

COMPREHENSIVE VALIDATION PACKAGE

ATL Applications

INVENTORY SHEET

WORK ORDER # 0909559A

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Completed by:

Kara McKiernan

(Signature)

Kara McKiernan/ Document Control

(Print Name & Title)

10/16/09

(Date)

WORK ORDER #: 0909559A

Work Order Summary

CLIENT:	Mr. Taeko Minegishi Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494	BILL TO:	Accounts Payable Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494
PHONE:	800-825-5343	P.O. #	16512
FAX:	781-247-4305	PROJECT #	16512
DATE RECEIVED:	09/25/2009	CONTACT:	Ausha Scott
DATE COMPLETED:	10/14/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	103148	ATL Applications
02A	103149	ATL Applications
03A	103150	ATL Applications
04A	103152	ATL Applications
05A	103153	ATL Applications
06A	103177	ATL Applications
07A	103178	ATL Applications
07AA	103178 Lab Duplicate	ATL Applications
08A	103179	ATL Applications
09A	103180	ATL Applications
10A	103181	ATL Applications
11A	103182	ATL Applications
12A	103206	ATL Applications
12AA	103206 Lab Duplicate	ATL Applications
13A	103207	ATL Applications
14A	103208	ATL Applications
15A	103209	ATL Applications
16A	Lab Blank	ATL Applications

Continued on next page

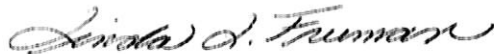
WORK ORDER #: 0909559A

Work Order Summary

CLIENT:	Mr. Taeko Minegishi Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494	BILL TO:	Accounts Payable Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494
PHONE:	800-825-5343	P.O. #	16512
FAX:	781-247-4305	PROJECT #	16512
DATE RECEIVED:	09/25/2009	CONTACT:	Ausha Scott
DATE COMPLETED:	10/14/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
16B	Lab Blank	ATL Applications
17A	CCV	ATL Applications

CERTIFIED BY:



Laboratory Director

DATE: 10/14/09

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE
Hydrogen Sulfide by Radiello 170
Environmental Health & Engineering, Inc.
Workorder# 0909559A**

Fifteen Radiello 170 (H₂S) samples were received on September 25, 2009. The procedure involves adsorption of H₂S by zinc acetate to form zinc sulfide. The sulfide is then recovered by extraction with water and addition of ferric chloride in a strongly acidic solution to produce methylene blue. Methylene blue absorbance is then measured at 665 nm using a spectrophotometer. Results are reported in uG and uG/m³.

Sampling rate of 69 mL/min for H₂S was provided by the manufacturer.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Results were calculated based on 25 deg C without temperature correction. The actual exposure time was used to calculate sample concentrations and reporting limits.

An exposure time of 20160 minutes was used for the QC samples.

All media used for the sampling were supplied by the client. Blank subtraction was not performed on the sample results since the media used for Method Blanks may be from a different lot than the media used for the samples.

The % RPD for the duplicate analysis of samples 103178 and 103206 is at 25% and 16% respectively.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.
- N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

Sample Results and Raw Data

AIR TOXICS LTD.

ATL Application # 59 for RAD 170 (Hydrogen Sulfide)

Spectrophotometer

Field	Lab	Collection Date	Analysis Date	Dilution Factor	Reporting Limit (ug)	Reporting Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
103148	0909559A-01A	9/21/2009	10/1/2009	1.00	0.80	0.54	0.92	0.62
103149	0909559A-02A	9/21/2009	10/1/2009	1.00	0.80	0.54	ND	ND
103150	0909559A-03A	9/21/2009	10/1/2009	1.00	0.80	0.54	ND	ND
103152	0909559A-04A	9/21/2009	10/1/2009	1.00	0.80	0.54	1.1	0.74
103153	0909559A-05A	NA	10/1/2009	1.00	0.80	0.54	ND	ND
103177	0909559A-06A	9/21/2009	10/1/2009	1.00	0.80	0.58	1.5	1.1
103178	0909559A-07A	9/21/2009	10/1/2009	1.00	0.80	0.58	2.1	1.6
103178 Lab Duplicate	0909559A-07AA	9/21/2009	10/1/2009	1.00	0.80	0.58	2.7	2.0
103179	0909559A-08A	9/21/2009	10/1/2009	1.00	0.80	0.58	2.2	1.6
103180	0909559A-09A	9/21/2009	10/1/2009	1.00	0.80	0.58	1.5	1.1
103181	0909559A-10A	9/21/2009	10/1/2009	1.00	0.80	0.58	1.3	0.96
103182	0909559A-11A	NA	10/1/2009	1.00	0.80	0.54	ND	ND
103206	0909559A-12A	9/21/2009	10/1/2009	1.00	0.80	0.58	2.9	2.1
103206 Lab Duplicate	0909559A-12AA	9/21/2009	10/1/2009	1.00	0.80	0.58	3.4	2.5
103207	0909559A-13A	9/21/2009	10/1/2009	1.00	0.80	0.58	2.6	1.9
103208	0909559A-14A	9/21/2009	10/1/2009	1.00	0.80	0.58	1.9	1.4
103209	0909559A-15A	9/21/2009	10/1/2009	1.00	0.80	0.58	3.0	2.2
Method Blank	0909559A-16A	NA	10/1/2009	1.00	0.80	0.54	ND	ND
Method Blank	0909559A-16B	NA	10/1/2009	1.00	0.80	0.54	ND	ND
CCV	0909559A-17A	NA	10/1/2009	1.00	0.80	0.54	%Rec 101	

COMMENTS: 1. NA=Not Applicable
 2. ND=Not Detected
 3. Exposure time of 20160 minutes was assumed for the QC samples.
 4. Background subtraction not performed.

Low Point:DF RL(ug/ml)XVol (ml) RL (ug sulfide) *MMW HZS RL (ug) x 1000 RL (ug) of sulfide

MMW Sulfide Q x Duration

ppbx mmw 24.45

Calibration Data 10/1/2009 Linear Regression

Calibration Date

Slope 1.075242217
Y-int 0.019308572
R2 0.999566265

RL(ug/ml) of sulfide	RL (ug) of sulfide	RL (ug) of HZS	RL (ppb) of HZS	RL (ug/m3)	Result (ug) HZS	Result (ug/m3) HZS	%Rec	ug/ml of sulfide	absorbance
0.072	0.752	0.798966249	0.39	0.541	0.920429969	0.623805337		0	0
0.072	0.752	0.798966249	0.39	0.541	ND	ND		0.0716	0.086
0.072	0.752	0.798966249	0.39	0.541	ND	ND		0.143	0.169
0.072	0.752	0.798966249	0.39	0.541	1.086854115	0.743373722		0.286	0.338
0.072	0.752	0.798966249	0.42	0.583	ND	ND		0.572	0.644
0.072	0.752	0.798966249	0.42	0.583	1.543103427	1.12625843		1.145	1.244
0.072	0.752	0.798966249	0.42	0.583	2.145021103	1.56557562			
0.072	0.752	0.798966249	0.42	0.583	2.695049325	1.967024354			
0.072	0.752	0.798966249	0.42	0.583	2.21766634	1.618598836			
0.072	0.752	0.798966249	0.42	0.583	1.511969754	1.103535027			
0.072	0.752	0.798966249	0.39	0.541	1.314789826	0.959620139			
0.072	0.752	0.798966249	0.42	0.583	ND	ND			
0.072	0.752	0.798966249	0.42	0.583	2.912985035	2.126088178			
0.072	0.752	0.798966249	0.42	0.583	3.39036802	2.474513696			
0.072	0.752	0.798966249	0.42	0.583	2.622404088	1.91400308			
0.072	0.752	0.798966249	0.42	0.583	1.875195938	1.368641399			
0.072	0.752	0.798966249	0.42	0.583	3.016763945	2.201832856			
0.072	0.752	0.798966249	#DNV/0!	#DNV/0!	ND	#DNV/0!			
0.072	0.752	0.798966249	#DNV/0!	#DNV/0!	ND	#DNV/0!			
0.072	0.752	0.798966249	#DNV/0!	#DNV/0!	ND	#DNV/0!			
0.072	0.752	0.798966249	#DNV/0!	#DNV/0!	ND	#DNV/0!			
0.072	0.752	0.798966249	#DNV/0!	#DNV/0!	ND	#DNV/0!			
0.072	0.752	0.798966249	0.39	0.541	ND	ND	%Rec		
0.072	0.752	0.798966249	0.39	0.541	3.213943874	2.178194333	101		

T Corrected, no Blank correction

QC Results and Raw Data

Work Order: 0909559A

Date: 10/01/09

Method: Rad 170

Analyst: M. Skidmore

Wavelength: 665nm

Standard ID	Concentration	ABS
Level 1 1858-70 -E	0.0716 mg/mL	0.086
Level 2 -D	0.143 mg/mL	0.169
Level 3 -C	0.286 mg/mL	0.338
Level 4 -B	0.572 mg/mL	0.644
Level 5 ↓ -A	1.145 mg/mL	1.244
ICV 1858-71	0.286 mg/mL	0.324

$r = \frac{0.9996}{1.075}$
 $m = \frac{1.075}{0.019}$
 $b = 0.019$

ICV % Recovery = 100

Fraction	Dilution	ABS	Sample ID	Sample Volume	Comments
01A	1.00	0.108	103148	10.5 mL	
02A		0.093	103149		
03A		0.084	103150		
04A		0.125	103152		
05A		0.015	103153		
06A		0.168	103177		
07A		0.226	103178		
07AA		0.279	103178		
08A		0.233	103179		
09A		0.165	103180		
10A		0.146	103181		
11A		0.019	103182		
12A		0.300	103206		
12AA		0.346	103206		
13A		0.272	103207		
14A		0.200	103208		
15A		0.310	103209		
BIK		0.013	N/A		lot: 09075
BIK		0.011			↓
CCV		0.165			0.153 mg/mL
LCV		0.329			0.286 mg/mL
			MJS	10/2/09	

LCV
CCV

Procedure:

M. Skidmore
Signed

10/2/09
Date

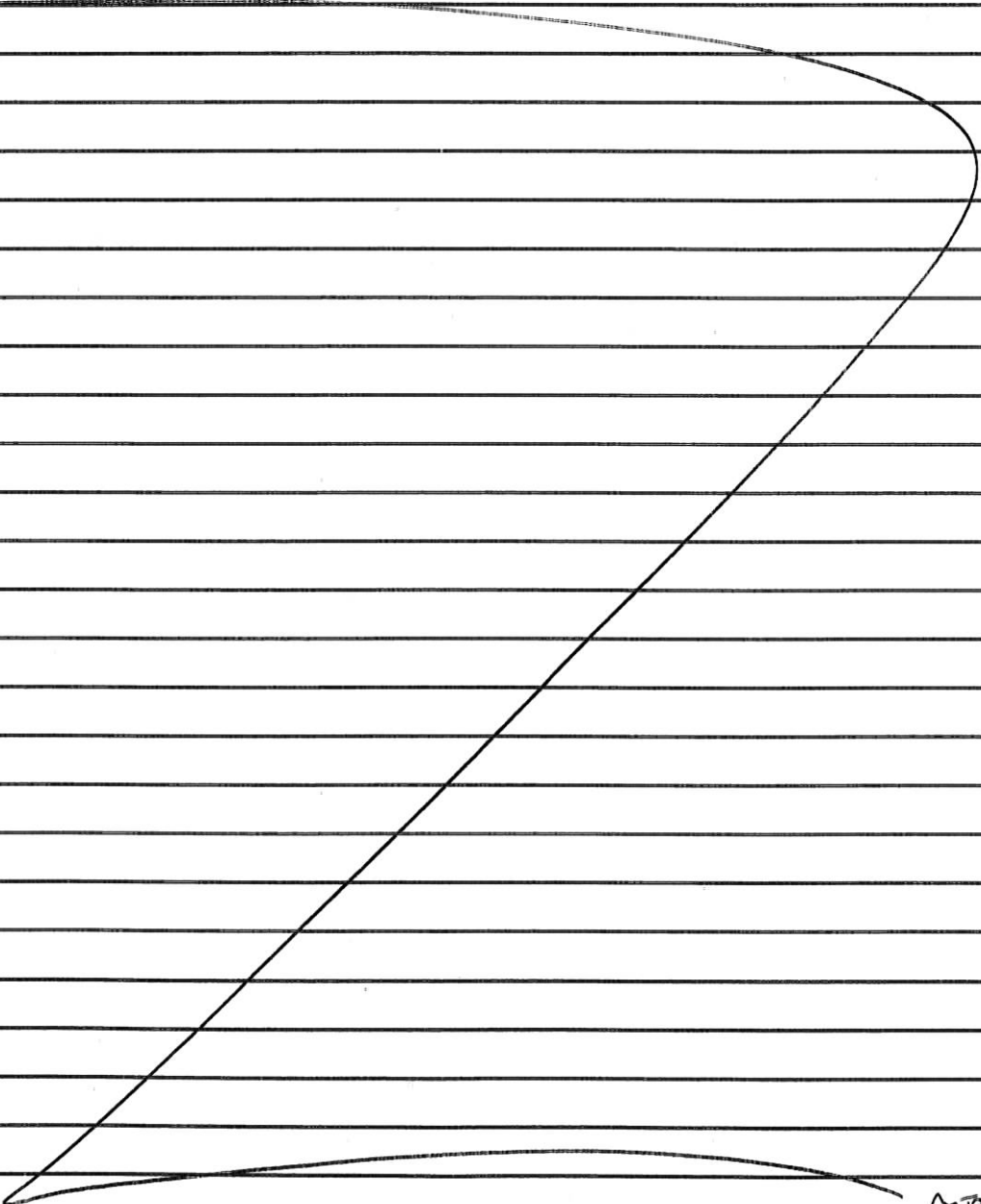
Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-47
Project: Ferric Chloride Solution Rad170
Analyst: M. Skidmore
Preparation Date: 9/23/09
Expiration Date: ~~3/23/09~~ 9/23/09

Solvent: D.I. H₂O
Solvent Lot #: N/A

Procedure/Comments: Dissolve 25g of ferric chloride hexahydrate (located in ER2C lot: 73297 MJ) in 10.0 mL of D.I. H₂O.



MJS
9/23/09

M. Skidmore 9/25/09
Signed Date

[Signature] 9/24/09
Reviewed Date

Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-64
Project: Rad 170 Amine solution
Analyst: M. Skidmore
Preparation Date: 9/30/09
Expiration Date: 10/30/09

Solvent: H₂SO₄ / H₂O
Solvent Lot #: N/A

Procedure/Comments:

Sulfuric acid solution:

Slowly add 6.25 mL of concentrated sulfuric acid to 2.5 mL of DI H₂O, and let the solution cool. (sulfuric acid lot: 06011DA)

Amine solutions

Dissolve 1.6875 g of N,N-dimethyl-p-phenylenediammonium oxalate (located ERIA, lot: 63797PJ) in the above mentioned sulfuric acid solution. Dilute this solution to 250 mL with sulfuric acid - water 1:1 v/v, (this is roughly 120 mL H₂O + 120 mL H₂SO₄)

MJS
9/30/09

Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-70
Project: Calibration Solution Rad 170
Analyst: M. Skidmore
Preparation Date: 10/1/09
Expiration Date: 10/1/09

Solvent: D.I. H₂O
Solvent Lot #: N/A

Procedure/Comments: _____

_____ Solution A: 2 mL of Code Rad 171 (1476-984, exp 8/6/10) (located in ER1B) with
_____ 98 mL of D.I. H₂O = 1.145 µg/mL

_____ Solution B: 2.5 mL of Solution A with 2.5 mL of D.I. H₂O = 0.572 µg/mL

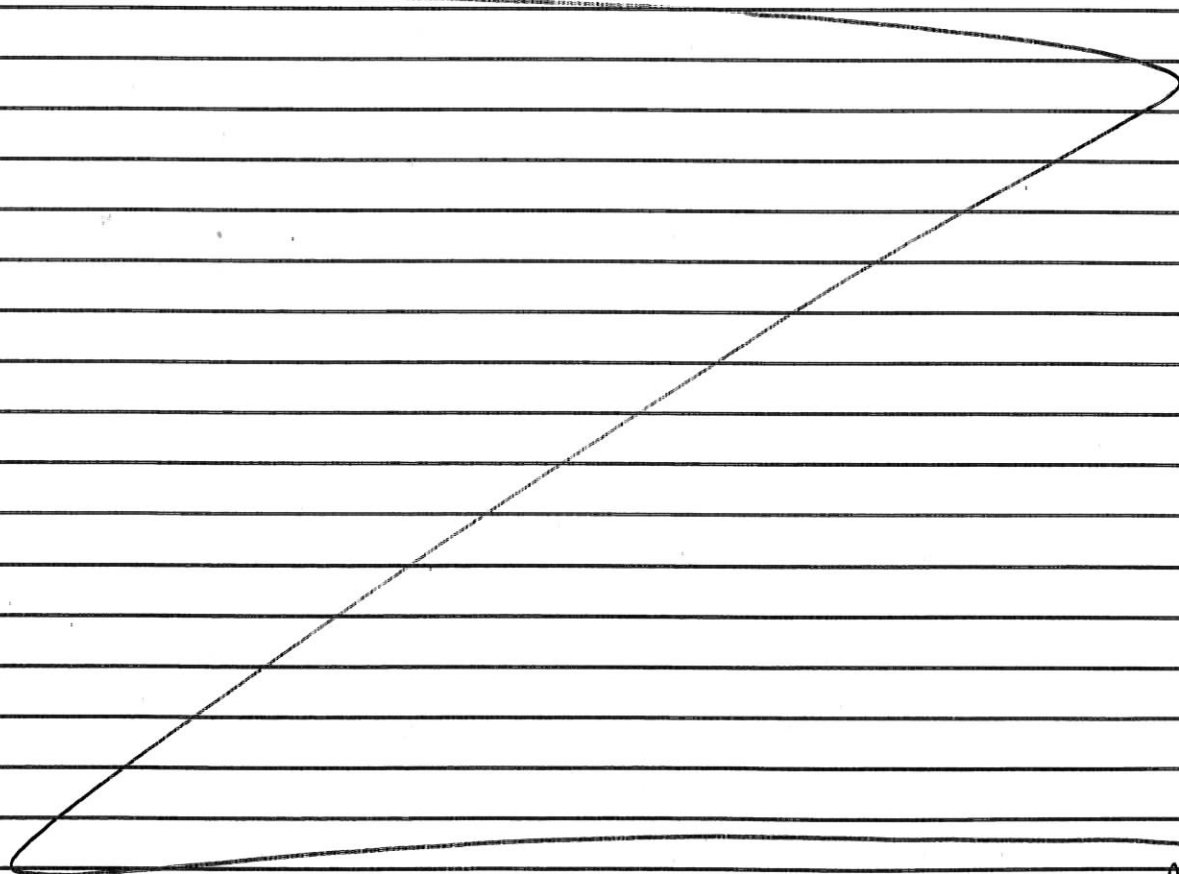
_____ Solution C: 1.25 mL of Solution A with 3.75 mL of D.I. H₂O = 0.286 µg/mL

_____ Solution D: 0.625 mL of Solution A with 4.375 mL of D.I. H₂O = 0.143 µg/mL

_____ Solution E: 0.375 mL of Solution A with 5.625 mL of D.I. H₂O = 0.0716 µg/mL

_____ Note: Each solution was measured immediately after it was prepared. Solution A is only
_____ stable in the flask it was prepared in.

MJS 10/1/09



MJS 10/5/09

Page 70 *M. Skidmore* Signed 10/5/09 Date

Camryn Reviewed 10/6/09 Date

Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-71
Project: H₂S ICV Rad 170
Analyst: ky
Preparation Date: 10/1/09
Expiration Date: 10/1/09

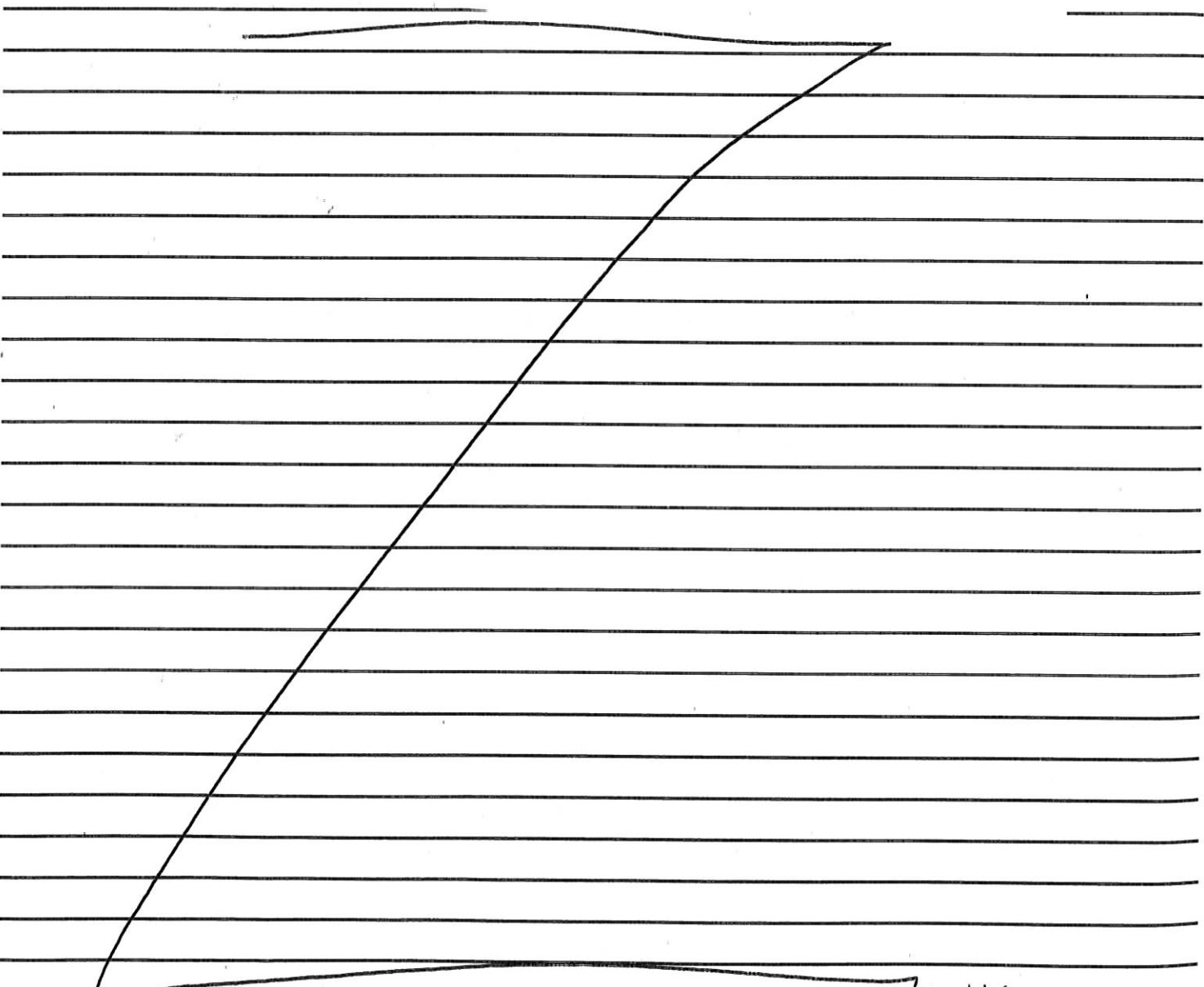
Solvent: DI H₂O
Solvent Lot #: NA

Procedure/Comments: _____

_____ Solution A: 2 mL of Code Rad 171 (1476-984, exp 8/6/10) (located in ER1B) with
_____ 98 mL of D.I. H₂O = 1.145 µg/mL _____

_____ Solution C: 1.25 mL of Solution A with 3.75 mL of D.I. H₂O = 0.286 µg/mL _____

_____ Note: Each solution was measured immediately after it was prepared. Solution A is only
_____ stable in the flask it was prepared in. _____



[Signature]
Signed

10/1/09
Date

[Signature]
Reviewed

10/6/09
Date

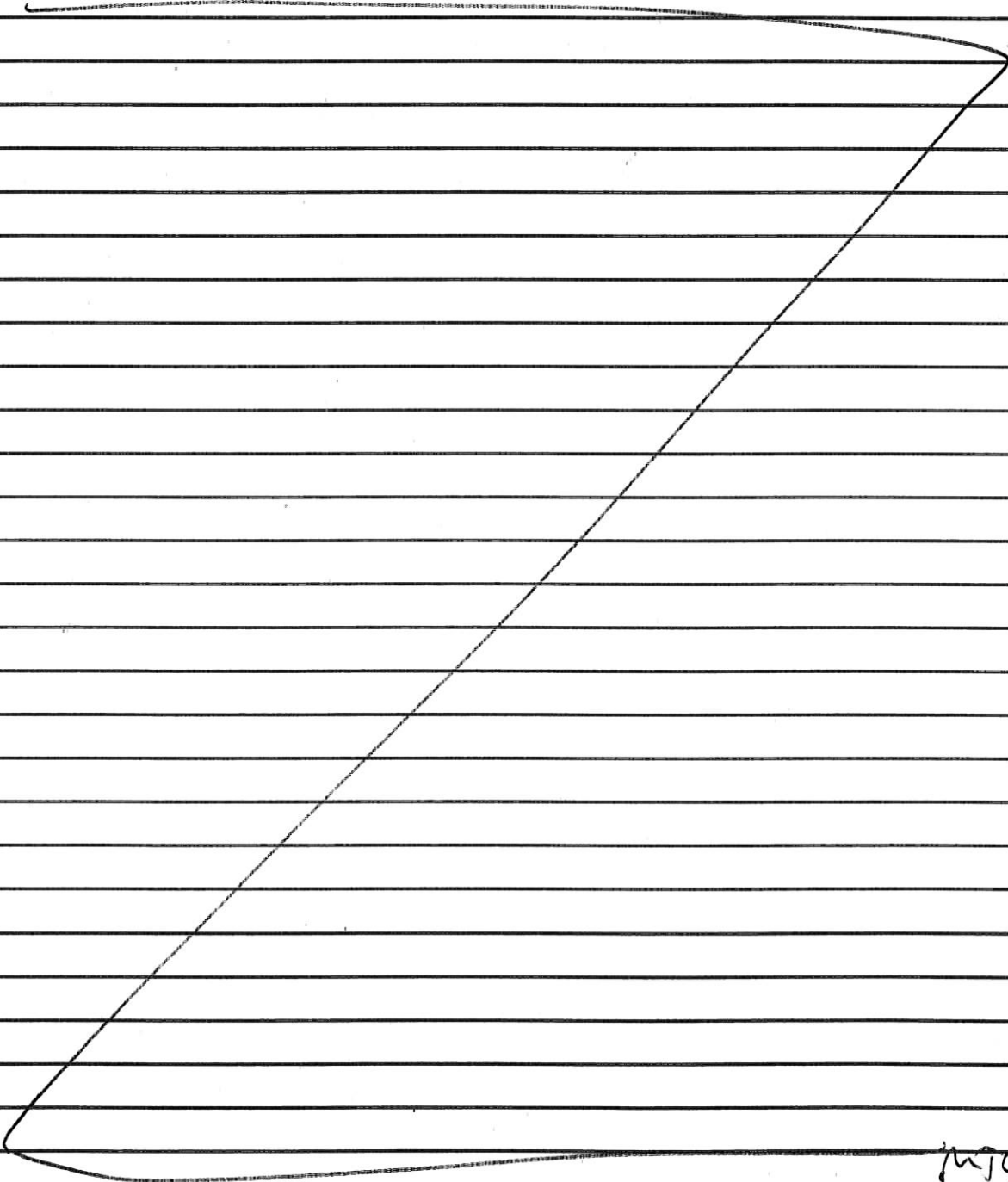
Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-72
Project: Ferric Chloride - Amine
Analyst: M. Skidmore
Preparation Date: 10/1/09
Expiration Date: 10/1/09

Solvent: DI H₂O
Solvent Lot #: N/A

Procedure/Comments: 6.5 mL of ferric chloride (1858-47)
with 32.5 mL of amine solution (1858-64).



MJS
10/1/09

Shipping/ Receiving Documents

**180 Blue Ravine Road, Suite B
Folsom, CA 95630**

**Phone (916) 985-1000 FAX (916) 985-1020
Hours 8:00 A.M. to 6:00 P.M. Pacific**

COMPANY: Environmental Health & Engineering, Inc.
ATTENTION: Mr. Taeko Minegishi
FAX #: 781-247-4305
FROM: Sample Receiving
Workorder #: 0909559A
of pages (Including Cover): 4

10/16/2009

Thank you for selecting Air Toxics Ltd. We have received your samples and have found discrepancies. In order to expedite analysis and reporting, please review the attached information for accuracy. Corrections can be faxed to **Ausha Scott at 916-985-1020.** ATL will proceed with the analysis as specified on the Chain of Custody and Sample Login page.

In accordance with your company's contract, this account is required to have a PO that is fully executed by both parties which also covers the cost of the workorder before any data can be released. Please ensure that you have given all appropriate information to our Project Manager so that there will be no delay in reporting of the data you are requesting.

Your prompt response is appreciated.

DATE: 9/24/09

FROM: Environmental Health and Engineering, Inc.
117 Fourth Avenue
Needham, MA 02494-2725 **0909559**

TO: AIR TOXICS

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 16512

The cost of this analysis will be covered by EH&E Purchase Order # 16512

For EH & E Data Coordinator - URGENT DATA

SAMPLE ID	SAMPLE TYPE	ANALYTICAL METHOD/NUMBER	OTHER: Time/Date/Vol.
103148	AIR/PASSIVE	H ₂ S ANALYSIS	9/21/09
103149			
103150			
103151			
103152			
103153			
103177			9/21/09
103178			
103179			
103180			
103181			
103182			
103206			9/21/09
103207			
103208			
103209			

Special Instructions:

- Standard turn around time
- Fax results 781-247-4305
- RETURN SAMPLES
- Additional report recipient mfrugal@ehinc.com
- Rush by _____ date/time
- Electronic transfer - datacoordinator@ehinc.com

Fedex 8704 2332 9461
CHAIN OF CUSTODY SEAL INTACT?
Y N NONE TEMP 36°C

Each signatory please return one copy of this form to the above address

Relinquished by: [Signature] of Environmental Health & Engineering, Inc. Date: 9/24/09
 Received by: [Signature] of (company name) ATI Date: 9/25/09
 Relinquished by: _____ of (company name) _____ Date: _____
 Received by: _____ of (company name) _____ Date: _____
 Relinquished by: _____ of (company name) _____ Date: _____
 Received by: _____ of (company name) _____ Date: _____
 Lab Data
 Received by: _____ of Environmental Health & Engineering, Inc. Date: _____

SAMPLE RECEIPT SUMMARY

WORKORDER 0909559A

Client	Phone	Date Promised: 10/06/09 11:59 pm
Mr. Taeko Minegishi	800-825-5343	Date Completed: 10/14/09
Environmental Health & Engineering, Inc.	Fax	Date Received: 9/25/09
117 Fourth Avenue	781-247-4305	PO#: 16512
Needham, MA 02494		Project#: 16512
Sales Rep: TL		Total \$: \$ 825.00
		Logged By: MW

<u>Fraction</u>	<u>Sample #</u>	<u>Analysis</u>	<u>Collected</u>	<u>Amount\$</u>
01A	103148	ATL Applications	9/21/2009	\$50.00
02A	103149	ATL Applications	9/21/2009	\$50.00
03A	103150	ATL Applications	9/21/2009	\$50.00
04A	103152	ATL Applications	9/21/2009	\$50.00
05A	103153	ATL Applications	NA	\$50.00
06A	103177	ATL Applications	9/21/2009	\$50.00
07A	103178	ATL Applications	9/21/2009	\$50.00
07AA	103178 Lab Duplicate	ATL Applications	9/21/2009	\$0.00
08A	103179	ATL Applications	9/21/2009	\$50.00
09A	103180	ATL Applications	9/21/2009	\$50.00
10A	103181	ATL Applications	9/21/2009	\$50.00
11A	103182	ATL Applications	NA	\$50.00
12A	103206	ATL Applications	9/21/2009	\$50.00
12AA	103206 Lab Duplicate	ATL Applications	9/21/2009	\$0.00
13A	103207	ATL Applications	9/21/2009	\$50.00
14A	103208	ATL Applications	9/21/2009	\$50.00
15A	103209	ATL Applications	9/21/2009	\$50.00
16A	Lab Blank	ATL Applications	NA	\$0.00
16B	Lab Blank	ATL Applications	NA	\$0.00
17A	CCV	ATL Applications	NA	\$0.00

Note: Samples received after 3 P.M. PST are considered to be received on the following work day.
Atlas Project Name/Profile#: CPSC Indoor Air Monitoring/13297

BILL TO: Accounts Payable
Environmental Health & Engineering, Inc.
117 Fourth Avenue
Needham, MA 02494

Analysis Code: Other GC

TERMS:

Reporting Method: ATL Application #59 H2S-Radiello 170

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

SAMPLE RECEIPT SUMMARY Continued

Client	Phone	Date Promised:
		Date Completed:
		Date Received:
	Fax	PO#:
		Project#:
Sales Rep:		Total \$: \$ 825.00
		Logged By: MW

<u>Fraction</u>	<u>Sample #</u>	<u>Analysis</u>	<u>Collected</u>	<u>Amount\$</u>
Misc. Charges eCVP (15) @ \$5.00 each.				\$75.00

Note: Samples received after 3 P.M. PST are considered to be received on the following work day.
Atlas Project Name/Profile#: CPSC Indoor Air Monitoring/13297

BILL TO: Accounts Payable
Environmental Health & Engineering, Inc.
117 Fourth Avenue
Needham, MA 02494

Analysis Code: Other GC

TERMS:

Reporting Method: ATL Application #59 H2S-Radiello 170

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

Other Records

Method : ATL Application #59 H2S-Radiello 170

CAS Number	Compound	Rpt. Limit (ug)
7783-06-4	Hydrogen Sulfide	1.2

DATA REVIEW CHECKLIST

Work Order #:

0909559A

A1 A2 R T M Q

- Analysis/Reporting vs. Project Profile/SOP requirements checked (i.e. 100% Dups, J-Flag to MDL, etc)
The final report has the correct reporting list, special units, and header info.
Lab Narrative is correct (proper method & description/Receiving & Analytical notes correct)
Sample Discrepancy Report (SDR) is completed
Corrective Action issued - #
Unusual circumstances have been documented in the notes section below

LUMEN validation report present and initialed

CIRCLE (YES / NO)

- Lab Blank, CCV, LCS and DUP met QC criteria
Hold time is met for all samples
Appropriate data qualifier flags are applied
Manual integrations for samples and QC are properly documented
Samples analyzed within the project or method specific clock
Retention times have been verified
Appropriate ICAL(s) included
At least one result per sample is verified against the target quant sheets/raw data
Dilution factor correctly calculated (sample load volume, syringe and bag dilutions, can pressurization(s))
Correct amount of sample analyzed (i.e. sample not over-diluted)
Spectra verified - documentation of spectral defense included (Section 5A of eCVP pkg)
TICs resemble reference spectra
TICs between duplicate samples are consistent
Checked samples for trends (i.e. Influent vs. Effluent, Field Dups, Field/Trip Blank, etc.)
Data for multiple analyses of sample(s) has been evaluated for comparability of results
Special units for all samples in the final report are correctly calculated
Manually entered results checked (i.e. TPH/NMOC)
Chain of Custody verified for any special comments (i.e. different compounds/RLs, action levels)
Chain of Custody scanned correctly
Verify sample id's vs. chain of custody
Date MDL(s) performed per instrument(s) 9/4/09
Samples pressurized w/ appropriate gas (N2 or He) Other (i.e. Tedlar bag, cartridge, sorbent)
Final pressure consistent with canister size (6L vs. 1L)
Verify receipt pressures
Verify canister ID #'s
Final invoice amount correct (adjusted for TAT, Penalties, Re-issue Charges etc.)
MDL date(s) present for all instruments utilized
Client LUMEN report reviewed for accuracy and completeness

Notes: (to include: noting samples with QA/QC problems, Blanks with positive hits, narratives, etc.)

A/R: Dup 07A/AA RPD=25% 10/14/09
Dup 12A/AA RPD=18% 10/16/09

M/Q:

A1/A2 (Analytical Review/Date) R/T (Reporting Review/Date) M (Management Review/Date) Q (QA Review/Date)
A1: R: M: Q:
A2: T: