

Wildland Fire:

*Health Effects, EPA's Public Health Outreach
and Smoke Ready Toolbox for Wildfires*

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The Sand Fire

Santa Clarita Valley July

2016 Credit: Kevin Gill/flickr

CSTE's 9 Annual National Disaster Epidemiology

Atlanta, GA

May 15, 2018



Conflict of Interest Statement

Wayne Cascio, MD

- *No conflicts of interest*
- *The presentation represents the opinions of the speaker and does not necessarily represent the policies of the US EPA*



Wildland Fires & Their Emissions

A Global Public Health Issue



Global mortality from wildfire smoke:
Estimated to be 339,000 persons

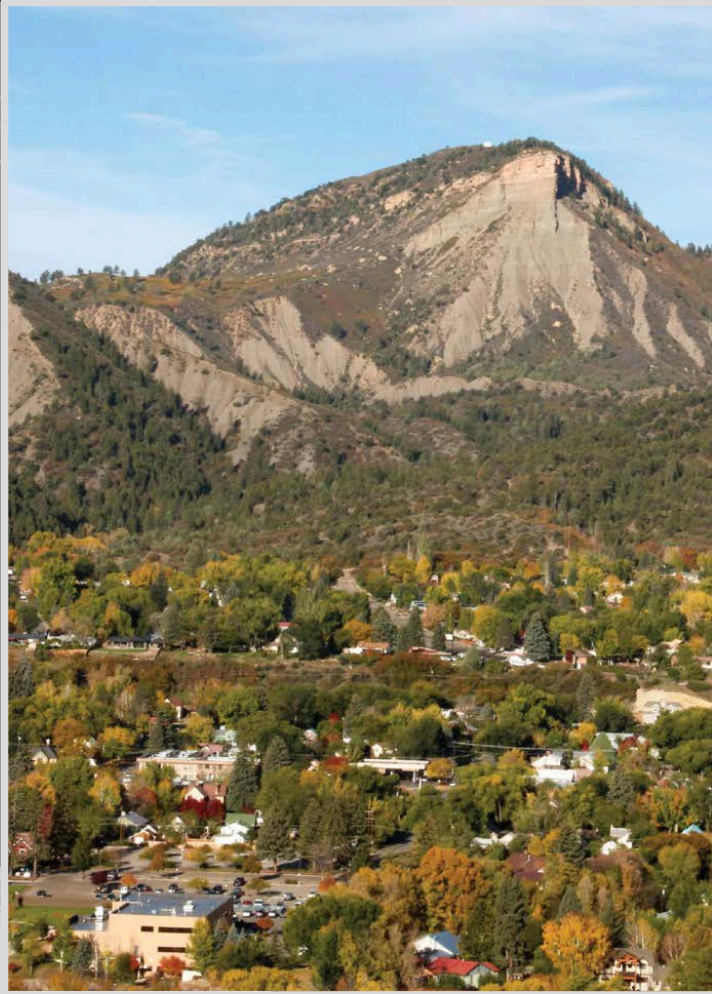
Johnson FH et al. *Environ Health Perspect* 2012

URL: lance-modis.eosdis.nasa.gov/cgi-bin/imagery/firemaps.cgi



Wildland Fires & Their Emissions

A Community Public Health Issue



Springs Fire near Camarillo, California, 3 May 2013. A new review concludes there is strong evidence that wildfire smoke exacerbates asthma and COPD.

© David McNew/Getty Images



Wildland Fires & Their Emissions

An Individual & Occupational Health Issue



Whitewater-Baldy Complex, Gila National Forest, New Mexico,
May, 2012

URL: lance-modis.eosdis.nasa.gov/cgi-bin/imagery/firemaps.cgi



Wildland Fires & Their Emissions

A Large Urban Environmental Health Issue

San Francisco Bay Area experienced hazardous levels of smoke

Smoke From Northern California Fires Creates Haze Over Bay Area

LIVE



WINE COUNTRY
WILDFIRES

Smoke Creates Hazy Conditions
Bay Bridge

12:09 PM
5
KPIX

0.23% 51.28
▲ DJI 22,812.35



Adverse Impacts on Air-Quality Extend for Long Distances

Health Impacts Can Extend Hundreds of Miles and Affect Heavily Populated Urban Areas

- **Forest fires in Quebec during July 2002 (red circles)**
- **Baltimore, Maryland, nearly a thousand miles downwind**
- **30-fold increase in airborne fine particle concentrations**

Source: Moderate Resolution Imaging Spectroradiometer (MODIS) instrument on the Terra satellite, Land Rapid Response Team, NASA/GSFC





Wildland Fires & Their Emissions

A Costly Individual and Public Health Issue



*Estimated Economic
Value of Wildfire-
Attributed PM_{2.5}-
Premature Deaths &
Respiratory Admissions*

**Short-term
\$10-20 billion/yr**

**Long-term
\$76-130 billion/yr**

Fann N et al. *Science of the Total Environment* 610–611 (2018) 802–809

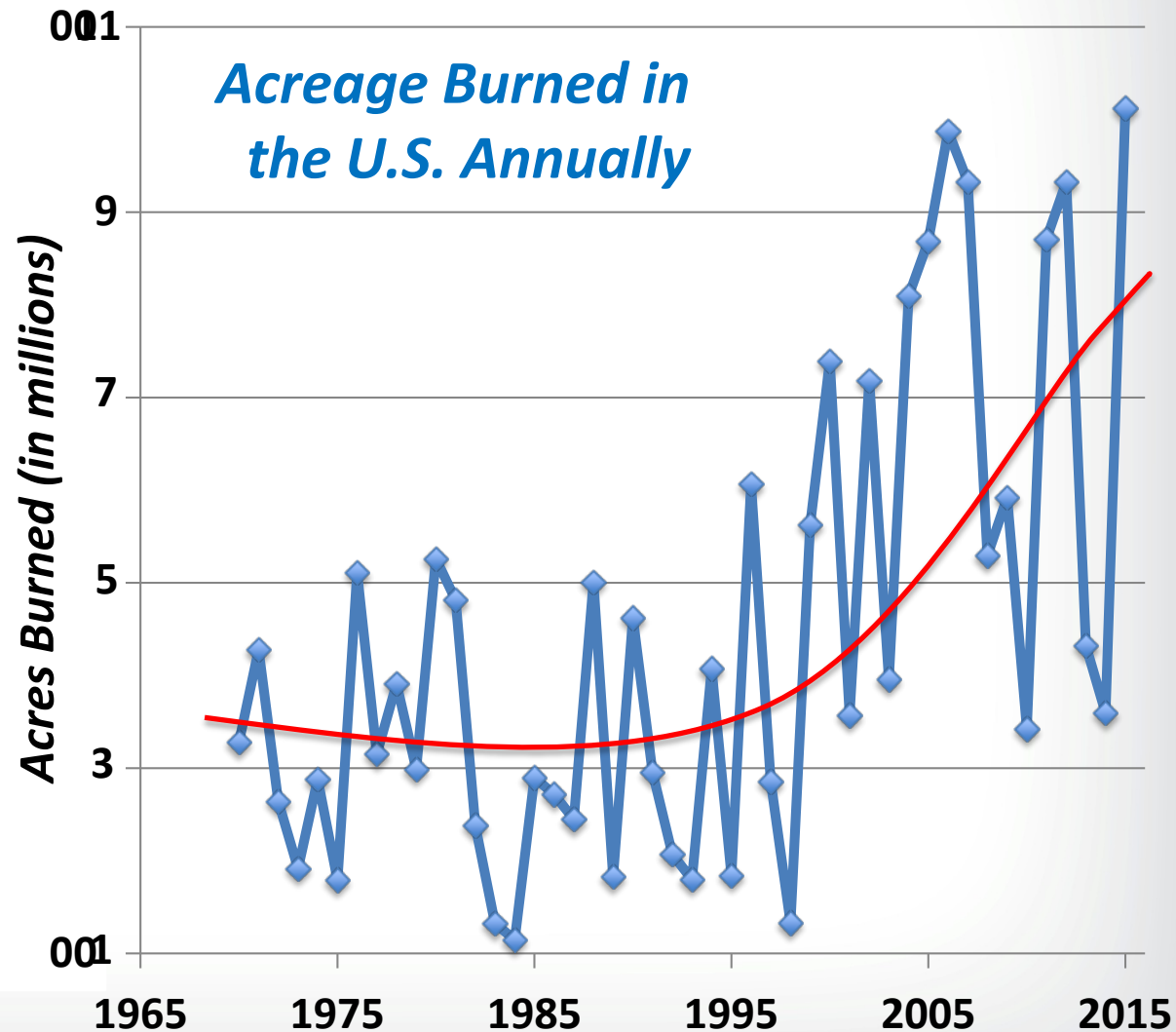


Wildfire Smoke is an Increasing Health Hazard in the U.S.

Present Concerns

- **Increasing acreage burned**
- **Increasing impact on urban areas**
 - 10% of all land with housing are situated in the wildland-urban interface
 - 38.5% of U.S. housing units
- **Increasing vulnerability of sensitive populations**

(Radeloff et al. 2005)





Health Effects of Wildfire Smoke

Systematic Reviews are Now Available



[Environ Res.](#) 2015
Jan;136:120-32. doi:
10.1016/j.envres.20
14.10.015.

[Environ Health
Perspect.](#) 2016;
124:1334–1343

Review

A Section 508–conformant HTML version of this article
is available at <http://dx.doi.org/10.1289/ehp.1409277>.

Critical Review of Health Impacts of Wildfire Smoke Exposure

Colleen E. Reid,^{1,2} Michael Brauer,³ Fay H. Johnston,^{4,5} Michael Jerrett,^{1,6} John R. Balmes,^{1,7} and Catherine T. Elliott^{3,8}

¹Environmental Health Sciences Division, School of Public Health, University of California, Berkeley, Berkeley, California, USA; ²Harvard Center for Population and Development Studies, Harvard T.H. Chan School of Public Health, Cambridge, Massachusetts, USA; ³School of Population and Public Health, University of British Columbia, Vancouver, British Columbia, Canada; ⁴Menzies Institute of Medical Research, University of Tasmania, Hobart, Tasmania, Australia; ⁵Environmental Health Services, Department of Health and Human Services, Hobart, Tasmania, Australia; ⁶Department of Environmental Health Sciences, Fielding School of Public Health, University of California, Los Angeles, Los Angeles, California, USA; ⁷Department of Medicine, University of California, San Francisco, San Francisco, California, USA; ⁸Office of the Chief Medical Officer of Health, Yukon Health and Social Services, Whitehorse, Yukon, Canada

Known and Suspected Health Effects of Wildfire Smoke

Known

- **Respiratory morbidity**
 - *Asthma & COPD*
 - *Bronchitis & pneumonia*
- **Susceptible populations**
 - *Children, elders and those with chronic disease*

Suspected

- **All-cause mortality**
- **Cardiovascular morbidity**
- **Adverse birth outcomes**

More data needed

- **Risk of mortality**
- **Cardiovascular morbidity**
- **Susceptible populations**



At-risk populations include –

- Pregnant women and fetuses
- Children
- Older adults
- Populations with pre-existing respiratory disease
- Populations with pre-existing cardiovascular disease

***27% of
U.S. population is
at-risk***

Populations suspected to be at greater risk –

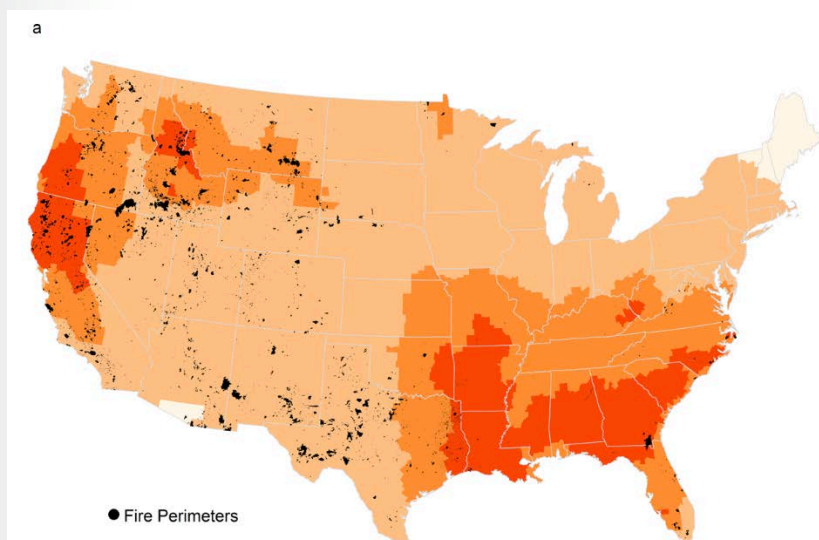
- Populations with chronic inflammatory diseases (e.g., diabetes, obesity)
- Women, African-Americans and populations with lower socio-economic status*



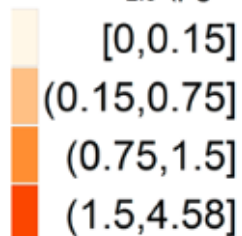
Air Quality Impacts of Wildland Fires

Annual average daily fire-PM_{2.5} footprint for US counties

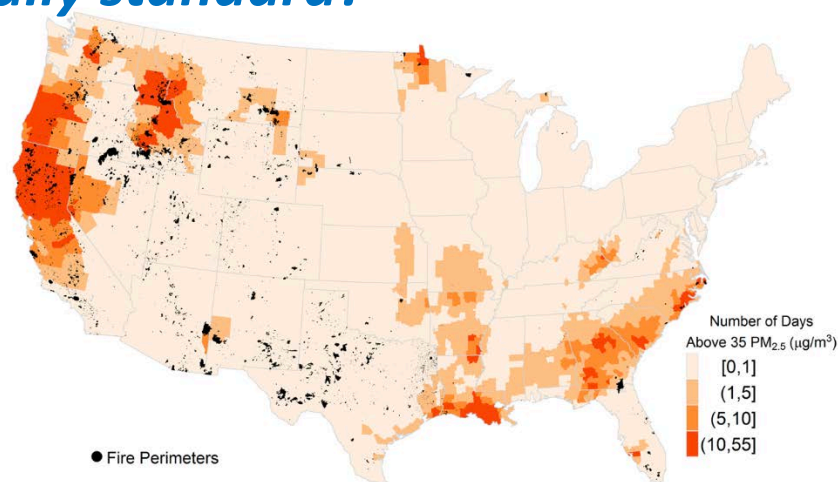
How much does smoke contribute to air quality and how often does it lead to exceeding daily standard?



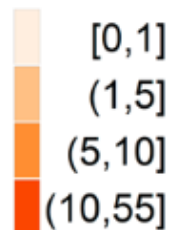
Fire-PM_{2.5} (μg/m³)



Health protective standards
Annual: 12 μg/m³ daily avg.
Daily: 35 μg/m³



Above 35 PM_{2.5} (μg/m³)



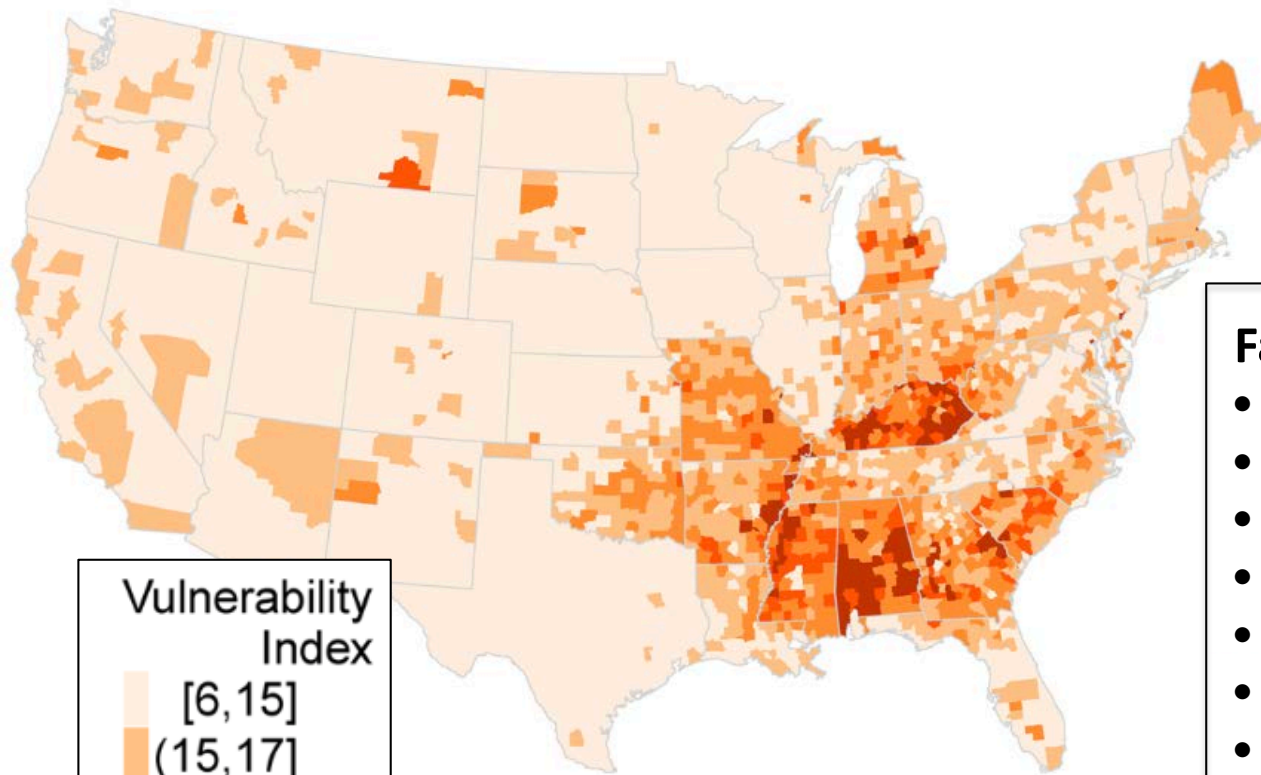
of days with fire-PM_{2.5} above 35 μg/m³ by counties of continental US



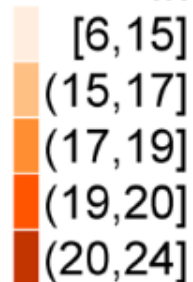
Community Health-Vulnerability

Community-Health Vulnerability Index

County Level Community-Health Vulnerability Index



Vulnerability Index



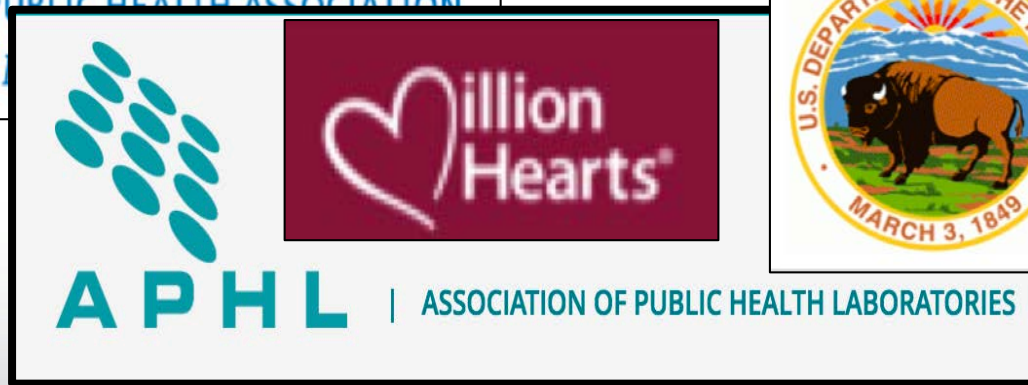
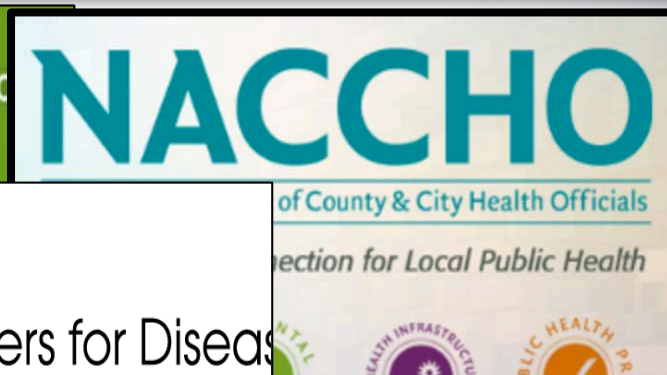
Factors of Vulnerability

- Peds & Adult Asthma
- COPD
- Obesity
- Diabetes
- Hypertension
- % population age 65+
- Income, education, poverty, unemployment



ORD's Public Health Outreach

Getting Resources to the States





Smoke Ready Toolbox for Wildfires

epa.gov/air-research/smoke-ready-toolbox-wildfires



Airnow.gov: Current Fire Conditions

Get current air quality conditions and learn what to do to protect your health from air pollution, including smoke from wildland fires. Airnow.gov provides local air quality forecasts using EPA's science-based air quality index. https://airnow.gov/index.cfm?action=topics.smoke_wildfires

How Smoke From Fires Can Affect Your Health

Learn who is more at risk from smoke, how to tell if it is affecting you, and steps you can take to protect your health. Learn what to do before, during and after a wildfire. <https://airnow.gov/index.cfm?action=smoke.index>

Wildfire Smoke: A Guide for Public Health Officials

The guide is an easy-to-use resource that outlines whose health is most affected by wildfire smoke, how to reduce exposure to smoke, what public health actions are recommended, and how to communicate air quality to the public. The recommendations are based on science conducted by EPA and others. https://www3.epa.gov/airnow/wildfire_may2016.pdf

Wildfire Smoke Exposure Infographics

Two infographics provide information on actions to take to reduce health risks from smoke exposure in areas with wildfire smoke and what respirator (mask) to wear if you have to go outside and how to wear it properly. https://www3.epa.gov/airnow/smoke_fires/reduce-health-risks-with-wildfire-smoke.pdf and <https://airnow.gov/static/topics/images/epa-infographic-respirator.jpg>

Smoke Sense App

The Smoke Sense mobile app, developed by EPA researchers, enables you to get information on air quality and learn how to protect your health from wildland fire smoke. The app is being used in a citizen science study to determine how smoke from fires impacts public health. The app is available for anyone to use and can be downloaded on Android or iOS. www.epa.gov/air-research/smoke-sense

Particle Pollution and Your Patients' Health Course

Particle pollution, also known as particulate matter or PM, is the main component of haze, smoke, and dust. This course provides health professionals with knowledge they can share with patients to help reduce overall risk of PM-related health effects, particularly in individuals with heart and lung disease. www.epa.gov/pmcourse



Online Healthy Heart Toolkit

Breathing in fine particulate matter (PM_{2.5}) can trigger heart attacks, ischemic stroke, abnormal heart rhythms and worsen heart failure in people with cardiovascular disease or older adults with medical conditions that put them at risk. Particle pollution is a main component of smoke. Use the toolkit to protect your heart. <https://www.epa.gov/air-research/healthy-heart-toolkit-and-research>

Smoke Ready Toolbox for Wildfires

- Resources health officials can use to educate the public about the risks of smoke exposure and actions people can take to protect their health

https://www.epa.gov/sites/production/files/2018-04/documents/smoke_ready_toolbox_for_wildfires_tagged.pdf



Local Air Quality Conditions

Zip Code:

Go

State :



Go

[National Summary](#)

[Forecast](#)

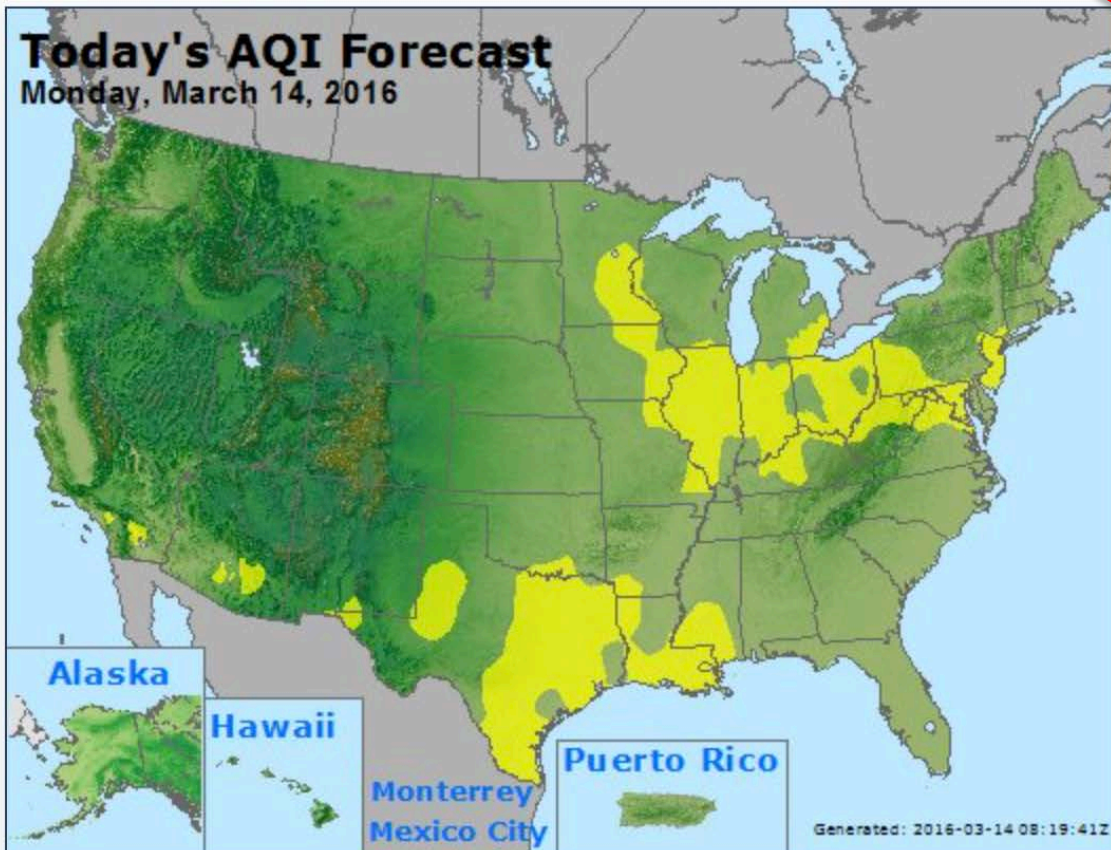
[Current AQI](#)

[AQI Loop](#)

[More Maps](#)

Today's AQI Forecast

Monday, March 14, 2016



Alaska

Hawaii

Monterrey
Mexico City

Puerto Rico

Generated: 2016-03-14 08:19:41Z

Good

Moderate

USG

Unhealthy

Very
Unhealthy

Hazardous

! Action Day

Fires: Current Conditions

[Click to see map](#)



U.S. Embassies and Consulates

Data from air quality monitors at select U.S. embassies and consulates around the world

Announcements

3/9/16: NEW: [Spanish-language website](#) for Air Quality Flag Program - NEUVO: [En español—El sitio web](#) de la programa de banderines sobre la calidad del aire

03/03/16: Now available! Heart Disease, Stroke, and Outdoor Air Pollution (en Español) - [Enfermedades del corazón, ataques cerebrales y contaminación del aire](#)

[more announcements](#)

Air Quality Basics

[Air Quality Index](#) | [Ozone](#) | [Particle Pollution](#) | [Smoke from fires](#) | [What You Can Do](#)

▶ [Health](#)

▶ [Learning Center](#)



Apps



EnviroFlash Email



Local Air Quality Conditions

Zip Code:

Go

State : Alabama



Go

[National Summary](#)

[Forecast](#)

[Current AQI](#)

[AQI Loop](#)

[More Maps](#)

Fires: Current Conditions

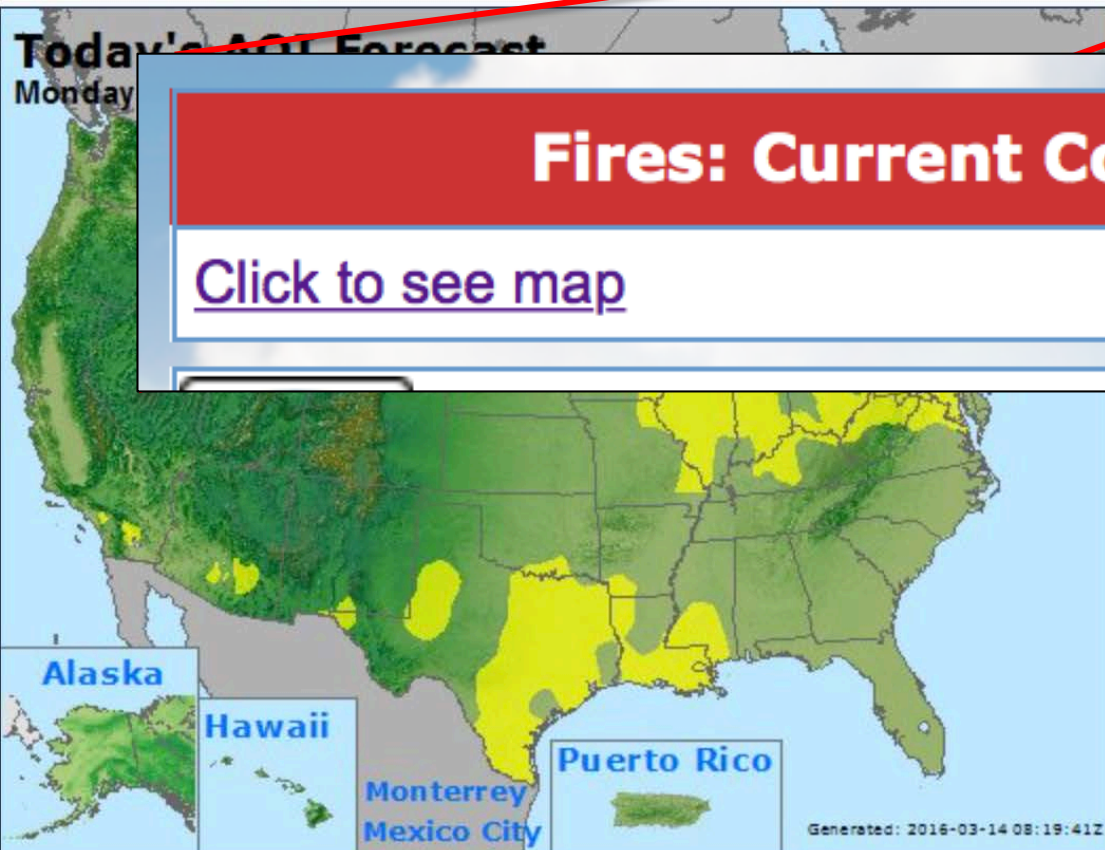
[Click to see map](#)



[U.S. Embassies and Consulates](#)

Fires: Current Conditions

[Click to see map](#)



[corazón, ataques cerebrales y contaminación del aire](#)

[more announcements](#)

Air Quality Basics

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Good

Moderate

USG

Unhealthy

Very Unhealthy

Hazardous

! Action Day



Apps



EnviroFlash Email



Fires: Current Conditions Page

- **Current Smoke Map generated by NOAA Hazard Mapping System**
- **Current Advisories – State/Local/Tribal agency blogs**
- **Wildland Fire Air Quality Response Program**

Current Advisories

Fires and Health

Before, During, and After a Wildfire

More Fire Tools

See [Infographic enlarged JPG](#) 127.36 KB
See [Infographic enlarged PNG](#) 26.17 KB

See [Infographic enlarged PDF](#) (1 p., 2.2 MB)

AirNow

Local Air Quality Conditions

Zip Code: Go State: Go

My Current Location

Fires and Your Health

Smoke is made up of a complex mixture of gases and fine particles produced when wood and other organic materials burn. The biggest health threat from smoke is from fine particles. These microscopic particles can get into your eyes and respiratory system, where they can cause health problems such as burning eyes, runny nose, and illnesses such as bronchitis. Fine particles also can aggravate chronic heart and lung diseases - and even be linked to premature deaths in people with these conditions.

If you are healthy, you're usually not at a major risk from short-term exposures to smoke. Still, it's a good idea to avoid breathing smoke if you can. Everyone should take the steps below when wildfires are present.

Questions? Visit our [Frequently Asked Questions](#) page for answers to some common questions about health and smoke from wildland fires.

Use common sense. If it looks smoky outside, it's probably not a good time to mow the lawn or go for a run. And it's probably not a good time for your children to play outdoors.

Pay attention to local air quality reports. Stay alert to smoke-related news coverage or health warnings.

Visit [AirNow](#) to find out the Air Quality Index in your area. As smoke gets worse, the amount of particles in the air changes - and so do the steps you should take to protect yourself. [AirNow](#) recommends precautions you can take to protect your health when air pollution gets bad.

If you are advised to stay indoors, take steps to keep indoor air as clean as possible. When smoke levels are high, try to avoid using anything that burns, such as wood, candles, gas stoves, gas heaters - and even candles! Don't vacuum. That stirs up particles already inside your home. And don't smoke. That puts even more pollution in your lungs, and in the lungs of people around you.

If you have asthma or other lung disease, make sure you follow your doctor's directions about taking your medicines and following your asthma management plan. Call your doctor if your symptoms worsen.

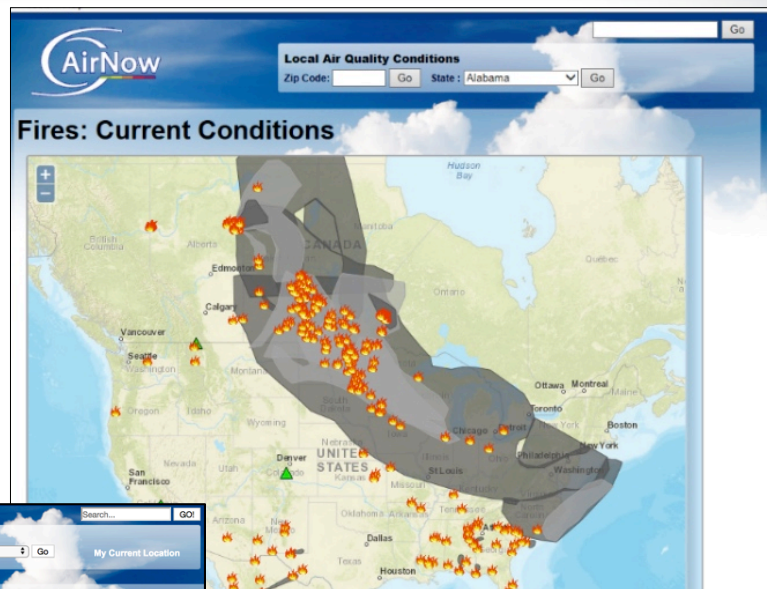
Fires and smoke across Alaska and Northern Canada
[AirNow smoke courtesy of NASA Media](#)

Health Resources

- [Wildfire Smoke, A Guide for Public Health Officials, 2016](#) (76 pp., 1.5MB, [about PDF](#))
- [How Smoke from Fires Can Affect Your Health](#) - Learn steps you can take to protect your health.
- [Particle Pollution and Your Health](#) - Find out if you are at risk from exposure to particle pollution, and what health effects can be caused by particles.

Educational Resources

- [CDC Wildfire Fact Sheet](#) - Information on emergency preparedness and response
- [California Air Resources Board SMP Public Outreach Protocol - Tools and Materials](#)
- [FOR KIDS- Follow \[Smoky Bear's\]\(#\) advice when wildfires are in your area!](#)



CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

SEARCH

CDC A-Z INDEX

Natural Disasters and Severe Weather

Wildfires

More and more people make their homes in areas that are prone to wildfires. You can take steps to be ready for a wildfire and prepare your home and landscaping to reduce your risk. Learn how to protect yourself and your family from a wildfire, evacuate safely during a wildfire, and how to stay healthy when you return home.

Language: English (US)

Before a Wildfire

- [Wildfire, Are You Prepared?](#)
- [Is your home firewise?](#)
- [Make a Plan](#)

View a full-sized image of the Be Ready! Wildfires infographic. Share it on social media or print it out to post in your office, school, or home.

During a Wildfire

- [Wildfire Smoke](#)
- [Wound Care](#)
- [Ready.gov Wildfires](#)
- [Protecting Pets](#)
- [Animals in Evacuation Centers](#)

After a Wildfire

- [What to Do After a Home Fire](#)
- [Preventing Injury](#)
- [Returning Home After a Disaster](#)

Info for Specific Groups

- [Evacuees & Other Affected Persons](#)
- [Evacuation Centers](#)
- [Pregnant Women](#)
- [Responders](#)

Fires and Your Health

CDC: Before, During and After a Wildfire

How Smoke from Fires Can Affect Your Health



Local Air Quality Conditions

Zip Code: State : [My Current Location](#)

How Smoke from Fires Can Affect Your Health

Updated January 2017

Smoke may smell good, but it's not good for you

While not everyone has the same sensitivity to wildfire smoke, it's still a good idea to avoid breathing smoke if you can help it. And when smoke is heavy, such as can occur in close proximity to a wildfire, it's bad for everyone.

Smoke is made up of a complex mixture of gases and fine particles produced when wood and other organic materials burn. The biggest health threat from smoke is from fine particles. These microscopic particles can penetrate deep into your lungs. They can cause a range of health problems, from burning eyes and a runny nose to aggravated chronic heart and lung diseases. Exposure to particle pollution is even linked to premature death.

Some people are more at risk

It's especially important for you to pay attention to local air quality reports during a fire if you are

- **a person with heart or lung disease**, such as heart failure, angina, ischemic heart disease, chronic obstructive pulmonary disease, emphysema or asthma.
- **an older adult**, which makes you more likely to have heart or lung disease than younger people.
- **caring for children, including teenagers**, because their respiratory systems are still developing, they breathe more air (and air pollution) per pound of body weight than adults, they're more likely to be active outdoors, and they're more likely to have asthma.
- **a person with diabetes**, because you are more likely to have underlying cardiovascular disease.
- **a pregnant woman**, because there could be potential health effects for both you and the developing fetus.



How to tell if smoke is affecting you

<https://airnow.gov/index.cfm?action=smoke.index>



Public Health Recommendations

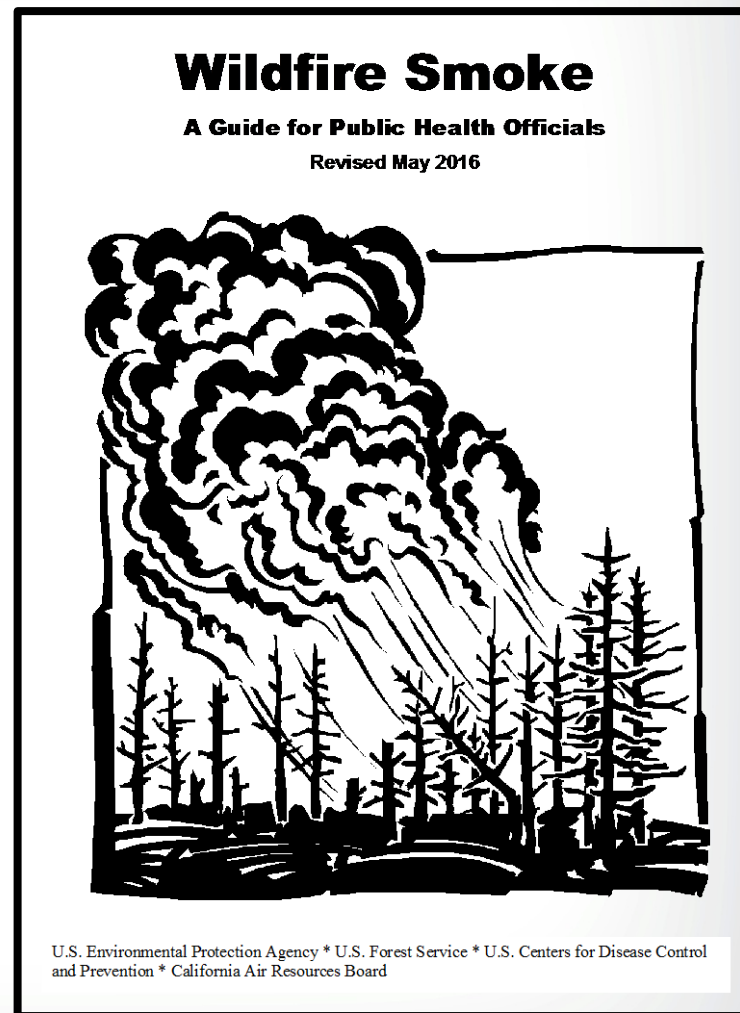
Exposure Reduction Measures

An individual can be advised to:

- Stay indoors
- Reduce outdoor physical activity
- Respirators (e.g., N-95) can help in the short-term
- Activate asthma/COPD action plans
- Use a home clean air shelter

A community can be advised to:

- Cancel outdoor events
- Provide community clean air shelters
- Increase air filtration in institutions
- Evacuate



https://www3.epa.gov/airnow/wildfire_may2016.pdf



Wildfire Smoke Guide 2018

Anticipate Availability Late Summer/Fall



- *Updated look*
- *Smoke vs urban particles*
- *Addition of ozone*
- *Add sections*
 - *PM web course* - *Sensors*
 - *Ash clean-up*
- *Stand-alone fact sheets*
 - *Children* - *Older adults*
 - *Older adults* - *Respirator use*
 - *Pets/livestock* - *Ash clean-up*
 - *Preseason preparedness*
 - *Exposure reduction*
 - *Know when to evacuate*



Wildfire Smoke Guide 2018

Fact Sheets Being Release as Approved



WILDFIRE SMOKE FACTSHEET

Children and Families

Background

- **Wildfires** expose children and women of reproductive age to a number of environmental hazards, e.g., fire, smoke, psychological stress, and the byproducts of combustion of wood, plastics, and other chemicals released from burnings structures and furnishings.
- **During the acute phase** of wildfire activity, the major hazards are fire and smoke.
- **Children, Pregnant Women**, individuals with pre-existing lung or cardiovascular diseases (e.g. asthma), impoverished populations are especially vulnerable to hazards due to wildfires.

Environmental Hazards

- **Wildfire Smoke:** Consists of very small organic particles, liquid droplets, and gases such as carbon monoxide (CO), carbon dioxide (CO₂) and other volatile organic compounds (VOCs), such as formaldehyde and acrolein. The actual content of the smoke depends on the fuel source.

Health Effects from Smoke

- Symptoms from smoke inhalation can include chest tightness, shortness of breath, wheezing, coughing, respiratory tract and eye irritation and burning, chest pain, dizziness, or lightheadedness and other symptoms.
- Underlying conditions such as allergies and asthma symptoms may be exacerbated.
- The risk of developing cancer from short-term exposures to smoke is vanishingly small.

Recommendations

Prepare Before Wildfire Season

- **Stock up** so you don't have to go out when it's smoky. Have several days of medications on hand. Buy groceries that do not need to be refrigerated or cooked because cooking can add to indoor particle levels.
- **Create a "clean room"** in your home. Choose a room with as few windows as possible, such as a bathroom, and use a portable air cleaner and avoid sources of pollution.
- **Buy a portable air cleaner** before there is a smoke event. High-efficiency particulate (HEPA) filter air cleaners, and electrostatic precipitators that do not produce ozone help reduce indoor particle levels.
- **Organize** your important items ahead of time and know where to go in case you have to evacuate.



WILDFIRE SMOKE FACTSHEET:

Indoor Air Filtration

Exposure to Particle Pollutants

Indoor sources of particulate matter (PM) come from combustion events such as smoking, candle burning, cooking and wood-burning. During a wildfire event, outdoor PM can increase indoor PM levels well above the levels normally found. As outlined in the Guide, reducing indoor sources of pollution is a major step to lower the concentrations of PM indoors. Further reductions in indoor PM can be achieved using one of the filtration options discussed below.

Filtration Options

There are two effective options for improving air filtration in the home: upgrading the central system filter, or using high efficiency portable air cleaning appliances. Before discussing filtration options, it is important to understand the basics of filter efficiency.

Filter Efficiency

The most common industry standard for filter efficiency is known as the Minimum Efficiency Reporting Value, or MERV rating. The MERV scale for residential filters ranges from 1-20. The higher the MERV rating the greater the percentage of particles captured as the air passes through the filter media. Higher MERV (higher efficiency) filters are especially effective at capturing very small particles that can most affect health.

Central Air System Filter

The filter used in the central heating/cooling system of the home can effectively reduce indoor PM. A home typically will have a low MERV (1-4)

fiberglass filter that is 1" thick. Replacing this filter with a medium efficiency pleated filter can significantly improve the air quality. Higher efficiency filters (MERV 6-16) in the central system can reduce indoor PM as much as 95%. However, these filters offer more resistance to air flow, which may require more energy used by the blower motor. You may wish to consult a HVAC technician or the manufacturer of your system to confirm that the system can handle a more efficient filter. If you are not sure, simply switching from "Auto" to "On" has been shown to reduce concentrations by as much as 50%.

Portable Air Cleaners

Portable air cleaners are self-contained units that can be used to enhance central filtration to remove particles. Their effectiveness depends on several factors such as the size of the unit, the filter efficiency, and whether the unit is turned on and at what fan speed. Cleaners fitted with high efficiency filters can reduce indoor PM concentrations by as much as 50%.

Portable Air Cleaners: Choose

There is a wide variety of air cleaners ranging in price from about \$50 to \$500. Air cleaners under about \$200 are typically the air well and would not be recommended.

Types of Air Cleaners

Most air cleaners fall under two categories: mechanical and electronic. Mechanical

WILDFIRE SMOKE FACTSHEET

Prepare for Fire Season



If you live in an area that is regularly affected by smoke or where the wildfire risk is high, take steps to prepare for fire season. Know how to get ready before a wildfire. Know how to protect yourself from smoke exposure during a wildfire.

Being prepared for fire season is especially important for the health of children, older adults, and people with heart or lung disease.

Prepare Before a Wildfire

- **Stock up** so you don't have to go out when it's smoky. Have several days of medications on hand. Buy groceries that do not need to be refrigerated or cooked, because cooking can add to indoor particle levels.
- **Create a "clean room"** in your home. Choose a room with as few windows and doors as possible, such as a bedroom. Use a portable air cleaner and avoid indoor sources of pollution.
- **Buy a portable air cleaner** before there is a smoke event. High-efficiency particulate air (HEPA) filter air cleaners, and electrostatic precipitators that do not produce ozone, can help reduce indoor particle levels.
- **Understand** how you will receive alerts and health warnings, including air quality reports and public service announcements, from local officials.





Particulate Matter Web Course For Healthcare Professionals and Educators

Environmental Topics

Laws & Regulations

About EPA

Search EPA.gov



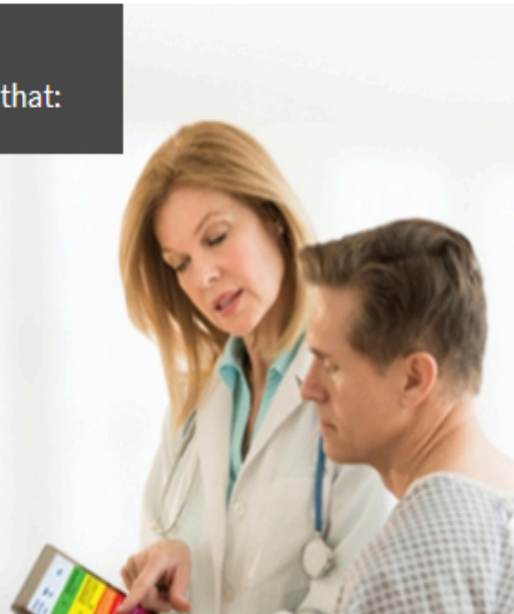
Particle Pollution and Your Patients' Health

[Share](#)

[Contact Us](#)

An evidence-based training course for healthcare providers that:

- Describes the biological mechanisms responsible for the cardiovascular and respiratory health effects associated with particle pollution exposure.
- Provides education tools to help patients understand how particle pollution exposure can affect their health and how they can use the Air Quality Index to protect their health.



This course is designed for family medicine physicians, internists, pediatricians, occupational and rehabilitation physicians, nurse practitioners, nurses, asthma educators, pulmonary specialists, cardiologists, and other medical professionals.

[Start the Course](#)

CME credit from CDC to physicians, nurses and health educators



EPA's Healthy Heart Program

Increasing Environmental Health Literacy



EPA's Healthy Heart program aims to prevent heart attacks and strokes by:

- Raising public awareness about the role outdoor air pollution plays in cardiovascular health, and
- Steps individuals can take to reduce their pollution exposure



The screenshot shows the EPA website's 'Healthy Heart Toolkit and Research: Steps You Can Take' page. The header includes the EPA logo, navigation links for 'Environmental Topics', 'Laws & Regulations', and 'About EPA', and a search bar. Below the header, there's a 'Related Topics: Air Research' link and social media sharing options. The main heading is 'Healthy Heart Toolkit and Research: Steps You Can Take'. Below this, a sub-heading reads 'Steps You Can Take to Reduce Health Effects from Air Pollution'. A paragraph explains that air pollution can trigger heart attacks and strokes, and that reducing exposure can help. To the right, there's a 'Daily Air Quality' section with links to 'Check Pollution Forecasts' and 'Get Free Email Alerts', and an 'EXIT' button. Below this is a 'Resources' section with links to 'Be Smart, Protect Your Heart video', 'Heart Disease, Stroke and Outdoor Air Pollution', and 'Million Hearts Initiative'. On the left, under the heading 'When are air pollution levels high?', there's a list of conditions: 'Any time of year', 'When weather is calm', 'Near busy roads', 'In urban areas', 'In industrial areas', and 'When there is smoke'. A photograph of a city skyline is also visible.

Healthy Heart Toolkit and Research: Steps You Can Take

Steps You Can Take to Reduce Health Effects from Air Pollution

Studies show that air pollution can trigger heart attacks, strokes and worsen heart failure in people who are at risk for these conditions. If you have a heart condition, you could benefit by reducing your exposure to high levels of air pollution.

When are air pollution levels high?

- Any time of year
- When weather is calm
- Near busy roads
- In urban areas
- In industrial areas
- When there is smoke

Daily Air Quality

- [Check Pollution Forecasts](#)
- [Get Free Email Alerts](#)

Resources

- [Be Smart, Protect Your Heart video](#)
- [Heart Disease, Stroke and Outdoor Air Pollution](#)
- [Million Hearts Initiative](#)




- *When are air pollution levels high?*
- *Are you at risk?*
- *Steps to Protect Your Heart*
- *How to Reduce your Risk?*
- *Warning Signs of a Heart Attack*
- *Warning Signs of a Stroke*



Million Hearts®

Provides Educational Tools on Particle Pollution



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Undiagnosed Hypertension
Self-Measured Blood Pressure
Medication Adherence
Treatment Protocols
Action Guides
Tools
Health IT
Particle Pollution
Physical Activity
Tobacco

Tools & Protocols

Find treatment protocols, action guides, and other tools to help educate, motivate, and monitor your patients.

Data & Reports

Access the latest data and published research on heart disease and stroke.

e-update

Tools You Can Use

- **New Million Hearts® website on physical activity promotes community programs and resources.** Physical activity is one of the most effective ways to prevent and manage heart disease, but just half of U.S. adults get enough. Take advantage of resources and information about community-based programs to boost physical activity in your community.
- **Vermont Department of Health releases Hypertension Management Toolkit.** The toolkit uses Lean quality improvement tools and methods to support evidence-based strategies that improve blood pressure control. A new statewide peer learning collaborative will share best practices to keep the toolkit updated.
- **Million Hearts® Tobacco Cessation Protocol now available on the go.** Find the CDC Protocol for Identifying and Treating Patients Who Use Tobacco on Epocrates, a free website and app for clinicians. (Registration may be required.)
- **A visual air quality alert makes air awareness easy.** The EPA's Air Quality Flag Program provides instructions on using physical and digital flags at your business or online to alert people to daily air quality.
- **New EPA toolkit details the link between heart problems and air pollution.** Use the Healthy Heart Toolkit to take steps to protect yourself and your community, sign up for air alerts, and download public education materials.

Million Hearts® in the Community

- **The District of Columbia Department of Health's Million Hearts® program builds a framework for success.** Learn how D.C.'s Million Hearts® program's strong partnerships, data monitoring, and targeted interventions have reduced CV disease morbidity and mortality in the nation's capital.
- **Find your niche when partnering with Million Hearts®.** Hospitals, employers, and clinical care teams in communities across the nation have tailored unique approaches to keeping people healthy, optimizing care, and helping priority populations. Learn how they did it—and then craft your own plan.
- **Million Hearts® continues engagement to find patients with hypertension "hiding in plain sight."** How many people in your practice have undiagnosed high blood pressure? Learn how to establish criteria for finding people with hypertension, implement evidence-based strategies to treat them, and improve their CV outcomes.
- **Pilot program with National Association of Community Health Centers (NACHC) shows progress in fighting hypertension.** In honor of National Heart Center Week (Aug. 13-19), take the time to learn how Million Hearts® partner NACHC is making strides in blood pressure control.

The Science of Million Hearts®

- **Physicians experienced in health information technology are more likely to achieve 70% blood pressure control.** (*Journal of the American Medical Association*)
- **Lowering prices of fruits and vegetables could reduce the number of deaths from CV disease.** (PLoS Medicine)
- **A cost-benefit analysis shows how indoor air filtration may reduce mortality due to particulate matter.** (*International Journal of Indoor Environment and Health*)

You are receiving this newsletter because you are a Million Hearts® supporter.


Do This!

Share the EPA Air Quality Index with networks and people at risk.

Particle pollution puts people with CV conditions at higher risk for heart problems or stroke. Post this tool on your websites and social media so people can check air quality before they go outside for physical activity. Those at risk should avoid going outside on days ranked "orange" or worse and instead choose indoor versions of their favorite activities.

Quick Fact

One in three American adults has heart or blood vessel disease and is at higher risk from air pollution, which can trigger heart attacks and strokes and worsen existing conditions.



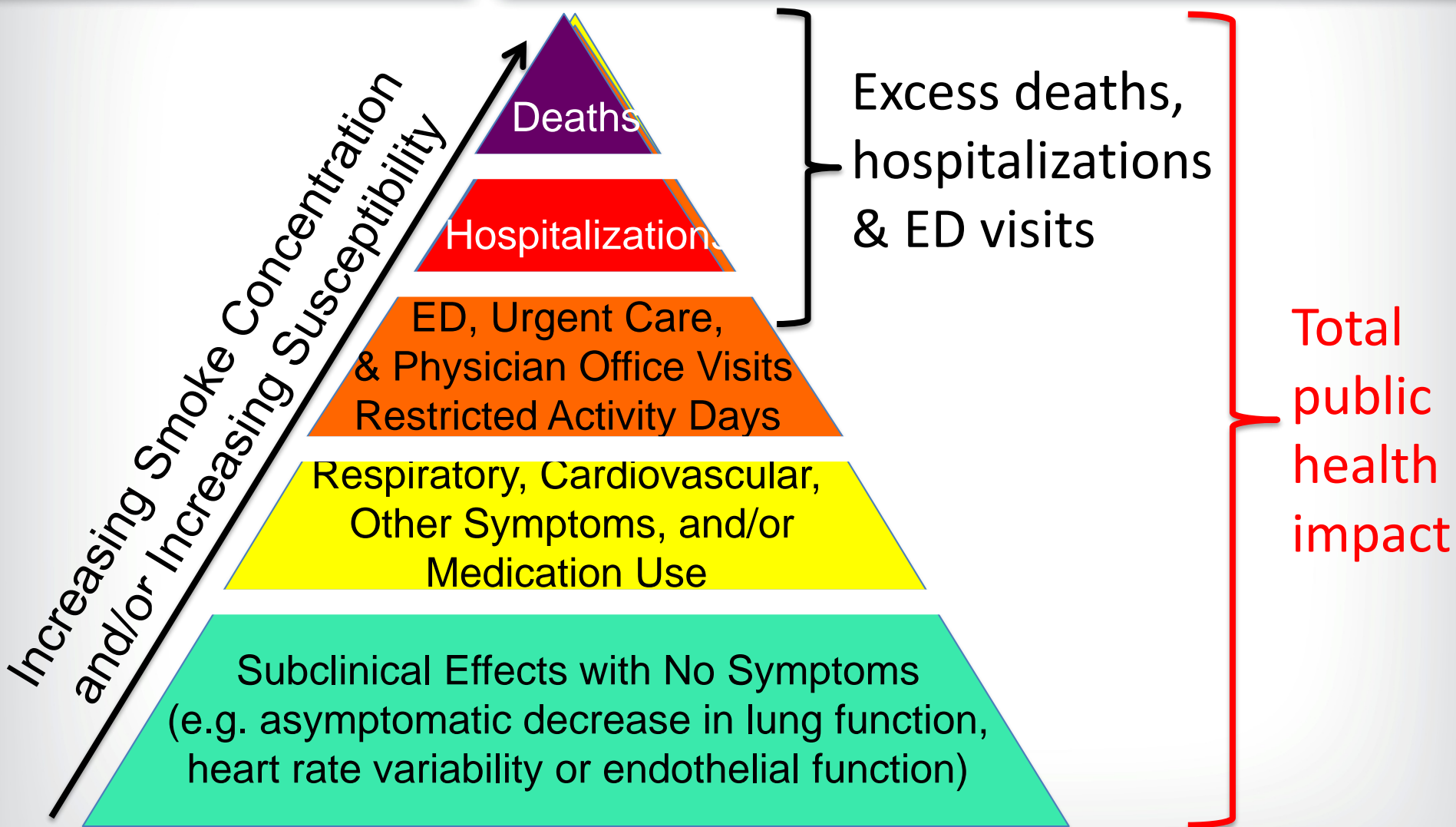
Air quality as a risk factor for heart attack? It may sound strange, but worsening air quality puts people at risk for heart attacks and other cardiovascular (CV) conditions, especially among people who are already vulnerable. More than 1.5 million people in the United States suffer from heart attacks and strokes each year. Millions more have high blood pressure or heart rhythm disorders, putting this priority population especially at risk from particle pollution's effects.

Million Hearts® is dedicated to driving implementation of evidence-based public health and clinical strategies that help prevent CV events. With that in mind, we recently launched a webpage to spread awareness about particle pollution and CV health, with resources to help track local air quality. Use the resources in this newsletter to learn about the connection between heart health and particle pollution to help keep people healthy this summer and beyond.

—Janet Wright, MD, FACC
Executive Director, Million Hearts®



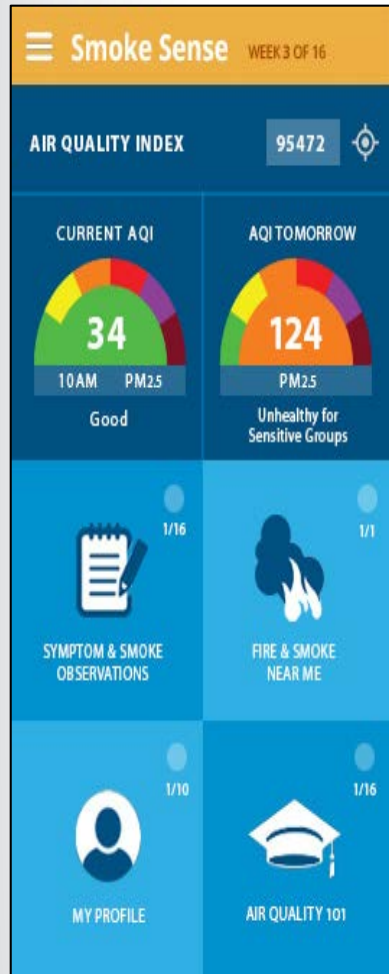
Wildland Fire Smoke and Population Health Effects



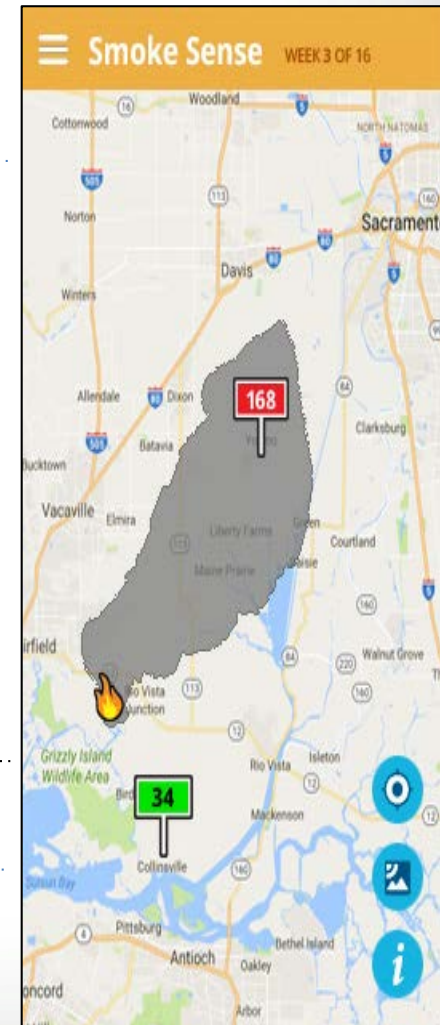
Size of Population Affected by Exposure to Wildfire Smoke



Air Quality & Smoke Plume Info



- *Smoke Sense provides information about current and future air quality*
- *Forecasted smoke plumes can be visualized*
- *Less time outside during smoke episodes to decrease exposure, & protect health*
- *Smoke Sense helps collect information about who, when, and how frequently people are impacted by smoke*
- *Information about smoke in the air and symptoms experienced in the past week will be logged*



AirNow Redesign

- Look will be different: focus on local conditions
- Mobile-friendly web site
- Same great information
 - Health Care Provider page
 - Fires: Current Conditions page
- Better display of temporal changes in air quality





Health Impacts of Wildfire Smoke Merit Our Attention & Action

- *Population & clinical health impacts are real and costly*
- *Intensity of wildland fires is increasing*
- *Size of vulnerable & sensitive populations is Increasing*
 - *Increasing area of the Wildland-Urban Interface*
 - *contains 60% of new homes built in the U.S. after 1990*
 - *contains 46 million single family homes, thousands of businesses, & a population greater than 120 million*
 - *Increasing size of the sensitive population*
 - *aging U.S. population with high prevalence of heart & lung disease*
 - *increasing prevalence of obesity and diabetes*
- *Drought and poor forest health are increasing risks of wildland fire and risks of co-morbidity*

Develop, Harmonize, Implement and Evaluate Impact Public Health Communication on Health Effects

- **Link wildfire smoke forecasts to public health messaging to decrease exposure**
- **Evaluate the effectiveness of:**
 - interventions to decrease wildfire smoke exposures and associated adverse health outcomes
 - PSAs (public service announcements) and other communication methods



Thank you

Wayne E. Cascio, MD, FACC

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