Welcome to the webinar!

We'll begin momentarily

NEHA is:

- **4,800** members
- **7** credentials and **6,200** credential holders in all 50 states and 2 territories
- **80** years of JEH publication, distributed to over **6,000** individuals
- Over **3,500** professionals trained through webinars
- Over **200** educational sessions at the AEC

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AND HUD HEALTHY HOMES CONFERENCE

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neha.org/news-events/aec-annual-educational-conference-0/register

NEHA 2018 AEC and HUD Healthy Homes Conference

Anaheim • California • June 25-28, 2018

A healthier environment for healthier hearts

Air Pollution and Cardiovascular Health

Wayne Cascio MD, FACC

Acting Director

National Health and Environmental Effects Research Laboratory

Office of Research and Development

US EPA

NEHA Webinar

Research Triangle Park, NC
February 28, 2018

Air Pollution: A Leading Cause of the Global Burden of Disease

In 2015 ambient $PM_{2.5}$ was the fifth-ranking global mortality risk factor -

Exposure to $PM_{2.5}$ caused:

- 4.2 million deaths
- 103.1 million disability-adjusted life-years (DALYs)

Between 1990-2015 deaths increased in association with $PM_{2.5}$ from:

- 3·5 million to 4.2 million

Ozone exposure contributed to morbidity and mortality -

In 2015 ozone exposure is estimated to have accounted for:

- 254,000 deaths
- 4.1 million DALYs from chronic obstructive pulmonary disease

Global Burden of Disease, Injuries, and Risk Factors Study 2015. Cohen AJ, et al. *Lancet* 2017; 389: 1907–18

U.S. Air Pollution Continues to Impact Population Health

Air Pollution Remains a Significant U.S. Public Health Concern

- Estimated excess mortality **125,000 deaths/year**
- Over **20 million school days and work days lost**
- Over **1 million life-years lost**
- **122.5 million people living in counties with one or more pollutants exceeding the NAAQS in 2016**

Fann N. et al. Risk Anal 2012; Fann et al. *Environ Sci Tech* 2013; US EPA

Air Pollution Related Deaths Over Time

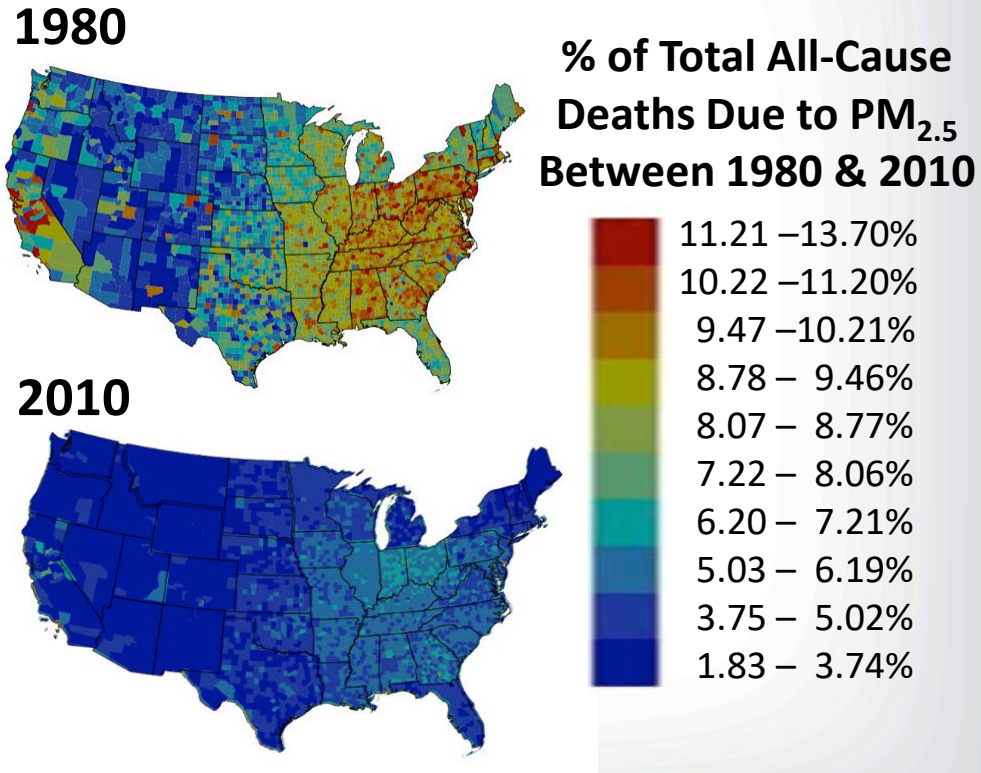
Fraction of All-Cause Deaths Attributed to PM

After the implementation of local, state, and federal air quality policies

- $PM_{2.5}$ precursor emissions declined over the course of several decades

Between 1980 - 2010, $PM_{2:5}$ exposures fell by about half, and estimated excess deaths decreased by about a third

- California, Virginia, New Jersey, and Georgia had some of the largest estimated reductions in $PM_{2.5}$-attributable deaths

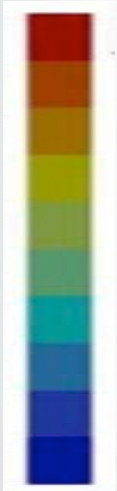


Fann N, et al. Environmental Health Perspectives 2017

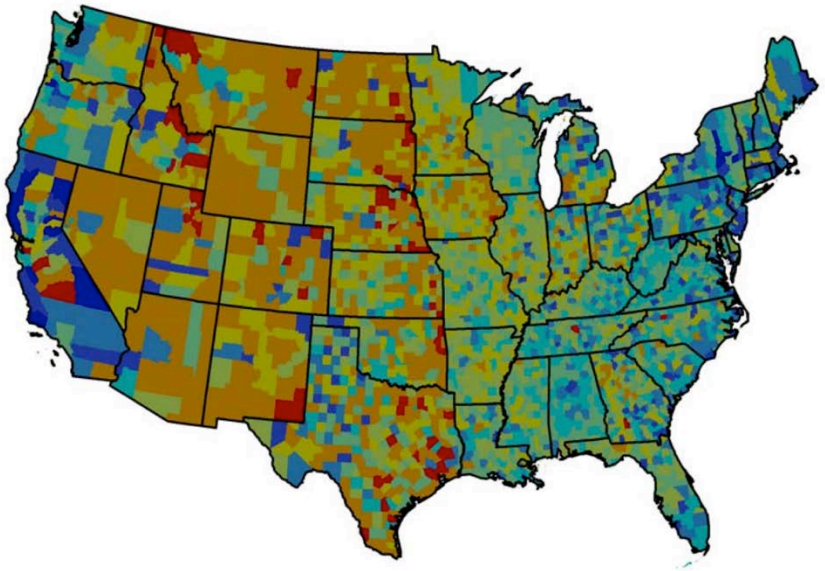
Air Pollution

Public Health Benefits of Decreasing $PM_{2.5}$ 1980-2010

Change in the % of Death Due to $PM_{2.5}$ Between 1980 - 2010



-2.85 – -0.04%
-0.03 – -0.01%
0.02 – 2.18%
2.19 – 3.01%
3.02 – 3.71%
3.72 – 4.37%
4.38 – 5.09%
5.10 – 6.07%
6.08 – 8.11%
8.12 – 11.7%



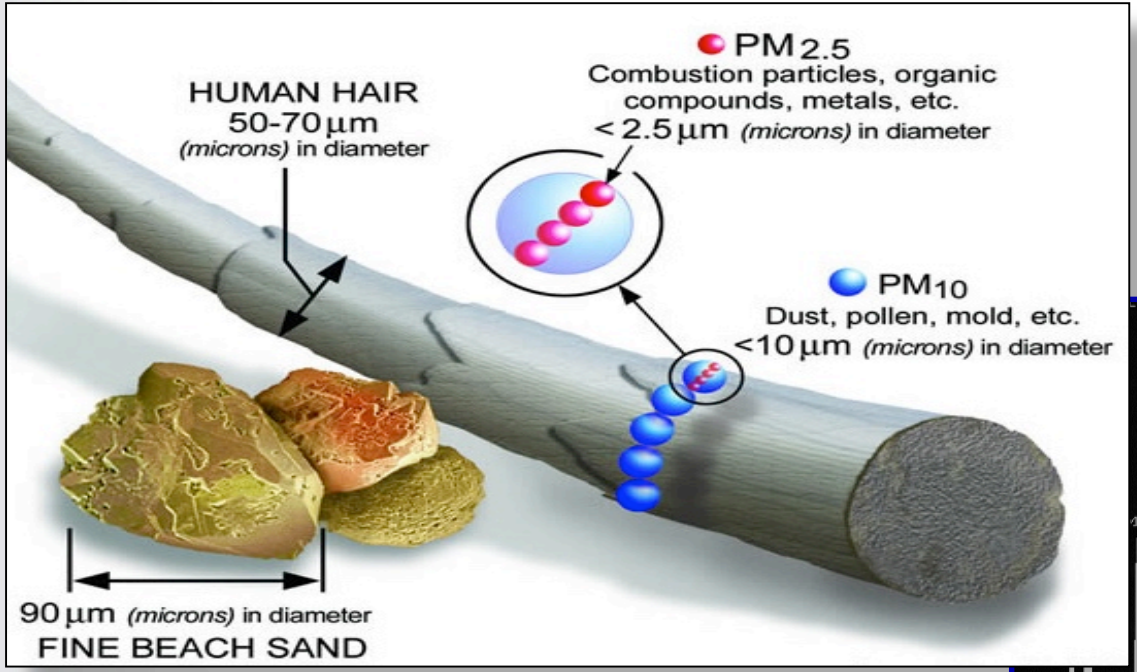
Relative to a hypothetical population with exposures held constant at 1980 levels

- people born in 2050 would live about 1 year longer
- there would be a cumulative gain of 4.4 million life years among adults ≥30 years of age

Fann N, et al. Environmental Health Perspectives 2017

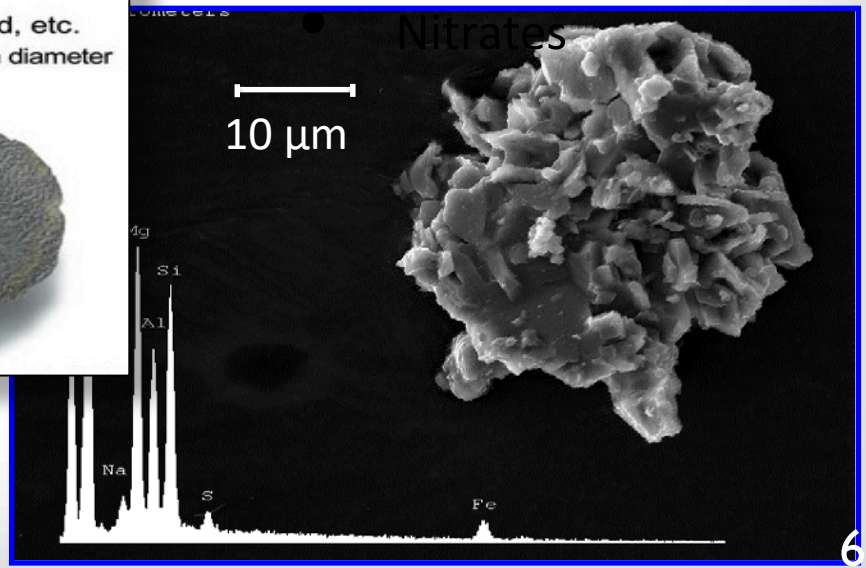
Ambient Particulate Matter

Definitions and Composition



Composition

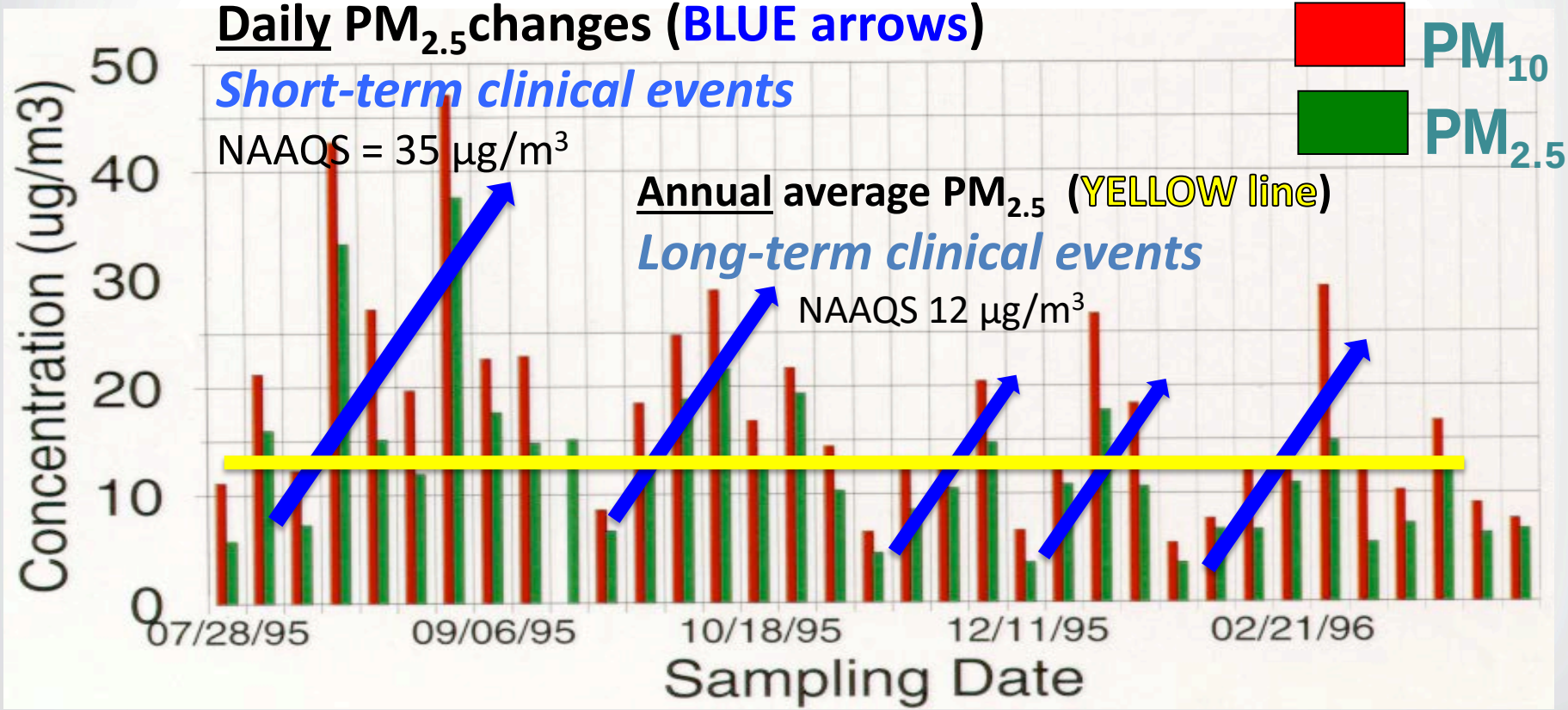
- Elemental carbon
- Organic carbon
- Metals
- Sulfates
- Nitrates



Aerodynamic diameter

- <10 µm (PM_{10})
- <2.5 µm ($PM_{2.5}$)

Daily Variability of PM_{10} & $PM_{2.5}$
Chapel Hill, NC 1995-96



What are the Facts?

Air Pollution and Population Health

Key Facts

- High attributable health burden
- Vulnerable populations are at higher risk
- Short-term exposure can trigger heart attack, stroke, arrhythmia and worsen heart failure
- No established threshold level for safe long-term exposure
- Mechanisms of health effects are now known
- Decreased long-term air pollutant exposures associated with improved cardiovascular outcomes

Robinson Projection

http://sedac.ciesin.columbia.edu/data/set/sdei-global-annual-avg-pm2-5-2001-2010

Giles LV et al. *Environmental Health Perspectives* 2011

Personal Health Care Spending in U.S. for Chronic Disease is High

COPD	**$ 53.8 billion**
Asthma	**$ 32.5 billion**
Pneumonia	**$ 37.1 billion**
Lung cancer	**$ 13.1 billion**
Ischemic heart disease	**$ 88.1 billion**
High blood pressure	**$ 83.9 billion**
Stroke	**$ 43.8 billion**
Heart failure	**$ 28.5 billion**
Atrial fibrillation	**$ 27.7 billion**
Peripheral vascular disease	**$ 2.7 billion**
Diabetes	**$101.4 billion**
Preterm birth	**$ 4.9 billion**

½ Trillion Dollars in 2013

Dieleman JL et al. *JAMA* 2016

Air Pollutant Exposure is a Risk Factor in Each

Who is the most vulnerable?

Populations At-Risk Are Known

Populations At-Risk from $PM_{2.5}$

Susceptible populations include –

- those with pre-existing cardiovascular disease
- those with pre-existing respiratory disease
- older adults
- those with lower socio-economic status
- children & the developing fetus

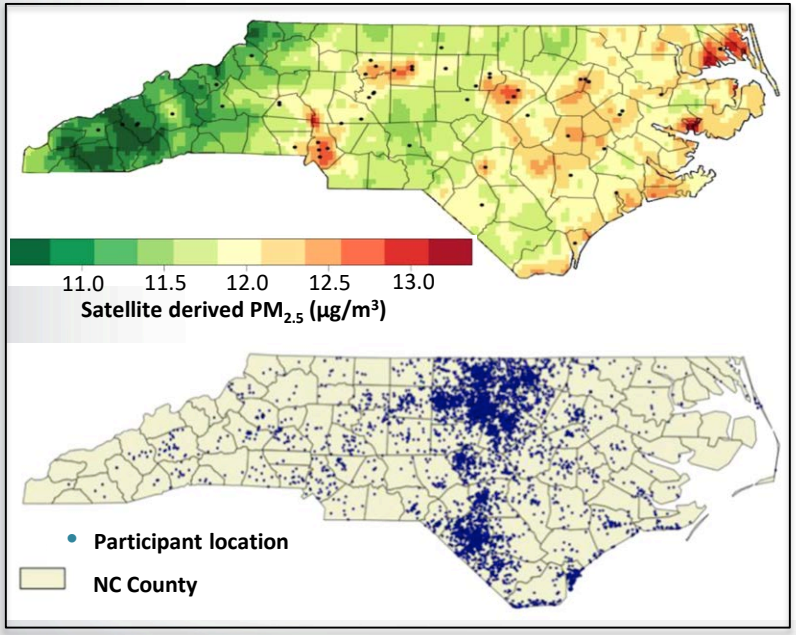
Populations suspected to be at greater risk –

- those with chronic inflammatory diseases (e.g., diabetes, obesity)
- those with specific genetic polymorphisms (e.g., GSTM1)

Health and Long-term Air Pollution Exposure

Association between PM and Coronary Artery Disease

5,679 patients who underwent coronary angiography at Duke University between 2002–2009 and resided in North Carolina*



1 µg/m³ increase in annual average $PM_{2.5}$ was associated with an:

- 11.1% relative increase in the odds of significant coronary artery disease
- 14.2% increase in the odds of having had a heart attack during the previous year

6,575 Ohio residents undergoing elective diagnostic coronary angiography**

1 µg/m³ increase in annual average $PM_{2.5}$ was associated with an:

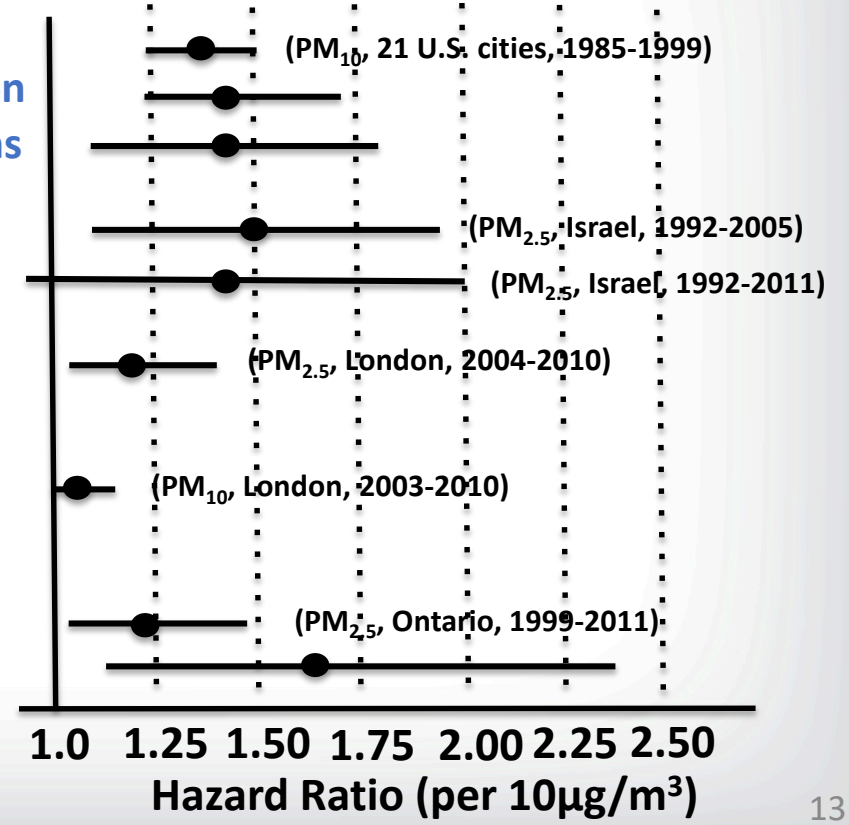
- 17% relative increase in the odds of 1-2 vessel, and a 24% increase in ≥ 3 vessel coronary artery disease
- 14% increase in the odds of having a heart attack within 3 years

*McGuinn LA, et al. *Environ Res* 2016 **Hartiala J, et al. J *Am Heart Assoc* 2016

Air Pollution and Mortality

PM, Survival and Subsequent Clinical Events

Zanobetti A & Schwartz J. *Environ Health Perspect* 2007	Mortality CHF hospitalization MI hospitalizations
Koton *et al.* *Prev Med* 2013	MI, CHF, Stroke Mortality
Tonne et al. *Eur Heart J* 2013	Mortality
Tonne et al. *Int J Hyg Envir Health* 2016	Mortality
Chen et al. *EHP* 2016 *Environ Health Perspect 2016*	Mortality MI Mortality



Air Pollution is Costly

- **Air pollution adversely affects:**
  - Health, Longevity, Healthcare Resource Utilization and Public Welfare (e.g. effects on visibility, vegetation, and ecosystems)
- **Most healthcare professionals & patients at-risk know of air pollution's adverse health effects**

Despite Knowledge of the Risks
the Healthcare System is Not Engaged

- **Few healthcare professionals discuss the risks with their patients**
- **At-risk patients don't take action to reduce exposure**

Healthy Heart Tool Kit and Research

www.epa.gov/healthyheart

Goal:

- Narrow the knowledge-gap of healthcare professionals and patients at higher risk from air pollution regarding the relationship between air pollution and cardiovascular health
- Promote health protective behaviors and the avoidance of air pollutant exposures on poor air quality days

Approach:

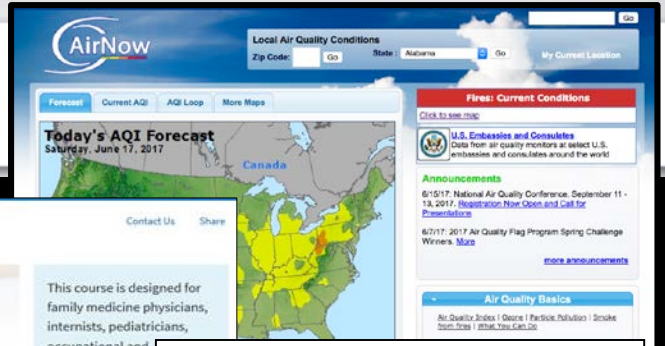
- Provide an environmental health information for patients who at high-risk for adverse cardiopulmonary outcomes from air pollutant exposure to limit exposure to PM
- Encourage adherence to primary and secondary preventions guidelines

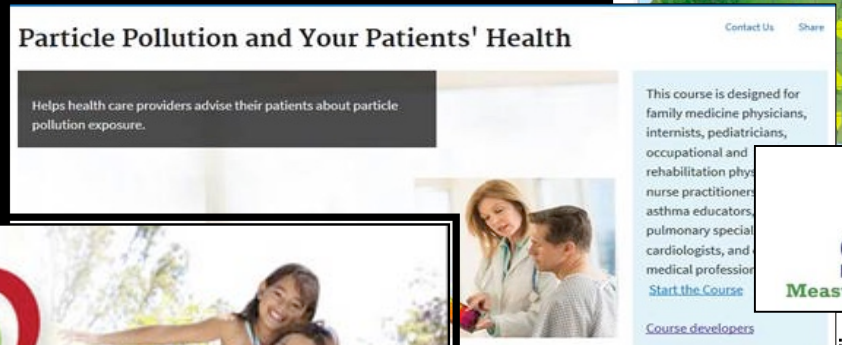
Healthy Heart
A healthier environment for healthier hearts

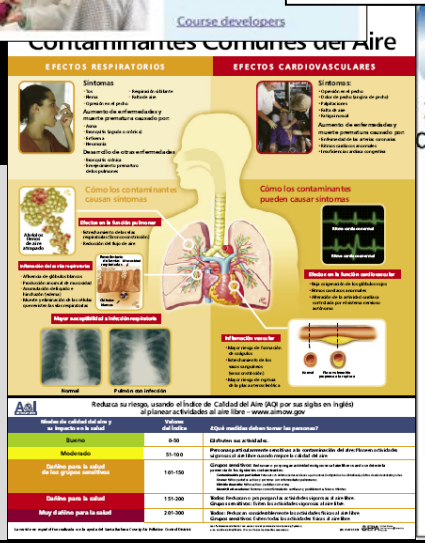
Impact:

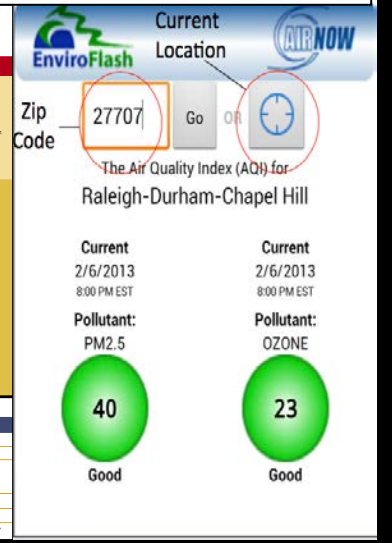
- Decrease vascular and arrhythmic events, improve overall cardiovascular health and wellbeing and lower healthcare resource utilization

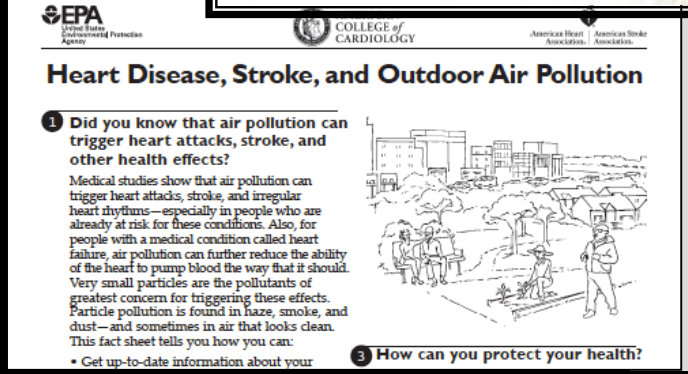
Engaging the Public
Examples of Products











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

Air Quality Index and AirNow for Health Professionals

Susan Lyon Stone, MS

Senior Environmental Health Scientist

US EPA

National Environmental Health Association Webinar

February 28, 2018

AQI Categories and Health Messages

Category Descriptor	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.

Air Quality Index

- Pollutant-specific health effects and cautionary statements address question "who will be affected"
- Based on health information supporting the National Ambient Air Quality Standards
  - Controlled human exposure, epidemiological studies exposure/risk assessments used to set breakpoints
  - 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

How to use the AQI to lower the dose of inhaled pollution:

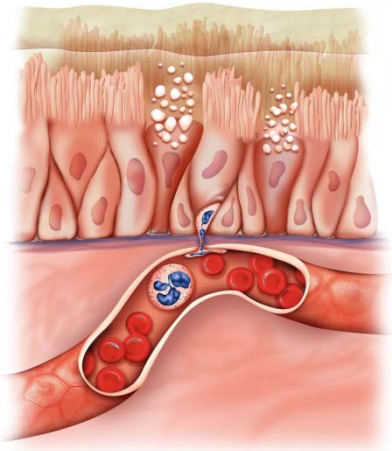
Dose = Concentration x Ventilation rate x Time

C - be active outdoors when air quality is better

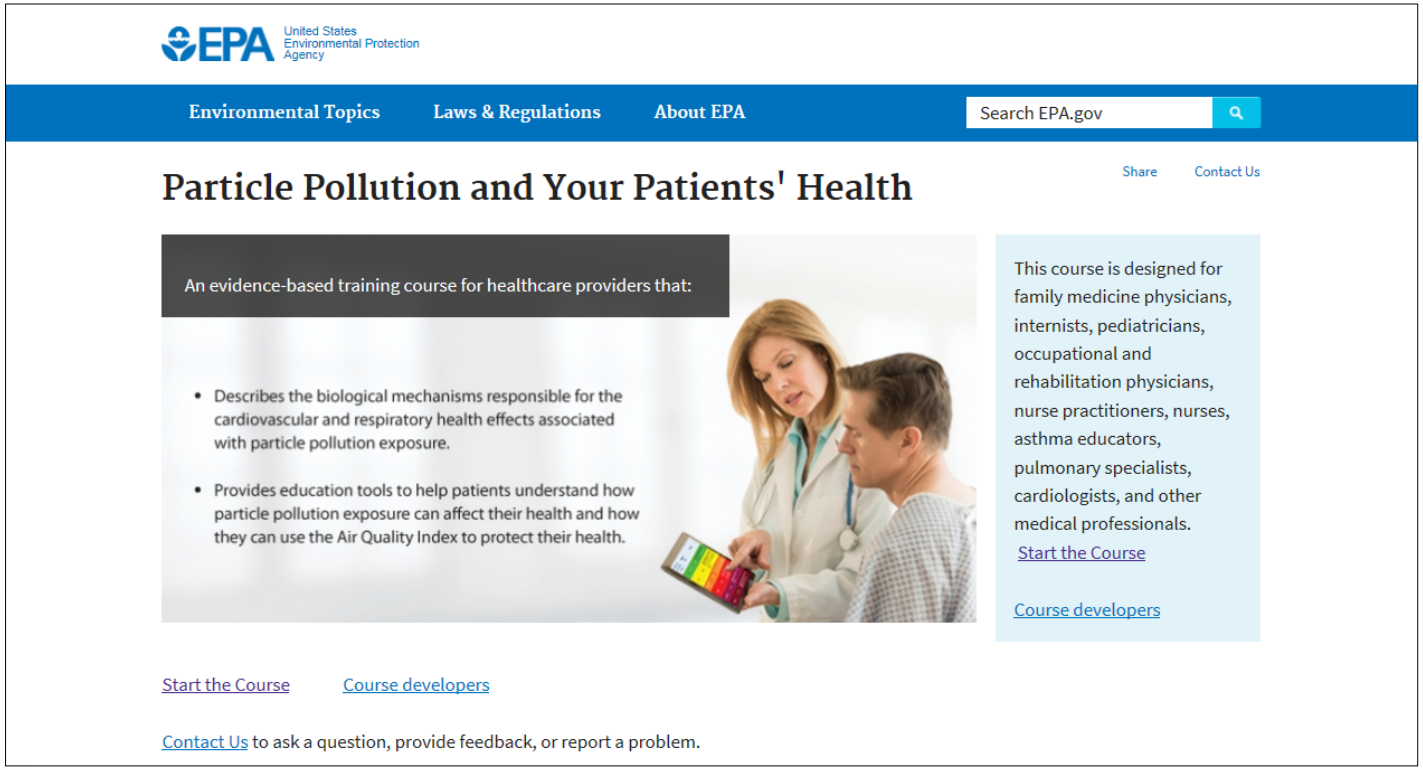
V - take it easier when active outdoors

T - spend less time being active outdoors

Since people respond differently - PAY ATTENTION TO SYMPTOMS!



PM Web Course for Healthcare Professionals



Offers CE credit from CDC to physicians, nurses and health educators (https://www.epa.gov/pmcourse)

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

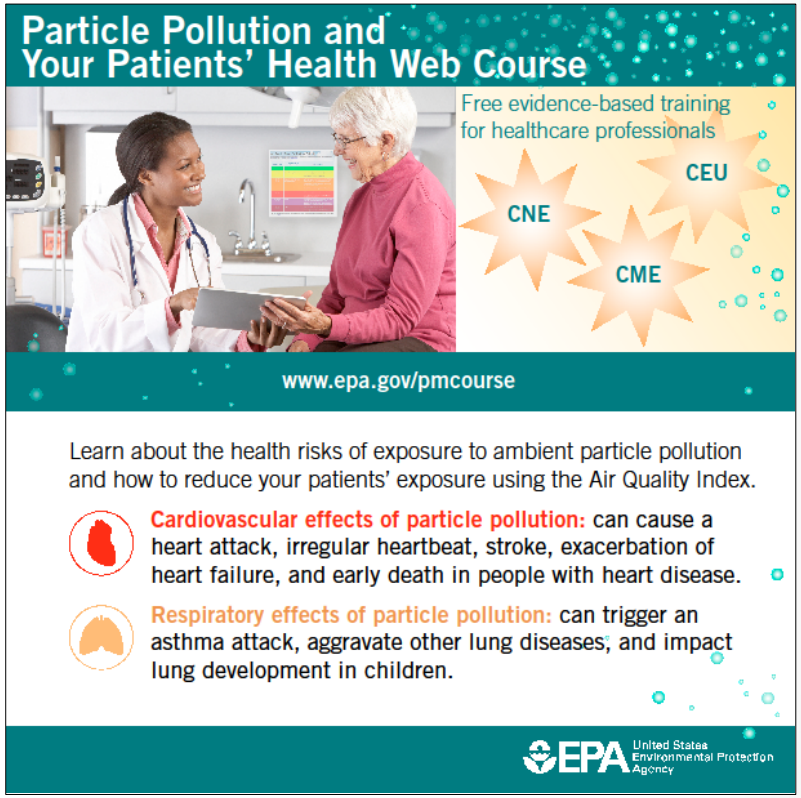
Offers Continuing Education Credits to physicians, nurses, health educators

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

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 XJ, Balluz L, Mokdad A. 2009. J Community Health. 34(1):40-6.)
  - 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).

PM Web Course Outreach Materials



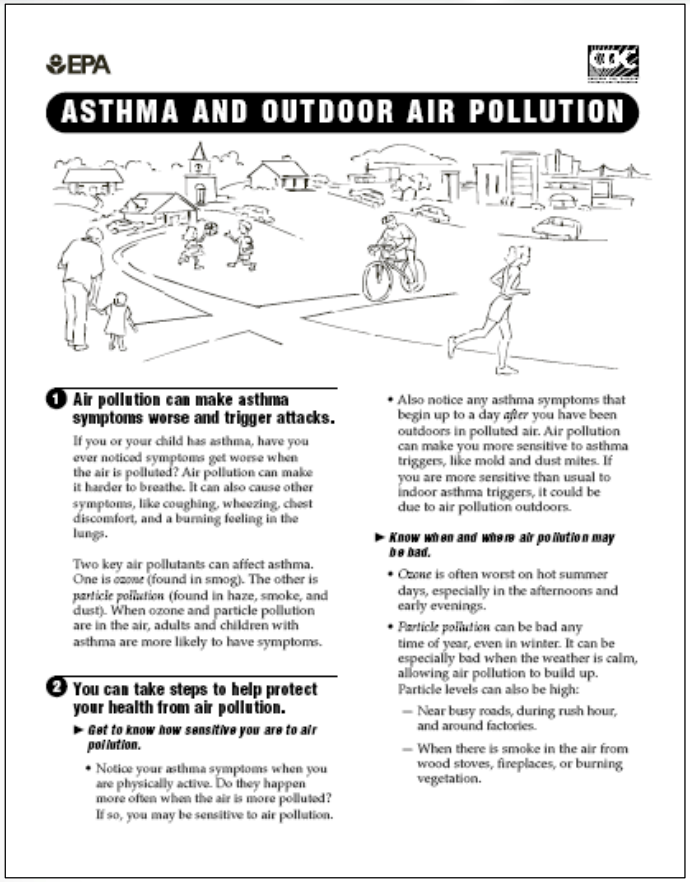
https://www.airnow.gov/index.cfm?action=health_providers.index

Ozone Web Course for Healthcare Professionals

https://www.epa.gov/ozone-pollution-and-your-patients-health - Does not offer Continuing Education credits at this time

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.

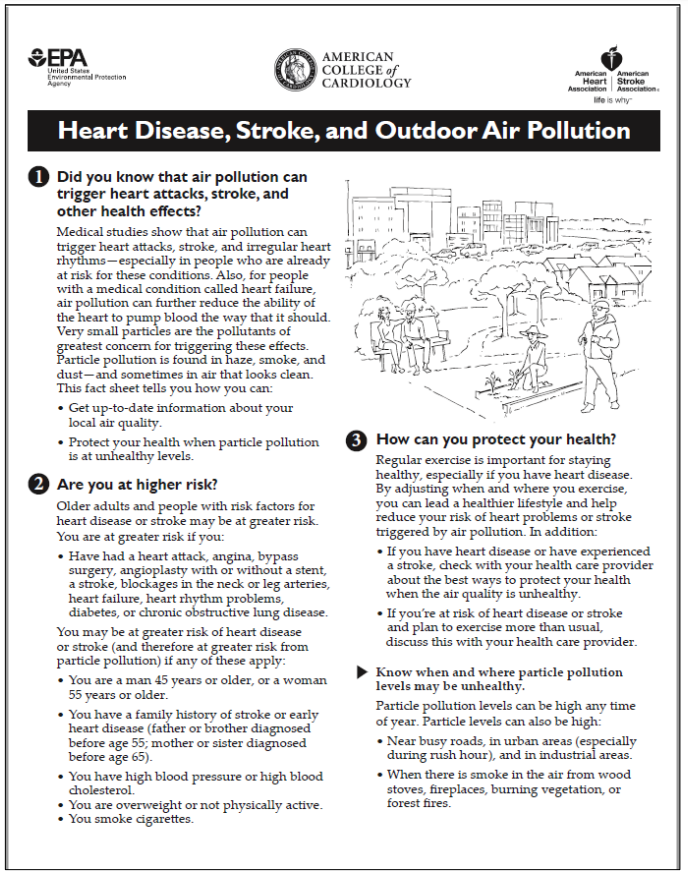
2 You can take steps to help protect your health from air pollution.

► ***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 United States Environmental Protection Agency

AMERICAN COLLEGE of CARDIOLOGY

American Heart Association | American Stroke Association

life is why

Heart Disease, Stroke, and Outdoor Air Pollution

1 Did you know that air pollution can trigger heart attacks, stroke, and other health effects?

Medical studies show that air pollution can trigger heart attacks, stroke, and irregular heart rhythms—especially in people who are already at risk for these conditions. Also, for people with a medical condition called heart failure, air pollution can further reduce the ability of the heart to pump blood the way that it should. Very small particles are the pollutants of greatest concern for triggering these effects. Particle pollution is found in haze, smoke, and dust—and sometimes in air that looks clean. This fact sheet tells you how you can:

- Get up-to-date information about your local air quality.
- Protect your health when particle pollution is at unhealthy levels.

2 Are you at higher risk?

Older adults and people with risk factors for heart disease or stroke may be at greater risk. You are at greater risk if you:

- Have had a heart attack, angina, bypass surgery, angioplasty with or without a stent, a stroke, blockages in the neck or leg arteries, heart failure, heart rhythm problems, diabetes, or chronic obstructive lung disease.

You may be at greater risk of heart disease or stroke (and therefore at greater risk from particle pollution) if any of these apply:

- You are a man 45 years or older, or a woman 55 years or older.
- You have a family history of stroke or early heart disease (father or brother diagnosed before age 55; mother or sister diagnosed before age 65).
- You have high blood pressure or high blood cholesterol.
- You are overweight or not physically active.
- You smoke cigarettes.

3 How can you protect your health?

Regular exercise is important for staying healthy, especially if you have heart disease. By adjusting when and where you exercise, you can lead a healthier lifestyle and help reduce your risk of heart problems or stroke triggered by air pollution. In addition:

- If you have heart disease or have experienced a stroke, check with your health care provider about the best ways to protect your health when the air quality is unhealthy.
- If you're at risk of heart disease or stroke and plan to exercise more than usual, discuss this with your health care provider.

▶ **Know when and where particle pollution levels may be unhealthy.**

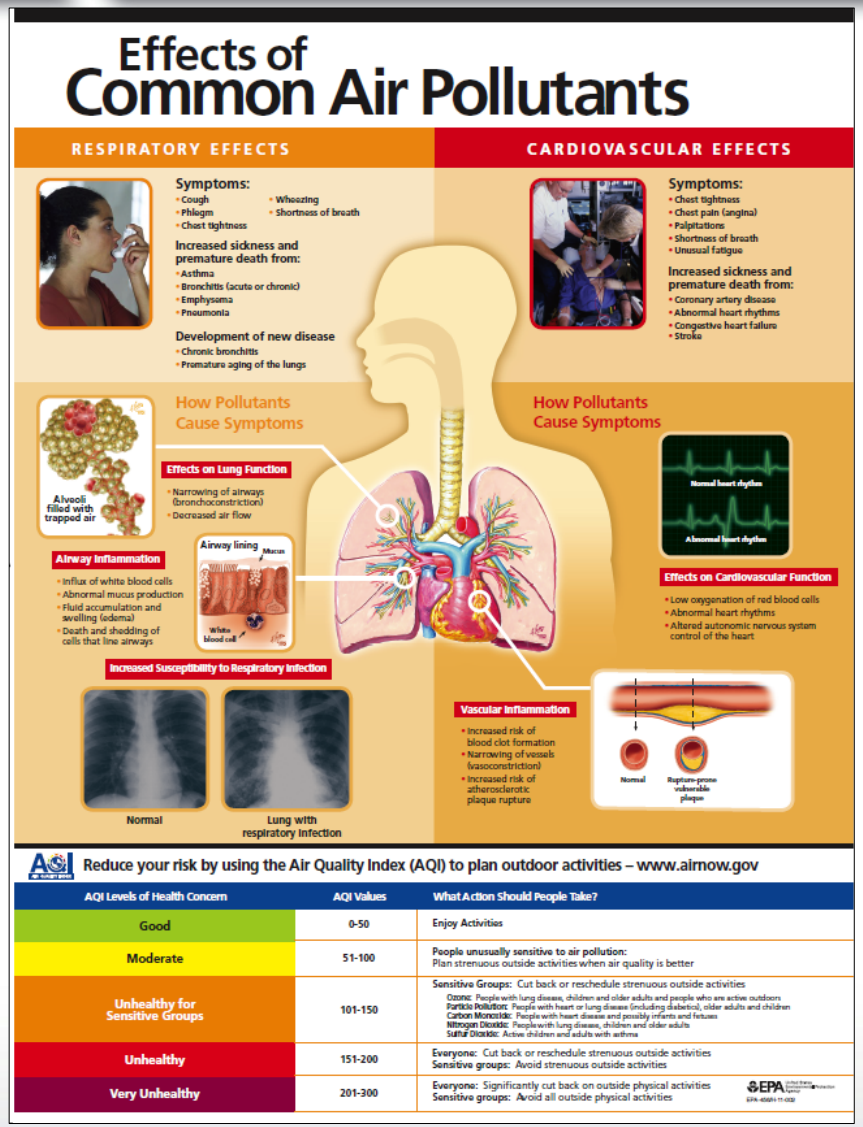
Particle pollution levels can be high any time of year. Particle levels can also be high:

- Near busy roads, in urban areas (especially during rush hour), and in industrial areas.
- When there is smoke in the air from wood stoves, fireplaces, burning vegetation, or forest fires.

https://www3.epa.gov/airnow/asthma-flyer.pdf

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

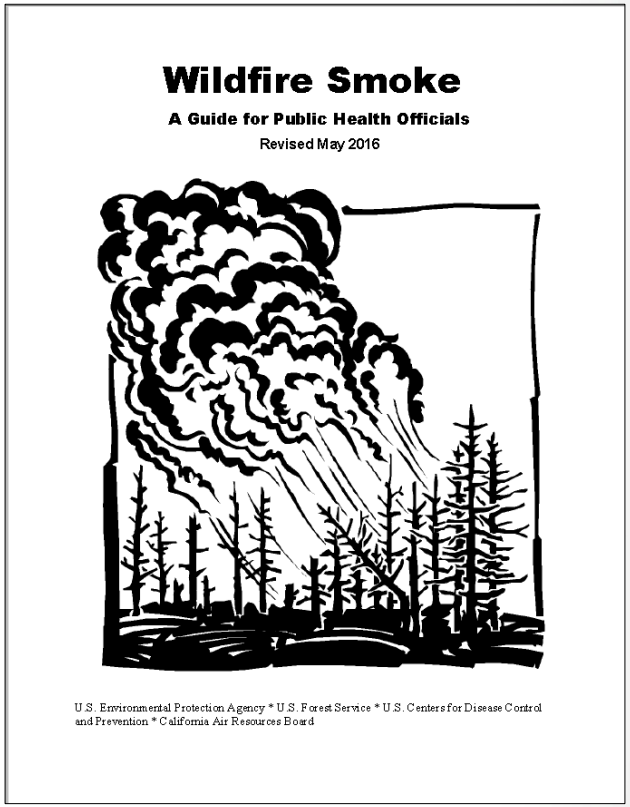
Medical Poster



https://www3.epa.gov/airnow/health-prof/common-air-pollutants-2011-high.pdf

Wildfire Smoke
A Guide for Public Health Officials (2016)

- Revised by EPA/CDC and NIOSH/USFS/California Agencies
- Updated air quality and health information
- Exposure reduction measures incorporate stronger evidence base
- 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-revised.pdf

Coming Soon - Wildfire Guide Fact Sheets

- Prepare for Fire Season
- Reduce Your Smoke Exposure
- Children's Health and Wildfires
- Indoor Air Filtration
- Protect Yourself from Ash
- Respiratory Protection from Wildfire Smoke and Ash

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.

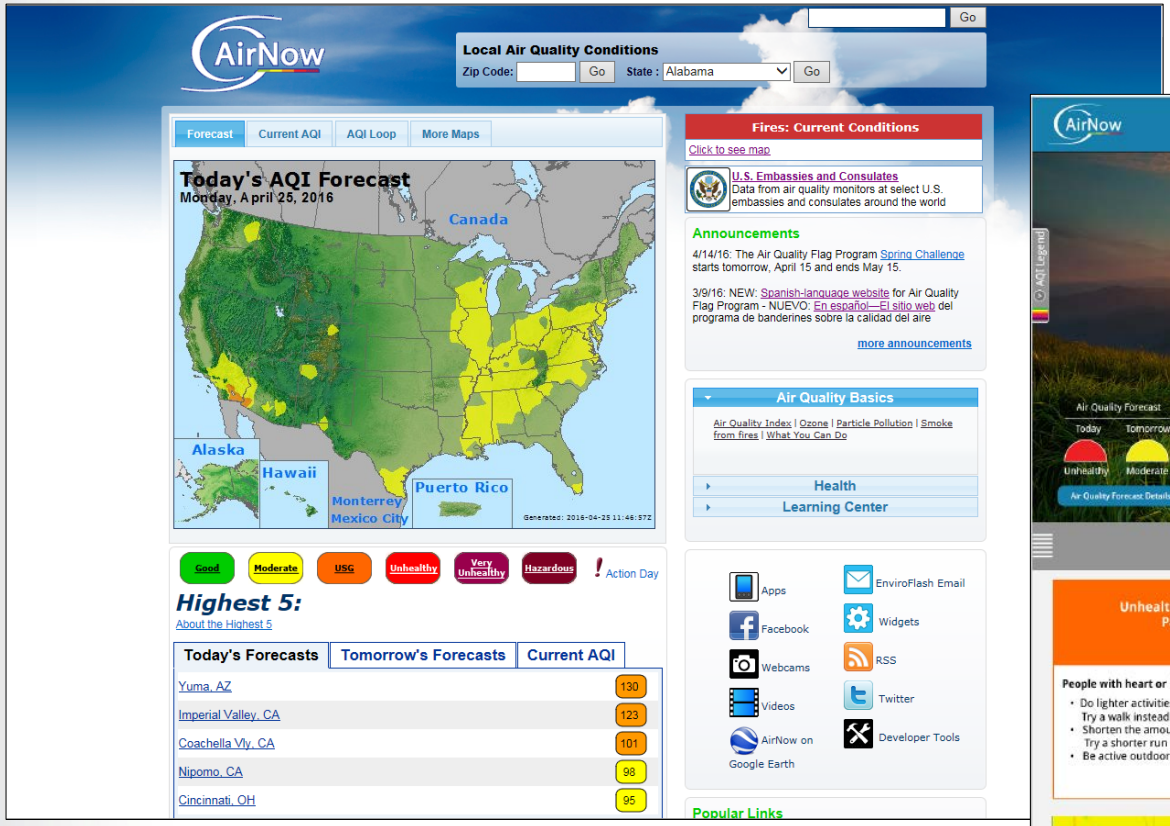
Prepare Before a Wildfire

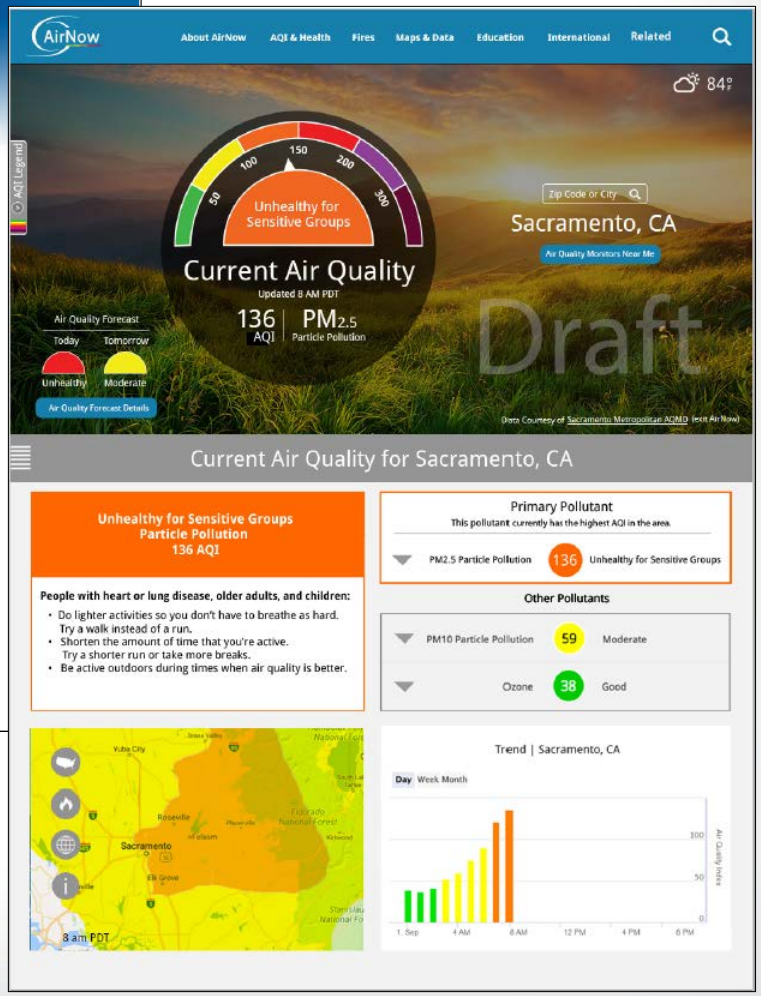
- **Stock up** so you don't have to go out when it's smoky. Have several days of medications on hand. Buy groceries that do not need to be refrigerated or cooked, because cooking can add to indoor particle levels.
- **Create a "clean room"** in your home. Choose a room with as few windows and doors as 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.
- **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 and know where to go in case you have to evacuate.

Wildfire Guide – Next Revision

- Updated look
- Health effects section
  - Addition of ozone
  - Multi-day exposure
  - Heat and smoke
  - Smoke vs urban particles
- Add sections
  - PM web course for health professionals
  - Sensor use
  - Ash clean-up
- Additional fact sheets
  - Older Adults
  - Pets
  - Livestock
  - After the Fire

AirNow (www.airnow.gov)





Coming soon

Thank you!

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U.S. Environmental Protection Agency
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Air Pollution and Cardiovascular Health

The Role of Million Hearts 2022

National Environmental Health Association
February 28, 2018

Janet Wright MD, FACC
Executive Director, Million Hearts

Million Hearts®

Million Hearts® 2022

- **Aim:** Prevent 1 million—or more—heart attacks and strokes in the next 5 years
- National initiative co-led by
  - Centers for Disease Control and Prevention (CDC)
  - Centers for Medicare & Medicaid Services (CMS)
- Partners across federal and state agencies and private organizations and individuals

Million Hearts®

Opportunities in U.S. Adults to Prevent Cardiovascular Disease

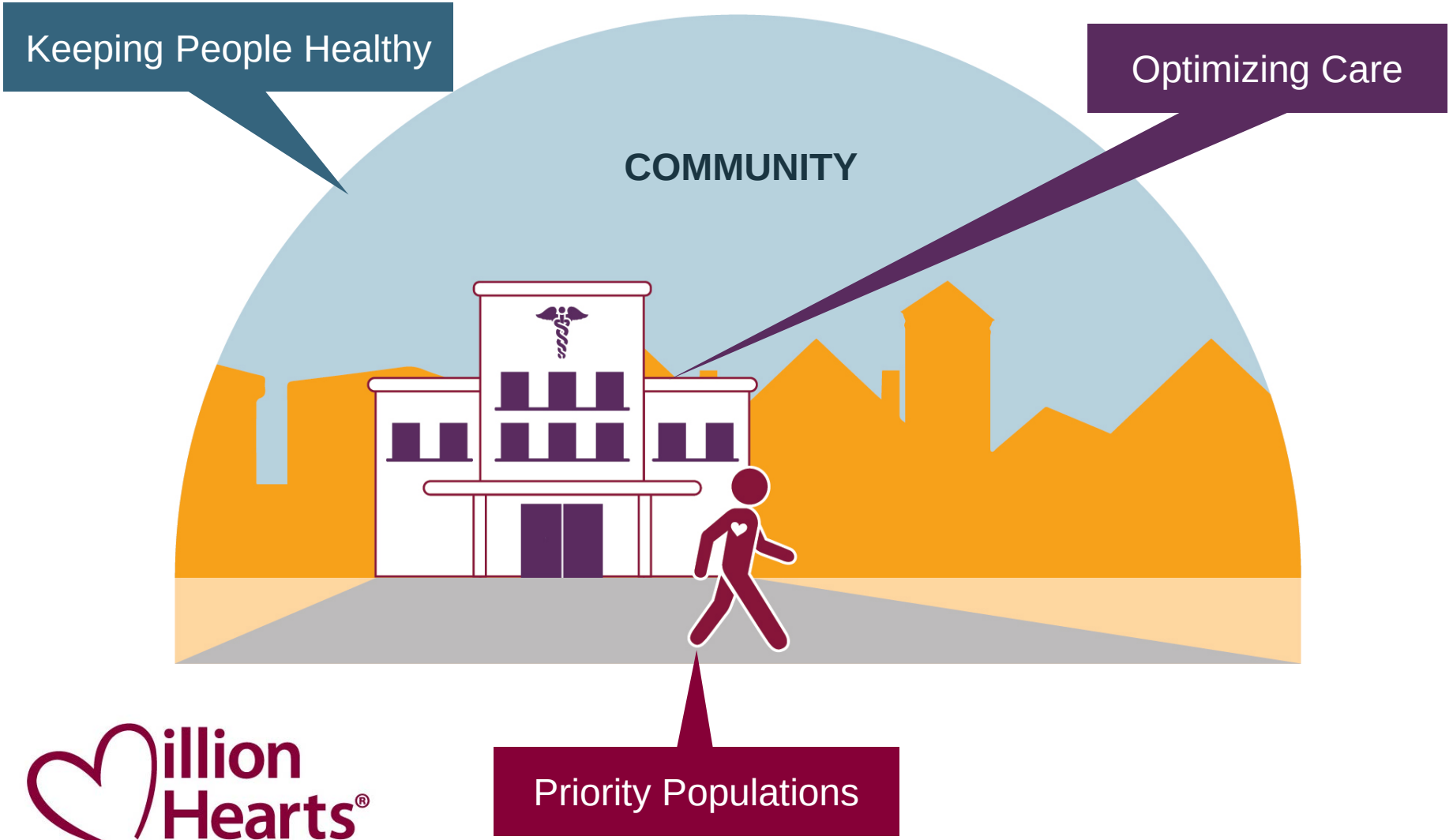
Blood Pressure	Cholesterol	Sodium	Physical Activity	Tobacco Use
34 M	**35M/42M**	**215M**	**124 M**	**36.5 M**
Uncontrolled	**Unmanaged**	**Overconsume**	**Underexert**	**Smoke**

Million Hearts®

We Know What Works

Million Hearts® 2022

Aim: Prevent 1 Million Heart Attacks and Strokes in 5 Years



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Priorities and Objectives

Keeping People Healthy
Reduce Sodium Intake
Decrease Tobacco Use
Increase Physical Activity

Optimizing Care
Improve ABCS*
Increase Use of Cardiac Rehab
Engage Patients in Heart-healthy Behaviors

Improving Outcomes for Priority Populations
Blacks/African Americans
35- to 64-year-olds
People who have had a heart attack or stroke
People with mental illness or substance use disorders

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*Aspirin use when appropriate, Blood pressure control, Cholesterol management, Smoking cessation

Keeping People Healthy

Goals	Effective Public Health Strategies
Reduce Sodium Intake Target: 20%	• Enhance consumers' options for lower sodium foods • Institute healthy food procurement and nutrition policies
Decrease Tobacco Use Target: 20%	• Enact smoke-free space policies that include e-cigarettes • Use pricing approaches • Conduct mass media campaigns
Increase Physical Activity Target: 20% (Reduction of inactivity)	• Create or enhance access to places for physical activity • Design communities and streets that support physical activity • Develop and promote peer support programs

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Optimizing Care

Goals	Effective Health Care Strategies
Improve ABCS* Targets: 80% **Increase Use of Cardiac Rehab** Target: 70% **Engage Patients in Heart-healthy Behaviors** Targets: TBD	***High Performers Excel in the Use of…*** • **Teams**—including pharmacists, nurses, community health workers, and **cardiac rehab professionals** • **Technology**—decision support, patient portals, e- and default referrals, registries, and algorithms to find gaps in care • **Processes**—treatment protocols; daily huddles; ABCS scorecards; proactive outreach; **finding those with** undiagnosed high BP or cholesterol, tobacco use, **particulate matter exposure** • **Patient and Family Supports**—training in home blood pressure monitoring; problem-solving in medication adherence; counseling on nutrition, **physical activity**, tobacco use**, risks of particulate matter; referral to community-based physical activity programs and cardiac rehab**

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Improving Outcomes for Priority Populations

- ✓ Disparate outcome
- ✓ Effective interventions
- ✓ Well-positioned partners

Priority Population	Objectives	Strategies
Blacks/African Americans	• Improving hypertension control	• Implement tailored protocols • Problem-solve in med adherence
35-64 year olds	• Improving HTN control and statin use • Increasing physical activity	• Implement tailored protocols • Increase access to and participation in community-based activity programs
People who have had a heart attack or stroke	• Increasing cardiac rehab referral and participation • **Avoiding exposure to particulate matter**	• Use opt-out referral and CR liaison visits at discharge; ensure timely enrollment post-discharge • **Increase use of Air Quality Index**
People with mental illness or substance abuse disorders	• Reducing tobacco use	• Integrate tobacco cessation into behavioral health treatment • Institute tobacco-free policy at mental health and substance use treatment facilities • Tailored quitline protocols

Air Quality Awareness

- Among people with known heart disease:
  - Are they aware of air quality alerts?
  - Have they discussed with a health professional strategies to reduce air pollution exposure?
  - Do they avoid busy roads to reduce air pollution exposure?
- ConsumerStyles survey, 2014-16

Mirabelli MC, Boehmer TK, Damon SA, Sircar KD, Wall HK, Yip FY, Zahran HS, Garbe PL. Air quality awareness among U.S. adults with respiratory and heart disease. Am J Prev Med 2018; in press.

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Particle Pollution

- $PM_{2.5}$ refers to particulate matter of 2.5 micrometers or less in diameter
- Exposure is linked to an increase in risk of heart attacks, strokes, and rhythm disorders
- https://millionhearts.hhs.gov/tools-protocols/tools/particle-pollution.html

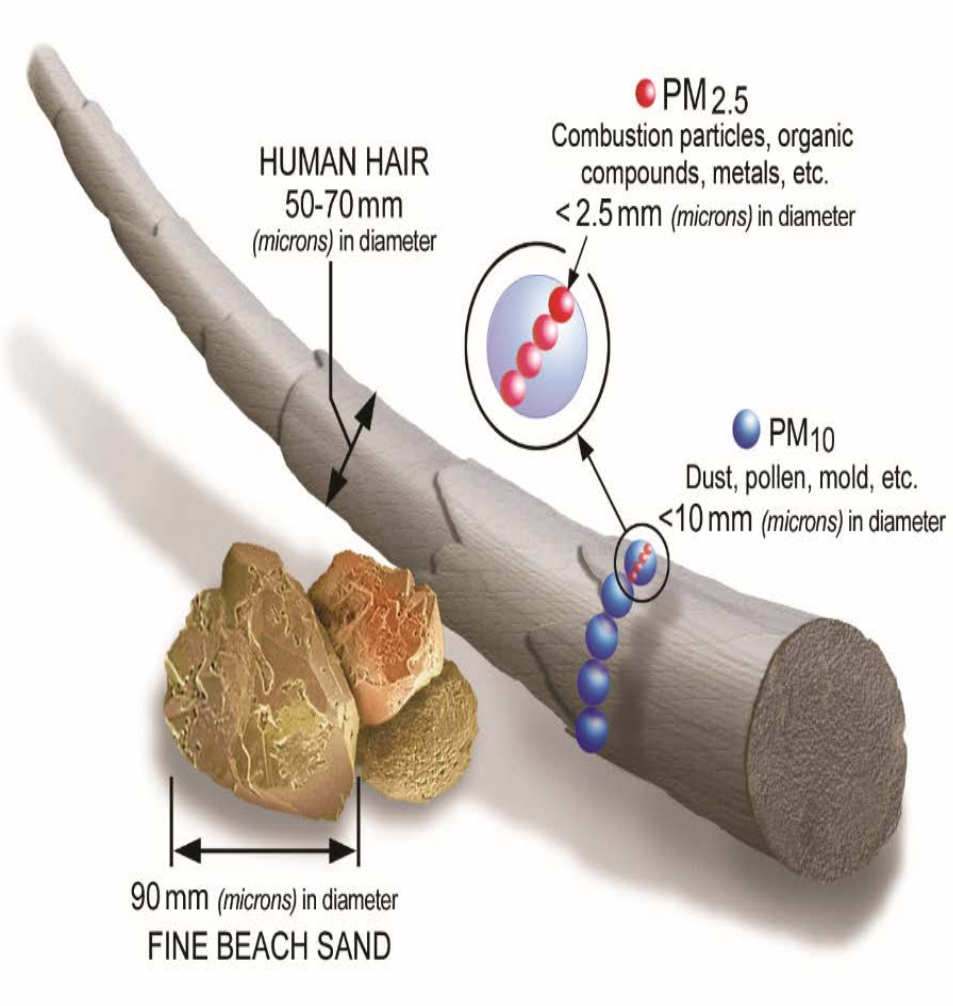

Image source: EPA, Office of Research and Development
https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM

Air Quality Index (AQI)

AQI Values	Levels of Health Concern	Meaning
0-50	Good	Air quality is considered satisfactory, and air pollution poses little or no risk.
51-100	Moderate	Air quality is acceptable; may be a moderate health concern for people who are unusually sensitive to air pollution.
101-150	Unhealthy for sensitive groups	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
151-200	Unhealthy	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
201-300	Very unhealthy	Health alert: everyone may experience more serious health effects.
301-500	Hazardous	Health warnings of emergency conditions. The entire population is more likely to be affected.

The AQI can be found:

- On the web: www.airnow.gov
- On Facebook and Twitter
- Through EnviroFlash email alerts
- With the free AirNow App for iPhones and Android

Key Actions to Protect Your Health From Air Pollution

- Know when and where particle pollution levels may be unhealthy
  - Busy roads
  - Rush hour traffic
  - Smoke from fires
- Plan activities when and where pollution levels are lower
  - Delay activity until air is cleaner or move activity indoors

- Check the Air Quality Index, which provides forecasts of daily air quality

- Change your activity level
  - Reduce activity (ex: walk instead of jog)
- Reduce overall risk of heart disease or stroke
- Know the warning signs of heart attack or stroke

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Million Hearts Family Priority Actions

- Raise awareness among those at-risk, their families, and **the clinicians who care for them**
- Encourage health professionals to take EPA's web-based course: **Particle Pollution and Your Patients' Health**
- Educate at-risk patients about mitigation behaviors
- Incorporate messages about air quality into cardiac rehab program curriculum
- Encourage adoption of EPA's Air Quality Flag Program among hospitals, employers, health systems, others
- Disseminate $PM_{2.5}$ content via Million Hearts channels

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Thank you

- More information about Million Hearts 2022 at www.millionhearts.gov
- Reach me at janet.wright@cms.hhs.gov