

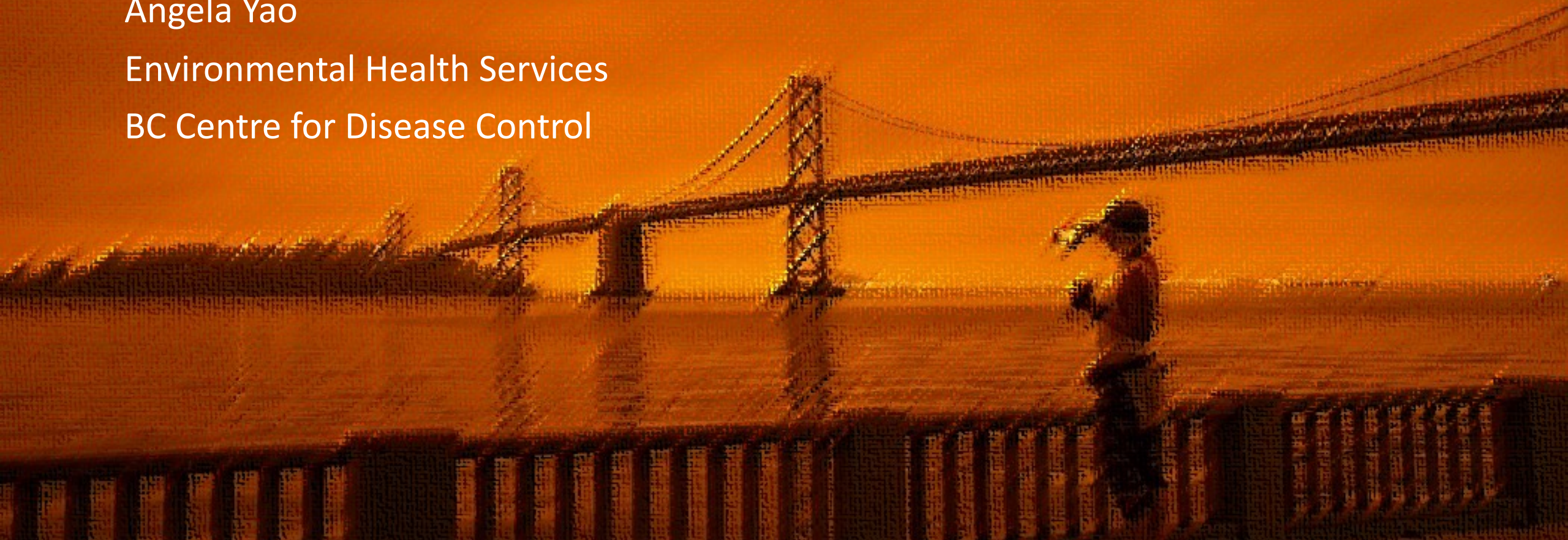
# Wildfire Smoke and Public Health

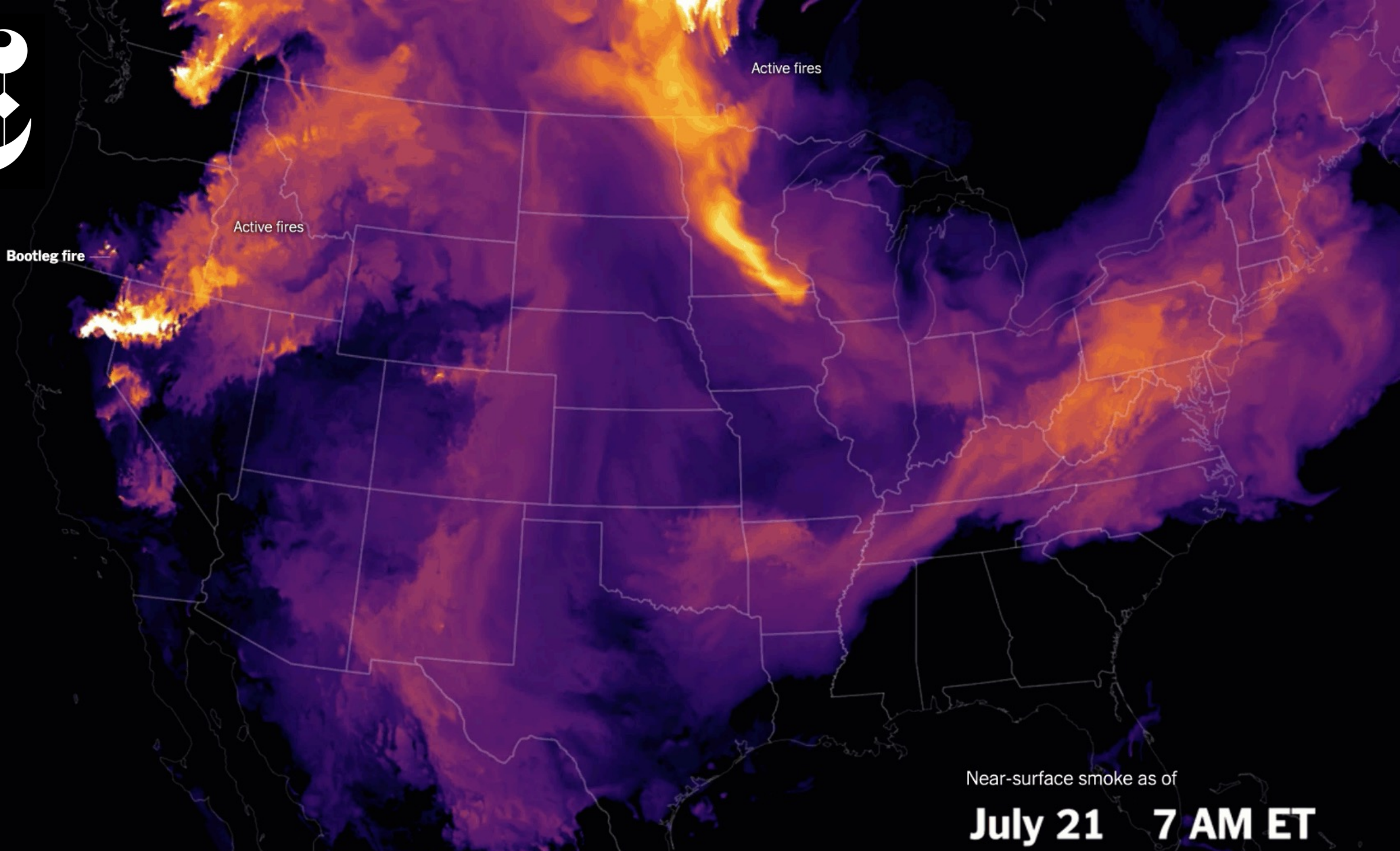
## Learn to live with a smoky reality

Angela Yao

Environmental Health Services

BC Centre for Disease Control





Active fires

Active fires

Bootleg fire

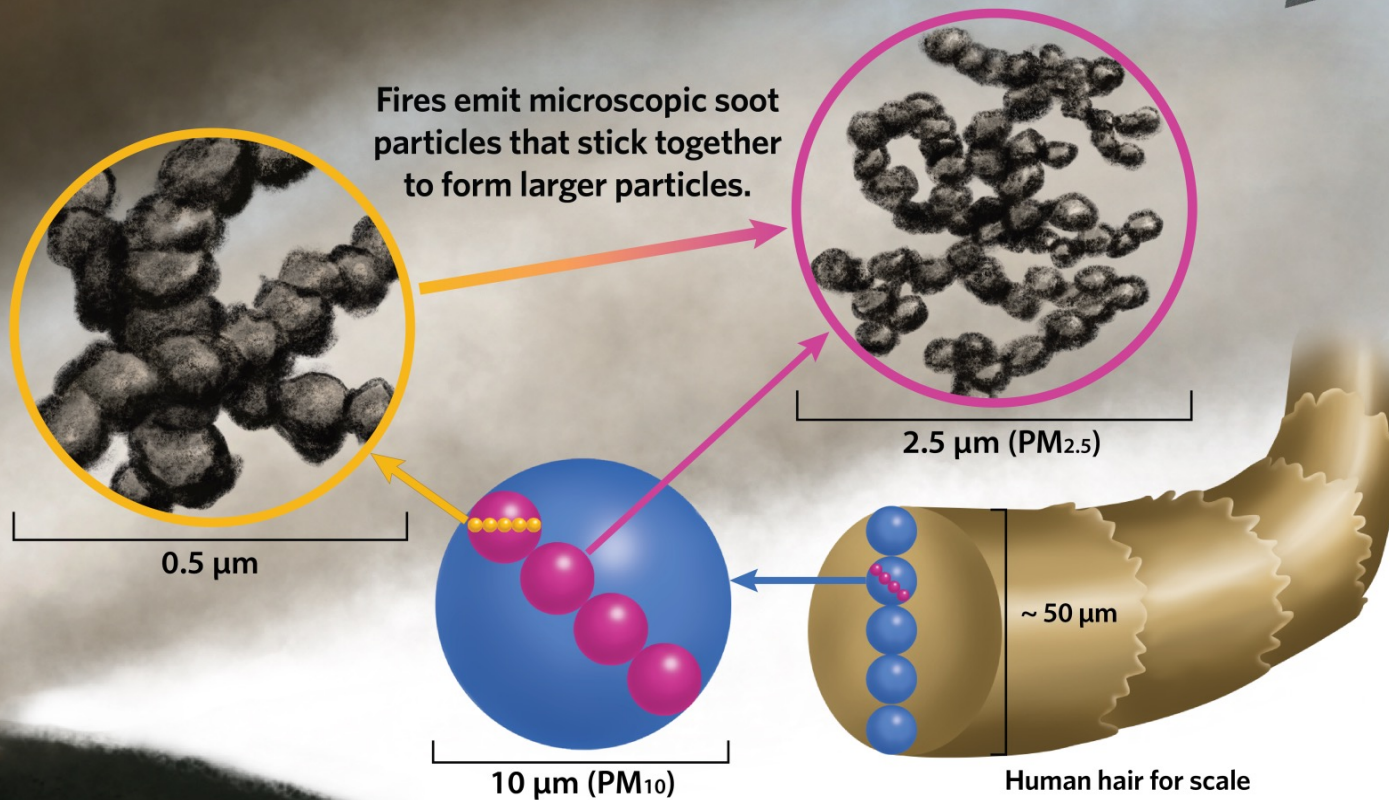
Near-surface smoke as of

**July 21 7 AM ET**

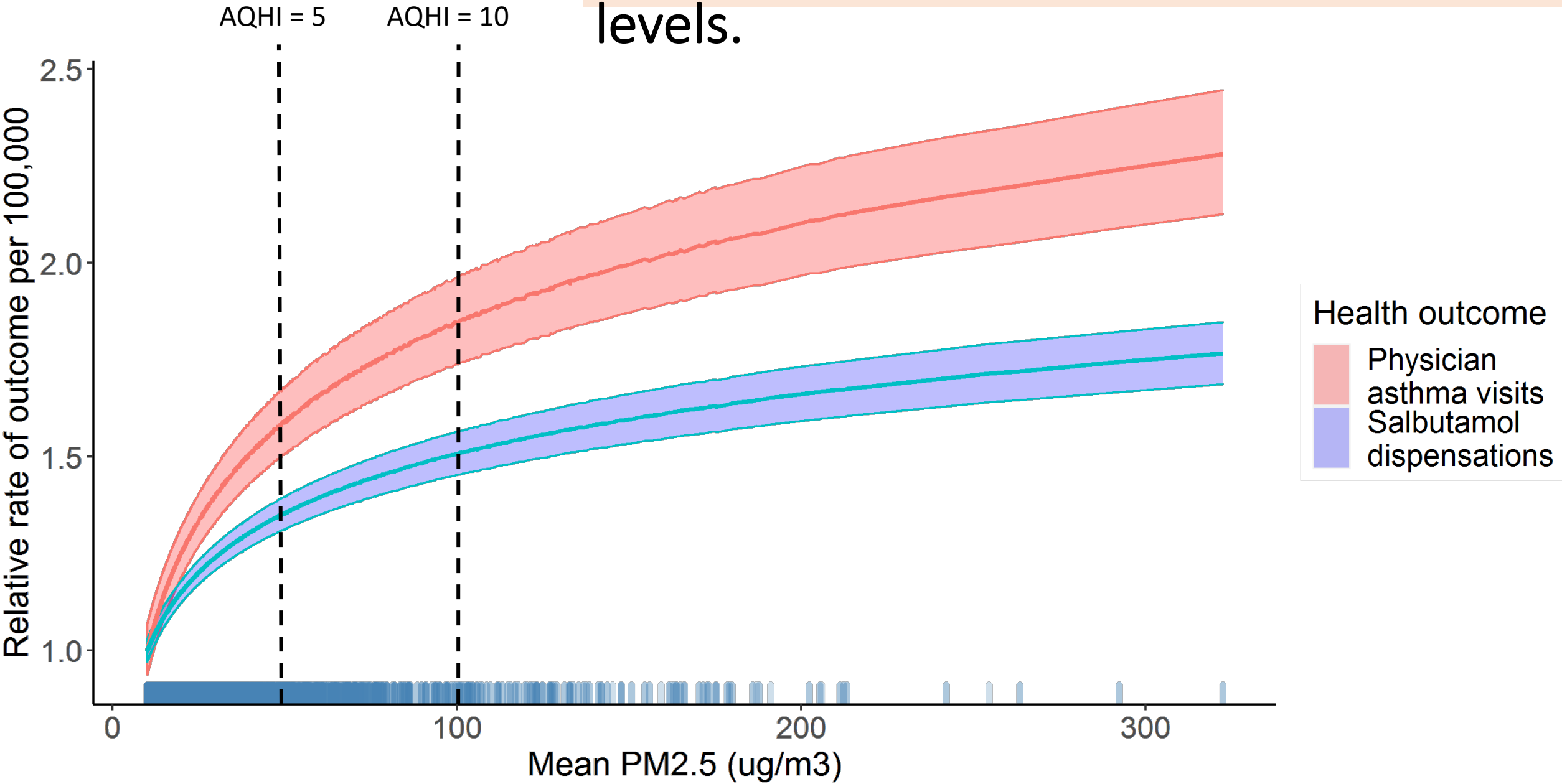
**Wildfire smoke is a complex mixture of gases and particles.**

As they move away from the fire, the particulate matter (PM), volatile organic compounds, and other gases interact in the atmosphere to form secondary particles and gases, such as ozone.

Fires emit microscopic soot particles that stick together to form larger particles.

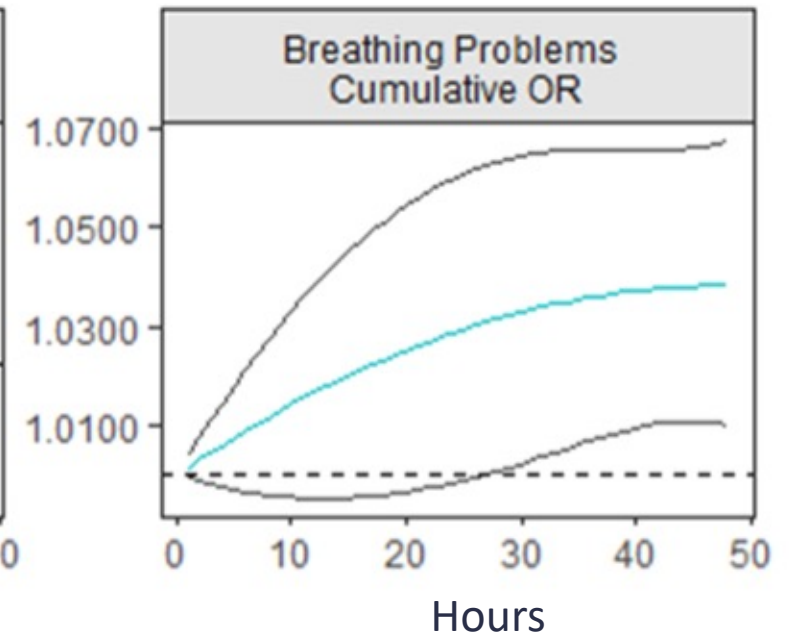
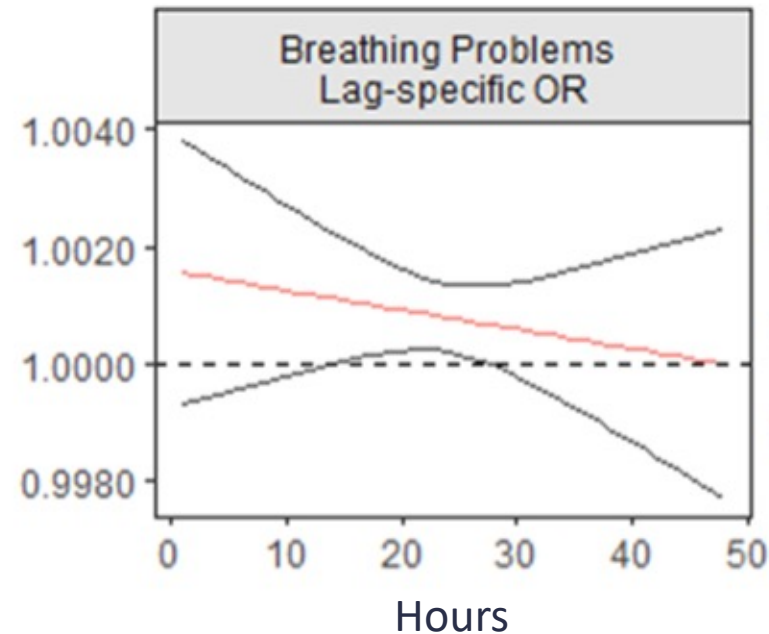


Most health effects seen at lower levels.

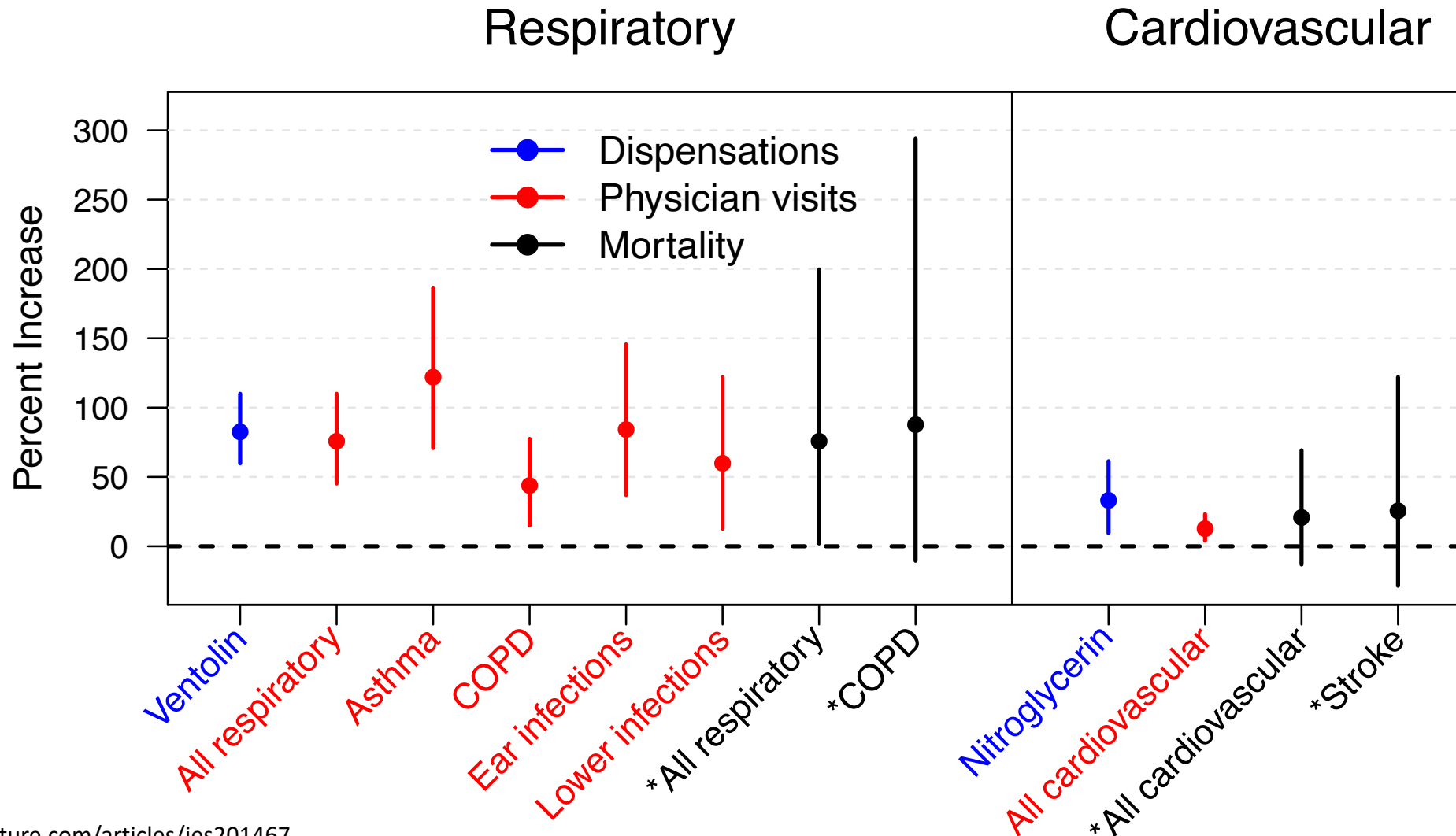


# Impacts observed within hours of exposure.

**Ambulance  
Dispatch**



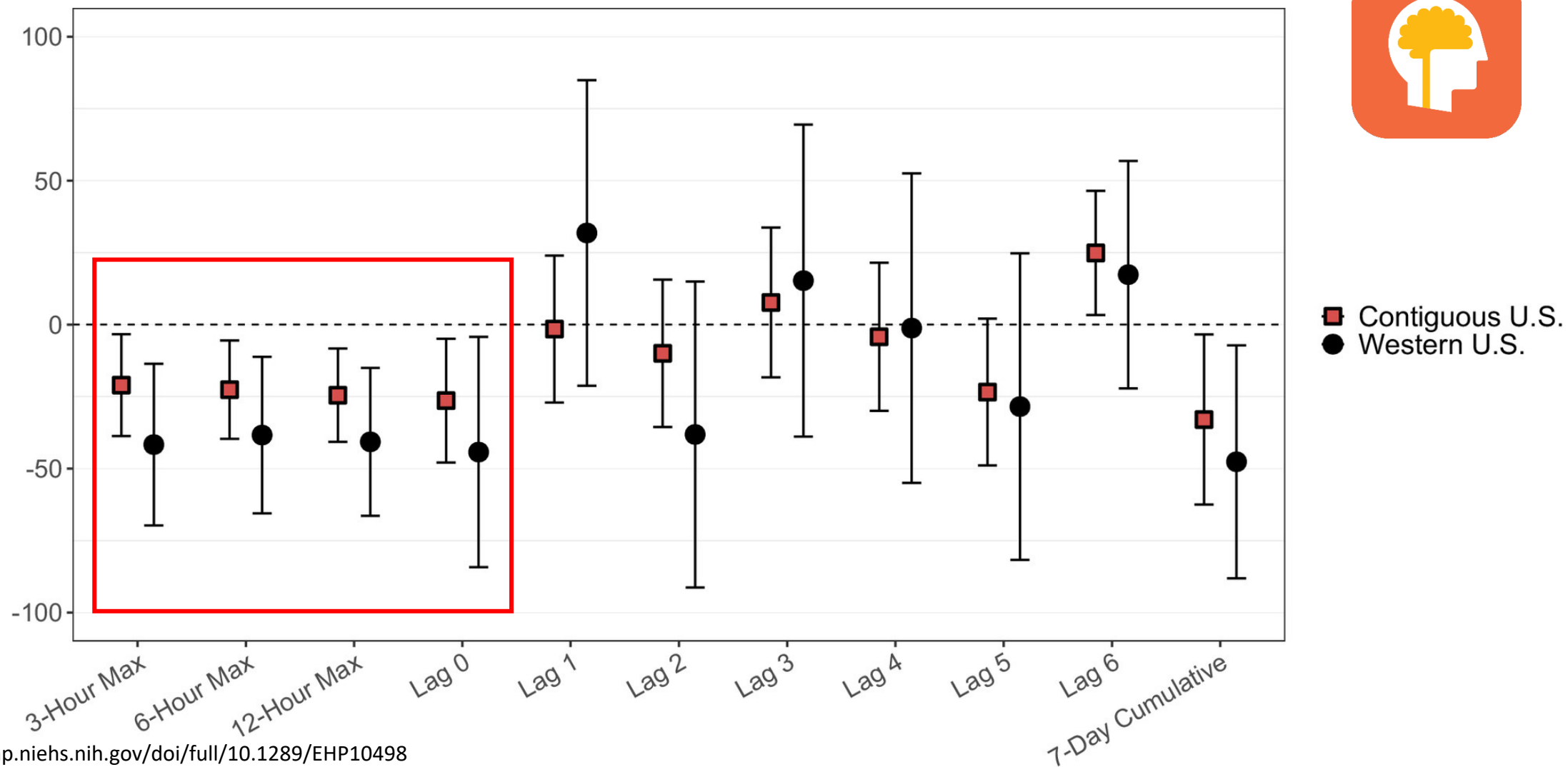
# Impacts go well beyond respiratory conditions.



\*Unpublished data

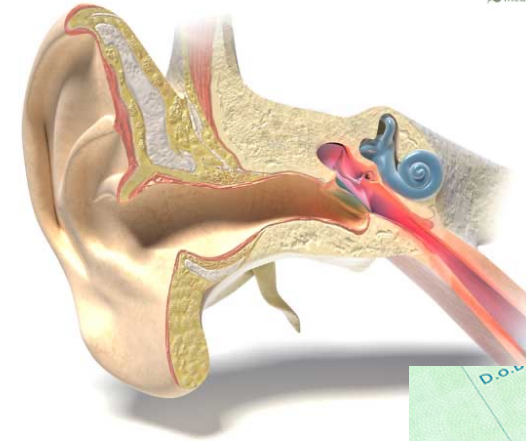
# Reduced cognitive function

Changes in attention scores per 10 ug/m<sup>3</sup> PM<sub>2.5</sub> increase



# Prenatal exposure is associated with birth/early life outcomes.

## Birth weight



Ear and respiratory infections

**Table 2.** Estimated effect of wildfire event during gestation on birth weight (g), by trimester.

Trimester of exposure	Unadjusted model		Adjusted model	
	Effect (g)	95% CI	Effect (g)	95% CI
Third ( $\geq 29$ weeks)	-7.9	(-12.8, -3.1)	-7.0	(-11.8, -2.2)
Second (17-28 weeks)	-17.1	(-21.9, -12.3)	-9.7	(-14.5, -4.8)
First (1-16 weeks)	-3.9	(-7.8, 0.0)	-3.3	(-7.2, 0.6)
Any trimester	-8.8	(-11.5, -6.1)	-6.1	(-8.7, -3.5)

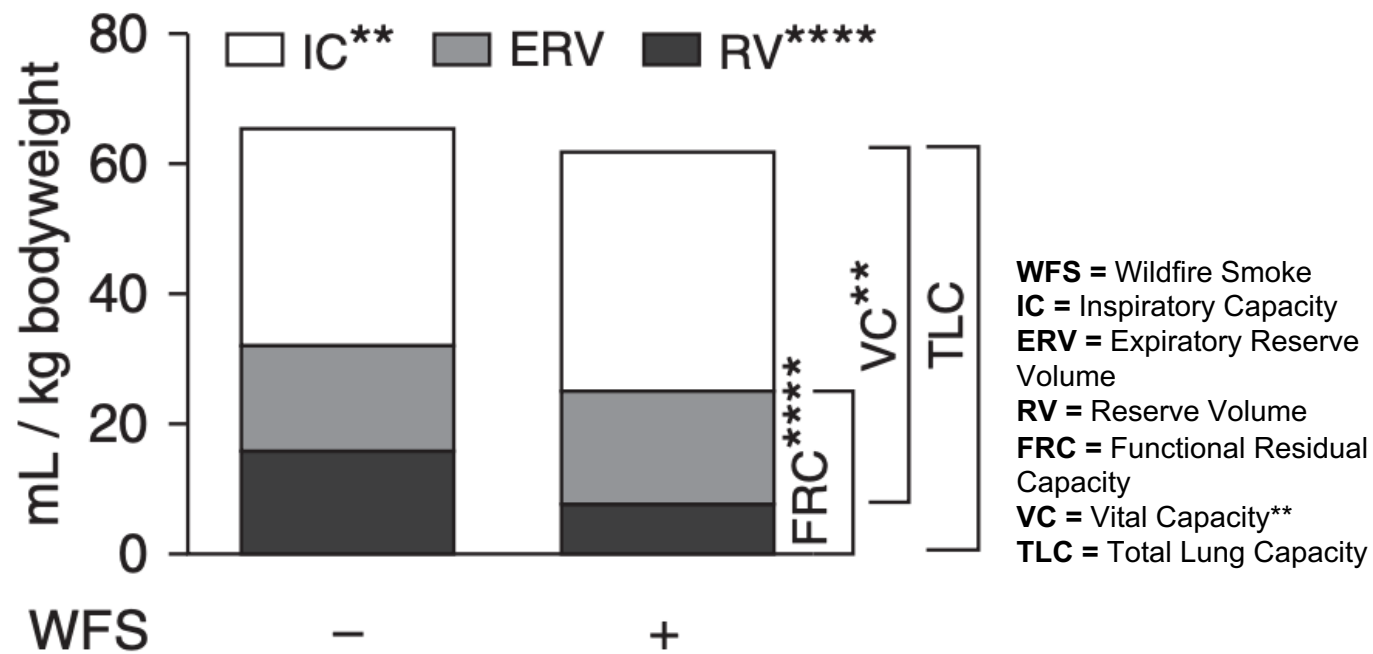
Adjusted model includes terms for fetal sex, gestational age, parity, maternal age, maternal education, maternal race/ethnicity, secular trend, and season.







# Reduced lung capacity after early life exposure





## Impacts of High Concentration, Medium Duration Coal Mine Fire Related PM<sub>2.5</sub> on Cancer Incidence: 5-Year Follow-Up of the Hazelwood Health Study


[Pei Yu](#) , [Yuming Guo](#) , [...], and [Michael J. Abramson](#)  [View all authors and affiliations](#)

### Articles

# Long-term exposure to wildfires and cancer incidence in Canada: a population-based observational cohort study

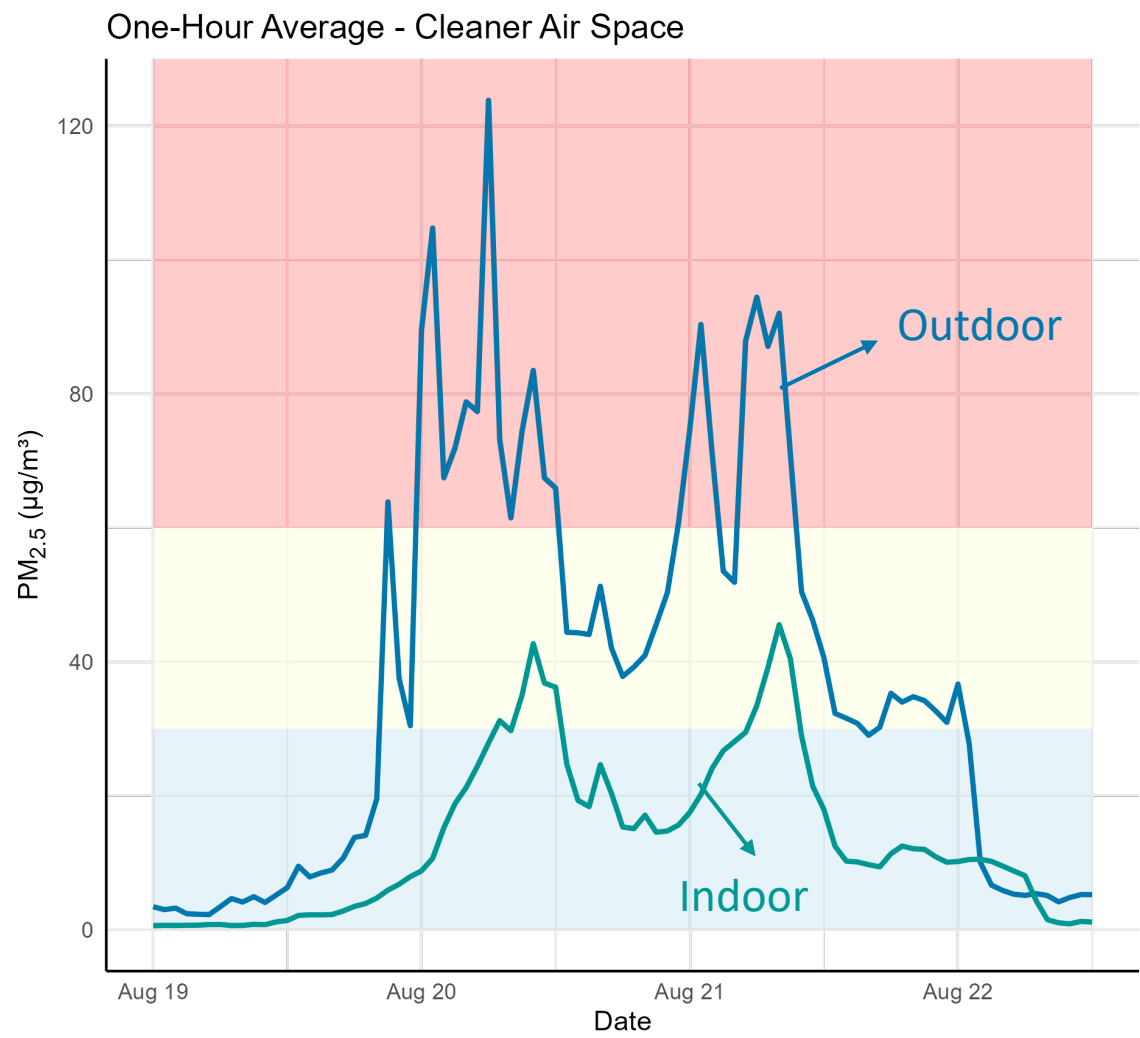
[Jill Korsiak MSc](#) <sup>a</sup>, [Lauren Pinault PhD](#) <sup>b</sup>, [Tanya Christidis PhD](#) <sup>b</sup>, [Richard T Burnett PhD](#) <sup>c</sup>, [Prof Michal Abrahamowicz PhD](#) <sup>a</sup>, [Prof Scott Weichenthal PhD](#) <sup>a</sup>  

## Exposure to wildfire-related PM<sub>2.5</sub> and site-specific cancer mortality in Brazil from 2010 to 2016: A retrospective study

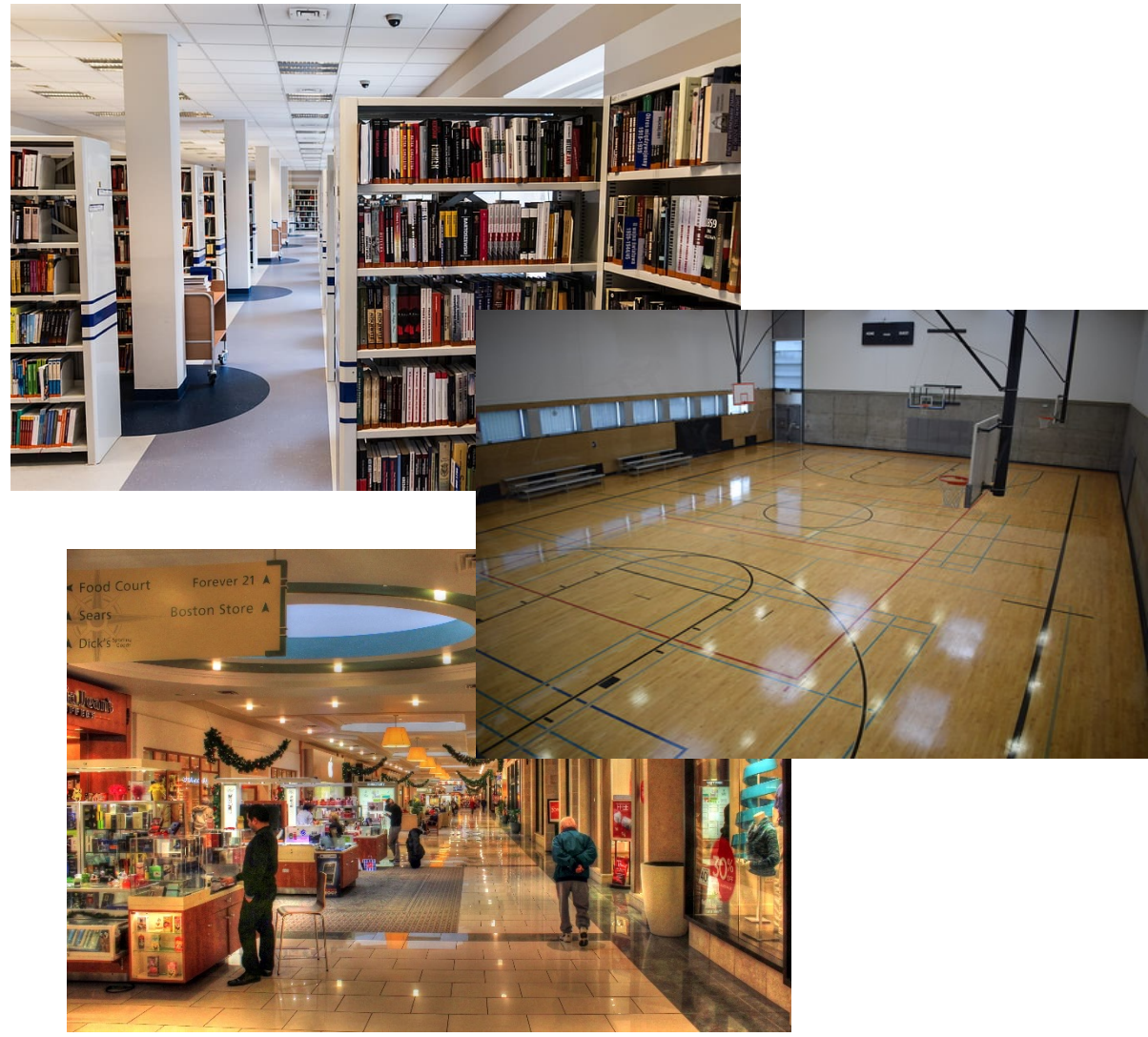
[Pei Yu](#), [Rongbin Xu](#), [Shanshan Li](#), [Xu Yue](#), [Gongbo Chen](#), [Tingting Ye](#), [Micheline S. Z. S. Coêlho](#), [Paulo H. N. Saldiva](#), [Malcolm R. Sim](#), [Michael J. Abramson](#), [Yuming Guo](#) 



# Get buildings ready for smoke!



Source: Vancouver Coastal Health

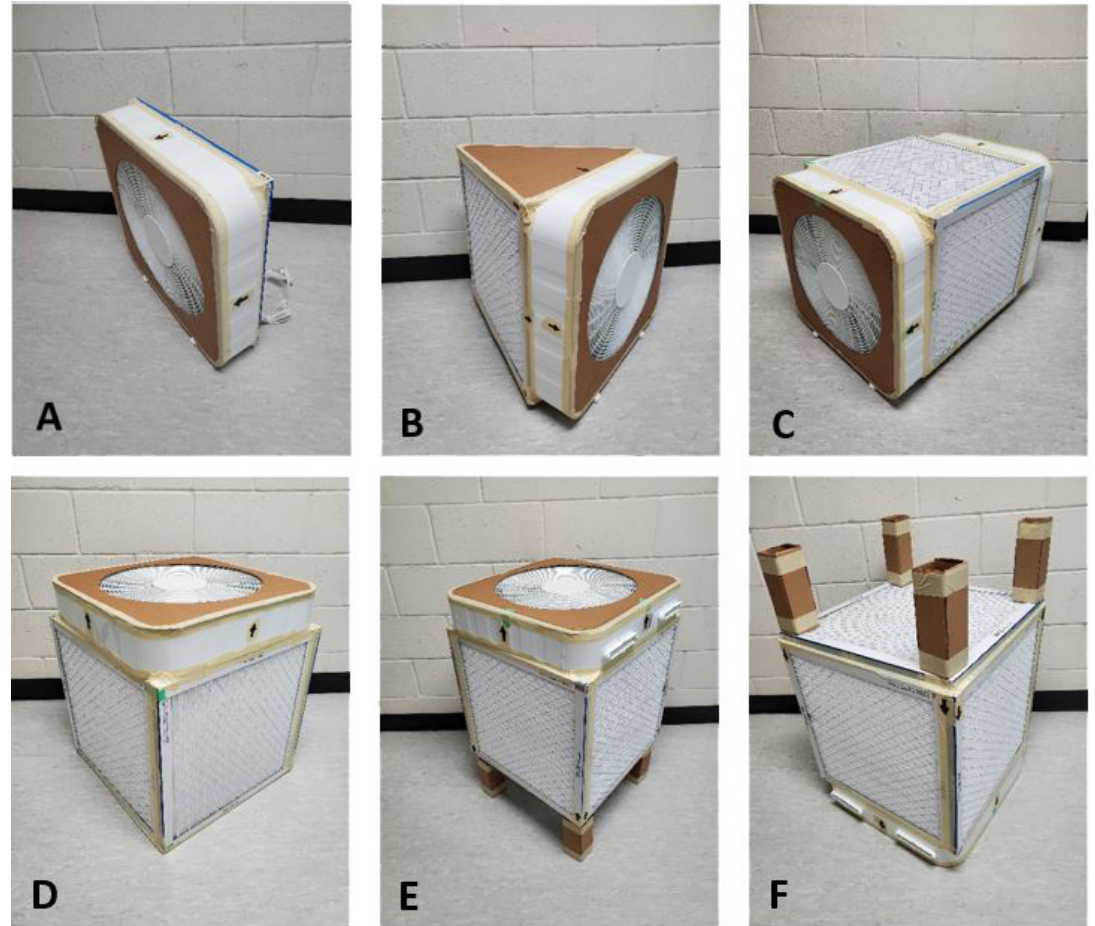


# Portable HEPA air cleaners work!

Commercial portable air cleaner



DIY air cleaner with box fan and furnace filters



[Do-it-yourself \(DIY\) air cleaners: Evidence on effectiveness and considerations for safe operation | National Collaborating Centre for Environmental Health | NCCEH - CCSNE](#)

# Communities/organizations/individuals should have a plan!



PART 1: To be completed with your healthcare provider

## Wildfire Smoke and Extreme Heat Action Plan

Name: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Care Professional's Name: \_\_\_\_\_ Emergency Contact Name: \_\_\_\_\_  
Care Professional's #: ( ) - \_\_\_\_\_ Emergency Contact #: ( ) - \_\_\_\_\_

**Wildfire smoke and extreme heat can affect your health, but there are steps you can take to protect yourself. This action plan will help you *prepare and respond*.**

**I Know My Air Quality and Temperature**  
My region: \_\_\_\_\_, BC

- I can check air quality
  - (1) phone/email (<https://aqss.nrs.gov.bc.ca/subscription.html>, or the WeatherCAN app)
  - (2) online (<https://www.env.gov.bc.ca/epd/bcairquality/data/aqi-table.html>)
  - (3) if I can see smoke, I know the risk is high to very high
- I will receive extreme heat alerts
  - (1) on my phone (emergency alerts active)
  - (2) online (<https://weather.gc.ca/?alertTableFilterProv=BC>)
  - (3) by listening to this **radio channel**: \_\_\_\_\_ AM/FM
- If I cannot access this information on my own, I will call: \_\_\_\_\_ at ( ) - \_\_\_\_\_

**My Home and Supplies are Ready Now**  
I have....

- extra medications and a **pharmacy delivery contact**: \_\_\_\_\_
  - I have talked to my pharmacist/doctor about medical safety during a heat event
- extra food/water and a **grocery delivery contact**: \_\_\_\_\_
- window coverings or thermal curtains.
- a home digital thermometer and extra batteries.
- purchased/made a portable air cleaner (with HEPA filter) and designated a clean air room.
- a heat pump, or an air conditioning unit and/or fan to reduce heat exposure.
- If I have forced air heating, I have talked to my service provider about filters/settings to use when smoky.
- If employed, I have talked to my employer about indoor or work-from-home options during an event.

**I Know My Resources**

- In case I *must* go outside, I have a to-go bag ready and I have safe transport options.
  - (1) Phone a friend/ride service: **ride contact**: \_\_\_\_\_
  - (2) Drive myself, with vents and windows closed and air conditioner on "recirculate" mode.
  - (3) I have a supply of well-fitted masks, and **my transit route** is: \_\_\_\_\_



[BC-Wildfire-Action-Plan 2023June08 EB.pdf](#)  
[centreforlunghealth.ca](http://centreforlunghealth.ca)

Thank you!

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