

The Pollution Detectives, Inc.
1012 Westlake Drive, Kannapolis, NC 28081
info@thepollutiondetectives.org
904-616-8024 (P); 704-934-2082 (F)

Protocol for Surveying Indoor Air Quality in Schools

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 schools. For background information on this issue, please visit [Right Under Our Noses](#).

To aid administrators, teachers and operations personnel in measuring pollutants, we lend a variety of detection devices. Each piece of equipment we lend is worth approximately \$2,000, 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 school 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 employee in your 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.

If you are unfamiliar with different heating, ventilation and cooling (HVAC or “airconditioning”) systems, talk to your building maintenance staff about the design, obtain a blueprint, and read the following.

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

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- 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.

- 4) **Return Attachments One and Two to The Pollution Detectives, Inc.** You can scan and email attachments to info@thepollutiondetectives.org, fax them to 704-934-2082, 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, and scan and email it, fax 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:

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- 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 Four provides an example of effective placement.

- 7) After placement, **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 Four 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.

- 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 Five**.
- 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. **Sign and date the black portion of the receipt you filled out in Step 8.** **Attachment Three** provides an example. **Scan and email the receipt, or fax it, or send a paper copy** to The Pollution Detectives, Inc., using the contact information at the top of this document.

Do not hesitate to contact us with questions or concerns!

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**ATTACHMENT ONE
CONTACT INFORMATION FOR MONITOR OPERATORS**

Operator(s) Placing Monitors

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 you Plan for Surveying (Attachment Two), or fax 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**

To ensure you obtain accurate measurements and reports of indoor air quality, The Pollution Detectives, Inc. requires the information below. If you are unsure of any item, please provide your best estimate. Please list additional Rooms (e.g., 4, 5 and 6), as necessary.

Scan and email your completed Plan for Surveying, along with your Contact Information (Attachment One), or fax or mail them 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:

*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
MONITOR RECEIPT**

When you take possession of a monitor from The Pollution Detectives, Inc., please complete the **blue** portion of the forms below (this page and next). **Scan and email the form, fax it, 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.

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

RECIPIENT OF MONITOR(S)

Name(s) Title

Phone

Email Address

I, _____, confirm that on the date indicated
Print Name
below I received from The Pollution Detectives, Inc., the monitors listed in the following table.

Signature

Date

The Pollution Detectives, Inc.

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**ATTACHMENT THREE (continued)
MONITOR RECEIPT**

PERSON RETURNING MONITOR

Name(s) _____ Title _____

Phone _____

Email Address _____

**I, _____, confirm that on the date indicated
Print Name below I delivered to The Pollution Detectives, Inc., the monitors listed in the
following table.**

Signature

Date

The Pollution Detectives, Inc.
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**ATTACHMENT THREE (continued)
MONITOR RECEIPT**

Monitor No.	Serial No.	Date Shipped (TPD, Inc.)	Date Received	Date Returned
32678	5200326780	02/04/2024	02/07/2024	03/08/2024

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**ATTACHMENT FOUR
PHOTOGRAPHING MONITOR PLACEMENT**

This is an example of a good placement.



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**ATTACHMENT FOUR (continued)
PHOTOGRAPHING MONITOR PLACEMENT**

Here are two examples of bad placement. In the first, you can see that the back vent, where air is supposed to exit the monitor, is blocked. In the second photo, the monitor is placed on top of some device that is likely to influence monitor readings.



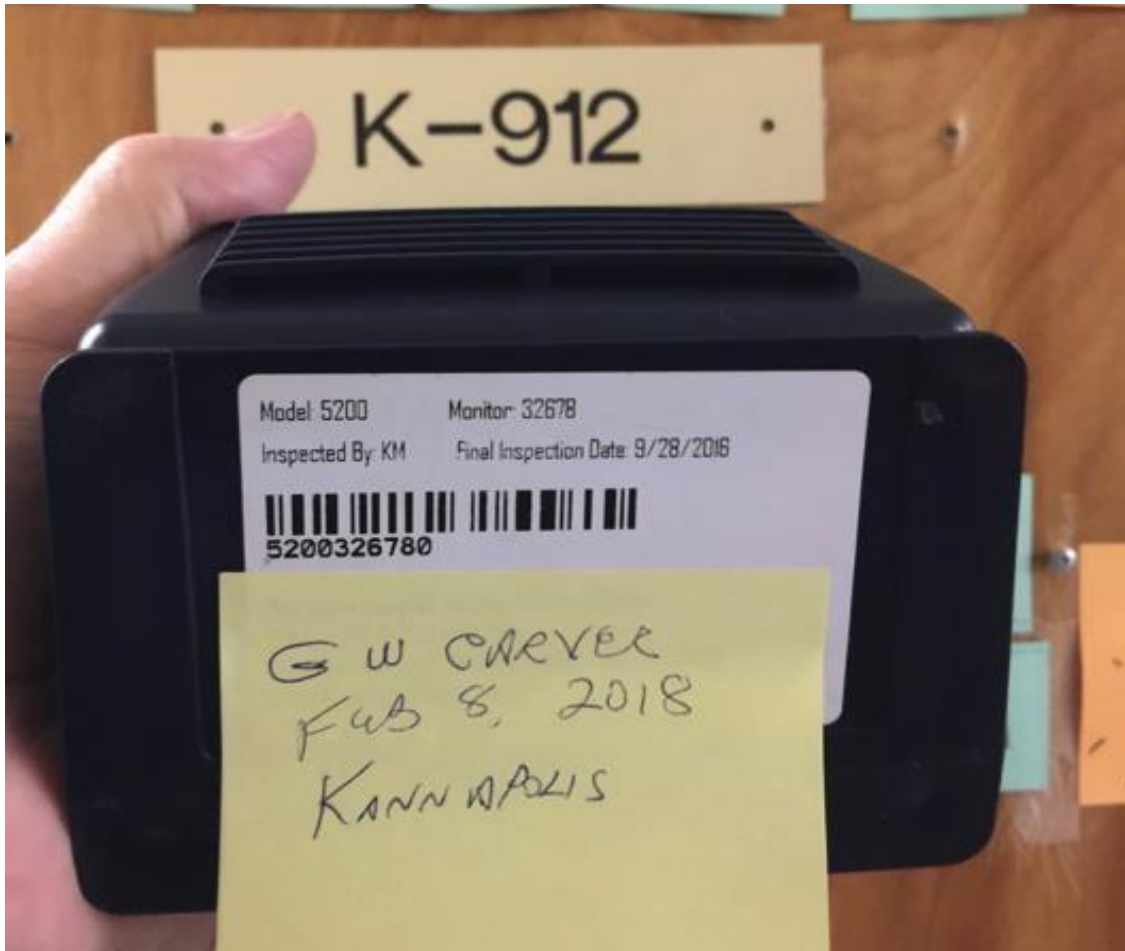
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**ATTACHMENT FOUR (continued)
PHOTOGRAPHING MONITOR PLACEMENT**

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 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 FIVE
DOCUMENTATION OF MONITOR INSTALLATION**

Please create a form like the one below documenting the information shown in your photos, along with the dates 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
<i>Mr. Jones</i>	<i>G.W. Carver</i>	<i>K-912</i>	<i>32678</i>	<i>02/08/2024</i>	<i>02/15/2024</i>	<i>Yes</i>
<i>Mr. Jones</i>	<i>G.W. Carver</i>	<i>K-914</i>	<i>32678</i>	<i>02/15/2024</i>	<i>02/22/2024</i>	<i>YES</i>

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Installer	Building Name	Room No.	Monitor No.	Date Installed	Date Removed	Photo Y/N