

**COMPREHENSIVE VALIDATION PACKAGE**

ATL Applications

INVENTORY SHEET

WORK ORDER # 0909375D

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Completed by:

*Kara McKiernan*

(Signature)

Kara McKiernan/ Document Control

(Print Name & Title)

10/07/09

(Date)



**LABORATORY NARRATIVE  
Nitrogen Dioxide by Radiello 166  
Environmental Health & Engineering, Inc.  
Workorder# 0909375D**

Six Radiello 166 (NO<sub>2</sub>) samples were received on September 18, 2009. The procedure involves extraction of nitrite from reaction of NO<sub>2</sub> with triethanolamine. Absorbance of nitrite is then measured at 537 nm using a spectrophotometer. Results are reported in uG and uG/m<sup>3</sup>.

Sampling rate of 141 mL/min was provided by the manufacturer.

**Receiving Notes**

The Chain of Custody (COC) was not relinquished properly. A signature and date were not provided by the field sampler.

A Temperature Blank was not included with the shipment. Temperature was measured on a representative sample and was not within 4±2 °C. Coolant in the form of blue ice was present. Analysis proceeded.

**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.

An Independent Calibration Verification (ICV) was not performed with this workorder.

**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)
105060	0909375D-41A	9/17/2009	9/18/2009	1.00	0.32	0.22	48	31
105060 Lab Duplicate	0909375D-41AA	9/17/2009	9/18/2009	1.00	0.32	0.22	48	32
105061	0909375D-42A	9/17/2009	9/18/2009	1.00	0.32	0.22	38	25
105062	0909375D-43A	9/17/2009	9/18/2009	1.00	0.32	0.22	22	15
105063	0909375D-44A	9/17/2009	9/18/2009	1.00	0.32	0.22	32	21
105064	0909375D-45A	9/17/2009	9/18/2009	1.00	0.32	0.22	31	21
105065	0909375D-46A	N/A	9/18/2009	1.00	0.32	0.22	ND	ND
Method Blank	0909375D-47A	N/A	9/18/2009	1.00	0.32	0.22	ND	ND
Method Blank	0909375D-47B	N/A	9/18/2009	1.00	0.32	0.22	ND	ND
CCV	0909375D-48A	N/A	9/18/2009	1.00	0.32	0.22	%Rec 108	

- 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**



# Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-40

Project: Calibration Solutions Rack 166

Analyst: M. Skidmore

Preparation Date: 9/18/09

Expiration Date: 9/18/09

Solvent: DI H<sub>2</sub>O

Solvent Lot #: N/A

Procedure/Comments: Dissolve 5mg Sodium Nitrate, 97% (located ERAD)  
in 250 mL DI H<sub>2</sub>O to yield 13 mg/mL or 13 mg/L. From  
this solution, dilute to make:

<u>6.5 mg/mL</u> <u>(315:630)</u>	<u>1.3 mg/mL</u> <u>(130:650)</u>	<u>0.325 mg/mL</u> <u>(150:600)</u>	and	<u>0.065 mg/mL</u> <u>(100:500)</u>
--------------------------------------	--------------------------------------	----------------------------------------	-----	----------------------------------------

To each of these calibration levels, transfer 0.5 mL  
to vial and add 5 mL of sulfanilamide, cap tightly,  
stir and wait 5 <sup>mins</sup> minutes. Then add 1 mL  
of NEDA solution, stir and wait 10 minutes.  
Measure absorbance at 537 nm.

MSS

9/18/09

## **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 #: 0909375D  
# of pages (Including Cover): 4

10/7/2009

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.

DATE: 9/17/09

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

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.			
105060	AIR/PASSIVE	NO <sub>2</sub> , SO <sub>2</sub> , HF ANALYSIS	9/17/09	9/17/09			
105061	↓	↓	↓	↓			
105062							
105063							
105064							
105065							
105054					ALDEHYDE ANALYSIS	9/17/09	
105055					↓	↓	↓
105056							
105057							
105058							
105059	0						

Special Instructions:

- Standard turn around time
- Fax results 781-247-4305
- RETURN SAMPLES
- Additional report recipient MFRAGALA@EHEINC.COM
- Rush by \_\_\_\_\_ date/time
- Other \_\_\_\_\_
- Electronic transfer - datacoordinator@ehinc.com 8.7°C

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

Relinquished by: [Signature] of Environmental Health & Engineering, Inc. Date: 9/17/09  
 Received by: [Signature] of (company name) ATI 0850 Date: 9/18/09  
 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: \_\_\_\_\_

(B) NO<sub>2</sub> SO<sub>2</sub> HF

## SAMPLE RECEIPT SUMMARY

### WORKORDER 0909375D

<b>Client</b>	<b>Phone</b>	<b>Date Promised:</b> 09/29/09 11:59 pm
Mr. Taeko Minegishi	800-825-5343	<b>Date Completed:</b> 10/5/09
Environmental Health & Engineering, Inc.	<b>Fax</b>	<b>Date Received:</b> 9/18/09
117 Fourth Avenue	781-247-4305	<b>PO#:</b> 16512
Needham, MA 02494		<b>Project#:</b> 16512
<b>Sales Rep:</b> TL		<b>Total \$:</b> \$ 270.00
		<b>Logged By:</b> MW

<u>Fraction</u>	<u>Sample #</u>	<u>Analysis</u>	<u>Collected</u>	<u>Amount\$</u>
41A	105060	ATL Applications	9/17/2009	\$40.00
41AA	105060 Lab Duplicate	ATL Applications	9/17/2009	\$0.00
42A	105061	ATL Applications	9/17/2009	\$40.00
43A	105062	ATL Applications	9/17/2009	\$40.00
44A	105063	ATL Applications	9/17/2009	\$40.00
45A	105064	ATL Applications	9/17/2009	\$40.00
46A	105065	ATL Applications	NA	\$40.00
47A	Lab Blank	ATL Applications	NA	\$0.00
47B	Lab Blank	ATL Applications	NA	\$0.00
48A	CCV	ATL Applications	NA	\$0.00
Misc. Charges eCVP (6) @ \$5.00 each.				\$30.00

**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

# Sample Discrepancy Report

## Identification

Initiated By: MW Project ID:13297 PM: AS Date: 9/18/2009 Discrepancy Type:  1.  2.  3.

Workorder(s) affected:0909375 Sample(s) affected: all

## 1. Sample Receipt Discrepancies

### Narration Not Required:

- 1.1.  Sample container (cartridge/tube/VOA vial) was received broken, however sample was intact.
- 1.2.  No brass cap on canister.
- 1.3.  Date of Collection noted on first sample, but no arrow down to indicate all samples.

### Notify Lab for further determination:

- 1.4.  Tedlar bag received with minimal volume.

Initials: \_\_\_\_\_ Date: \_\_\_\_\_

### Narration Required in Lab Narrative and Sample Confirmation:

- 1.5.  COC was not filled out in ink.
- 1.6.  COC Improperly relinquished / received.
- 1.7.  Sample tags / can numbers do not match the COC.
- 1.8.  Sample date  error /  missing on COC but noted on sample tag (check one).
- 1.9.  Custody Seal on the outside of the container was  broken /  Improperly placed (check one).
- 1.10.  ID-none on the sample Tag/Blank
- 1.11.  Other (describe below).

Describe the Discrepancy: 1.6:no relinq. signature and date

## 2. Sample Receipt/Screening Discrepancies requiring PM notification

Document on Cover Page of Sample Receipt Confirmation and in Receiving Notes of Lab Narrative

### If Section II. is filled out PM must be notified within 24 hrs of Initiation

- 2.1.  COC was not received with samples.
- 2.2.  Analysis method(s) is  not specified /  incorrectly specified (check one) on the COC.
- 2.3.  Incorrect sampling media / container for analysis requested.
- 2.4.  Number of samples on the COC does not match the number of samples that were received.
- 2.5.  Samples were received expired.
- 2.6.  Sampling date (time for sulfur) is not documented for  some /  any samples (check one).
- 2.7.  Sample received with amount of H<sub>2</sub>O in the Tedlar Bag.
- 2.8.  Sample cannot be analyzed. Container was  received broken /  leaking /  flat /  defective.
- 2.9.  Tedlar bag / canister received emitting a strong odor; Sample  can /  cannot (check one) be analyzed.
- 2.10.  Tedlar Bag for Sulfur analysis has metal fitting.
- 2.11.  Environmental Supply Company valves
- 2.12.  Sorbent samples-sampling volume was not provided
- 2.13.  Flow controller used – canister samples received at ambient or under pressure.
- 2.14.  Canister was at ambient pressure at time of pressurization and (check all that apply):
  - Canister failed leak check on two manifolds,
  - Canister valve was open,
  - Brass nut was loose/not present.
  - Sample can be analyzed
  - Cannot be analyzed
- 2.15.  Canister sample received with a vacuum difference >5.0"Hg between the receipt vac. And the final vac. reported on the COC, indicating loss of vacuum.
- 2.16.  Canister sample received at >15"Hg (not identified as a Trip/Field Blank).
- 2.17.  Canister Trip Blank received at low vacuum (< 25"Hg).
- 2.18.  Sorbent Sample received outside method required temperature of 2°C to 6°C;  ice /  blue ice (check one) was present. A temp. Blank  was /  was not present (check one).
- 2.19.  Other (describe below)

Initials: \_\_\_\_\_ Date: \_\_\_\_\_ Notify Receiving:  Notify PM:

Describe the Discrepancy: samples rec'd at 8.4C

**3. Lab Discrepancies requiring Team Leader/PM notification**

*Document in Analytical Notes of Lab Narrative*

**If Section III. is filled out PM must be notified within 24 hrs of Initiation**

- 3.1.  Tedlar Bag found to be leaking at the time of analysis; sample  can /  cannot (check one) be analyzed.
- 3.2.  Tedlar Bag found to be flat/low volume; sample cannot be analyzed.
- 3.3.  Sulfur samples received with insufficient time to analyze prior to expiration.
- 3.4.  Canister found to be leaking at the time of analysis.
- 3.5.  VOST tube saturated; bag dilution necessary.
- 3.6.  Sample loss due to instrument malfunction / broken glassware.
- 3.7.  Low/high surrogate recoveries noted in QC/sample(s) for extractable samples.
- 3.8.  Reporting Limit was raised.
- 3.9.  Post weight > Pre weight in field/lab Blank for PM10/TSP samples.
- 3.10.  Other (describe below).

Initials: \_\_\_\_\_ Date: \_\_\_\_\_ Notify Receiving:  Notify PM:

Team Lead Initials: \_\_\_\_\_ Date: \_\_\_\_\_

Describe the Discrepancy: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

How Does this Affect Client: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Project Manager Use Only**

**Project Manager Notification**

Section 2 Complete

Section 3 Complete

**Action:**

It is not necessary to notify the client. Narrate the discrepancy in Receiving Notes/Analytical Notes of Lab Narrative.

PM Initials: \_\_\_\_\_ Date: \_\_\_\_\_

Client notification required. See attached client contact / email, or comments below:

**Client Notification:**

PM Initials: AS Person notified: \_\_\_\_\_ Date: 9/22/2009

Waiting for Client Reply

Comments: \_\_\_\_\_  
\_\_\_\_\_

Notify Lab Name: \_\_\_\_\_ Date: \_\_\_\_\_ Notify Receiving:

Additional notifications attached.

**Additional Comments:**

\_\_\_\_\_

## Other Records



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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 #:

0909375D

- 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)

- |                          |                          |                                     |                          |                                     |                          |                                                                                     |
|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Lab Blank, CCV, LCS and DUP met QC criteria                                         |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Hold time is met for all samples                                                    |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Appropriate data qualifier flags are applied                                        |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Manual integrations for samples and QC are properly documented                      |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | Samples analyzed within the project or method specific clock                        |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | Retention times have been verified                                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | Appropriate ICAL(s) included                                                        |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 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 (N<sub>2</sub> 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 41A  
ICV not analyzed

M/Q:

A <sub>1</sub> /A <sub>2</sub> (Analytical Review/Date)	R/T (Reporting Review/Date)	M (Management Review/Date)	Q (QA Review/Date)
A <sub>1</sub> : _____	R: Km 9/30/09	M: Dr 10/5/09	_____
A <sub>2</sub> : _____	T: _____	_____	_____

Note (1): Please check all the appropriate boxes. Indicate "NA" for any statement that does not apply. Rev. 02/20/09  
Note (2): Management reviewer and reporting reviewer must be separate individuals.