



# Mitigation Measures in Missoula County

A look at smoke-readiness in Missoula County, Montana

Sarah Coefield, Air Quality Specialist

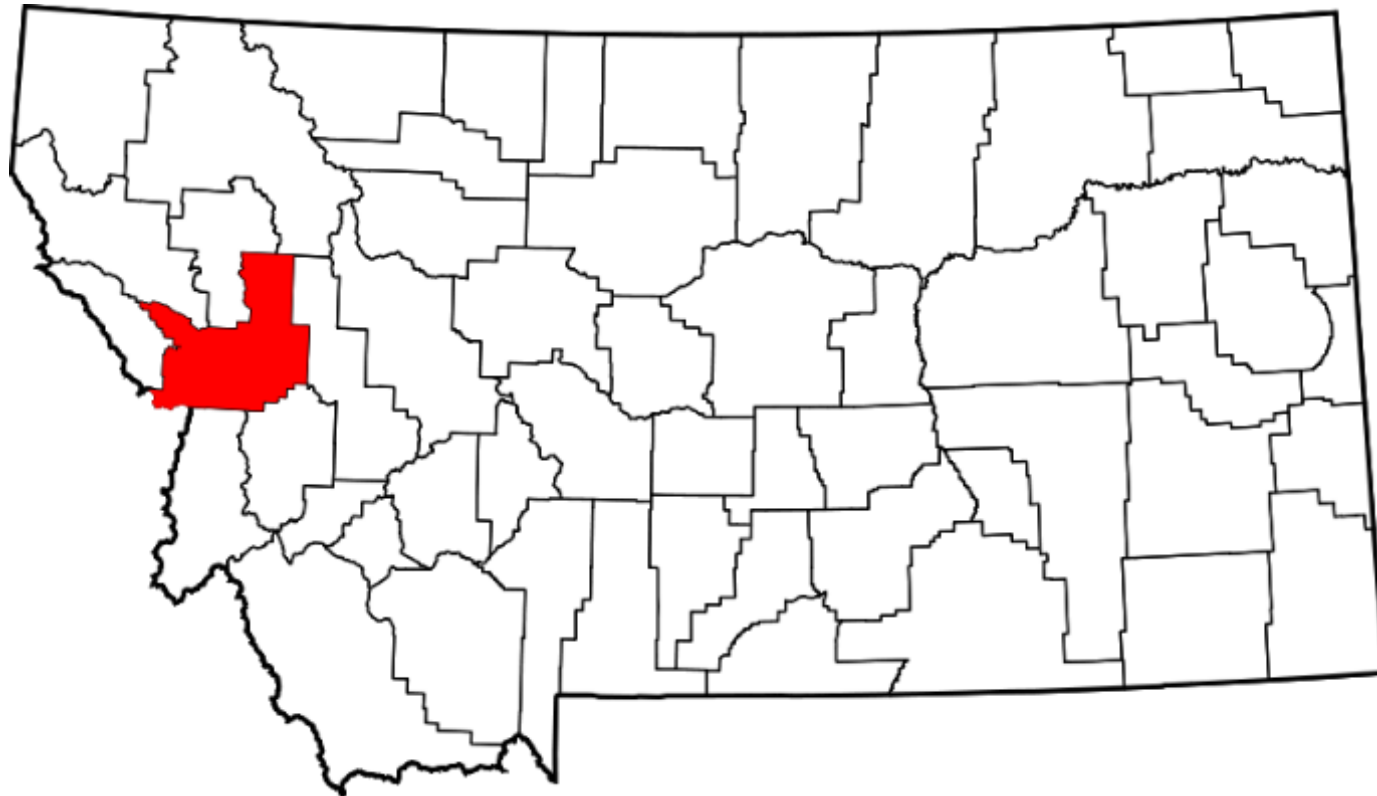
Missoula City-County Health Department



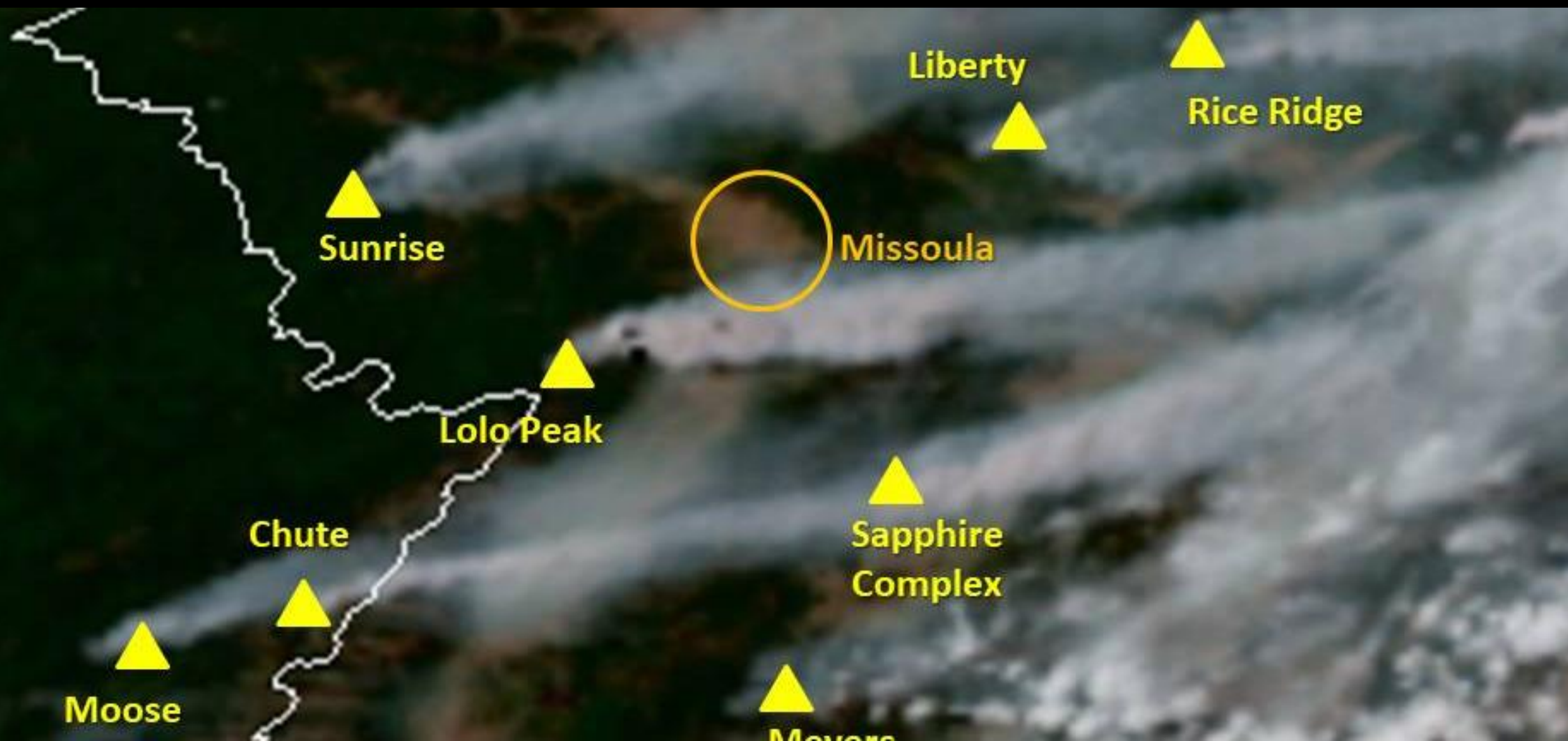
2019 Smoke Management in the  
Northwest  
Smoke Ready Communities  
EPA Region 10  
May 29-30, 2019

# Missoula County

~**117,000** Residents | **2,618** mi<sup>2</sup> | **2** Air Quality Specialists

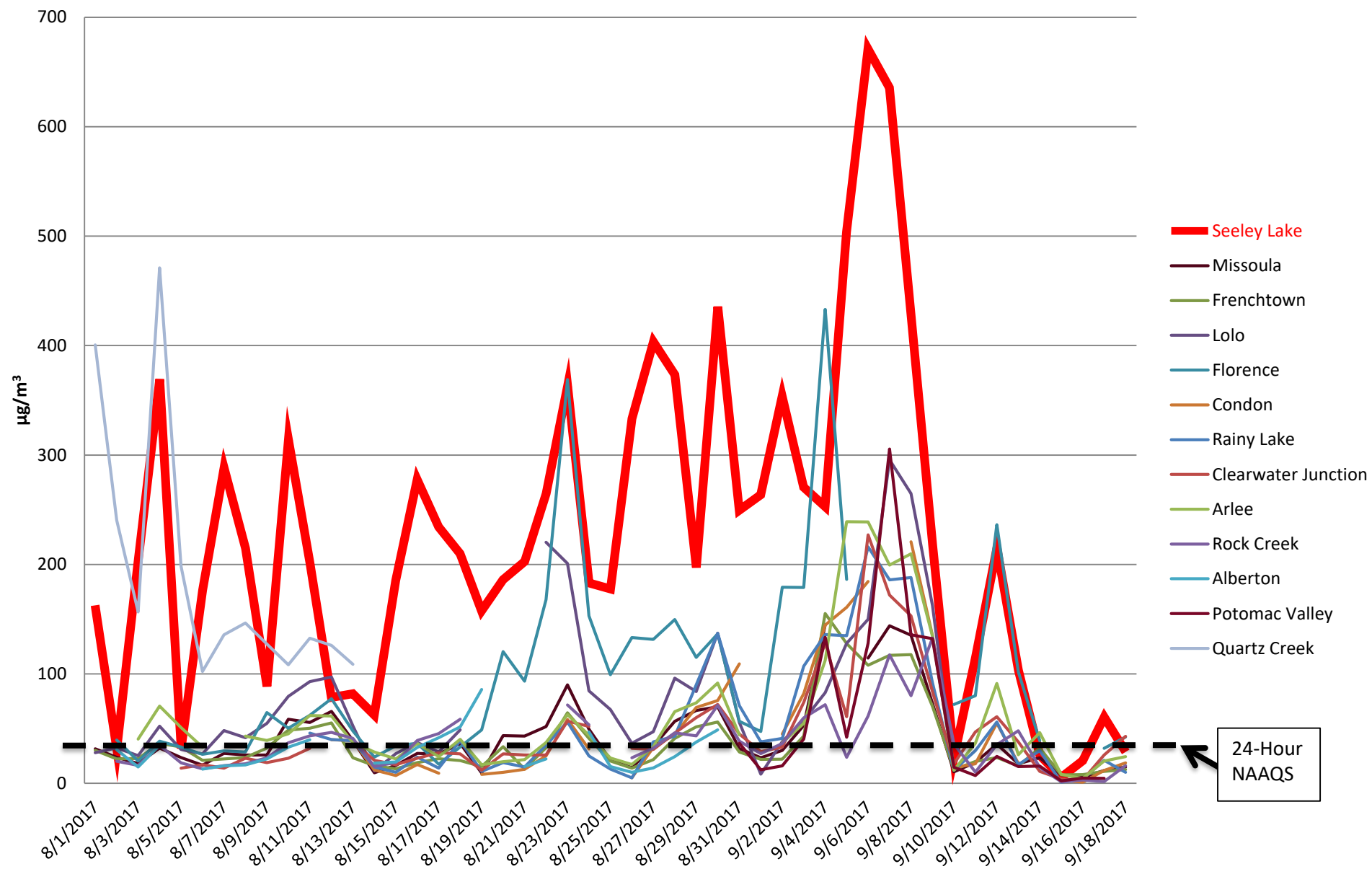


# 2017 Was a Record-Breaking Wildfire Smoke Year in Missoula County

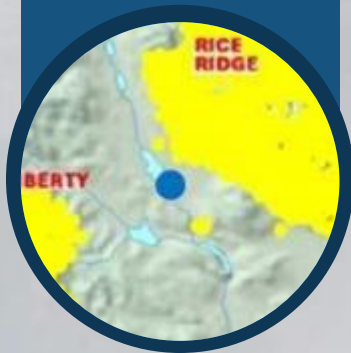




## 2017 Wildfire Season 24-hour Average PM<sub>2.5</sub> Concentrations



# Seeley Lake

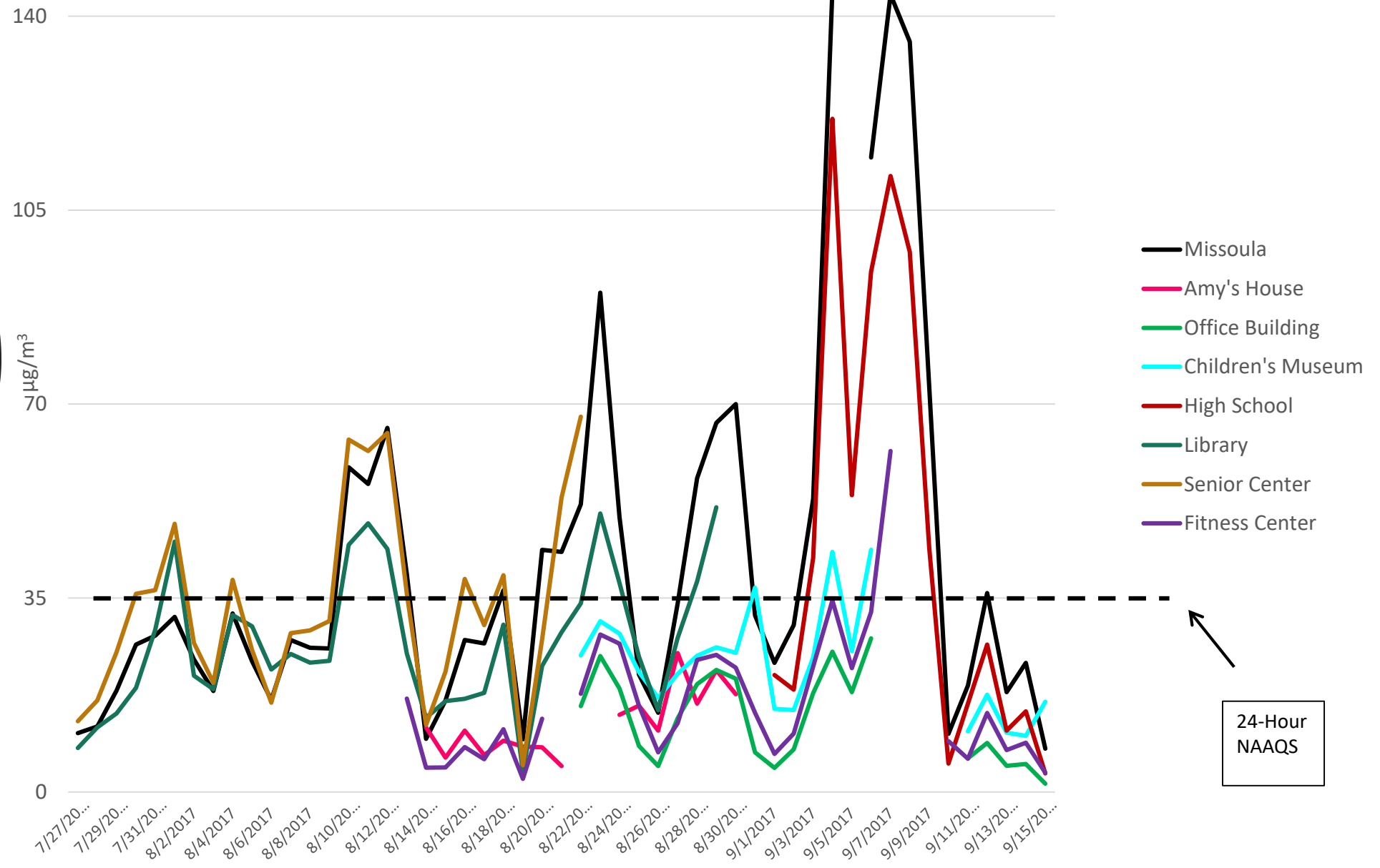


35 mornings of hazardous air quality



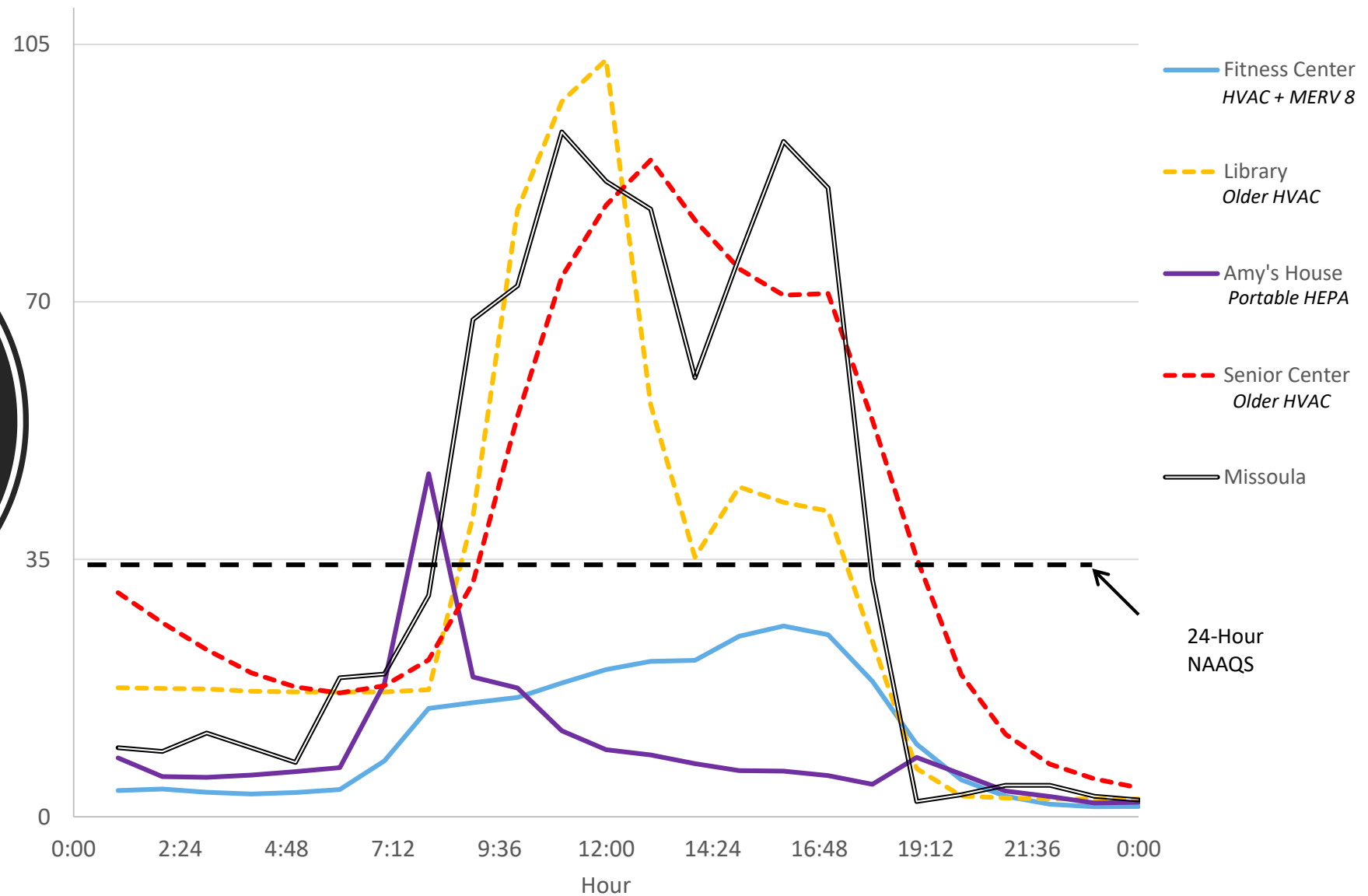
24-hour PM2.5 average concentrations in Missoula and select indoor locations

After-Event  
Analysis:  
Filtration  
Impact on Air  
Quality



After-Event  
Analysis:  
Filtration  
Impact on Air  
Quality

PM<sub>2.5</sub> Concentrations on August 18, 2017 in Missoula and Indoor Locations



# What's a MERV?

## Minimum Efficiency Reporting Value

MERV Std 52.2	Intended Dust Spot Efficiency Std 52.1 (2)	Average Arrestance	Particle Size Ranges	Typical Applications	Typical Filter Type
1 - 4	<20%	60 to 80%	> 10.0 µm	Residential/Minimum Light Commercial/ Minimum Minimum Equipment Protection	Permanent / Self Charging (passive) Washable / Metal, Foam / Synthetics Disposable Panels Fiberglass / Synthetics
5 - 8	<20 to 60%	80 to 95%	3.0-10.0 µm	Industrial Workplaces Commercial Better / Residential Paint Booth / Finishing	Pleated Filters Extended Surface Filters Media Panel Filters
9 - 12	40 to 85%	>90 to 98%	1.0-3.0 µm	Superior/Residential Better/Industrial Workplaces Better/Commercial Buildings	Non-Supported / Pocket Filter / Rigid Box Rigid Cell / Cartridge V-Cells
13 - 16	70 - 98%	>95 to 99%	0.30-1.0 µm	Smoke Removal General Surgery Hospitals & Health Care Superior/ Commercial Buildings	Rigid Cell / Cartridge Rigid Box / Non-Supported / Pocket Filter V-Cells
MERV Std 52.2	Efficiency		Typical Applications		Typical Filter Type
17 - 20 <sup>1</sup> <small>Deleted from ASHRAE</small>	99.97%-99.9999%		Hospital Surgery Suites Cleanrooms Hazardous Biological Contaminants Nuclear Material		HEPA ULPA

Current commercial standard



# Wildfire Public Health Strategies

## Traditional

- Monitor air quality
- Issue health advisories
- Emphasize reducing activity levels and staying inside

## New Direction

- Monitor air quality
- Issue health advisories
- Emphasize reducing activity levels and staying inside with **filtered air**
- **Create clean air spaces**
  - Direct interventions
  - Policy/Institutional controls

# What is a smoke-ready community?



A community in which public buildings have filtration for wildfire smoke



A community whose residents understand the health risks associated with wildfire smoke exposure and have access to tools to protect themselves



A community with the resources on hand to help vulnerable and underserved residents



# Some Smoke-Ready Goals

- Heating, ventilation and air conditioning (HVAC) systems **recirculating air through MERV 13+ filters** during smoke events
- Appropriately sized portable air cleaners with **true high-efficiency particulate air (HEPA) filtration** in buildings without HVAC systems
- Good door and window control to **limit smoke infiltration**
- Public understanding about the **importance of creating clean indoor air** during smoke events

# Mitigation Measures in Missoula



A community in which public buildings have  
filtration for wildfire smoke

## Public spaces



# Schools

- MERV 13+ filters in all new and remodeled public schools in Missoula County
- MERV 13+ requirements in new MT School Rules draft (in legal review)
- HEPA portable air cleaner (PAC) dissemination during 2017 wildfires, cache on-hand in 2018
- Community Needs Assessment completed in 2018 by Climate Smart Missoula (CSM)



# Libraries

- Missoula's current library (c. 1974) HVAC can't filter out PM2.5
- New library (opening in 2020) will have MERV 13 filters installed during wildfire season



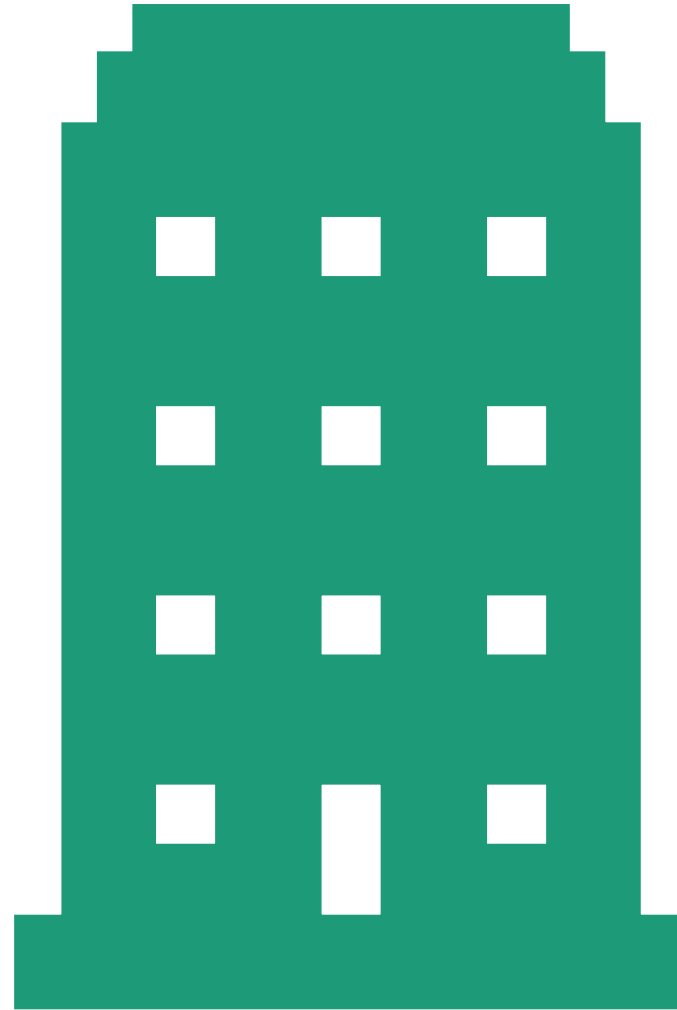
## Privately owned public spaces

MERV 13 commitment in new  
buildings:

- Residence Inn Missoula
- Staybridge Suites
- Community Hospital Cancer  
Patient Family Center

Some facilities are ahead of the  
game

- DirectTV/AT&T – filtration for  
fine particulate and VOCs for  
their Missoula employees





A community whose residents understand the health risks associated with wildfire smoke exposure and have access to tools to protect themselves

# Individuals



# Smoke-ready outreach

- Columns in the Missoulian before 2018 smoke season
- News releases about preparing for wildfire smoke generated multiple stories in local media
- Excellent relationship with local media = more people to carry the message



COLUMNISTS

## Keeping wildfire smoke out of large indoor spaces

SARAH COEFIELD Jul 27, 2018

Today we're focusing on creating clean indoor air in the spaces where you work, live, or go to school, office, indoor recreation, etc.



COLUMNISTS

## Keeping cool during smoke season

SARAH COEFIELD Jul 20, 2018

According to the Centers for Disease Control, every year, thousands of people in the United States are killed by extreme heat. However, during wildfire smoke season, the risk of heat-related illness and death is even higher.



COLUMNISTS

## Practical tips for filtering indoor air

SARAH COEFIELD Jul 12, 2018

In last week's column (July 2) we learned why it's important to stay indoors during wildfire smoke season. This week, we'll share some practical tips for filtering indoor air.

[HOME](#)[TODAY'S AIR](#)[HEALTH RISKS](#)[CLEAN INDOOR AIR](#)[OUTDOOR SAFETY](#)[THE SCIENCE](#)[ABOUT](#)<http://www.montanawildfiresmoke.org>

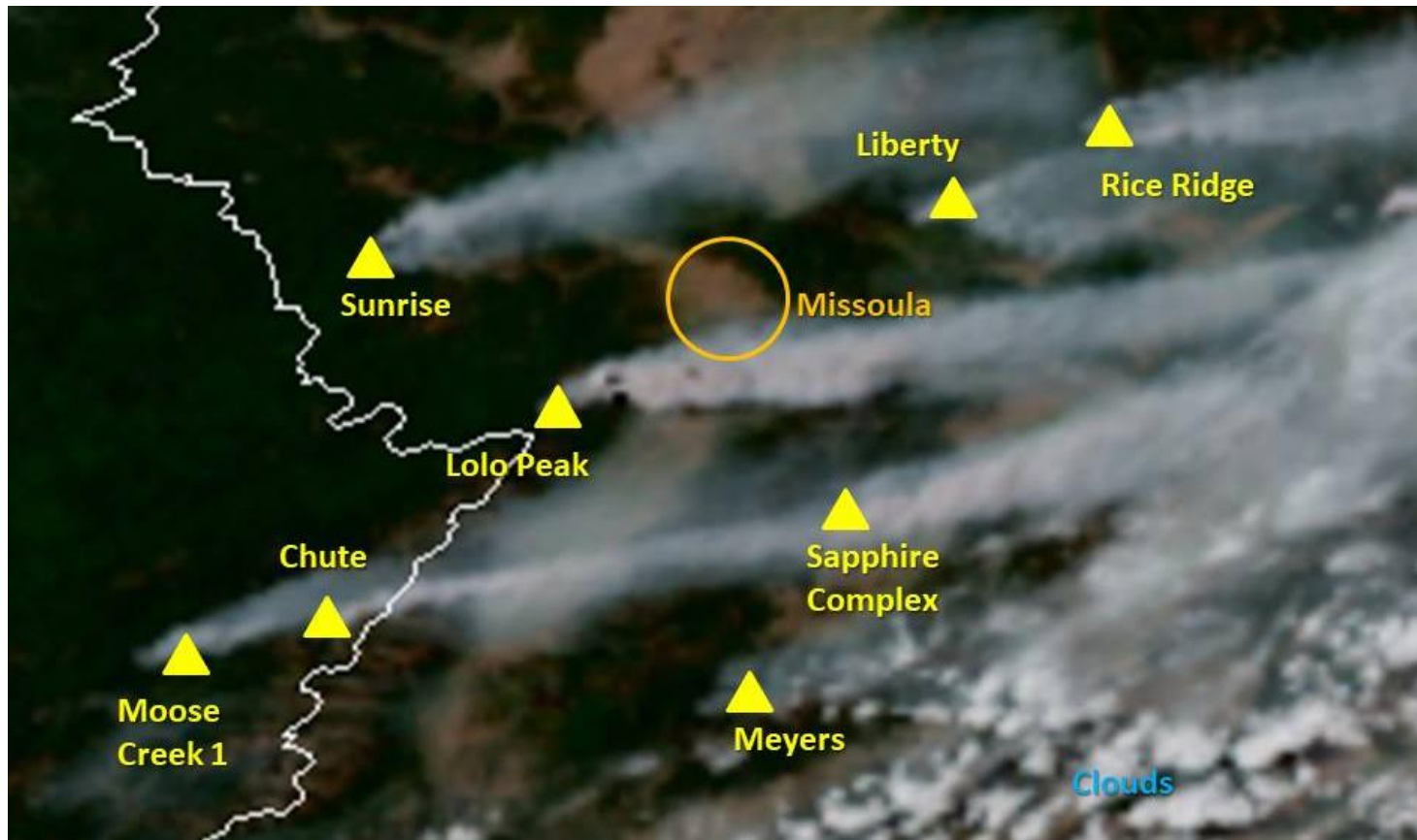
# Montana Wildfire Smoke

Photo by Paul Willet

As forest fires in the western United States grow in size, severity, and frequency, and as the wildfire season lengthens, the amount of wildfire smoke we breathe increases too. Smoke can settle in Montana communities from fires in local forests, from nearby states like Idaho, and even as far as Washington, California, and Canada. Visit the different pages of this site to find out more about the health risks of smoke, current smoke levels in your area, and what you can do to stay healthy.

**Scroll down for 2 short videos:**

- *Prepare for Smoke*
- *Be smart about health risks*



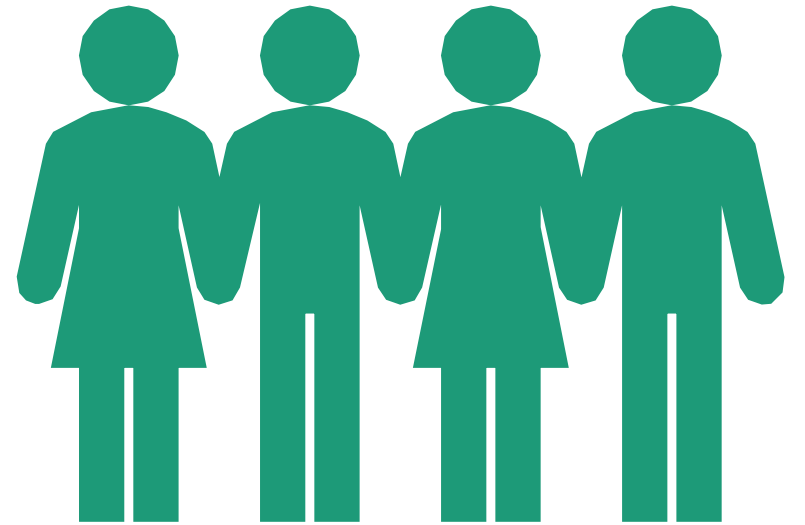
## Public health messaging during a smoke event

- Current air quality conditions
- Where the smoke is coming from
- Fire activity
- Smoke behavior
- How conditions will (or won't) change during the day
- Where to find cleaner air
- How to stay protected from the smoke



A community with the resources on hand to help  
vulnerable and underserved residents

Vulnerable and  
underserved residents



A public/private partnership born out of a shared desire to protect the public from wildfire smoke led to a smoke-ready pilot project in 2017. The project provided HEPA PACs to home-bound seniors with respiratory challenges and families with new babies. The project ballooned in response heavy wildfire smoke to include clinic patients and small elementary schools.



Intern Terri with volunteers from Lion's Den Ministries - getting ready to deliver filters.

A happy air cleaner recipient!



# Helping Individuals

---

Climate Smart Missoula donated 25 portable air cleaners to Seeley Lake health clinic patients and 5 portable air cleaners to the clinic itself in 2017.

**"I believe that machine saved my life,  
I really do."**

-Don Dunagan, Seeley Lake resident



Photo and quote: "Summer of Smoke Exposes Need For Clean Indoor Air In Montana," Nora Saks, Montana Public Radio, 1/3/18



## Preschools and Daycares

- PACs disseminated by Missoula City-County Health Department (MCCHD) and CSM to local daycares and preschools in 2018 – more than 500 young children had filtered air
- MCCHD and CSM plan to continue the program in 2019





## Special Needs Students

- Climate Smart Missoula has donated PACs to schools with students who have special health needs – the PACs will be in all their classrooms.



Climate Smart Missoula gave Potomac school three portable HEPA air cleaners for use in the classroom of one particularly sensitive young student.

Next steps, concluding thoughts

## Next Steps:

- Smoke-ready messaging will be included in wildfire preparedness outreach materials to residents in the wildland-urban interface (WUI)

## COMMUNITY WILDFIRE PROTECTION PLAN MISSOULA COUNTY, MONTANA



## Next Steps:

- 
- Community Needs Assessment that looks at indoor fitness facilities and activity spaces



## Next Steps:

---

- Host a workshop or series of workshops for local businesses to promote cleaner indoor air spaces during wildfire smoke events.
- Goal: protect employee health and provide opportunities for customers to get out of the smoke and into local businesses.
- Modeled after SmokeWise Ashland workshop



## Next Steps:

- Upcoming study to assess effectiveness of our wildfire smoke communication, outreach and intervention programs
  - Study plan and partners identified
  - Working out funding

The Washington Post

*Montana residents are desperate for clean air, and they're calling me*

Great Falls Tribune  
PART OF THE USA TODAY NETWORK

*Air quality in Seeley Lake "crazy bad"*

Montana  
Public Radio

npr

*Seeley Lake Schools Installing HEPA Filters Due To Wildfire Smoke*

*Montanans Pitch In To Bring Clean Air To Smoky Classrooms*

*Health Department: Leave Seeley Lake Until The Smoke Clears*

*Wildfire Smoke Takes Physical, Mental Toll on Western Montana*

*Summer of Smoke Exposes Need for Clean Indoor Air In Montana*

Sample of media coverage that helped spread wildfire smoke messaging in 2017



# Next Steps:

## FEMA Post Fire Hazard Mitigation Grant

- Wildfire smoke adaptation/mitigation plan for the county to be incorporated into disaster management planning.
- Additional monitors for MCCHD
- PACs for CSM's cache



## Next Steps:

---

- Cleaner air for Montana
  - HJ 42 failed on the House floor, 49-50.
  - Missoula County will pursue the tenets of the bill
  - Try again in 2021

A Joint Resolution of the Senate and the House of Representatives of the State of Montana requesting an interim study to evaluate options to promote and secure more timely and effective air quality monitoring and air filtration methods to increase citizens' access to cleaner and healthier indoor air during wildfire smoke seasons.

## Next Steps:

---

Wildfire smoke public health study in partnership with EPA

- Launching summer 2019
- Research in Missoula County and Research Triangle Park (NC)

- Evaluate the effectiveness of different filtration and HVAC setups during wildfire smoke events
- Test useful lifespan of consumer-grade HEPA filters under wildfire smoke conditions

As community  
size grows (or  
as resources  
shrink):



The need for  
institutional/policy/engineering  
controls also grows



The need for individuals' self-  
sufficiency grows

# Lingering questions



Social and health equity



Balance indoor air pollutant concerns with outdoor air pollutant concerns



Heat vs. Smoke



Can we do a better job removing VOCs?



# Questions?



Sarah Coefield  
Air Quality Specialist  
Missoula City-County Health Department  
[scoefield@missoulacounty.us](mailto:scoefield@missoulacounty.us)  
(406) 258-3642



# Get ready for next time

---

- Push for better air filtration in public places
- Compile health research
- Improve messaging
- Build filter cache

August 17, 2017  
Photo credit: Shannon Edney