91		
Bromoform	1.30299	1.25331	3.81		**
Isopropylbenzene	1.56842	1.57436	.38		
Bromofluorobenzene(SURR)	1.02859	.98482	4.25		
Bromobenzene	1.00657	1.02649	1.98		
1,1,2,2-Tetrachloroethane	1.04747	1.10443	3.46		**
1,2,3-Trichloropropane	.75275	.71615	4.86		
n-Propylbenzene	.54724	.56328	2.93		
2-Chlorotoluene	.60641	.61331	1.14		
4-Chlorotoluene	.61990	.62254	.43		
1,3,5-Trimethylbenzene	1.72250	1.79833	4.40		
tert-Butylbenzene	1.82315	1.94051	6.44		
1,2,4-Trimethylbenzene	1.72777	1.85576	7.41		
sec-Butylbenzene	2.38295	2.55022	7.02		
1,3-Dichlorobenzene	1.58385	1.61997	2.28		
1,4-Dichlorobenzene	1.65256	1.70384	3.10		
p-Isopropyltoluene	1.96082	2.12497	8.47		
1,2-Dichlorobenzene	1.47840	1.53648	3.92		

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

AR309413

Form VII Page 2 of 2

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Continuing Calibration Check
HSL Compounds

Case No:

Calibration Date: 02/25/91

Contractor: REGION III - CRL

Time: 10:17

Contract No: ESAT

Laboratory ID: >EA795

Instrument ID: HP 5970 MSD

Initial Calibration Date: ~~02/21/91~~ 02/20/91 SR

Minimum $\overline{RF}$ for SPCC is 0.300

Maximum % Diff for CCC is 25.00%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
n-Butylbenzene	1.77122	1.91458	8.09		
1,2-Dibromo-3-chloropropane	.34273	.35895	4.73		
1,2,4-Trichlorobenzene	1.37826	1.40376	1.85		
Naphthalene	1.92781	1.90823	1.02		
Hexachlorobutadiene	1.21543	1.28740	5.92		
1,2,3-Trichlorobenzene	1.27321	1.25507	1.42		

RF - Response Factor from daily standard file at 50.00 ug/L

\- Average Response Factor from Initial Calibration Form VI

Diff - % Difference from original average or curve

CC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

AR309414

Form VII Page 1 of 1

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IS+SS Mix prep 2/13
STD Mix prepar 2/14

Continuing Calibration Check
HSL Compounds

Case No:

Calibration Date: 02/26/91

Contractor: REGION III - CRL

Time: 12:28

Contract No: ESAT

Laboratory ID: >EA010

Instrument ID: HP 5970 MSD

Initial Calibration Date: ~~02/21/91~~ 02/20/91 SR

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % Diff for CCC is 25.00%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
Dichlorodifluoromethane	.23260	.20149	13.37		
Chloromethane	.14196	.09757	31.27		**
Vinyl Chloride	.18032	.13597	24.60	*	
Bromomethane	.34368	.25803	24.92		
Chloroethane	.13548	.10639	21.47		
Trichlorofluoromethane	.71760	.59931	16.49		
1,1-Dichloroethene	.10072	.08059	19.99	*	
Carbon Disulfide	.77916	.62683	19.14		
Acetone	.09144	.07124	22.09		
Methylene Chloride	.35584	.27387	23.04		
Trans-1,2-Dichloroethene	.24007	.19827	17.41		
1,1-Dichloroethane	.61850	.52651	14.87		**
Vinyl Acetate	.05672	.05766	1.66		
2,2-Dichloropropane	.33851	.35599	5.16		
Cis-1,2-Dichloroethene	.33818	.29393	13.08		
2-Butanone	.15507	.13946	10.07		
Bromochloromethane	.38410	.29403	23.45		
Chloroform	.80012	.75890	5.15	*	
1,1,1-Trichloroethane	.69190	.69411	.32		
Carbon Tetrachloride	.79499	.76646	1.52		
1,1-Dichloro-1-propene	.47899	.47788	.22		
1,2-Dichloroethane-d4(SURR)	.21987	.23393	6.40		
Benzene	.63028	.61096	3.06		
1,2-Dichloroethane	.47392	.52783	11.47		
Fluorobenzene(SURR)	.97169	.96345	.84		
Trichloroethene	.55347	.48358	12.63		
1,2-Dichloropropane	.37777	.32703	13.43	*	
Dibromomethane	.58148	.49663	14.59		
Bromodichloromethane	.97436	.83239	14.57		
2-Chloroethylvinylether	.24772	.20513	17.19		
Trans-1,3-Dichloropropene	.86721	.70498	18.72		
4-Methyl-2-pentanone	.15612	.15377	1.50		

AR309415

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

Continuing Calibration Check
HSL Compounds

Case No:

Calibration Date: 02/26/91

Contractor: REGION III - CRL

Time: 12:28

Contract No: ESAT

Laboratory ID: >EA810

Instrument ID: HP 5970 MSD

Initial Calibration Date: ~~02/21/91~~ 02/26/91 SR

Minimum $\overline{RF}$ for SPCC is 0.300

Maximum % Diff for CCC is 25.00%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
Toluene-d8(SURR)	1.13940	1.18045	3.60		
Toluene	.60111	.61651	2.56	*	
Cis-1,3-Dichloropropene	.44065	.44324	5.13		
1,1,2-Trichloroethane	.46416	.44948	3.16		
Tetrachloroethene	.91988	.80500	12.49		
1,3-Dichloropropene	.66332	.67273	1.42		
2-Hexanone	.15295	.14190	7.22		
Dibromochloromethane	1.26477	1.22492	3.15		
1,2-Dibromoethane (EDB)	.88114	.83839	4.85		
Chlorobenzene	1.09329	.99610	9.43		**
1,1,1,2-Tetrachloroethane	.72294	.72166	.18		
Ethylbenzene	1.33063	1.42948	7.43	*	
m&p-Xylenes	1.04364	1.04228	.13		
o-Xylene	1.00324	1.02106	1.78		
Styrene	1.79753	1.83791	4.57		
Bromoform	1.30299	1.19514	8.28		**
Isopropylbenzene	1.56842	1.66033	5.86		
Bromofluorobenzene(SURR)	1.02859	1.00971	1.83		
Bromobenzene	1.00657	1.01532	.87		
1,1,2,2-Tetrachloroethane	1.06747	1.20341	12.74		**
1,2,3-Trichloropropane	.79275	.89489	18.88		
n-Propylbenzene	.54724	.60231	10.06		
2-Chlorotoluene	.60641	.64851	6.94		
4-Chlorotoluene	.61990	.63244	2.02		
1,3,5-Trimethylbenzene	1.72250	2.00800	16.57		
tert-Butylbenzene	1.82315	2.04453	12.14		
1,2,4-Trimethylbenzene	1.72777	2.02677	17.31		
sec-Butylbenzene	2.38295	2.78948	17.06		
1,3-Dichlorobenzene	1.58389	1.61596	2.03		
1,4-Dichlorobenzene	1.65256	1.73925	5.25		
p-Isopropyltoluene	1.96082	2.24654	14.57		
1,2-Dichlorobenzene	1.47848	1.53286	3.68		

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

AR309416

Form VII Page 0 of 7

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Continuing Calibration Check
HSL Compounds

Case No:

Contractor: REGION III - CRL

Contract No: ESAT

Instrument ID: HP 5970 MSD

Calibration Date: 02/26/91

Time: 12:28

Laboratory ID: >EA810

Initial Calibration Date: ~~02/21/91~~ 02/26/91 SR

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % Diff for CCC is 25.00%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
n-Butylbenzene	1.77122	2.17089	22.56		
1,2-Dibromo-3-chloropropane	.34273	.39095	14.07		
1,2,4-Trichlorobenzene	1.37826	1.33477	3.16		
Naphthalene	1.92781	1.92632	.08		
Hexachlorobutadiene	1.21543	1.27506	4.91		
1,2,3-Trichlorobenzene	1.27321	1.27692	.29		

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

AR309417

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QUANT REPORT

Operator ID: ESAT Quant Rev: 6 Quant Time: 910225 14:30
Output File: ^EA799::QT Injected at: 910225 13:49
Data File: >EA799::D3 Dilution Factor: 1.00000
Name: 910221-07 CHEM SOLV
Misc: MON W 26 A, 5ML SAMPLE + 5UL IS+SS

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910225 11:30

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*1,4-Difluorobenzene	16.58	114.0	75909	50.00	ug/L	68
~~3)~~	~~Chloromethane~~ See MC 2	~~10.47~~	~~50.0~~	~~3056~~	~~24.39~~	~~ug/L~~ S.R. 2/28/91	97
~~10)~~	~~Acetone~~ See MC 2	~~11.67~~	~~43.0~~	~~15496~~	~~99.41~~	~~ug/L~~ SR 2/28/91	61
7)	2-Butanone	14.55	43.0	910	3.40	ug/L	90
~~9)~~	~~Chloroform~~	~~15.00~~	~~83.0~~	~~1174~~	~~1.03~~	~~ug/L~~ S.R. 2/28/91	89
13)	1,2-Dichloroethane-d4(SURR)	15.79	67.0	18060	112.24	ug/L	99
14)	Benzene	15.86	78.0	28374	31.99	ug/L	99
~~5)~~	~~1,1-Dichloroethane~~	~~15.92~~	~~63.0~~	~~10570~~	~~1.42~~	~~ug/L~~ S.R. 2/28/91	96
16)	Fluorobenzene(SURR)	16.36	96.0	71645	100.29	ug/L	86
3)	*Chlorobenzene-d5	22.43	117.0	59646	50.00	ug/L	97
1)	Toluene-d8(SURR)	19.35	98.0	72151	105.59	ug/L	98
9)	Tetrachloroethene	20.58	166.0	1393	1.31	ug/L	89
~~6)~~	~~Ethylbenzene~~ See following Quant Report	~~23.05~~	~~91.0~~	~~862~~	~~.51~~	~~ug/L~~ SR 2/28/91	74
1)	Isopropylbenzene	24.87	105.0	29736	15.83	ug/L	92
2)	Bromofluorobenzene(SURR)	25.22	95.0	62030	105.60	ug/L	92
3)	*1,2-Dichlorobenzene-D4	29.00	152.0	44863	50.00	ug/L	91
~~8)~~	~~1,3,5-Trimethylbenzene~~	~~26.14~~	~~105.0~~	~~753~~	~~.47~~	~~ug/L~~ SR 2/28/91	100
1)	tert-Butylbenzene	27.12	119.0	608	.35	ug/L	93
2)	1,2,4-Trimethylbenzene	27.24	105.0	730	.44	ug/L	92
3)	sec-Butylbenzene	27.67	105.0	20073	8.77	ug/L	89
8)	n-Butylbenzene	29.12	91.0	10684	6.22	ug/L	100
~~1)~~	~~Naphthalene~~	~~33.83~~	~~128.0~~	~~736~~	~~.55~~	~~ug/L~~ SR 2/28/91	100

* Compound is ISTD

AR309418

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QUANT REPORT - False positives deleted, #47 manual integrated and 2nd TIC sea[illegible]

Operator ID: ESAT Quant Rev: 6 Quant Time: 910225 14:50
Output File: ^EA799::QT Injected at: 910225 13:49
Data File: >EA799::D3 Dilution Factor: 1.00000
Name: 910221-07 CHEM SOLV
Misc: MON W 26 A, 5ML SAMPLE + 5UL IS+SS

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910225 11:30

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Difluorobenzene	16.58	1208	75909	50.00	ug/L
17)	2-Butanone	14.55	1034	910	3.40	ug/L
23)	1,2-Dichloroethane-d4(SURR)	15.79	1141	18060	112.24	ug/L
24)	Benzene	15.86	1147	28374	31.99	ug/L
26)	Fluorobenzene(SURR)	16.36	1189	71645	100.29	ug/L
33)	*Chlorobenzene-d5	22.43	1709	59646	50.00	ug/L
35)	Toluene-d8(SURR)	19.35	1445	72151	105.59	ug/L
39)	Tetrachloroethene	20.58	1551	1393	1.31	ug/L
47)	m&p-Xylenes	23.06	1763	249M	.40	ug/L
51)	Isopropylbenzene	24.87	1918	29736	15.83	ug/L
52)	Bromofluorobenzene(SURR)	25.22	1948	62030	105.60	ug/L
53)	*1,2-Dichlorobenzene-D4	29.00	2272	44863	50.00	ug/L
61)	tert-Butylbenzene	27.12	2111	608	.35	ug/L
62)	1,2,4-Trimethylbenzene	27.24	2121	730	.44	ug/L
63)	sec-Butylbenzene	27.67	2158	20073	8.77	ug/L
68)	n-Butylbenzene	29.12	2282	10684	6.22	ug/L

* Compound is ISTD

AR309419

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QUANT REPORT

Operator ID: ESAT Quant Rev: 6 Quant Time: 910225 15:17
Output File: ^EA800::QT Injected at: 910225 14:36
Data File: >EA800::D3 Dilution Factor: 1.00000
Name: 910221-08 CHEM SOLV
Misc: MON W 33 A, 5ML SAMPLE + 5UL IS+SS

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910225 11:30

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*1,4-Difluorobenzene	16.57	114.0	75713	50.00	ug/L	70
16)	Cis-1,2-Dichloroethene	14.46	96.0	595	1.38	ug/L	93
19)	Chloroform	14.99	83.0	1579	1.40	ug/L	75
20)	1,1,1-Trichloroethane	15.23	97.0	11456	11.62	ug/L	94
~~21)~~	~~Carbon Tetrachloride~~	~~15.22~~	~~117.0~~	~~1494~~	~~1.37~~	~~ug/L~~	89
23)	1,2-Dichloroethane-d4(SURR)	15.79	67.0	18186	113.31	ug/L	98
26)	Fluorobenzene(SURR)	16.35	96.0	71255	100.00	ug/L	89
27)	Trichloroethene	17.00	130.0	112137	141.71	ug/L	97
53)	*Chlorobenzene-d5	22.41	117.0	58113	50.00	ug/L	96
55)	Toluene-d8(SURR)	19.32	98.0	68053	102.22	ug/L	89
59)	Tetrachloroethene	20.57	166.0	3568	3.45	ug/L	83
62)	Bromofluorobenzene(SURR)	25.21	95.0	59479	103.93	ug/L	86
63)	*1,2-Dichlorobenzene-D4	28.98	152.0	43320	50.00	ug/L	92

* Compound is ISTD

AR309420

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QUANT REPORT

Operator ID: ESAT Quant Rev: 6 Quant Time: 910225 16:05
Output File: ^EA801::QT Injected at: 910225 15:24
Data File: >EA801::D3 Dilution Factor: 1.00000
Name: 910221-09 CHEM SOLV
Misc: MON W 33D, 5ML SAMP + 5UL IS+SS

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910225 11:30

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Difluorobenzene	16.54	1208	73845	50.00	ug/L
16)	Cis-1,2-Dichloroethene	14.42	1026	607	1.45	ug/L
19)	Chloroform	14.97	1073	1460	1.32	ug/L
20)	1,1,1-Trichloroethane	15.19	1092	11163	11.61	ug/L
~~21)~~	~~Carbon Tetrachloride~~	~~15.20~~	~~1093~~	~~1482~~	~~1.40~~	~~ug/L~~
23)	1,2-Dichloroethane-d4(SURR)	15.76	1141	17867M	114.14	ug/L
26)	Fluorobenzene(SURR)	16.32	1189	70114	100.89	ug/L
27)	Trichloroethene	16.98	1245	109906	142.40	ug/L
33)	*Chlorobenzene-d5	22.38	1708	58293	50.00	ug/L
35)	Toluene-d8(SURR)	19.29	1443	69111	103.49	ug/L
39)	Tetrachloroethene	20.55	1551	3669	3.53	ug/L
52)	Bromofluorobenzene(SURR)	25.18	1948	58075	101.16	ug/L
53)	*1,2-Dichlorobenzene-D4	28.96	2272	44457	50.00	ug/L

* Compound is ISTD

AR309421

C-18

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QUANT REPORT

Operator ID: ESAT Quant Rev: 6 Quant Time: 910225 13:42
Output File: ^EA798::QT Injected at: 910225 13:01
Data File: >EA798::D3 Dilution Factor: 1.00000
Name: 910221-10 CHEM SOLV
Misc: TRIP BLANK, 5ML SAMPLE & 5UL IS + SS

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910225 11:30

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*1,4-Difluorobenzene	16.44	114.0	74221	50.00	ug/L	70
3)	Chloromethane	8.79	50.0	929	6.01	ug/L	89
.0)	Acetone	11.76	43.0	1322	8.32	ug/L	97
.7)	2-Butanone	14.42	43.0	618	2.36	ug/L	87
.9)	Chloroform	14.86	83.0	5714	5.15	ug/L	93
13)	1,2-Dichloroethane-d4(SURR)	15.66	67.0	17650	112.18	ug/L	96
16)	Fluorobenzene(SURR)	16.23	96.0	70462	100.87	ug/L	89
10)	Bromodichloromethane	17.84	83.0	526	.41	ug/L	93
13)	*Chlorobenzene-d5	22.30	117.0	58938	50.00	ug/L	93
15)	Toluene-d8(SURR)	19.20	98.0	69346	102.70	ug/L	97
2)	Bromofluorobenzene(SURR)	25.12	95.0	62489	107.66	ug/L	89
13)	*1,2-Dichlorobenzene-D4	28.94	152.0	43864	50.00	ug/L	89
18)	~~n-Butylbenzene~~	~~29.07~~	~~91.0~~	~~873~~	.52	ug/L	100

* Compound is ISTD

AR309422

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QUANT REPORT

Operator ID: ESAT Quant Rev: 6 Quant Time: 910225 12:46
Output ~~File~~: ^EA797::QT Injected at: 910225 12:05
Data File: >EA797::D3 Dilution Factor: 1.00000
Name: VOA METHOD BLANK- 910221-11 -CAL Lab Blank S.R.
Misc: 5UL IS+SS IN 5ML DFW

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910225 11:30

	Compound	R.T.	Q ion	Area	Conc	Units
1)	*1,4-Difluorobenzene	16.58	114.0	78872	50.00	ug/L
11)	Methylene Chloride	12.44	84.0	2091	5.60	ug/L
23)	1,2-Dichloroethane-d4(SURR)	15.78	67.0	17771	106.29	ug/L
26)	Fluorobenzene(SURR)	16.36	96.0	73173	98.58	ug/L
33)	*Chlorobenzene-d5	22.41	117.0	62346	50.00	ug/L
35)	Toluene-d8(SURR)	19.32	98.0	70940	99.32	ug/L
52)	Bromofluorobenzene(SURR)	25.21	95.0	62493	101.78	ug/L
53)	*1,2-Dichlorobenzene-D4	28.99	152.0	46159	50.00	ug/L

* Compound is ISTD

AR309423

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QUANT REPORT

Operator ID: ESAT Quant Rev: 6 Quant Time: 910226 17:09
Output File: ^EA813::QT Injected at: 910226 16:28
Data File: >EA813::D3 Dilution Factor: 1.00000
Name: 910221-08MS CHEM SOL
Misc: MON W 33 A, 5ML SAMPLE + 5UL IS+SS + 5UL STD MIX

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910226 13:53

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*1,4-Difluorobenzene	16.63	114.0	70546	50.00	ug/L	67
2)	Dichlorodifluoromethane	7.36	85.0	5443^	19.15	ug/L	93
3)	Chloromethane	8.55	50.0	6578	47.78	ug/L	96
4)	Vinyl Chloride	9.11	62.0	9194	47.92	ug/L	93
5)	Bromomethane	9.97	94.0	17108	46.99	ug/L	84
6)	Chloroethane	10.26	64.0	7273	48.45	ug/L	98
7)	Trichlorofluoromethane	10.79	101.0	47549	56.23	ug/L	97
8)	1,1-Dichloroethene	11.66	96.0	5880	51.71	ug/L	94
9)	Carbon Disulfide	11.88	76.0	42541	48.10	ug/L	100
10)	Acetone	11.88	43.0	4932	49.07	ug/L	97
11)	Methylene Chloride	12.50	84.0	14646	37.90	ug/L	74
12)	Trans-1,2-Dichloroethene	12.91	96.0	13335	47.67	ug/L	85
13)	1,1-Dichloroethane	13.56	63.0	38338	51.61	ug/L	95
14)	Vinyl Acetate	13.74	86.0	4012	49.32	ug/L	77
15)	2,2-Dichloropropane	14.47	77.0	26406	52.57	ug/L	90
16)	Cis-1,2-Dichloroethene	14.49	96.0	21183	51.08	ug/L	91
17)	2-Butanone	14.60	43.0	9610	48.84	ug/L	96
18)	Bromochloromethane	14.88	128.0	20995	50.61	ug/L	81
19)	Chloroform	15.04	83.0	57056	53.29	ug/L	96
20)	1,1,1-Trichloroethane	15.28	97.0	61965	63.27	ug/L	78
21)	Carbon Tetrachloride	15.55	117.0	55587	51.40	ug/L	97
22)	1,1-Dichloro-1-propene	15.57	75.0	34507	51.18	ug/L	96
23)	1,2-Dichloroethane-d4(SURR)	15.84	67.0	17311	105.08	ug/L	95
24)	Benzene	15.91	78.0	41629	48.29	ug/L	99
25)	1,2-Dichloroethane	15.97	62.0	39382	52.88	ug/L	97
26)	Fluorobenzene(SURR)	16.41	96.0	66020	97.13	ug/L	88
27)	Trichloroethene	17.05	130.0	131036	192.05	ug/L	91
28)	1,2-Dichloropropane	17.46	63.0	22761	49.33	ug/L	94
30)	Bromodichloromethane	18.00	83.0	61697	52.53	ug/L	91
32)	Trans-1,3-Dichloropropene	18.87	75.0	48394	29.20	ug/L	98
33)	*Chlorobenzene-d5	22.46	117.0	52105	50.00	ug/L	97
34)	4-Methyl-2-pentanone	19.25	58.0	8339	52.04	ug/L	85
35)	Toluene-d8(SURR)	19.38	98.0	62823	102.14	ug/L	92
36)	Toluene	19.50	92.0	32495	50.58	ug/L	95
37)	Cis-1,3-Dichloropropene	20.02	75.0	26614	27.18	ug/L	97
38)	1,1,2-Trichloroethane	20.40	97.0	25095	[illegible]	ug/L	99
39)	Tetrachloroethene	20.64	166.0	45797	54.59	ug/L	93
40)	1,3-Dichloropropane	20.73	76.0	37453	53.42	ug/L	87
41)	2-Hexanone	20.99	58.0	8069	54.57	ug/L	78
42)	Dibromochloromethane	21.21	129.0	68100	53.35	ug/L	97
43)	1,2-Dibromoethane (EDB)	21.42	107.0	46348	53.05	ug/L	95
44)	Chlorobenzene	22.53	112.0	53546	51.58	ug/L	72
45)	1,1,1,2-Tetrachloroethane (Cl	22.75	131.0	[illegible]	[illegible]	[illegible]	[illegible]

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	Compound	R.T.	Q ion	Area	Conc	Uni..	
46)	Ethylbenzene	22.81	91.0	76118	51.10	ug/L	
47)	m&p-Xylenes	23.10	106.0	54695	100.71	ug/L	
48)	o-Xylene	24.00	106.0	54910	103.21	ug/L	
49)	Styrene	24.06	104.0	95482	99.70	ug/L	
50)	Bromoform	24.46	173.0	64333	51.65	ug/L	
51)	Isopropylbenzene	24.91	105.0	86812	50.17	ug/L	
52)	Bromofluorobenzene(SURR)	25.25	95.0	55463	105.42	ug/L	
53)	*1,2-Dichlorobenzene-D4	29.03	152.0	37620	50.00	ug/L	
54)	Bromobenzene	25.57	156.0	37743	49.41	ug/L	
55)	1,1,2,2-Tetrachloroethane	25.70	83.0	47498	52.46	ug/L	
56)	1,2,3-Trichloropropane	25.75	75.0	31520	46.81	ug/L	
57)	n-Propylbenzene	25.91	120.0	22419	49.47	ug/L	
58)	2-Chlorotoluene	26.08	126.0	24267	49.73	ug/L	
59)	4-Chlorotoluene	26.36	126.0	24996	52.53	ug/L	
60)	1,3,5-Trimethylbenzene	26.37	105.0	75548	50.00	ug/L	
61)	tert-Butylbenzene	27.16	119.0	73103	47.52	ug/L	
62)	1,2,4-Trimethylbenzene	27.27	105.0	77722	50.97	ug/L	
63)	sec-Butylbenzene	27.71	105.0	104907	49.98	ug/L	
64)	1,3-Dichlorobenzene	27.93	146.0	62391	51.31	ug/L	
65)	1,4-Dichlorobenzene	28.16	146.0	64240	49.09	ug/L	
66)	p-Isopropyltoluene	28.09	119.0	88380	52.29	ug/L	1
67)	1,2-Dichlorobenzene	29.07	146.0	56754	49.21	ug/L	
68)	n-Butylbenzene	29.13	91.0	81995	50.20	ug/L	1
69)	1,2-Dibromo-3-chloropropane	31.12	75.0	15306	52.03	ug/L	
70)	1,2,4-Trichlorobenzene	33.25	180.0	49427	49.22	ug/L	1
71)	Naphthalene	33.87	128.0	74921	51.69	ug/L	1
72)	Hexachlorobutadiene	33.76	225.0	45031	46.94	ug/L	1
73)	1,2,3-Trichlorobenzene	34.53	180.0	47492	49.43	ug/L	1

* Compound is ISTD

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QUANT REPORT

Operator ID: ESAT Quant Rev: 6 Quant Time: 910226 18:45
Output File: ^EA815::QT Injected at: 910226 18:03
Data File: >EA815::D3 Dilution Factor: 1.00000
Name: 910221-08MSD CHEM SO
Misc: MON W 33A, 5ML SAMP + 5UL IS+SS + 5UL STD MIX

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910226 13:53

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Difluorobenzene	16.60	1209	67842	50.00	ug/L	67
2)	Dichlorodifluoromethane	7.38	419	10278	37.59	ug/L	94
3)	Chloromethane	9.03	561	6862	51.83	ug/L	97
4)	Vinyl Chloride	9.50	601	9359	50.73	ug/L	99
5)	Bromomethane	10.26	666	17200	49.13	ug/L	89
6)	Chloroethane	10.50	687	7482	51.83	ug/L	95
7)	Trichlorofluoromethane	10.98	728	48725	59.92	ug/L	99
8)	1,1-Dichloroethene	11.79	797	5579	51.02	ug/L	93
9)	Carbon Disulfide	12.00	815	40730	47.89	ug/L	100
10)	Acetone	11.96	812	5974	61.80	ug/L	96
11)	Methylene Chloride	12.57	864	14285	38.44	ug/L	83
12)	Trans-1,2-Dichloroethene	12.94	896	13552	50.38	ug/L	91
13)	1,1-Dichloroethane	13.58	951	38283	53.59	ug/L	99
14)	Vinyl Acetate	13.74	964	3867	49.43	ug/L	76
15)	2,2-Dichloropropane	14.47	1027	22561	46.71	ug/L	92
16)	Cis-1,2-Dichloroethene	14.49	1029	19878	49.84	ug/L	89
17)	2-Butanone	14.59	1037	10031	53.01	ug/L	91
19)	Chloroform	15.02	1074	53727	52.18	ug/L	95
20)	1,1,1-Trichloroethane	15.25	1094	54152	57.50	ug/L	75
21)	Carbon Tetrachloride	15.52	1117	49182	47.29	ug/L	92
22)	1,1-Dichloro-1-propene	15.53	1118	32988	50.88	ug/L	97
23)	1,2-Dichloroethane-d4(SURR)	15.83	1143	15682	98.98	ug/L	97
24)	Benzene	15.88	1148	41857	50.49	ug/L	99
25)	1,2-Dichloroethane	15.95	1154	36098	50.40	ug/L	96
26)	Fluorobenzene(SURR)	16.39	1191	63680	97.43	ug/L	91
27)	Trichloroethene	17.03	1246	126104	192.19	ug/L	92
28)	1,2-Dichloropropane	17.44	1281	23344	52.61	ug/L	93
30)	Bromodichloromethane	17.97	1327	62074	54.96	ug/L	93
32)	Trans-1,3-Dichloropropene	18.84	1401	47169	29.59	ug/L	98
33)	*Chlorobenzene-d5	22.40	1706	47659	50.00	ug/L	98
34)	4-Methyl-2-pentanone	19.21	1433	8296	56.60	ug/L	84
35)	Toluene-d8(SURR)	19.33	1443	60902M	108.25	ug/L	96
36)	Toluene	19.47	1455	33733	57.40	ug/L	97
37)	Cis-1,3-Dichloropropene	19.97	1498	26000	[illegible]	ug/L	9[illegible]
38)	1,1,2-Trichloroethane	20.34	1530	23854	55.68	ug/L	[illegible]
39)	Tetrachloroethene	20.58	1550	46401	60.47	ug/L	86
40)	1,3-Dichloropropane	20.68	1559	37483	58.45	ug/L	87
41)	2-Hexanone	20.94	1581	7397	54.69	ug/L	74
42)	Dibromochloromethane	21.15	1599	62843	53.82	ug/L	95
43)	1,2-Dibromoethane (EDB)	21.36	1617	45887	57.42	ug/L	97
44)	Chlorobenzene	22.47	1712	51308	54.04	ug/L	77
45)	1,1,1,2-Tetrachloroethane	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1830426

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48)	o-Xylene	23.78	1837	47227	101.18	ug/L
49)	Styrene	23.99	1842	87588	99.99	ug/L
50)	Bromoform	24.39	1876	58804	51.62	ug/L
51)	Isopropylbenzene	24.84	1915	78147	49.38	ug/L
52)	Bromofluorobenzene(SURR)	25.19	1945	45334	94.21	ug/L
53)	*1,2-Dichlorobenzene-D4	28.99	2269	36048	50.00	ug/L
54)	Bromobenzene	25.50	1971	32068	43.81	ug/L
55)	1,1,2,2-Tetrachloroethane	25.64	1983	43542	50.19	ug/L
56)	1,2,3-Trichloropropane	25.70	1988	30427	47.16	ug/L
57)	n-Propylbenzene	25.85	2001	18845	43.40	ug/L
58)	2-Chlorotoluene	26.01	2015	20087	42.96	ug/L
59)	4-Chlorotoluene	26.30	2039	20513	44.99	ug/L
60)	1,3,5-Trimethylbenzene	26.32	2041	64410	44.49	ug/L
61)	tert-Butylbenzene	27.10	2108	71990	48.84	ug/L
62)	1,2,4-Trimethylbenzene	27.23	2119	73528	50.32	ug/L
63)	sec-Butylbenzene	27.65	2155	99972	49.71	ug/L
64)	1,3-Dichlorobenzene	27.87	2174	54405	46.70	ug/L
65)	1,4-Dichlorobenzene	28.11	2194	64474	51.42	ug/L
66)	p-Isopropyltoluene	28.05	2189	85531	52.81	ug/L
67)	1,2-Dichlorobenzene	29.02	2272	55503	50.22	ug/L
68)	n-Butylbenzene	29.09	2278	82339	52.61	ug/L
69)	1,2-Dibromo-3-chloropropane	31.04	2445	16197	57.47	ug/L
70)	1,2,4-Trichlorobenzene	33.18	2628	49042	50.96	ug/L
71)	Naphthalene	33.80	2681	77695	55.94	ug/L
72)	Hexachlorobutadiene	33.67	2670	48415	52.67	ug/L
73)	1,2,3-Trichlorobenzene	34.44	2736	45590	49.52	ug/L

* Compound is ISTD

AR309427

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QUANT REPORT

Operator ID: ESAT · Quant Rev: 6 Quant Time: 910226 16:21
Output File: ^EA812::QT Injected at: 910226 15:39
Data File: >EA812::D3 Dilution Factor: 1.00000
Name: VOA METHOD BLANK
Misc: 5UL IS + SS MIX IN 5ML DFW

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910226 13:53

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*1,4-Difluorobenzene	16.46	114.0	69835	50.00	ug/L	69
11)	Methylene Chloride	12.32	84.0	2677	7.00	ug/L	75
23)	1,2-Dichloroethane-d4(SURR)	15.65	67.0	16048	98.40	ug/L	96
26)	Fluorobenzene(SURR)	16.23	96.0	66759	99.22	ug/L	91
33)	*Chlorobenzene-d5	22.34	117.0	55874	50.00	ug/L	94
35)	Toluene-d8(SURR)	19.22	98.0	64798	98.24	ug/L	93
52)	Bromofluorobenzene(SURR)	25.16	95.0	54467	96.54	ug/L	89
53)	*1,2-Dichlorobenzene-D4	28.97	152.0	39719	50.00	ug/L	91

* Compound is ISTD

AR309428

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QUANT REPORT

Operator ID: ESAT Quant Rev: 6 Quant Time: 910225 11:31
Output File: ^EA795::QT Injected at: 910225 10:17
Data File: >EA795::D3 Dilution Factor: 1.00000
Name: VOA 50 STD
Misc: 5UL IS+SS & 5UL STD MIX IN 5ML DFW

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910225 11:30

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Difluorobenzene	16.56	1207	83722	50.00	ug/L
2)	Dichlorodifluoromethane	7.35	417	15295M	50.00	ug/L
3)	Chloromethane	8.48	514	8719M	50.00	ug/L
4)	Vinyl Chloride	9.04	562	11327	50.00	ug/L
5)	Bromomethane	9.90	636	22025	50.00	ug/L
6)	Chloroethane	10.19	661	9087	50.00	ug/L
7)	Trichlorofluoromethane	10.72	706	46600	50.00	ug/L
8)	1,1-Dichloroethene	11.60	782	6866	50.00	ug/L
9)	Carbon Disulfide	11.80	799	51386	50.00	ug/L
10)	Acetone	11.80	799	8957	50.00	ug/L
11)	Methylene Chloride	12.43	853	19802M	50.00	ug/L
12)	Trans-1,2-Dichloroethene	12.83	887	16077	50.00	ug/L
13)	1,1-Dichloroethane	13.49	944	42219	50.00	ug/L
14)	Vinyl Acetate	13.66	958	4831	50.00	ug/L
15)	2,2-Dichloropropane	14.40	1022	28139	50.00	ug/L
16)	Cis-1,2-Dichloroethene	14.43	1024	23771	50.00	ug/L
17)	2-Butanone	14.54	1034	14743	50.00	ug/L
18)	Bromochloromethane	14.80	1056	26079	50.00	ug/L
19)	Chloroform	14.98	1071	62581	50.00	ug/L
20)	1,1,1-Trichloroethane	15.20	1090	54491	50.00	ug/L
21)	Carbon Tetrachloride	15.47	1113	60148	50.00	ug/L
22)	1,1-Dichloro-1-propene	15.49	1115	38242	50.00	ug/L
23)	1,2-Dichloroethane-d4(SURR)	15.77	1139	17747	100.00	ug/L
24)	Benzene	15.83	1144	48907	50.00	ug/L
25)	1,2-Dichloroethane	15.90	1150	41171	50.00	ug/L
26)	Fluorobenzene(SURR)	16.33	1187	78793	100.00	ug/L
27)	Trichloroethene	16.98	1243	43752	50.00	ug/L
28)	1,2-Dichloropropane	17.39	1278	25891	50.00	ug/L
29)	Dibromomethane	17.62	1297	41064	50.00	ug/L
30)	Bromodichloromethane	17.94	1325	71530	50.00	ug/L
31)	2-Chloroethylvinylether	18.59	1380	16279	50.00	ug/L
32)	Trans-1,3-Dichloropropene	18.81	1399	56945	50.00	ug/L
33)	*Chlorobenzene-d5	22.39	1706	64973	50.00	ug/L
34)	4-Methyl-2-pentanone	19.19	1432	9968	50.00	ug/L
35)	Toluene-d8(SURR)	19.32	1443	74434	100.00	ug/L
36)	Toluene	19.45	1454	4041[illegible]	[illegible]	ug/L
37)	Cis-1,3-Dichloropropene	19.96	1498	30608	[illegible]	ug/L
38)	1,1,2-Trichloroethane	20.34	1530	29417	50.00	ug/L
39)	Tetrachloroethene	20.57	1550	57853	50.00	ug/L
40)	1,3-Dichloropropane	20.68	1559	42948	50.00	ug/L
41)	2-Hexanone	20.93	1581	10445	50.00	ug/L
42)	Dibromochloromethane	21.14	1599	84614	50.00	ug/L
43)	1,2-Dibromoethane (EDB)	21.35	1.17	55284	50.00	ug/L
44)	Chlorobenzene	22.48	1713	64112	50.00	ug/L
45)	1,1,1,2-Tetrachloroethane	22.49	1731	49507	50.00	ug/L

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48)	o-Xylene	23.95	1839	65042	100.00	ug/L	93
49)	Styrene	24.01	1844	117516	100.00	ug/L	100
50)	Bromoform	24.39	1877	81431	50.00	ug/L	96
51)	Isopropylbenzene	24.86	1917	102291	50.00	ug/L	87
52)	Bromofluorobenzene(SURR)	25.21	1947	63987	100.00	ug/L	84
53)	*1,2-Dichlorobenzene-D4	29.01	2272	47870	50.00	ug/L	91
54)	Bromobenzene	25.53	1974	49138	50.00	ug/L	86
55)	1,1,2,2-Tetrachloroethane	25.64	1984	52869	50.00	ug/L	97
56)	1,2,3-Trichloropropane	25.70	1989	34282	50.00	ug/L	95
57)	n-Propylbenzene	25.87	2003	26964	50.00	ug/L	92
58)	2-Chlorotoluene	26.03	2017	29359	50.00	ug/L	94
59)	4-Chlorotoluene	26.31	2041	29801	50.00	ug/L	97
60)	1,3,5-Trimethylbenzene	26.32	2042	86086	50.00	ug/L	100
61)	tert-Butylbenzene	27.11	2109	92892	50.00	ug/L	99
62)	1,2,4-Trimethylbenzene	27.25	2121	88835	50.00	ug/L	98
63)	sec-Butylbenzene	27.68	2158	122079	50.00	ug/L	98
64)	1,3-Dichlorobenzene	27.89	2176	77548	50.00	ug/L	96
65)	1,4-Dichlorobenzene	28.12	2196	81563	50.00	ug/L	93
66)	p-Isopropyltoluene	28.06	2191	101818	50.00	ug/L	100
67)	1,2-Dichlorobenzene	29.05	2275	73264	50.00	ug/L	97
68)	n-Butylbenzene	29.11	2280	91651	50.00	ug/L	100
69)	1,2-Dibromo-3-chloropropane	31.08	2449	17183	50.00	ug/L	88
70)	1,2,4-Trichlorobenzene	33.22	2632	67198	50.00	ug/L	100
71)	Naphthalene	33.84	2685	91347	50.00	ug/L	100
72)	Hexachlorobutadiene	33.72	2675	61628	50.00	ug/L	100
73)	1,2,3-Trichlorobenzene	34.49	2741	60080	50.00	ug/L	100

* Compound is ISTD

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QUANT REPORT

Operator ID: ESAT Quant Rev: 6 Quant Time: 910226 13:54
Output File: ^EA810::QT Injected at: 910226 12:29
Data File: >EA810::D3 Dilution Factor: 1.00000
Name: VOA 50 STD
Misc: 5UL IS+SS + 5UL STD MIX IN 5ML DFW

ID File: VOAID1::ME
Title: DB-624 DIRECT 6PSI
Last Calibration: 910226 13:53

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Difluorobenzene	16.55	1206	76260	50.00	ug/L
2)	Dichlorodifluoromethane	7.53	433	15366M	50.00	ug/L
3)	Chloromethane	8.62	526	7441	50.00	ug/L
4)	Vinyl Chloride	9.14	571	10369	50.00	ug/L
5)	Bromomethane	9.98	643	19677M	50.00	ug/L
6)	Chloroethane	10.26	667	8113	50.00	ug/L
7)	Trichlorofluoromethane	10.76	710	45703	50.00	ug/L
8)	1,1-Dichloroethene	11.64	785	6146	50.00	ug/L
9)	Carbon Disulfide	11.83	802	47802	50.00	ug/L
10)	Acetone	11.85	803	5433	50.00	ug/L
11)	Methylene Chloride	12.45	855	20885	50.00	ug/L
12)	Trans-1,2-Dichloroethene	12.85	889	15120	50.00	ug/L
13)	1,1-Dichloroethane	13.50	945	40152	50.00	ug/L
14)	Vinyl Acetate	13.68	960	4397	50.00	ug/L
15)	2,2-Dichloropropane	14.39	1021	27148	50.00	ug/L
16)	Cis-1,2-Dichloroethene	14.42	1024	22415	50.00	ug/L
17)	2-Butanone	14.54	1034	10635	50.00	ug/L
18)	Bromochloromethane	14.80	1056	22423	50.00	ug/L
19)	Chloroform	14.97	1071	57874	50.00	ug/L
20)	1,1,1-Trichloroethane	15.19	1090	52933	50.00	ug/L
21)	Carbon Tetrachloride	15.48	1114	58450	50.00	ug/L
22)	1,1-Dichloro-1-propene	15.49	1115	36443	50.00	ug/L
23)	1,2-Dichloroethane-d4(SURR)	15.78	1140	17809	100.00	ug/L
24)	Benzene	15.84	1145	46592	50.00	ug/L
25)	1,2-Dichloroethane	15.90	1150	40252	50.00	ug/L
26)	Fluorobenzene(SURR)	16.34	1188	73473	100.00	ug/L
27)	Trichloroethene	16.98	1243	36878	50.00	ug/L
28)	1,2-Dichloropropane	17.40	1279	24939	50.00	ug/L
29)	Dibromomethane	17.61	1297	37873	50.00	ug/L
30)	Bromodichloromethane	17.95	1326	63478	50.00	ug/L
31)	2-Chloroethylvinylether	18.59	1381	15643	50.00	ug/L
32)	Trans-1,3-Dichloropropene	18.83	1401	53756	30.00	ug/L
33)	*Chlorobenzene-d5	22.44	1710	59302	50.00	ug/L
34)	4-Methyl-2-pentanone	19.20	1433	9119	50.00	ug/L
35)	Toluene-d8(SURR)	19.32	1443	70003	100.00	ug/L
36)	Toluene	19.46	1453	36560	50.00	ug/L
37)	Cis-1,3-Dichloropropene	19.97	1499	27471	70.00	ug/L
38)	1,1,2-Trichloroethane	20.36	1532	26655	50.00	ug/L
39)	Tetrachloroethene	20.58	1551	47738	50.00	ug/L
40)	1,3-Dichloropropane	20.68	1560	39894	50.00	ug/L
41)	2-Hexanone	20.97	1584	8415	50.00	ug/L
42)	Dibromochloromethane	21.18	1602	72640	50.00	ug/L
43)	1,2-Dibromoethane (EDB)	21.37	1619	49718	50.00	ug/L
44)	Chlorobenzene	22.48	1714	59071	50.00	ug/L

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		[illegible]	[illegible]	[illegible]	[illegible]	ug/L	[illegible]
47)	m&p-Xylenes	23.06	1763	61809	100.00	ug/L	83
48)	o-Xylene	23.98	1842	60551	100.00	ug/L	97
49)	Styrene	24.03	1846	108992	100.00	ug/L	100
50)	Bromoform	24.41	1879	70874	50.00	ug/L	97
51)	Isopropylbenzene	24.88	1919	98461	50.00	ug/L	90
52)	Bromofluorobenzene(SURR)	25.23	1949	59878	100.00	ug/L	91
53)	*1,2-Dichlorobenzene-D4	29.03	2274	41384	50.00	ug/L	91
54)	Bromobenzene	25.54	1976	42018	50.00	ug/L	91
55)	1,1,2,2-Tetrachloroethane	25.67	1987	49802	50.00	ug/L	94
56)	1,2,3-Trichloropropane	25.72	1991	37034	50.00	ug/L	95
57)	n-Propylbenzene	25.90	2006	24926	50.00	ug/L	97
58)	2-Chlorotoluene	26.05	2019	26838	50.00	ug/L	92
59)	4-Chlorotoluene	26.33	2043	26173	50.00	ug/L	94
60)	1,3,5-Trimethylbenzene	26.35	2045	83099	50.00	ug/L	100
61)	tert-Butylbenzene	27.15	2113	84611	50.00	ug/L	94
62)	1,2,4-Trimethylbenzene	27.26	2123	83876	50.00	ug/L	97
63)	sec-Butylbenzene	27.70	2160	115440	50.00	ug/L	94
64)	1,3-Dichlorobenzene	27.91	2178	66875	50.00	ug/L	93
65)	1,4-Dichlorobenzene	28.14	2198	71977	50.00	ug/L	99
66)	p-Isopropyltoluene	28.09	2194	92971	50.00	ug/L	100
67)	1,2-Dichlorobenzene	29.08	2278	63436	50.00	ug/L	95
68)	n-Butylbenzene	29.14	2283	89840	50.00	ug/L	100
69)	1,2-Dibromo-3-chloropropane	31.11	2452	16179	50.00	ug/L	78
70)	1,2,4-Trichlorobenzene	33.26	2636	55238	50.00	ug/L	100
71)	Naphthalene	33.88	2689	79719	50.00	ug/L	100
72)	Hexachlorobutadiene	33.76	2679	52767	50.00	ug/L	100
73)	1,2,3-Trichlorobenzene	34.51	2743	52844	50.00	ug/L	100

* Compound is ISTD

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ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

CHAIN OF CUSTODY RECORD

PROJ. NO.:
PROJECT NAME: CS

SAMPLERS: (Signature) Sharon E. Jennette, Rady Gaia

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOA SHELF 3	BOD	COD	Sulfate	Cyanide - aqueous	Sulfide - aqueous	REMARKS Tag No.
MW-33A	01/11	1305		X	Monitoring Well 33A	3	3						3-114154, 55, 56 91022107
MW-33A	01/11	1700		X	Monitoring Well 33A (HS/MD)	9	9						3-114159, 60, 61, 62, 63, 64, 65, 66, 67 91022108
MW-33D	01/11	1700		X	Monitoring Well 33D (Duplicate of 33A)	3	3						3-114170, 73, 74 91022109
TB	01/11	0730		X	Trip Blank	3	3						3-114195, 96, 97 91022110
MW-98	01/11	1200		X	Monitoring Well 98	1		1					3-114198 91022101
MW-98-D	01/11	1200		X	Monitoring Well 98-D (Duplicate BOD)	1		1					3-114199 91022103
FB-BOD	01/11	0930		X	Field Blank BOD	1		1					3-114191 91022105
MW-98	01/11	1215		X	Monitoring Well 98	1			1				3-114200 91022101
MW-98-D	01/11	1215		X	Monitoring Well 98-D (Duplicate COD)	1			1				3-114201 91022103
FB-COD	01/11	0930		X	Field Blank COD	1			1				3-114192 91022105
MW-98	01/11	1215		X	Monitoring Well 98	1				1			3-114202 91022101
MW-98-D	01/11	1215		X	Monitoring Well 98-D (Duplicate Sulfate)	1				1			3-114203 91022103
FB-Sulfate	01/11	0930		X	Field Blank - Sulfate	1				1			3-114193 91022105

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Rady Gaia	01/11/91 1430				
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Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
			12/11/90	Shipped via Federal Express	

R 9843

Office of Enforcement

REGION 3
Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106

CHAIN OF CUSTODY RECORD

PROJ. NO.:

PROJECT NAME: CS

SAMPLERS: (Signature) Sharon E. Donaldson, Kathy Maria

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Chloride	Sulfide	Nitrate/Nitrite	Nitrogen-Ammonia	Total Mercury	Tag No	REMARKS
MW-9B	010291	1215		X	Monitoring Well 9B	1	1					3-142304	91022101
MW-9B-D	010291	1215		X	Monitoring Well 9B-D (Duplicate Chloride)	1	1					3-142305	91022103
FB-Chloride	010291	0930		X	Field Blank Chloride	1	1					3-141491	91022105
MW-9B	010291	1215		X	Monitoring Well 9B	1		1				3-142306	91022101
MW-9B-D	010291	1215		X	Monitoring Well 9BD (Duplicate Sulfide)	1		1				3-142307	91022103
FB-Sulfide	010291	0930		X	Field Blank Sulfide	1		1				3-141495	91022105
MW-9B	010291	1215		X	Monitoring Well 9B	1			1			3-142308	91022101
MW-9B-D	010291	1215		X	Monitoring Well 9B-D (Duplicate Nitrate/Nitrite)	1			1			3-142309	91022103
FB-Nitrate/Nitrite	010291	0930		X	Field Blank Nitrate/Nitrite	1			1			3-141496	91022105
MW-9B	010291	1215		X	Monitoring Well 9B	1				1		3-142310	91022101
MW-9B-D	010291	1215		X	Monitoring Well 9B-D (Duplicate Nitrogen-Ammonia)	1				1		3-142311	91022103
FB-Nitrogen-Ammonia	010291	0930		X	Field Blank Nitrogen-Ammonia	1				1		3-141497	91022105
MW-9B	010291	1100		X	Monitoring Well 9B	1					1	3-141499	91022101
MW-9B-D	010291	1100		X	Monitoring Well 9B-D (Duplicate Total Hg)	1					1	3-141498	91022103
FB-Total Hg	010291	1115		X	Field Blank Total Hg	1					1	3-141486	91022105

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[signature]	2/21/91 1430				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) Linda Vaughan	Date / Time 2/21/91 09:30	Remarks Shipped via Federal Express Airbill No. 7102232 6283	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

CHAIN OF CUSTODY RECORD

PROJ. NO.:
PROJECT NAME: OS

SAMPLERS: (Signature) Jonathan E. Smoller, Zachary Davis

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Dissolved Heavy	Inorganic Heavy	Dissolved Inorganic Hg					REMARKS Tag No
MW98	9/20/91	1200		X	Monitoring Well 98	1	1							3-141481 91022102
MW98-D	9/20/91	1200		X	Monitoring Well 98-D (Dissolved Hg)	1	1							3-141482 91022104
FB-Hg (Dissolved)	9/20/91	1115		X	Field Blank Dissolved Hg	1	1							3-141487 91022106
MW98	9/20/91	1200		X	Monitoring Well 98	1		1						3-141480 91022101
MW98-D	9/20/91	1200		X	Monitoring Well 98-D (Dissolved Inorganic Hg)	1		1						3-141479 91022103
FB-Hg (Inorganic)	9/20/91	1115		X	Field Blank Inorganic Hg	1		1						3-141478 91022105
MW98	9/20/91	1200		X	Monitoring Well 98	1			1					3-141483 91022102
MW98-D	9/20/91	1200		X	Monitoring Well 98-D (Dissolved Inorganic Hg)	1			1					3-141484 91022104
FB-Hg (Dis. Inorg.)	9/20/91	1115		X	Field Blank Dissolved Inorganic Hg				1					3-141489 91022106

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Zach Davis	9/20/91 1430				
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Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		Linda [illegible]	9/21/91 09:20	Shipped via [illegible]	

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
CENTRAL REGIONAL LABORATORY
839 BESTGATE ROAD
ANNAPOLIS, MARYLAND 21401
(301) 266-9180

ATE : April 15, 1991

UBJECT : Region III Data QA Review

ROM : Theresa A. Simpson TAS
Region III ESAT DPO (3ES23)

O : Stephanie Dehnhard
Regional Project Manager (3HW25)

Attached is the inorganic data review for the Chem/Solv Site (Case15915) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III ESD.

If you have any questions regarding this review, please call me.

Attachment

cc: Cathy Garris, CDM
Edward Kantor, EMSL-LV
Regional CLP TPO: Stevie Wilding Region: III Lab Code: ITPA

TID File: 03910219 Task 2338

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WESTON
MANAGERS DESIGNERS/CONSULTANTS
2568A RIVA ROAD
SUITE 300
ANNAPOLIS, MD 21401
PHONE 301-266-9887

DATE: 11 APRIL 1991

SUBJECT: INORGANIC DATA VALIDATION, Case 15915
SITE: CHEM/SOLV

FROM: PETE CHAPMAN
INORGANIC DATA REVIEWER

MARSHA BURRELL
SENIOR DATA REVIEWER

TO: TERRY SIMPSON
ESAT DEPUTY PROJECT OFFICER

THRU: RICHARD D. DRESSER
ESAT TEAM MANAGER

OVERVIEW

The set of samples for Case 15915 contained five (5) unfiltered aqueous and five (5) filtered aqueous samples which were analyzed through the Contract Laboratory Program (CLP) Routine Analytical Services. Included in the sample set was an unfiltered aqueous equipment blank, a filtered field blank, an unfiltered field duplicate pair, and a filtered field duplicate pair. Samples MCES39 and MCES41 exceeded the 10-day Chemical Health Advisory Level for the Pb analyte. The advisory level for Pb is 20.0 ug/L and the results for these samples were 173 ug/L and 88.7 ug/L, respectively.

SUMMARY

All analytes were successfully analyzed in all samples. Areas of concern with respect to data usability are listed according to the seriousness of the problem. These include:

MINOR ISSUES

The preparation blank had results >IDL for the Ca, Fe, K, Na and Zn analytes in the aqueous samples and the unfiltered field blank had results >IDL for the Tl and Zn analytes in the unfiltered samples. The reported results for these analytes in the affected samples which are <5x the blank concentration may be biased [illegible] therefore, have been qualified "B".

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The ICP serial dilution results for the K, Na and Zn analytes in the samples were outside of the 10% control limit. The reported results for these analytes in the samples have been qualified estimated, "J". However, the reported result for sample MCES45 in the Zn analyte has been superceded by the qualifier "B" as previously mentioned.

The matrix spike recovery was high (>125%) for the Hg analyte in the samples. The reported result for this analyte in sample MCES45 may be biased high, and therefore, has been qualified "K".

The analytical spike recovery was high (>115%) for the Tl analyte in sample MCES43. The reported result for this sample may be biased high, and therefore, it has been qualified "K".

NOTE:

The data was reviewed in accordance with the National Functional Guidelines for Evaluating Inorganic Analyses.

INFORMATION REGARDING REPORT CONTENT

Table 1A is a summary of qualifiers added to the laboratory's results during evaluation.

ATTACHMENTS

TABLE 1A	SUMMARY OF QUALIFIERS ON DATA SUMMARY AFTER DATA VALIDATION
TABLE 1B	CODES USED IN COMMENTS COLUMN
TABLE 2	GLOSSARY OF DATA QUALIFIER CODES
TABLE 3	DATA SUMMARY FORMS
APPENDIX A	RESULTS REPORTED BY LABORATORY FORM Is
APPENDIX B	TPO REPORT

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TABLE 1A

SUMMARY OF QUALIFIERS ON DATA SUMMARY
AFTER DATA VALIDATION

ANALYTE	SAMPLES AFFECTED	POSITIVE VALUES	NON-DETECTED VALUES	BIAS	COMMENTS*
Ca	MCES44	B		High	A (18.5 ppb)
Fe	MCES43, MCES45, MCES46	B		High	A (42.4 ppb)
Hg	MCES45	K		High	B (126%)
K	All aqueous except MCES43, MCES44	J			C (10.1%)
	MCES43, MCES44	B		High	A (79.2 ppb)
Na	All aqueous except MCES43, MCES44	J			C (11.4%)
	MCES43	B		High	A (27.4 ppb)
Tl	MCES41	B		High	D (1.0 ppb)
	MCES43	K		High	E (140%)
Zn	All aqueous except MCES43, MCES44, MCES45	J			C (43.3%)
	MCES43, MCES44	B		High	A (1.9 ppb)
	MCES45	B		High	D (4.9 ppb)

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TABLE 18

CODES USED IN COMMENTS COLUMN

A = The preparation blank had a result that was >IDL (the result is in parentheses) and the reported results were <5x the blank. The reported results may be biased high.

B = Due to a high matrix spike recovery (% recovery is in parentheses), the reported result may be biased high.

C = The ICP serial dilution result was outside of the control limit (the result is in parentheses), the reported results are estimated.

D = The field blank had a result that was >IDL (the result is in parentheses) and the reported results were <5x the blank. The reported results may be biased high.

E = Due to a high analytical spike recovery (% recovery is in parentheses), the reported result may be biased high.

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WESTON

TABLE 2

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION
(confidence concerning presence or absence of analytes):

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

(NO CODE) = Confirmed identification.

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

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

CODES RELATED TO QUANTITATION
(can be used for both positive results and sample quantitation limits):

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

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

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

[] = Analyte present. As values approach the IDL the quantitation may not be accurate.

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

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

Q = No analytical result.

AR309441

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DATA SUMMARY FORM: INORGANICS

Site Name: Chem-Solv

Case #: 15915 Sampling Date(s): 2/19-20/91

WATER SAMPLES
(µg/L)

*Due to dilution, sample quantitation limit is affecte
See dilution table for specific

	Sample No.	MCES37		MCES38		MCES39		MCES40		MCES41		MCES42		MCES43		MCES44		MCES45		MCES46	
	Dilution Factor	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
	Location	MW-26A		MW-26A Filtered		MW-33A unfiltered		MW-33A Filtered		MW-33D unfiltered		MW-33D Filtered		FB Field Blank		FB Filtered Field Blank		MW-9B		MW-9B Filtered	
CRDL	ANALYTE																				
200	Aluminum	[53.0]		[54.5]		380				[142]								[80.0]			
60	Antimony					[9.0]															
10	*Arsenic																				
200	Barium	[150]		[161]		[50.5]		[51.6]		[19.7]		[19.3]				[3.9]		[28.8]		[31.7]	
5	Beryllium																				
5	*Cadmium																				
5000	Calcium	32800		32000		16700		16900		16700		16700				[34.6]	B	[1590]		[1900]	
10	*Chromium																				
50	Cobalt	[13.5]		[12.7]																	
25	Copper	[2.5]				[5.4]				[3.3]											
100	Iron	8140		7530		3970		543		2330		532		[11.4]	B			184	B	[8.4]	
3	*Lead	[1.3]				173		1.7		88.7		9.9						7.6		3.2	
5000	Magnesium	20600		20200		6910		6980		6820		6870						[4200]		[4280]	
15	Manganese	234.00		224.00		46.8		34.2		41.5		33.7						39.8		38.3	
0.2	Mercury																	2.5	K		
40	*Nickel																				
5000	Potassium	15100	J	15400	J	5880	J	5900	J	5840	J	5950	J	[1.8]	B	[172]	B	32100	J	31900	J
5	Selenium																				
10	Silver																				
5000	Sodium	26800	J	27000	J	18100	J	17900	J	17700	J	18000	J	[103]	B	[216]		21500	J	21400	J
10	Thallium							[1.0]		[1.0]	B			[1.0]	K						
50	Vanadium	[2.3]																			
20	Zinc	58.5	J	30.2	J	6620	J	2510	J	6080	J	2470	J	[4.9]	B	[3.7]	B	23.2	B	[19.3]	J
10	*Cyanide		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q

CRDL = Contract Required Detection Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITION

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WESTON

APPENDIX A

RESULTS REPORTED BY LABORATORY

FORM I'S

AR309443

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

000003

MC2337

Name: ITAS_PITTSBURGH Contract: 68-D9-0087

Lab Code: ITPG Case No.: 15912 SAS No.: SDG No.: MC2337

Matrix (soil/water): WATER Lab Sample ID: MC2337

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	53.0	B		P
7440-36-0	Antimony	9.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	150	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	33300			P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	13.5	B		P
7440-50-8	Copper	2.5	B		P
7439-89-6	Iron	9140			P
7439-92-1	Lead	1.3	B		F
7439-95-4	Magnesium	30600			P
7439-96-5	Manganese	23400			P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	15100		E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	26800		E	P
7440-28-0	Thallium	1.0	U	W	F
7440-62-2	Vanadium	2.3	B		P
7440-66-6	Zinc	53.5		E	P
	Cyanide				NR

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After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

000004

MCE338

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-09-0087

Lab Code: ITPA Case No.: 15915 SAS No.: _____ SDG No.: MCE337

Matrix (soil/water): WATER Lab Sample ID: MCE338

Level (low/med): LOW Date Received: 03/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	24.2	B		P
7440-36-0	Antimony	8.0	U		P
7440-38-2	Arsenic	3.0	U		F
7440-39-3	Barium	161	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	33000			P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	12.7	B		P
7440-50-8	Copper	2.0	U		P
7439-89-6	Iron	7530			P
7439-92-1	Lead	1.0	U		F
7439-95-4	Magnesium	30200			P
7439-96-5	Manganese	32400			P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	15400		E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	27000		E	P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	30.2		E	P
	Cyanide				NR

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Comments:

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000005

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCE339

Name: ITAS PITTSBURGH Contract: 68-D9-0097

Code: ITPA Case No.: 15915 SAS No.: SDG No.: MCE337

Lab (soil/water): WATER Lab Sample ID: MCE339

% (low/med): LOW Date Received: 02/21/91

Lids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	380			P
7440-36-0	Antimony	9.0	B		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	50.5	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	16700			P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	5.4	B		P
7439-89-6	Iron	3970			P
7439-92-1	Lead	173			F
7439-95-4	Magnesium	6910			P
7439-96-5	Manganese	46.8			P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	5880		E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	18100		E	P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	6620		E	P
	Cyanide				NR

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INORGANIC ANALYSES DATA SHEET

000006

EPA SAMPLE NO.

MCE340

Lab Name: ITAS PITTSBURGH ____ Contract: 68-D9-0087

Lab Code: ITPA _ Case No.: 13315 SAS No.: _ __ SDG No.: MCE337

Matrix (soil/water): WATER Lab Sample ID: MCE340

Level (low/med): LOW__ Date Received: 02/21/91

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9.0	U		P
7440-36-0	Antimony	9.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	54.6	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	13900			P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	2.0	U		P
7439-89-6	Iron	543			P
7439-92-1	Lead	7.7			F
7439-95-4	Magnesium	6980			P
7439-96-5	Manganese	34.2			P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	5900		E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	17900		E	P
7440-28-0	Thallium	1.0	B		F
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	251		E	P
	Cyanide				NR

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Comments:

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000007

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCE341

Name: ITAS PITTSBURGH Contract: 68-D9-0087

Case: ITPA Case No.: 15313 SAS No.: SDG No.: MCE337

tx (soil/water): WATER Lab Sample ID: MCE341

l (low/med): LOW Date Received: 03/21/91

lids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	142	B		P
7440-36-0	Antimony	8.0	U		P
7440-38-2	Arsenic	3.0	U		F
7440-39-3	Barium	49.7	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	16700			P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	3.3	B		P
7439-89-6	Iron	2330			P
7439-92-1	Lead	88.7			F
7439-95-4	Magnesium	6820			P
7439-96-5	Manganese	41.5			P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	5840		E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	17700		E	P
7440-28-0	Thallium	1.0	B		F
7440-62-2	Vanadium	3.0	U		P
7440-66-6	Zinc	6080		E	P
	Cyanide				NR

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCE342

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D9-0037

Lab Code: ITPA _ Case No.: 15915 SAS No.: _____ SDG No.: MCE327

Matrix (soil/water): WATER Lab Sample ID: MCE342

Level (low/med): LOW__ Date Received: 02/21/91

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9.0	U		P
7440-36-0	Antimony	8.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	49.3	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	14700			P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	2.0	U		P
7439-89-6	Iron	532			P
7439-92-1	Lead	9.9			F
7439-95-4	Magnesium	6870			P
7439-96-5	Manganese	33.7			P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	3950		E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	18000		E	P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	2470		E	P
	Cyanide				NR

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INORGANIC ANALYSES DATA SHEET

000009

EPA SAMPLE NO.

MCE342

Name: ITAS PITTSBURGH Contract: 68-D9-0087

Code: ITPA Case No.: 15315 SAS No.: SDG No.: MCE337

Matrix (soil/water): WATER Lab Sample ID: MCE342

Level (low/med): LOW Date Received: 02/21/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9.0	U		P
7440-36-0	Antimony	8.0	U		P
7440-38-2	Arsenic	2.0	U	W	P
7440-39-3	Barium	1.0	U		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	8.0	U		P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	2.0	U		P
7439-89-6	Iron	11.4	B		P
7439-92-1	Lead	1.0	U		F
7439-95-4	Magnesium	12.0	U		P
7439-96-5	Manganese	1.0	U		P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	168	B	E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	103	B	E	P
7440-28-0	Thallium	1.0	B	W	F
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	4.9	B	E	P
	Cyanide				NR

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCE344

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D9-0097

Lab Code: ITPA__ Case No.: 15915 SAS No.: _____ SDG No.: MCE337

Matrix (soil/water): WATER Lab Sample ID: MCE344

Level (low/med): LOW_ Date Received: 02/21/91

% Solids: _0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9.0	U		P
7440-36-0	Antimony	8.0	U		P
7440-38-2	Arsenic	2.0	U	W	F
7440-39-3	Barium	3.9	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	34.6	B		P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	2.0	U		P
7439-89-6	Iron	4.0	U		P
7439-92-1	Lead	1.0	U		F
7439-95-4	Magnesium	12.0	U		P
7439-96-5	Manganese	1.0	U		P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	172	B	E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	216	B	E	P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	3.7	B	E	P
	Cyanide				NR

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Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCE345

Name: ITAS_PITTSBURGH_____ Contract: 68-D9-0087

Code: ITP4__ Case No.: 15915 SAS No.: _____ SDG No.: MCE31T

Matrix (soil/water): WATER Lab Sample ID: MCE345

Level (low/med): LOW___ Date Received: 02/21/91

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	30.0	B		P
7440-36-0	Antimony	8.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	38.3	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	4590	B		P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	2.0	U		P
7439-89-6	Iron	184			P
7439-92-1	Lead	7.6			F
7439-95-4	Magnesium	4220	B		P
7439-96-5	Manganese	39.9			P
7439-97-6	Mercury	2.5		N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	32100		E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	21500		E	P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	22.2		E	P
	Cyanide				NR

Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCE346

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D9-0087

Lab Code: ITPA__ Case No.: 15913 SAS No.: _____ SDG No.: MCE337

Matrix (soil/water): WATER Lab Sample ID: MCE346

Level (low/med): LOW Date Received: 02/21/91

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9.0	U		P
7440-36-0	Antimony	8.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	31.7	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	4900	B		P
7440-47-3	Chromium	5.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	2.0	U		P
7439-89-6	Iron	8.4	B		P
7439-92-1	Lead	3.2		S	F
7439-95-4	Magnesium	4290	B		P
7439-96-5	Manganese	38.3			P
7439-97-6	Mercury	0.20	U	N	CV
7440-02-0	Nickel	4.0	U		P
7440-09-7	Potassium	31900		E	P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	21400		E	P
7440-28-0	Thallium	1.0	U	W	F
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	19.3	B	E	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

AR309453

FORM I - IN

7/88

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WESTON

APPENDIX B

TPO REPORT

AR309454

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WESTON

TPO: [ ] ACTION [X] FYI

Region III

INORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO: 15915
SDG NO: MCES37
SOW: 7/88
NO. OF SAMPLES: five (5)

LABORATORY: ITPA
DATA USER: Stevie Wilding
REVIEW COMPLETION DATE: 4/5/91
MATRIX: Unfiltered aqueous

REVIEWER: ESAT

	ICP	AA	Hg	CYANIDE
1. HOLDING TIMES	O	O	O	- -
2. INITIAL CALIBRATIONS	O	O	O	- -
3. CONTINUING CALIBRATIONS	O	O	O	- -
4. FIELD BLANKS(F=NOT APPLICABLE)	X	X	O	- -
5. LABORATORY BLANKS	X	O	O	-
6. ICS	O			
7. LCS	O	O		
8. DUPLICATE ANALYSIS	O	O	O	- -
9. MATRIX SPIKE	O	O	X	- -
10. MSA		O		
11. SERIAL DILUTION	M			
12. SAMPLE VERIFICATION	O	O	O	- -
13. REGIONAL QC(F-NOT APPLICABLE)	F	F	F	- -
14. OVERALL ASSESSMENT	M	X	X	- -

O = No problem or minor problems that do not affect data usability
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as estimated.
Z = More than about 5% of the data points are qualified as unusable.
* = TPO action requested; use in conjunction with one of the above codes.

TPO ACTION ITEMS:

AREAS OF CONCERN:

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WESTON

'PO: [ ] ACTION [X] FYI

Region III

INORGANIC REGIONAL DATA ASSESSMENT SUMMARY

'ASE NO: 15915
'DG NO: MCES37
OW: 7/88
'O. OF SAMPLES: five (5)

LABORATORY: ITPA
DATA USER: Stevie Wilding
REVIEW COMPLETION DATE: 4/5/91
MATRIX: Filtered aqueous

EVIEWER: ESAT

	ICP	AA	Hg	CYANIDE
. HOLDING TIMES	O	O	O	- -
. INITIAL CALIBRATIONS	O	O	O	- -
. CONTINUING CALIBRATIONS	O	O	O	- -
. FIELD BLANKS(F=NOT APPLICABLE)	O	O	O	- -
. LABORATORY BLANKS	X	O	O	- -
ICS	O			
. LCS	O	O		
. DUPLICATE ANALYSIS	O	O	O	- -
.. MATRIX SPIKE	O	O	O	- -
). MSA		O		
L. SERIAL DILUTION	M			
1. SAMPLE VERIFICATION	O	O	O	- -
1. REGIONAL QC(F-NOT APPLICABLE)	F	F	F	- -
1. OVERALL ASSESSMENT	M	O	O	- -

O = No problems or minor problems that do not affect data usability
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as estimated.
Z = More than about 5% of the data points are qualified as unusable.
A = TPO action requested; use in conjunction with one of the above codes.

'O ACTION ITEMS:

EAS OF CONCERN:

AR309456

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BCM

INTEROFFICE

TO: Peg Bonaker

cc: M.M. Mang

DATE: May 13, 1991

FROM: Atwood Davis/Denise McGuire

SUBJECT: Chem-Solv
Split Sample Comparison
BCM Project No. 00-6012-02

INTRODUCTION

This memo compares the split sample results obtained by EPA Region III's ESAT subcontractor to those obtained by BCM Laboratory. In addition, a summary review of the EPA subcontractor data was performed and is offered in this memo. Three monitoring well samples wer collected on February 19, 1991 at the following locations, MW26A, MW33A, and MW33A (field duplicate). These samples were split between BCM and the EPA subcontractor onsite. In addition, a trip blank was collected. However, from the information available, it was not possible to ascertain if the trip blanks were from the same source or if BCM and the EPA contractor each supplied their own trip blank.

BCM's data package was validated in accordance with EPA Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, February, 1988. The results of the validation have been prepared and are available as a validation report issued April, 1991 for the Chem-Solv site under BCM Project Number 00-6012-02.

REVIEW OF EPA SUBCONTRACTOR SAMPLE DATA PACKAGES

The inorganic split sample data package was reviewed under a separate memo of May 7, 1991, by Denise McGuire of BCM's QA Department (Attached).

A review the volatile organic data packages supplied by ESAT indicated the following:

1. Samples were analyzed within acceptable holding times.

2. Surrogate spike recoveries were reported to be within acceptable ranges.

3. Matrix spike and matrix spike duplicate recoveries and relative percent differences (RPDs) were reported to be within acceptable ranges.

4. GC/MS Tune criteria was found to be acceptable for initial calibration and analyses.

5. Initial calibration and continuing calibration response factors (RF) were all above 0.05. All system performance check compounds (SPCC) met average RF criteria, except chloromethane, in both initial and continuing calibrations.

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6. All continuing calibration check (CCC) compounds met percent relative standard deviation (RSD) criteria except 1,1-dichloroethene (30.167) which was a minor exceedance in the initial calibration. All percent differences for CCCs in the continuing calibrations met acceptance criteria.

7. Under CLP protocol another initial calibration would be required due to the criteria exceeded in points 5 and 6. However, these criteria were not exceeded to the extent of adversely impacting the reported results.

8. Several percent differences exceeded 30 percent in continuing calibrations. Methylene chloride on 2/25 (probably due to lab contaminants) and chloromethane on 2/26 (a minor exceedance affecting only matrix spike and matrix spike duplicates which had no effect on reported sample data).

9. Several percent RSDs exceeded 30 percent in the initial calibration. All were minor. 2-butanone results and detection limits could be considered estimated. Detection limits for trichlorofluoromethane and 1,1-dichloroethene are also estimated.

10. Some low level trip and lab blank contaminants were reported in the split samples analyzed by the EPA subcontractor.

11. Internal standard areas and retention times were reported to be within criteria.

Several points were also noted in the review of volatiles which have some impact on the comparison of these results. BCM analyzed the samples using CLP-SOW protocol 2/88 revised 4/90, the EPA subcontractor analyzed using CLP-SOW 2/88 <u>and</u> EPA Method 624. This was not fully explained by the EPA subcontractor in the laboratory case narrative; however, it was noted that the GC/MS instrument was calibrated for many more compounds than found on the TCL volatiles and the Method 624 analyte list. This analyte difference caused the EPA splits to contain some reported compounds which were not analyzed by BCM's protocol. These compounds are tabulated on page 2 of the data summary attached to this memo. It should also be noted that the data package provided by the EPA subcontractor for this review was a summary package, not a full CLP deliverable. Therefore, this review is limited to the summary information only and was not verified against raw data (except internal standard areas from the quantitation lists supplied).

The overall assessment of the data supplied by EPA's subcontractor is that with the exception of minor calibration problems and low level blank contaminants which question some sample results, the reported results appear to be consistent with BCM results for the major contaminants which were analyzed by both parties.

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COMPARISON OF SPLIT SAMPLE RESULTS

Volatile Organics

A comparison of EPA subcontractor to BCM subcontractor (BCM) results is shown c page 1 of the attached data summary. The positive results for benzene in MW26 agree well as do the positive results for trichloroethene and 1,1,1-trichloroethar in MW33A and MW33 duplicates. Both laboratories also detected tetrachloroethene i MW33 duplicate below the required quantitation limit.

Blank contaminants which were reported but were not detected in the actual sample are not of consequence to the comparison. However, 2-butanone and chloroform wa detected in the EPA split blank at levels similar to or greater than those detecte in the samples. These sample results were flagged by the EPA subcontractc laboratory with a "B" indicating the possibility of false positives.

All other positive results in the well samples reported by the EPA subcontractc were not detected in the BCM analyses. In most cases these detects were low level below CLP quantitation limits. As previously noted, due to difference in analyte calibrated, the results shown on page 2 of the attached data summary were compounc not tested for by BCM. As a result, no comparison can be made for these compounds.

Inorganics - Mercury

A comparison of BCM subcontractor (BCM), EPA Central Regional Laboratory (CRL) ar EPA Contract Laboratory Program Routine Analytical Services (CLP RAS) subcontractc results is shown on page 3 of the attached data summary. Total and inorgani mercury was analyzed for the unfiltered and filtered sample MW9B.

The unfiltered total mercury results vary (EPA CLP RAS results are highest). Th EPA CLP RAS reported a high matrix spike recovery for mercury indicating this resul may be biased high. BCM and the EPA CRL filtered total mercury results agree well although EPA CLP RAS reported filtered total mercury below the detection limit Without backup raw data, this value cannot be verified.

The unfiltered inorganic mercury results agree very well, although the results ar higher than the total mercury results. The filtered inorganic mercury resuli greatly vary. The filtered inorganic mercury duplicates analyzed by EPA CF exhibited good reproducibility, although the inorganic mercury results are greate than the total mercury results. The higher values for inorganic mercury ca probably be attributed to the variability in the two methods used, specifically th different digestion procedures. Since the complete digestion procedure is nc performed for the determination of inorganic mercury, there may be possible organi interferences causing the inorganic results to be evaluated.

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Wet Chemistry

A comparison of BCM and EPA CRL results is shown on page 5 of the attached data summary. The positive results for chloride, nitrate, and sulfate in sample MW9B and its duplicate agree well. Positive COD results reported by EPA were not detected by BCM. These detects were below BCM subcontractor's detection limits. As a result, no comparison can be made.

SUMMARY

Volatile organic split sample results appear to agree very well except at levels below required quantitation limits. Several compounds detected in MW 26A by the EPA subcontractor were not analyzed for by BCM.

Sample MW9B unfiltered total and inorganic mercury results appear to agree. Although the EPA CLP RAS subcontractor results for total mercury is slightly higher, a high matrix spike recovery indicates the result is biased high (actual value is lower) and, therefore, closer in value to the other results. The BCM subcontractor and EPA CRL total mercury results appear to agree, although the EPA CLP RAS subcontractor reported results below the detection limit. The filtered inorganic mercury results vary considerably. Due to the method used, organic interferences may be present causing variability between the sample results.

Wet chemistry split sample results appear to agree very well. Chloride was detected by the EPA CRL at levels below the BCM subcontractor's detection limits.

For specifics concerning this comparison, please see the attached memorandum. Data validation reports and analytical data are available from file 00-6012-02.

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SAMPLE DATA SUMMARY
TARGET COMPOUNDS

☒ Organic ☐ Inorganic

Site Name: ChemSolv
Date of Sample: 2-19-91

EPA Number: ESAT TASK 2299

VOLATILES ONLY

page 1

910221-

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	Chloromethane	Acetone	Methylene Chloride	2-Butanone	Benzene	Trichloro-ethene	Bromodichloro-methane	Tetrachloro-ethene	cis-1,2-dichloro-ethene	Chloroform	1,1,1-trichloro-ethane	Xylenes		Remarks
-07	26A	AQ	ug/L				3.4B	32			1.3J				0.4J		
BCM	26A	AQ	ug/L				ND	29			ND				ND		BCM RESULT
-08	33A	AQ	ug/L						142		3.5J	1.4J	1.4B	11.6			
BCM	33A	AQ	ug/L						110		ND	ND	ND	8			BCM Result
-09	33D	AQ	ug/L						142		3.5J	1.5J	1.3B	11.6			
BCM	33AD	AQ	ug/L						120		4J	ND	ND	10			BCM RESULT
-10	TRIP BLANK	AQ	ug/L	6.0J	8.3J		2.4J			0.4J			5.2				
BCM	TRIP BLANK	AQ	ug/L	ND	ND		ND			ND			ND				BCM RESULT
-11	CRL LAB BLANK	AQ	ug/L			5.6J											

NOTE: For review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

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EPA Number CSMT TASK 2411 ☒ Organic ☐ Inorganic Date of Sample 2-11-91

Page 2

Compounds NOT Tested by BCM Analysis

VOLATILES ONLY

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	ISOPROPYL-BENZENE	tert-Butyl-benzene	1,2,4-trimethyl-benzene	sec-Butyl-benzene	n-Butyl-benzene									Remarks
-07	26A	AQ	ug/L	15.8	0.4J	0.4J	8.8	6.2									
-08	33A	AQ	ug/L														
-09	33AD	AQ	ug/L														
-10	TRIP BLANK	AQ	ug/L														
-11	CRL LAB BLANK	AQ	ug/L														

AR309462

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

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DATA SUMMARY

page 2

Page 1 of 2

BCM

Site: Chem-Solv Inc

Case No.: 6168-006

Laboratory: BCM, EPA, EPACLPRAS Date of Sample: 2/20/91

Matrix: aqueous

Units: ug/L

CRDL	LAB IDL	FIELD I.D. / LAB I.D.	9BU BCM BC017	9BU EPA 910221	9BU field dup EPA 910222	9BU EPACLPRAS MC5HS		9BIU BCM BC018	9BIU EPA 910221	9BIU field dup EPA 910221 2			
	NR	Aluminum											
	NR	Antimony											
	NR	Arsenic											
	NR	Barium											
	NR	Beryllium											
	NR	Cadmium											
	NR	Calcium											
	NR	Chromium											
	NR	Cobalt											
	NR	Copper											
	NR	Iron											
	NR	Lead											
	NR	Magnesium											
	NR	Manganese											
	0.2	Mercury	2.2	1.7	1.6	2.5	K	2.6	2.6	2.5			
	NR	Nickel											
	NR	Potassium											
	NR	Selenium											
	NR	Silver											
	NR	Sodium											
	NR	Thallium											
	NR	Vanadium											
	NR	Zinc											
	NR	Cyanide											

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Site: Chem-Solv Inc

Case No.: 8628-006

Laboratory: BCM, EPA, EPACLPRAS

Date of Sample: 2/20/91

Page: [illegible] of [illegible]

Matrix: Aqueous

Units: ug/l.

CRDL	LAB IDL	FIELD I.D. / LAB I.D.	9BF BCM B6006	9BF EPA 910223B	9BF field dup EPA 910223B4	9BF EPACLPRAS MC6546	9BIF BCM B6007	9BIF EPA 910223B	9BIF field dup EPA 910223B4			
	NR	Aluminum										
	NR	Antimony										
	NR	Arsenic										
	NR	Barium										
	NR	Beryllium										
	NR	Cadmium										
	NR	Calcium										
	NR	Chromium										
	NR	Cobalt										
	NR	Copper										
	NR	Iron										
	NR	Lead										
	NR	Magnesium										
	NR	Manganese										
	0.2	Mercury	2.1	1.9	1.8		0.27	2.3	2.2			
	NR	Nickel										
	NR	Potassium										
	NR	Selenium										
	NR	Silver										
	NR	Sodium										
	NR	Thallium										
	NR	Vanadium										
	NR	Zinc										
	NR	Cyanide										
		% Solids										

F - filtered I - inorganic Hg BCM = TEA EPA = EPACRL ; EPACLPRAS = ITAS

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SAMPLE DATA SUMMARY

TDD Number: Chem-Solv Inc.
EPA Number: 8108-007

Site Name: Chem-Solv Inc.
Date of Sample: 2/20/91

page 5

Sample Number	Sample Description and Location		Units	AMMONIA	B.O.D	CHLORIDE	C.O.D	NITRITE	NITRATE	SULFATE	SULFIDE						Remarks
(BCM) IEA	MW9B		mg/l			13			11	48							BCM subcontractor
EPA	MW9B		mg/l			13.5	15.4		9.8	51.3							
EPA	MW9B dup		mg/l			13.2	15.0		9.8	50							EPA dup field sample

MR309465

BCM

INTEROFFICE

TO: M. Bonaker

DATE: May 7, 1991

FROM: Denise McGuire DM

cc: M. Mang
A. Davis

SUBJECT: Chem-Solv., Inc.

This data review addresses the wet chemistry data and inorganic data from the split groundwater sampling event at the Chem-Solv., Inc. site. Two groundwater samples and one field blank were analyzed for several wet chemistry analyses by the EPA Central Regional Laboratory and Weston. Three groundwater samples and a field blank were were analyzed for manganese, mercury, and zinc by the Delaware Department of Natural Resources and Environmental Control. Three unfiltered groundwater samples, three filtered groundwater samples, an unfiltered field blank, a filtered field blank, an unfiltered field duplicate sample and a filtered field duplicate sample were analyzed for TAL metals by Weston.

Wet Chemistry Analyses:

Field blanks exhibited contamination for some analyses (B.O.D and C.O.D) laboratory and field blanks showed good reproducibility. Matrix spike recoveries were within control limits.

It should be noted that the laboratory reported a C.O.D. result by averaging the sample and its duplicate. This is non-compliant with SOW 788, the original sample result should have been reported. The laboratory also calculated the C.O.D. matrix spike recovery using the average value. Although this is non-compliant with SOW 788, there is no significant impact on the data; the actual matrix spike recovery is within control limits.

Inorganic Analyses: Manganese, mercury, and zinc.

Holding times were met for all samples. Laboratory blanks showed contamination for zinc analysis. All calibration verification and laboratory control sample results were within control limits. Laboratory duplicates exhibited good reproducibility. Matrix spike recoveries were within control limits. Several serial dilution results were outside control limits indicating a possible matrix interference.

It should be noted that the laboratory used the field blank for the spiked sample analysis. This is non-compliant with SOW 788.

The quality control parameters could not be verified due to the lack of a complete package.

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BCM

Inorganic Analyses: TAL Metals

Holding times were met for all samples. Laboratory and field blanks showed som contamination. Several serial dilution results and matrix spike recoveries wer outside of control limits indicating a possible matrix interference.

Not all quality control parameters could be reviewed due to the lack of complet packages. Also laboratory duplicates and matrix spike results can not be verified.

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APPENDIX O

AR309468

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BCM

APPENDIX O

DNR:C GROUNDWATER ANALYTICAL RESULTS
MARCH 1991

AR309469

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