



ORD Tools & Resources Webinar



Wayne Cascio, MD, FACC

Director, Environmental Public Health Division

National Health and Environmental Effects Research Laboratory

Office of Research and Development - US EPA

Chapel Hill, North Carolina

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EPA's Healthy Heart Program

Increasing Environmental Health Literacy



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

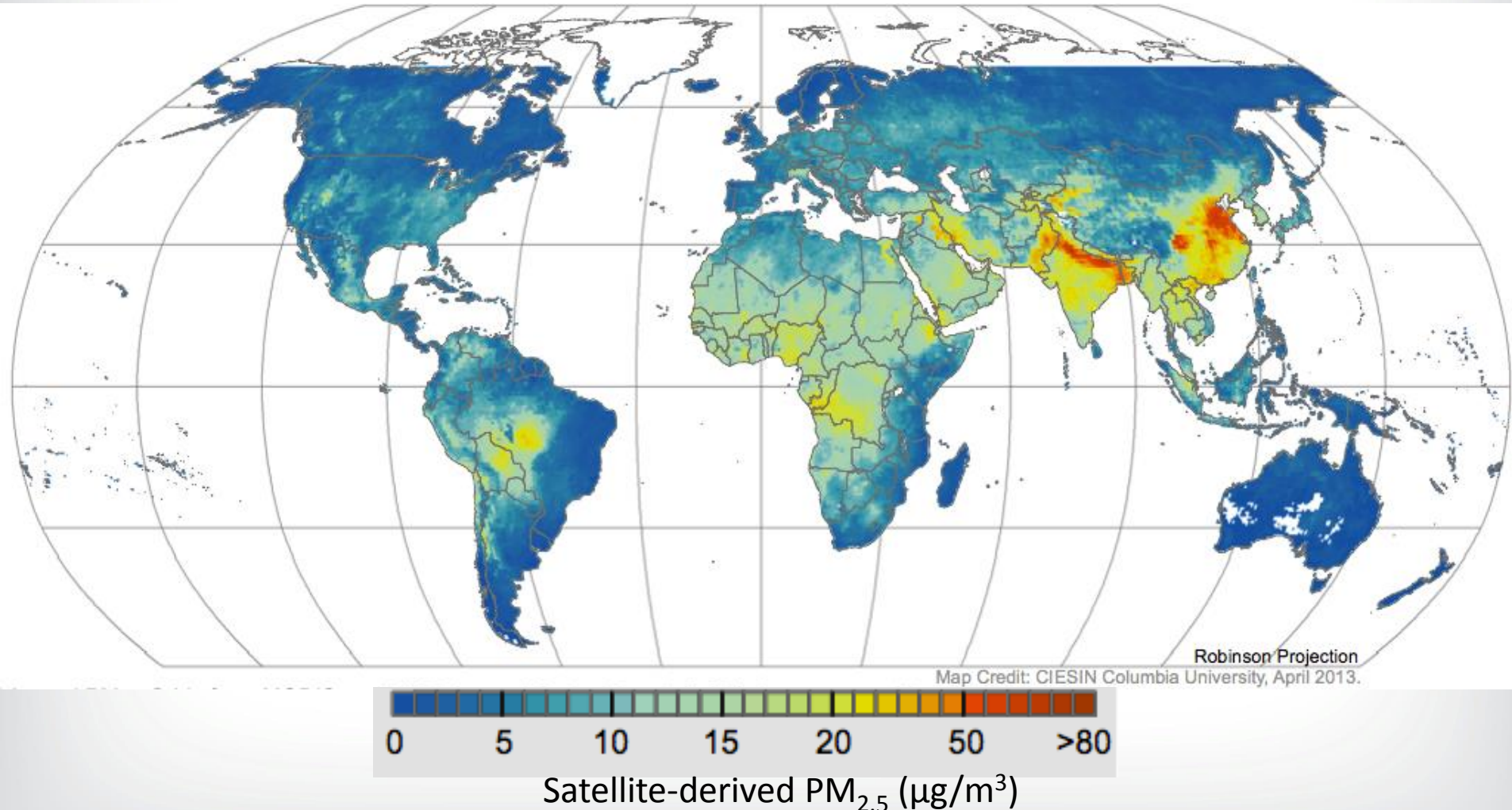
- Raising public awareness about the role outdoor air pollution plays in cardiovascular health, and
- Steps individuals can take to reduce their pollution exposure



Global Health Issue

Average PM_{2.5} 2001-2010

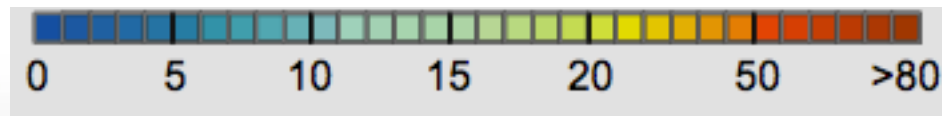
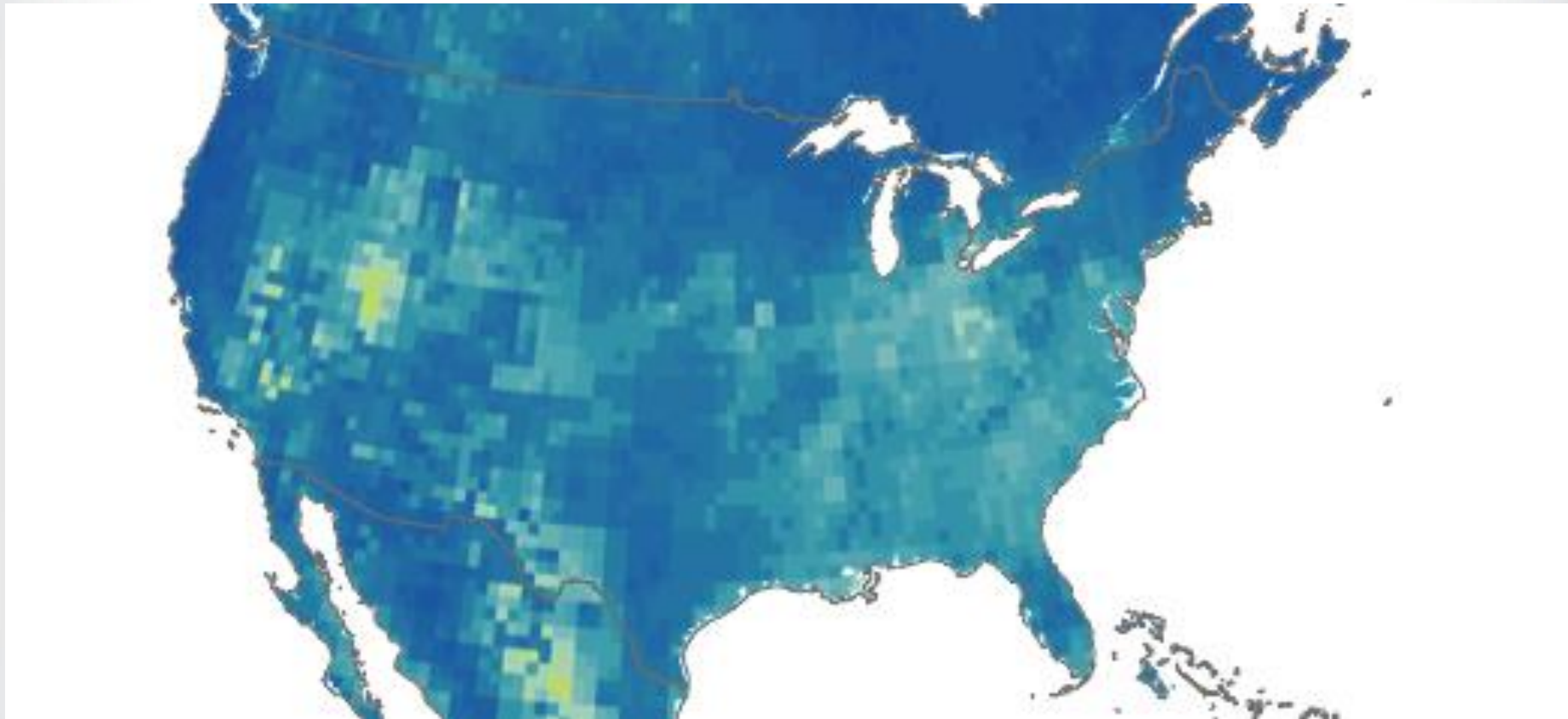
WHO: 3.7 million excess deaths globally due to ambient air pollution





Annual U.S. $PM_{2.5}$ Concentration 2001-2010

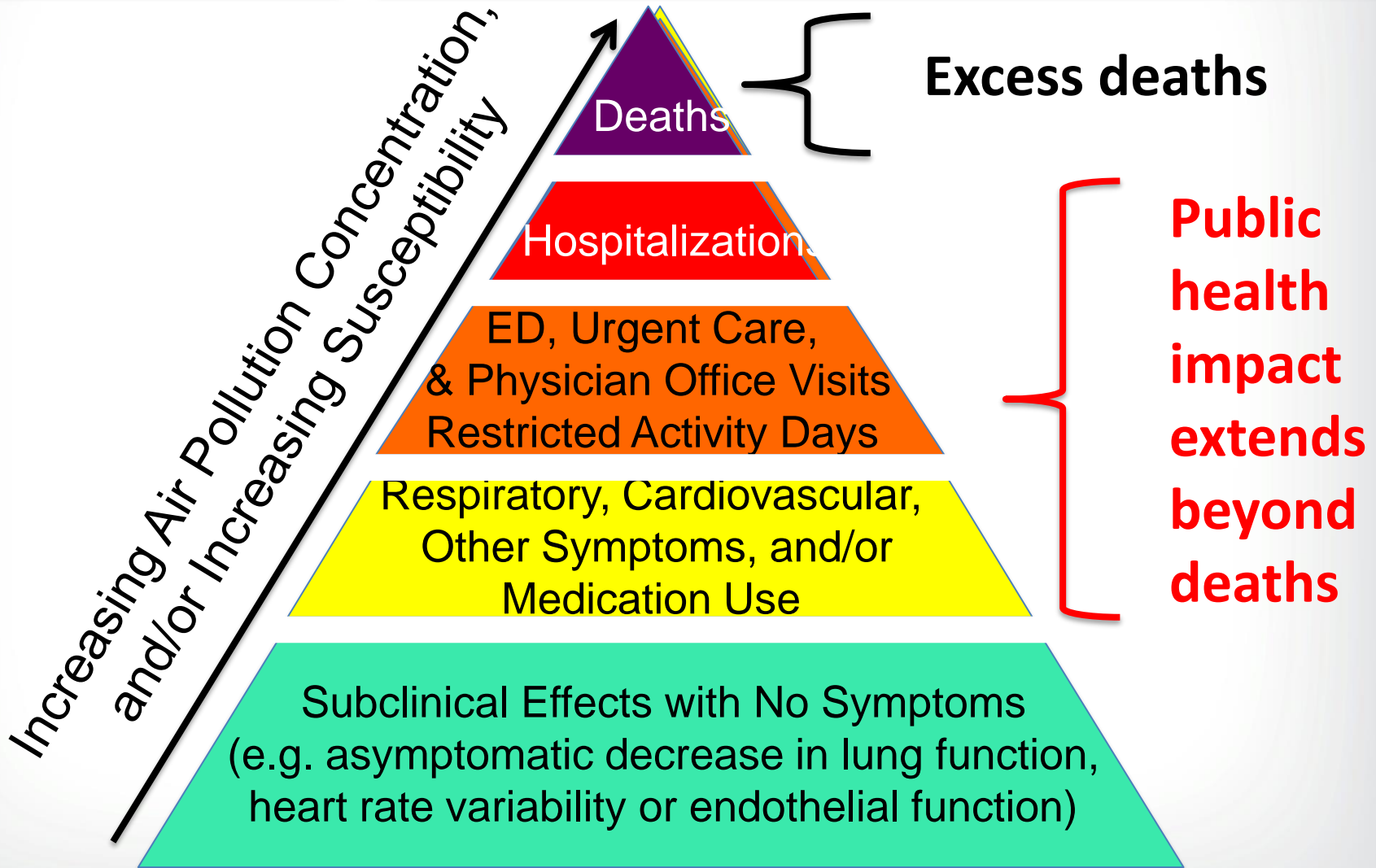
Estimate of 60,000 excess deaths in U.S. due to ambient air pollution



Satellite-derived $PM_{2.5}$ ($\mu\text{g}/\text{m}^3$)



Air Pollution and Health Effects

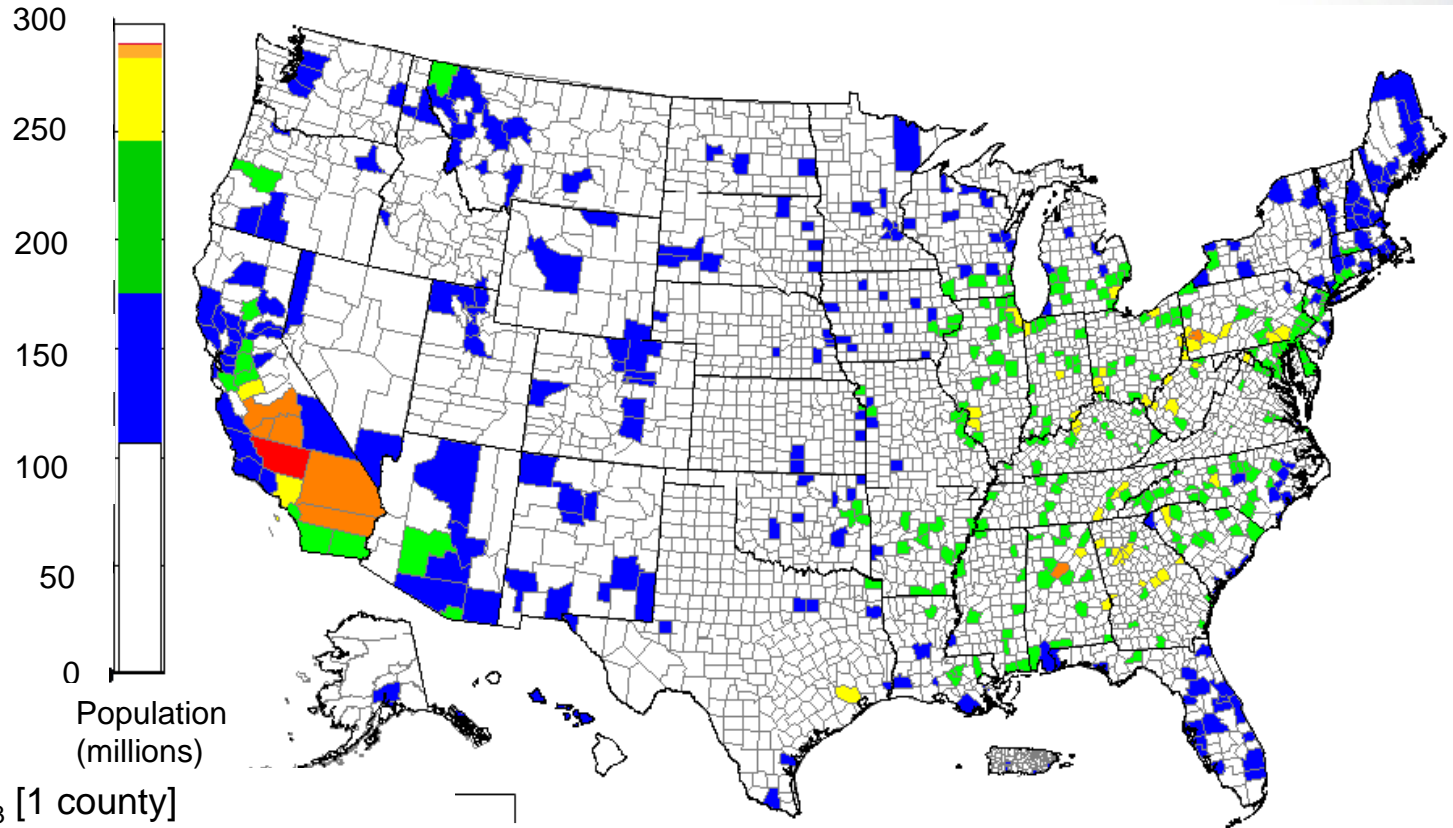


Size of Population Affected by Exposure to Air Pollution



Three-Year Average 24-hr $PM_{2.5}$ Concentration by County 2005-2007

Number of people residing within counties that reported county-wide average concentrations within the specified ranges (in millions)



Concentration Range

- Red: $\geq 20.1 \mu\text{g}/\text{m}_3$ [1 county]
- Orange: $18.1 - 20.0 \mu\text{g}/\text{m}_3$ [7 counties]
- Yellow: $15.1 - 18.1 \mu\text{g}/\text{m}_3$ [53 counties]
- Green: $12.1 - 15.0 \mu\text{g}/\text{m}_3$ [242 counties]
- Blue: $\leq 12.0 \mu\text{g}/\text{m}_3$ [237 counties]
- White: No data

Millions of people live in areas that exceed the annual NAAQS for PM

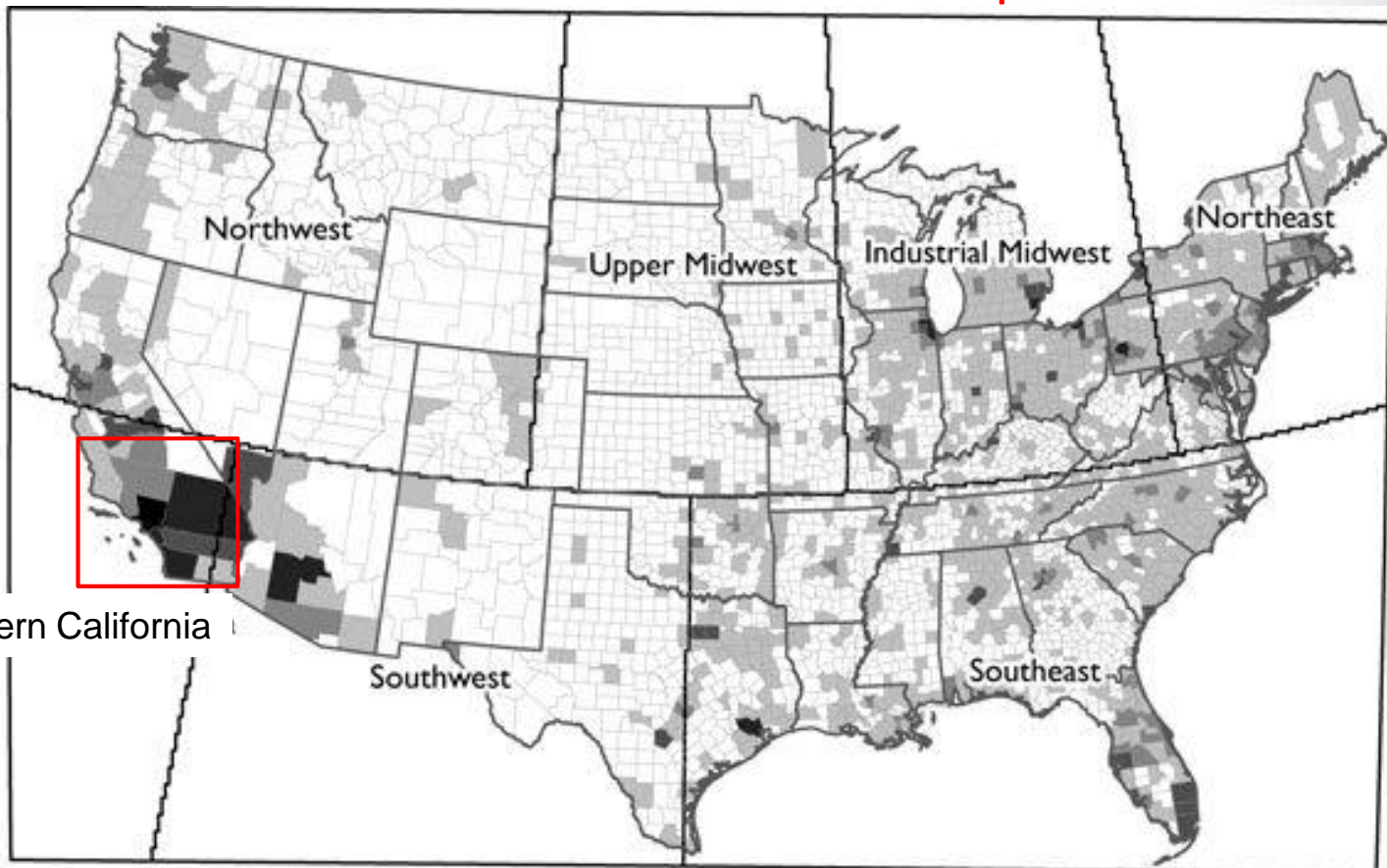
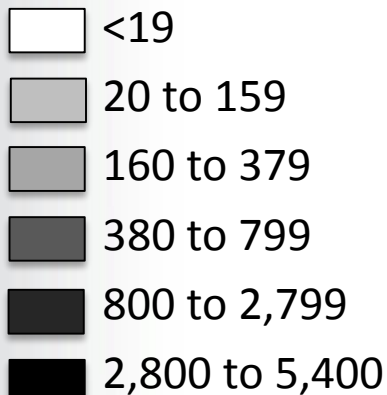


Estimated Excess Mortality

Burden of Air Pollution Deaths by US County

PM_{2.5} and O₃-related Mortality by County based on 2005 air pollution levels

PM_{2.5} and O₃ related mortality



Southern California

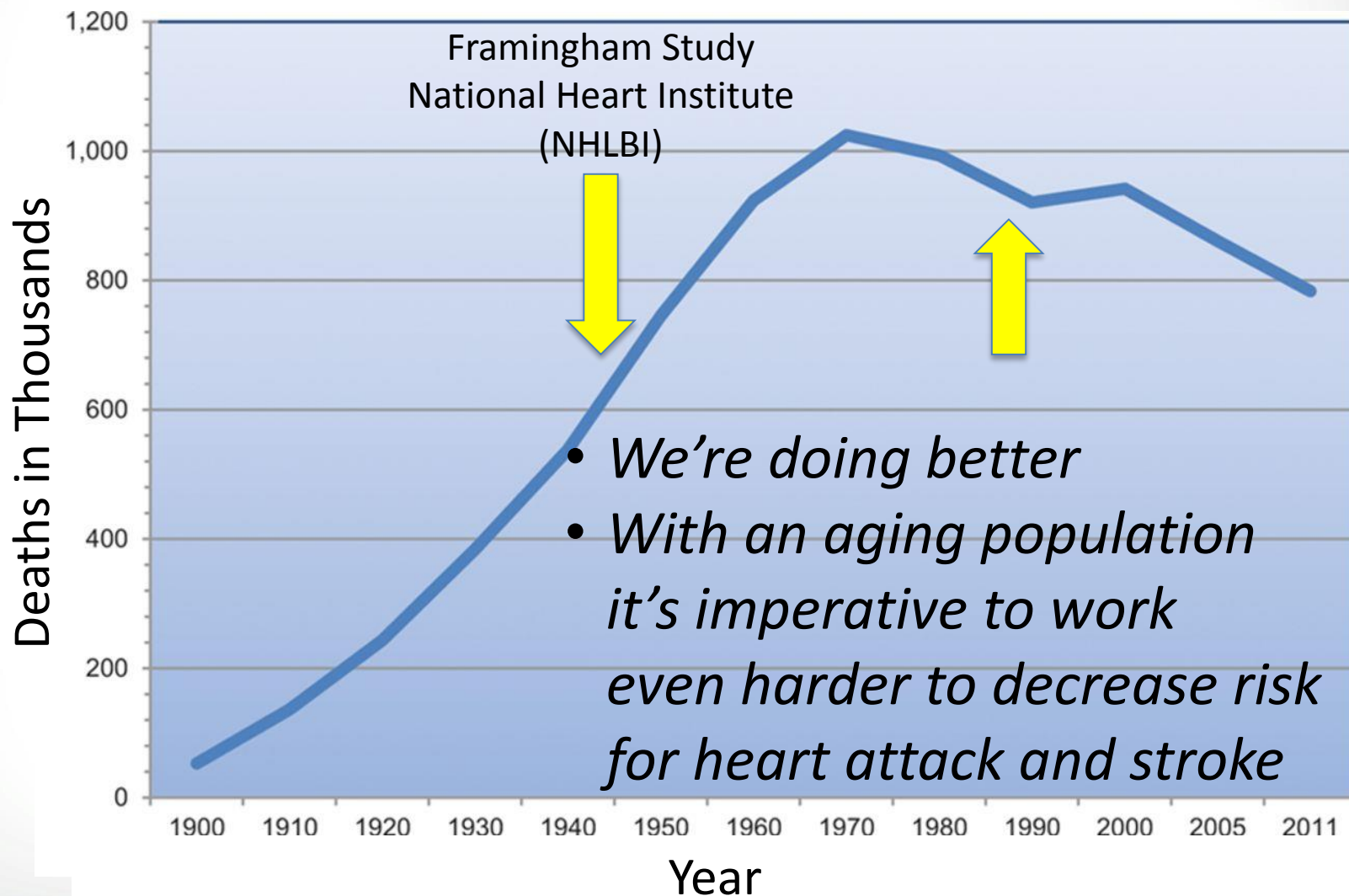
US EPA's BENMAP

www.epa.gov/benmap/benmap-community-edition



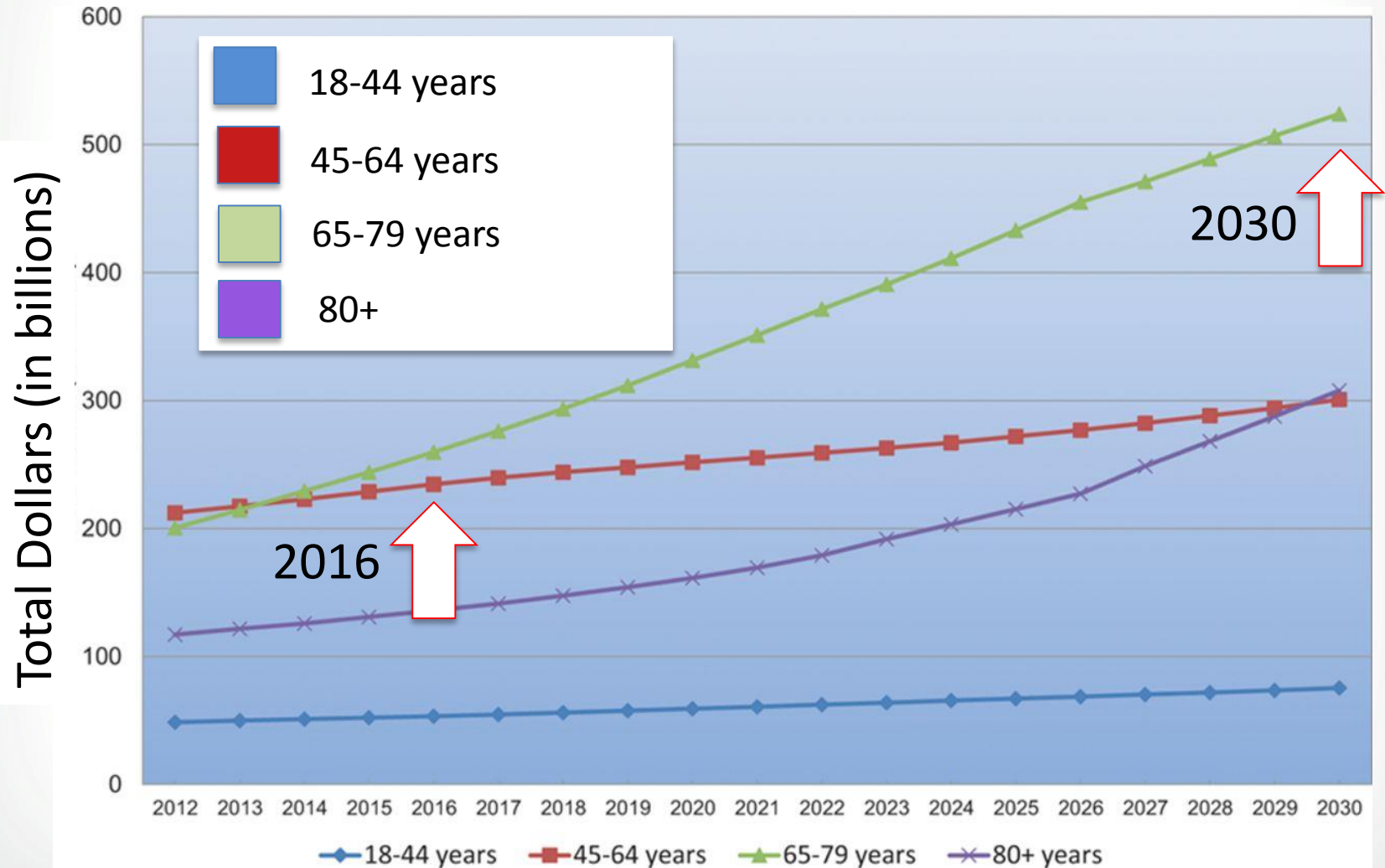
Deaths Attributed to CV Disease

United States: 1900-2011





Projected total costs of CV Disease by age (2012 in billions)





Air Particle Pollution Associated with CV Morbidity & Mortality

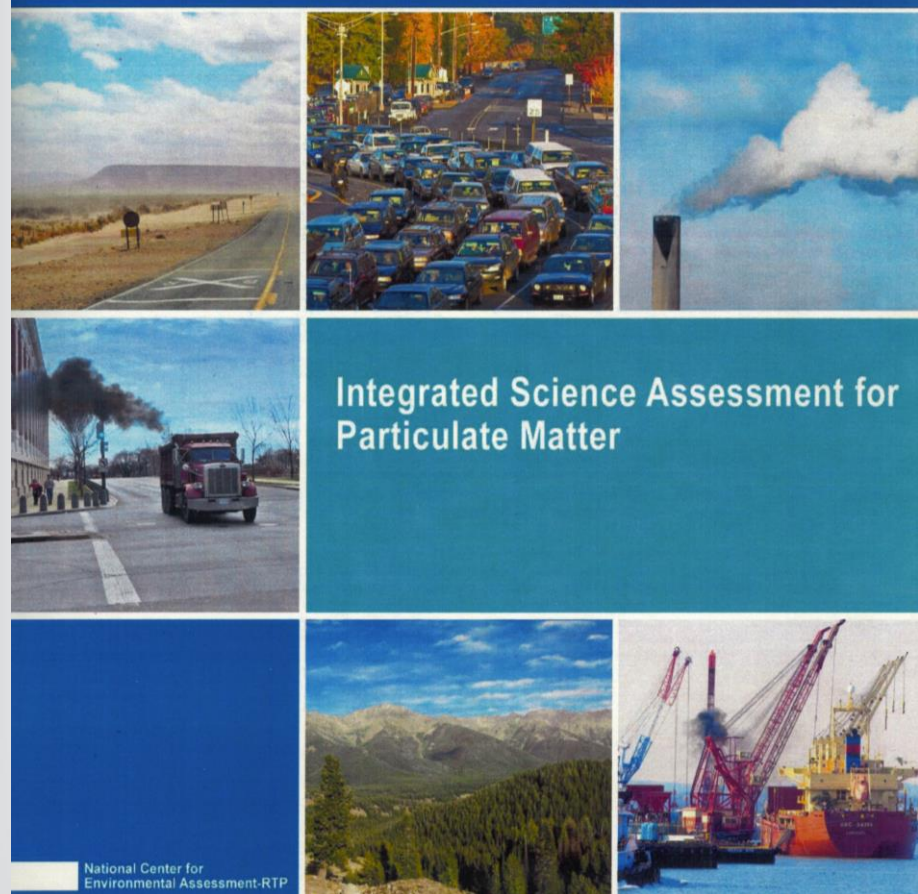


EPA 600/R-08/139F | December 2009 | www.epa.gov

Integrated Science Assessment for Particulate Matter

“Epidemiologic evidence is sufficient to conclude that a causal relationship exists between:

short-term, and long-term exposure to $PM_{2.5}$ and mortality.”



Integrated Science Assessment for
Particulate Matter



Air Pollution Worsens CV Disease

AHA Expert Panel 2010

AHA Scientific Statement

Particulate Matter Air Pollution and Cardiovascular Disease

An Update to the Scientific Statement From the American Heart Association

Robert D. Brook, MD, Chair; Sanjay Rajagopalan, MD; C. Arden Pope III, PhD;
Jeffrey R. Brook, PhD; Aruni Bhatnagar, PhD, FAHA; Ana V. Diez-Roux, MD, PhD, MPH;
Fernando Holguin, MD; Yuling Hong, MD, PhD, FAHA; Russell V. Lueker, MD, MS, FAHA.

- Fine particulate matter (PM) or air particle pollution can
 - *Trigger heart attacks*
 - *Trigger strokes*
 - *Trigger arrhythmia*
 - *Worsen heart failure*
- Heart disease patients should reduce their exposure to air pollution when levels are high.

- “Air pollution should be viewed as one of several major modifiable risk factors in the prevention and management of cardiovascular disease.”



European Heart Journal (2015) **36**, 83–93
doi:10.1093/eurheartj/ehu458

CURRENT OPINION

Expert position paper on air pollution and cardiovascular disease

David E. Newby¹, Pier M. Mannucci², Grethe S. Tell³, Andrea A. Baccarelli⁴, Robert D. Brook⁵, Ken Donaldson⁶, Francesco Forastiere⁷, Massimo Franchini⁸, Oscar H. Franco⁹, Ian Graham¹⁰, Gerard Hoek¹¹, Barbara Hoffmann¹²,

- “Health professionals, including cardiologists, have an important role to play in supporting educational and policy initiatives as well as counseling their patients.”

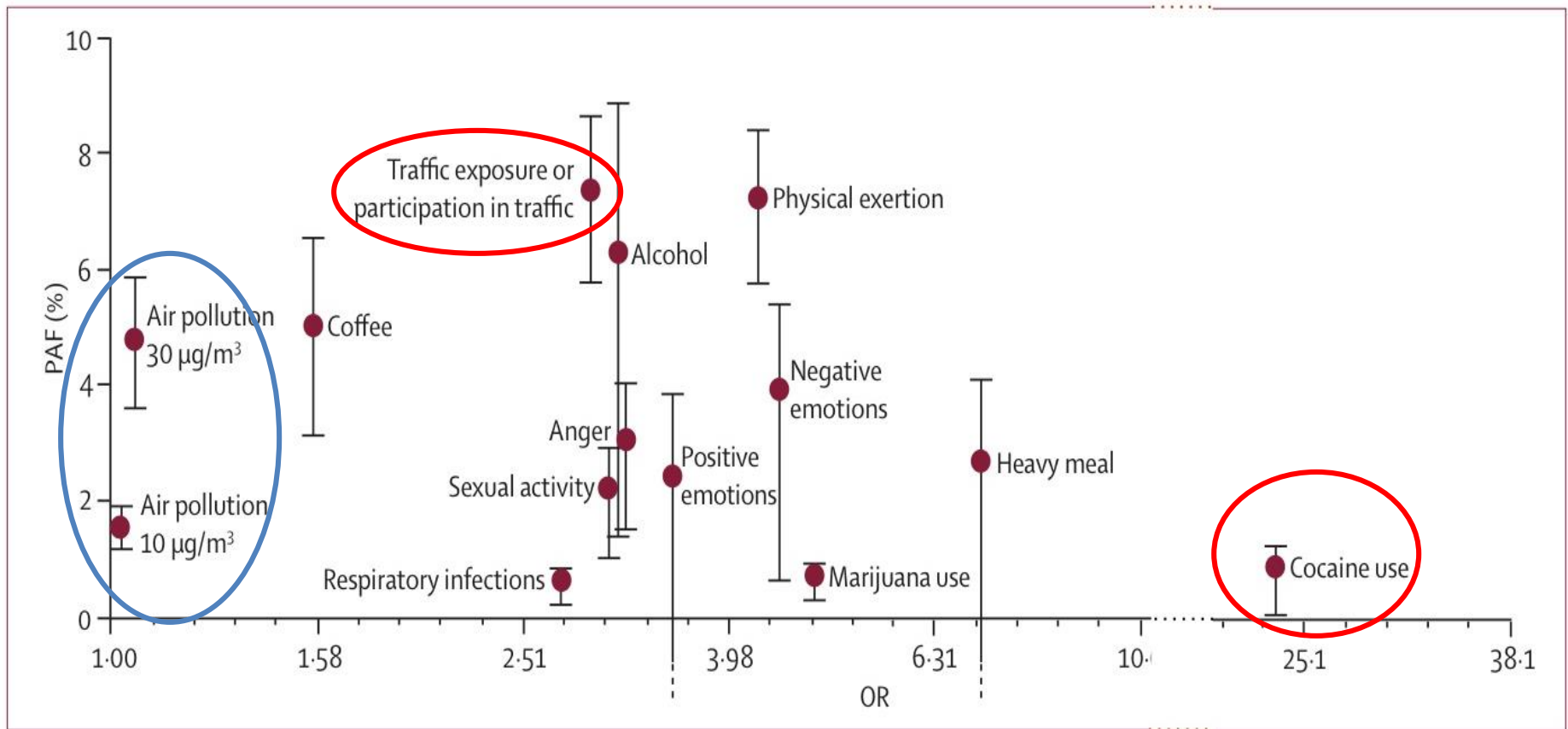


Air Pollution Triggers Heart Attacks

Lower exposure associated with lower risk

Population Attributable Fractions (PAF)

Related to: the strength of the association between exposure to a risk factor and the prevalence of this risk factor within the population





Healthy Heart Toolkit

www.epa.gov/air-research/healthy-heart-toolkit



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Healthy Heart Toolkit

Help increase awareness that air pollution can trigger heart attacks, strokes and worsen heart conditions by using these resources. Here's what you can do:

- Link to the [Healthy Heart website](#)
- Link to the [PSA and share with others](#) [Exit](#)
- Include an article in your newsletter or educational materials for the public
- Share information with your twitter followers
- Use the graphic on your educational materials



Key Messages

- Air pollution can affect heart health and can trigger heart attacks and strokes that cause disability and death.
- One in three Americans has cardiovascular disease and is at higher risk from exposure to air pollution.
- People with heart disease can use the Air Quality Index to help reduce their exposure to air pollution and protect their heart.
- A top priority of EPA is to improve air quality. EPA scientists and partners conduct research to better understand air pollution's impacts on heart health.



Healthy Heart Toolkit & Research

Protect Your Heart



United States Environmental Protection Agency

Español | 中文: 繁體版 | 中文: 简体版 | Tiếng Việt | 한국어

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<http://www.epa.gov/air-research/healthy-heart-toolkit-and-research>

Healthy Heart Toolkit and Research: Protect Your Heart

Steps You Can Take to Reduce Health Effects from Air Pollution

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

When are air pollution levels high?

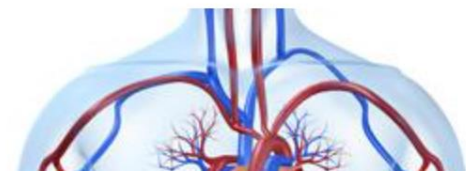
- Any time of year
- When weather is calm
- Near busy roads
- In urban areas
- In industrial areas
- When there is smoke



Are you at risk?

Greater risk if you have or have had:

- Coronary artery disease
- Angina (chest pain)



Daily Air Quality

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

Related Resources

- [Healthy Heart](#)
- [Healthy Heart Toolkit](#)
- [Ongoing Research](#)
- [Research Discoveries](#)

Resources

- [Have Heart Disease? Fact Sheet](#)
- [Heart Disease, Stroke and](#)

Populations showing increased susceptibility to the adverse health effects of air particle pollution include:

- Aged adults & Children
- Pregnant women (?)
- Developing fetus (?)

And those having:

- **Cardiovascular disease**
 - Ischemic heart disease
 - Heart failure
 - Ventricular arrhythmia
- **Diabetes**
- **Pulmonary disease**
- **Genetic polymorphisms**

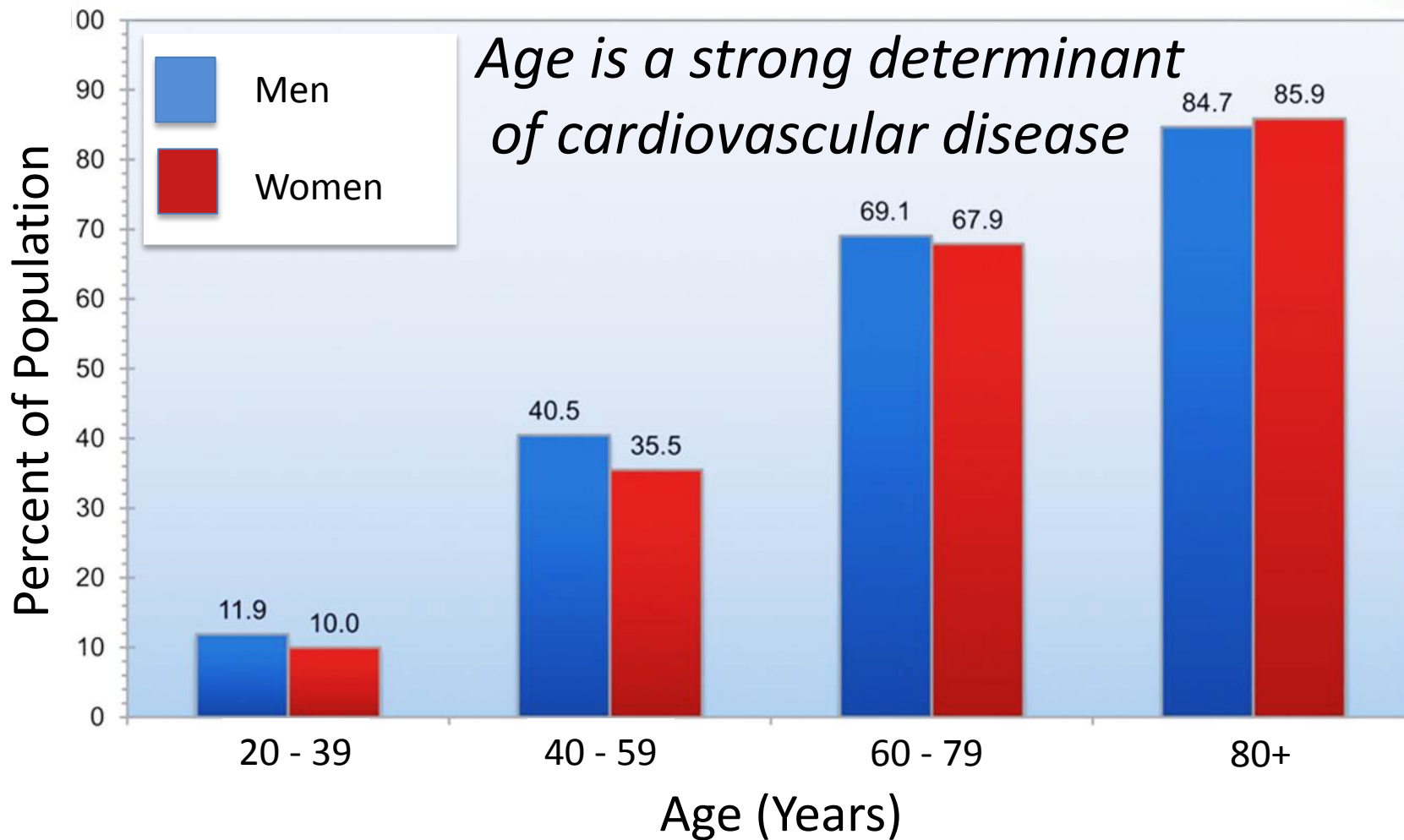




Prevalence of CV Disease

Adults ≥ 20 years old by Age and Sex

(National Health and Nutrition Examination Survey: 2009-2012)





Healthy Heart Flyer



EPA
United States Environmental Protection Agency
epa.gov/healthyheart

Have Heart Disease?

Steps You Can Take to Reduce Health Effects from Air Pollution

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

Air Pollution Levels can be high

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

Are you at risk?
Greater risk if you have or have had:

- Coronary artery disease
- Angina (chest pain)
- A heart attack
- Bypass surgery or an angioplasty
- Heart failure
- An internal cardiac defibrillator
- A stroke or transient ischemic attack
- Blockages in the arteries of the neck or legs

Air quality levels are	Health Message
Good	None
Moderate	Unusually sensitive people should consider reducing prolonged or heavy exertion
Unhealthy for Sensitive Groups	People with heart disease should reduce prolonged or heavy exertion
Unhealthy	People with heart disease should avoid prolonged or heavy exertion
Very Unhealthy	People with heart disease should avoid all physical activity outdoors
Hazardous	People with heart disease should remain indoors and keep activity levels low

Check the AQI Daily
Check current pollution forecasts and reports that use the Air Quality Index (AQI)

- On local TV, radio or newspapers
- On the Internet at airnow.gov
- Through the AirNow app for iPhone and Android phones
- Through free e-mail alerts at enviroflash.info

The AQI is a simple color scale that tells you how clean or polluted the air is and provides an advisory health message.



EPA
United States Environmental Protection Agency
epa.gov/healthyheart

Steps to Protect Your Heart

When pollution is high, you can reduce the amount of particle pollution you inhale

- Delay your outdoor activity until the air is cleaner
- Reduce your activity level (for example, go for a walk instead of a jog)
- Move your exercise inside
- Avoid exercising near busy roads

To learn more, visit: www.airnow.gov

Reduce Your Risk

Reduce your overall risk of heart disease and stroke

- Eat healthy foods
- Control blood pressure
- Control cholesterol levels
- Exercise more (first check with your health care provider)
- Stop smoking
- Take aspirin and heart medication as directed
- Talk to your health care provider about treatment

Warning Signs of a Heart Attack

- Chest discomfort (uncomfortable pressure, fullness, squeezing, or pain in the center of the chest that lasts more than a few minutes or goes away and comes back)
- Discomfort in other areas of the upper body (pain or discomfort in one or both arms, the back, neck, jaw, or stomach)
- Shortness of breath
- Other signs may include breaking out in cold sweats, nausea, or light-headedness

Warning Signs of a Stroke

- Sudden numbness or weakness in the face, arm or leg (especially on one side of the body)
- Confusion, trouble speaking or understanding
- Problems seeing
- Dizziness, loss of balance or coordination, or trouble walking
- Severe headache with no known cause

For more information, visit
www.heart.org
www.millionhearts.hhs.gov
epa.gov/research/airsceince/air-cardiovascular.htm

Learn more about preventing heart attacks and stroke at:
www.cdc.gov/heartdisease
www.cdc.gov/stroke

Pg. 2



Reduce Overall Risk

Reducing PM's Health Effects

- Eat healthy foods
- Control blood pressure
- Control cholesterol levels
- Exercise according to health provider's recommendation
- Stop smoking
- Take aspirin and heart medication as directed



Reduce Risk

Reducing Particle Exposure

- Delay outdoor activity until the air is cleaner
- Reduce activity level
- Move exercise inside
- Avoid exercising near busy roads





- Color scale detailing how clean or polluted the air is
- Where can it be found?
 - Local TV, radio or newspapers
 - AirNow app
 - Email alerts at www.enviroflash.info

Descriptors	Cautionary Statement
Good 0 – 50	No message
Moderate 51 – 100	Unusually sensitive individuals
Unhealthy for Sensitive Groups 101 - 150	Identifiable groups at risk - different groups for different pollutants
Unhealthy 151 - 200	General public at risk; sensitive groups at greater risk
Very Unhealthy 201 - 300	General public at greater risk; sensitive groups at greatest risk



Informing the Public www.airnow.gov via the Internet

Today's AQI & forecast - Chicago

AirNow Local Air Quality Conditions
Zip Code: State: National Summary

Forecast | Current AQI | AQI Loop | More Maps

Today's AQI Forecast

Monday, March 23, 2015

Alaska | Hawaii | Mexico City | Puerto Rico

Generated: 2015-03-23 09:16:24Z

Fires: Current Conditions
Click to see map

Announcements
02/03/15: Updated [Ozone Facts](#) webpage
11/04/14: Updated AirNow materials in [Ozone and Your Health](#) and [Guide to Ozone](#)
[more announcements](#)

Air Quality Basics
[Air Quality Index](#) | [Ozone](#) | [Particulate Matter](#) | [Pollution](#) | [UV](#) | [Smoke from Fires](#) | [What You Can Do](#)

Health
Learning Center

Apps | Facebook | Webcams | Videos | AirNow on Google Earth | EnviroFlare | Widgets | RSS | Twitter

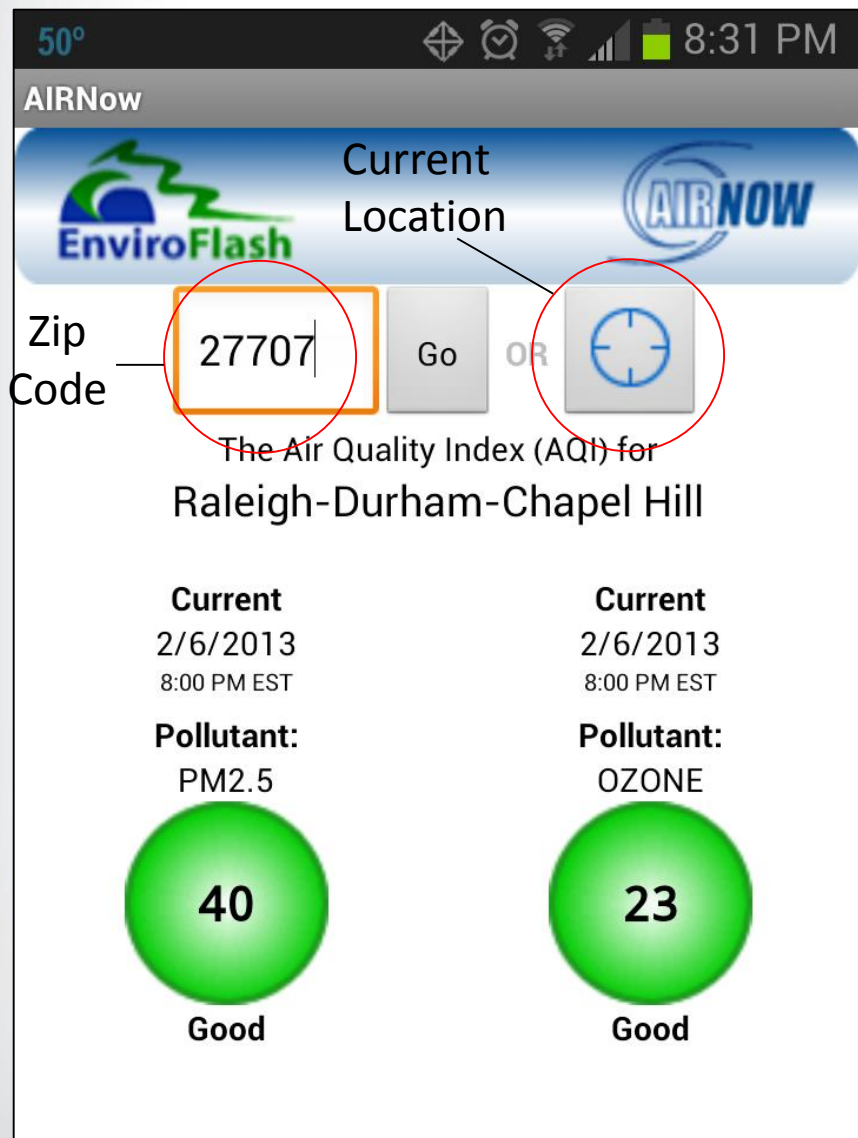
Air Quality Forecast	
Today's High	Tomorrow's High
Air Quality Index (AQI) Moderate Health Message: Unusually sensitive people should consider reducing prolonged or heavy exertion.	Air Quality Index (AQI) Moderate Health Message: Unusually sensitive people should consider reducing prolonged or heavy exertion.
AQI - Pollutant Details	
Particles (PM2.5) Moderate	Particles (PM2.5) Moderate

Current Conditions	
Air Quality Index (AQI) observed at 5:00 CDT	
38 Good	
Health Message: None	
AQI - Pollutant Details	
Particles (PM2.5) 38 Good	
Ozone 31 Good	

Good **Moderate** **USG** **Unhealthy** **Very Unhealthy** **Hazardous** **Action Day**

Highest 5: [U.S. Air Quality Summary](#) | [Canada Air Quality](#)
[About the Highest 5](#)

Today's Forecasts	Tomorrow's Forecasts	Current AQI
Metro Riverside CO, CA		91
Nipomo, CA		83
NW San Bernardino, CA		82



- AirNow app *EnviroFlash*
URL: www.enviroflash.info
- Provided daily air quality forecasts and action day notifications to your email
- Information can be used to plan outdoor activities
- Available for iPhone and Android
- Partnership between EPA and state and local air quality agency



Health Care Providers



Local Air Quality Conditions

Zip Code:

State :



[National Summary](#)

Health Care Providers

You will need Adobe Reader to view some of the files on this page. See the [AirNow PDF page](#) to learn more.

Help your patients protect their health by reducing their exposure to air pollution. This page includes

- information for you about the cardiac and respiratory health effects associated with outdoor air pollution exposure
- educational materials for your patients

[Ozone and Your Patients' Health On-line Training](#) - This is a short evidence-based training course for health care providers that explains the physiological effects of ozone and ways people can reduce their exposure to ozone. It includes clinical scenarios and FAQs to help you answer your patients' questions.

1. The purpose of this fact sheet is to increase awareness that air pollution can trigger heart attacks, stroke, and other health effects. It also provides information about steps to take to protect your health – including using the Air Quality Index to reduce exposure. It includes information about risk factors for heart disease and stroke, and lists the warning signs of heart attack and stroke. Print it directly from the Web to give to your patients.
[Heart Disease, Stroke, and Outdoor Air Pollution](#) (PDF, 2 pp. 439KB)
2. This fact sheet is designed to answer questions about how people with asthma can be affected by air pollution and how they can use the Air Quality Index to reduce their exposure. Print it directly from the Web to give to your patients.
[Asthma and Outdoor Air Pollution factsheet](#) (PDF, 2 pp., 502KB)
3. This colorful poster is designed for use in patient waiting areas or exam rooms. Use this poster to educate your patients about the health effects of outdoor air pollution on the respiratory and cardiovascular systems.
[Effects of Common Air Pollutants Medical Poster](#) (PDF 1 p., 8MB)
[18"x24" Printable Version](#) (PDF, 1 p., 800KB)
4. Este colorido cartel está diseñado para usarse en las salas de espera o las salas de exámenes médicos. Utilice este cartel para educar a sus pacientes sobre los efectos que produce la contaminación aérea externa en los sistemas respiratorios y cardiovasculares. La traducción al español fue provista por el Santa Barbara County Air Pollution Control District.
[Efectos de los contaminantes comunes del aire--cartel médico](#) (PDF, 1 p., 8MB)
[Versión para imprimir, 18" por 24"](#) (PDF, 1 p., 1.3MB)



Ozone and Your Patients' Health Training for Health Care Providers



[Contact Us](#) Search: All EPA This Area

You are here: [EPA Home](#) » [Air & Radiation](#) » [Air Quality Planning and Standards](#) » [Air Pollution Training Institute](#) » Ozone and Your Patients' Health

About this Course

During the summer months, millions of people in the United States are exposed to the ambient air pollutant ozone at levels that can cause uncomfortable but reversible respiratory symptoms as well as a number of more serious health effects. **Ozone and Your Patients' Health** is a short, evidence-based training course that:

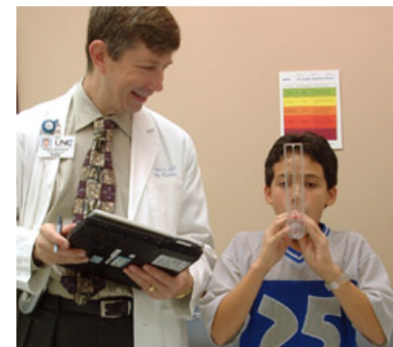
- Describes the physiological mechanisms responsible for the lung function changes and symptoms caused by exposure to ground-level ozone
- Describes the relationships observed between ground-level ozone and other adverse health effects
- Discusses in detail the effects of ozone exposure on patients with asthma
- Helps health care providers advise their patients about exposure to ozone
- Provides practical [Patient Education Tools](#) to help patients understand what triggers their symptoms and how to alleviate them

Ozone and Your Patients' Health is designed for family practice doctors, pediatricians, nurse practitioners, asthma educators, and other medical professionals who counsel patients about asthma, air pollution, or exercise. Patients and their families may also use this material to learn the science behind ozone's effect on respiration and how to manage their respiratory health using the Air Quality Index.

Course Objectives

Upon completion of this course, you will be able to:

1. Describe how ozone is formed and where it is found
2. Identify the effects that exposure to ozone has on the general population
3. List the different effects of ozone at varying exposure concentrations and durations
4. Identify the effects that ozone has on asthma patients



Clinical Scenarios

The **Clinical Scenarios** section of this course discusses the following scenario and others in detail.

A 12-year-old girl and her mother arrive at your office for an evaluation of the child's asthma. At soccer practice the girl experienced chest tightness and shortness of breath, and she woke up during the night wheezing. Yesterday was a Code Red air quality day for ozone. The mother asks, "Do you think ozone caused her wheezing? Should I

About this Course/
Home

What is Ozone?

Health Effects in the
General Population

Health Effects in
Patients with Asthma

Patient Exposure and
the Air Quality Index

Clinical Scenarios

Frequent Questions

Course Outline/ Key
Points

Review Questions

Patient Education
Tools

References & Figures

Glossary



Heart Disease, Stroke, & Outdoor Air Pollution



Heart Disease, Stroke, and Outdoor Air Pollution

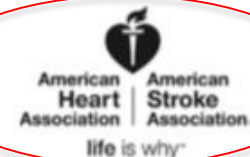
► Plan activities when and where pollution levels are lower.

- Avoid exercising near busy roads or industrial areas.
- When particle levels outdoors are unhealthy, delay your activity until the air is cleaner or move your activity indoors.

4 Get up-to-date information about your local air quality

Sometimes you can tell that the air is polluted— for example, on a smoggy or hazy day. But often you can't see the pollution. In many areas, you can find air quality forecasts and reports on local TV, radio, or in the

1



Heart Disease, Stroke, and Outdoor Air Pollution

2

1 Did you know that air pollution can

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.

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.

Know the warning signs of heart attack and stroke (see box below). If you feel symptoms, even if they go away, stop your activity and seek medical help immediately!

- Center for Disease Control and Prevention at: www.cdc.gov/heartdisease/

Know the warning signs of a heart attack:

- **Chest discomfort** — uncomfortable pressure, fullness, squeezing, or pain in the center of the chest that lasts more than a few minutes, or goes away and comes back.
- **Discomfort in other areas of the upper body** — pain or discomfort in one or both arms, the back, neck, jaw or stomach.
- **Shortness of breath** — often comes with or without chest discomfort.
- **Other signs** — may include breaking out in a cold sweat, nausea, or light-headedness.

Use FAST to remember the warning signs of a stroke:

- F** **FACE:** Ask the person to smile. Does one side of the face droop?
- A** **ARMS:** Ask the person to raise both arms. Does one arm drift downward?
- S** **SPEECH:** Ask the person to repeat a simple phrase. Is their speech slurred or strange?
- T** **TIME:** If you observe any of these signs, call 9-1-1 immediately.

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Effect of Common Air Pollutants

Poster Available in Spanish

Effects of Common Air Pollutants

RESPIRATORY EFFECTS



Symptoms:

- Cough
- Wheezing
- Phlegm
- Chest pain (angina)
- Chest tightness
- Shortness of breath

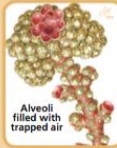
Increased sickness and premature death from:

- Asthma
- Bronchitis (acute or chronic)
- Emphysema
- Pneumonia

Development of new disease

- Chronic bronchitis
- Premature aging of the lungs

How Pollutants Cause Symptoms



Effects on Lung Function

- Narrowing of airways (bronchoconstriction)
- Decreased air flow

Airway Inflammation

- Influx of white blood cells
- Abnormal mucus production
- Fluid accumulation and swelling (edema)
- Death and shedding of cells that line airways



Increased Susceptibility to Respiratory Infection

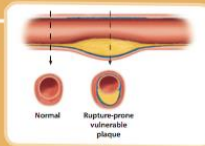


Normal

Lung with respiratory infection

Vascular Inflammation

- Increased risk of blood clot formation
- Narrowing of vessels (vasoconstriction)
- Increased risk of atherosclerotic plaque rupture



Normal

Rupture-prone vulnerable plaque

CARDIOVASCULAR EFFECTS



Symptoms:

- Chest tightness
- Chest pain (angina)
- Palpitations
- Shortness of breath
- Unusual fatigue

Increased sickness and premature death from:

- Coronary artery disease
- Abnormal heart rhythms
- Congestive heart failure
- Stroke

How Pollutants Cause Symptoms



Normal heart rhythm



Abnormal heart rhythm

Effects on Cardiovascular Function

- Low oxygenation of red blood cells
- Abnormal heart rhythms
- Altered autonomic nervous system control of the heart

Efectos de los Contaminantes Comunes del Aire

EFFECTOS RESPIRATORIOS



Síntomas

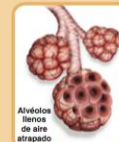
- Tos
- Respiración silbante
- Flema
- Falta de aire
- Opresión en el pecho

Aumento de enfermedades y muerte prematura causado por:

- Aasma
- Bronquitis (aguda o crónica)
- Enfisema
- Neumonía

Desarrollo de otras enfermedades

- Bronquitis crónica
- Envejecimiento prematuro de los pulmones



Inflamación de las vías respiratorias

- Afluencia de glóbulos blancos
- Producción anormal de mucosidad
- Acumulación de líquido e hinchazón (edema)
- Muerte y eliminación de las células que revisten las vías respiratorias



Mayor susceptibilidad a infección respiratoria



Normal

Pulmón con infección

EFFECTOS CARDIOVASCULARES



Síntomas:

- Opresión en el pecho
- Dolor de pecho (angina de pecho)
- Palpitaciones
- Falta de aire
- Fatiga inusual

Aumento de enfermedades y muerte prematura causado por:

- Enfermedad de las arterias coronarias
- Ritmos cardíacos anormales
- Insuficiencia cardíaca congestiva

Cómo los contaminantes pueden causar síntomas



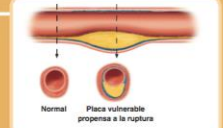
Ritmo cardíaco normal



Ritmo cardíaco anormal

Efectos en la función cardiovascular

- Baja oxigenación de los glóbulos rojos
- Ritmos cardíacos anormales
- Alteración de la actividad cardíaca controlada por el sistema nervioso autónomo



Normal

Placa vulnerable propensa a la ruptura

Inflamación vascular

- Mayor riesgo de formación de coágulos
- Estrechamiento de los vasos sanguíneos (vasoconstricción)
- Mayor riesgo de ruptura de la placa aterosclerótica

Reduce your risk by using the Air Quality Index (AQI) to plan outdoor activities – www.airnow.gov

AQI Levels of Health Concern	AQI Values	What Action Should People Take?
Good	0-50	Enjoy Activities
Moderate	51-100	People unusually sensitive to air pollution: Plan strenuous outside activities when air quality is better
Unhealthy for Sensitive Groups	101-150	Sensitive Groups: Cut back or reschedule strenuous outside activities Ozone: People with lung disease, children and older adults and people who are active outdoors Particulate Pollutants: People with heart or lung disease (including diabetes), older adults and children Carbon Monoxide: People with heart disease and possibly infants and fetuses Nitrogen Dioxide: People with lung disease, children and older adults Sulfur Dioxide: Active children and adults with asthma
Unhealthy	151-200	Everyone: Cut back or reschedule strenuous outside activities Sensitive groups: Avoid strenuous outside activities
Very Unhealthy	201-300	Everyone: Significantly cut back on outside physical activities Sensitive groups: Avoid all outside physical activities



Reduzca su riesgo, usando el Índice de Calidad del Aire (AQI por sus siglas en inglés) al planear actividades al aire libre – www.airnow.gov

Niveles de calidad del aire y su impacto en la salud	Valores del Índice	¿Qué medidas deben tomar las personas?
Bueno	0-50	Disfruten sus actividades.
Moderado	51-100	Personas particularmente sensibles a la contaminación del aire: Planeen actividades vigorosas al aire libre cuando mejore la calidad del aire.
Dañino para la salud de los grupos sensibles	101-150	Grupos sensibles: Reduzcan o pospongan actividades vigorosas al aire libre cuando se detecte la presencia de los siguientes contaminantes: Contaminación por partículas: Personas con enfermedades cardíacas o pulmonares (incluyendo a los diabéticos), adultos de edad avanzada y niños. Ozono: Niños y atletas activos y personas con enfermedades pulmonares. Dióxido de azufre: Niños activos y adultos con asma. Monóxido de carbono: Personas con enfermedades cardíacas y problemas, falta e infantes.
Dañino para la salud	151-200	Todos: Reduzcan o pospongan las actividades vigorosas al aire libre. Grupos sensibles: Eviten las actividades vigorosas al aire libre.
Muy dañino para la salud	201-300	Todos: Reduzcan considerablemente las actividades físicas al aire libre. Grupos sensibles: Eviten todas las actividades físicas al aire libre.

La versión en español fue realizada con la ayuda del Santa Barbara County Air Pollution Control District.

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- Heart disease & stroke impose a substantial social and economic burden to the U.S.
- Ambient air pollution contributes to this burden
- The burden will grow as our population ages
- Aged individuals and those with prevalent heart and lung disease are more susceptible to the adverse health effects of ambient air pollution
- EPA's *Healthy Heart* program supports the goals of the Million Hearts[®] Initiative to decrease heart attacks and strokes by providing information and tools to reduce exposure to air pollutants and possibly lower risk of heart attacks and strokes.



For More Information Visit



- www.epa.gov/healthyheart
 - EPA Healthy Heart
- www.airnow.gov
 - EPA AirNow
- www.millionhearts.hhs.gov
 - CDC Million Hearts Initiative
- www.cdc.gov/heartdisease
 - CDC Heart disease information
- www.cdc.gov/stroke
 - CDC Stroke information
- www.heart.org
 - American Heart Association
- www.epa.gov/benmap
 - BenMap

Contact information: Wayne Cascio, MD
email: cascio.wayne@epa.gov



Questions?