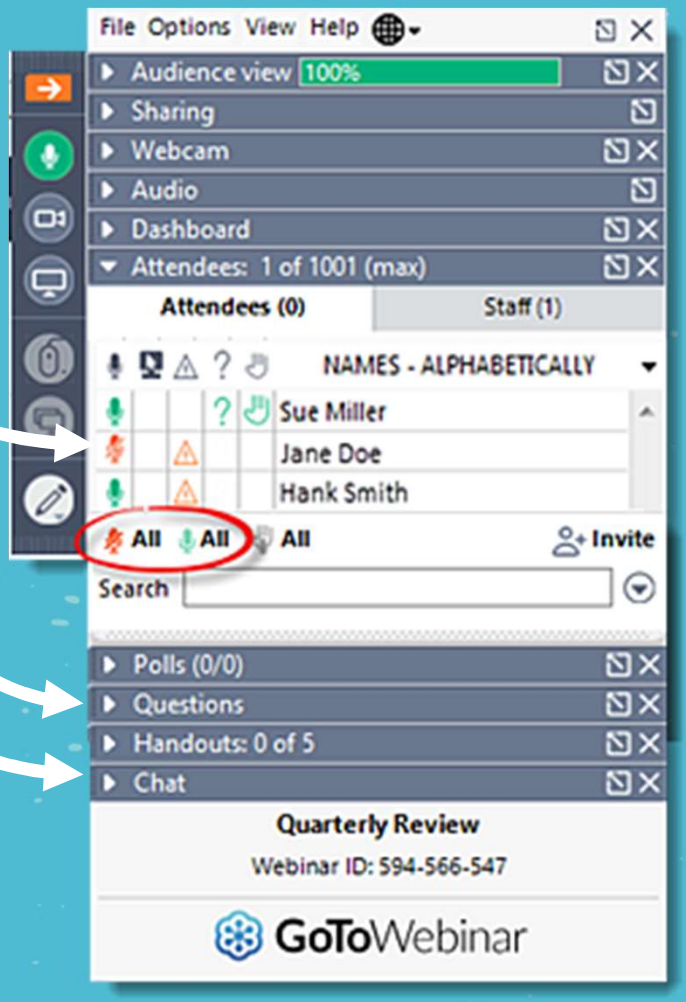
Low Cost Monitoring Program (LCMP)
Kick Off: Cohort 48

7:00 PM Thursday, July 8, 2021

10:30 AM Friday, July 9, 2021

The Virtual Classroom

- Feel free to keep your mics on (mute if noisy)
- Use “Questions” tab in the control panel to ask questions, or raise hand
- All links will be placed in the “Chat” tab in the control panel. Comments can be added here as well.



This Meeting is Being Recorded

01

Introductions

Your Name

Where are you located?

Folks (& critters) in your household/ monitoring location

What do you hope to gain from the cohort?

LCMP Team

Linda Wigington
Team Leader
Waynesburg, PA
724-986-0793
lwigington1@outlook.com

Don Fugler
LCMP Technical Advisor
Ottawa, Canada
donfugler@gmail.com

Samantha Totoni
Public Health Fellow
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Emily Dale
LCMP Coordinator
Claysville, PA
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ke_dale@hotmail.com

Rob Busher
Program Coordinator
Portland, ME
412-437-8454
robb@rocis.org

Jessica Kester
Air Quality Education Coordinator
Charleroi, PA
814-937-7365
jessicalkester@gmail.com

02

Meeting Objectives

1. Introduce Monitoring Equipment
2. Clarify Expectations
   - Completion of User Agreement
   - Daily Use of Log & Incident forms
   - Weekly uploading photos/ forms/files to us
3. Find out where & how to get your questions answered
4. Achieve balance!

We will be playing kahoot – you will need to see this screen and another screen, using a smart phone is easiest

A Southwestern Pennsylvania initiative to reduce the impact of exterior pollution in indoor spaces.

Most of our exposure to outdoor pollution happens INSIDE buildings.

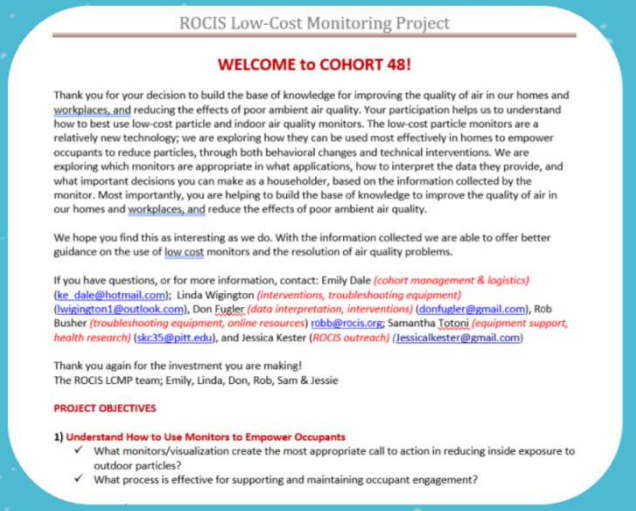
https://www.iaqscience.lbl.gov

03

Equipment Summary

Introducing Your Kit

- Monitoring equipment
- Clipboard
  - User Agreement
  - Today's Handouts
- A short cord (if you are outlet constrained) & splitters
- Please return items in their packing & boxes
- When you pack up, use the User Agreement to make sure you have everything.



ROCIS Low-Cost Monitoring Project

WELCOME to COHORT 48!

Thank you for your decision to build the base of knowledge for improving the quality of air in our homes and workplaces, and reducing the effects of poor ambient air quality. Your participation helps us to understand how to best use low-cost particle and indoor air quality monitors. The low-cost particle monitors are a relatively new technology; we are exploring how they can be used most effectively in homes to empower occupants to reduce particles, through both behavioral changes and technical interventions. We are exploring which monitors are appropriate in what applications, how to interpret the data they provide, and what important decisions you can make as a householder, based on the information collected by the monitor. Most importantly, you are helping to build the base of knowledge to improve the quality of air in our homes and workplaces, and reduce the effects of poor ambient air quality.

We hope you find this as interesting as we do. With the information collected we are able to offer better guidance on the use of low cost monitors and the resolution of air quality problems.

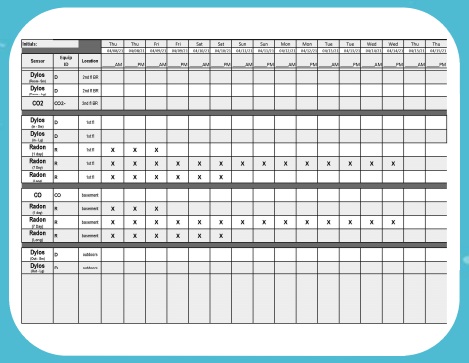
If you have questions, or for more information, contact: Emily Dale *(cohort management & logistics)* (ke_dale@hotmail.com); Linda Wigington *(interventions, troubleshooting equipment)* (lwigington1@outlook.com), Don Fugler *(data interpretation, interventions)* (donfugler@gmail.com), Rob Busher *(troubleshooting equipment, online resources)* robb@rocis.org; Samantha Totoni *(equipment support, health research)* (skc35@pitt.edu), and Jessica Kester *(ROCIS outreach)* (Jessicalkester@gmail.com)

Thank you again for the investment you are making!
The ROCIS LCMP team; Emily, Linda, Don, Rob, Sam & Jessie

PROJECT OBJECTIVES

1) Understand How to Use Monitors to Empower Occupants

- ✓ What monitors/visualization create the most appropriate call to action in reducing inside exposure to outdoor particles?
- ✓ What process is effective for supporting and maintaining occupant engagement?



Equipment Handouts

(included in the G2W control bar)

- Equipment Locations (goldenrod)
  - Instructions on Equipment Set-up
  - Air Quality – How Good is Good Enough?
- Equipment Summary & Features (white)
- Dylos (green)
  - Mac users instructions (white)
- Setting Up the CO_2 Meter (yellow)
- On our website along with presentations from meetings ED9

http://rocis.org/rocis-lcmp-cohort-48

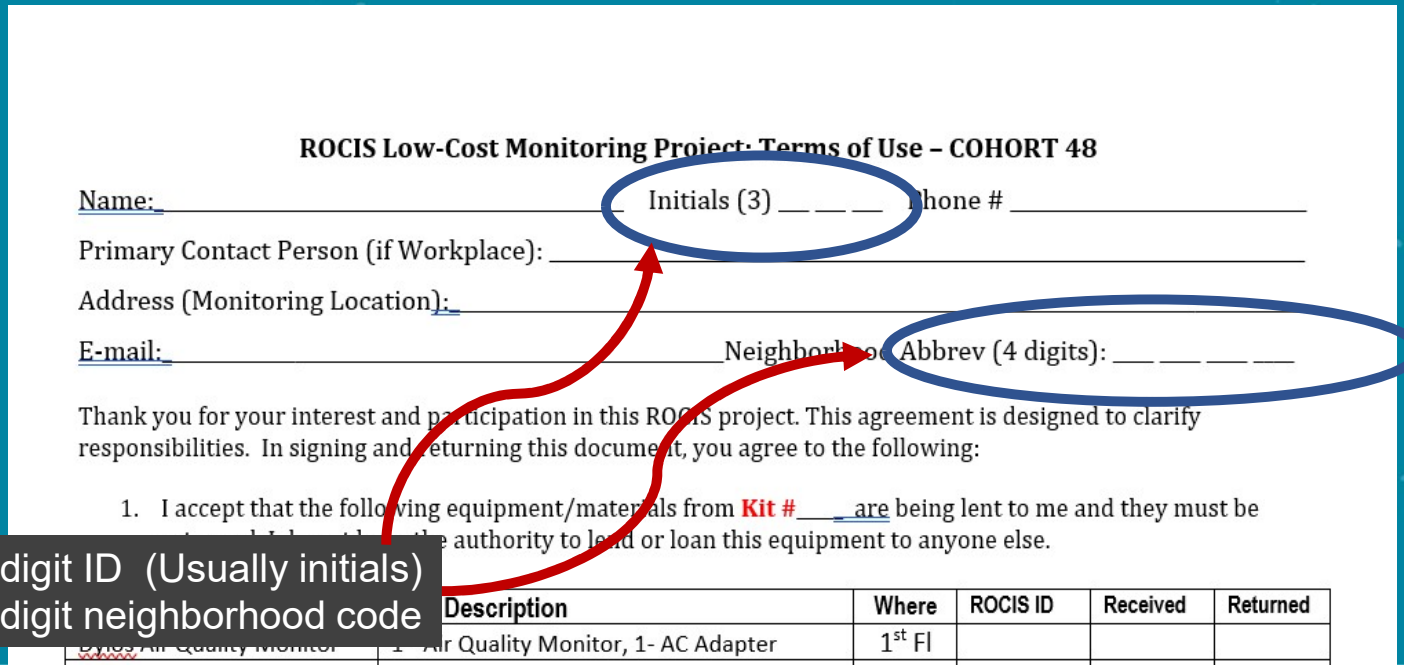
Slide 10

ED9 Update!

Emily Dale, 6/25/2021

Terms of Use: Agreement Form

- ✓ Verify/Complete top portion of form
- ✓ Check off your equipment against list
- ✓ Note any corrections
- ✓ Take a photo or scan it
- ✓ Send to us / Emily



ROCIS Low-Cost Monitoring Project: Terms of Use – COHORT 48

Name:_____ Initials (3) ___ ___ ___ Phone # _____

Primary Contact Person (if Workplace): _____

Address (Monitoring Location):_____

E-mail:_____ Neighborhood Abbrev (4 digits): ___ ___ ___ ___

Thank you for your interest and participation in this ROCIS project. This agreement is designed to clarify responsibilities. In signing and returning this document, you agree to the following:

1. I accept that the following equipment/materials from **Kit #**____ are being lent to me and they must be [illegible] the authority to lend or loan this equipment to anyone else.

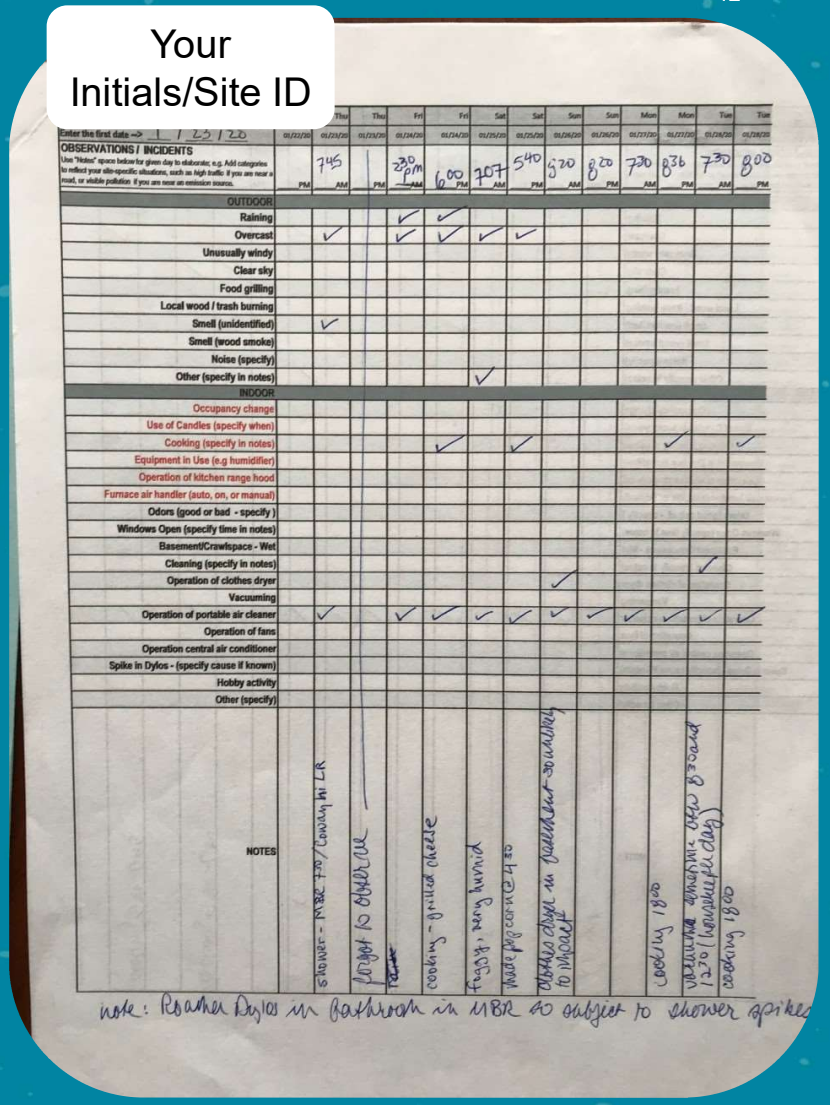
	Description	Where	ROCIS ID	Received	Returned
Dylos Air Quality Monitor	1 - Air Quality Monitor, 1- AC Adapter	1st Fl			

3-digit ID (Usually initials)
4-digit neighborhood code

LCMP White Incident Form

- Week 1: Complete

- Week 2, on:
  - OK to incorporate this info onto blue log form



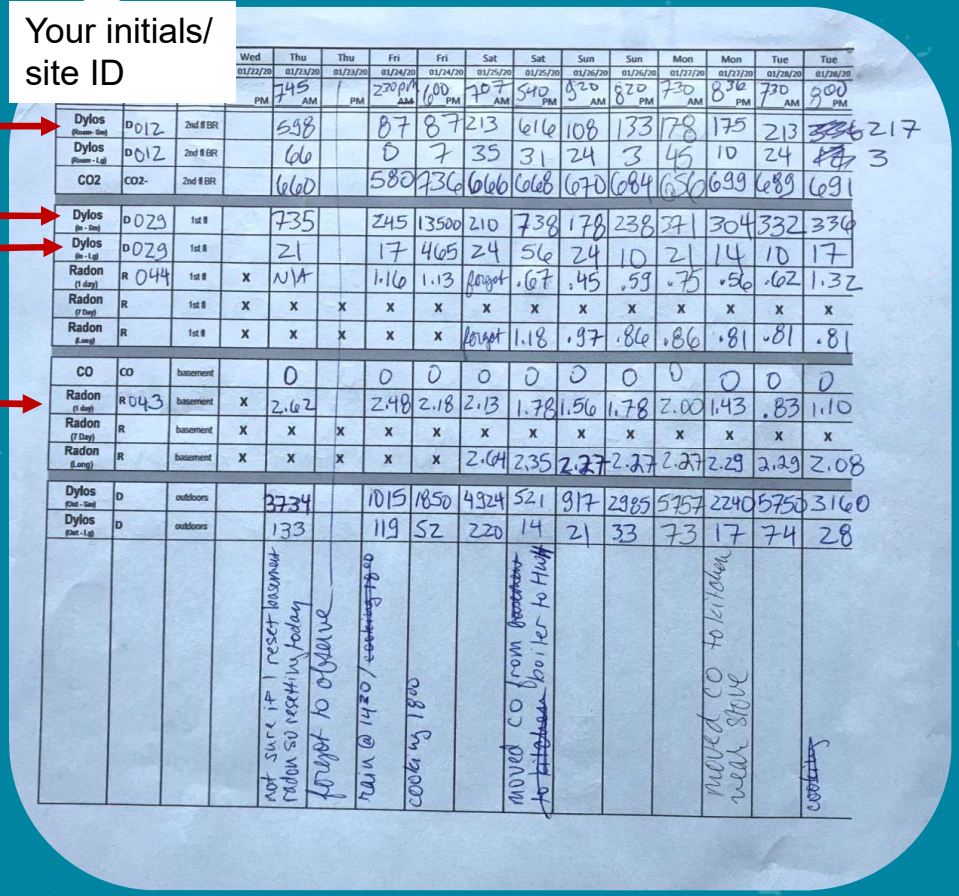
LCMP Blue Logging Form

Your initials/
site ID

Starts in Bedroom

Dylos Small? Large?

Radon – Why XX?
(note 1-day, 7-day, Long)



Low Cost Monitoring Kit

(3) Dylos **Particle** Counter DC1700 http://www.dylosproducts.com/dc1700.html

(2) AirThings **Radon** Monitor https://airthings.com/us/

(1) Carbon Monoxide (CO) Monitor Experts Model 2015/16 http://coexperts.ca/product/model-2016/

(1) Carbon Dioxide (CO_2) TIM12 Datalogging Meter www.co2meter.com

Where to Place the Monitors

1) Master Bedroom - R - Particles, CO_2
2) Primary Living Space - I - Particles, Radon
3) Basement (or lowest level) - Radon, CO

(no power needed)

Carbon Monoxide (CO) monitor: move to Kitchen

4) Protected Outdoors - O - Particles

Outdoor Location

Ideal: On covered porch – 12” to 3’ above the floor

Alternatives:

- Under a clothes basket (monitor above ground)
- Under a picnic table with vinyl/plastic tablecloth
- Under a deck with a water-proof “roof” above monitor
- In a milk crate with a secure roof (with overhang)

Should not overheat, OR get wet (either rain or splash from ground/floor)

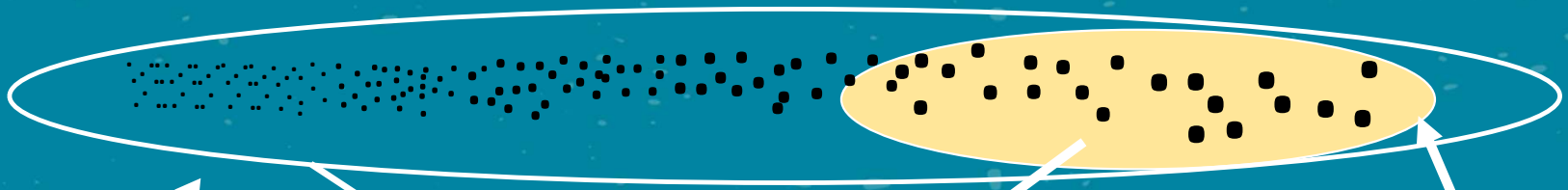
Don’t assume your outside outlet works!
Protect any outdoor electrical outlet connections from water!

04

Specifics

Dylos Monitor: Introduction

- Get out the Dylos with the “roamer” label on the box
- If you can, plug it in while you are using it during this virtual demo



Many particles!

Mostly small

Fewer particles

Large particle sizes only

Higher Number

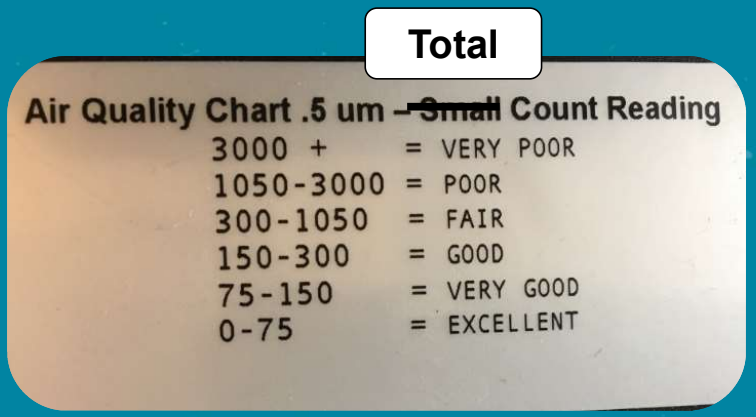
Lower Number

Making the Invisible Visible

- Dylos 1700 Optical Particle Counter:
  # Particles per 1/100 ft^3, 1 minute resolution
- 2 size ranges of Particles:
  - > 0.5+ µm (Dylos "Total")
  - *this includes the Dylos "large" particles
  - > 2.5+ µm (Dylos "Large")
- 1-week max data storage
- 3 Dylos per Site
  - Outside
  - Inside (living area)
  - Roamer (usually bedroom)

Interpreting the Dylos numbers

Turn Dylos around – on back



NOTE: Scale is from the manufacturer; not health based

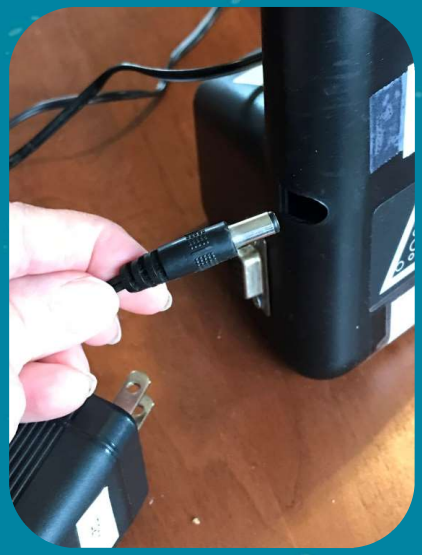
Dylos 1700 http://www.dylosproducts.com/dc1700.html

Dylos Controls & Numbers

Three buttons on front

- Left “⏻“: on or off (auto sets to ‘continuous’)
- Middle “MODE”: scroll through settings, recent readings; use when checking time, clearing data
- Right “SELECT”: use to select middle button setting (view past readings, change time, or clear data)

Dylos Set Up: Step 1



Make sure power cord is well seated into power port on left side of Dylos

Step 2

Use one-foot extension cord if needed

Dylos Set Up: Step 3

Battery switch on right side

- ✓ When monitoring push in at top; if transporting push in at bottom
- ✓ Plug into power when monitoring
- ✓ Battery – several hours at most

Dylos: Operation

Use Continuous Mode

Readings will jump around
Bar under readings will move continuously

Not Monitor Mode

Troubleshooting: Too Hi or Low?

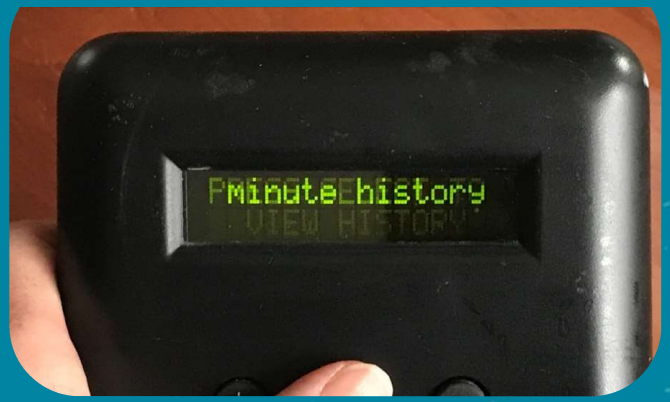
- Dylos readings should bounce up & down significantly
- Left number will seldom be below 10
- If consistently 5,000 or 0, it is suspicious

Things to try:

- Put 3 Dylos next to each other (should be within 25%)
- Blow out back with canned air (please do not insert anything into Dylos)

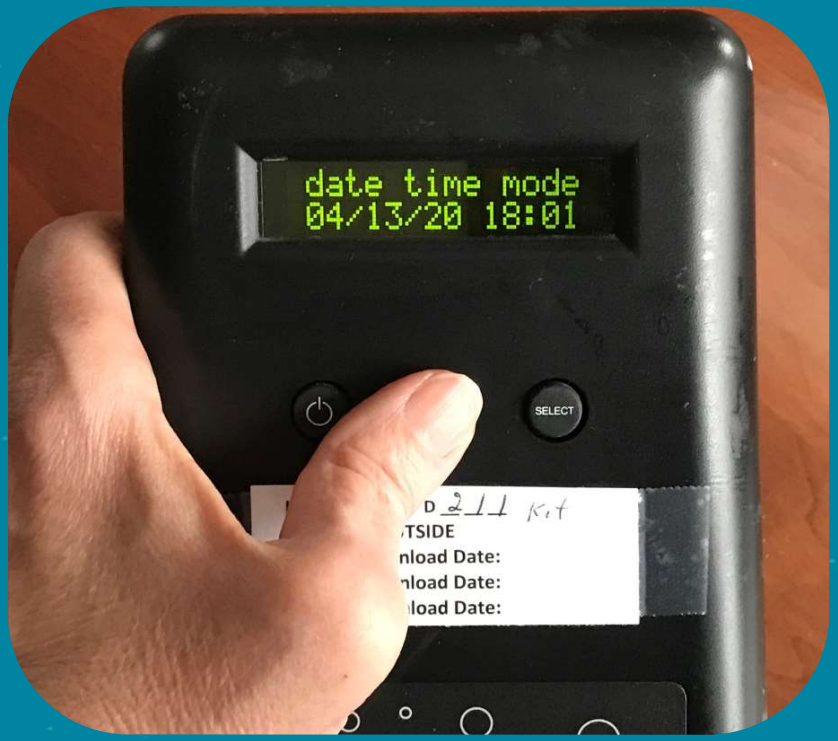
Reviewing Recent Dylos Readings

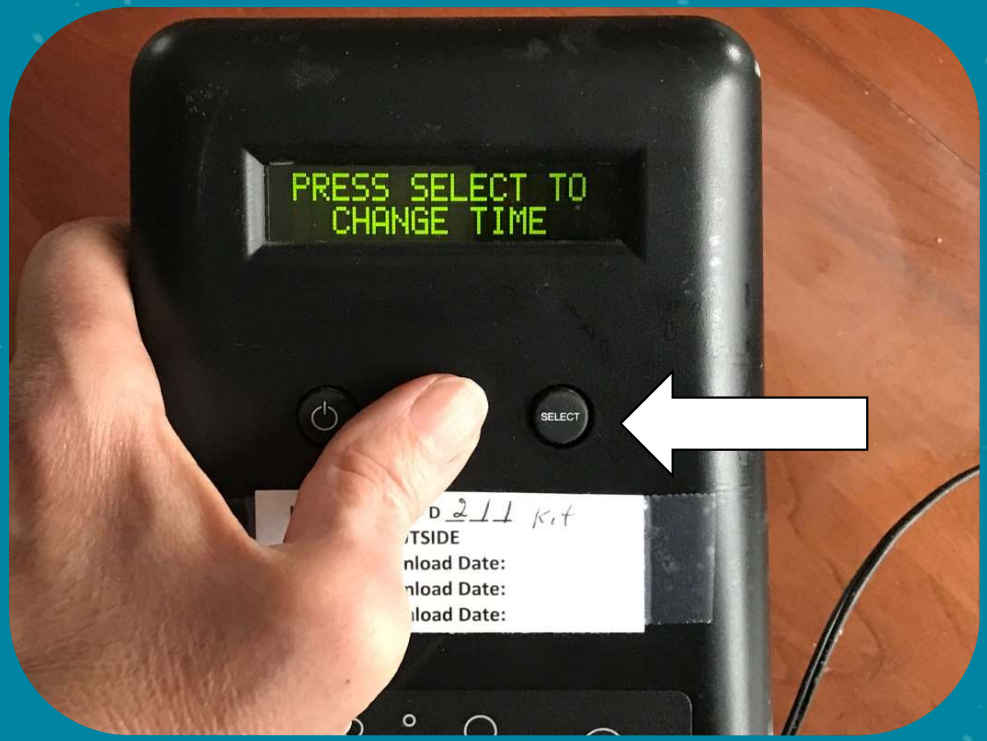
Push Mode button



Push Select to scroll through readings

Dylos Set Up:
Time/Date Check (all 3 monitors)



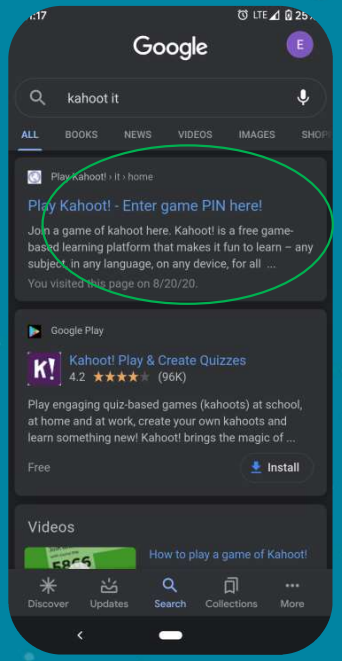


Dylos Set Up: Clear History on Roamer

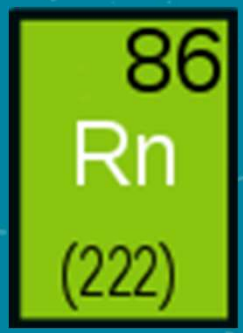
- Push center button “Mode” (past time/date)
- ‘Clear History?’ on screen
- Push “Select”

DYLOS QUIZ!!

- Type kahoot.it in your browser
- We will give you the pin.



*Radon



- Colorless, odorless, radioactive gas
- Naturally occurs in soil/rocks
- Seeps into houses through cracks or other openings in foundations
- Heavier than air – so hangs out in low areas

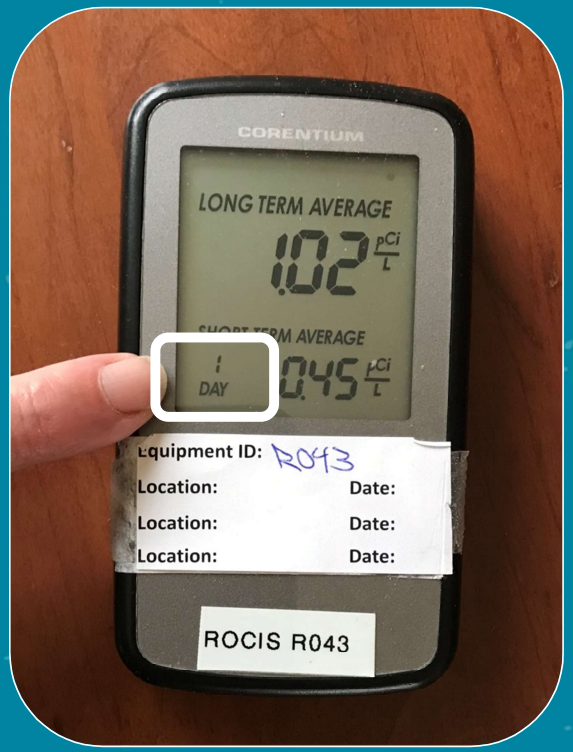
- The EPA (Environmental Protection Agency) action level for Radon is 4.0 pCI/L (pico-Curie's per Liter)
- The WHO (World Health Organization) action level is 2.7 pCI/L

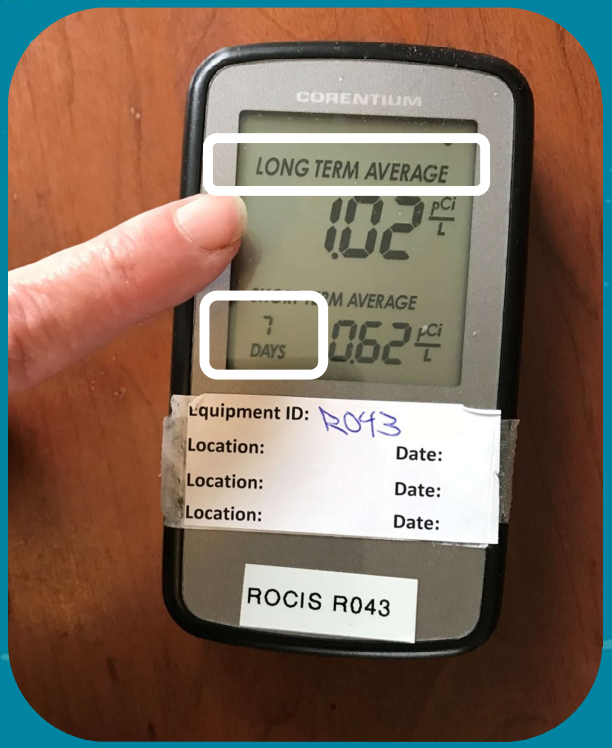
Corentium Digital Radon Monitor (2 per kit) (new name "AirThings")

- Measures radon (pico-Curie's per Liter) pCi/L
- No data logging or downloading option
- Do not move during cohort
- Do not reset during cohort
- Do not remove the batteries (unless dead – OK to replace them)

- For more info: http://www.airthings.com

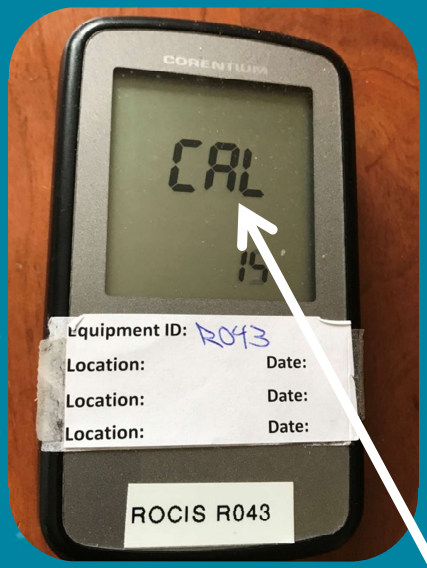
Radon Monitor: 3 readings

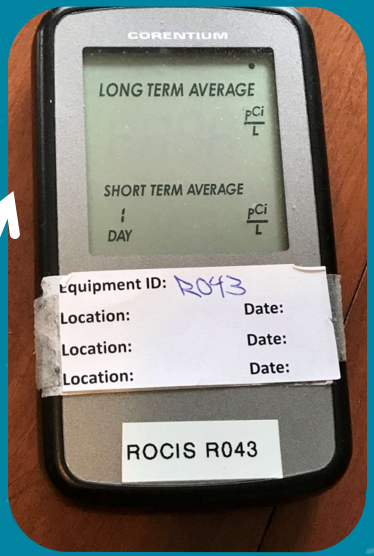




Radon Monitor: First Reset

- Push reset dimple (on back)





- Initially there will be no reading (while calibrating)

CO (Carbon Monoxide) Monitor

- Monitors low level carbon monoxide (CO) down to 7 part per million (ppm)
- No data logging or downloading option
- Can view CO levels over time to identify the incident
- For more info: http://coexperts.ca/product/model-2016/

CO monitor should read "0" at all times

Sources of CO are combustion appliances (space & water heaters, dryers, cook stoves, wood stoves, & fireplaces), indoor smoking, & vehicles in attached garages

CO (Carbon Monoxide) Monitor

Back plate must be in place for monitor to ‘wake-up’ & function

CO Monitor: Test before Deploying

CO_2 MONITOR (TIM12 Datalogging Meter)
Carbon Dioxide (yellow handout)

- CO_2 is an indication of the ventilation rate & building occupancy
- Records CO_2, temperature, & relative humidity (RH)
- Holds 30 days of data (we will download after Cohort)
- For more information: www.co2meter.com

CO_2: Verify Date & Time (24/hr) is Correct

- CO_2 meter does not keep time when it is not plugged in.
- It needs to be reset when you deploy it.

CO_2: Make Sure it is Recording!

"rEC" will alternate with CO_2 reading

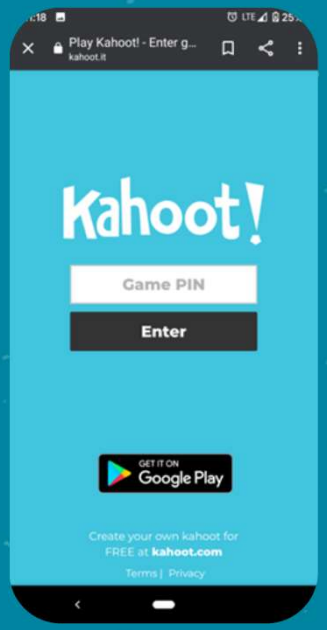
Green Flashing Light

CO_2 Meter: Troubleshooting

Push "Reset" button
Does not lose settings

Power Outage?

Do not adjust time or you will lose all data



CO, RADON, & CO_2 QUIZ!

- Type kahoot.it in your browser
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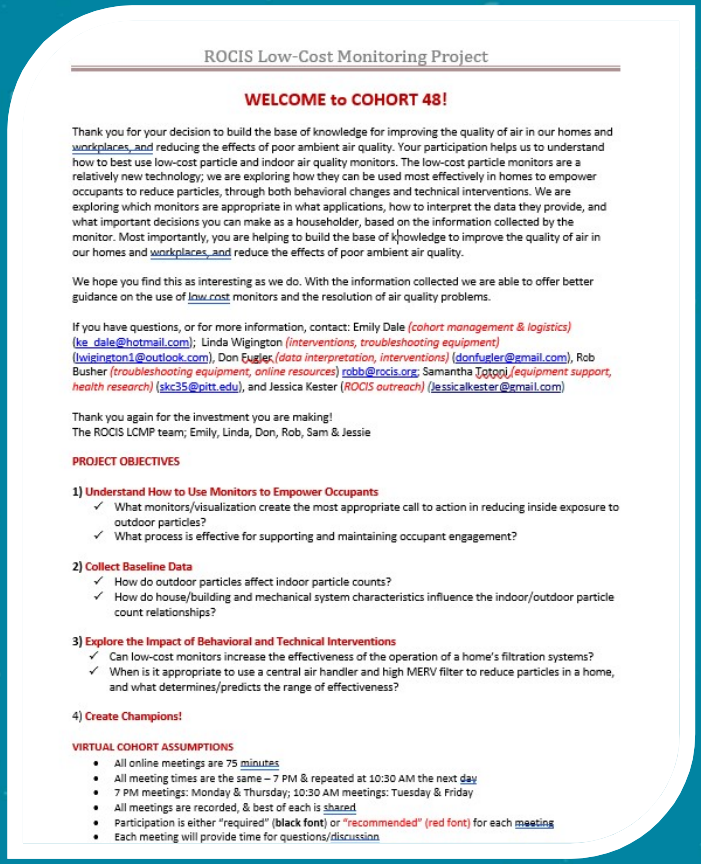
Virtual Cohort Expectations: Monitoring

- Schedule
- Ongoing Air Quality Monitoring (Daily):
  - Logging form
  - Incident form
- Download Dylos Particle Monitor /Upload (Weekly)



ROCIS Low-Cost Monitoring Project

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PROJECT OBJECTIVES

1) Understand How to Use Monitors to Empower Occupants
- ✓ What monitors/visualization create the most appropriate call to action in reducing inside exposure to outdoor particles?
- ✓ What process is effective for supporting and maintaining occupant engagement?

2) Collect Baseline Data
- ✓ How do outdoor particles affect indoor particle counts?
- ✓ How do house/building and mechanical system characteristics influence the indoor/outdoor particle count relationships?

3) Explore the Impact of Behavioral and Technical Interventions
- ✓ Can low-cost monitors increase the effectiveness of the operation of a home's filtration systems?
- ✓ When is it appropriate to use a central air handler and high MERV filter to reduce particles in a home, and what determines/predicts the range of effectiveness?

4) **Create Champions!**

VIRTUAL COHORT ASSUMPTIONS
- All online meetings are 75 minutes
- All meeting times are the same – 7 PM & repeated at 10:30 AM the next day
- 7 PM meetings: Monday & Thursday; 10:30 AM meetings: Tuesday & Friday
- All meetings are recorded, & best of each is shared
- Participation is either "required" (**black font**) or "recommended" (red font) for each meeting
- Each meeting will provide time for questions/discussion

Schedule & Topics

75-minute Online Meetings
7 PM Mon. & Thurs., Repeated 10:30 AM Tues. & Fri.

Important Dates:

July 10	Have all monitors set up by this evening, send photos
Aug 10	Kit Pick up

Meetings in orange are required.

Meetings:

July 8 or 9	**Virtual Cohort Kick-off**
July 12 or 13	Check-in
July 15 or 16	**Dylos Downloading**
July 19 or 20	What are Good Numbers? Health Risks?
July 22 or 23	Online Resources
July 26 or 27	Behavioral Interventions
July 29 or 30	**ROCIS Filtration Interventions**
Aug 2 or 3	Health Impacts of Particles and YOUR questions Answered
Aug 5 or 6	**Wrap-up Meeting**

Immediate Tasks

Do by Saturday, July 10, 2021

- Place & plug in monitors
- One monitor (Dylos) needs to be plugged in at a protected outdoor location
- Confirm with us that everything is set up & working
- Complete User Agreement & upload it to us
- Take & upload photos of equipment as set up in each monitoring location
- Send us a photo of your household/monitoring site team – pets welcome! (for the virtual group photo)

Virtual Cohort Expectations: Monitoring

- Schedule

- Ongoing Air Quality Monitoring (Daily)
  - Logging form
  - Incident form

- Download Dylos Particle Monitor & Upload (Weekly)

Virtual Cohort Expectations: Monitoring

- Schedule
- Ongoing Air Quality Monitoring (Daily)
  - Logging form
  - Incident form
- Download Dylos Particle Monitor /Upload (Weekly)

Data Management

- Create ROCIS folder on your laptop/computer
- Keep photos, forms, & Dylos downloads in your folder

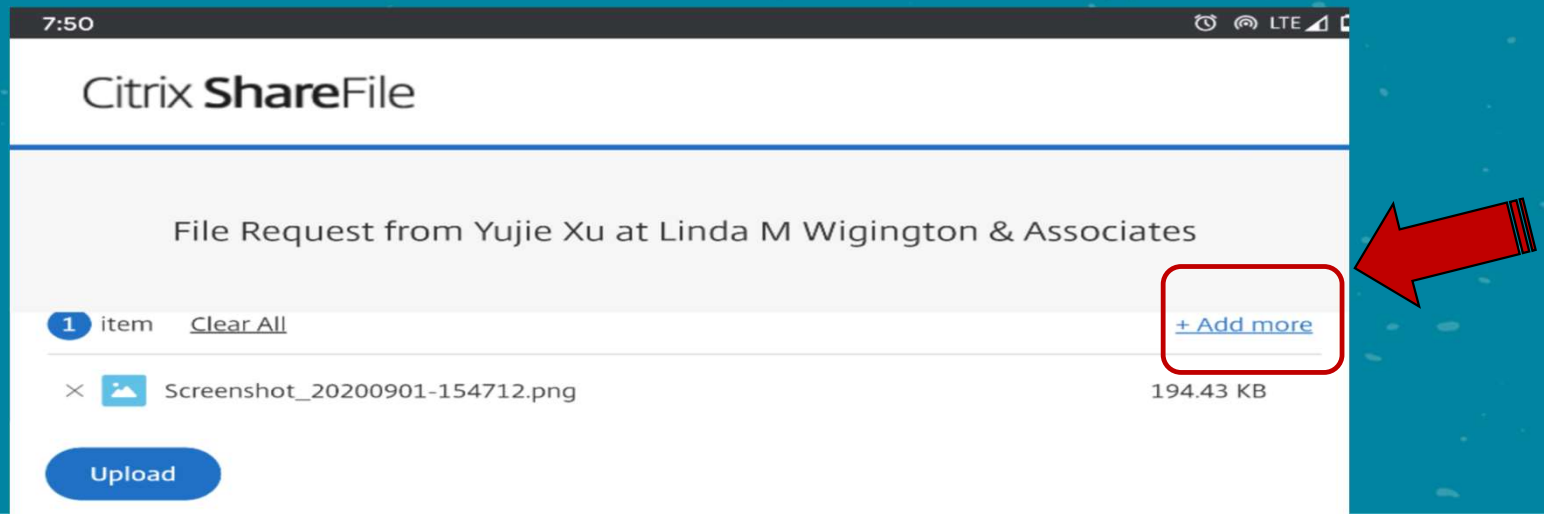
Uploading Files to Us

Bookmark This Site!

- ShareFile upload Link:

  https://lindawigington.sharefile.com/r-r14c810b22454a529

- Upload multiple files at once
- Use for photos, Dylos downloads, and logs
- We get immediate notice of upload, you do not



Check-in Meeting
Monday 7/12 or Tuesday 7/13

- Have with you:
  - Your Logs/Notes to date
  - Questions / Comments
    - Equipment operation
    - Readings you are seeing
    - Indoor air quality

05

Recap & Review

Need Help? Who to Contact

- **Coordination & Logistics:**
  - Emily Dale - text: 724-833-8223 or ke_dale@hotmail.com
- **Equipment issues:**
  - Linda Wigington - text: 724-986-0793 or lwigington1@outlook.com
  - Rob Busher - text: 412-437-8454 or robb@rocis.org
  - Samantha Totoni - text: 217-390-1842 or skc35@pitt.edu
- **Interpretation of monitoring readings:**
  - Don Fugler - dfugler@gmail.com
  - Linda Wigington - text: 724-986-0793 or lwigington1@outlook.com
- **Social Media Postings:**
  - Jessie Kester - text: 814-937-7365 jessicalkester@gmail.com

Accessing Cohort 48 Resources

ED11

- Limited Access Website page* http://rocis.org/rocis-lcmp-cohort-48
  - Handouts
  - Forms
  - Slide decks from meetings
  - Links to recordings

***This link will be in the follow up e-mail!**

Slide 53

ED11 Change website and photo

Emily Dale, 6/25/2021

Specifically for LCMP Participants

- Check Cohort 48 webpage for links!
- Download Smell Pittsburgh App
- Join our private ROCIS LCMP group on Facebook
- Follow ROCIS on Facebook, LinkedIn, & Twitter
- Great Resources:
  - Join the Building Performance Community
    - “Low-cost Residential Particle Monitoring” online group
    - Kitchen Ventilation group

ED5

Slide 54

ED5 leave group links??
Emily Dale, 3/23/2021

06

Meeting Objectives

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3. Find out where & how to get your questions answered
4. Achieve balance!

Thanks!

Thanks to Phil Johnson & The Heinz Endowments for support of the ROCIS initiative (Reducing Outdoor Contaminants in Indoor Spaces) and our 385+ LCMP participants

QUESTIONS?

Linda Wigington
Team Leader
Waynesburg, PA
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lwigington1@outlook.com

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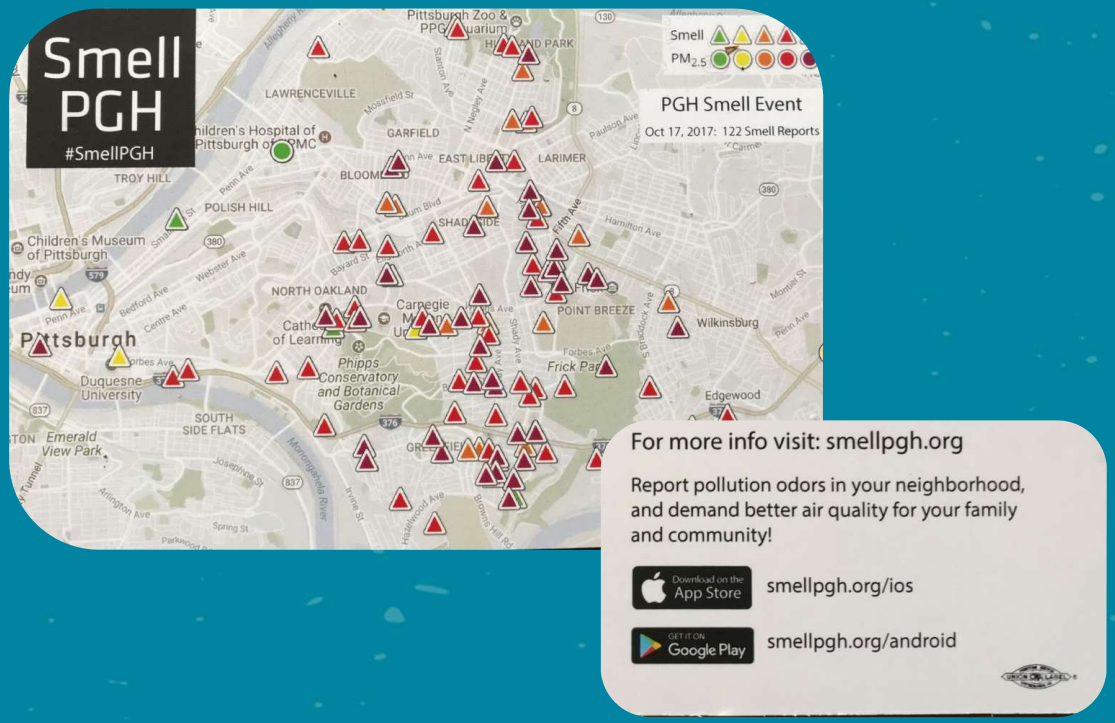
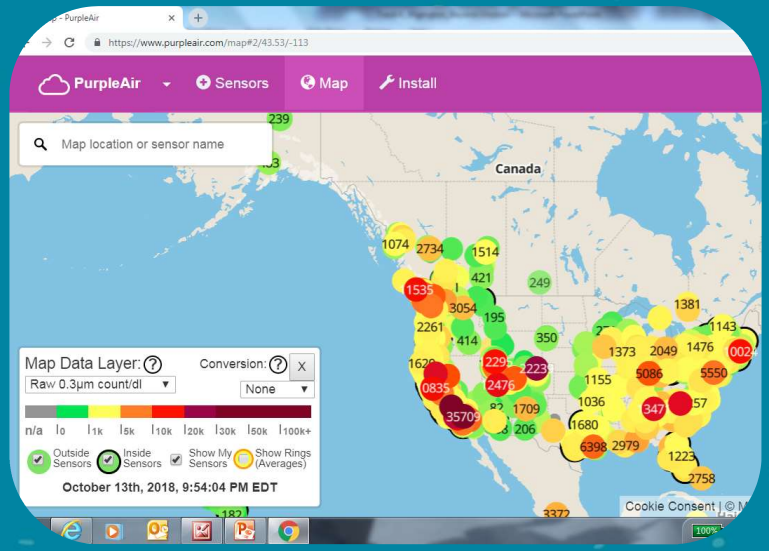
07

Extras

Resources: Smell PGH & Purple Air





https://www.purpleair.com/gmap

Interventions: What Can We Learn with Low-cost Monitors ??

Impact of interventions in different buildings

- Better vs. worse outdoor air quality
- Indoor vs. outdoor sources
- Leakier vs. tighter homes
- Air conditioners vs. no AC

Portable Air Cleaner

Applications, Impact, & Practicality of Interventions

- Mechanical ventilation systems & strategies
- Sanctuary room/zone
- Operation of portable air cleaners / DIY Fan/Filter
- Forced air distribution filtration

24/7 Air Handler – High MERV filter intervention

Where to Place the Monitors

Place all monitors in the breathing zone, not on the floor.

Protected Outdoor Space:
Particles

Master Bedroom/
Conference Room:
Particles & CO_2

Kitchen (week 2-4):
CO

Primary Living Space:
Particles & Radon

Basement/Lowest Level: Radon & CO
No power required

Dylos Troubleshooting: Battery Charging

Battery Charge Level

More reliable with 3 or 4 bars; at most lasts 2-3 hours when not plugged in

Does not charge automatically!

To Charge:

- Plug in monitor
- Turn monitor OFF
- Make sure battery button on

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ED12 moved to dylos DL slidedeck
Emily Dale, 7/8/2021

One More …

- Sometimes the Dylos charges then mysteriously says “low battery”.

- If you know they were just fully charged – ignore & proceed.

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ED7 Moved to Dylos DL slidedeck
Emily Dale, 4/15/2021

Why is IEQ Important
(Indoor Environmental Quality)

- About 90% of our time is spent indoors.
- Vulnerable groups spend more time indoors

Dylos Download Meeting Thursday 4/15 or Friday 4/16

- Preparation
  - Laptop with Software Downloaded (both!) & Computer re-booted
    1. Drivers for Trendnet cord;
    2. Download Putty (Windows) or ZOC (Mac)
       - (refer to **GREEN** Dylos instructions/ **White** Mac instructions)
    3. Identify USB com port number (Windows OS)
- Have with you
  - White Trendnet cord
  - Your computer
  - One Dylos machine
  - Dylos instructions sheet

Need help?
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