

Wildfire Matters Review Committee July 2, 2024

- Kristy Richardson, State Toxicologist
- Scott Landes, Meteorology & Prescribed Fire Unit Manager
- Kristen Good, Health Equity Branch Deputy Chief



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Wildfires and Health Concerns

Kristy Richardson, PhD
State Toxicologist
Toxicology and Environmental Epidemiology Office
Division of Environmental Health and Sustainability

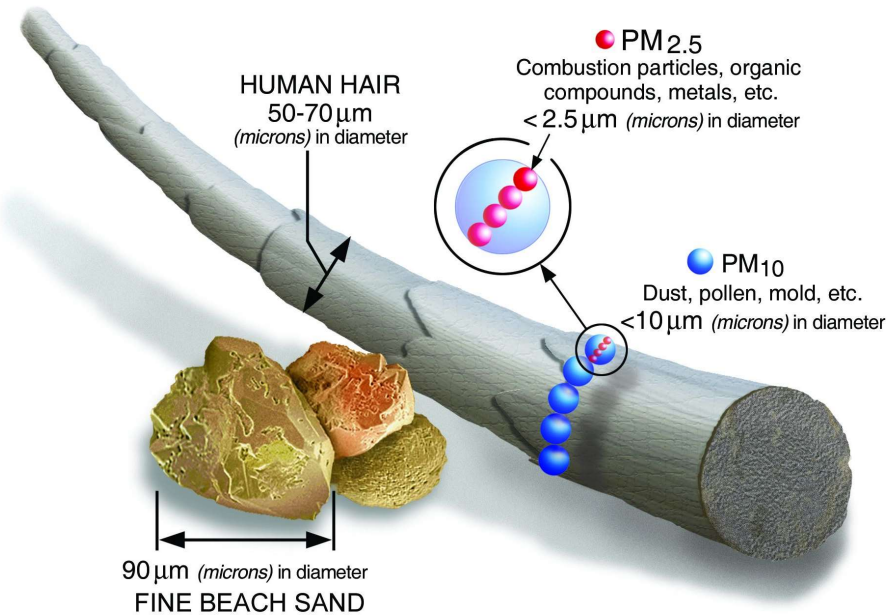


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Health concerns from wildfires

Wildfire smoke can:

- Irritate eyes, nose, and throat.
- Cause wheezing, coughing, chest tightness, and difficulty breathing.
- Worsen asthma, bronchitis, and other lung diseases.
- Increase the risk of heart attack, heart failure, stroke, and premature death.
- Impact mental health.



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Health concerns after wildfires

Wildfires can expose people to new sources of contaminants.

- Impacts to infrastructure, like water pipes, can introduce new contaminants.
 - Health impacts depend on the nature of impacts
- Clean up of ash, soot, and burned materials can impact health:
 - Irritate the eyes, nose, and skin.
 - Cause coughing and difficulty breathing.
- Contents of ash vary by fire and material burned.
- Reducing exposure reduces health risks.



[Illustration from EPA of a man wearing appropriate gear to clean up ash after a wildfire.](#)



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TEEO's role supporting other groups

Protect your health on smoky days.



Stay indoors when you can.



Check the air quality in your area before going outdoors.



Wear an N95 respirator outdoors.



Set fans and air conditioners to recirculate - even in your car.



- Health education and risk communication
 - Websites
 - Fact sheets
 - Social media tool kits
 - ToxCall hotline
- Technical assistance
 - Supporting other divisions, Local Public Health Agencies, other agencies

[Source: CDPHE wildfire smoke and health social media guide](#)



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Wildland Fire Smoke: Limiting, Forecasting and Public Health Outreach

Scott Landes

Lead Meteorologist and Supervisor of Meteorology and Prescribed Fire Unit

Air Pollution Control Division

Colorado Department of Public Health and Environment



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Meteorology and Prescribed Fire Unit

| Meteorology (Forecasting) | Prescribed Fire (Smoke Management) |
|---|---|
| Statewide forecasts and advisories, 365 days a year | Smoke management permitting for larger prescribed burns |
| Meteorological analysis, including for Exceptional Event demonstrations | Burn data collection |
| Data requests | Site visits |
| Public outreach | Billing calculation |

Wildfire smoke health impacts: General rules of thumb for the forecaster

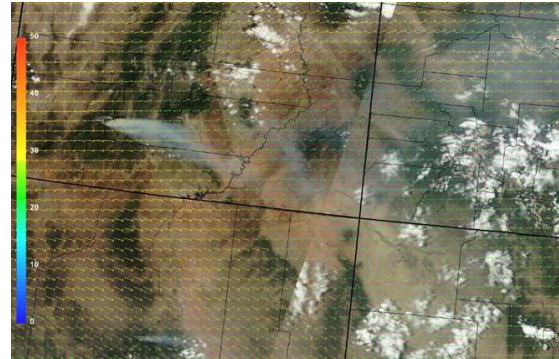
- In-state wildfires: smaller-scale, but potentially higher public health impact from smoke
- Out-of-state/country wildfires: larger scale, but normally lower public health impact from long-range transport of smoke

Wild card: Long-range, transported, and aged smoke has the capability of increasing ozone concentrations under certain conditions.

Forecasting techniques: Wildfire smoke

For afternoon and early evening smoke

- atmospheric mixing
- transport wind speed
- direction aloft



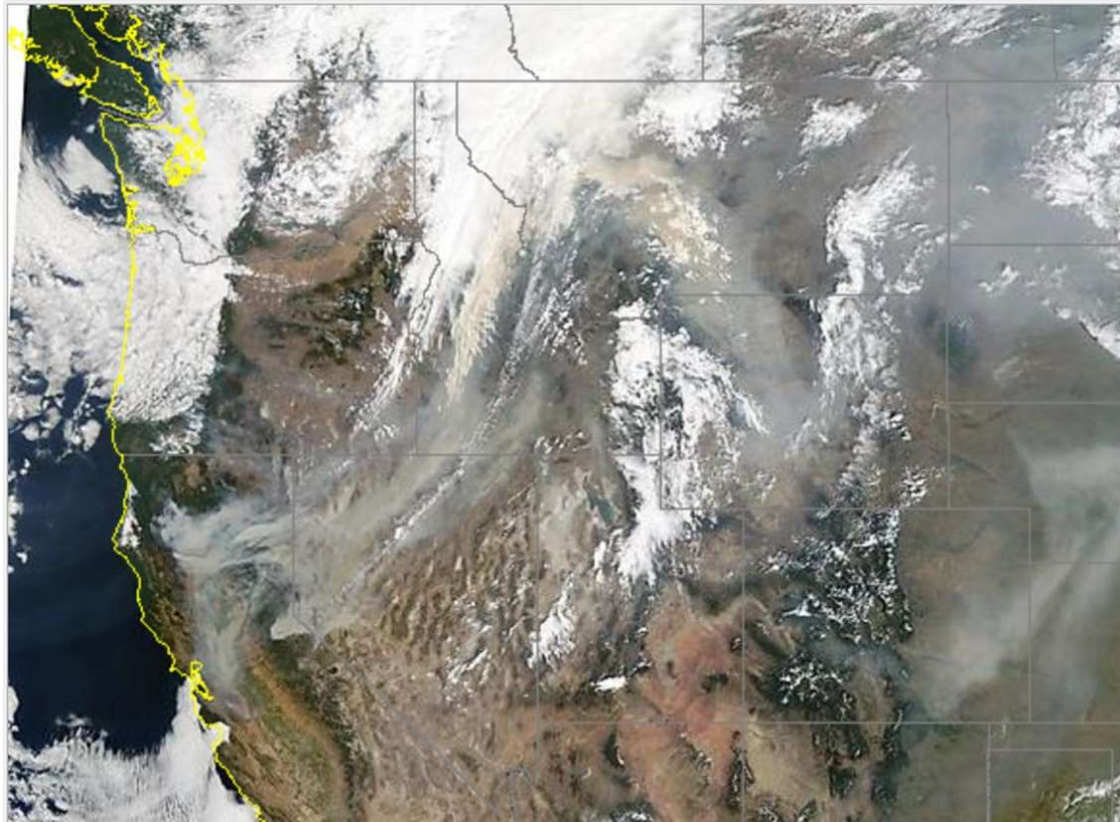
For overnight and morning smoke

- atmospheric mixing
- topographic maps to predict drainage of smoke



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Long range smoke transport

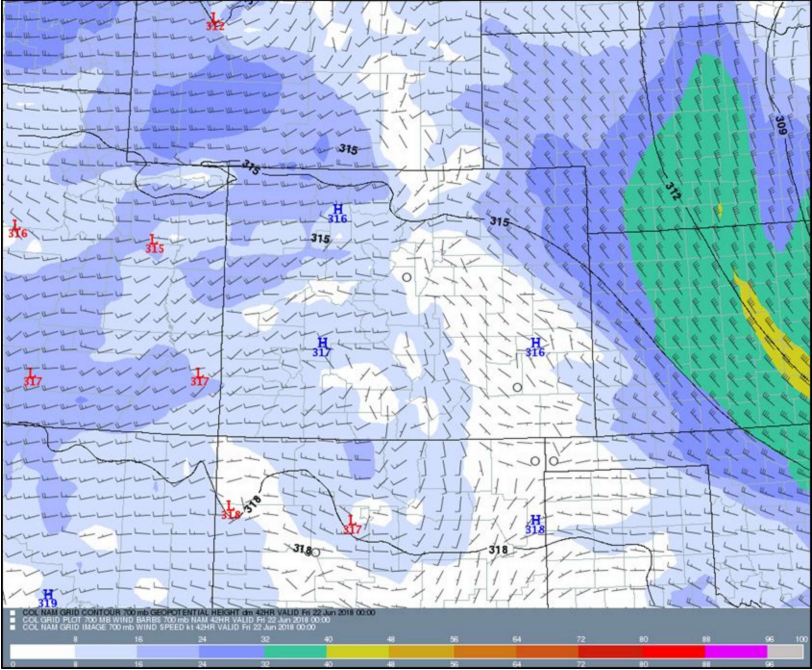


MODIS-Terra image on August 17,
2021 at approximately 11:30 PM
MST

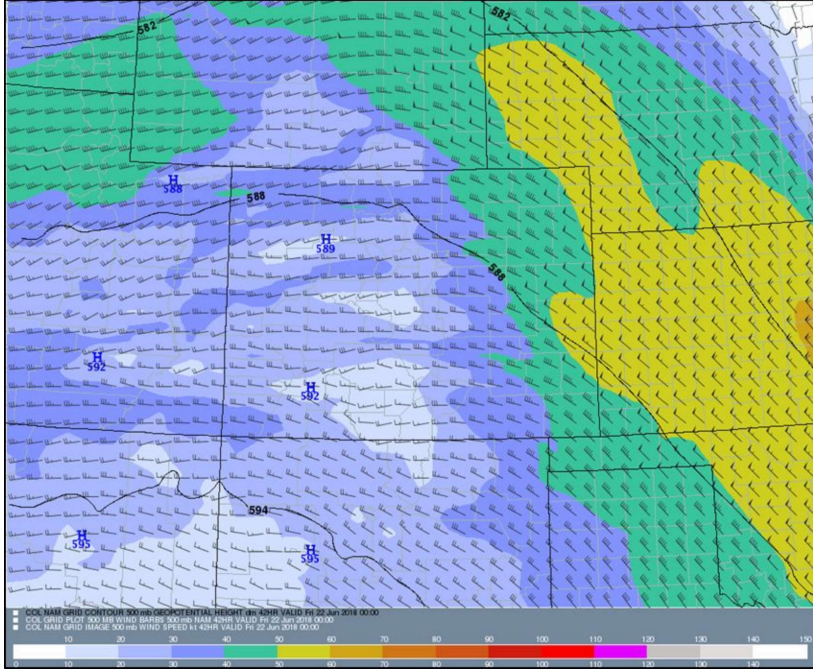


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Where is the smoke going?



700 mb



500 mb



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Satellite Detection

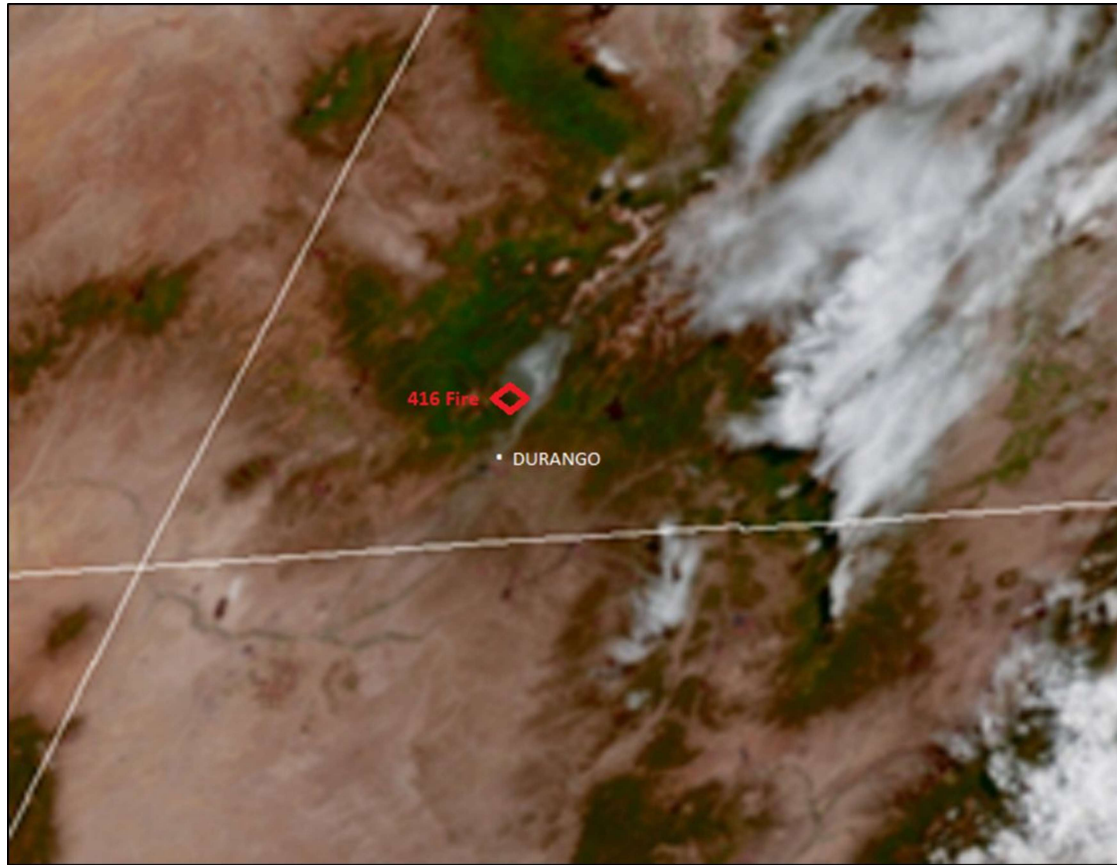


416 Fire on June 1, 2018 at approximately 10:22 AM MDT, GOES-16 (Band 7)



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Satellite Detection



416 Fire with smoke
plume draining
southward
along the Animas River
into Durango on June 7,
2018.
GOES-16 GeoColor CIRA
at approximately 9:17
AM MDT



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Morning drainage smoke.....at its worst



View of
Durango from
Smelter
Mountain
(looking
east-northeast)
on June 7, 2018
at
approximately
9:19 AM MDT



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Department of Public Health & Environment

Air Quality Health Advisory for Wildfire Smoke

Issued for southern Garfield and northern Mesa counties
Issued at 5:30 PM MDT, Monday, June 26, 2023

Issued by the [Colorado Department of Public Health and Environment](#)

Affected Area: southern Garfield and northern Mesa counties. Locations include, but are not limited to, Parachute and De Beque.

Advisory in Effect: 5:30 PM MDT, Monday, June 26, 2023 to 9:00 AM MDT, Tuesday, June 27, 2023.

Public Health Recommendations: If smoke is thick or becomes thick in your neighborhood you may want to remain indoors. *This is especially true for those with heart disease, respiratory illnesses, the very young, and the elderly.* Consider limiting outdoor activity when moderate to heavy smoke is present. Consider relocating temporarily if smoke is present indoors and is making you ill. *If visibility is less than 5 miles in smoke in your neighborhood, smoke has reached levels that are unhealthy.*

Outlook: The Spring Creek wildfire has intensified with the dry and windy weather around the area. Most of the smoke will remain aloft through Monday evening and cause minimal public health impacts. However, heavier smoke will be possible late Monday night through early Tuesday morning as the smoke drains to lower elevations. The heaviest smoke impacts early Tuesday morning will be most likely along the Interstate 70 corridor between Parachute and De Beque.

For the latest Smoke Outlook, visit:
<http://www.colorado.gov/airquality/addendum.aspx#smoke>

For more information about smoke and your health, visit:
<http://www.colorado.gov/airquality/wildfire.aspx>

For the latest Colorado statewide air quality conditions, forecasts, and advisories, visit:
http://www.colorado.gov/airquality/colorado_summary.aspx

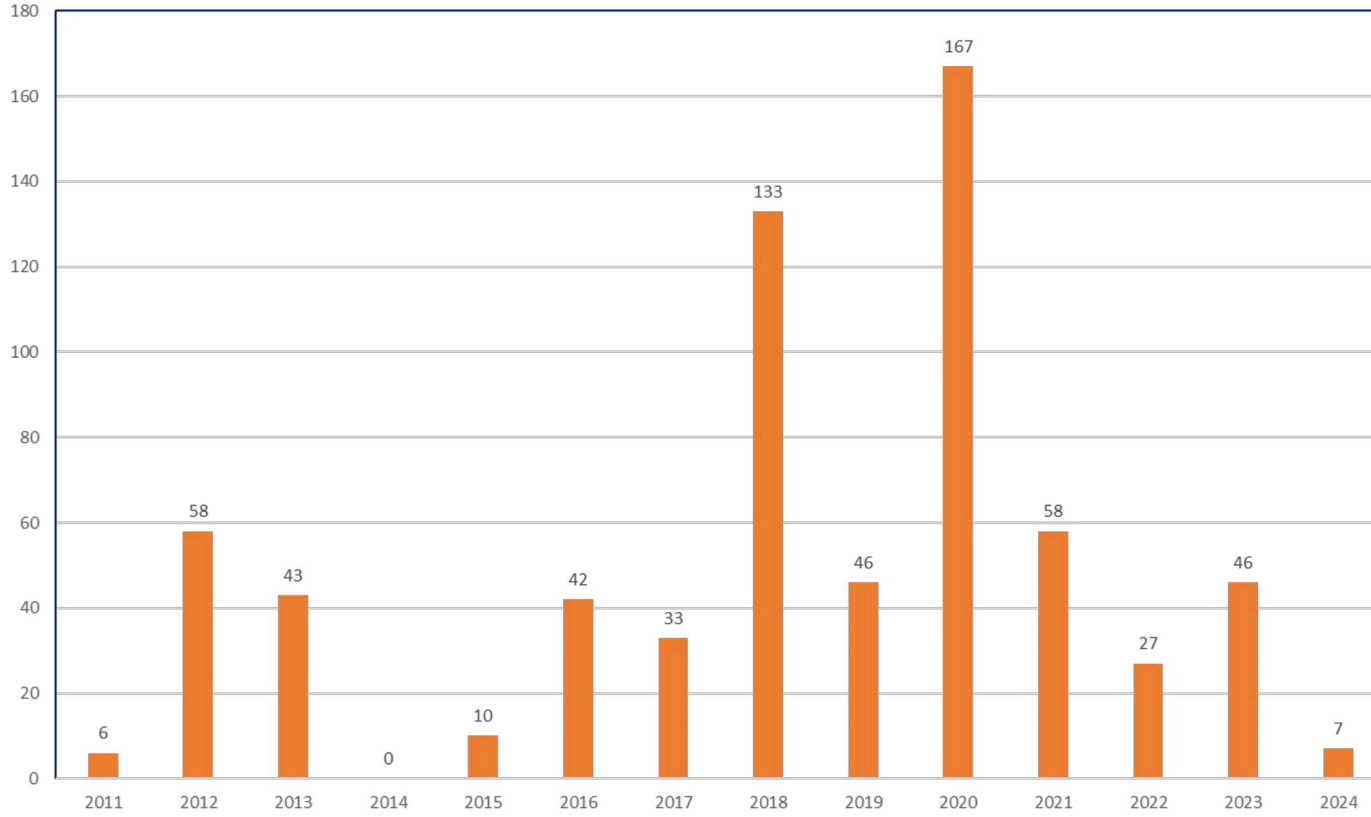
Social Media:
<http://www.facebook.com/cdphe.apcd>
<http://twitter.com/cdpheapcd>



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Air Quality Health Advisories

Number of Air Quality Health Advisories for Wildfire Smoke



(2024 advisories through 6/25/24)



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Air Quality Health Advisories

Statewide Advisories

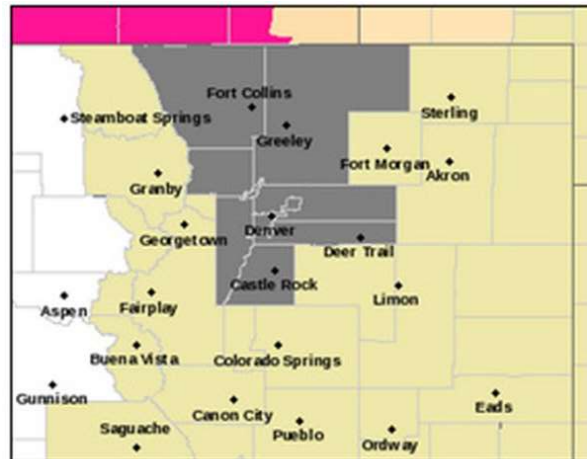


Denver Metro Seasonal Advisory
(Winter Burning Restrictions & Summer Ozone)
Sign up for air quality notifications from CDPHE's automated e-mail alert system

| Current - Air Quality Index (AQI) | | SPM |
|-----------------------------------|--------------------------------|-----|
| Denver Metro | UNHEALTHY for sensitive groups | |
| Colorado Springs | MODERATE | |
| Ft Collins - Greeley | MODERATE | |
| Grand Junction | GOOD | |
| Colo. River Valley | GOOD | |

| Forecast - Front Range Air Quality | |
|---|--------------------------------|
| Expected Air Quality for Your Health (Thursday) | UNHEALTHY for sensitive groups |
| Expected Visibility (Friday) | EXTREMELY POOR |
| ACTION DAY! | |
| Action Day in effect Thu 4PM - Fri 4PM | |
| FOR MULTIPLE POLLUTANTS | |

Map valid 08/13/2020 10:00PM(MDT)
■ Ozone Action Day ■ Multiple AQAs
■ Wildfire Smoke



[Watches, Warnings & Advisories](#)

[Red Flag Warning](#) ■

[Fire Weather Watch](#) ■

[Air Quality Alert](#) ■

[Hazardous Weather Outlook](#) ■

Zoom Out

Advisories displayed in map format on both the APCD website and with our federal partners at the National Weather Service



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Communicating public health risks from smoke



COLORADO Air Quality

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[AirQuality Menu](#) ▾

Colorado Smoke Outlook

COLORADO SMOKE OUTLOOK:

Monday, April 8, 2024, 6:55 AM MDT

[Avisos en Español](#)

[Sign up for air quality notifications from CDPHE's automated e-mail alert system](#)

Light to moderate concentrations of smoke are possible near small wildfires and prescribed burns around the state.

What if there is a wildfire or smoke in your area?

The focus of the Colorado Smoke Outlook is on large fires (e.g., greater than 100 acres in size). Nevertheless, smoke from smaller fires, prescribed fires, and/or smoke from new fires not yet known to CDPHE air quality meteorologists may cause locally heavy smoke. If there is smoke in your neighborhood, see the public health recommendations below.

Public health recommendations for areas affected by smoke:

If smoke is thick or becomes thick in your neighborhood you may want to remain indoors. This is especially true for those with heart disease, respiratory illnesses, the very young, and the elderly. Consider limiting outdoor activity when moderate to heavy smoke is present. Consider relocating temporarily if smoke is present indoors and is making you ill. To temporarily relocate to an area with better air quality, consider



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Colorado Smoke Blog

The CDPHE Air Pollution Control Division periodically updates this page to provide information about smoke in Colorado. This page covers wildfire activity, prescribed burning operations, and the transport of smoke from out-of-state sources.



[All posts](#) [Wildfire information](#) [Prescribed burning information](#) [Other resources](#)
[Air quality health advisories](#) [Avisos en Español \(Spanish Advisories\)](#) [Health information](#) [Prescribed fire map](#)

IN DEVELOPMENT



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Communicating public health risks from smoke

WEDNESDAY, JUNE 12, 2024

Heavy morning smoke near the Interlaken Fire

It's a rough morning for air quality at Twin Lakes Wednesday morning with heavy smoke settling overnight from the Interlaken Fire. The smoke has also spread southwards along the Arkansas River and State Highway 24 into Americus and Buena Vista. It's unclear at this point how much additional fire activity can be expected today, but regardless the [Air Quality Health Advisory](#) that was issued last night for southern Lake and northern Chaffee Counties will be re-issued and will run through at least 9am Thursday.



Heavy smoke along the Arkansas River Valley. Image courtesy of the [Federal Aviation Administration](#)

- June 12, 2024 No comments: 
Labels: [Wildfire Information](#)

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Smoke Management Program

Open burning permits

- Less than 50 small piles per year or very small landscape burns
- No reporting requirements
- No charge for permit

Smoke management permits

- Larger prescribed fire projects for multiple purposes, including reducing hazardous fuels to mitigate wildfire risk
- Daily permit conditions
- Daily notification & activity reporting required
- User fees cover the cost of program



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Standard permits

Daily burn limits are based on:

- Fuel type/average pile size
- Type of community (rural, smoke-sensitive, non-attainment)
- Distance to nearest residences
- Forecasted smoke dispersion

Standard permit conditions establish:

- Daily acres/piles allowed
- End time (for ignition)
- Allowed wind directions



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Non-standard permits

- Customized permit conditions for complex projects
- Also known as “learning permits”, where information from the burn can help aid in making future adjustments to standard conditions
- Increased community outreach
- Public comment period for the highest impact burns
- Increased daily acreage often balanced by earlier end times for ignition
- Real-time air quality monitoring
- 2nd day permit conditions will be adjusted, if needed, based on monitoring data
- Meteorological consultation



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CO-CAMP - Colorado Clean Airshed Management Portal

EAC Profile* Agency View

EAC User Profile Created By: OITCO.SERVICE1
11/15/2021 11:26:13 AM



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CO-CAMP
Colorado Clean Airshed Management Portal

Request a Burn Permit

Renew a Previous Years Permit

Form D - Fill out Daily Notification of Ignition

Form E - Fill out Daily Burn Summary

Form F - Fill out Annual Burn Summary

Profile

| | |
|--------------------------|-------------|
| First Name* | Last Name* |
| Scott | Landes |
| Email | User Number |
| SCOTT.LANDES@STATE.CO.US | |

- Went live in late 2021
- Uses the Hyland OnBase platform
- Big improvement in efficiency for both the burn community and Smoke Management Program staff



Prescribed fire mapping tool

This map shows the location/s of prescribed fire burns that have notified Colorado's Air Pollution Control Division (APCD) that they plan to burn on the date listed in the table below. This does not promise a burn will occur, but only states there is a plan to burn.

CDPHE weekly notifications of ignition for prescribed fire

Digital accessibility assistance: To request assistance or submit questions about digital accessibility, please email cdphe_apcd_outreach@state.co.us

Burn Type ● Broadcast

| Burn Date... | Burn Name | Burn Type | Estimated Ac... | Estimated Pi... | Agency ID | Agency Name | Agency Office | Permit # | Latitude, Longitude |
|--------------|---------------------|-----------|-----------------|-----------------|-----------|----------------------|-----------------|------------|---------------------|
| Jun 26, 2024 | Timnath 4th of July | Broadcast | 45 | 0 | LCL | Local Government ... | Town of Timnath | LCL-24-227 | 40.53, -104.95 |

1 - 1 / 1

pile burn broadcast burn

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Data Last Updated: 6/25/2024 4:16:24 PM | [Privacy Policy](#)

- All smoke management permits for the current calendar year
- Daily ignition notifications

IN DEVELOPMENT



Wildfire Smoke Preparedness in Community Buildings: A New CDPHE Program

Dr. Kristen Good, MEM, PhD
Health Equity Branch Deputy Chief; Indoor Air Quality Program Lead
Division of Disease Control and Public Health Response
Colorado Department of Public Health and Environment



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CDPHE's Wildfire Smoke Preparedness Program is launching now!



CDPHE is one of nine recipients selected by [US EPA's Wildfire Smoke Preparedness in Community Buildings Grant Program](#).

This three-year program will provide outreach, education, and training for local community partners on how to prepare for, and respond to, the public health threat of wildfire smoke.

Focus on reducing adverse impact of wildfire smoke on indoor air quality, and how community buildings can be “clean air havens” for impacted communities.



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Goal: Support and facilitate community smoke preparedness planning efforts through education and training

CDPHE will develop and disseminate trainings and resources specifically tailored toward local Colorado community stakeholders on:

- Understanding the impacts of wildfire smoke on indoor air quality and occupants' health
- Recognizing and responding to harmful levels of wildfire smoke
- How to establish and operate Cleaner Air Centers (CACs) in community-serving buildings to ensure equitable access to clean indoor air to all community members
- Working with K-12 schools involved with the Clean Air for Schools Program, to understand impacts of smoke events and serve as potential community CACs



Two primary objectives:

1. Develop and facilitate a Colorado Stakeholder Education and Training Network to help communities mitigate the impacts of wildfire smoke on health
2. Training for K-12 Schools to be wildfire smoke ready and to serve as Sentinel Indoor Air Monitoring Sites and Cleaner Air Centers (CACs)

Objective 1: Develop and Facilitate a Stakeholder Education and Training Network

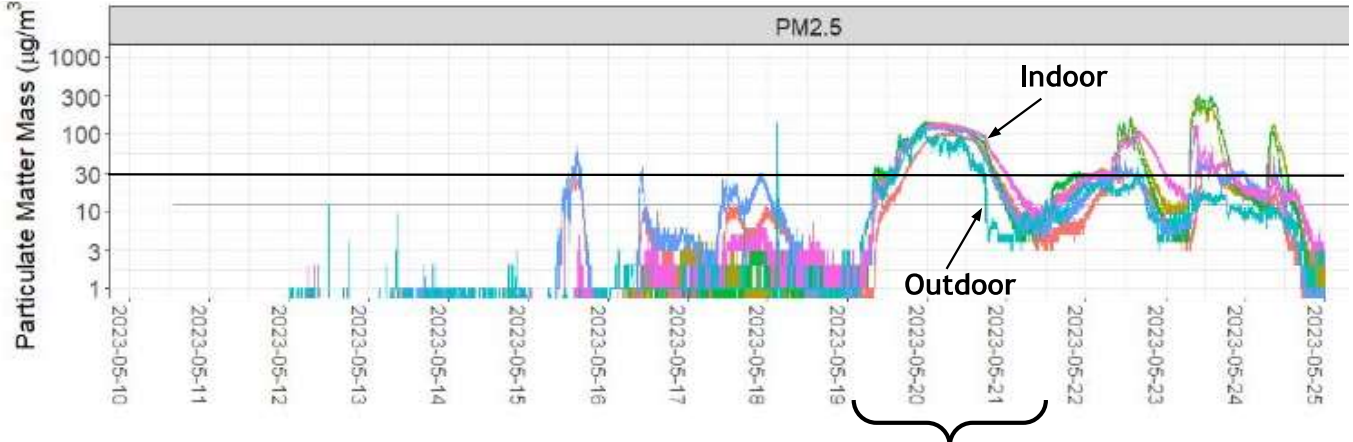
- Engage stakeholders who have leadership roles in their community related to wildfire response, and/or represent community buildings that could be adapted into CACs
 - Individuals who are in positions to take action for their communities
- Develop and disseminate educational resources on mitigating wildfire smoke impacts on community buildings
- Organize workshops & webinars for Network participants that cover:
 - Impacts of wildfire smoke on indoor air quality and occupants
 - Smoke readiness plans for community buildings to serve as CACs
 - Emergency preparedness and communication



Goal Outcome: More communities with Building Management Plans that address indoor air quality during wildfire smoke events

Conventional advice: *stay indoors during wildfire events and high ambient pollution days.*

... just because indoor air may be less polluted than outdoor air does not mean the indoor air quality is healthy! Indoor air quality is often a reflection of outdoor air quality.



Goal Outcome: More communities with operational Building Management Plans

CDPHE will facilitate community stakeholders ability to:

- Identify suitable community-serving building(s) to serve as CACs
- Learn how to optimize current HVAC systems and other building operating conditions to maintain healthy IAQ
- Best practices in using HEPA portable air cleaners with existing building systems to maintain healthy IAQ
- Utilize indoor air quality monitoring data to understand when to take action
- Establish detailed plans for successful CAC operation
- Identify funding opportunities for setting up and operating CACs

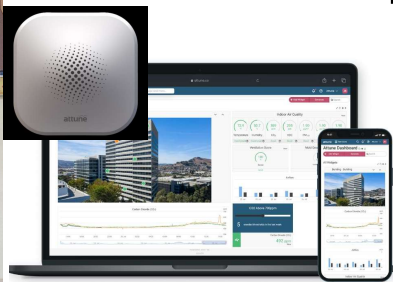


Objective 2: Training for K-12 Schools to serve as Sentinel IAQ Monitoring Sites and Community Cleaner Air Centers

- Train schools that received indoor air quality (IAQ) monitors and HEPA portable air cleaners through our 2023 Clean Air for Schools Initiative to understand monitoring data to track and respond to impacts of wildfire smoke on IAQ
- Work with their communities to serve as a Sentinel Site to understand real-time impacts of wildfire smoke on indoor air quality
- Help schools establish building readiness plans to reduce impacts of wildfire smoke for staff and students, and (if they choose) serve as Community CACs

Goal Outcome: More schools with Building Management Plans and IAQ monitoring

Our CAFS Program installed IAQ Monitoring Networks in 369 K-12 schools across Colorado & distributed over 35,000 HEPA portable air cleaners to 550 K-12 Schools.



Real-time indoor air quality monitoring systems

HEPA Portable Air Cleaners

These existing resources can be leveraged to:

- Help communities understand how indoor environments are impacted by smoke in real-time using IAQ monitoring data
- Train schools how to recognize and respond to indoor impacts of wildfire smoke
- Provide healthy indoor air quality to students, staff and community during extreme smoke events



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To summarize... the CDPHE Wildfire Smoke Preparedness in Community Buildings Program is:

3-year effort focused on providing EDUCATION and TRAINING to local community stakeholders on:

- How wildfire smoke affects indoor air quality, and subsequent public health impacts
- How to address these impacts through preparedness actions including:
 - Developing building readiness plans for community-use spaces
 - Establishing and operationalizing community clean air centers
- Working with K-12 schools, as a type of community building, to:
 - Use existing portable air cleaners + IAQ monitors to address wildfire smoke threats
 - Operate as community Cleaner Air Centers

<https://cdphe.colorado.gov/wildfire-smoke-preparedness-program>



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Thank you!



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