

BROOKHAVEN NATIONAL LABORATORY Safety & Health Services Division	NUMBER IH97265
	REVISION Final Rev0
INDUSTRIAL HYGIENE GROUP Standard Operating Procedure: Field Procedure	DATE 09/21/07
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SUBJECT: INSTRUMENT OPERATION	
Q-Trak™ Model 7565 IAQ Monitor	

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1.0 Purpose/Scope

The purpose of this document is to provide a simple field procedure for operating the *Q-Trak™* Model 7565 Indoor Air Quality monitor. With this document the user will be able to use the instrument to capture building environmental data and download all data collected for analysis. The procedure for operating the *Q-Trak™* Model 7565 IAQ monitor is based on the information provided in the operation and maintenance manual.

Indoor Air Quality can positively or negatively affect worker performance. The environmental quality in the work area should be kept as healthy as possible to maximize worker comfort and productivity and to eliminate the need for personal protective equipment. This meter can measure certain parameters of an indoor air quality profile including temperature, relative humidity, carbon dioxide and carbon monoxide levels. These parameters can be indicators of poor indoor quality and point to the need for further investigations into the source of contamination, building HVAC problems or overcrowding of the work area.

2.0 Responsibilities

- 2.1 This procedure will be implemented through the SHSD Industrial Hygiene Group Manager. Use of this SOP shall be limited to persons who act under the direction of a *competent hazard assessment person*.

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- 2.2 Persons using this procedure must have demonstrated competency to satisfactorily use this procedure and instrument to the satisfaction of the qualification criteria set in Section 7. Personnel that perform monitoring with this procedure are responsible to follow all steps indicated.
- 2.3 Persons conducting testing are responsible to document results of the testing in compliance with this SOP and *IH60500 Planning, Sampling, & Reporting Personnel Exposure Monitoring Results*. The data collected using this instrument must have appropriate evaluation of the hazard and risk by a *cognizant IH professional*.
- 2.4 Persons using this method and their supervisor are responsible to ensure that the appropriate personal protective equipment (PPE) is determined and worn while performing this procedure. In addition, the person performing the procedure and his/her supervisor are responsible to ensure that all required training and qualification for hazards that may be present in areas where this procedure will be used (such as respiratory protection or radioactive contamination) have been met.
- 2.5 The persons performing the procedure and their line supervisor are responsible to comply with all work planning and work permit system requirements.
- 2.6 The Industrial Hygiene Group shall maintain the equipment used in this procedure.
- 2.7 Hazard Analysis of the Sampling Task: It is the responsibility of the Qualified Sampler and his/her supervisor to ensure that training is current and the appropriate personal protective equipment is worn. In addition, the person performing this procedure and his/her supervisor are responsible to ensure that all required training and qualification for other hazards that may be present in areas (such as respiratory protection or radiation contamination) have been met. The Qualified Sampler and their line supervisor are responsible to comply with all work planning and work permit system requirements.
- 2.8 The Qualified Sampler is required to request and check the instrument in and out of the IH lab in accordance with the SOP's IH 51200 & 51500.

3.0 Definitions:

Competent Hazard Assessment Person: A person who is approved by the IHG management to use the Q-Trak™ Model 7565 IAQ meter and analyze the results. Approval is based on formal education and experience with IH principles as determined by the IH Group manager.

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Cognizant IH Professional: A person who is approved by the IHG management to direct IH exposure monitoring assessments. Approval is based on formal education and experience with IH principles and knowledge of applicable occupational exposure limits.

Occupational Exposure Limit (OEL): The maximum time weighted average (TWA) exposure permitted for employee exposure, based on the lesser of the OSHA Permissible Exposure Limits (PEL) or ACGIH Threshold Limit Value (TLV). BNL follows the most protective OEL.

Qualified Sampler: A person who has demonstrated competency, in accordance with Section 7, to perform this field procedure.

4.0 Prerequisites

- 4.1 Do not perform work using this procedure without meeting the training and qualification requirements.
- 4.2 Training for entry into restricted areas may be required (check with ESH coordinator or FS Representative for the facility). Use appropriate PPE for the area.

5.0 Precautions

5.1 Hazard Determination:

5.1.1 This test may be done in areas where biological and/or chemical contamination may be present. These contaminants can have significant health effects on susceptible employees and must receive a hazard evaluation by a cognizant ESH professional. This monitor does not generate a hazard to the operator or occupants. The test equipment design does not cause significant ergonomic concerns in routine use. The meter does not have a noise hazard.

5.2 Personal Protective Equipment

5.2.1 Typically, this meter is primarily used for measuring comfort factors in office spaces where there is no risk to the sampler from hazardous levels of chemical or radiological contamination. Personal Protective Equipment is not needed in this scenario.

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5.2.2 For work done where there is a potential for chemical or radiological hazards to be present, a hazard assessment to determine the inherent hazardous conditions, evaluate the degree of hazard to individuals and put in place appropriate protective measures based on the hierarchy of controls is to be done by a cognizant ESH professional.

5.2.3 When the potential for exposure to surface or airborne contaminants exist in the area being sampled, appropriate PPE for hands, feet, skin, head, or eyes may be needed for the area being entered. Check with your FS Representative or IH Group Leader.

5.3 **Radioactive Contamination:** To avoid contamination of the unit it should not be used in areas where there is a potential for airborne radioactive particles.

5.4 **Work Planning:** All requirements of work permits and work planning system reviews must be met in performing this procedure.

5.5 **Job Risk Assessment:** Consult the *Job Risk Assessment* SHSD-JRA-05 for the risk analysis of this operation based on the hazards and controls of this SOP.

5.6 **Environmental Impact and Waste Disposal:** This analyzer does not have adverse impact on the environment or generate hazardous wastes. Refer to *IH50900 IH Group's EMS 14001 Program* for details on the environmental aspects.

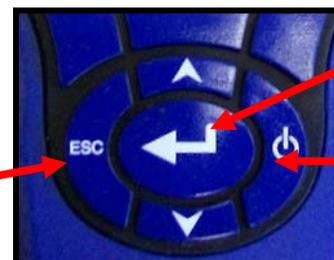
6.0 Procedure

6.1 Equipment: (see Attachment 9.1)

- Q-Trak™ Model 7565 IAQ Monitor.
-
- A/C adapter for continuous monitoring more than 8 hours.
- Data cable for connection to the IH equipment computer and direct printer connection.
- Calibration gases, regulator, tubing and probe sleeve.

6.2 Keys and Symbols

ESCAPE



ENTER

ON/OFF

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6.2 **Turn the unit ON:** Press the *On/Off* key. Once the unit is through the start up procedure it is in the Survey Mode. To turn off the meter press and hold the *On/Off* key during the three second countdown.

6.3 **Calibration of the equipment**

- The manufacturer recommends an annual factory recalibration.
- It is not necessary to calibrate the unit prior to each use. However, as a check, observe the CO₂ readings: it should typically be around 350 parts per million in ambient “clean air”.
- The manufacturer recommends in-house calibration of the instrument for CO and CO₂ monthly. Calibration of the unit will be conducted by the IH lab technician, typically prior to each use of the meter for long term monitoring. Although the concentrations of calibration gas are not hazardous, calibrations in the IH lab will be conducted inside a chemical fume hood.
- It is recommended that the unit be bump checked for carbon dioxide and carbon monoxide before and after each use.

6.3.1 Carbon Dioxide (CO₂) Sensor Calibration: Both zero CO₂ air and a span gas concentration (1000ppm) are needed for the calibration.

- Select **Calibration** from the main menu.
- Select **CO₂** and press the **Enter** key.
- Cover the probe with the calibration collar and ensure a tight fit.
- Install the regulator on the zero calibration gas and connect tubing to the fitting.
- Press the **Enter** key and turn on the gas (0.3 LPM).
- Press the **Enter** key again to begin zero gas calibration. Wait until calibration is complete.
- Press the **Enter** key again. Turn of the gas.
- Attach the regulator to the span gas. Turn the span gas on and press the **Enter** key to begin calibrating.
- When complete the display reads the average concentration and % adjustment..
- Press the **Enter** key to accept, turn off the span gas and remove the calibration collar.

6.3.2 Carbon Monoxide (CO) sensor calibration: Repeat all steps in 6.3.2 with a cylinder containing Carbon Monoxide (35 ppm). Note: 100% nitrogen is not to be used as zero CO air.

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6.3.3 Temperature and Relative Humidity Sensor Calibration: This operation is conducted using reference devices during factory calibration and is not covered in this SOP.

6.4 **Operation of the meter:** The monitor displays all four measurement parameters simultaneously.

General navigation in the meter set-up: When in the survey mode, press the **Menu** key to select the main menu. Use the **up/down arrow** keys to move through the menu and the **Enter** key to select a menu item.

Select the Setup Menu to: change the date/time; clear the memory; calibrate the instrument; or print. See Attachment 9.2 for menus available.

As an example, the temperature may be changed from °F to °C by selecting **Menu; Settings; Select Units; Temperature**; and then °F or °C.

Use the **Enter** key to accept changes made in settings before escaping back through the menu.

6.5 **Logging Data:** The units displayed on the instrument will be the same units that are stored during logging.

6.5.1 **Clear Memory:**

6.5.1.1 Download all data prior to performing the clear memory option. Select **Menu; Datalogging; Delete Data**; then one of the following: Delete All, Delete Test or Delete Sample

6.5.2 **Logging: Press Menu; Data Logging; Log Mode:** The last format remains after shutting off the meter. In log mode the Icon and information show on the meter readout as shown in the diagram..

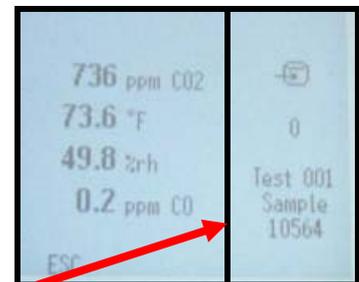
6.5.2.1 **Manual:** prompts user to save sample.

6.5.2.2 **Auto-save:** user manually takes samples that are automatically logged.

6.5.2.3 **Cont. Key:** user starts logging readings



MENU Button



Logging Display

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with **Enter** key. Instrument continues logging until **Enter** key is pressed again.

6.5.2.4 **Cont Time:** user starts readings with **Enter** key and instrument continues logging for set time period. To set log period, **Esc** back in the menu and select **Log Settings**. You can change the log interval as well as the test length.

6.6 **Download Data:** The instrument must be connected to a computer with the *Q-Trak Monitor* software installed.

- 6.6.1 Turn on the monitor and start the **Trak Pro** software (version 4.0.2 or later).
- 6.6.2 Connect the USB cable to the computer and the instrument. The instrument auto detects the USB connection and will show USB connected in the display.
- 6.6.3 In TrakPro, Select **File** then **Receive**. You can select a specific test by highlighting it or you can select receive all tests. Once all selected tests are downloaded close the pop-up.
- 6.6.4 Highlight the test to view and select **Graph; New; Graph Logged Data Test**. In the pop-up, name the graph and input the Main and Sub Titles for the graph. Check the box for the test and **OK**. For sample see Attachment 9.3.
- 6.6.5 In the graph view, select **File; Print; HP 4650** (for color print) and **OK**. Save the file and close the graph.
- 6.6.6 To view and print the summary statistics;
- 6.6.7 Highlight the test; select **Reports** and then the type of report:
Test Statistics Report is a summary version
Data Statistics Report is a full line-by-line sample result table
- 6.6.8 After viewing the report select **File** then **Print**. For Sample Report see Attachment 9.4.
- 6.6.9 Turn off the unit: Press and hold the **On/Off** button to turn the unit off. All data will be stored for later review and downloading.

7.0 **Implementation and Training**

- 7.1 Monitoring shall be performed only by persons who have demonstrated the competence to satisfactorily perform the tests as evidenced by experience and training. For SHSD personnel, the qualification to use this procedure, demonstration of competency, and qualification is documented using Attachment 9.5 *Job Performance Measure*.

The only official copy is on-line at the SHSD IH Group website.
 Before using a printed copy, verify that it is current by checking the document issue date on the website.

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- 7.2 Qualification Frequency & Recordkeeping: The supervisor of *Qualified Samplers* is responsible to ensure that the employees remain competent in the operation of this meter.
- Personnel shall be re-qualified when there is evidence that they do not clearly understand the principles of operation of this meter.
 - The re-qualification frequency is 3 years. However, if a person has not used this instrument for a period of 12 months from the date of last qualification, demonstration of competency to perform this procedure to the satisfaction of the supervisor may be required before sampling commences.
 - If significant and substantive changes to the procedure are made, *Qualified Samplers* will be notified of the changes.

8.0 References

- 8.1 TSI Incorporated Operation and Service Manual: *Q-Trak™* Model 7565 IAQ Monitor, PN: 198057 RevB, 2007..

9.0 Attachments

- 9.1 Views of Meter
- 9.2 Menu Displays
- 9.3 Sample of *Output Chart*
- 9.4 Sample of *Output Summary Report*
- 9.5 *Job Performance Measure*

10.0 Documentation

Document Development and Revision Control Tracking		
Prepared By: <i>(signature/date on file)</i> J. Peters 09/21/07 Certified Industrial Hygienist	Reviewed By / Date: <i>(signature/date on file)</i> R. Selvey 09/21/07 Certified Industrial Hygienist	Approved By / Date: <i>(signature/date on file)</i> R. Selvey 09/21/07 Industrial Hygienist Group Leader
ESH Coordinator/ Date: <i>none</i>	Work Coordinator/ Date: <i>none</i>	SHSD Manager / Date <i>none</i>

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QA Representative / Date: <i>none</i>	Training Coordinator / Date: <i>none</i>	Filing Code: IH52
Facility Support Rep. / Date: <i>None</i>	Environ. Compliance Rep. / Date: <i>none</i>	Effective Date: 09/21/07
ISM Review - Hazard Categorization <input type="checkbox"/> High <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Low/Skill of the craft	Validation: <input type="checkbox"/> Formal Walkthrough <input type="checkbox"/> Desk Top Review <input checked="" type="checkbox"/> SME Review Name / Date:	Implementation: Training Completed: Tracked in BTMS Procedure posted on Web: 09/21/07 Hard Copy files updated: 09/21/07 Document Control: 09/21/07

Revision Log		
Purpose: <input type="checkbox"/> Temporary Change <input type="checkbox"/> Change in Scope <input type="checkbox"/> Periodic review <input type="checkbox"/> Clarify/enhance procedural controls		
Changed resulting from: <input type="checkbox"/> Environmental impacts <input type="checkbox"/> Federal, State and/or Local requirements <input type="checkbox"/> Corrective/preventive actions to non-conformances <input type="checkbox"/> none of the above		
Section/page and Description of change:		
<i>(signature/date on file)</i> SME Reviewer/Date:	<i>(signature/date on file)</i> Reviewer/Date:	Reviewer/Date:

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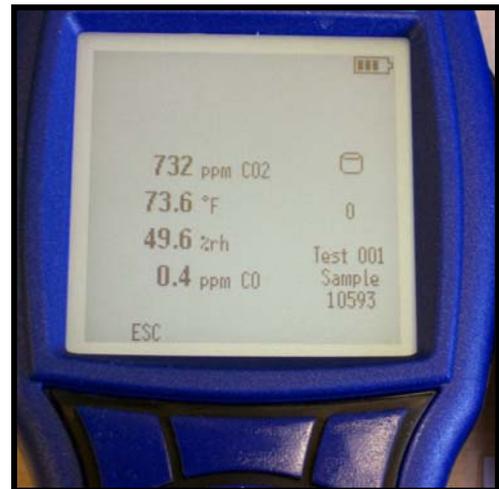
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Attachment 9.1

Meter and Menu Displays



Standard Test Display



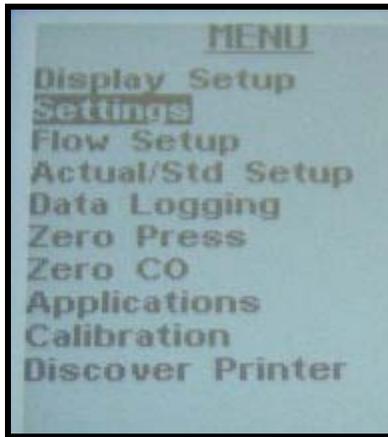
Logging Test Display

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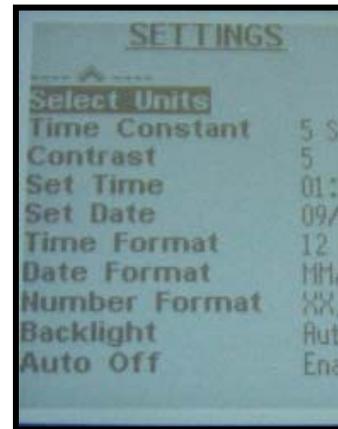
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Attachment 9.2

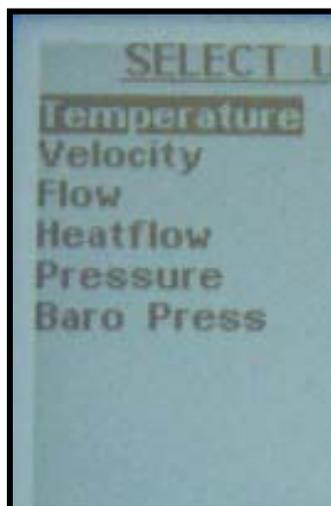
Menu Displays



1.0 Main Menu



2.0 Settings Menu

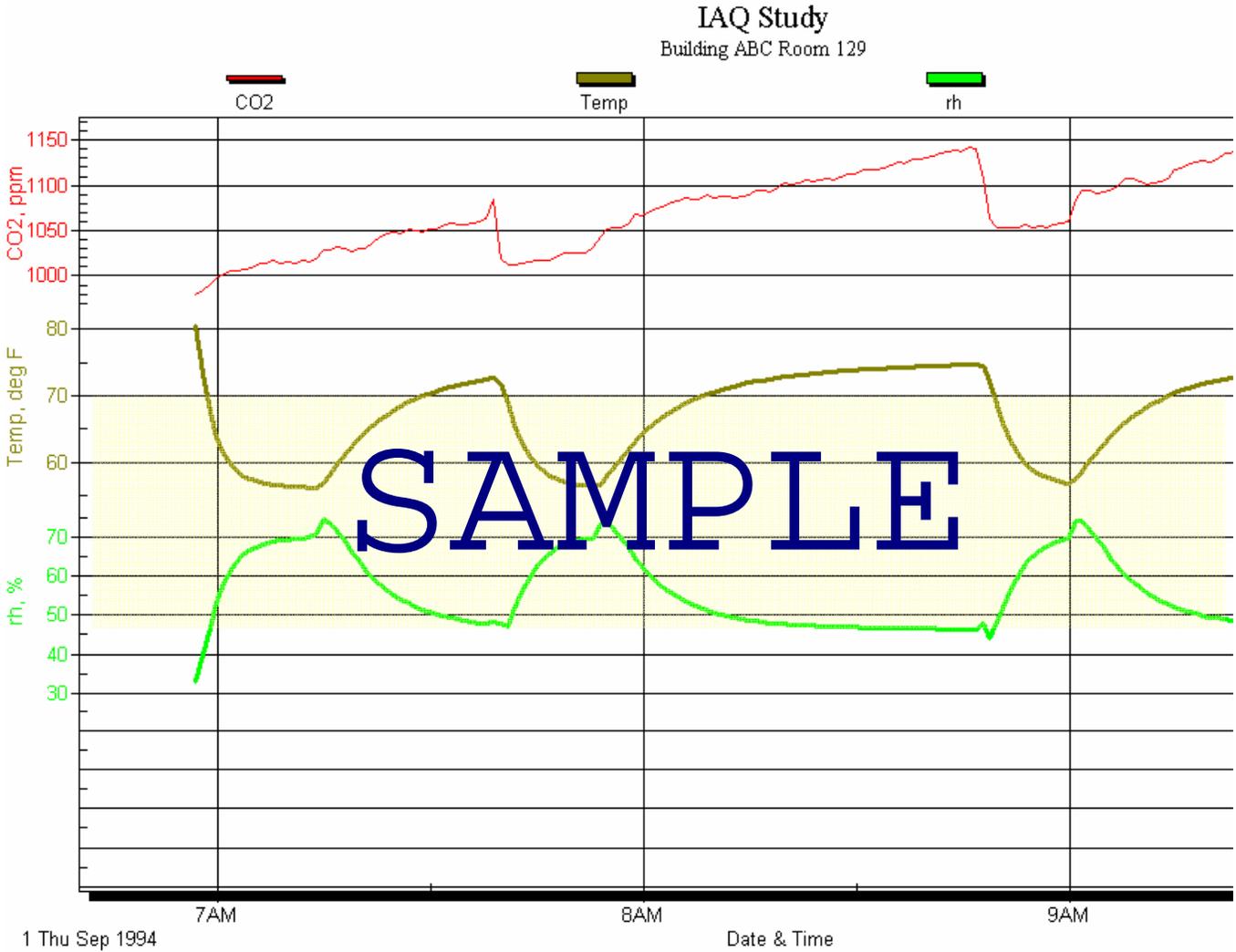


3.0 Units Menu

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Attachment 9.3 Sample Chart



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Attachment 9.4 Sample Summary Report

Current Test: 005				
Start Time: 16:17:04 08/30/2007				
Stop Time: 10:10:04 09/14/2007				
Total Time: 14:17:53:00				
Logging Interval: 60 seconds				
Serial Number: 8554-04031064				
Sensor:	CO2	CO	Temp	rh
Cal. Date:	04/10/2007	04/10/2007	04/10/2007	04/10/2007
SAMPLE				
Channel:	CO2	CO	Temp	rh
(Units)	ppm	ppm	deg F	%
Average:	433	0.0	83.2	43.1
TWA (8 hr):	473	0.0		
Minimum:	340	0.0	60.3	29.2
Time	17:26:04	16:18:04	23:15:04	15:24:04
Date	09/03/2007	08/30/2007	09/10/2007	09/05/2007
Maximum:	890	0.1	91.8	72.5
Time	16:07:04	15:17:04	16:45:04	08:58:04
Date	09/11/2007	09/02/2007	09/09/2007	09/11/2007

Operation of the Q-Trak Model 7565 IAQ Monitor Job Performance Measure (JPM) Completion Certificate

Candidate's Name	Life Number:
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Knowledge of the Principles of IAQ Investigations

Criteria	Qualifying Standard	Unsatisfactory	Recovered	Satisfactory
Hazard Analysis	Understands the need to perform a hazard analysis of the sampling area and potential exposure to the sampler.			
Personal Protective Equipment	Understands the need to be aware of the potential IAQ causing agent to sampler and knows how to determine the need for PPE.			
Sampling Protocol	Understands the exposure monitoring logic necessary to appropriately select sampling locations to accurately measure worker, public and environmental exposure potential.			
Analysis of data	Understands the need to perform analysis on the sampling data to assess potential exposure to the sampler, worker, public and environment, and to recommend corrective actions as necessary, and employee notification.			

Practical Skill Evaluation: Demonstration of Sampling Methodology

Criteria	Qualifying Performance Standard	Unsatisfactory	Recovered	Satisfactory
Sampling Equipment	Knows where equipment needed for the procedure is located and how to properly sign it out.			
Meter Operation	Demonstrates the proper way to set up, turn on and use the meter.			
Record forms	Shows how to correctly and completely fill all forms associated with this SOP.			
Data Analysis	Shows how to correctly have the data analyzed and compared to occupational exposure limits. Knows the correct OELs.			
Employee Notification	Knows how to timely and properly notify workers and management of over exposure. Knows how to inform workers and management of exposure that is within OEL.			

Employee: I accept the responsibility for performing this task as demonstrated within this JPM and the corresponding SOP.

Candidate Signature:	Date:
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Evaluator: I certify the candidate has satisfactorily performed each of the above listed steps and is capable of performing the task unsupervised.

Evaluator Signature:	Date:
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