

COMPREHENSIVE VALIDATION PACKAGE

ATL Applications

INVENTORY SHEET

WORK ORDER # 0910017B

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Completed by:

Kara McKiernan

(Signature)

Kara McKiernan/ Document Control

(Print Name & Title)

10/20/09

(Date)

WORK ORDER #: 0910017B

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:	10/01/2009	CONTACT:	Ausha Scott
DATE COMPLETED:	10/19/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
17A	101839	ATL Applications
18A	101840	ATL Applications
19A	101841	ATL Applications
20A	101868	ATL Applications
20AA	101868 Lab Duplicate	ATL Applications
21A	101869	ATL Applications
21AA	101869 Lab Duplicate	ATL Applications
22A	101870	ATL Applications
23A	101871	ATL Applications
24A	101872	ATL Applications
25A	101873	ATL Applications
26A	101897	ATL Applications
27A	101898	ATL Applications
28A	101899	ATL Applications
29A	101900	ATL Applications
30A	101901	ATL Applications
31A	101902	ATL Applications
32A	Lab Blank	ATL Applications

Continued on next page

LABORATORY NARRATIVE
Hydrogen Sulfide by Radiello 170
Environmental Health & Engineering, Inc.
Workorder# 0910017B

Fifteen Radiello 170 (H₂S) samples were received on October 01, 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 2990 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.

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)
Sample ID.	Sample ID.							
101839	0910017B-17A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101840	0910017B-18A	NA	10/1/2009	1.00	0.80	0.54	ND	ND
101841	0910017B-19A	NA	10/1/2009	1.00	0.80	0.54	ND	ND
101868	0910017B-20A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101868 Lab Duplicate	0910017B-20AA	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101869	0910017B-21A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101869 Lab Duplicate	0910017B-21AA	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101870	0910017B-22A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101871	0910017B-23A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101872	0910017B-24A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101873	0910017B-25A	NA	10/1/2009	1.00	0.80	0.54	ND	ND
101897	0910017B-26A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101898	0910017B-27A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101899	0910017B-28A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101900	0910017B-29A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101901	0910017B-30A	9/30/2009	10/1/2009	1.00	0.80	0.54	ND	ND
101902	0910017B-31A	NA	10/1/2009	1.00	0.80	0.54	ND	ND
Method Blank	0910017B-32A	NA	10/1/2009	1.00	0.80	0.54	ND	ND
Method Blank	0910017B-32B	NA	10/1/2009	1.00	0.80	0.54	ND	ND
CCV	0910017B-33A	NA	10/1/2009	1.00	0.80	0.54		

%Rec
100

- 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.

QC Results and Raw Data

Work Order: 0175 ^{0910017B} _{MJS 10/1/09}

Date: 10/01/09

Method: Rad170

Analyst: _____

Wavelength: 665nm

Standard ID	Concentration	ABS
Level 1 1858-70-E	0,0716 µg/mL	0,086
Level 2 -D	0,143 µg/mL	0,169
Level 3 -C	0,286 µg/mL	0,338
Level 4 -B	0,572 µg/mL	0,644
Level 5 -A	1,145 µg/mL	1,244
ICV 1858-71	0,286 µg/mL	0,324

$r = \frac{0,9996}{}$

$m = \frac{1,075}{}$

$b = \frac{0,019}{}$

ICV % Recovery = 100

Fraction	Dilution	ABS	Sample ID	Sample Volume	Comments
17A	1,00	0,076	101839	10,5 mL	
18A		0,018	101840		
19A		0,016	101841		
20A		0,050	101868		
20AA		0,061	101868 101868		
21A		0,057	101869		
21AA		0,063	101869		
22A		0,037	101870		
23A		0,044	101871		
24A		0,051	101872		
25A		0,017	101873		
26A		0,027	101897		
27A		0,027	101898		
28A		0,046	101899		
29A		0,026	101900		
30A		0,020	101901		
31A		0,019	101902		
B/K		0,013	N/A		101: 0,075
B/K		0,011			↓
LCS		0,165			0,133 µg/mL
CCV	↓	0,326	↓	↓	0,286 µg/mL

MJS 10/2/09

Procedure:

Miles GCS

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

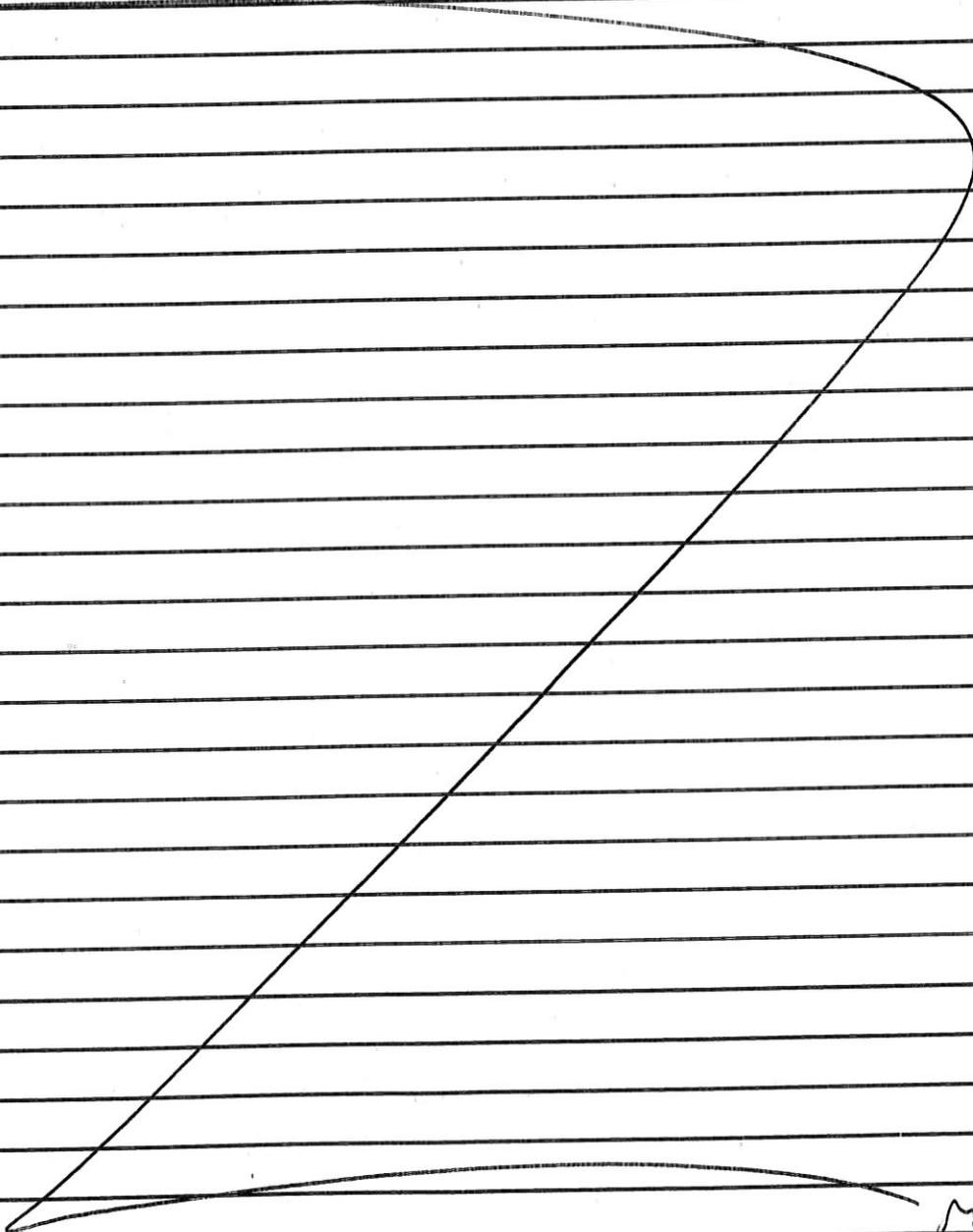
Preparation Date: 9/23/09

Expiration Date: ~~3/23/09~~ ^{4/23/09} 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 9/25/04
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

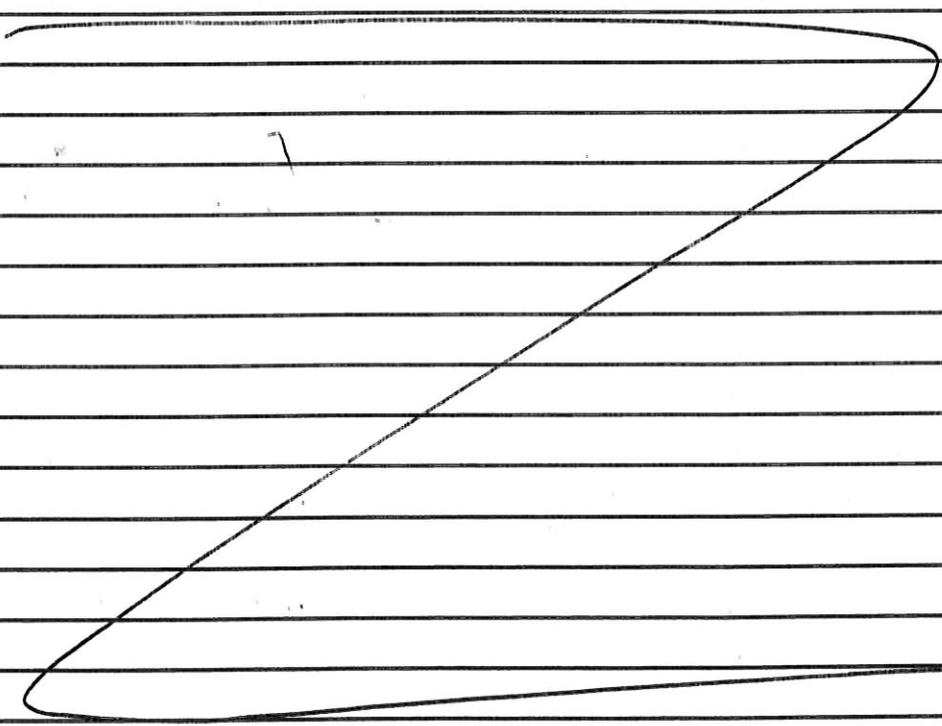
Procedure/Comments: _____

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-phenyldiammonium 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

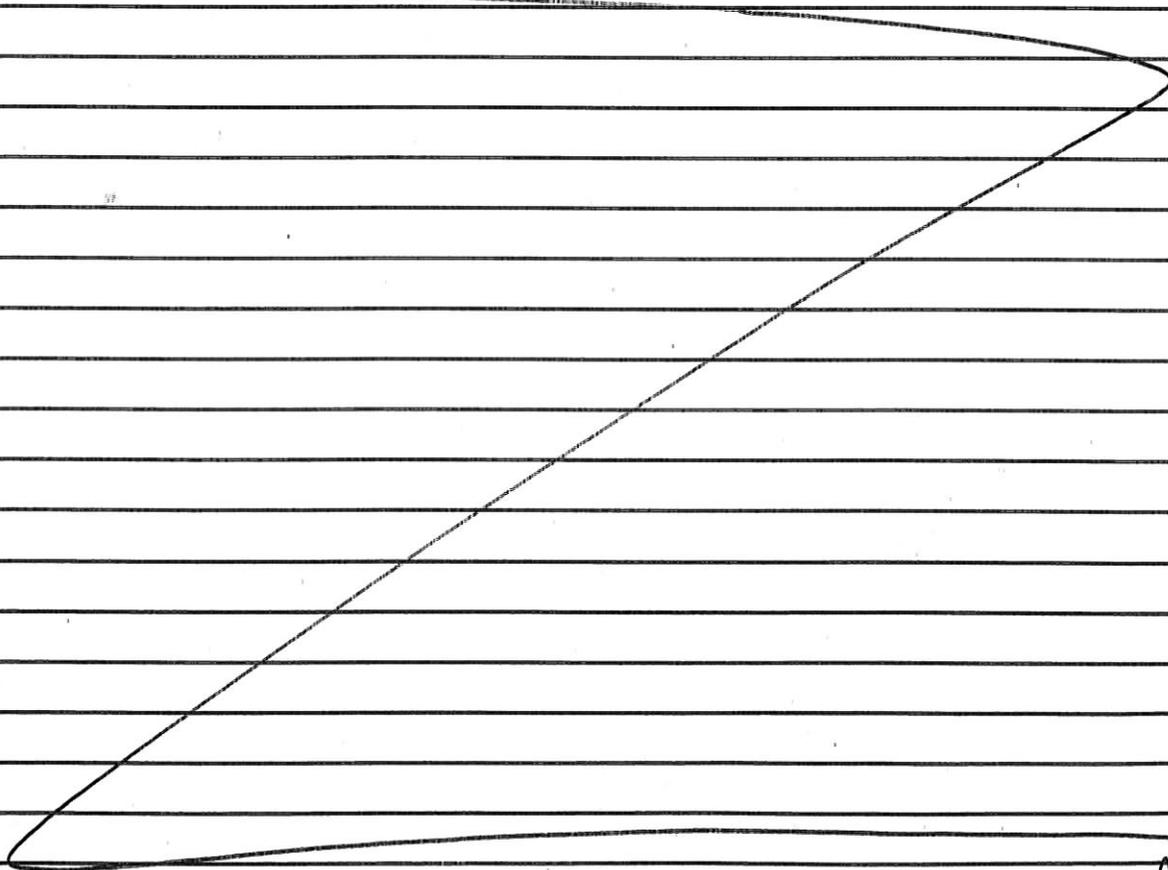
_____ Solution C: 1.25 mL of Solution A with 3.75 mL of D.I. H₂O = 0.286 µg/mL

_____ 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

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

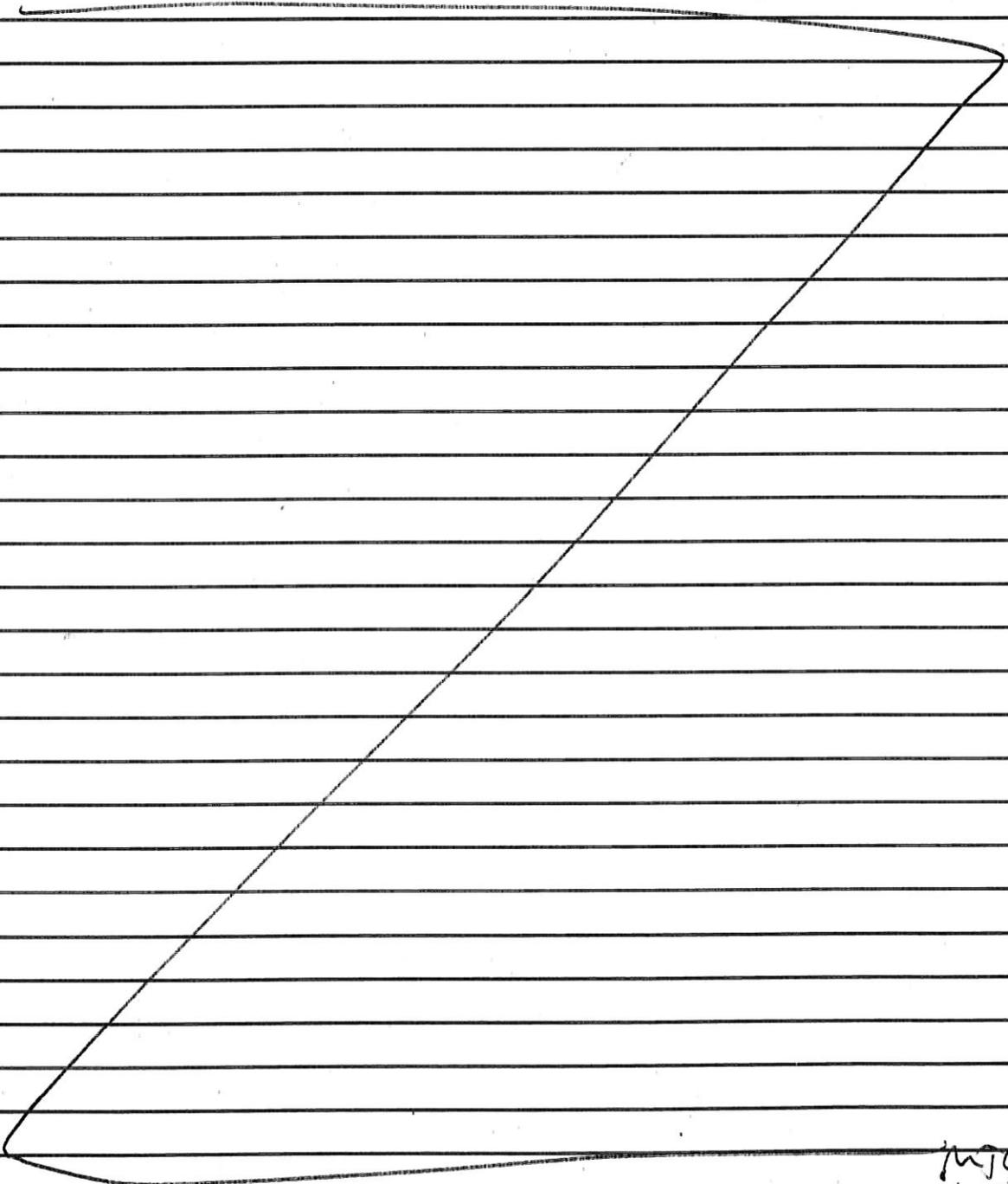
Spectrophotometer Standard Preparation Log

@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 #: 0910017B
of pages (Including Cover): 4

10/20/2009

Thank you for selecting Air Toxics Ltd. We have received your samples and have found no 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.

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

0910017

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	Start	OTHER: Time/Date/Vol.	Step
101839	Air/Passive	H ₂ S Analysis	9/16/09	9/30/09	
101840	↓	↓	↓	↓	
101841	↓	↓	↓	↓	
101868	Air/Passive	H ₂ S Analysis	9/16/09	9/30/09	
101869	↓	↓	↓	↓	
101870	↓	↓	↓	↓	
101871	↓	↓	↓	↓	
101872	↓	↓	↓	↓	
101873	↓	↓	↓	↓	
101897	Air/Passive	H ₂ S Analysis	9/16/09	9/30/09	
101898	↓	↓	↓	↓	
101899	↓	↓	↓	↓	
101900	↓	↓	↓	↓	
101901	↓	↓	↓	↓	
101902	↓	↓	↓	↓	

Special Instructions:

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

Other: **CUSTODY SEAL INTACT?**
Y N NONE TEMP 7.4°C

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

Relinquished by: [Signature] of Environmental Health & Engineering, Inc. Date: 9/30/09
 Received by: [Signature] of (company name) AH1 Date: 10/1/09
 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 0910017B

Client	Phone	Date Promised: 10/12/09 11:59 pm
Mr. Taeko Minegishi	800-825-5343	Date Completed: 10/19/09
Environmental Health & Engineering, Inc.	Fax	Date Received: 10/1/09
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>
17A	101839	ATL Applications	9/30/2009	\$50.00
18A	101840	ATL Applications	NA	\$50.00
19A	101841	ATL Applications	NA	\$50.00
20A	101868	ATL Applications	9/30/2009	\$50.00
20AA	101868 Lab Duplicate	ATL Applications	9/30/2009	\$0.00
21A	101869	ATL Applications	9/30/2009	\$50.00
21AA	101869 Lab Duplicate	ATL Applications	9/30/2009	\$0.00
22A	101870	ATL Applications	9/30/2009	\$50.00
23A	101871	ATL Applications	9/30/2009	\$50.00
24A	101872	ATL Applications	9/30/2009	\$50.00
25A	101873	ATL Applications	NA	\$50.00
26A	101897	ATL Applications	9/30/2009	\$50.00
27A	101898	ATL Applications	9/30/2009	\$50.00
28A	101899	ATL Applications	9/30/2009	\$50.00
29A	101900	ATL Applications	9/30/2009	\$50.00
30A	101901	ATL Applications	9/30/2009	\$50.00
31A	101902	ATL Applications	NA	\$50.00
32A	Lab Blank	ATL Applications	NA	\$0.00
32B	Lab Blank	ATL Applications	NA	\$0.00
33A	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 #:

0910017B

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:
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: