

COMPREHENSIVE VALIDATION PACKAGE

ATL Applications

INVENTORY SHEET

WORK ORDER # 0909127C

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Completed by:

Kara McKiernan

(Signature)

Kara McKiernan/ Document Control

(Print Name & Title)

09/22/09

(Date)

WORK ORDER #: 0909127C

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:	09/04/2009	CONTACT:	Ausha Scott
DATE COMPLETED:	09/18/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
33A	102111	ATL Applications
34A	102112	ATL Applications
35A	102113	ATL Applications
36A	102133	ATL Applications
36AA	102133 Lab Duplicate	ATL Applications
37A	102134	ATL Applications
37AA	102134 Lab Duplicate	ATL Applications
38A	102135	ATL Applications
39A	102136	ATL Applications
40A	102137	ATL Applications
41A	102138	ATL Applications
42A	102165	ATL Applications
43A	102166	ATL Applications
44A	102167	ATL Applications
45A	102168	ATL Applications
46A	102169	ATL Applications
47A	102170	ATL Applications

Continued on next page

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<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
48A	Method Blank	ATL Applications
48B	Method Blank	ATL Applications
49A	CCV	ATL Applications

CERTIFIED BY:



Laboratory Director

DATE: 09/18/09

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

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

**LABORATORY NARRATIVE
Nitrogen Dioxide by Radiello 166
Environmental Health & Engineering, Inc.
Workorder# 0909127C**

Fifteen Radiello 166 (NO₂) samples were received on September 04, 2009. The procedure involves extraction of nitrite from reaction of NO₂ with triethanolamine. Absorbance of nitrite is then measured at 537 nm using a spectrophotometer. Results are reported in uG and uG/m³.

Sampling rate of 141 mL/min 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.

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 # 61 for RAD 166 (Nitrogen Dioxide)

Spectrophotometer

Field Sample ID.	Lab Sample ID.	Collection Date	Analysis Date	Dilution Factor	Reporting Limit (ug)	Reporting Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
102111	0909127C-33A	9/3/2009	9/8/2009	1.00	0.32	0.22	3.0	2.0
102112	0909127C-34A	9/3/2009	9/8/2009	1.00	0.32	0.22	0.40	0.26
102113	0909127C-35A	9/3/2009	9/8/2009	1.00	0.32	0.22	0.58	0.38
102133	0909127C-36A	9/3/2009	9/8/2009	1.00	0.32	0.22	4.9	3.2
102133 Lab Duplicate	0909127C-36AA	9/3/2009	9/8/2009	1.00	0.32	0.22	4.9	3.2
102134	0909127C-37A	9/3/2009	9/8/2009	1.00	0.32	0.22	5.9	3.9
102134 Lab Duplicate	0909127C-37AA	9/3/2009	9/8/2009	1.00	0.32	0.22	5.8	3.8
102135	0909127C-38A	9/3/2009	9/8/2009	1.00	0.32	0.22	1.6	1.0
102136	0909127C-39A	9/3/2009	9/8/2009	1.00	0.32	0.22	2.5	1.6
102137	0909127C-40A	9/3/2009	9/8/2009	1.00	0.32	0.22	3.6	2.4
102138	0909127C-41A	NA	9/8/2009	1.00	0.32	0.22	ND	ND
102165	0909127C-42A	9/3/2009	9/8/2009	1.00	0.32	0.22	ND	ND
102166	0909127C-43A	9/3/2009	9/8/2009	1.00	0.32	0.22	ND	ND
102167	0909127C-44A	9/3/2009	9/8/2009	1.00	0.32	0.22	3.3	2.2
102168	0909127C-45A	9/3/2009	9/8/2009	1.00	0.32	0.22	0.36	0.24
102169	0909127C-46A	9/3/2009	9/8/2009	1.00	0.32	0.22	0.40	0.26
102170	0909127C-47A	NA	9/8/2009	1.00	0.32	0.22	ND	ND
Method Blank	0909127C-48A	NA	9/8/2009	1.00	0.32	0.22	ND	ND
Method Blank	0909127C-48B	NA	9/8/2009	1.00	0.32	0.22	ND	ND
CCV	0909127C-49A	NA	9/8/2009	1.00	0.32	0.22	%Rec 102	

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.

Dioxide Radiallo Calculation Worksheet

Workorder #: 0909127C
 Sampling Rate (ng/(ppb*min)) 0.141
 Sampling T (deg C) 25
 Volume (ml) 5
 Date of Analysis: 9/8/2009

1000ng/lug

(Abs-Y-int)/DF Slope
 Cond(urk)5 (ml) 0.5ml
 Conc (ug) x 1000 Q x Duration
 ppbx mw 24.45

Corrected Q 0.141 25 into account temp

Lab/SampleID	Client	Date of Collection	Abs	Duration (min)	DF	Conc (ug) (for 0.5ml Aliquot)	Conc (ug) in full 5 ml of sample	Conc (ppb)	Conc (ug/m ³)
33A	102111	9/3/2009	0.097	20160	1.00	0.304803283	3.048032829	1.072	2.017
34A	102112	9/3/2009	0.024	20160	1.00	0.039824571	0.398245707	0.140	0.264
35A	102113	9/3/2009	0.029	20160	1.00	0.057973798	0.579737976	0.204	0.384
36A	102133	9/3/2009	0.148	20160	1.00	0.489925397	4.899253969	1.724	3.243
36AA	102133 Duplicate	9/3/2009	0.148	20160	1.00	0.489925397	4.899253969	1.724	3.243
37A	102134	9/3/2009	0.175	20160	1.00	0.587931222	5.87931222	2.068	3.891
37AA	102134 Duplicate	9/3/2009	0.173	20160	1.00	0.580671531	5.806715312	2.043	3.843
38A	102135	9/3/2009	0.056	20160	1.00	0.155979623	1.559796227	0.549	1.032
39A	102136	9/3/2009	0.082	20160	1.00	0.250355602	2.503556023	0.881	1.657
40A	102137	9/3/2009	0.111	20160	1.00	0.355621118	3.556211181	1.251	2.354
41A	102138	NA	0.0070	20160	1.00	-0.021882801	-0.218828006	-0.077	-0.145
42A	102165	9/3/2009	0.018	20160	1.00	0.018045499	0.180454985	0.063	0.119
43A	102166	9/3/2009	0.021	20160	1.00	0.028935035	0.289350346	0.102	0.192
44A	102167	9/3/2009	0.105	20160	1.00	0.333842046	3.338420459	1.174	2.210
45A	102168	9/3/2009	0.023	20160	1.00	0.036194725	0.361947254	0.127	0.240
46A	102169	9/3/2009	0.024	20160	1.00	0.039824571	0.398245707	0.140	0.264
47A	102170	NA	0.010	20160	1.00	-0.010993264	-0.109932645	-0.039	-0.073
48A	Method Blank	NA	0.010	20160	1.00	-0.047291718	-0.472917182	#DIV/0!	#DIV/0!
488	Method Blank	NA	0.014	20160	1.00	-0.047291718	-0.472917182	#DIV/0!	#DIV/0!
49A	CCV	NA	0.923	20160	1.00	3.30305556	33.0305556	0.012	0.023

QC Duration 20160
 CCV Spike Amt ug per 0.5 ml 3.25

21.862

1000ng/1ug

Low PointKDF RL(ug)x5 (ml) RL (ug) x 1000 Q x Duration

0.5ml ppbx mw 24.45

Calibration Data

Calibration Date 9/8/2009 Linear Regression

0.5 ml Aliquot of Cal STD

Slope 0.275493829 Y-int 0.013028577 R2 0.999945669

RL(ug) for 0.5 ml aliquot	RL (ug) in full 5 ml of sample	RL (ppb)	RL (ug/m3)	Result (ug)	Result (ug/m3)	%Rec	ug/ml of NO2	ug of NO2	absorbance
0.033	0.325	0.1	0.215	3.048032829	2.01738584		0	0	0
0.033	0.325	0.1	0.215	0.398245707	0.263584842		0.065	0.0325	0.019
0.033	0.325	0.1	0.215	0.579737976	0.383708198		0.325	0.1625	0.056
0.033	0.325	0.1	0.215	4.899253969	3.242644071		1.3	0.65	0.192
0.033	0.325	0.1	0.215	4.899253969	3.242644071		6.5	3.25	0.918
0.033	0.325	0.1	0.215	5.87931222	3.891310193		13	6.5	1.799
0.033	0.325	0.1	0.215	5.806715312	3.843260851				
0.033	0.325	0.1	0.215	1.559796227	1.03237432				
0.033	0.325	0.1	0.215	2.503556023	1.657015772				
0.033	0.325	0.1	0.215	3.556211181	2.353731236				
0.033	0.325	0.1	0.215	ND	ND				
0.033	0.325	0.1	0.215	ND	ND				
0.033	0.325	0.1	0.215	3.338420459	2.209583209				
0.033	0.325	0.1	0.215	0.361947254	0.23956017				
0.033	0.325	0.1	0.215	0.398245707	0.263584842				
0.033	0.325	0.1	0.215	ND	ND				
0.033	0.325	#DNV/01	#DNV/01	#DNV/01	#DNV/01				
0.033	0.325	#DNV/01	#DNV/01	#DNV/01	#DNV/01				
0.033	0.325	#DNV/01	#DNV/01	#DNV/01	#DNV/01				
0.033	0.325	#DNV/01	#DNV/01	#DNV/01	#DNV/01				
0.033	0.325	#DNV/01	#DNV/01	#DNV/01	#DNV/01				
0.033	0.325	0.1	0.215	ND	ND				
0.033	0.325	0.1	0.215	ND	ND				
0.033	0.325	0.1	0.215	33.0305556	21.86176425	%Rec 102			

QC Results and Raw Data

Spectrophotometer Logbook

@Air Toxics Ltd.

Log Book #: 1873

Work Order: 0909127C

Method: Rad 166

Date: 9/8/09

Wavelength: 537 nm

Analyst: Mike Skidmore

Prep. Notes:

Standard ID	Concentration	ABS
1858-34-0.065	0.065 $\mu\text{g}/\text{mL}$	0.019
0.325	0.325	0.056
1.3	1.3	0.192
6.5	6.5	0.918
13	13	1.799

$r = 0.9999$
 $m = 0.2755$
 $b = 0.01303$

Fraction	Dilution	ABS	Sample ID	Sample Volume	
33A	1.00	0.097	102111	5.0 mL	
34A	↓	0.024	102112	↓	
35A		0.029	102113		
36A		0.148	102133		
36AA		0.148	102133		
37A		0.175	102134		
37AA		0.173	102134		
38A		0.056	102135		
39A		0.082	102136		
40A		0.111	102137		
41A		0.007	102138		
42A		0.018	102165		
43A		0.021	102166		
44A		0.105	102167		
45A		0.023	102168		
46A		0.024	102169		
47A		0.010	102170		
B1K		0.010	N/A		
B1K		0.014	↓		
CCV/LCS		↓	0.923		↓

Notes: CCV/LCS @ 6.5 $\mu\text{g}/\text{mL}$
Blank Cartridges: Lot # 09150

Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-34
Project: Calibration Solution Rad 166
Analyst: A. Toyama
Preparation Date: 9/8/09
Expiration Date: 9/8/09

Solvent: DI H₂O
Solvent Lot #: NA

Procedure/Comments: Dissolve 5mg Sodium Nitrite, 97% (Located ER2D) in 250 ml DI H₂O to yield 13 µg/L or 13 µg/ml. From this solution, dilute to make:

6.5 µg/ml (315:630) 1.3 µg/ml (130:650) 0.325 µg/ml (150:600) and 0.065 µg/ml (100:500) - all in µl from conc. just made.

To each of these calibration levels, transfer 0.5 ml to vial and add 5ml of sulphaniamide, cap tightly, stir and wait 5 minutes. Then add 1 ml of NEDA solution, stir and wait 10 minutes. Measure absorbance at 537 nm.

9/8/09
ACT

Signed

9/8/09
Date

Reviewed

9/8/09
Date

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 #: 0909127C
of pages (Including Cover): 4

9/22/2009

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

TO: AIR TOXICS

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

0909127

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.	STOP
3A 102111	AIR/PASSIVE	SO ₂ NO ₂ HF ANALYSIS	8/20/09	9/3/09	
4A 102112					
5A 102113					
6A 102133					
7A 102134					
8A 102135					
9A 102136					
10A 102137					
11A 102138				∅	
12A 102165				9/3/09	
13A 102166					
14A 102167					
15A 102168					
16A 102169					
17A 102170				∅	

Special Instructions:

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

CUSTODY SEAL INTACT
 OUTDOOR TEMP VOL.
Fax 877-2333 1972

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

Relinquished by: [Signature] of Environmental Health & Engineering, Inc. Date: 9/3/09
 Received by: [Signature] of (company name) AH Date: 9/4/09
 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 0909127C

Client	Phone	Date Promised: 09/16/09 11:59 pm
Mr. Taeko Minegishi	800-825-5343	Date Completed:
Environmental Health & Engineering, Inc.	Fax	Date Received: 9/4/09
117 Fourth Avenue	781-247-4305	PO#: 16512
Needham, MA 02494		Project#: 16512
Sales Rep: TL		Total \$: \$ 675.00
		Logged By: HD

<u>Fraction</u>	<u>Sample #</u>	<u>Analysis</u>	<u>Collected</u>	<u>Amount\$</u>
33A	102111	ATL Applications	9/3/2009	\$40.00
34A	102112	ATL Applications	9/3/2009	\$40.00
35A	102113	ATL Applications	9/3/2009	\$40.00
36A	102133	ATL Applications	9/3/2009	\$40.00
37A	102134	ATL Applications	9/3/2009	\$40.00
38A	102135	ATL Applications	9/3/2009	\$40.00
39A	102136	ATL Applications	9/3/2009	\$40.00
40A	102137	ATL Applications	9/3/2009	\$40.00
41A	102138	ATL Applications	NA	\$40.00
42A	102165	ATL Applications	9/3/2009	\$40.00
43A	102166	ATL Applications	9/3/2009	\$40.00
44A	102167	ATL Applications	9/3/2009	\$40.00
45A	102168	ATL Applications	9/3/2009	\$40.00
46A	102169	ATL Applications	9/3/2009	\$40.00
47A	102170	ATL Applications	NA	\$40.00

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 #61 NO2-Radiello 166

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

Other Records



Method : ATL Application #61 NO2-Radiello 166

CAS Number	Compound	Rpt. Limit (ug)
10102-44-0	Nitrogen Dioxide	1.0

DATA REVIEW CHECKLIST

Work Order #:

0909127C

- 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)
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 36A, 37A
M/Q:

A1/A2 (Analytical Review/Date) R/T (Reporting Review/Date) M (Management Review/Date) Q (QA Review/Date)
A1: R: 9/16/09 9/18/09
A2: T: