**The Pollution Detectives, Inc.**
**1012 Westlake Drive, Kannapolis, NC 28081**
**info@thepollutiondetectives.org**
**904-616-8024 (P)**

# Protocol for Surveying Indoor Air Quality in Your Home, School, or Workplace

## Introduction

The Pollution Detectives is a North Carolina 501(c)(3) not-for-profit which educates citizens about threats to human health by "making the invisible visible." One of our focus areas is pollution inside homes, schools, and workplaces. For background information on this issue, please visit **Right Under Our Noses**.

To aid administrators, teachers, operations personnel and lay people in measuring pollutants, we lend a variety of detection devices. Each piece of equipment we lend is worth a lot of money, and we have constant demand for them, so we want to make sure you operate it prudently.

The purpose of this document, therefore, is to explain how to sample air inside a home, school, or workplace correctly and with care. **It is not intended to explain the social policy or the science behind this project.** For a detailed history of those issues and the huge opportunity to improve indoor air quality in America's schools and other organizations, see a document on our website entitled **Startling Facts About Pollution in Schools**.

## Steps to Surveying Indoor Air Quality

These are the steps you should take to successfully sample a building's indoor air quality:

1) **Use the form below entitled "Attachment One"** to provide **complete contact information** for the person in your home or organization who will be responsible for operating the monitors. Fill in all the required fields on the form.

   In Step 4, you will return this form to us, along with other items, using the email (or physical) address at the top of this document.

2) **Determine the rooms in which you will sample air quality with monitors**. Consider a variety of room types and locations, as well as the potential for exposure to polluted air. Do not plan on monitoring dining halls, gymnasiums, or other large, open areas.

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**If you are surveying a building that is not your residence and are unfamiliar with different heating, ventilation and cooling (HVAC or "air conditioning") systems,** talk to your building maintenance staff about the design, obtain a blueprint, and read the following.

As you examine the blueprint for your organization, you may encounter one or more of the following HVAC designs:

a. A single large HVAC system can have a number of air pipes or ducts that service different parts of the building. For example, rooms on the left side of a hallway may have different piping or ductwork to carry the air than rooms on the right side of the same hallway. In a surprising number of cases, even though the air conditioning was all done by one big central machine, some offices or rooms are great, and others across the hall are not. This has to do with various internal parts and pieces that may need adjustment. For this reason, **with a unified HVAC system, plan on sampling from both sides of a hallway**.

b. In other cases, your building's air-conditioning equipment may have half a dozen distinct "trees," each with its own central "trunk," or central unit, along with many "branches" to hallways and rooms. To adequately address this design, monitor the first and last room on every branch of the tree.

c. And in still other cases, **each room has its own** individual air conditioner. Buildings with this design require samples from the greatest number of rooms, since air quality is contingent upon the effectiveness of each individual unit.

3) **Establish a Plan for Surveying the rooms you have designated in Step 2 (Attachment Two),** including the number of rooms and monitors required and the total time period in which they will be used.

Each room requires a minimum of **5 monitor days** to obtain adequate samples. (You can install a monitor on Friday afternoon and remove it the following Friday, or install it on Monday morning and remove it in the evening on Friday.) Your plan, for example, may consist of surveying 10 rooms with 5 monitors borrowed for a total of two weeks or 10 monitors borrowed for a total of one week.

Depending on the size of your building(s) and the availability of monitors from our inventory, it may take as little as a week or as long as several months to obtain data that help you improve air quality for room occupants.

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4) **Return Attachments One and Two to The Pollution Detectives, Inc.** You can scan and email attachments to info@thepollutiondetectives.org, or send them by first class mail to the address at the top of the attachment.

5) After we have received Attachments One and Two, we will deliver the monitors you requested, along with a receipt that lists these monitors by serial number (**Attachment Three** provides an example.) **When you receive the receipt, sign and date the blue portion of Attachment Three, and scan and email it, or send a paper copy** to The Pollution Detectives, Inc., using the contact information at the top of the attachment.

6) **Place your monitors** in your designated rooms by following these instructions:

   a. Note that each monitor, regardless of manufacturer, has a small fan, a place where air is sucked in, and after electronic sampling, another place where air is pushed out. This goes on continuously. It is vital that there be no external blockage of either intake or exhaust.

   b. Monitors should be placed **a minimum of two feet above the floor (**about waist high**)**, **and** to the extent possible, **one foot away from walls, windows, air intake and exhaust vents, laboratory Bunsen burners, copy machines, and other mechanical or electrical devices** that would falsely present the overall average air quality in the room.

   **Attachment Five provides an example of effective placement.**

7) After placement, you can help us answer any questions you have if you **take a photograph of each monitor in its exact location.** All monitor placements must be documented by photos (which should not include a person's face). **Each photo should include a post-it note beside the monitor with the following information:**

   - **name of organization,**
   - **date of placement,**
   - **room number, and**
   - **serial number of the monitor**.

   **Attachment Five provides an example of a photo with the required information.**

   **Email your photos** to us using the contact information at the top of this page.

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8) As you measure the air quality in your organization, you may need to relocate an air monitor to a new room to begin another survey. When this occurs, please document the new location with a table similar to the one shown in **Attachment Six**.

9) **When you finish your monitoring,** mindful of the value of the equipment we have lent to you, check to make sure you are returning everything we sent. **Please complete all parts of Attachment Four**. **When Attachment Four is complete, scan and email it, or send a paper copy** to The Pollution Detectives, Inc., **using the contact information at the top of this document**.

**AND do not hesitate to contact us with questions or concerns!**

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## ATTACHMENT ONE
## CONTACT INFORMATION FOR EQUIPMENT OPERATORS

**Operator(s) Placing Equipment**

Name(s) Title
Phone
Email Address
School or Organization
Physical Address, School/Organization

Website Address

**Other Notable Personnel (e.g., Supervisor Evaluating Data)**

Name(s) Title
Phone
Email Address
Physical Address, if different from above

**Scan and email your contact information, along with your Plan for Surveying (Attachment Two), or mail them, to The Pollution Detectives, Inc.**, using the contact information at the top of this document.

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## ATTACHMENT TWO
## PLAN FOR SURVEYING

If you are surveying a school or workplace, you will probably need to complete the information below to ensure you receive accurate measurements and reports of indoor air quality (see * at bottom for further information). **Home borrowers, however, are exempt from items with an asterisk.** If you are unsure of any item, please provide your best estimate. Please list additional Rooms (e.g., 4, 5 and 6), as necessary.

**When you have completed your Plan for Surveying and your Contact Information (Attachment One), scan and email them, or mail them via USPS, to The Pollution Detectives, Inc., using the contact information at the top of this document.**

Date of Construction for the Building Surveyed (*e.g., 2001)*:*

Total Number of Rooms to be Surveyed *(e.g., 5)*:

Total Number of Monitors Requested *(e.g., 10)*:

Total Time Required to Survey *(e.g. 2 weeks)*:

**Room 1**

*Location (e.g., Family Room):*

*Square Footage:**

*Number of Occupants:**

**Room 2**

*Location:*

*Square Footage:**

*Number of Occupants:**

**Room 3**

*Location:*

*Square Footage:**

*Number of Occupants:**

***Items with an asterisk are only required if you would like to receive digital reports that can be readily emailed or printed to share with others.** The program that produces these reports requires information for the requested items. Please be aware that The Pollution Detectives, Inc., may not have the requested number of monitors in inventory. In this case, we will work with recipients to amend the Plan for Surveying.

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## ATTACHMENT THREE
## EQUIPMENT RECEIPT

**When you take possession of a monitor** from The Pollution Detectives, Inc., please complete the **blue** below. **Scan and email the form, or send a copy of it by regular postal service, to The Pollution Detectives, Inc.,** using the contact information at the top of this document.

### RECIPIENT OF EQUIPMENT

Name(s) Title
Phone
Email Address

### Equipment in My Possession

Please check all that apply.

- ☐ **Indoor Air Quality Monitor** Number (1-10): _____
- ☐ **Moisture Detection Meter (Mold)**
  Number (1-10): _____
- ☐ **Thermal Camera**
  Number (1-10): _____
- ☐ **Lead in Drinking Water Detector**
- ☐ **Refrigerant Leak Detector**
- ☐ **Radon Meter**
  Number (1-10): _____

**I, _____, confirm that on the date indicated**
**Print Name**
**below I received from The Pollution Detectives, Inc., the equipment in the checklist above.**

_____ _____

**Signature** **Date**

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## ATTACHMENT THREE (continued)
## EQUIPMENT RECEIPT*

*For borrowers who survey a school or office; home borrowers need not complete.

| Monitor No. | Serial No. | Date Shipped by TPD, Inc. | Date Received | Date Returned |
|---|---|---|---|---|
| 32678 | 5200326780 | 02/04/2024 | **02/07/2024** | **03/08/2024** |
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## ATTACHMENT FOUR
## EQUIPMENT RETURN

**When you return a monitor** to The Pollution Detectives, Inc., please complete the **black** form below. **Scan and email the form, or send it by regular postal service, to The Pollution Detectives, Inc.,** using the contact information at the top of this document.

### PERSON RETURNING EQUIPMENT

Name(s) Title
Phone
Email Address

### Equipment Returned to The Pollution Detectives, Inc.

Please check all that apply.

- ☐ **Indoor Air Quality Monitor** Number (1-10): _____
- ☐ **Moisture Detection Meter (Mold)**
  Number (1-10): _____
- ☐ **Thermal Camera**
  Number (1-10): _____
- ☐ **Lead in Drinking Water Detector**
- ☐ **Refrigerant Leak Detector**
- ☐ **Radon Meter**
  Number (1-10): _____

**I, _____, confirm that on the date indicated**
**Print Name**
**below I mailed to The Pollution Detectives, Inc., the equipment in the checklist above.**

_____ _____

**Signature** **Date**

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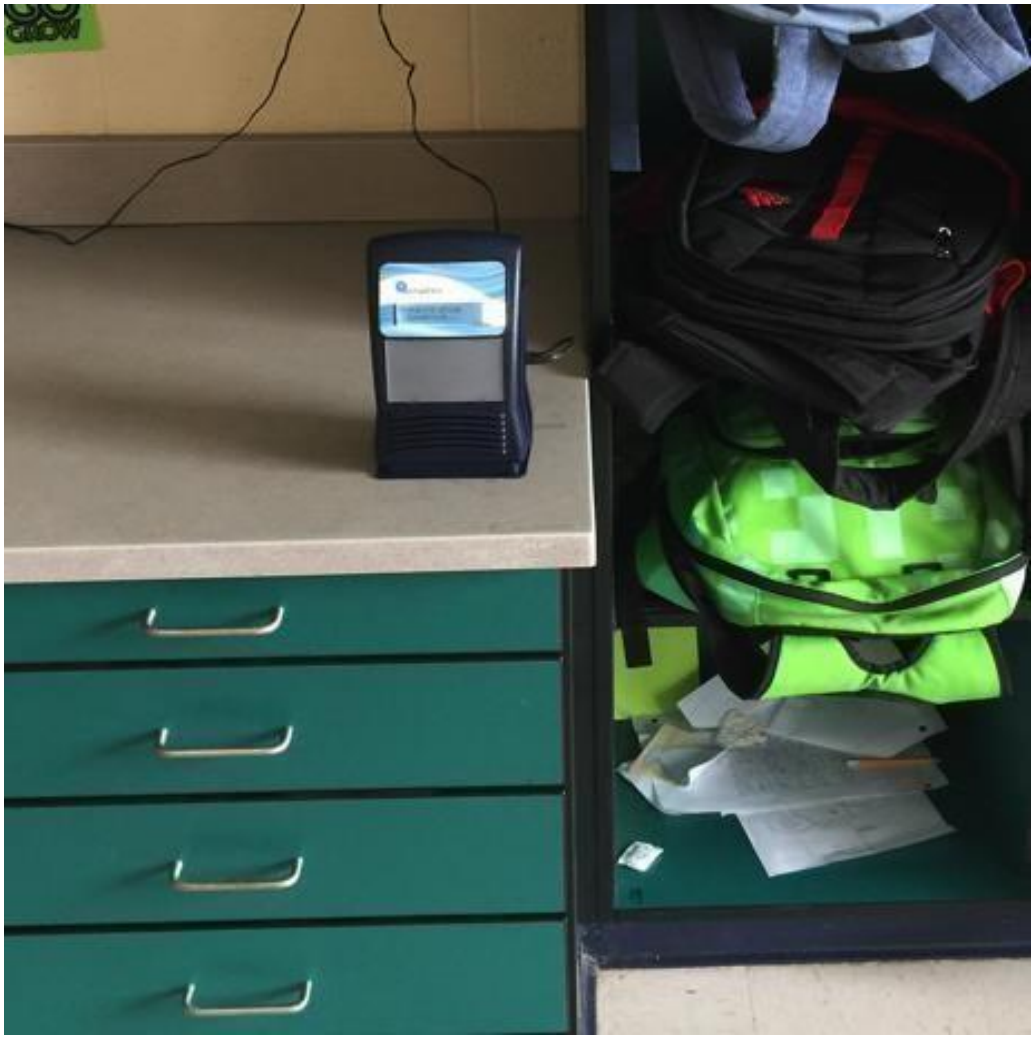
## ATTACHMENT FIVE
## PHOTOGRAPHING IAQ MONITOR PLACEMENT

### GOOD placement in a SCHOOL or WORKPLACE



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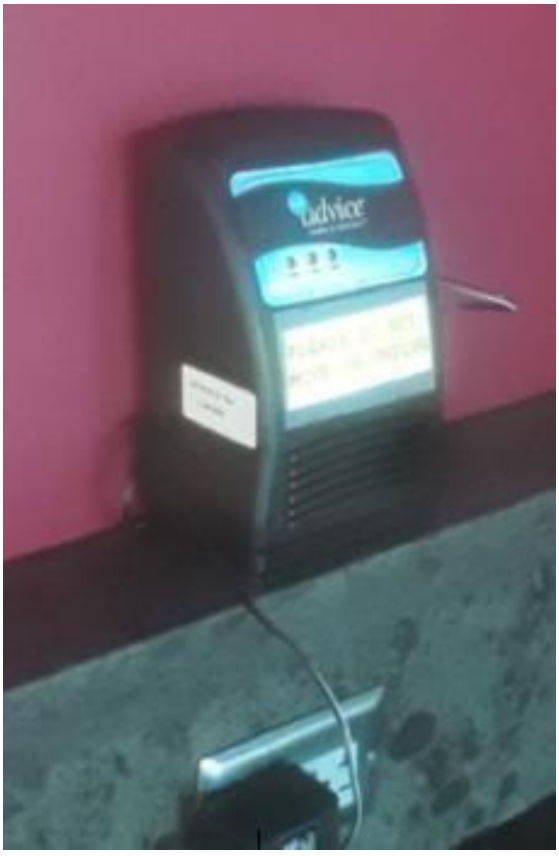
## ATTACHMENT FIVE (continued)
## PHOTOGRAPHING IAQ MONITOR PLACEMENT

### POOR placement in a SCHOOL or WORKPLACE

In the photo on the left, you can see that the back vent, where air is supposed to exit the monitor, is blocked.




In the photo on the right, the monitor is placed on top of a device that is likely to influence monitor readings.

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## ATTACHMENT FIVE (continued)
## PHOTOGRAPHING IAQ MONITOR PLACEMENT

### POOR placement in a HOME

In both photos, the monitor is placed on top of a heat source which can influence measurements. In the photo on the right, the monitor is also placed in front of an area in which air can easily be trapped, skewing your results.

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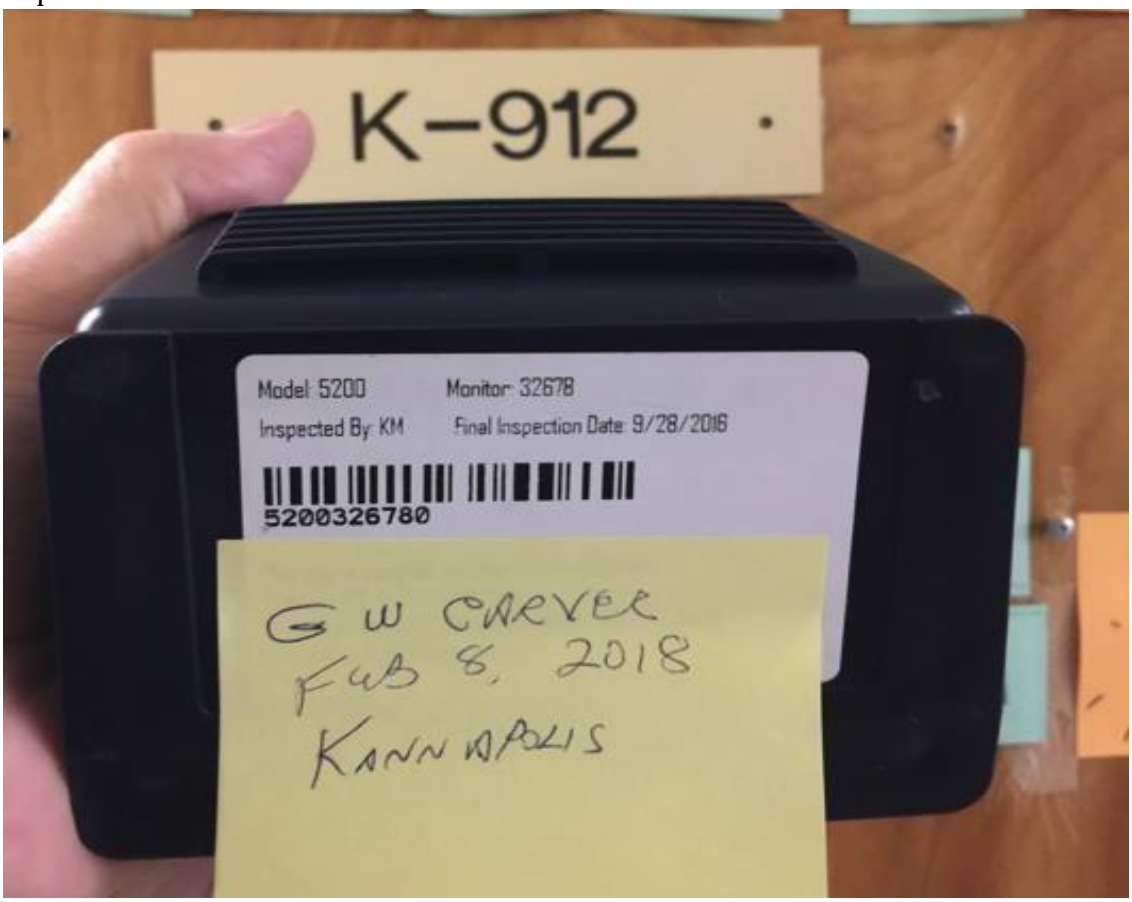
## ATTACHMENT FIVE (continued)
## PHOTOGRAPHING IAQ MONITOR PLACEMENT

**Photos**
All monitor placements must be documented by photos (which should not include a person's face). **Each photo should include a post-it note beside the IAQ monitor with the following information:**

- **name of organization,**
- **date of installation,**
- **building and room number, and**
- **serial number of the monitor**.

**This is a good example** of a monitor photo taken at the location of placement, with all the required information.



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## ATTACHMENT SIX
## DOCUMENTATION OF IAQ MONITOR INSTALLATION

**Please create a form like the one below documenting the information shown in your photos, along with the dates IAQ monitors are moved from one building or room to another, as applicable.**

**NAME OF ORGANIZATION** _____

| Installer | Building Name | Room No. | Monitor No. | Date Installed | Date Removed | Photo Y/N |
|---|---|---|---|---|---|---|
| *Mr. Jones* | *G.W. Carver* | *K-912* | *32678* | *02/08/2024* | *02/15/2024* | *Yes* |
| *Mr. Jones* | *G.W.Carver* | *K-914* | *32678* | *02/15/2024* | *02/22/2024* | *Yes* |
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