

US Air Quality Index

New Communication Tools

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NACAA Webinar
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What Is the Air Quality Index?

- The Air Quality Index (AQI) is EPA's color-coded tool for telling the public how clean or polluted the air is
- It recommends steps people can take to reduce their daily exposure to pollution
- The AQI converts pollutant concentrations to a number on a scale from 0 to 500; generally a value of 100 is equal to the level of the short-term standard
- Cities and states use the AQI for reporting and forecasting air quality
- Metropolitan statistical areas with a population over 350,000 are required to report the daily AQI value (40 CFR Part 58 Appendix G)

Air Quality Index

- Pollutant-specific health effects and cautionary statements address question “who may be affected”
- Advisories based on health information supporting the NAAQS
 - Including controlled human exposure, epidemiological studies and exposure/risk assessments
 - Epidemiological studies useful for identifying risk factors and more serious effects
 - Controlled human exposure studies useful for identifying proportion of healthy population affected, symptoms, mechanisms of effects, genetic variability

In controlled human exposure studies, we calculate the dose of inhaled pollution:

$$\text{Dose} = \text{Concentration} \times \text{Ventilation Rate} \times \text{Time}$$

AQI advisories describe how to reduce this dose

C - be active outdoors when air quality is better

V - take it easier when active outdoors

T - spend less time being active outdoors

PAY ATTENTION TO SYMPTOMS!



AQI Categories and Health Messages



Level of Health Concern	Index Value	Message
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health alert: everyone may experience more serious health effects.
Hazardous	301 to 500	Health warnings of emergency conditions. The entire population is more likely to be affected by serious health effects.

AirNow (airnow.gov)

The screenshot shows the AirNow website interface. At the top, there is a search bar for "Local Air Quality Conditions" with fields for "Zip Code" and "State" (set to Alabama). Below this is a navigation menu with "Forecast", "Current AQI", "AQI Loop", and "More Maps". The main content area features a map of the United States titled "Today's AQI Forecast Monday, April 25, 2016". The map shows varying levels of air quality, with yellow and orange areas indicating higher AQI values. Below the map are color-coded buttons for "Good", "Moderate", "Unhealthy", "Very Unhealthy", and "Hazardous", along with an "Alerts" button. A section titled "Highest 5:" lists the top five highest AQI forecasts for the day, including Yuma, AZ (130), Imperial Valley, CA (123), Coachella Valley, CA (101), Nipomo, CA (56), and Cincinnati, OH (55).

On the right side of the page, there is a sidebar with several sections. The top section is "Fires: Current Conditions" with a "Click to see map" link. Below this is a section for "U.S. Embassies and Consulates" with a link to "Data from air quality monitors at select U.S. embassies and consulates around the world". The "Air Quality Basics" section includes links for "Air Quality Index", "Ozone", "Particle Pollution", "Smog", "From Fires", and "What You Can Do". A "Health" link is circled in red. At the bottom, there is a "Popular Links" section with icons for Apps, Facebook, Webcams, Videos, AirNow on Google Earth, Email, Widgets, RSS, Twitter, and Developer Tools.

This is a close-up view of the "U.S. Embassies and Consulates" link from the AirNow website. It features a red header with the text "Fires: Current Conditions". Below the header is a white box with the text "Click to see map" and a link. To the left of the text is a circular icon containing the U.S. Department of State seal. The main text reads "U.S. Embassies and Consulates" followed by "Data from air quality monitors at select U.S. embassies and consulates around the world".

Fires: Current Conditions Page

Local Air Quality Conditions
Zip Code: Go State: Go My Current Location

Fires: Current Conditions

Current Advisories

More Fire Tools

- [Wildfire Smoke: A Guide for Public Health Officials, 2016](#) (PDF) - This guide provides information on wildfire smoke, its health effects, and how to protect people from wildfire smoke. It is a part of the AirNow program to assess, communicate, and address risks posed by wildfire smoke.
- [NOAA Smoke Exposure Tool](#) - Maps of surface and vertical smoke can be found under "Additional Air Quality Forecast Data."
- [NOAA's Fire Weather Outlook](#) - This tool maps the weather and warnings.
- [California Wildfire Smoke](#) - Address cases of current

Fires and Health

Smoke Advisories and Forecasts
Cities and Your Health
Fires: Current Conditions
Advisories and Forecasts
United States
Alaska
[Alaska DEC Wildfire Information](#)
Arizona
[Arizona Wildfire Information](#)
California
[Butte County Air Quality Management District](#)
[Northern Sierra Air Management District](#)
[Shasta County Air Quality Management District](#)
[Shasta County \(Redding\) Air Quality Webcam](#)
[South Coast Air Quality Management District](#)
[Ventura County Air Pollution Control District](#)

Wildfire Smoke

A Guide for Public Health Officials
Revised May 2016



U.S. Environmental Protection Agency * U.S. Forest Service * U.S. Centers for Disease Control and Prevention * California Air Resources Board

Fires Current Conditions Map

- Current Conditions map for August 18, 2017
- Smoke map generated by NOAA Hazard Mapping System
- Updated at least 5 times a day
- Uses satellite data, will be enhanced when GOES-16 becomes operational



Fires: Current Conditions – Current Advisories

Smoke Forecast Outlook Issued August 16, 2017 at 10:45 AM EDT

Outlook for Air Quality Report

Smoke: Satellite images show smoke from Chetco Bar fire reaching south to Eugene and Victor area. Smoke, haze and poor air quality will continue with fluctuating air quality hours as smoke clears evening. Unstable fire sensitive (SW) winds, smoke from West Creek fire will also impact Brookings as well as Cave Junction as the southwest winds continue at 5-20 mph with gusts up to 17 mph. Today's conditions will be the most clear. High pressure aloft and surface thermal trough along the coast will continue to bring southeast winds 5-15 mph. Mid-level haze is visible along southern Oregon and will continue for the next few days in Cave Junction, Grants Pass and Prineville.

Fire: Chetco Bar fire is currently at 3000 acres. The fire is having fairly previously reported by 3000 and about 1000. Disrupts for stands back but with a heavy load of smoke and ash. Fire is still active. Wildfires have been reported in nearby and surrounding areas and will continue to burn in the area. Smoke from the fire is approximately 400 acres. The conditions are making the fire along south, east and northeast directions.

Other: Additional information can be found at wspokane.com

Daily AQI Forecast for Aug 18, 2017

Location	Yesterday	This	Forecast	Comment for Today - Fri, Aug 18	Fri	Sat
	Score	Score	Score		Score	Score
Brookings-Oregon Coast Highway	100	100	100	Will experience fluctuating air quality	100	100
Agness Regional Forest Development Road RD	100	100	100	Smoke and haze will be visible	100	100
Cave Junction Forest Service	100	100	100	Light haze may be visible	100	100
Grants Pass - Forest Service	100	100	100	Light haze may be visible	100	100
Prineville - Forest Service	100	100	100	Light haze may be visible	100	100

Issued Aug 16, 2017 by Nicole R. Ingulf, Air Resources Division

Air Quality Index (AQI) - Actions to Protect Yourself

AQI	Health Concern	Action to Protect Yourself
0-50	Good	None
51-100	Moderate	Unusually sensitive individuals should consider limiting prolonged or heavy exertion.
101-150	Unhealthy for Sensitive Groups	People with respiratory disease, heart disease, or heavy outdoor exertion should consider limiting prolonged or heavy outdoor activity.
151-200	Unhealthy	Everyone should avoid prolonged or heavy exertion.
201-300	Very Unhealthy	Everyone should avoid prolonged or heavy exertion.
301-400	Hazardous	Everyone should avoid any outdoor activity.

Additional Links
[Oregon Smoke Blog](#)
[Chetco Bar Fire Information](#)
<http://www.wildlandfireinfo.net/updates/2017/08/16/08-16-17.html>

Current Advisories


CA Smoke Blog

USFS
Wildland Fire Air Quality Response Program

- State/Local/Tribal agency blogs
- Wildland Fire Air Quality Response Program

Smoke Forecast Outlook, Chetco Bar Fire, 8/18/17, 10:45 am

How Smoke from Fires Can Affect Your Health



The screenshot shows the AirNow website interface. At the top, there is a search bar for 'Local Air Quality Conditions' with fields for 'Zip Code' and 'State' (set to Alabama), and a 'Go' button. Below the search bar, the main heading reads 'How Smoke from Fires Can Affect Your Health' with a sub-heading 'Updated January 2017'. The article text discusses the health impacts of wildfire smoke, noting that while not everyone is equally sensitive, it's best to avoid breathing it. It explains that smoke consists of gases and fine particles that can penetrate deep into the lungs, causing various health issues. A section titled 'Some people are more at risk' lists categories such as individuals with heart or lung disease, older adults, children, people with diabetes, and pregnant women. Another section, 'How to tell if smoke is affecting you', describes symptoms like burning eyes, cough, and difficulty breathing. The final section, 'Protect yourself', advises limiting exposure to smoke. A partial section at the bottom is titled 'Prepare for fire season if you live in a fire-prone area'. An image of a forest fire with smoke rising from the trees is positioned to the right of the text.

Local Air Quality Conditions

Zip Code: Go State: Alabama Go 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 particulate 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

High concentrations of smoke can trigger a range of symptoms:

- Anyone may experience burning eyes, a runny nose, cough, phlegm, wheezing and difficulty breathing.
- If you have heart or lung disease, smoke may make your symptoms worse.
 - People with heart disease might experience chest pain, palpitations, shortness of breath, or fatigue.
 - People with lung disease may not be able to breathe as deeply or as vigorously as usual, and may experience symptoms such as coughing, phlegm, chest discomfort, wheezing and shortness of breath.

Protect yourself!

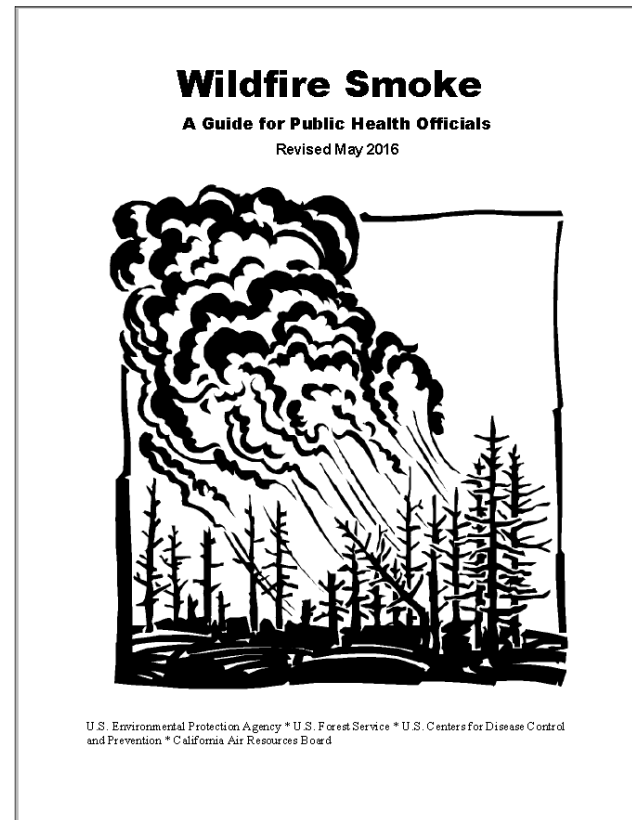
It's important to limit your exposure to smoke - especially if you are at increased risk for particle-related effects. Here are some steps you can take to protect your health:

Prepare for fire season if you live in a fire-prone area

If you have heart, respiratory or lung disease, irritative asthma, talk with your health...

Wildfire Guide – revised 2016

- Revised by EPA/CDC/USFS/California - on AirNow.gov
- Updated air quality and health information
- Evidenced-based exposure reduction measures
- Entirely new section on communicating air quality
 - Uses “Current PM” levels from AirNow
 - Uses satellite information on Fires: Current Conditions page
 - Visual range information updated
- New fact sheets about children’s health



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

Wildfire Guide – Some Draft Fact Sheets

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Children's Health and Wildfires

Background

- Children are especially vulnerable during wildfires because their lungs are still developing and they are dependent on adults for care.
- If your child has asthma, allergies, heart or lung conditions, wildfire smoke can be an even bigger problem.
- Wildfire concerns include the fire itself, the smoke, and the chemicals from burning materials.
- Smoke can travel hundreds of miles downwind from a fire. Pay attention to local air quality during fire season, even if no fire is nearby.

Health Effects from Wildfires

- Inhaling smoke** may cause chest tightness or pain, shortness of breath, wheezing, coughing, nose, throat or eye irritation, dizziness, lightheadedness and other symptoms.
- Children with asthma, allergies, heart or lung conditions** may have more serious effects, especially more breathing issues, than usual.
- Stress and mental health effects** of all disasters, including wildfires, are serious concerns for children.

Preparing for Wildfires

- Pay attention to local air quality reports. Stay alert to smoke-related news coverage or health warnings.
- Find the **Air Quality Index (AQI)** for your area on the AirNow web site. As smoke gets heavier so do the steps you should take to protect your child. AQI advisories can help.
- Sign up for **Enviroflash** – visit AirNow to find out if Enviroflash is available for your area.
- Create a **"clean air room"** in your home, one with as few windows and doors as possible, to prevent exposure to outdoor smoke coming indoors, especially if you have a child with health conditions.

During Wildfires

- Keep children indoors** with the door closed. If you have an air conditioner the fresh-air intake closed (recirculate) keep smoke from getting indoors.
- If you must travel with children, close windows and vents and use the air recirculate mode. Do NOT leave of unattended.
- If your child has any difficulty breathing, excessively sleepy, disoriented, or has any other health concerns, reduce exposure to smoke and seek urgent attention.
- Children with asthma, allergies, heart conditions are at high risk from the related to wildfire smoke. Follow an action plan and other medical guidance.
- Use the clean air room and air clean during the worst pollution days.
- Keep the indoor air as clean as possible: unplug, not using gas, propane, or burning stoves, fireplaces, or candle cooke-generating air cleaners or g powered generators indoors.
- Humidifiers or breathing through a may be soothing, but does NOT prevent inhalation.

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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 basis 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. Simply re- place with a medium efficiency filter (MERV 5-8) significantly improve the air quality in your home. Higher efficiency filters (MERV 9-12) are even better, and a true high efficiency (MERV 13) in the central system can reduce PM as a 95%. However, these filters can offer more resistance to air flow, which may increase energy used by the blower motor for the system. You may wish to consult with a technician or the manufacturer of your system to confirm that the system can handle a higher efficiency filter. If you are not able to use a more efficient filter, simply running it continuously by switching the thermostat "Auto" to "On" has been shown to reduce concentrations by as much as 24%.

Portable Air Cleaners

Portable air cleaners are self-contained appliances that can be used alone or in conjunction with central filtration to effectively reduce indoor PM concentrations by as much as 24%.

Portable Air Cleaners: How to Choose

There is a wide variety of air cleaners on the market, ranging in price from about \$50 to \$2,000. Most air cleaners are under about \$200 typically and would not be helpful in a wildfire situation.

Types of Air Cleaners

Most air cleaners fall under two basic 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. Be sure to get ready before a wildfire. Be sure to protect yourself from smoke exposure during a wildfire.

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

Prepare Before a Wildfire

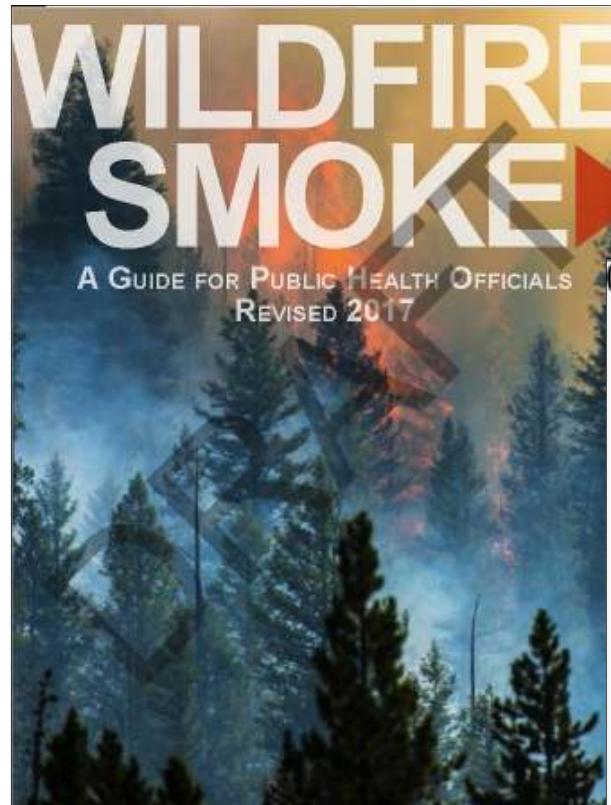
- Stock up** so you don't have to go out when it's smoky. Have several days of food, toiletries, and other necessities that do not need to be refrigerated or cooled, because cooking can add to indoor particle levels.
- Create a "clean room"** in your home. Choose a room with a close window and door as possible, such as a bedroom. Use a portable air cleaner and avoid other sources of pollution.
- Buy a portable air cleaner** before the start of fire season. High-efficiency particulate air (HEPA) filters in cleaners and electrostatic precipitators that do not produce ozone can help reduce indoor particle levels.
- Understand** how you will receive alerts and health warnings, and ask for a health report and public service announcements from local officials.

- 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 ahead of time so you know what to go in case you have to evacuate.



Wildfire Guide – Next Revision

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



PM Web Course for Healthcare Professionals

The screenshot shows the EPA website header with the logo and navigation links: Environmental Topics, Laws & Regulations, and About EPA. A search bar is present on the right. The main heading is 'Particle Pollution and Your Patients' Health'. Below the heading, there is a dark grey box with the text 'An evidence-based training course for healthcare providers that:' followed by a list of two bullet points. To the right of the list is a photograph of a female doctor in a white coat and a male patient looking at a tablet. Further right, a light blue box contains a list of medical professionals the course is designed for, a 'Start the Course' link, and a 'Course developers' link. At the bottom left, there are 'Start the Course' and 'Course developers' links. At the bottom center, there is a 'Contact Us' link with the text 'to ask a question, provide feedback, or report a problem.'

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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](#)

[Course developers](#)

[Start the Course](#) [Course developers](#)

[Contact Us](#) to ask a question, provide feedback, or report a problem.

What Is It? Who Is It For?

Particle Pollution and Your Patients' Health is an evidence-based training course that:

- Describes the biological mechanisms responsible for the cardiovascular and respiratory health effects associated with particle pollution exposure
- Helps health-care providers advise their patients about particle pollution exposure
- Provides practical 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

Particle Pollution and Your Patients' Health is designed for family medicine physicians, internists, pediatricians, occupational and rehabilitation physicians, nurse practitioners, nurses, asthma educators, pulmonary specialists, cardiologists, and other medical professionals who counsel patients about lung, heart or vascular disease

Offers Continuing Education Credits to physicians, nurses, health educators

- Continuing education for clinicians is required for continued licensure in many states

What is Particle Pollution? And Particle Pollution Exposure



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Environmental Topics Laws & Regulations About EPA Search EPA.gov

Particle Pollution and Your Patients' Health

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Particulate Pollution Course Home

Learn About the Course

- What is Particle Pollution?**
- Particle Pollution Exposure
- Cardiovascular Effects
- Respiratory Effects
- Patient Exposure & the Air Quality Index
- Patient Exposure & High Particle Pollution Events
- Clinical Scenarios
- Frequent Questions
- Course Outline & Key Points
- Review Questions
- Patient Education Tools
- Course Evaluation
- References

What is Particle Pollution?

On this page:

- [What is particle pollution and what types of particles are a health concern?](#)
- [Where does particle pollution come from?](#)
- [Where and when is particle pollution a problem?](#)

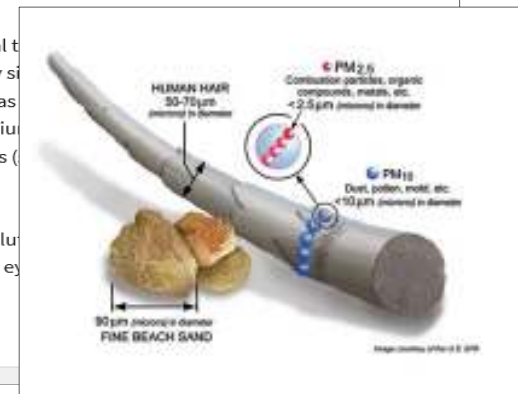
What is particle pollution and what types of particles are a health concern?

Particle pollution, also known as particulate matter or PM, is a general term for a mixture of solid particles and liquid droplets suspended in the air. Particle pollution comes in many sizes and is made up of a number of different components, including acids (such as sulfuric acid, nitric acid, and carbonic acid), ammonium sulfate, ammonium nitrate, and sodium chloride (such as sea salt), organic chemicals, soot, metals, soil or dust particles, and biological materials (such as pollen and spores).


The air we breathe indoors and outdoors always contains particle pollution. Dust, dirt, soot, or smoke, are large enough to be seen with the naked eye, but particles that are 10 micrometers (μm) in diameter or smaller can only be detected using an electron microscope (Figure 1).



Figure 1: Comparison of particle sizes. Human hair is 50-70 micrometers in diameter. Fine beach sand is 30 micrometers in diameter. PM2.5 consists of combustion particles, organic compounds, metals, etc., with a diameter of 2.5 micrometers. PM10 consists of dust, pollen, mold, etc., with a diameter of 10 micrometers.







Cardiovascular Effects

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Environmental Topics Laws & Regulations About EPA Search EPA.gov

Particle Pollution and Your Patients' Health

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- Particulate Pollution Course Home
- Learn About the Course
- What is Particle Pollution?
- Particle Pollution Exposure
- Cardiovascular Effects**
- Respiratory Effects
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- Glossary

Particle Pollution and Cardiovascular Effects

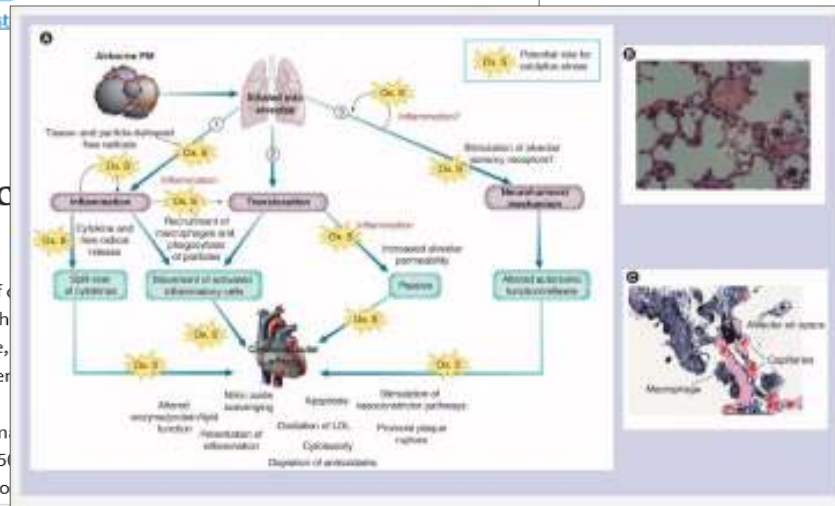
On this page:

- [Why is particle pollution a cardiovascular health concern?](#)
- [How does particle pollution affect the cardiovascular system?](#)
- [What are the cardiovascular effects?](#)
- [What are the acute exposure effects?](#)
- [What are the chronic exposure effects?](#)

Why is particle pollution a cardiovascular health concern?

Cardiovascular disease accounts for the greatest number of deaths in the United States. In fact, more than 1 in every three deaths is attributed to cardiovascular disease, and heart and blood vessel disease represent 17 percent of overall national health expenditures.

Traditional risk factors for cardiovascular disease, such as high blood pressure, high cholesterol, and smoking account for about 50 percent of heart and blood vessel disease. Particle pollution can act independently, or together with established risk factors, to increase the risk of cardiovascular disease.



Respiratory Effects



United States Environmental Protection Agency

[Environmental Topics](#) [Laws & Regulations](#) [About EPA](#)

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Particle Pollution and Your Patients' Health

Particulate Pollution Course Home

Learn About the Course

What is Particle Pollution?

Particle Pollution Exposure

Cardiovascular Effects

Respiratory Effects

Patient Exposure & the Air Quality Index

Patient Exposure & High Particle Pollution Events

Clinical Scenarios

Frequent Questions

Course Outline & Key Points

Review Questions

Patient Education Tools

Course Evaluation

References

Glossary

Particle Pollution and Respiratory Effects

On this page:

- [Why is particle pollution a respiratory health concern?](#)
- [How does particle pollution affect the respiratory system?](#)
- [What are the respiratory effects of acute exposure?](#)
- [What are the respiratory effects of chronic exposure?](#)
- [How does particle pollution affect people with asthma?](#)
- [What are the health disparities for asthma?](#)
- [How does particle pollution affect people with COPD?](#)
- [What is the role of fine particles in lung cancer incidence and mortality?](#)

Why is particle pollution a respiratory health concern?

Studies have linked particle pollution exposure to a variety of respiratory health effects, including:

- Respiratory symptoms including cough, phlegm, and wheeze.
- Acute, reversible decrement in pulmonary function.
- Inflammation of the airways and lung (this is acute and neutrophilic).

Patient Exposure and the AQI



Environmental Topics
Laws & Regulations
About EPA

Particle Pollution and Your Patients' Health

- Particulate Pollution Course Home
- Learn About the Course
- What is Particle Pollution?
- Particle Pollution Exposure
- Cardiovascular Effects
- Respiratory Effects
- Patient Exposure & the Air Quality Index**
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Patient Exposure and the Air Quality Index

On this page:

- [Should I recommend that my patients reduce their exposure to particle pollution?](#)
- [What is the Air Quality Index \(AQI\)?](#)
- [Where can I find daily air quality reports?](#)
- [What can I advise my patients to do when air quality is unhealthy?](#)
- [How can my patients reduce particle pollution exposure near roads?](#)
- [How effective are air quality notifications in reducing potentially avoidable exposure?](#)
- [What education materials are available?](#)

Should I recommend that my patients reduce their exposure to particle pollution?

Yes. All people should be educated about the health effects from unhealthy air quality and how to reduce exposure.

Patients more likely to be affected by particle pollution exposure than other types of air pollution. Key exposure-reduction measures are:

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The infographic is titled "Effects of Common Air Pollutants" and features a central illustration of the human respiratory system. It is divided into two main sections: "RESPIRATORY EFFECTS" and "CARDIOVASCULAR EFFECTS".

RESPIRATORY EFFECTS:

- Symptoms:** Cough, wheezing, shortness of breath, chest pain, irritation of the nose, throat, and eyes, and development of new asthma.
- High Pollutants Cause Symptoms:** Irritation of the lungs and airways, leading to difficulty breathing.
- Other Symptoms:** Irritation of the eyes, nose, and throat.
- Other Symptoms:** Irritation of the eyes, nose, and throat.

CARDIOVASCULAR EFFECTS:

- Symptoms:** Chest pain, shortness of breath, and increased risk of heart disease and stroke.
- High Pollutants May Cause Symptoms:** Increased risk of heart disease and stroke.
- Other Symptoms:** Increased risk of heart disease and stroke.

At the bottom, there is a table titled "AQI" with columns for "All levels of health concern", "AQI Range", and "What the health concern is".

All levels of health concern	AQI Range	What the health concern is
Good	0-50	Enjoy outdoor activities.
Moderate	51-100	People with respiratory or heart disease may experience symptoms. People with asthma should monitor their air quality index.
Unhealthy for Sensitive Groups	101-150	People with asthma, children, and people with heart disease should avoid prolonged outdoor activities. People with respiratory or heart disease should avoid prolonged outdoor activities.
Unhealthy	151-200	People with asthma, children, and people with heart disease should avoid prolonged outdoor activities. People with respiratory or heart disease should avoid prolonged outdoor activities.
Very Unhealthy	201-300	People with asthma, children, and people with heart disease should avoid prolonged outdoor activities. People with respiratory or heart disease should avoid prolonged outdoor activities.

High Particle Pollution Events

The screenshot shows the EPA website's course page for 'Particle Pollution and Your Patients' Health'. The page features a navigation bar with 'Environmental Topics', 'Laws & Regulations', and 'About EPA', along with a search bar. A sidebar on the left lists course topics, with 'Patient Exposure & High Particle Pollution Events' highlighted. The main content area includes a 'SHARE' button with social media icons, a 'CONTACT US' link, and a list of links for 'On this page:'. The 'Introduction' section is partially visible, discussing ozone and particle pollution levels.



Consistent with Wildfire Smoke: Guide for Public Health Officials

ated from the document "[Wildfire Smoke—A](#)
designed to help local public health officials

Why a Course for Clinicians?

- Part of CDC's Behavioral Risk Factor and Surveillance System of health related telephone surveys
 - In 2005 six states included questions about how environmental factors and the AQI affect people's activity levels
 - The states: Colorado, Florida, Indiana, Kansas, Massachusetts, and Wisconsin
- Results highlights:
 - **People with lifetime asthma** were almost twice as likely to report a change in activity based on an air quality alert if they had been advised by a healthcare professional to do so (Wen et al., 2009)
 - **People without asthma** were than three times as likely to report such a change, if they had been advised by a healthcare professional to do so. (Wen et al., 2009)
 - **In Kansas**, people were almost four times as likely to change outdoor activity levels if they were advised by a healthcare professional.
 - BUT: only a small percentage of people in groups considered to be at increased risk from particle pollution reported that healthcare professionals had advised them to pay attention to the AQI. (Kansas Department of Health and Environment, 2006).

Particle Pollution and Your Patients' Health



Evidence-based training
for healthcare professionals

Free
CNE

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Free
CME

www.epa.gov/particle-pollution-and-your-patients-health

Learn about the health risks of exposure to ambient particle pollution and how to reduce your patients' exposure using the Air Quality Index.




Cardiovascular effects of particle pollution: can cause a heart attack, irregular heartbeat, stroke, exacerbation of heart failure, and early death in people with heart disease.




Respiratory effects of particle pollution: can trigger an asthma attack, aggravate other lung diseases, and impact lung development in children.

Downloadable Factsheets for Heart and Lung Disease

In English and Spanish

EPA 

ASTHMA AND OUTDOOR AIR POLLUTION



1 Air pollution can make asthma symptoms worse and trigger attacks.

If you or your child has asthma, have you ever noticed symptoms get worse when the air is polluted? Air pollution can make it harder to breathe. It can also cause other symptoms, like coughing, wheezing, chest discomfort, and a burning feeling in the lungs.

Two key air pollutants can affect asthma. One is *ozone* (found in smog). The other is *particle pollution* (found in haze, smoke, and dust). When ozone and particle pollution are in the air, adults and children with asthma are more likely to have symptoms.

2 You can take steps to help protect your health from air pollution.

► Get to know how sensitive you are to air pollution.

- Notice your asthma symptoms when you are physically active. Do they happen more often when the air is more polluted? If so, you may be sensitive to air pollution.
- Also notice any asthma symptoms that begin up to a day *after* you have been outdoors in polluted air. Air pollution can make you more sensitive to asthma triggers, like mold and dust mites. If you are more sensitive than usual to indoor asthma triggers, it could be due to air pollution outdoors.

► Know when and where air pollution may be bad.

- Ozone is often worst on hot summer days, especially in the afternoons and early evenings.
- Particle pollution can be bad any time of year, even in winter. It can be especially bad when the weather is calm, allowing air pollution to build up. Particle levels can also be high:
 - Near busy roads, during rush hour, and around factories.
 - When there is smoke in the air from wood stoves, fireplaces, or burning vegetation.

EPA  **AMERICAN COLLEGE of CARDIOLOGY** 

Enfermedades del corazón, ataques cerebrales y contaminación del aire

1 ¿Sabía que la contaminación del aire puede provocar ataques al corazón, ataques cerebrales y otros problemas de salud?

Según estas nuevas evidencias, la contaminación del aire puede provocar ataques al corazón, ataques cerebrales y otros problemas de salud. Además, en las personas con una afección llamada insuficiencia cardíaca, la contaminación del aire puede reducir aún más la capacidad del corazón de bombear la sangre de la forma que necesita hacerlo. Las partículas muy pequeñas son las contaminantes más preocupantes que provocan estos efectos. La contaminación por partículas se encuentra en la neblina, el humo y el polvo, y a veces en el aire que genera truenos. Esta baja contaminación lo explica cómo puede:

- Causar que disminuyan los niveles de oxígeno en la sangre local del aire.
- Proteger su salud cuando la contaminación por partículas se encuentra en niveles más altos.

2 ¿Tiene usted un riesgo más elevado?

Las personas mayores y las personas con factores de riesgo de padecer enfermedades del corazón, o un ataque cerebral, pueden tener un riesgo más elevado. Tienen un riesgo mayor si:

- Ha sufrido un ataque al corazón, angina de pecho, hipertensión arterial (elevarse la presión arterial), diabetes, colesterol alto, obesidad, o enfermedad pulmonar obstructiva crónica.

Puede tener un mayor riesgo de padecer enfermedades del corazón o ataques cerebrales si, por lo tanto, es más susceptible a la contaminación por partículas si le corresponden cualquiera de estos condiciones:

- Es hombre de 45 años o más, o mujer de 55 años o más.
- En su historial incluye eventos ataques cerebrales o enfermedades del corazón tempranas que pueden o bien ser antes de cumplir 50 años, un infarto o bien ser antes de cumplir 65 años.

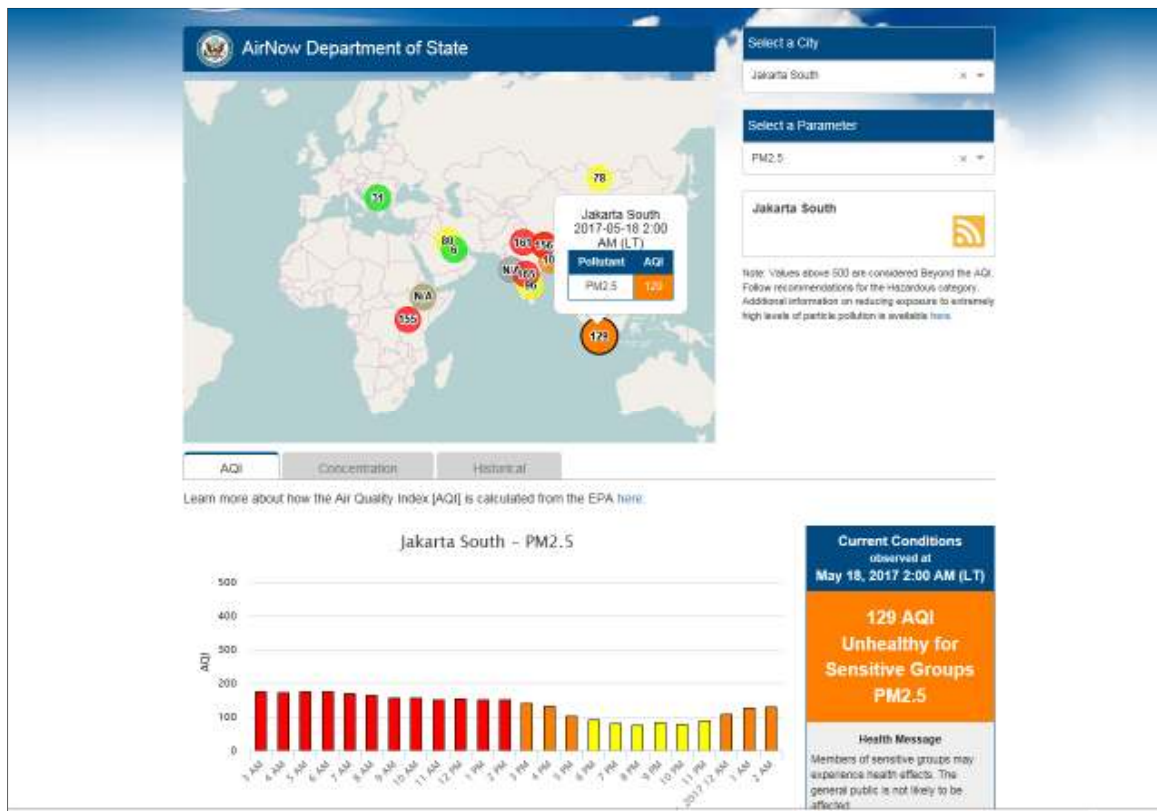
3 ¿Cómo puede proteger su salud?

Hacer ejercicio con regularidad es importante para tener buena salud, pero todo el mundo de enfermedades del corazón. Agregar más ejercicio puede hacer que el riesgo de padecer problemas del corazón o ataques cerebrales disminuya por la contaminación del aire. Además:

- Si padece de enfermedades del corazón o ha sufrido un ataque cerebral, consulte con su proveedor de atención médica sobre las mejores formas de proteger su salud cuando la calidad del aire es mala.
- Hablé con su proveedor de atención médica si cree el riesgo de padecer enfermedades del corazón o un ataque cerebral y planea hacer más ejercicio físico al aire libre.
- Sepa dónde y cuándo los niveles de contaminación por partículas pueden ser más altos. Los niveles de contaminación por partículas pueden ser elevados en cualquier época de año. También pueden ser elevados:
 - Cerca de vías muy transitadas, en zonas urbanas (puede haber un exceso de polvo) y en zonas industriales.
 - Cuando hay truenos en el aire proveniente de incendios de latas, chimeneas, quemadores de vegetación o incendios forestales.



AirNow Department of State



Currently, 21 posts report the AQI:
India - 5,
Indonesia - 2,
Mongolia,
Vietnam - 2,
Colombia,
Peru,
Ethiopia - 2,
Uganda,
Bangladesh,
Kosovo,
Kuwait,
Bahrain and
Nepal - 2

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