Welcome to today’s webinar,

Western Wildfires: Keeping Communities from Polluted Air

May 21, 2018

Thank you for your interest and attendance!

Please use your computer speakers to listen to today’s presentation.

Please submit your questions and comments in the Q&A box.

We will begin at 1:00 pm ET

This webinar will be recorded
Speakers

• **Brendon Haggerty, MURP, Senior Program Specialist, Multnomah County Health Department, Portland, Oregon**

• **Elizabeth Rhoades, Ph.D., Director, Climate Change and Sustainability, Los Angeles County Department of Public Health, Los Angeles, California**
Golfers finish a round as massive Oregon wildfire rages behind them

By Doug Criss, CNN

Updated 11:26 AM ET, Thu September 7, 2017

These golfers in Washington state give new meaning to the term "playing through."

Story highlights

(CNN) — Everybody knows golfers just hate to stop a good round.

The Eagle Creek fire came within view of a Washington state golf course

So, when the Eagle Creek fire, a 31,000-acre blaze...
Sept. 16 air quality poor for sensitive populations

September 7, 2017

Updated for Saturday, Sept. 16: Air quality today is unhealthy for sensitive groups. Children, elderly and those with chronic health conditions like heart and lung conditions should stay inside. If they must be outside, avoid intense activity.

The Multnomah County Health Department reports wearing a mask on a day like today is of little help unless it has been specially fitted with a tight seal around the face that is confirmed.

The County Health Department continues to work closely with the Oregon Health Authority and Department of Environmental Quality to monitor these issues. Read more about considerations for vulnerable populations.

The elderly and people with chronic heart and lung problems

People over age 65 and those with known heart and lung problems like asthma and emphysema are more sensitive to lung irritation from breathing in small particles. They may have cough, wheezing, trouble breathing, chest tightness, lightheadedness or unusual tiredness. It is especially important that anyone with these conditions stay inside and have their usual medications on hand. Anyone with symptoms that are severe or don't get better should contact their healthcare provider right away.
Local Perspective: Los Angeles County

May 21, 2018

Elizabeth Rhoades, PhD
Director, Climate Change and Sustainability Program
Los Angeles County Department of Public Health
Wildfires in California, 2017

• Most destructive wildfire season in California history
  – ~ 9,133 wildfires
  – Burned >1.3 million acres
  – Killed 43 people

• 29 wildfires across Southern California in December 2017
  – Burned >308,000 acres
  – 230,000 people evacuated
  – Caused traffic disruptions, school closures, hazardous air conditions, power outages, deaths, and billions of dollars in insured damages alone.

Major Fires, December 2017. Source: CAL FIRE 2017 Statewide Fire Map
Thomas Fire

- Largest wildfire in CA's recorded history: 281,893 acres
- Santa Barbara and Ventura Counties
- Destroyed more than 1,000 structures, cost over $177 million to fight
Thomas Fire - comparison

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Thomas Fire

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Thomas Fire
Wildfires

Acres burned by wildfire under current climate change trajectory for Southern California

Source: UCLA IoES Center for Climate Change ioes.ucla.edu/climate

Jin et al. 2015
Hotter Temperatures

Days Over 95°F Annually

Los Angeles County Department of Public Health Response

- Issued air quality advisories
- Inspected shelters
- Inspected restaurants and other facilities once reopened
- Staffed Local Assistance Center, distributing supplies (such as N95 masks) and information
- Provided mutual aid to Santa Barbara County following mudslides caused by rains following wildfires
Local Resource Centers

How to Clean Up Smoke and Soot from a Fire

Smoke and soot can travel and penetrate into other rooms affecting paint, carpet, upholstery, drapes, clothing and any other belongings. Ventilation of the fire scene or debris removal is an effective first step to clean up after a fire. Thorous cleaning and neutralizing of both the deposits and odors are required prior to any redecoration.

How to Start – General Cleaning Techniques

Different types of fire require different cleaning techniques. Typically, high-oxygen fires will result in dry dusty soot, whereas slow burning, low-oxygen fires will result in greasy wet deposits that easily smear. The cleaning regimen must take into account these variations.

Here are some clean-up recommendations and guidelines:

- Wear gloves such as household dish-washing gloves, long-sleeved shirts and pants to avoid skin contact. If you get any ash on your skin, wash it off as soon as possible.
- Wear personal protective gear, such as a dust mask, to avoid breathing in ash and other airborne particles.
- Ventilate the area (open windows, etc.) to remove smoke and odor.
- Remove burned debris to reduce odors.
- Install dehumidifiers to control moisture in the air (relative humidity), especially when water was used to extinguish the fire.
- Wipe all metallic finishes with coatings to prevent rust and staining.
- Clean plastic or surfaces such as PVC windows and white-painted surfaces using a mild alkaline detergent to remove possible acidic soot which may activate moisture in the air (humidity) and cause permanent staining.
- Undertake triage assessments to clean or remove all contents as quickly as possible and in order of value.
- Deodorants should not be used as they mask odors, which is a significant indicator of health concerns.
- Where surface staining cannot be removed, consider the use of specialist paint to obliterate the stain and anti-blood characteristics. Typically these paints are lacquers or oil-based.

Cleaning Techniques for Specific Types of Damage

For Damage Due to High-Oxygen Fires: Use dry sponges to remove initial deposits and follow with a low-alkaline detergent, then rinse.

For Damage Due to Low-Oxygen Fires: Do not use a dry sponge as this may create smears and cause the soot to spread. High-alkaline detergents are recommended with warm water and wash down. Remember to rinse thoroughly, as residue may affect subsequent paint applications.

For Damage Due to Kitchen Fires: Though cleaning is required, residue may not be readily visible. Remember that usually kitchen cabinets and drawer contents will need to be removed to allow access to hidden areas.

PUBLIC HEALTH NEWS

For Immediate Release:
August 28, 2009

Health Advisory:
Practice Safe Clean-Up After Fire

LOS ANGELES – The Los Angeles County Health Officer, Dr. Jonathan E. Fielding, advises people to take precautions during clean-up following a fire. Ash, soot, dust, and other airborne particles may have been deposited inside and outside of homes and businesses. While ash from wildfires is relatively non-toxic and similar to ash that may be found in a home fireplace, it may be irritating to the skin, nose and throat. Exposure to ash in air might trigger asthma attacks in people who already have asthma.

Ash Clean-up:
- Do not allow children to play in ash, especially in wet or damp ash.
- Wash toys before children play with them.
- Bathe pets to rid them of ash.
- During clean-up, wear gloves such as household dish-washing gloves, long-sleeved shirts and pants to avoid skin contact. If you do get ash on your skin, wash it off as soon as possible.
- If you have a vegetable garden or fruit trees, wash the fruit or vegetables thoroughly before eating them.
- Avoid getting ash into the air as much as possible. Do not use leaf blowers or take other actions that will put ash into the air. Instead, gently sweeping of indoor and outdoor surfaces, followed by wet sweeping, is the best way to clean an area with ash. A solution of bleach and water may be used to disinfect an area, if desired.

Soot, smoke and regular household vacuum cleaners do not filter out particles, but instead blow them into the air where they can be breathed. Use of a regular vacuum is not advised however HEPA-filter vacuum cleaners could be used.

A dust mask, such as a surgical mask or a mask rated N-95, may be worn during clean-up to avoid breathing in ash and other airborne particles.

Avoid washing ash into storm drains whenever possible. Use a little water as possible when cleaning an area of ash.

Collected ash may be disposed of in the regular trash by placing it in a plastic trash bag first.

If a job appears to be too big, hire a professional cleaning service. There are several businesses in L.A. County that specialize in post-fire cleaning that may be found in the phone book. Please contact a professional if there is substantial damage or destruction to a structure.

-MORE-
Mutual Aid

• Four Environmental Health staff spent a week conducting site hazard assessments for household chemicals
Mutual Aid
Thank you!

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Speakers

• **Colleen Reid, Ph.D., MPH,** Assistant Professor of Geography, University of Colorado – Boulder

• **Dr. Wayne Cascio, MD,** Director, U.S. EPA’s National Health and Environmental Effects Research Laboratory
Wildfire Smoke Exposure and Population Health
NACCHO Webinar
May 21, 2018

Colleen Reid, PhD MPH
Assistant Professor, Department of Geography
Faculty Associate, Institute of Behavioral Science
University of Colorado Boulder
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Epidemiological Difficulties

Figure 2 The air pollution health effects pyramid (adapted from American Thoracic Society 2000).
Emissions from Wildfires with Health Concerns

Primary air pollutants

- CO
- NO$_2$
- PAHs – polycyclic aromatic hydrocarbons
- VOCs – volatile organic compounds
- Particulate Matter (PM)

Secondary air pollutants

- Particulate Matter (PM)
- Ozone
Clear evidence of an association between wildfire smoke and respiratory health

Asthma and chronic obstructive pulmonary disease (COPD) significantly associated with higher wildfire smoke *in nearly every study*

- Increased medication usage
- Increased visits to physicians
- Increased emergency department visits
- Increased hospitalizations

- Growing evidence of a link between wildfire smoke and respiratory infections (pneumonia, bronchitis)
Wildfire smoke and cardiovascular disease

- Most studies to date have been null
- A few recent studies have found significant results
  - ED visits for all-cause cardiac symptoms in California (Wettstein et al. 2018)
  - Out-of-hospital cardiac arrests in Victoria, Australia (Haikerwal et al. 2015) and in Sydney, Australia (Salimi et al. 2016)
  - ED visits for congestive heart failure in North Carolina (Rappold et al. 2011)
- Some borderline significant
  - ED visits for hypertension (Tinling et al. 2016)
- Unsure as to the cause of these differences across studies
Wildfire Smoke and Mortality

• Clear evidence of wildfire smoke impacts on all-cause mortality
  • But no clear evidence for specific causes of mortality such as respiratory or cardiovascular deaths
**Fires effect on birth weight**

![Chart showing fires effect on birth weight](image)

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

<table>
<thead>
<tr>
<th>Trimester of exposure</th>
<th>Unadjusted model</th>
<th>Adjusted model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effect (g)</td>
<td>95% CI</td>
</tr>
<tr>
<td>Third (≥ 29 weeks)</td>
<td>-7.9</td>
<td>(-12.8, -3.1)</td>
</tr>
<tr>
<td>Second (17-28 weeks)</td>
<td>-17.1</td>
<td>(-21.9, -12.3)</td>
</tr>
<tr>
<td>First (1-16 weeks)</td>
<td>-3.9</td>
<td>(-7.8, 0.0)</td>
</tr>
<tr>
<td>Any trimester</td>
<td>-8.8</td>
<td>(-11.5, -6.1)</td>
</tr>
</tbody>
</table>

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

Holstius et al. 2012 *EHP*
Who is most vulnerable?

• Age
  • Some studies find older adults are more vulnerable
  • Some studies find younger adults are more vulnerable

• Pre-existing conditions
  • Only a few studies have looked at this with mixed results
  • But exacerbations of asthma and COPD are the clearest health findings for wildfire smoke

Reid et al. 2016 EHP
Who is most vulnerable?

- **Socio-economic status**
  - No differential effects by SES in British Columbia (Henderson et al. 2011)
  - More vulnerable in lower income areas found in studies in North Carolina (Rappold et al. 2012), California (Reid et al. 2016), and the western US (Liu et al. 2017)

- **Race-ethnicity**
  - Elderly Blacks had higher respiratory admissions associated with wildfires than elderly Whites in western US (Liu et al. 2017)
  - Indigenous Australians (Johnston et al. 2007; Hanigan et al. 2008)
What do we still not know?

• Why we have different findings for CVD
• Need more research into vulnerable populations
• There are likely other health endpoints related to smoke that have not been studied
• The health impacts of repeated exposures to wildfires
• Need more research into the effectiveness of public health interventions
• Health impacts of other air pollutants from wildfires not just PM
• Whether smoke from different types of fires affect health differently
• → need more connections between public health departments and researchers about what we should be researching
References

Research Perspectives on the Health Impacts of Wildfires and Wildfire Smoke

Wayne Cascio, MD, FACC
Director
National Health and Environmental Effects Research Laboratory
Office of Research and Development
US EPA

The Sand Fire
Santa Clarita Valley July 2016
Credit: Kevin Gill/flickr
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)

Adapted from https://www.nifc.gov/fireInfo/fireInfo_stats_totalFires.html
Californian Forests are in Peril
Dead Trees Increase Risk of Wildland Fire

Dead trees near Bass Lake in Sierra National Forest – US Forest Service
San Francisco Bay Area experienced hazardous levels of smoke
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

Annual average daily fire-PM$_{2.5}$ footprint for US counties

Health protective standards
Annual: 12 µg/m$^3$ daily avg.
Daily: 35 µg/m$^3$

# of days with fire-PM$_{2.5}$ above 35 µg/m$^3$ by counties of continental US

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

**Doing Solution Directed Science**

**ORD’s Translational Wildland Fire Research**

**In Vivo Test**

- WILDFIRE PM (100 µg)
- OROPHARYNGEAL ASPIRATION
  - MOUSE
  - BALF Analysis
  - o Lung injury
  - o Lung inflammation
  - o Cardiac function

**Smoke Toxicology**
Ian Gilmour, NHEERL
David DeMarini, NHEERL
Andy Ghio, NHEERL

**Smoke Epidemiology**
A. Rappold, W. Cascio, NHEERL
B. S. Stone, OAQPS
Public Health

**Smoke Exposure**
(Monitors/Sensors)
M. Landis, G. Hagler NERL
A. Holder, NRMRL

**EPA A&E Wildland Fire Research**

**FASME Initiative w/ OAR-OAQPS**

**Biomass Emissions Factors & Speciation**
B. Gullett, M. Hays, A. Holder NRMRL
V. Rao, OAR-OAQPS

**Smoke Emissions and AQ Impacts Modeling**
G. Pouliot, T. Pierce, NERL
K. Baker, OAR-OAQPS
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

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

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. This biggest health risk comes when the smoke is fine enough to enter the lungs. Air particles can aggravate chronic heart and lung diseases – and even be deadly to premature babies or people with these conditions.

If you are healthy, you’re usually not at a major risk from short-term exposure 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 smoke and health from wildfire fires.

PLEASE NOTE: If you or your family are currently using a respirator, please contact your health care provider before making any changes to your respirator use.

Health Resources

- Wildfire Safety and Preparedness
- AirNow

Educational Resources

- CDC: Wildfire Smoke: Information on emergency preparations and response
- AirNow: Air Quality - NOW

FOR KIDS: Follow einfach steps to make your home safer from wildfire smoke in your area.

Use common sense. If it looks smoky, it’s smoky. It’s not a good time for you or your family to go outside.

Wear a mask to protect your lungs when the air pollution is bad.

If you have asthma or other lung diseases, make sure you follow your doctor’s directions about taking your medications and avoiding your home. Keep windows and doors closed.

Use air purifiers or fans to improve indoor air quality. Keep indoor air cleaner by avoiding smoke, turning on air conditioning if you have it, and using filters.

Natural Disasters and Severe Weather

- Wildfires
- Hurricanes
- Tornadoes
- Floods
- Earthquakes

Before a Wildfire

- What to Do Before a Wildfire
- Getting Evacuated
- Make a Plan

During a Wildfire

- Wildfire Smoke
- Household Safety
- Protecting Pets

After a Wildfire

- Rebuilding
- Protecting Your Home
- Returning Home After a Disaster
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 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. In addition, water, pesticides, and other chemicals released from burning structures and furnisings.
- During the acute phase of wildfire activity, the major hazards are fire and smoke.
- Children, Pregnant Women, and individuals with pre-existing lung or cardiovascular disease (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, and light-headedness 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
  - Check what you don’t have to let’s ensure. Have several days of medications on hand. Buy supplies not to be refrigerated or because cooking can add to air levels.
  - Have a “clean room” in your house. Place where you can work as well as possible, such as a portable air cleaner and avoid exposure to particles.
  - Use a portable air cleaner (HEPA filter air cleaner), and a precipitator that do not produce more resistant particles than particle filters.
  - Organize your important items and keep them where to go in case of an emergency.

Exposure to Particle Pollutants
- Indoor sources of particulate matter (PM) come from combustion events such as smoking, cooking, burning, and wood-burning. During a fire season, 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 (MERV) rating. The MERV scale for residential filters ranges from 1 to 15. The higher the MERV rating the greater the percentage of particle captured as the air passes through the filter. Higher MERV (higher efficiency) filters are especially effective at capturing very small particles that can affect health.

Central Air System Filter
- The filter 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 foot thick. Filters with a medium efficiency can significantly improve the air and higher efficiency (MERV 10 or more) even better, and a filter (15-16) in the central system can increase as much as 30%. However, there is more resistance to air flow, all energy used by the blower. You may wish to consult a technician or the manufacturer of the system to confirm that the system efficiency is not affected by the filter.

System Efficiency
- If you are not more efficient filter, simply continuously by switching a “Auto” to “On” has been a concentration by as much as 30%.

Portable Air Cleaners
- Portable air cleaners are self-contained portable appliances that can be used to enhance central filtration at particles. Their effectiveness depends on several factors as air cleaner, filter efficiency, dust and other pollutants. Choose a powder with a low water and dust levels, such as a portable air cleaner and avoid exposure to particles.

Choose
- There is a wide variety of air cleaners ranging in price from about $5. Air cleaners with a total of $200 air cleaners under about $5 will not be used.

Types of Air Cleaners
- Most air cleaners fall under the mechanical and electronic, HEPA and HEPA.

Prepare for Fire Season

If you live in an area that is regularly affected by smoke or when 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 on medicine that you should if the smoke is smoky. Have several days of medications on hand. Buy supplies not to be refrigerated or because cooking can add to air levels.
- Create a “clean room” in your house. Place where you can work as well as possible, such as a portable air cleaner and avoid exposure to particles.
- Organize your important items and keep them where to go in case of an emergency.

If you have heart or lung disease, check with your doctor about what you should do during smoke events.

If you have asthma or another lung disease, update your respiratory management plan.

Have a supply of N95 masks and learn how to use them. They are sold at many home improvement stores and online.

Organize your important items and keep them where to go in case of an emergency.

WILDFIRE SMOKE FACTSHEET

Wildfire Smoke Guide 2018
Fact Sheets Being Released as Approved

35
Air Resource Advisors

- Employed nationwide during large smoke events
- Assist on incidents
- Analyze, summarize, and communicate these impacts

Monitoring

- Smoke monitors measuring PM$_{2.5}$ are tied into the GOES satellite system
- Near-real time data made available to the:
  - public via AirNow’s website
  - Pacific Northwest Research Station’s AirFire Team to support operational smoke forecasting
Modeling

- ARAs depend on daily smoke impact modeling of active wildfires
- Forecasts are produced by the USFS AirFire Team with their BlueSky smoke modeling system

Coordination

- Success depends on contributions from numerous interagency partners
Particle Pollution and Your Patients' Health

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 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

http://www.epa.gov/healthyheart/
EPA’s contributes the Healthy Heart program
- to the National Prevention Strategy
- and the fight against heart attacks and strokes
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**
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
  - communication strategies

Thank you

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• No conflicts of interest
• The presentation represents the opinions of the speaker and does not necessarily represent the policies of the US EPA
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
Please type your questions for our speakers in the Q&A box to the right.
THANK YOU!