Public health response at the small community scale

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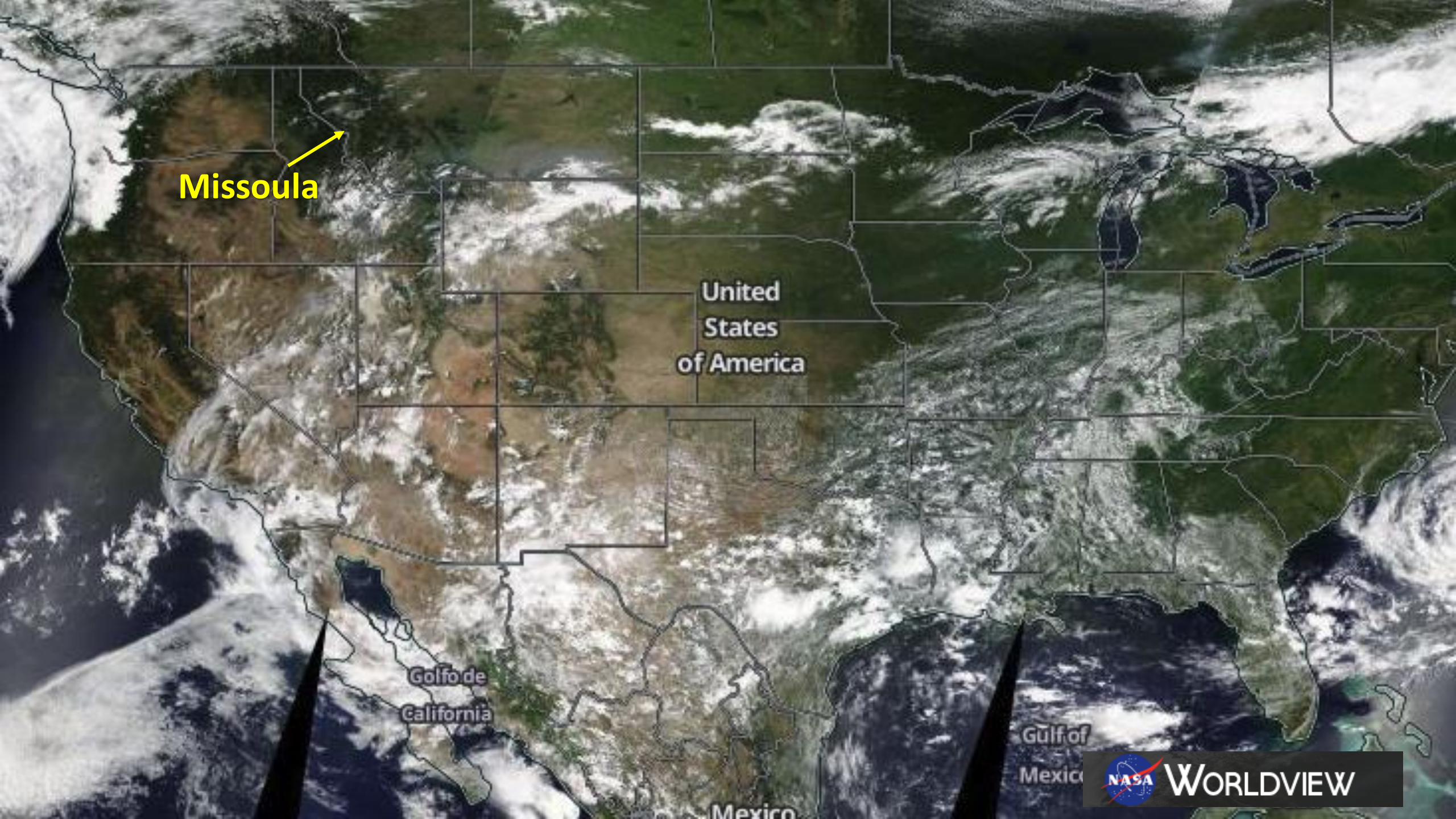
Missoula City-County Health Department

Wildfire Smoke: A Growing Threat to Air Quality and Public Health

BC Lung Association; Vancouver, BC; February 6, 2019


Missoula
United
States
of America
Golfo de
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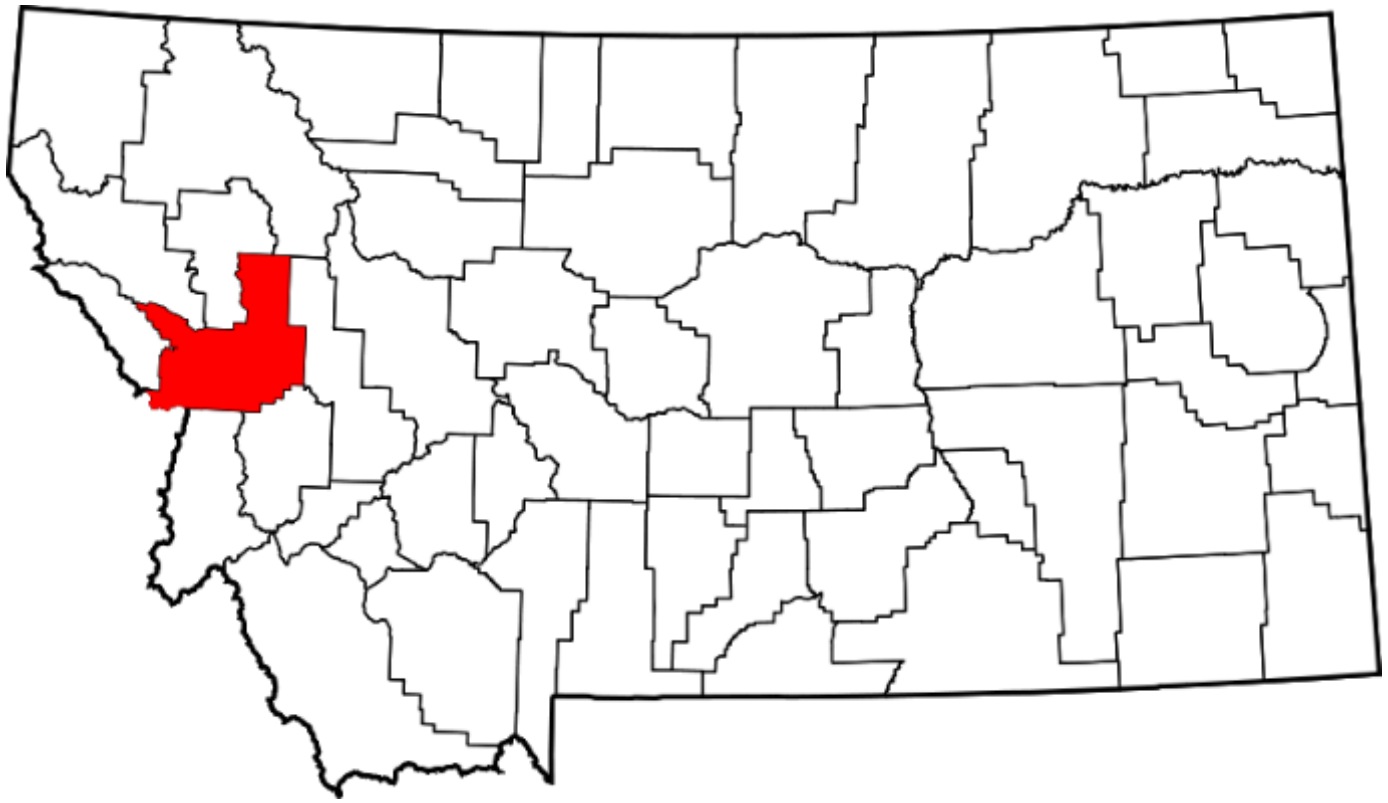
NASA WORLDVIEW

Missoula County

~**117,000** Residents | **2,618** mi^2 | **2** Air Quality Specialists



Air quality specialist tasks during wildfire season:

- Monitor air quality
- Provide health advisories to the public
- Collect snazzy smoke photos
- And also do everything else the job normally requires (divide and conquer)

As of 2017: Coordinate the county's public health response to wildfire smoke

Missoula County's public health response to wildfire smoke

- Communication
- Planning/Policy
- Interventions
- Air quality monitoring
- Outreach
- Studies
- Community Needs Assessment

Wildfire Public Health Strategies

Traditional

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

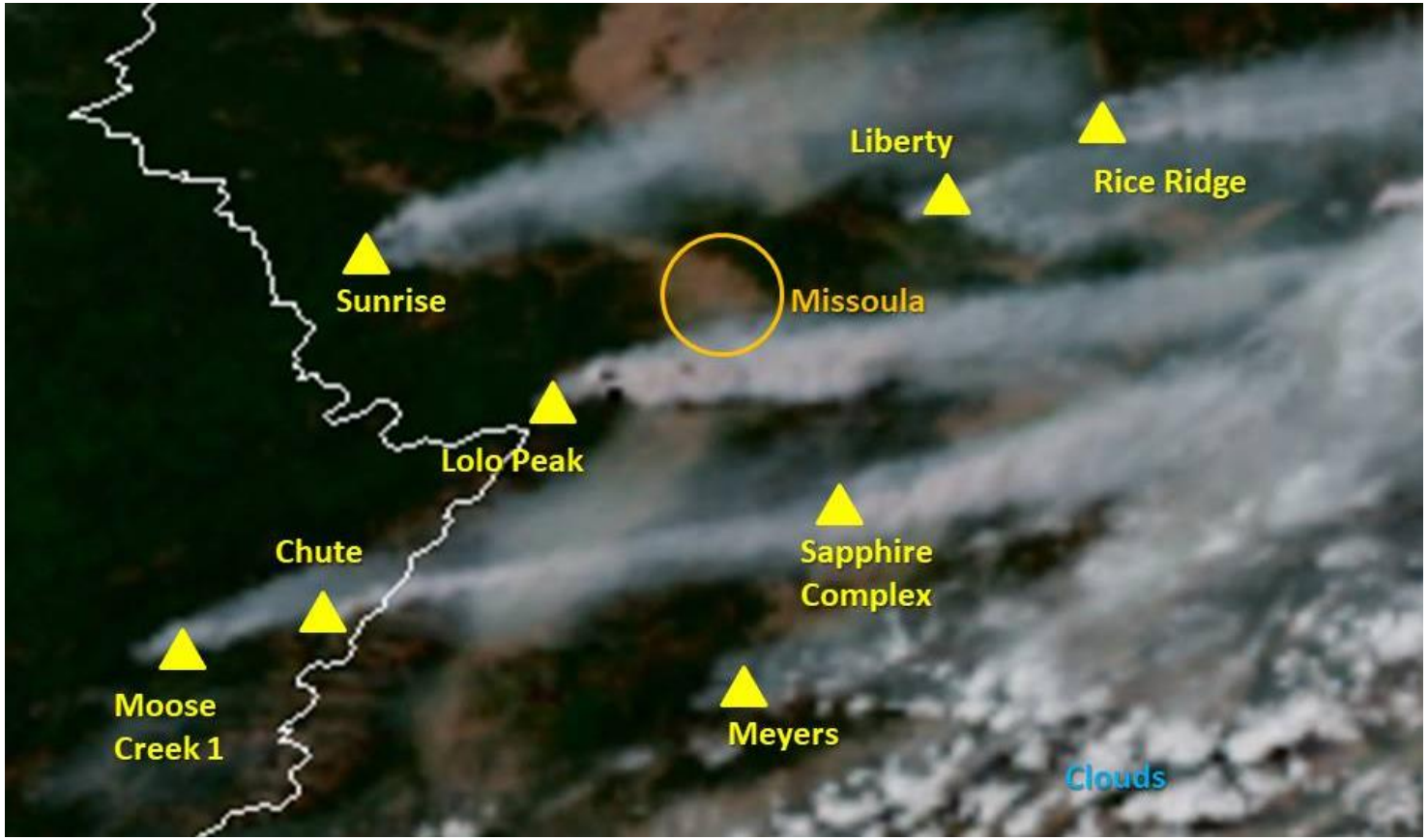
New Direction

- 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**

Seeley Lake

35 mornings of hazardous air quality in 2017

Photo credit: Kurt Wilson, Missoulian



Public health messaging for wildfire smoke

- 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

Call to leave Seeley Lake

Missoula Public Health
City-County Health Department

Recommendations for Seeley Lake Residents to Avoid Smoke
Unprecedented High Levels of Harmful Air Pollution from Wildfires
Issued August 9, 2017

The Missoula City-County Health Department is issuing stronger recommendations for Seeley Lake residents to avoid the dangerous wildfire smoke in the community. Recent air monitoring readings show record levels of harmful wildfire smoke in Seeley Lake. Indoor air is not safe. The smoke that is outside is also inside the buildings.

The recommendations are for everyone, but they are especially important for groups with higher health risk from breathing smoke: infants, children, pregnant women, people with asthma, lung or heart disease, and everyone 65 and older.

- Spend as little as time in the Seeley Lake area as possible.
    - If you must be in Seeley Lake during the day, leave the area at night. The worst smoke is gathering overnight and is entering buildings.
    - Consider moving at-risk family members out of the area
    - If you do not have anywhere to go, the Red Cross has set up a shelter in the Potomac Valley. Anyone seeking to stay at the shelter may call the Red Cross of

Recommending an entire community (even a small one) leave the area for smoke turned out to be a nonstarter. It would be even more difficult for larger communities

Public meetings

Air quality staff attended community meetings to explain MCCHD's recommendations, answer questions about the smoke

Attending meetings may not have as much impact in larger communities - lower percentage in attendance and less word of mouth

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!

CLIMATE SMART
MISSOULA

Missoula Public Health
City-County Health Department

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

Helping Individuals

Climate Smart Missoula donated 25 portable air cleaners (PACs) to Seeley Lake health clinic patients and 5 PACs to the clinic itself.

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

-Don Dunagan, Seeley Lake resident

Helping schools

Elementary school classrooms in the hardest hit areas received PACs from MCCHD, CSM and other nonprofits.

157 filters in schools = ~$20,000

It would take ~$150,000 to buy PACs for the remaining Missoula County public school classrooms with MERV 8 or less filtration

CSM measuring classroom square footage to determine number of PACs needed to provide clean air

PAC in a local preschool

2018 Smoke-Ready Efforts in Missoula County

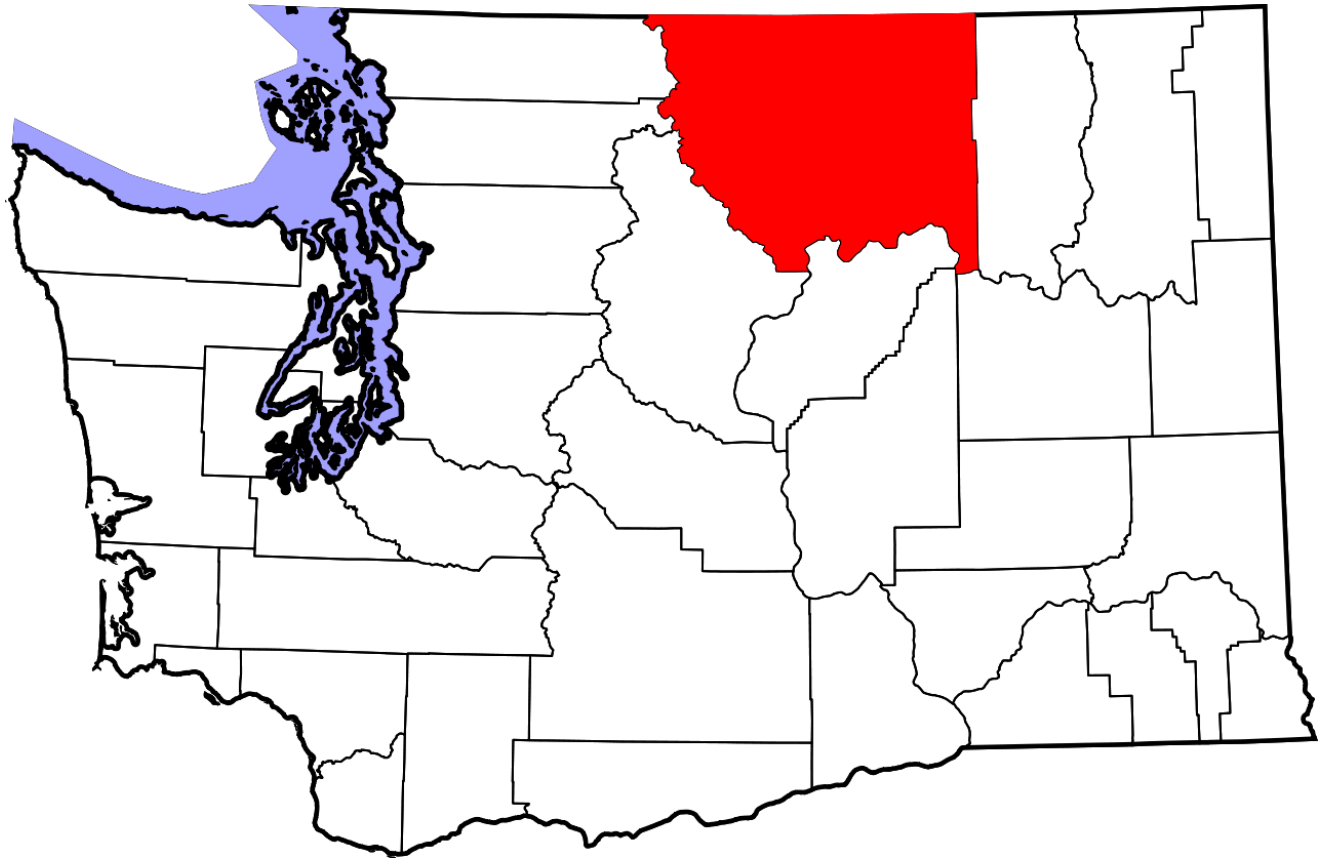
- Clean air for daycares and preschools
- Smoke-ready blog posts on MCCHD's website
- Recurring smoke-ready column in the Missoulian
- Climate Smart Missoula's new wildfire smoke website: *www.montanawildfiresmoke.org*

Ongoing Efforts for MCCHD and CSM

- Continue to purchase portable air cleaners (PACs) with HEPA filtration to grow our cache and prepare for the next wildfire season.
- Prepare a wildfire smoke adaptation/mitigation plan for the county
- Continue encouraging folks to seek out PACs before the smoke arrives.
- Continue working with schools and public buildings that are under construction to encourage the use of wildfire smoke-ready filtration systems.
- Climate Smart Missoula received funding from United Way of Missoula County to create a community needs assessment. The assessment describes the current ventilation systems in public schools and proposes options and strategies for providing clean air to students. Our next goal is to describe the ventilation systems in indoor athletic and fitness facilities.
- MCCHD is working on a state legislation to commission a study that will hopefully lead to the creation of a bill or policy for smoke-adapted communities in Montana

Wildfire Smoke Response in Okanogan County

- Colville Reservation
- Methow Valley



Colville Tribe

- 2015: 40 PACs to residents (FEMA grant)
- Indoor air monitoring showed significant levels of wildfire smoke inside buildings
- AQ Program manager partnered with Emergency Services and health workers during heavy smoke to assist vulnerable residents
- Health and air staff plan to produce smoke-ready communities guidance for what to do before, during and after a fire
- Website: https://www.cct-enr.com/smoke/

Native Voices
One Tribe, One Earth
NORTHERN ARIZONA UNIVERSITY
American Indian Air Quality Training Program
Institute for Tribal Environmental Professionals
Vol. XXIII, #4

Wildfire Smoke: An Indoor-Air Issue

In August of 2015, two massive wild fires struck the Reservation of the Colville Confederated Tribes in NE Washington state, decimating more than 250,000 acres of tribal land, burning a dozen homes and destroying a quarter of Colville's timber resources.

The combined blazes sent resident asthmatics and others to the emergency room, jammed up travel, and disrupted the lives of residents throughout the area. Because visibility approached zero on stretches of the main tribal thoroughfare, roadblocks were erected to prevent vehicles from entering. Those within tribal boundaries who hadn't already fled were preparing to evacuate or knew someone who was evacuating.

Colville AQ Program Manager, Kris Ray.

The impact of the Tunk Block and North Star fires on Colville's ambient air quality was chokingly obvious. Inside many tribal buildings, the pollution threat was also evident. As the flames swept through Colville's forested acres, Kris Ray, Colville's Air Quality levels up to 800 μg/m3—far above the concentration considered hazardous to human health.

Kris decided to check the air in a number of tribal buildings. "The readings were one-minute averages," he says. "So I went to different spots in the buildings, usually starting from where office staff sit and moving back through, doing a few readings per room. About 3–5 readings per building were enough to get reliable averages." He was concerned by the levels he found in every building he monitored. PM2.5 concentrations ranged from 166 to 800 μg/m3—all falling within the unhealthy to hazard ranges. That included the tribes' Head Start office, childcare facility, IHS clinic, and administration and legal offices. On the second day of the fire, the PM level spiked in at least one indoor space to a dizzying 1403μg/m3. Elevated indoor PM levels would persist at Colville for the next three weeks.

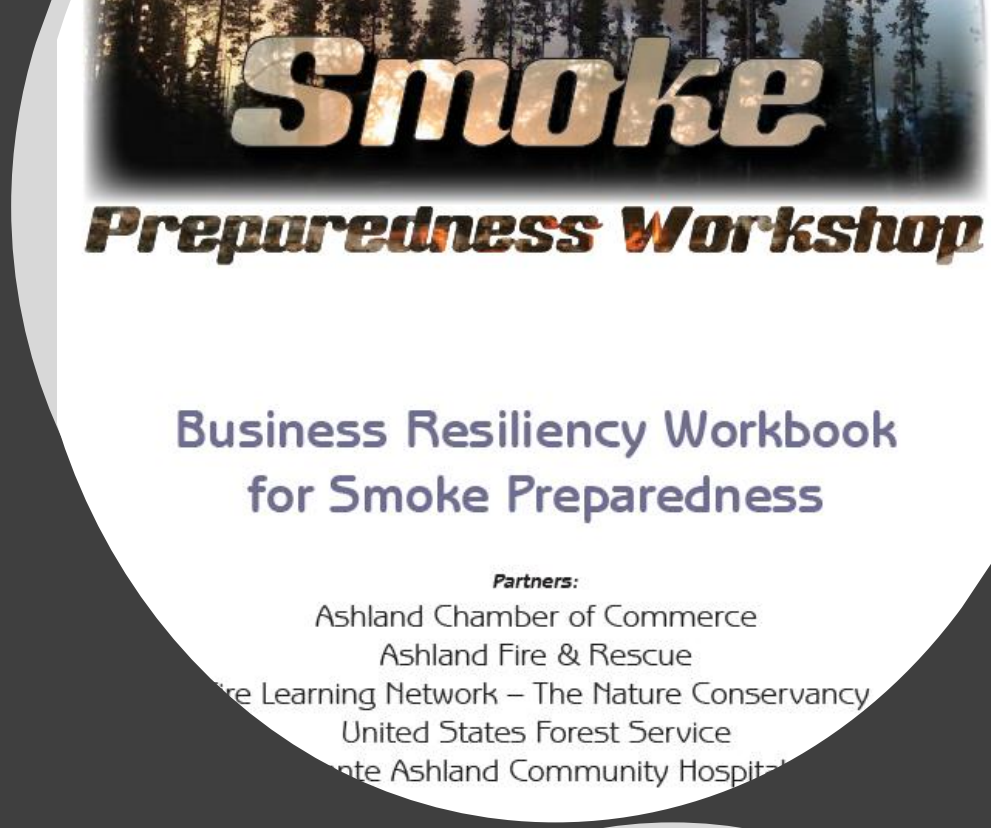
Clearly, maximizing the value of indoor shelters was crucial for responding to this and future fire events. On his rounds, Kris began identifying simple practices that could increase the level of protection for those

Methow Valley, WA

- Methow Valley Clean Air Project
  - Partnering with UW in a grant application to create a wildfire smoke public health action plan specifically applicable to small, rural communities
  - Created a low-cost sensor network and “Clean Air Ambassador Program” of 22 purple air monitors spanning a 60 mile populated watershed placed with individuals, schools, towns, and businesses.
  - Coordinating with Okanogan River Airshed Partnership on smoke-ready workshops
- Limited resources from local health department/emergency response
  - Health and emergency response agencies are receptive to the need for action, but they’re not willing/able to take leadership roles

Ashland, Oregon – SmokeWise Ashland

- Business resiliency workshop for smoke preparedness
- Outreach materials in English and Spanish
- Website: smokewiseashland.org
- Multiple local partnerships – government, business and medical
- Upcoming: Cleaner air program for businesses, clean air spaces for Ashland public schools, continued work with community partners, updated outreach materials



Oregon Wildfire Response Protocol for Severe Smoke Episodes

- Developed in response to recent wildfire seasons
- Provides a cohesive wildfire smoke message for local health departments to share with their communities = support for smaller communities without the resources to create their own messaging
- Recommends local community clean air shelters when air quality becomes very unhealthy or worse – unclear how that would work in small communities/who would be responsible for setting up and funding a shelter

Rice Ridge Fire community meeting in Seeley Lake, MT

Communities of all sizes share certain traits

- Everyone breathes the same air
- Everyone needs information about risks from smoke and how they can protect themselves
- There will be vulnerable/sensitive individuals
- There will be people who need extra help

Challenges in small communities

- Harder to get attention (i.e. funding or support) drawn to your area
- Fewer resources and less expertise on-hand
  - When smoke response falls on health department staff, the emergency preparedness coordinator may be a public health nurse with little wildfire smoke experience.
  - Communities are unlikely to have a smoke response plan in their disaster and emergency mitigation plans.
- Less likely to have air quality monitoring
  - 56 counties in Montana; 15 counties have permanent PM2.5 monitors
- Heavier reliance on state/regional smoke messaging and support, and that messaging may not make it to its audience

Opportunities in small communities

- Fewer facilities housing vulnerable populations will make direct facility-level (schools, clinics, etc.) interventions more manageable
- With smaller populations, direct interventions for highly vulnerable individuals may be more manageable
- Closer knit communities help each other
- Community meetings grab a larger swath of the population
- Word of mouth can be an effective messaging tool - community members will spread messages and generosity

As community size grows (or as resources shrink):

The need for institutional/policy/engineering controls also grows

The need for individuals' self-sufficiency grows

Help small communities become self-sufficient

- Find trusted community leaders and build networks
- Work in culturally appropriate ways.
- Encourage community members to create clean indoor air spaces at home and give specific instruction on how to do this.
- Provide ideas for creating community clean air spaces, as well as programming (e.g. movies, open play time for families, musical concerts) to combat anxiety and social isolation, as well as opportunity for information dissemination.
- Encourage low cost solutions
- Provide low-cost indoor air monitors (and training on appropriate use)
- Encourage indoor air monitoring
- Build cultural shift towards protecting health and building true resiliency to wildfire smoke

Potential partners

- Nonprofits
- Chamber of Commerce
- Charitable foundations
- Local hospitals
- State and federal agencies

Take home:

- Find a way to get relevant smoke preparedness and health advisory information to the community. News broadcasts from larger towns and health department Facebook posts probably aren't going to cut it.
- Small communities will be culturally different - this can be a strength, but can also make messaging more of a challenge
- Plan ahead. Plan ahead. Plan ahead.
- Figure out how you're going to answer the mask questions.
- Even when they're the right response, evacuations for smoke probably aren't the best response
- If you choose direct interventions, prepare to triage recipients
- Create partnerships with other organizations

Questions?

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