

Introduction to the Low Cost Monitoring Project (LCMP)

7:00 PM Monday, June 28, 2021

10:30 AM Tuesday, June 29, 2021

The Virtual Classroom

- **Feel free to keep your mics on being aware of any background noise at your location.**
- **Questions can be placed in the “Questions” tab in the control panel.**
- **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

File Options View Help

Audience view 100%

Sharing

Webcam

Audio

Dashboard

Attendees: 1 of 1001 (max)

Attendees (0) Staff (1)

NAMES - ALPHABETICALLY

Sue Miller

Jane Doe

Hank Smith

All All All

Search

Polls (0/0)

Questions

Handouts: 0 of 5

Chat

Quarterly Review

Webinar ID: 594-566-547

GoToWebinar



Your name



**Where are you
located?**



**Something
about you!**



**Question about
the Low Cost
Monitoring
Program**



Introductions

LCMP Team



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- 1. Introduce ROCIS and the Low Cost Monitoring Project (LCMP)**
- 2. Provide information needed for you to confirm your interest in participating in this cohort.**
- 3. Answer your questions.**



Meeting Objectives

Reducing
Outdoor
Contaminants
in
Indoor
Spaces

03



“Rock-us” or “Raucous”



**“A Southwestern
Pennsylvania initiative to
reduce the impact of exterior
pollution in indoor spaces”**

www.ROCIS.org



**Most of our
exposure to
outdoor
pollution
happens
INSIDE
buildings.**

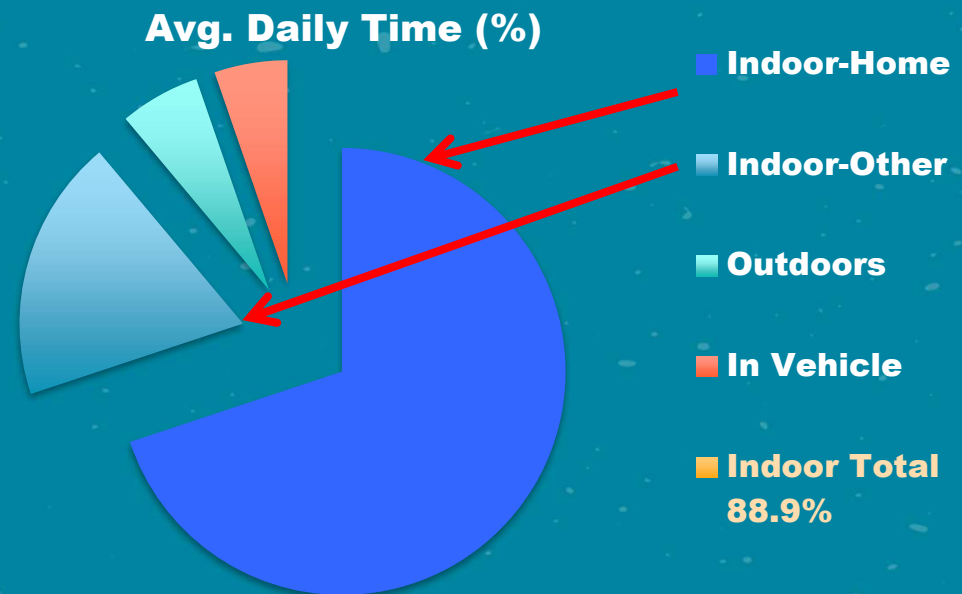
<https://www.iaqscience.lbl.gov>



Why is IEQ Important?

(Indoor Environmental Quality)

- **About 90% of our time is spent indoors**
- **Vulnerable groups spend more time indoors (95%+)**



Canadian Human Activity Pattern Survey 2, 2010-11

Matz, C.J.; Stieb, D.M.; Davis, K.; Egyed, M.; Rose, A.; Chou, B.; Brion, O. Effects of Age, Season, Gender and Urban-Rural Status on Time-Activity: Canadian Human Activity Pattern Survey 2 (CHAPS 2). *Int. J. Environ. Res. Public Health* 2014, 11, 2108-2124.



04

Focus on Particles

Also referred to as Particulate Matter (PM)

U.S. Environmental Protection Agency (EPA):

Particulate matter (PM), also known as particle pollution, is a complex mixture of extremely small particles & liquid droplets that get into the air. Once inhaled, these particles can affect the heart & lungs & cause serious health effects.



Pittsburgh's Air Quality is Poor



Rebecca Droke/Post-Gazette

8th

**People Most at Risk in the U.S.
from Year-Round Particle Pollution
(Annual PM_{2.5})**

1st

**Worst City East of the Rockies for
Year-Round and Short-Term PM_{2.5}**

16th

**People Most at Risk in the U.S.
from Short-Term Particle Pollution
(24-hour PM_{2.5})***

*Pittsburgh-New Castle-Weirton (PA-WV-OH)



LCMP Design

Not a Regulatory Focus

- **Measuring particle count, not mass; 1-min. resolution**
- **Focus on indoor / outdoor comparison**
- **Proof of concept – exploration of interventions**



Good Readings ≠ Good Indoor Air Quality

**Know the limitations of our particle monitoring.
What we cannot easily monitor could be important!**

Particles (PM)



Dylos 1700
Our work horse!

PM_{2.5}: Particulate matter
<2.5 μm in diameter

ROCIS LCMP Dylos:
Particles > 0.5 μm
(1/100 of human hair!)

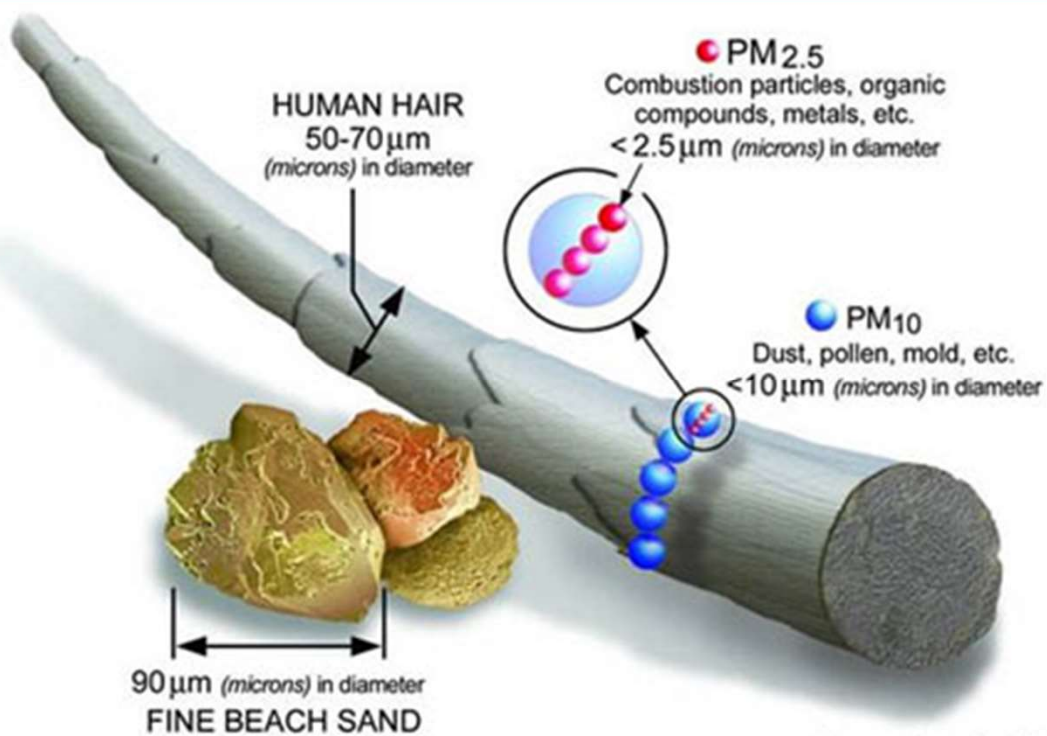


Image courtesy of the U.S. EPA

Making the Invisible Visible

Dylos 1700 Optical Particle Counter:
Particles per 1/100 ft³, 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)**



Outdoor + Indoor



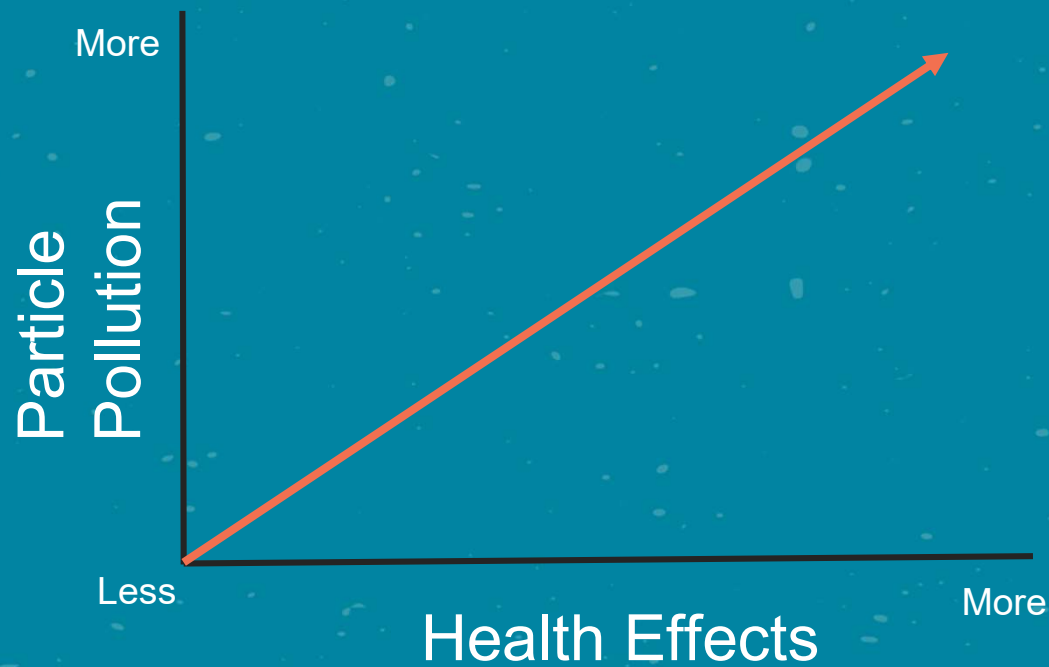
Reducing Cooking Emissions:

- **Check out ROCIS guidance document & webpage (<http://rocis.org/kitchen-range-hoods>)**
 - **ROCIS ISSUE BRIEF, Ducted Range Hoods: Recommendations for New and Existing Homes**
- **And recent ROCIS webinar**
 - **Keep a Lid on It: Best Practices for Reducing Cooking Pollution in Homes**

Health Concerns - Particles



- **Particles differ in toxicity.**
- **There can be adverse synergy with other co-pollutants.**
- **Fine and ultra-fine particles can be vehicles to increase exposure of toxic contaminants such as SVOCs and metals.**
- **Our premise: “Precautionary principle” – avoid or minimize your exposure.**



A clear concentration-response relationship between particle pollution & health effects has been established by scientific studies.



Higher particle concentration is associated with increased impacts to health.

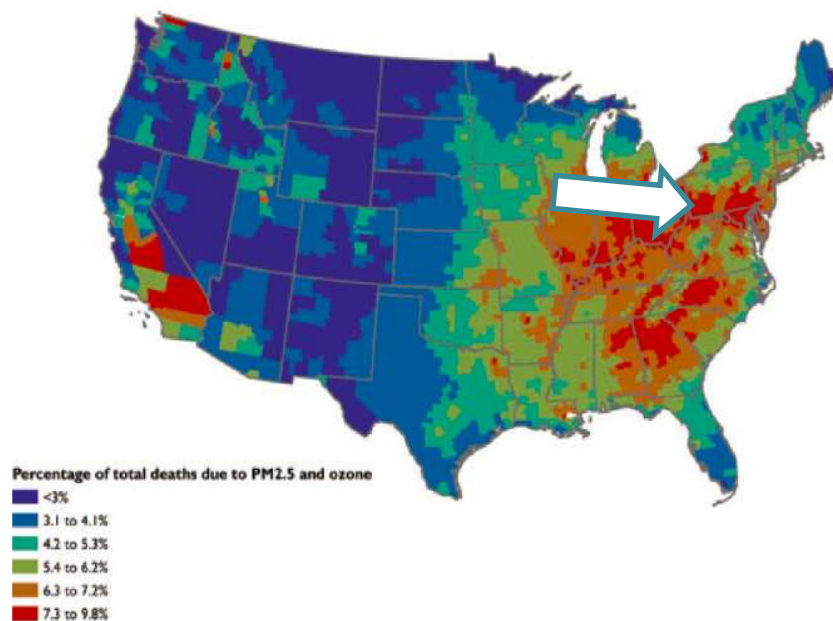
<https://www.epa.gov/pmcourse/particle-pollution-exposure>

Outdoor Particles (PM) & Human Health

“Our best estimates of the US mortality burden associated with total PM_{2.5} exposure in 2012 range from ~230,000 to ~300,000 deaths.”

Azimi, P., & Stephens, B. (2018). *Journal of exposure science & environmental epidemiology*.

Outdoor particulate matter and human health



LCMP Objectives

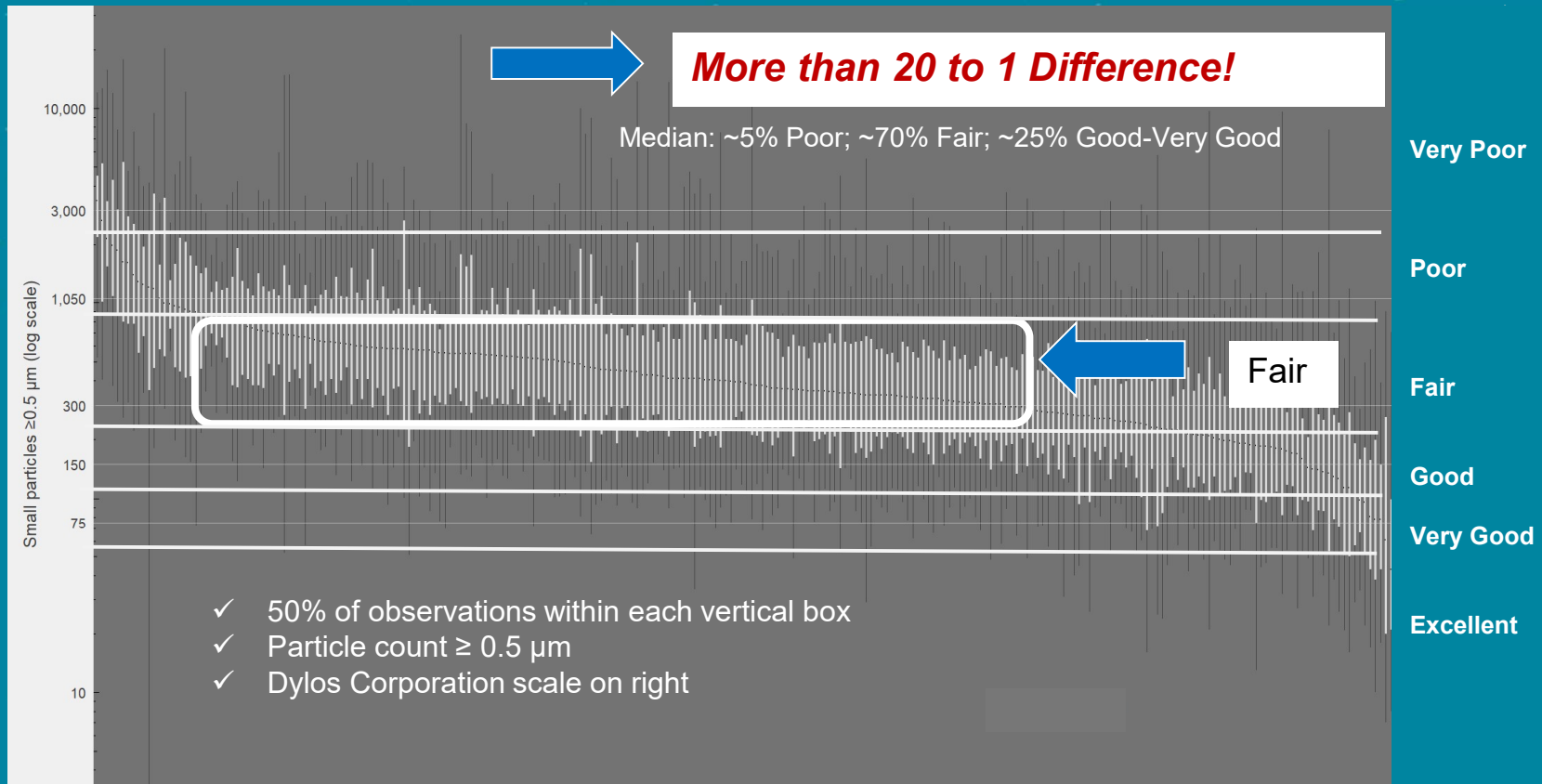
1. **Learn how low-cost monitors empower occupants.**
2. **Examine the impacts of outdoor on indoor air.**
3. **Explore Interventions to improve indoor air quality.**
4. **Develop champions!**



Indoor Particle Distribution

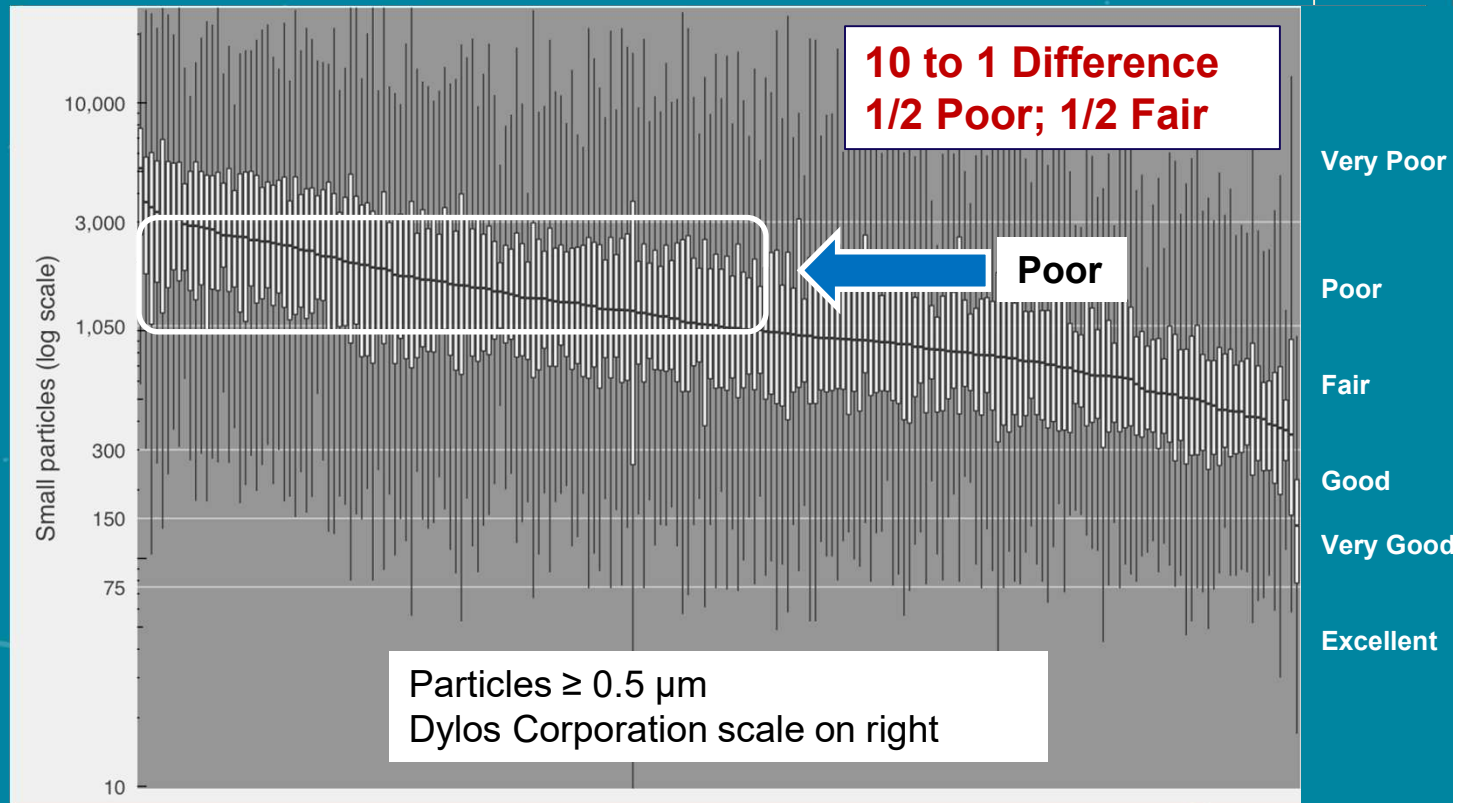


250 LCMP Residential Sites



Outdoor Particle Distribution

All Sites



LCMP Cohorts



- **Participants borrow monitoring equipment to measure:**

- **Particles (0.5+ μm and 2.5+ μm)**
- **Carbon dioxide (CO₂)**
- **Carbon monoxide (CO)**
- **Radon**
- **Temperature**
- **Relative humidity**



- **During the course of the 4-week cohort, participants:**

- **Learn from the ROCIS team**
- **Benefit from each other's experiences**
- **Receive weekly individualized feedback in response to their monitoring data, observations, and questions.**



Where to Place the Monitors

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



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!



Outdoor Location - Alternatives

- Can you ask a neighbor with a porch & outlet?

OR

- We may know someone near by who can “host” your outdoor monitor during your cohort.



Virtual Cohort Expectations



- **Schedule**
- **Ongoing Air Quality Monitoring (daily)**
 - **Logging form**
 - **Incident form**
- **Download Dylos Particle Monitor & Upload Data (weekly)**

Schedule & Topics

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

Important Dates:

- June 30/July 1 Confirm Your Interest
- July 6 Kit Drop Off
- July 10 Have all monitors set up by this evening, send photos
- Aug 10 Kit Pick up



Meetings in orange are required.

Meetings:

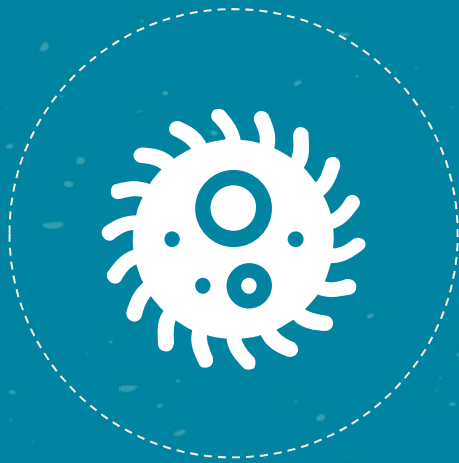
- July 8 or 9** Virtual Cohort Kick-off
- July 12 or 13 Check-in
- July 15 or 16** **Dylos Downloading**
- July 19 or 20 What are Good Numbers? Health Risks?
- July 22 or 23 Online Resources
- July 26 or 27 Behavioral Interventions
- July 29 or 30** **ROCIS Filtration Interventions**
- Aug 2 or 3 Health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

After this Webinar: Next Steps

- **Confirm your interest, by **Wed. PM, June 30th****
- **Complete House Characterization Survey by **Thur. PM July 1st****
 - Both links provided in follow-up email from today's webinar.
- **Arrange for kit delivery on **Tuesday, July 6th** (SW PA)**
- **Kits being shipped should arrive by **Thursday, July 8th****
- **Participate in the one-hour Kick-off, **Thurs. July 8th** or **Fri. July 9th****

The more time you invest, the more you will gain!

COVID-19 Considerations

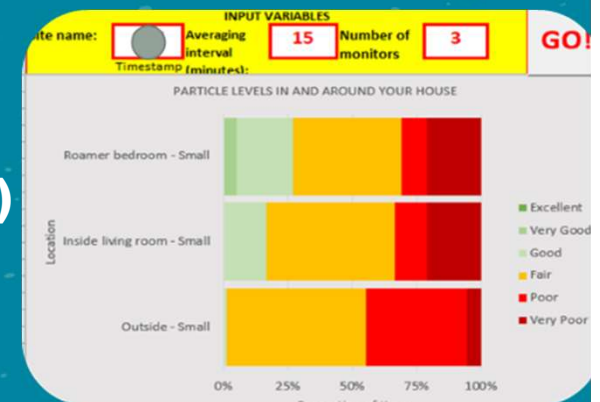


- **Kit preparation**
- **Kit delivery**
- **Kit return to ROCIS**

Virtual Cohort Expectations



- **Schedule**
- **Ongoing Air Quality Monitoring (twice daily)**
 - **Logging form**
 - **Incident form**
- **Download Dylos Particle Monitor & Upload Data (weekly)**



ROCI S

06

Recap - Review

- 1. Introduce ROCIS and the Low Cost Monitoring Project (LCMP)**
- 2. Provide information needed for you to confirm your interest in participating in this cohort.**
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**Did We
Meet the
Objectives?**

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??



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