

<b>BROOKHAVEN NATIONAL LABORATORY</b> Safety & Health Services Division  <b>INDUSTRIAL HYGIENE GROUP</b> Standard Operating Procedure: Field Procedure	NUMBER <b>IH97250</b>
	REV. <b>SHSD FINAL rev0</b> <b>RCD Review Draft</b>
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### **1.0 Purpose/Scope**

The purpose of this document is to provide a simple field procedure for operating the KD451A Indoor Air Quality monitor. With this document the user will be able to use the machine to capture building environmental data and download all data collected for analysis. The procedure for operating the KD451 I.A.Q. monitor is based on the information provided in the operator guide.

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**

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- 2.1 This program is implemented through the SHSD Industrial Hygiene Group. The IH Group Leader may assign the duties to a *Program Administrator*. Members of the SHSD Industrial Hygiene Group, the Radiation Control Division Facility Support Group, and Plant Engineering can qualify to perform tasks in this program based on their approval by the Industrial Hygiene Group Leader or Program Administrator.
- 2.2 Personnel who have demonstrated competency in performing tasks, in accordance with this procedure, will be qualified to serve as Qualified Sampler by the Group Leader, Program Administrator, or their designee.
- 2.3 Data Quality Control procedures: The qualified sampler is responsible for the integrity of the data until properly transferred to the IH Group laboratory using the SHSD established procedures. To have the data included in the SHSD IH group databases, approval of the data by the IH Group Leader or designee is required. Approval will be contingent on documentation that appropriate sampling procedures were followed including calibration checks before, during and after the work, submittal of an appropriate data form and any other requested documentation to the IH group.
- 2.4 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 hazards that may be present in areas where this procedure will be used (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.
- 2.5 Emergency Procedures: It is the responsibility of the Qualified Sampler to know and understand the emergency procedures in case of an accident or loss of the equipment.
- 2.6 Log In/Out: The Qualified Sampler will complete the sign in/out log in the IH equipment room prior to and after each daily use. The instrument is to be returned to the IH equipment room at the end of each days use.

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### 3.0 Definitions

- 3.1 ***I.A.Q. profile***: A description of the features of the building structure, function, and occupancy that impacts indoor air quality.
- 3.2 ***Program Administrator***: A person designated by the IH Group Leader or SHSD management to administer this procedure and the associated program of IAQ data management.
- 3.3 ***Qualified Sampler***: A person who has demonstrated competency, in accordance with Section 6, to perform this field procedure and is approved to independently use the KD451-A and interpret results.

### 4.0 Prerequisites

- 4.1 **Training**: The SHSD Industrial Hygiene Group Leader, Program Administrator, or their designee will qualify personnel in the use and interpretation of results from the KD 451A.
- 4.2 **Qualification Criteria**: The qualification criteria to perform this procedure are:
  - 4.2.1 Knowledge of industrial hygiene practice (awareness level).
  - 4.2.2 Specific knowledge of this procedure.
  - 4.2.3 Demonstrated competency in performing this test to the satisfaction of the IH Group Leader, Program Administrator, or designee via:
    - 4.2.3.1 Visual observation of proper detector usage technique.
    - 4.2.3.2 Ability to answer questions on the sampling procedures, custody of the instrument and emergency procedures during sampling and transportation.
    - 4.2.3.3 Knowledge of the appropriate personal protective equipment for the hazards of this particular type of sampling.
  - 4.2.4 **Qualification Frequency & Recordkeeping**: The supervisor of employees qualified to use this instrument are responsible to ensure that the employees remain competent in the operation of this meter.
    - 4.2.4.1 Personnel shall be re-qualified when there is evidence that they do not clearly understand the principles of operation of this meter.
    - 4.2.4.2 If a person has not used this instrument for a period of over 12 months from the date of last qualification, demonstration of

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competency to perform this procedure to the satisfaction of the supervisor will be required before sampling commences.

4.2.4.3 If significant and substantive changes to the procedure are made, Qualified Samplers will be notified of the changes.

4.2.5 **Meter Use Tracking:** A sign in/out log is required for distribution of the instrument and will be completed prior to and upon return of the instrument. Required information includes the users name, location(s) the instrument will be used, and a phone or pager number allowing contact of the user while the instrument is in their possession.

4.3 Prior to use of the KD451A I.A.Q. monitor, verify its operability, battery power, and calibration.

## **5.0 Precautions**

### **5.1 Hazard Assessment:**

5.1.1 **Typical Use:** This meter is primarily used for measuring comfort factors in office spaces and as such does not pose a risk to the sampler from hazardous levels of chemical or radiological contamination.

5.1.2 **Hazardous Areas:** For work done under this SOP where there is a potential for chemical or radiation hazards to be present, there shall be 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.

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

5.2 **Waste Disposal/Pollution Prevention:** Under all use pattern, this instrument does not generate hazardous waste.

### **5.3 Personal Protective Equipment:**

5.3.1 **Typical Use:** This meter is primarily used for measuring comfort factors in office spaces where there is no risk to the sampler from hazardous levels of

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chemical or radiological contamination. **Personal Protective Equipment is typically not needed in this scenario.**

- 5.3.2 **Hazardous Areas:** For work done where there is a potential for chemical or radiation hazards to be present, there shall be 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.

## **6.0 Procedure**

### **6.1 Equipment**

- 6.1.1 KD451 Indoor Air Quality Monitor
- 6.1.2 KD451A I.A.Q. monitor KD DATA PRO Software
- 6.1.3 Data cable for RS231 interface with meter

### **6.2 Data Logging**

- 6.2.1 **ON/OFF:** Turn the I.A.Q. Monitor on by holding the **On/Off** button until the screen activates. Scroll through the screens, by pushing **Screen**, to
  - verify the time information and
  - assure that the battery is at a satisfactory level. (For long sampling period- over 1 day), use the AC adapter.)
- 6.2.2 **WARM UP:** (determined by meter, self-timing)
- 6.2.3 **SAMPLING:** Once the machine has completed warming up, the display will begin showing real-time data. To log this data into the machine:
  - From the first I.A.Q. monitor menu, select **Change Interval**. Set the desired interval by pressing the up or down arrows.
  - Press the **Menu/Enter** button to save the data-logging interval and return to the Real-Time Readings screen.
- 6.2.4 **CLEAR MEMORY:** To erase all data and locations, from the I.A.Q monitor menu, select **Reset Memory** to get the erase screen. To proceed with the erasure, press the **Menu/Enter** button.

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6.2.5 **LOCATION MARKING:** To take samples in several places, from any I.A.Q. monitor screen, press the **Location** button to mark a new location. The I.A.Q. monitor automatically marks a new location every time it is turned on.

6.2.6 **TURN OFF:** Turn off the KD451 I.A.Q. monitor by holding the **On/Off** button for approximately seven seconds.  
(Note: stored data is maintained).

### 6.3 Computer Downloading of Stored Data

6.3.1 The following system requirements are necessary to run the software.

Microprocessor: 486 or higher  
Available memory: At least 8 MB  
Operating system: Microsoft Windows 3.1 or 3.11  
Microsoft Windows 95

6.3.2 **Installation** (Only required the first time on the computer)

6.3.2.1 Start Windows.

6.3.2.2 Insert the setup disk into the proper drive.

6.3.2.3 If you are running Windows 3.1 or 3.11, select **Run** from the **File** menu in Program Manager to receive the Run dialog box. In the **Command Line** text box, type **A:\SETUP** and click **OK**.

6.3.2.4 If you are running Windows 95, click the **Start** button on the task bar, and select **Run** to receive the Run dialog box. In the **Open** text box, type **A:\SETUP**, and click **OK**.

6.3.2.5 Follow the instructions on your screen.

6.3.3 **Downloading**

6.3.3.1 Before you can retrieve logged data, ensure the monitor is cabled to the DB-9 serial port on your computer and turned on.

6.3.3.2 To retrieve logged data from the monitor, select **Retrieve Data** from the **Monitor**. This data will be in table format.

## 7.0 References

2.1 KD451 Indoor Air Quality Monitor Operator Guide, 07/99

The only official copy is on-line at the SHSD IH Group website.  
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2.2 KD Data Pro Software User's Guide, 02/00

## 8.0 Attachments

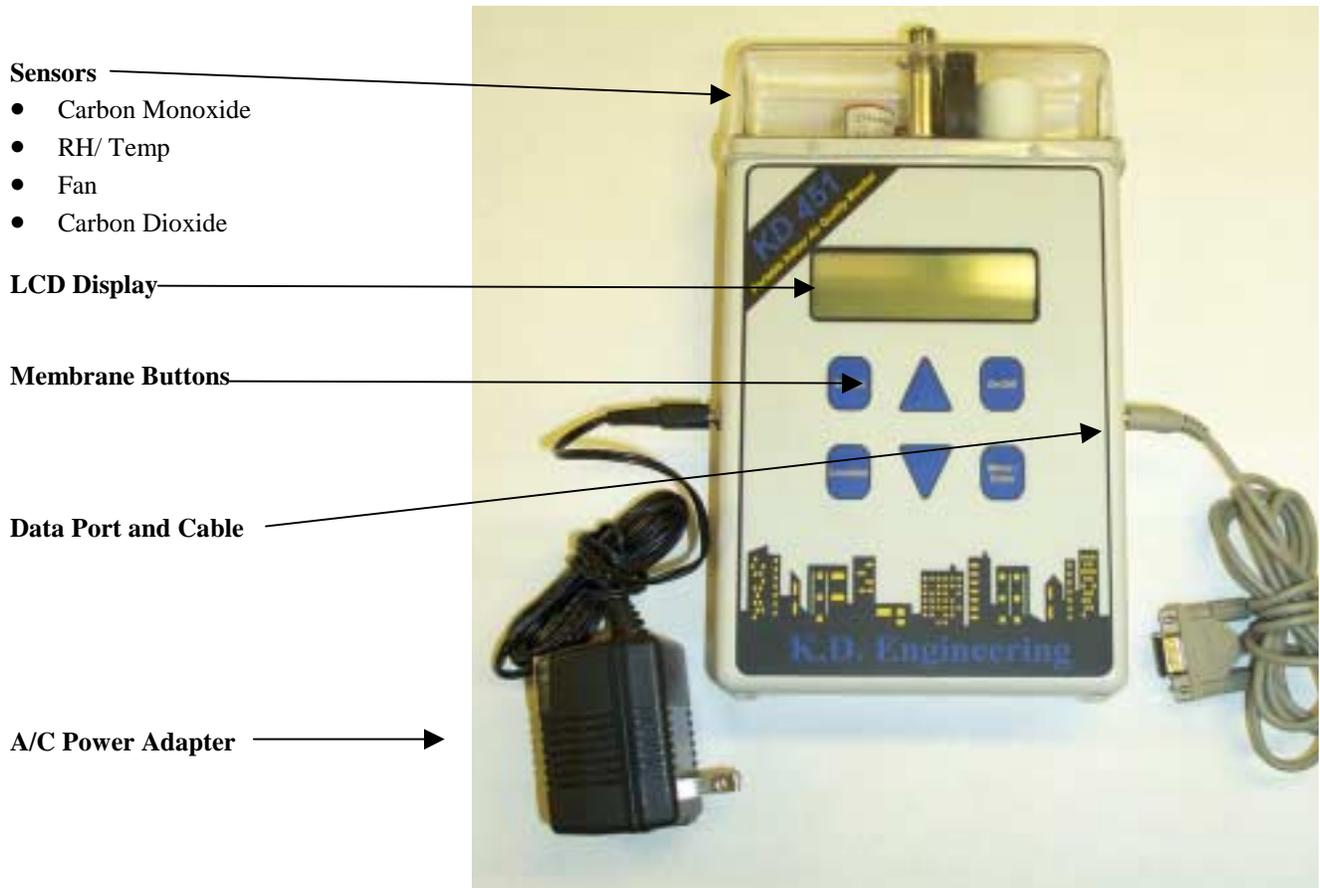
**8.1 Photograph of meter**

**8.2 Short Operating Instructions**

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## Attachment 8.1 Photograph of meter



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## Attachment 8.2

### Short Operating Instructions

	Step	User Action	Display
1	<b>Turning On</b>	Press the <b>ON/OFF</b> button once.	Screen activates to:
2	<b>Check Time/Date</b>	Scroll through the screens, by pushing <b>Screen</b> , to verify the time information and assure that the battery is at a satisfactory level.	
3	<b>Warm Up</b>	(determined by meter, self-timing).	Warming Up displayed until sensor warms up.
4	<b>Set Logging Rate</b>	Select <b>Change Interval</b> . Set the desired interval by pressing the up or down arrows.	
5	<b>Clear Memory</b>	To erase all data and locations, select <b>Reset Memory</b> to get the erase screen. To proceed with the erasure, press the <b>Menu/Enter</b> button.	
6	<b>Taking Readings</b>	Press the <b>Menu/Enter</b> button to save the data-logging interval and return to the Real-Time Readings screen.	Once the machine has completed warming up, the display will begin showing real-time data.
7	<b>Location Marking</b>	Press the <b>Location</b> button to mark a new location. The I.A.Q. monitor automatically marks a new location every time it is turned on.	
8	<b>Turning Off</b>	Press the <b>ON/OFF</b> button and hold for 7 seconds. (Note: stored data is maintained).	Display goes blank

