



Air Pollution Information in Your Market

What's available and
why you need it

American Lung Association

April 3, 2013



Today, we'll cover:

- What air quality information exists for your market
- How polluted air threatens health
- Where to find quick information about air trends
- Where pollution comes from—and how we're working to get rid of it

Thank you for the opportunity today.

Janice E. Nolen
Assistant Vice President,
National Policy
Washington, DC



A black and white photograph showing two young women in the foreground. The woman on the left is wearing a dark, sleeveless top and has her hand pressed against her face, eyes closed. The woman on the right is wearing a light-colored, patterned top and has both hands covering her face. In the background, a street scene is visible with trees and a building, suggesting an urban environment. The overall tone is somber and evocative.

Historical Overview of Clean Air

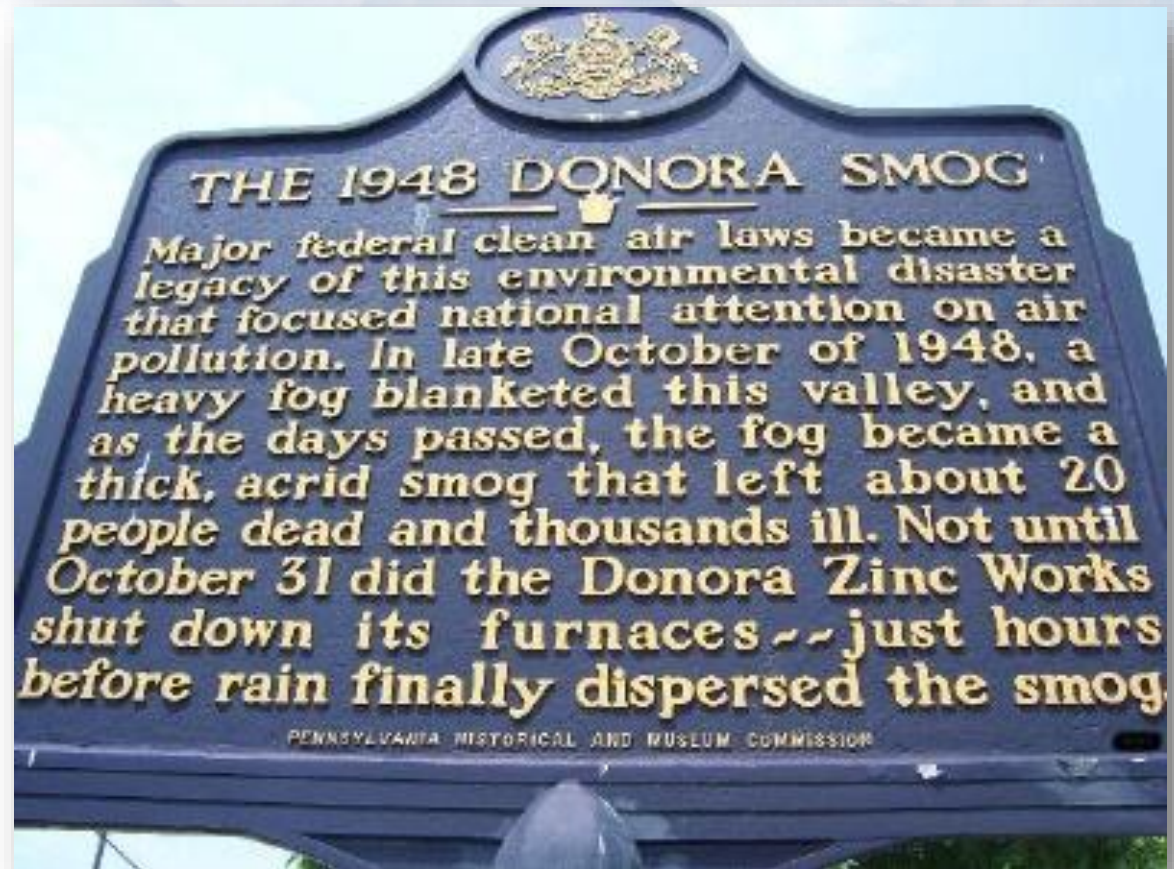
Landmarks in Air Pollution



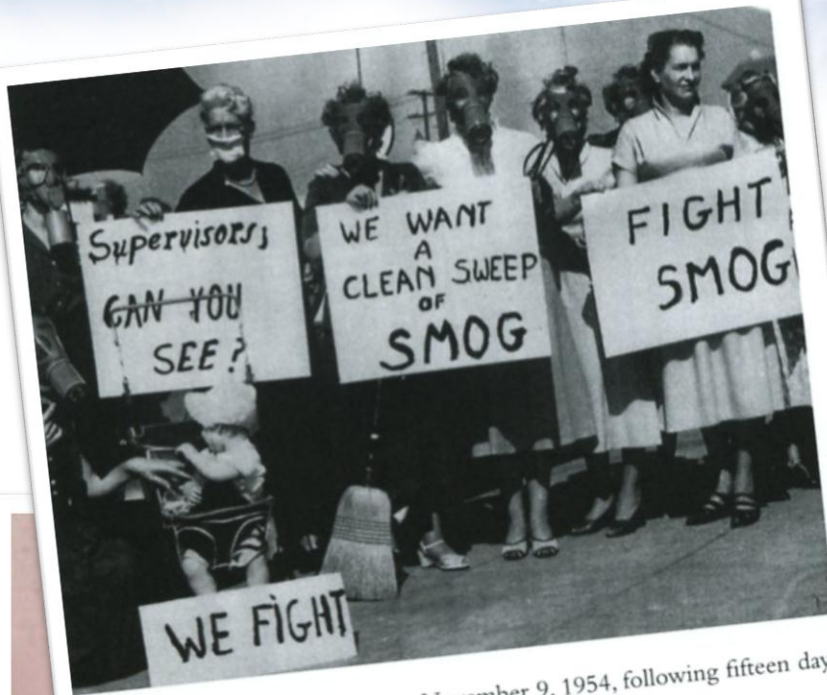
In many cities, pollution became the sign of economic growth.

Mid-morning in Pittsburgh, 1947 from a Post-Gazette photo of Liberty Tunnel as it frames the city.

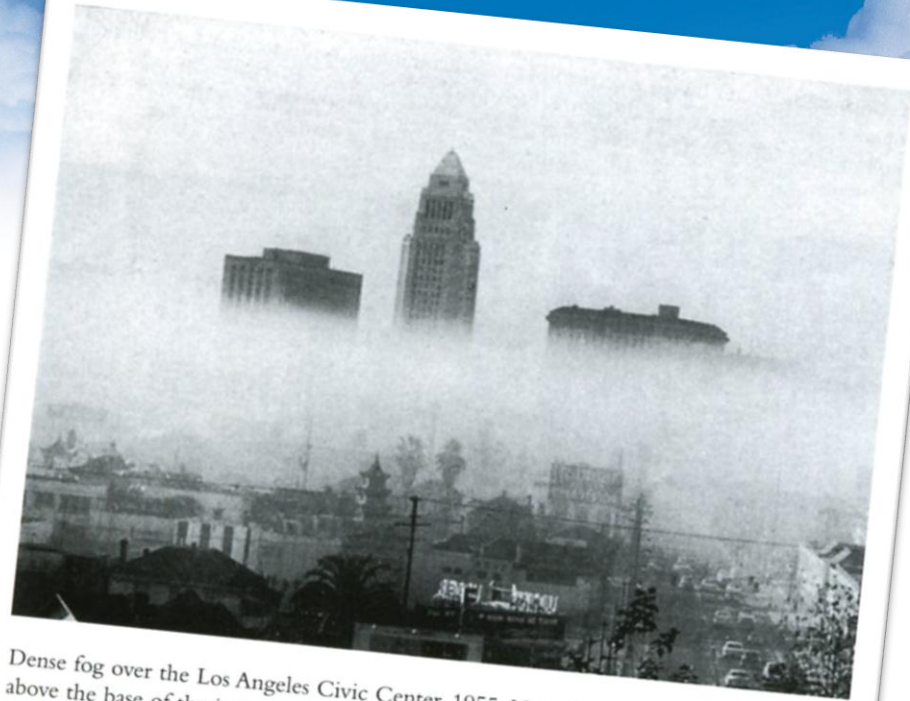
Cleaning up air pollution started after disasters over 50 years ago.



Landmarks in Air Pollution



Protests at Pasadena City Hall on November 9, 1954, following fifteen days of smog in October.



Dense fog over the Los Angeles Civic Center, 1955. Note that the buildings project above the base of the inversion layer, while the smog remains below.

Los Angeles, 1950s

Landmarks in Air Pollution

New York City Thanksgiving, 1966



Credit: Neal Boenzi/NYT Pictures



1966: New York City buried under a sea of smog.

Landmarks in Air Pollution



Birmingham, Alabama 1972

Landmarks in Air Pollution



Harbor at Tacoma, Washington
August 1972

Smog over Boston

Looking
north from
Columbia
Point Traffic
Circle
March, 1973





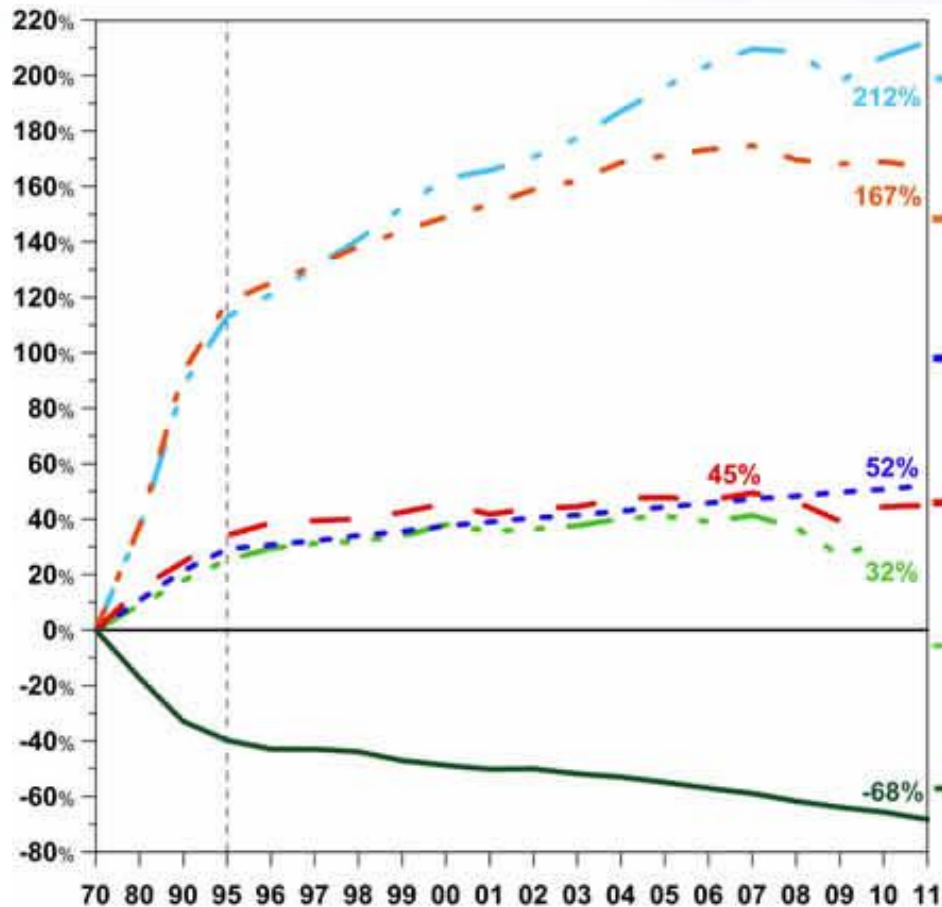
• **Los Angeles,
September, 1973**

New York City

1973—3 years after
modern Clean Air
Act adopted



Success since 1970



Gross Domestic Product



Vehicle Miles Traveled



Population



Energy Consumption



CO₂ Emissions



Aggregate Emissions
(Six Common Pollutants)

New reasons to be concerned



Mar 09, 2011

Wyoming's smog exceeds Los Angeles' due to gas drilling

Comment

25

f Recommend

2k

Tweet

106



By Wendy Koch, USA
TODAY

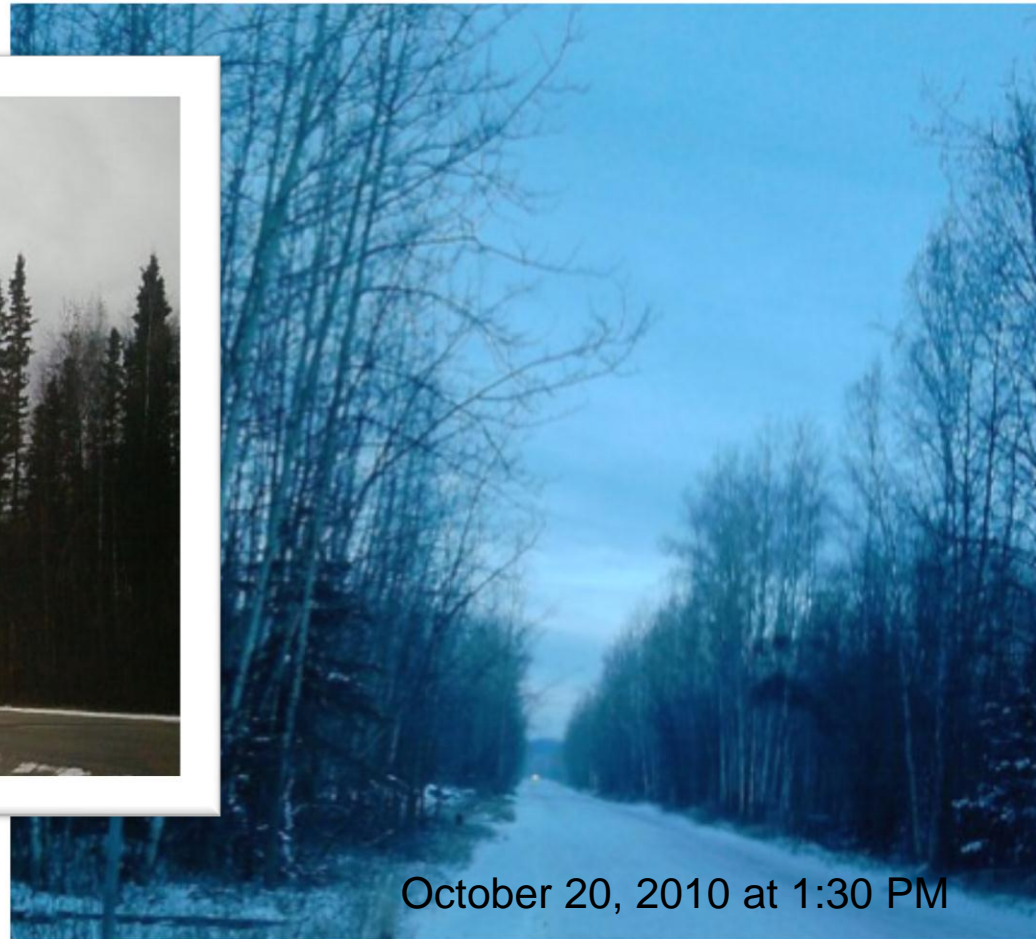
Air pollution remains a problem

Fairbanks, Alaska—haze from wood-burning

November 3, 2010 at 11 AM



October 20, 2010 at 1:30 PM





In 2008-2010

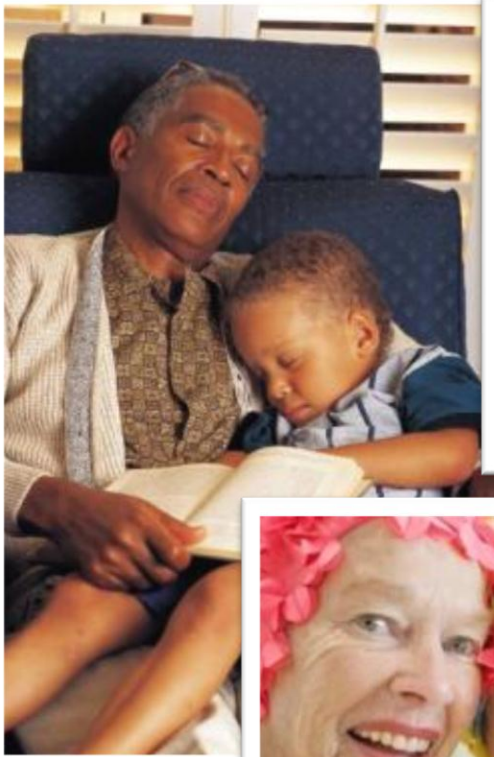
4 out of 10 people
in the U.S.A. lived in counties with an
F for air quality



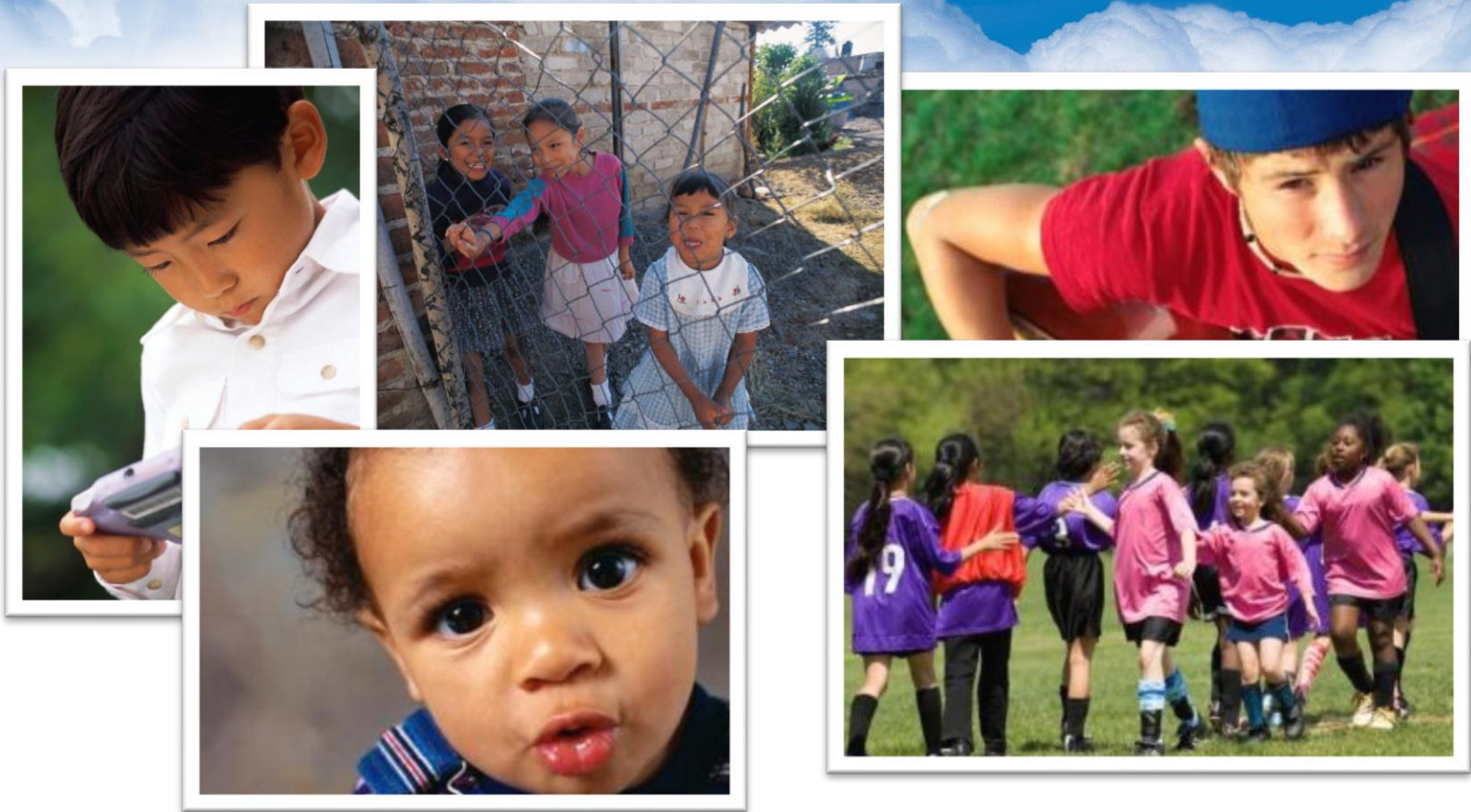
AMERICAN LUNG ASSOCIATION.
Fighting for Air

People at risk

Someone in every family faces higher risk from air pollution



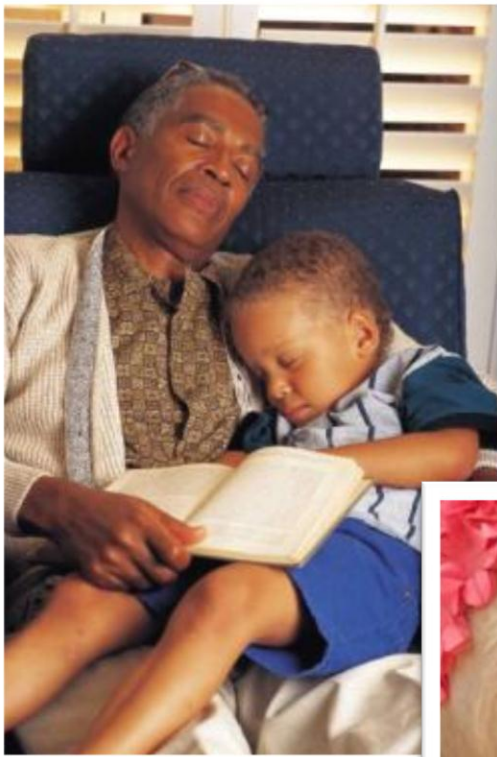
Children, Teens face higher risk



Children, teens have growing lungs, spend more time outdoors, inhale more air per pound

Older Adults face higher risk

Aging brings a gradual decline in the body's systems that makes us more vulnerable.



Chronic diseases mean higher risk

Having
asthma
or other lung diseases,
cardiovascular
disease or
diabetes
puts you at
higher risk.

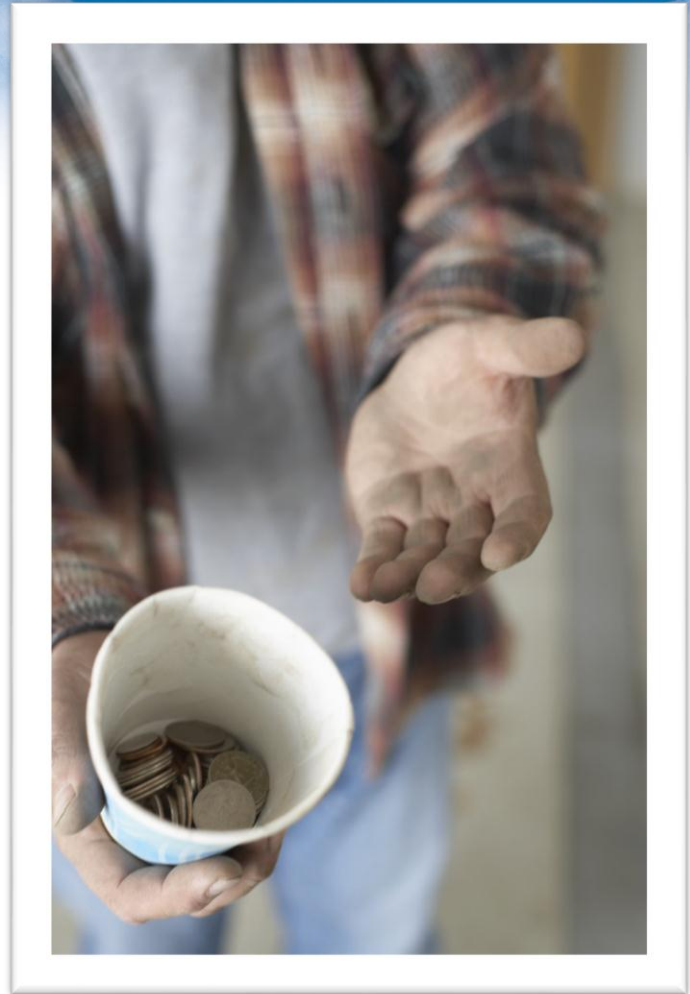


Healthy adults face higher risk

Working or exercising outdoors increases exposure, especially near highways



Poorer people often live closer to sources of pollution, may have higher incidence of disease, and less access to care.

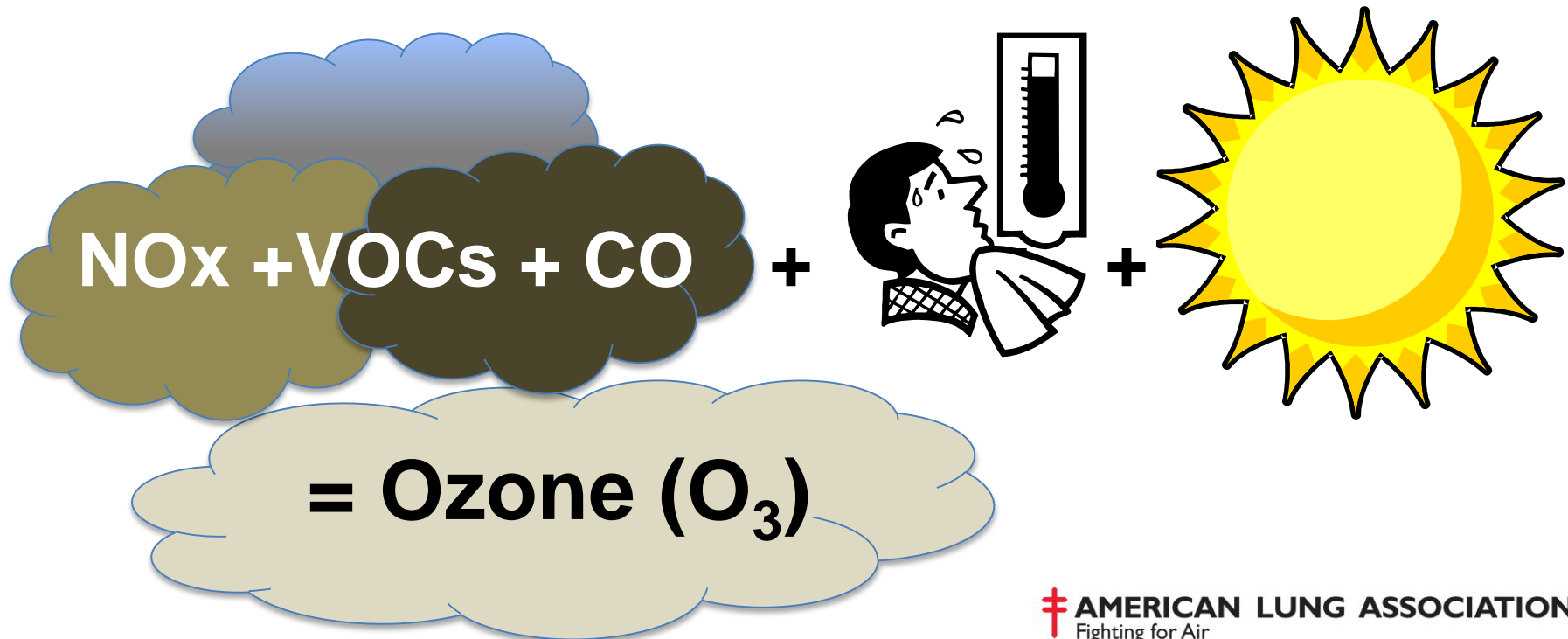




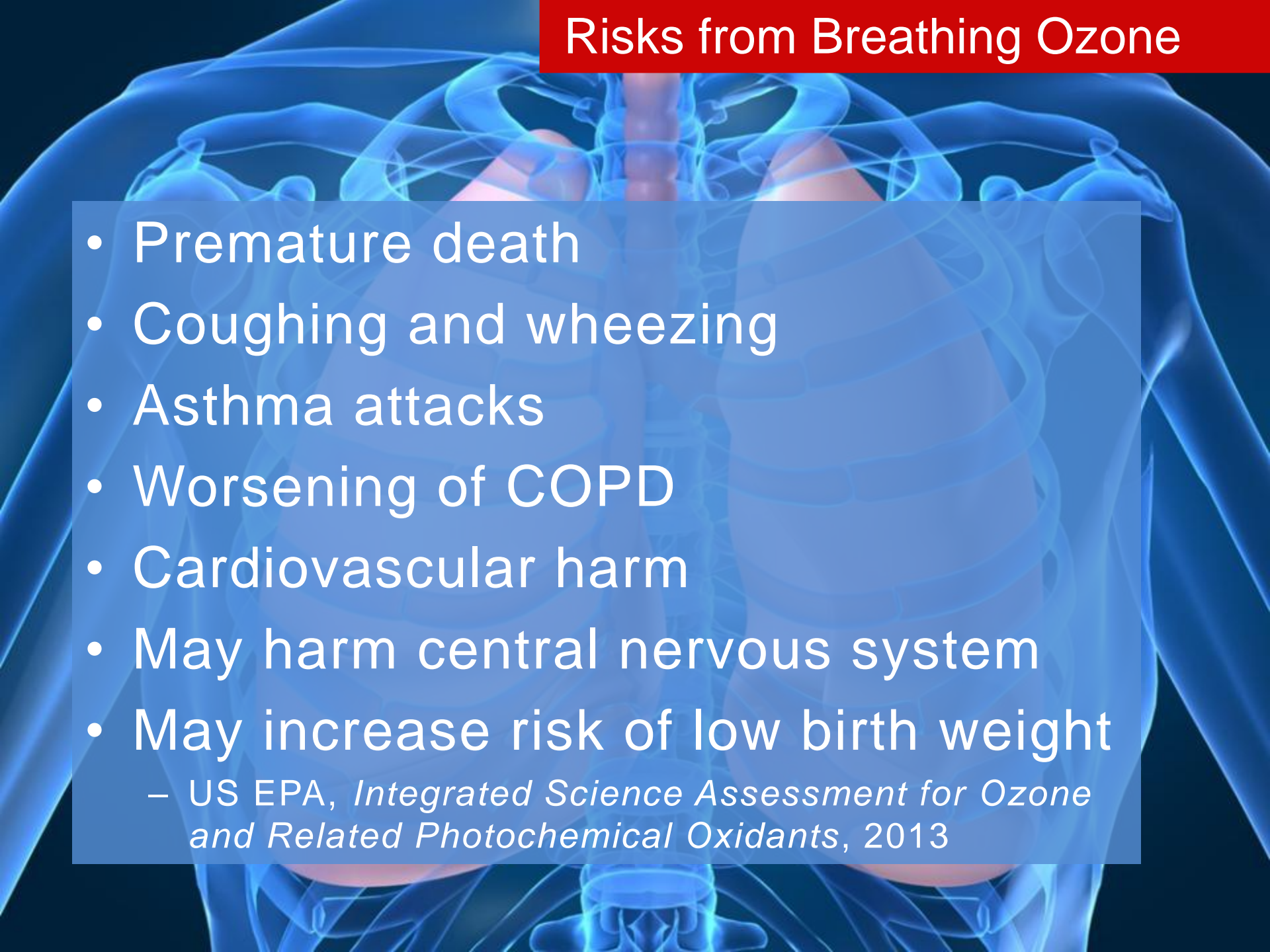
Air Pollutants and their Health Effects

What is ozone?

- Gas, sometimes called smog
- Created in the atmosphere

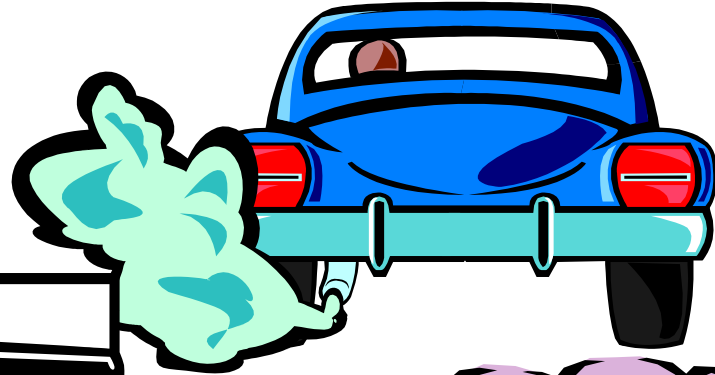


Risks from Breathing Ozone

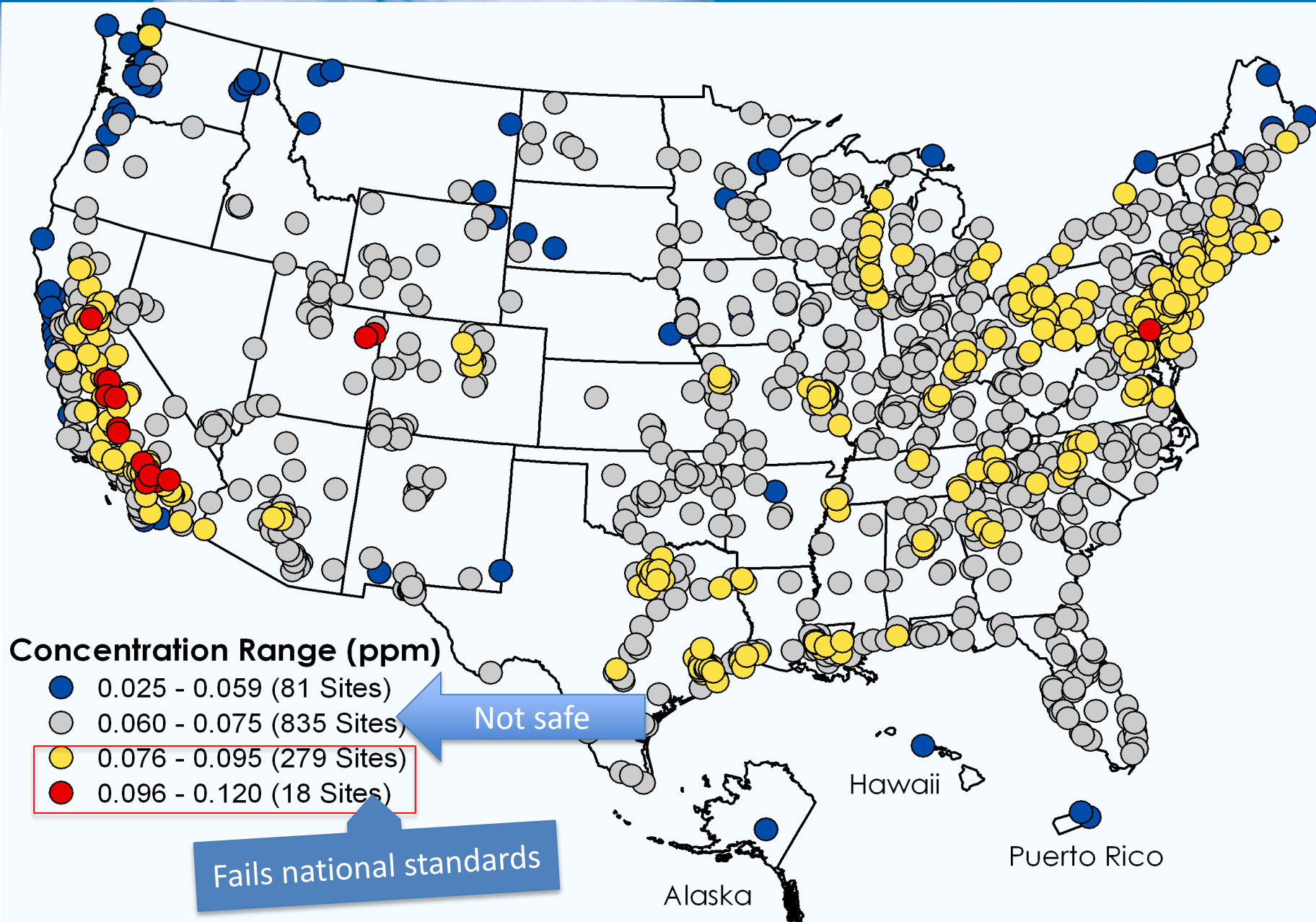
- 
- Premature death
 - Coughing and wheezing
 - Asthma attacks
 - Worsening of COPD
 - Cardiovascular harm
 - May harm central nervous system
 - May increase risk of low birth weight
 - US EPA, *Integrated Science Assessment for Ozone and Related Photochemical Oxidants*, 2013

Ozone pollution

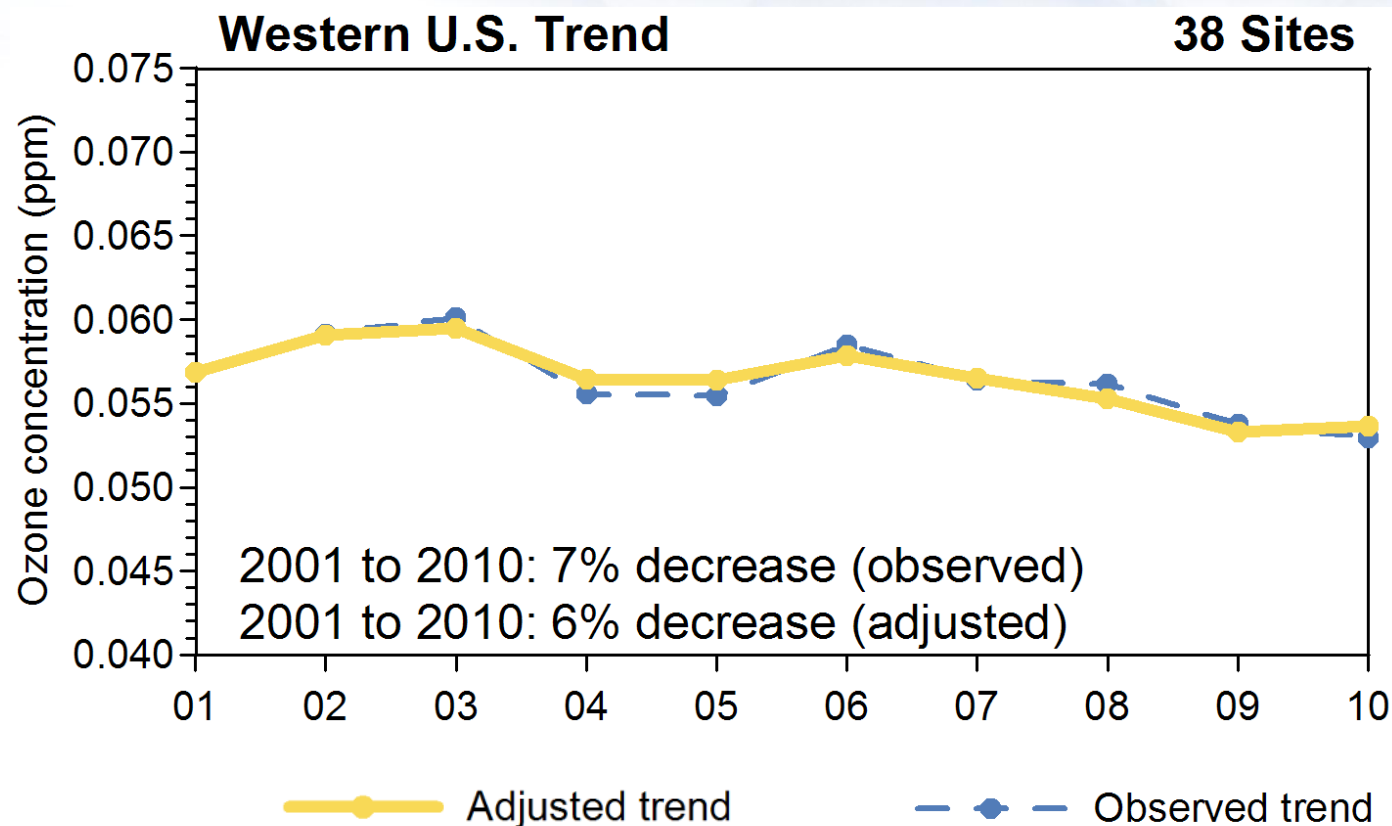
Comes from many sources, including—



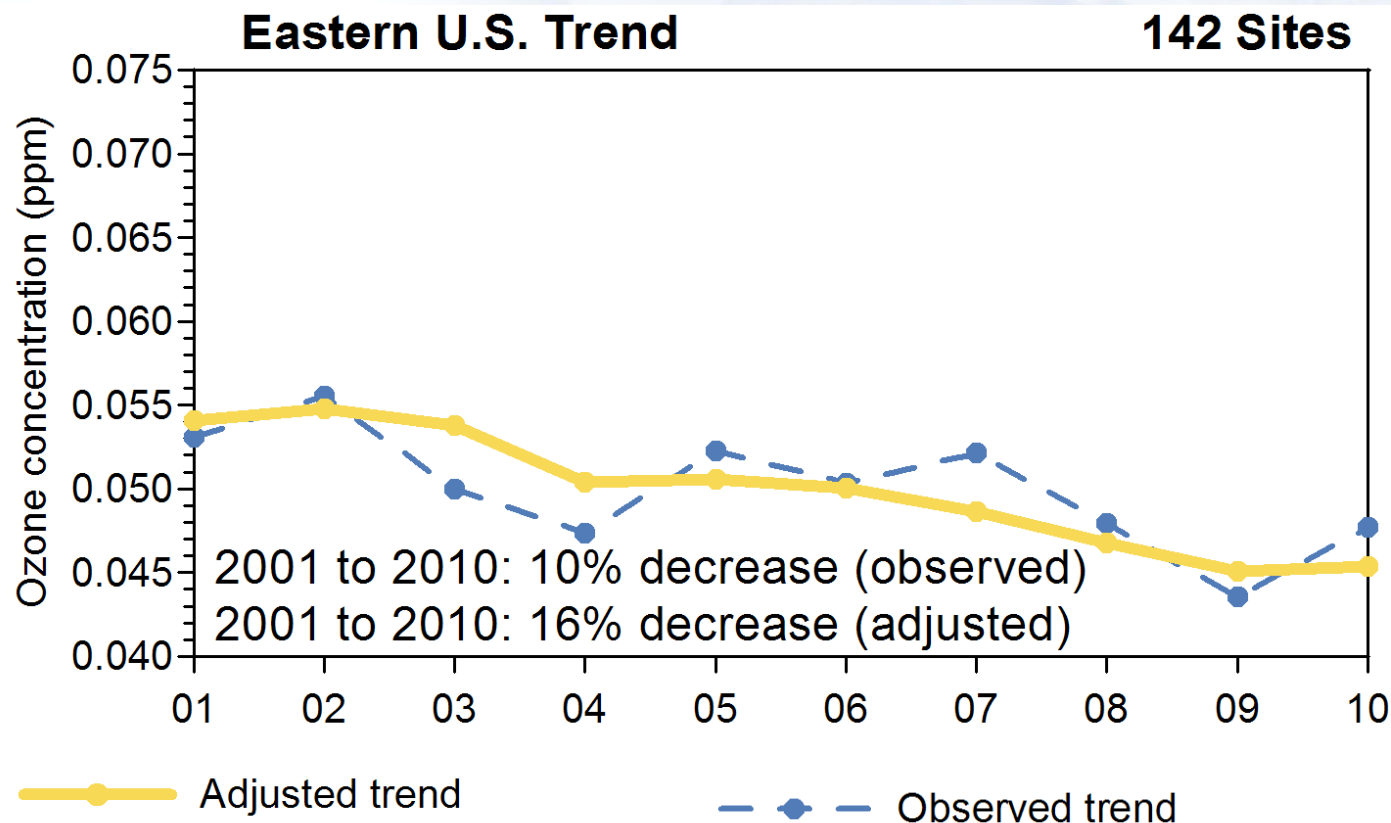
Ozone concentrations, 2010



Weather influences ozone



Weather influences ozone



Particles are microscopic

Solids and aerosols bypass the body's defenses to lodge in lungs.

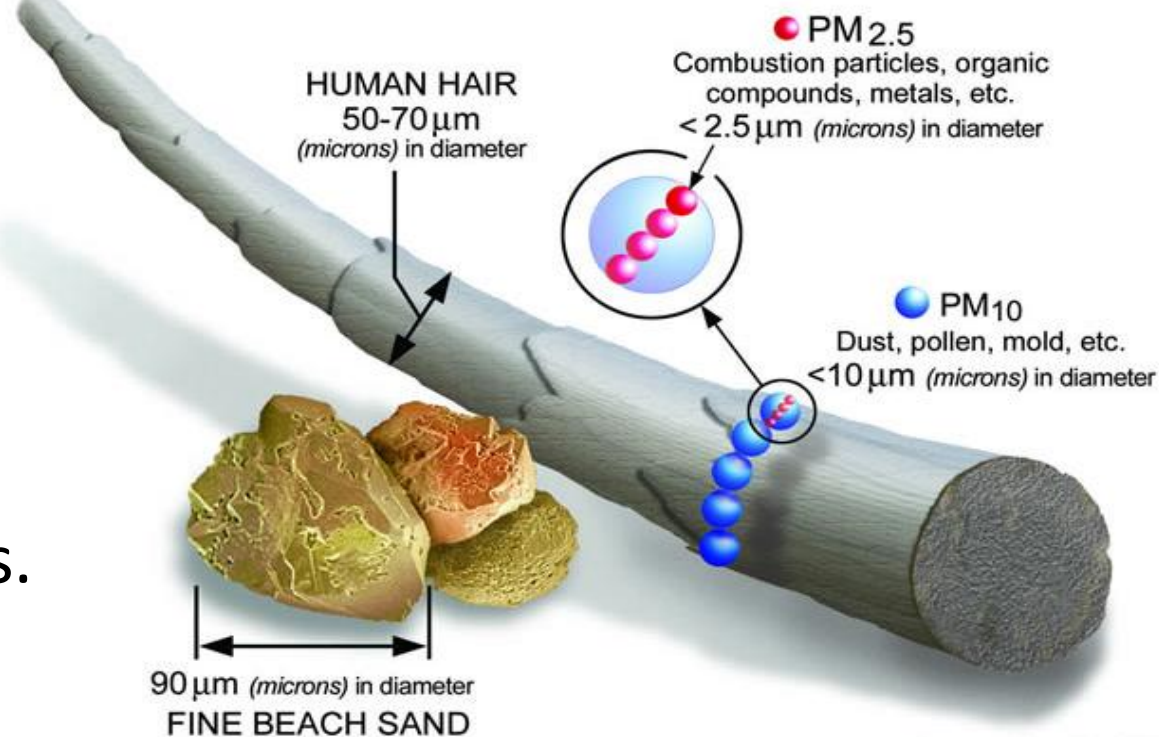
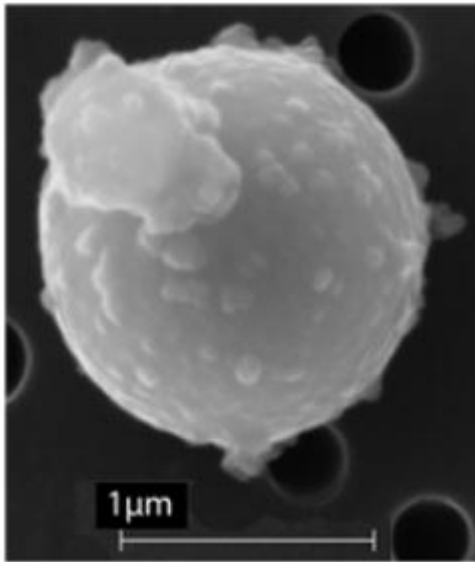
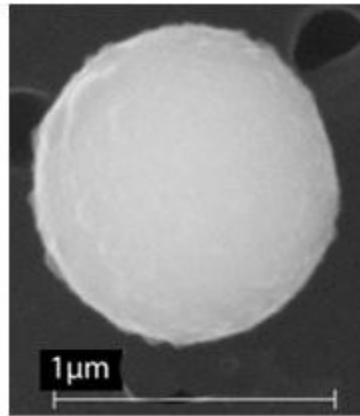


Image courtesy of the U.S. EPA

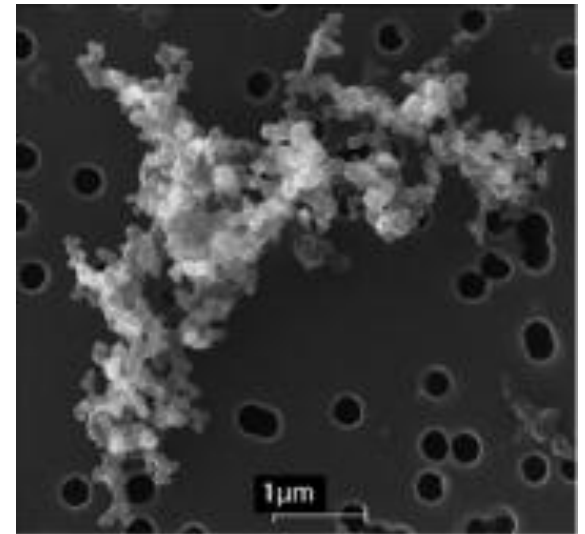
Fine particles— Human origin



Aluminum silicate
fly ash from a
coal-fired power
plant
-EPA, 2009

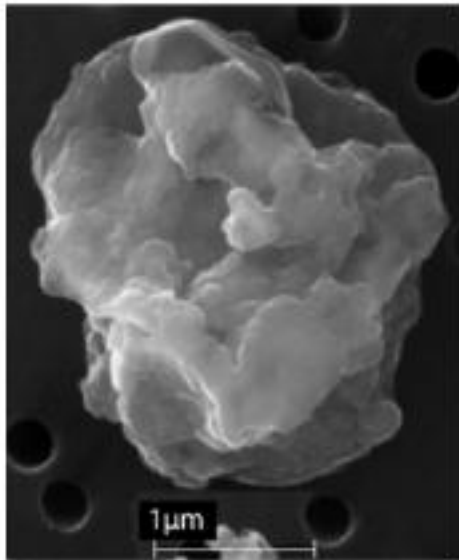


Iron oxide from a
steel manufacturing
plant

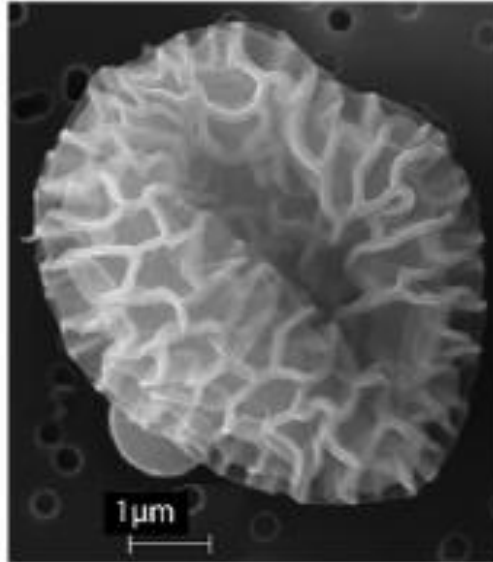


Carbon soot from a
diesel engine—has
lots of tiny particles

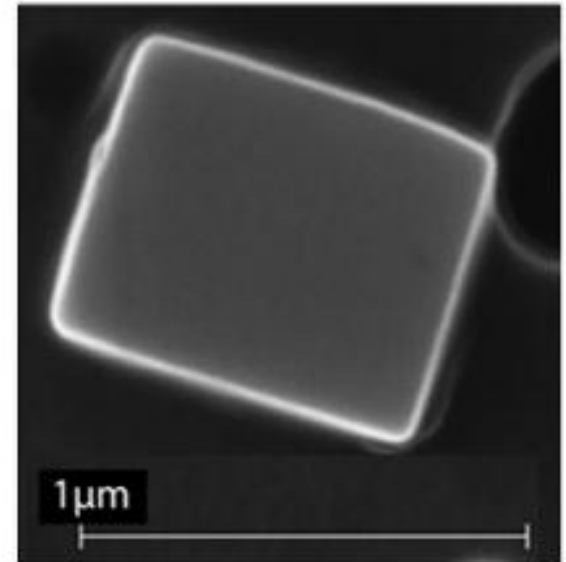
Naturally-occurring particles



Aluminum silicate
particle, probably
crystal

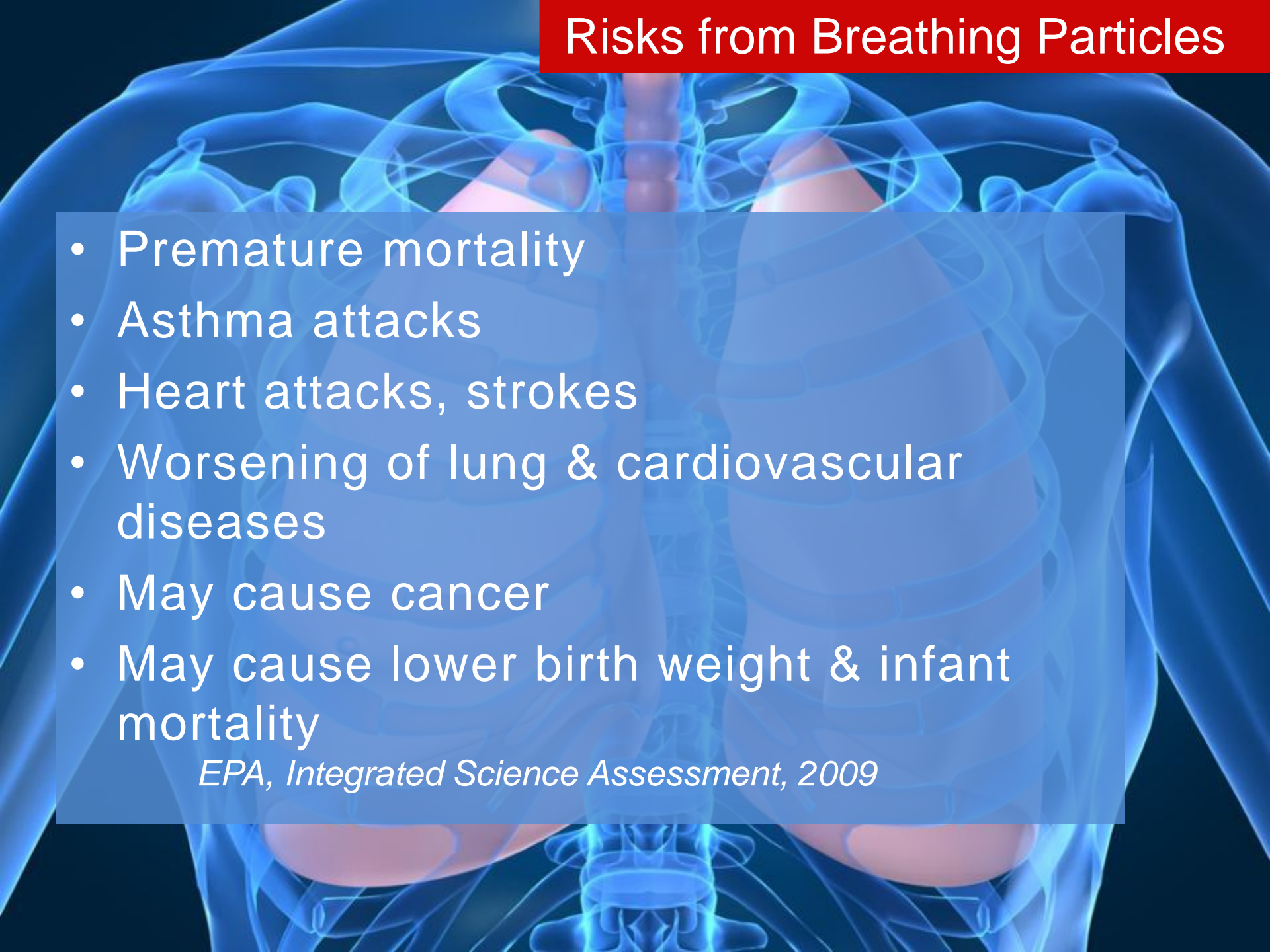


Pollen particle,
partially collapsed



Salt

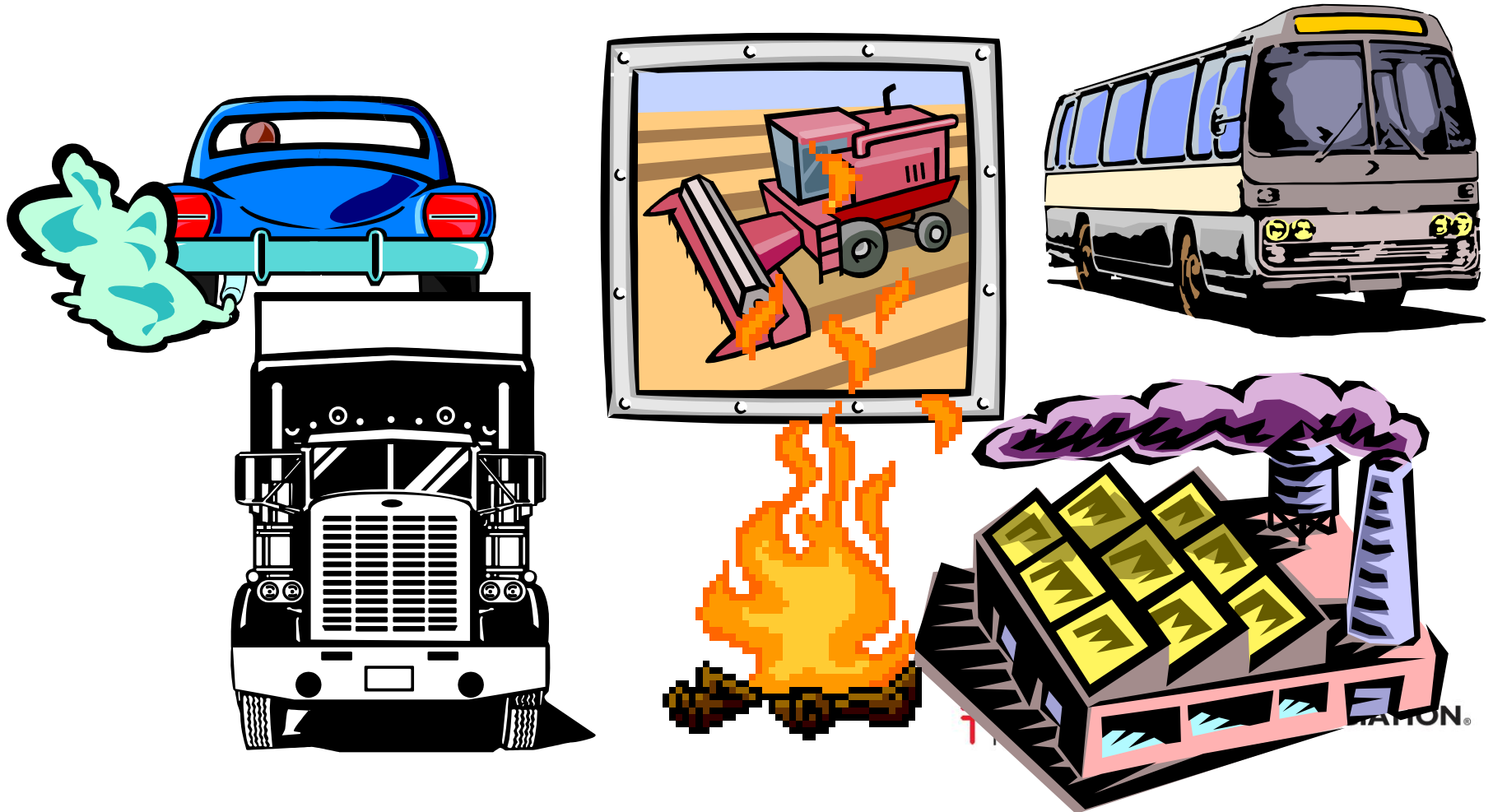
Risks from Breathing Particles

- 
- Premature mortality
 - Asthma attacks
 - Heart attacks, strokes
 - Worsening of lung & cardiovascular diseases
 - May cause cancer
 - May cause lower birth weight & infant mortality

EPA, Integrated Science Assessment, 2009

Particle Pollution

Comes from many sources, including—



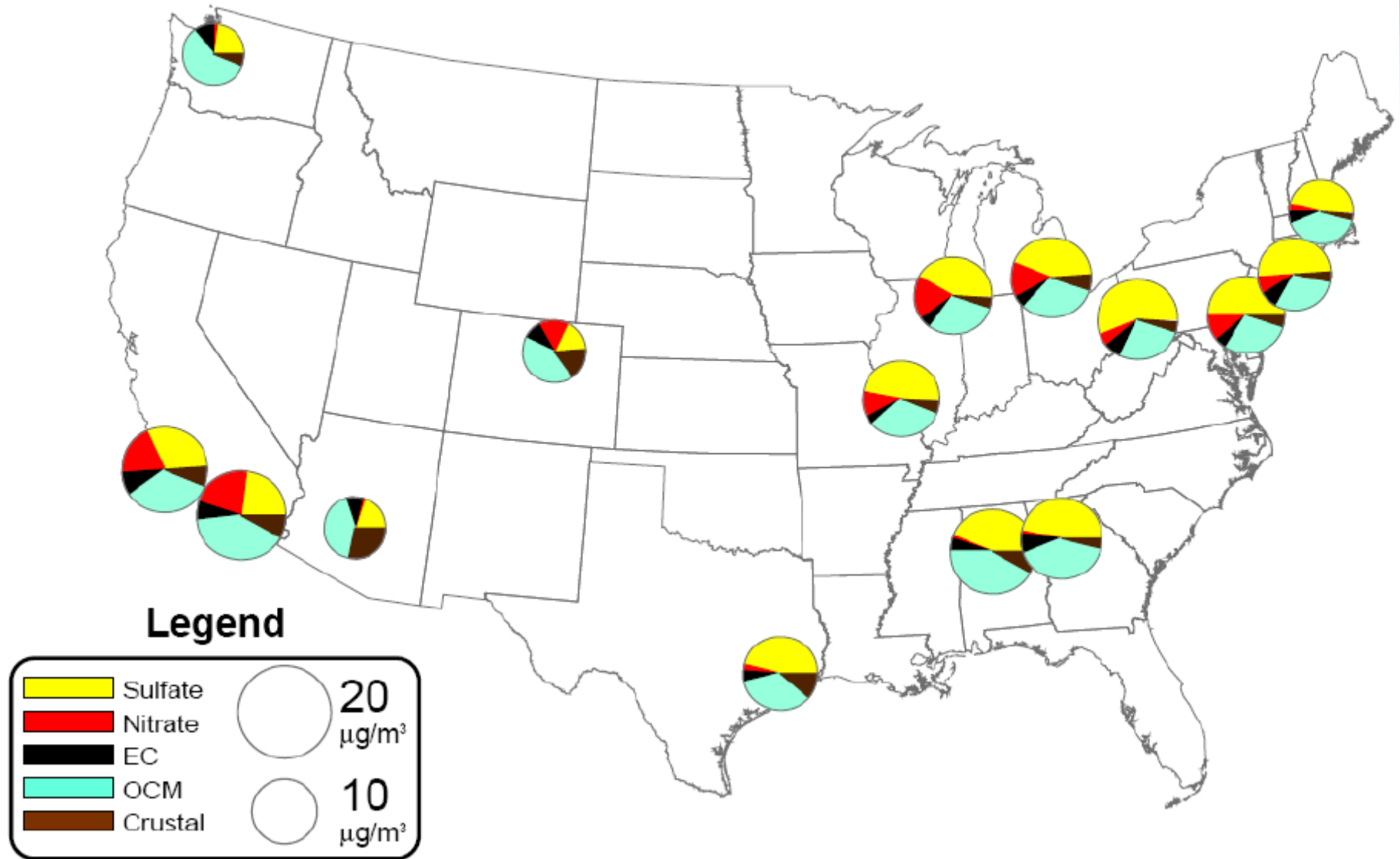
Natural pollution can be deadly, too



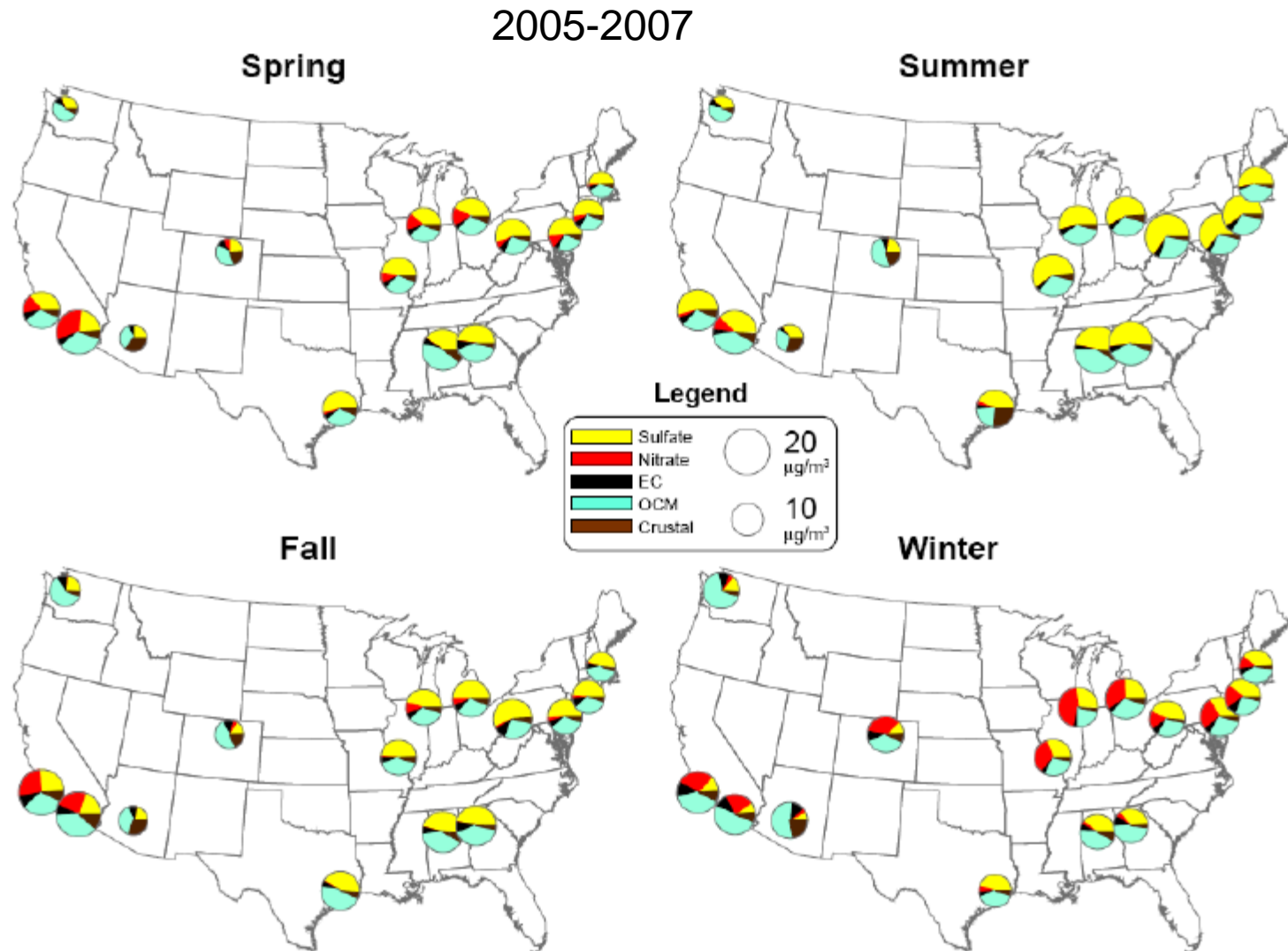
Massive dust
storm hit
Phoenix
July 7, 2011

<http://www.wrh.noaa.gov/psr/pns/2011/July/DustStorm.php>

Sources, composition vary

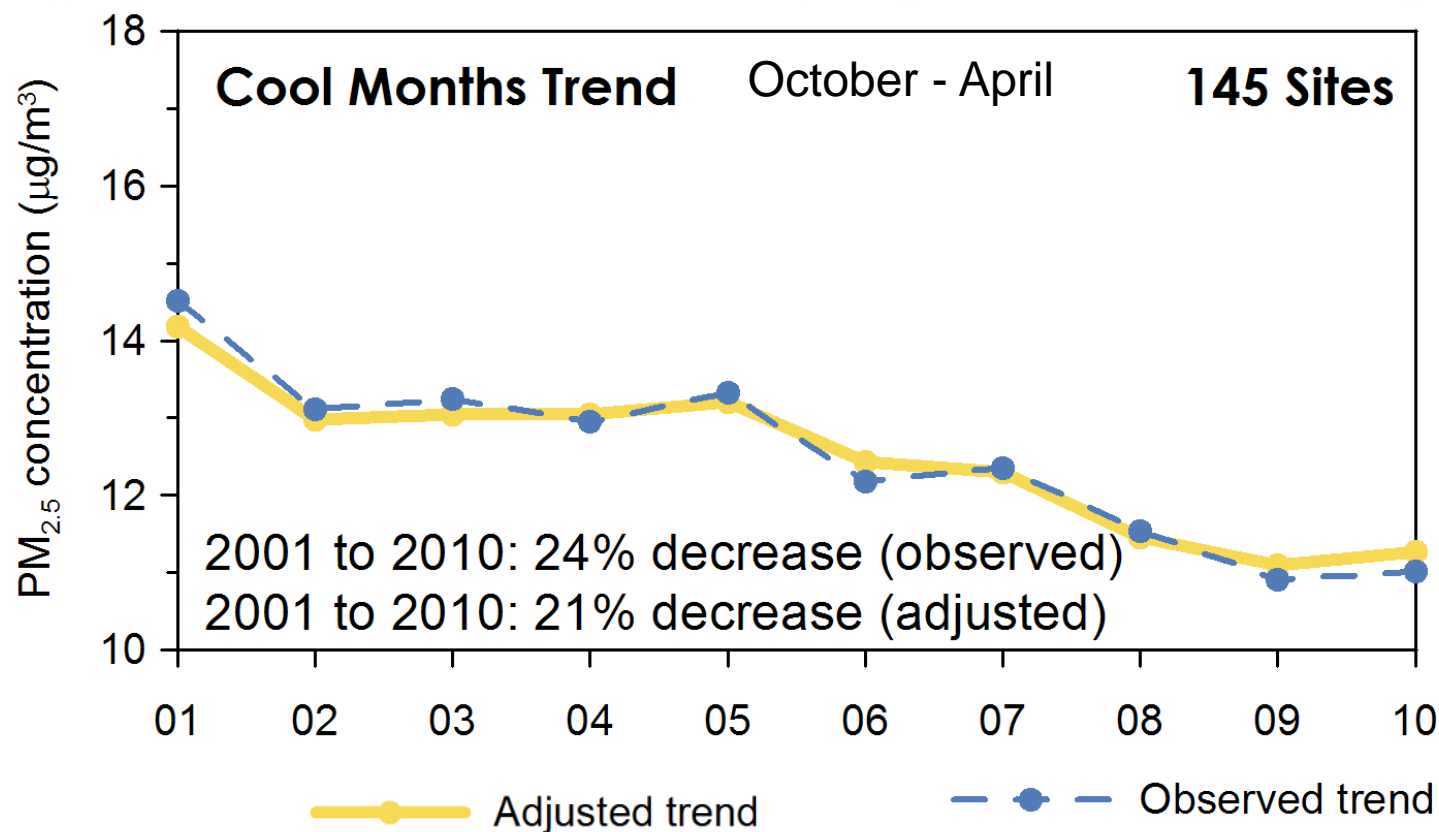


Variations by season, region

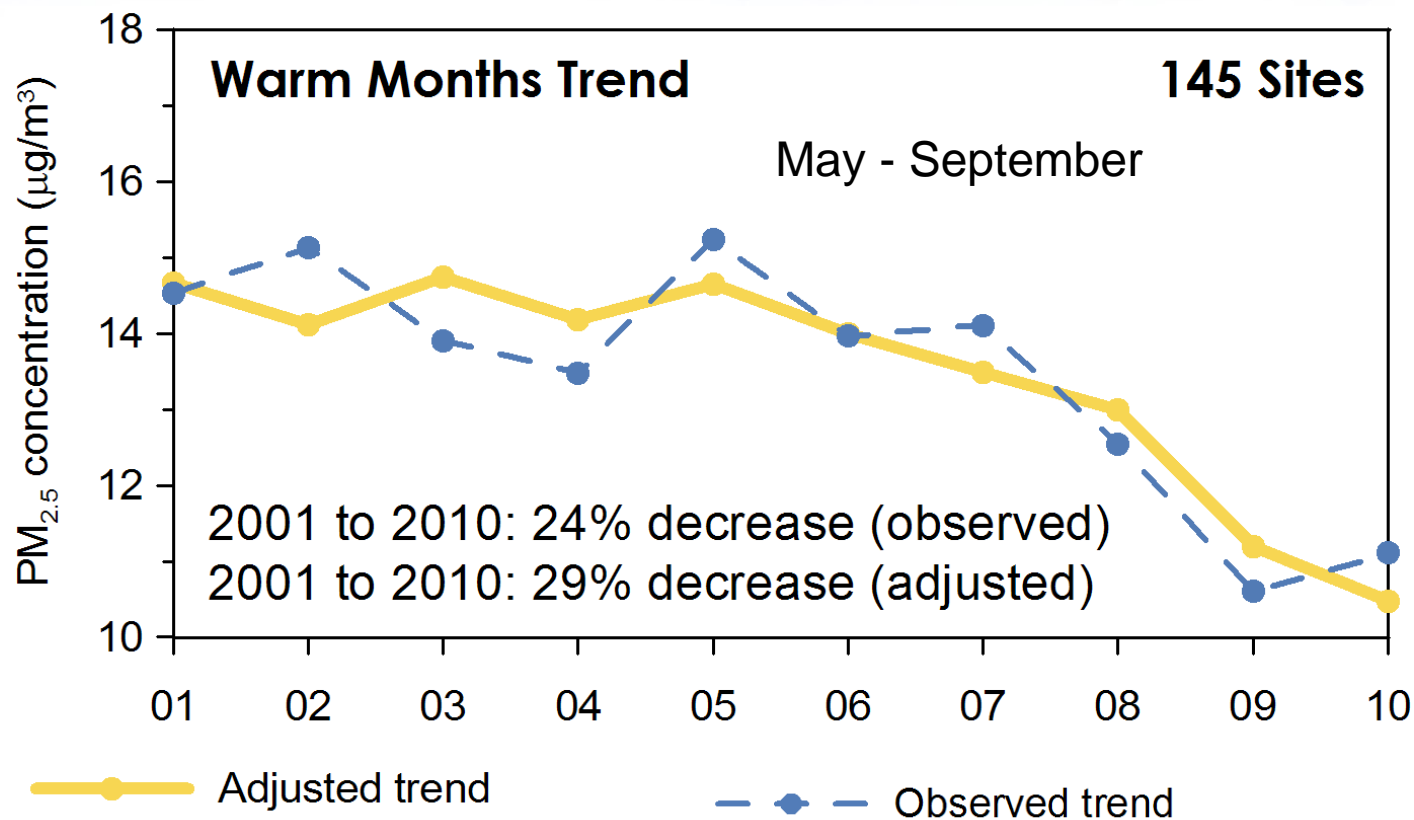


-EPA, 2009

Weather influences particles



Weather influences particles



Endorsed by:



Deciphering the Air Quality Index

Good

Moderate

Unhealthy
for Sensitive
Groups

Unhealthy

Very
Unhealthy

Hazardous

Air Quality Index Colors

Green = Good

Range=
0 – 50

Little or no risks
expected

Yellow = Moderate

Range
51-100

Unusually Sensitive people
should consider limiting
prolonged outdoor exertion*

* American Lung Association
includes more people than
“unusually sensitive”

Orange = Unhealthy for Sensitive Groups

Ranges
101 - 150

Active children, teens, and adults, and people with chronic diseases (lung, heart & diabetes), should limit prolonged outdoor exertion*

*Diabetes added. Healthy adults may risk health as well.

**Washington, DC
on an orange
day for particle
pollution.**



Red = Unhealthy

Range =
151 - 200

Active children and adults, people with chronic lung & heart disease & diabetes should avoid prolonged outdoor activities. Everyone should limit outdoor exertion.

Purple = Very Unhealthy

Range =
201-300

Avoid all outdoor exertion, especially children, seniors, people with chronic lung, heart diseases or diabetics. All others limit.

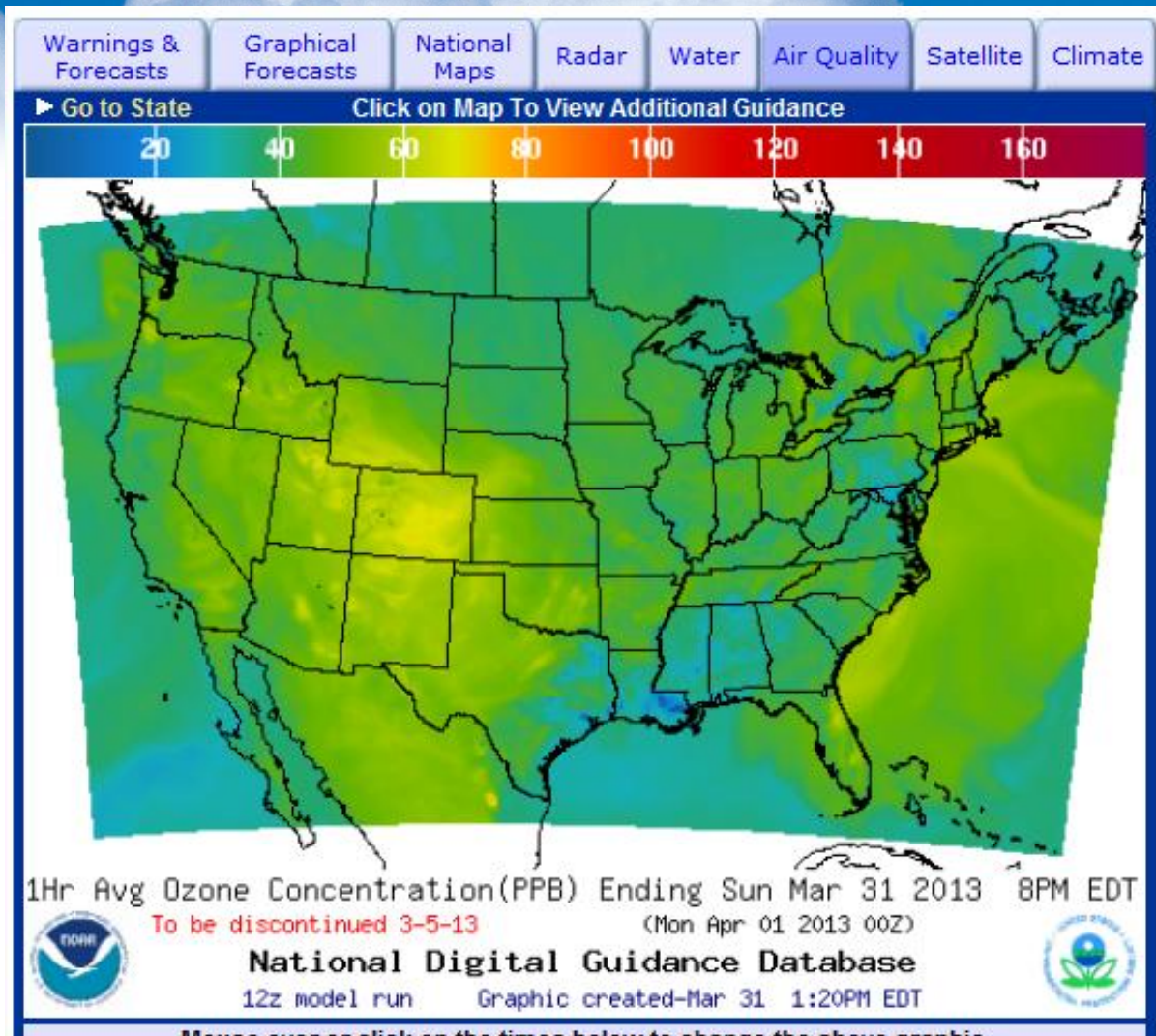
Maroon = Hazardous

Range =
300 – 500

Emergency conditions.
Entire population is
affected.

Finding Air Quality Forecasts online

- <http://airquality.weather.gov/> (NOAA)
- www.airnow.gov (Partnership-Feds, states, locals, tribes, international, media)
- www.enviroflash.info (EPA)



AQI Animation

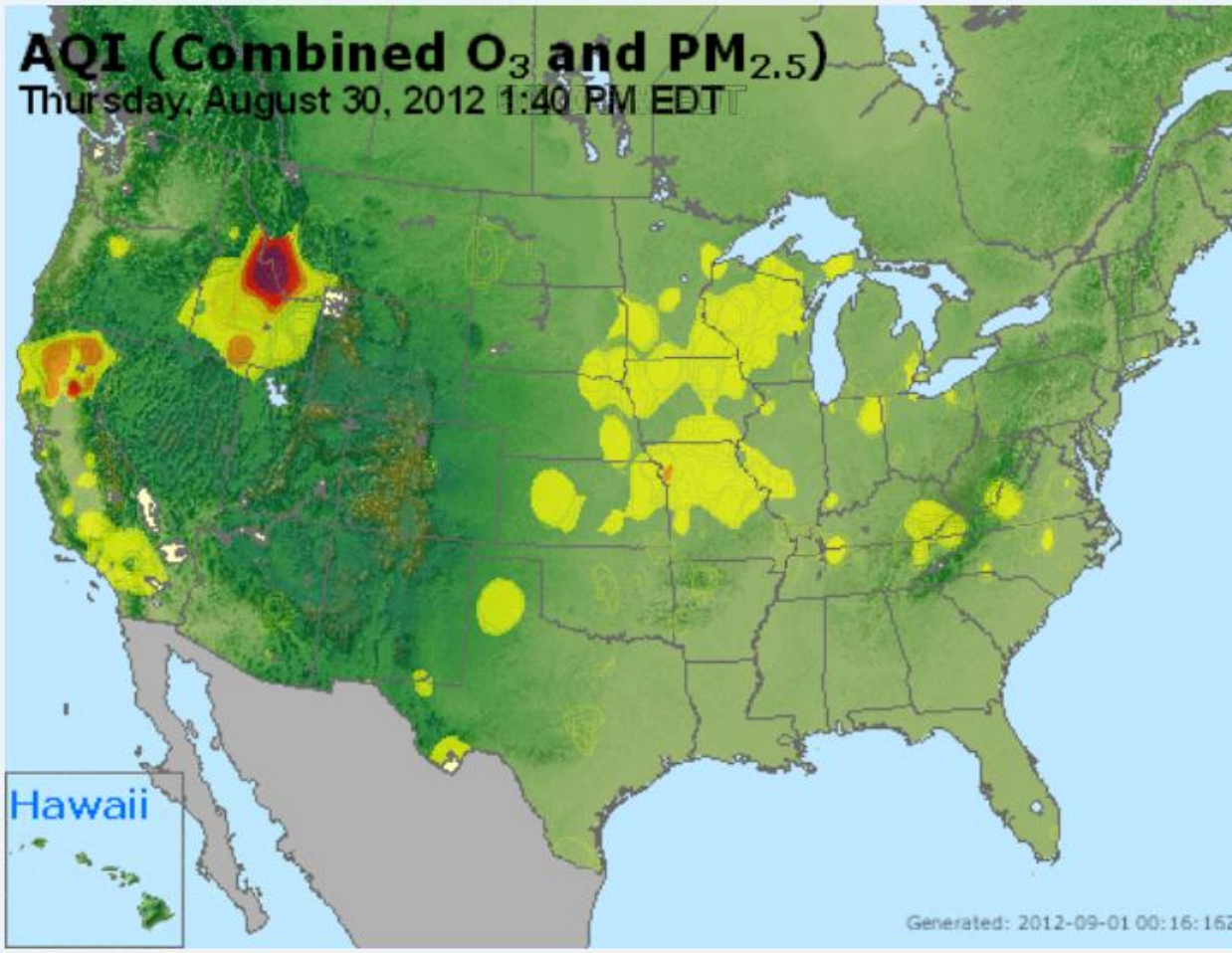
AQI Peak

Ozone Peak

Particles Peak

AQI (Combined O₃ and PM_{2.5})

Thursday, August 30, 2012 1:40 PM EDT



Good

Moderate

USG

Unhealthy

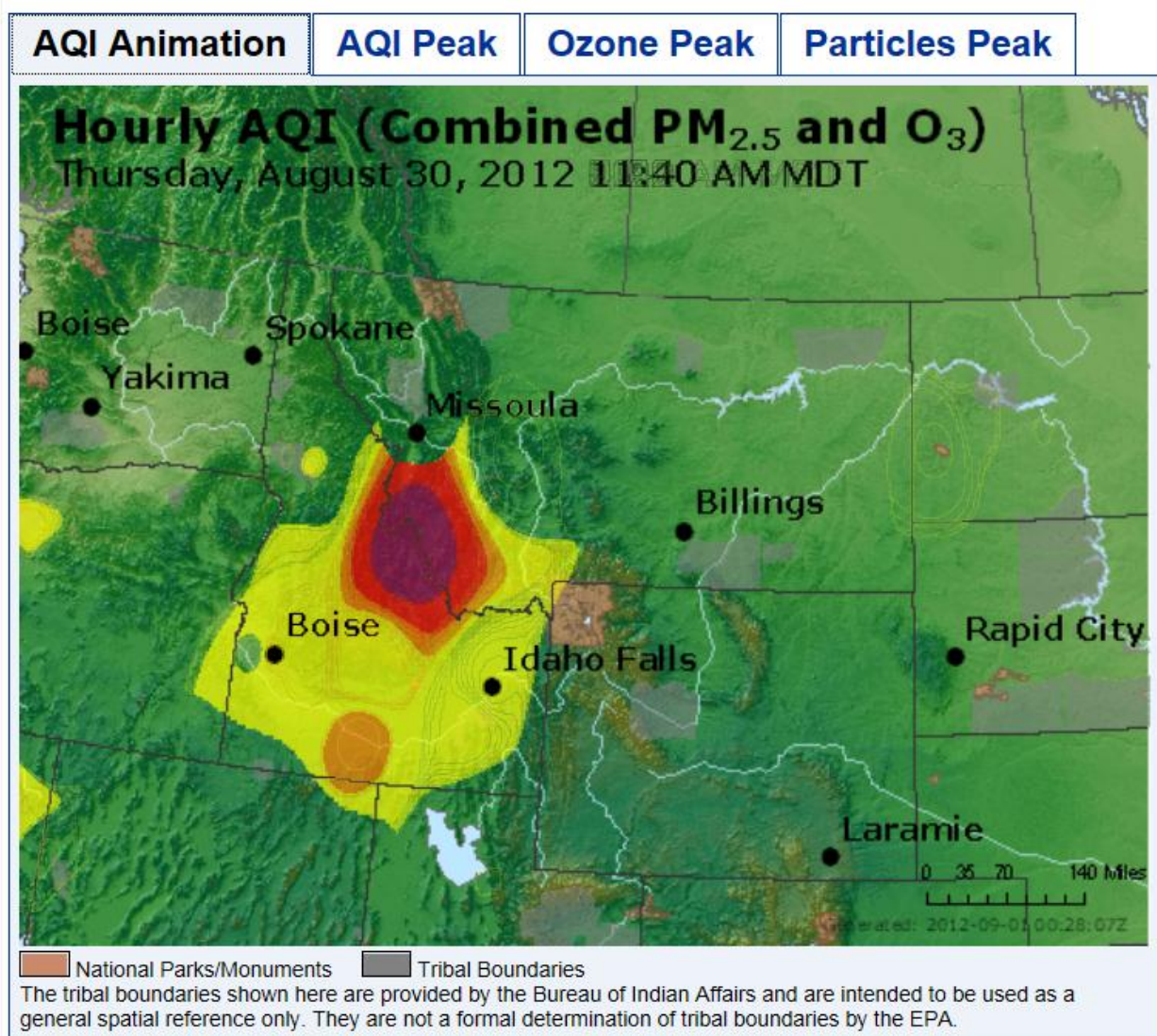
Very Unhealthy

Hazardous


! Action Day

G ASSOCIATION.


Smoke reached purple levels



| **LUNG ASSOCIATION®**



Air Quality Notifications



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[EnvironFlash Challenge](#)

[EnvironFlash Fact Sheet](#) (PDF)
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Welcome to EnvironFlash! Air quality affects how you live and breathe. Like the weather, it can change from day to day, or even hour to hour. Up-to-date information allows you to make decisions based on air quality forecasts. EnvironFlash comes to you through a partnership between the US EPA and your state or local air quality agency - notifying you about air quality so you don't have to go searching for it!




An [on-line subscription page](#) allows you to sign up, edit your profile, or cancel the service. After you choose the type and frequency of service you want, EnvironFlash will be sent to your email or cell phone as specified.



[EPA Home](#)

EnvironFlash: *Air quality information straight to your inbox!*

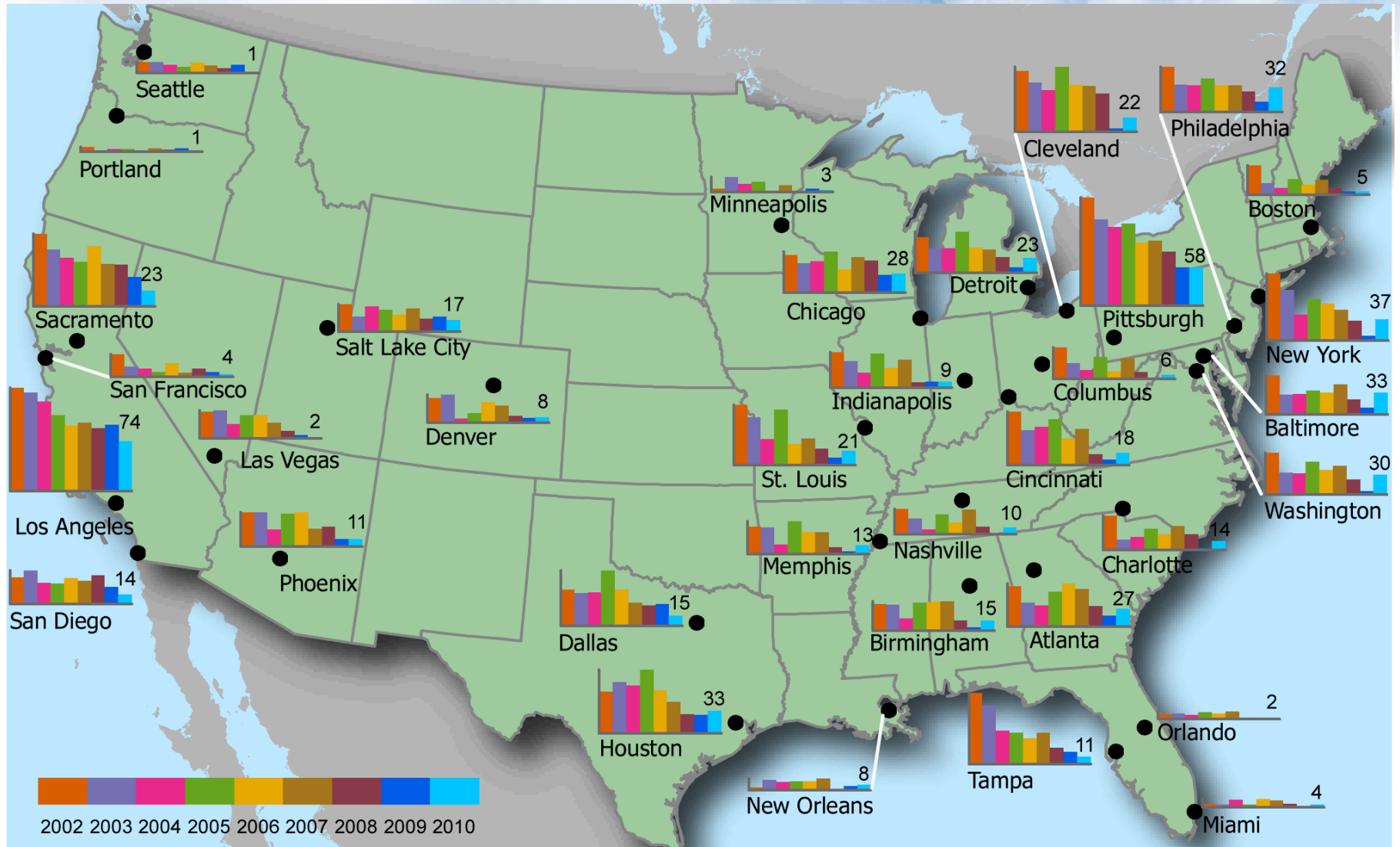
[Privacy Policy](#)



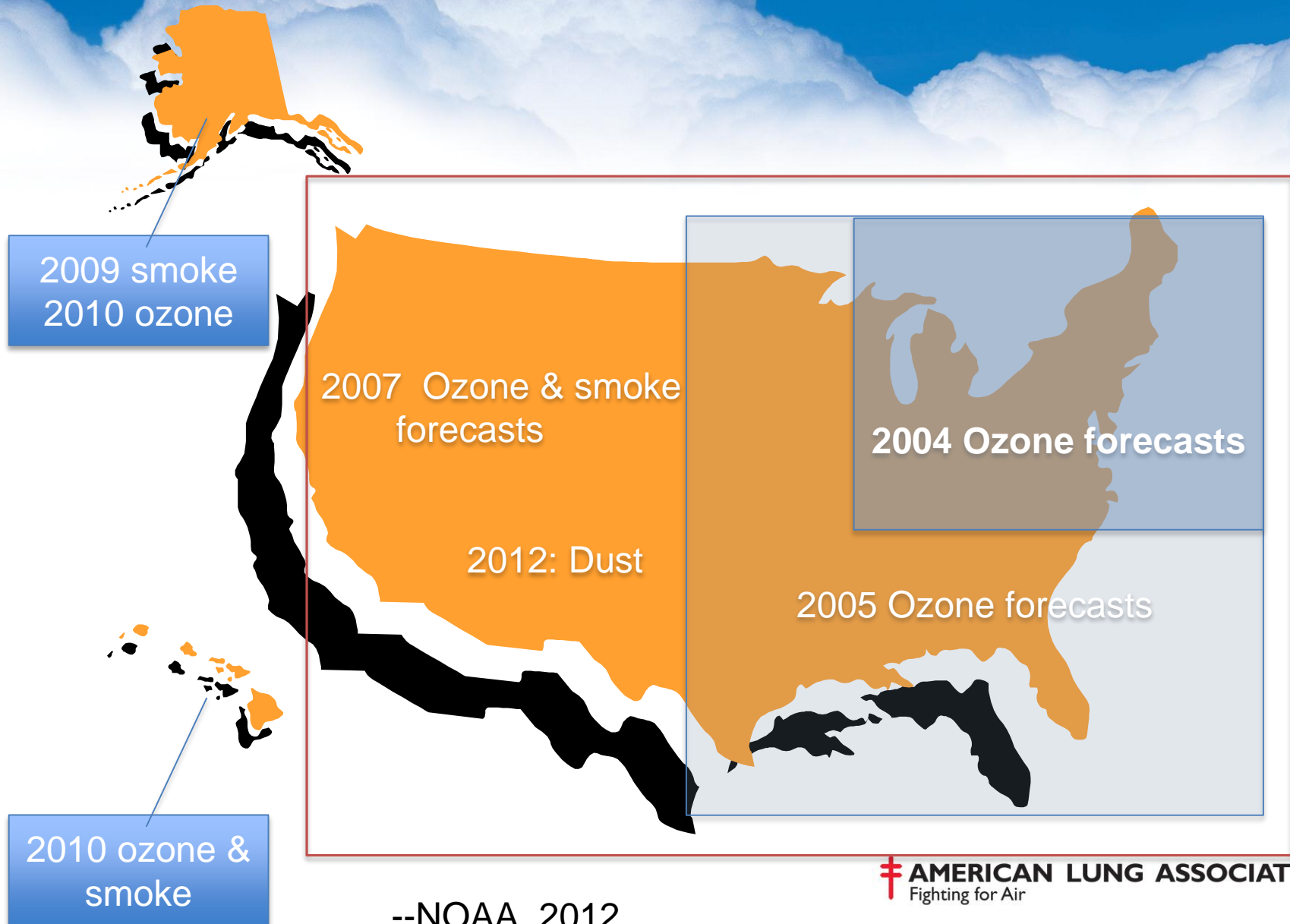
[AIRNow Home](#)

Air quality is improving

Number of days with AQI higher than 100 in 2002-2010



NOAA expanded forecasting



NOAA Operational Capability (2012)

- State-of-the-Science ozone, smoke and dust forecast guidance
- Hour-by-hour predictions of concentrations in digital and graphical formats
- Nationwide coverage for ozone and smoke, CONUS for dust

NOAA Operational Capability (2012), cont'd.

- Forecast guidance thru midnight the next day
- Spatial resolution at 12-kilometer grid
- Temporal resolution
 - 1-hr averages each hour for ozone, smoke and dust
 - 8-hr averages each hour for ozone
- Target operational PM 2.5 forecasts for NE US in 2015

Where we get the data

Air Pollution Monitors

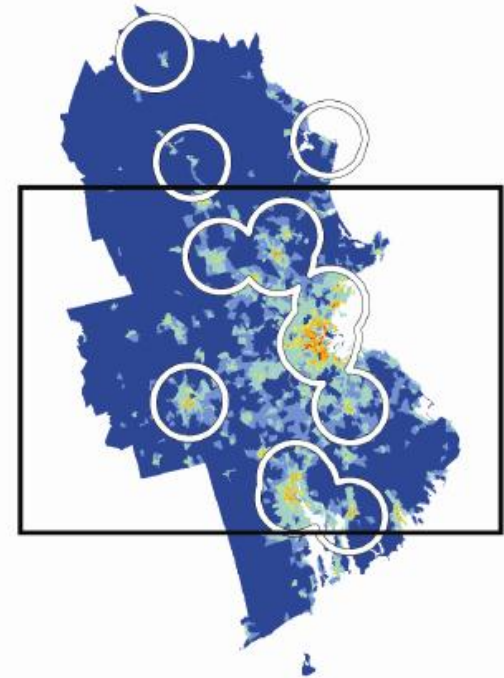
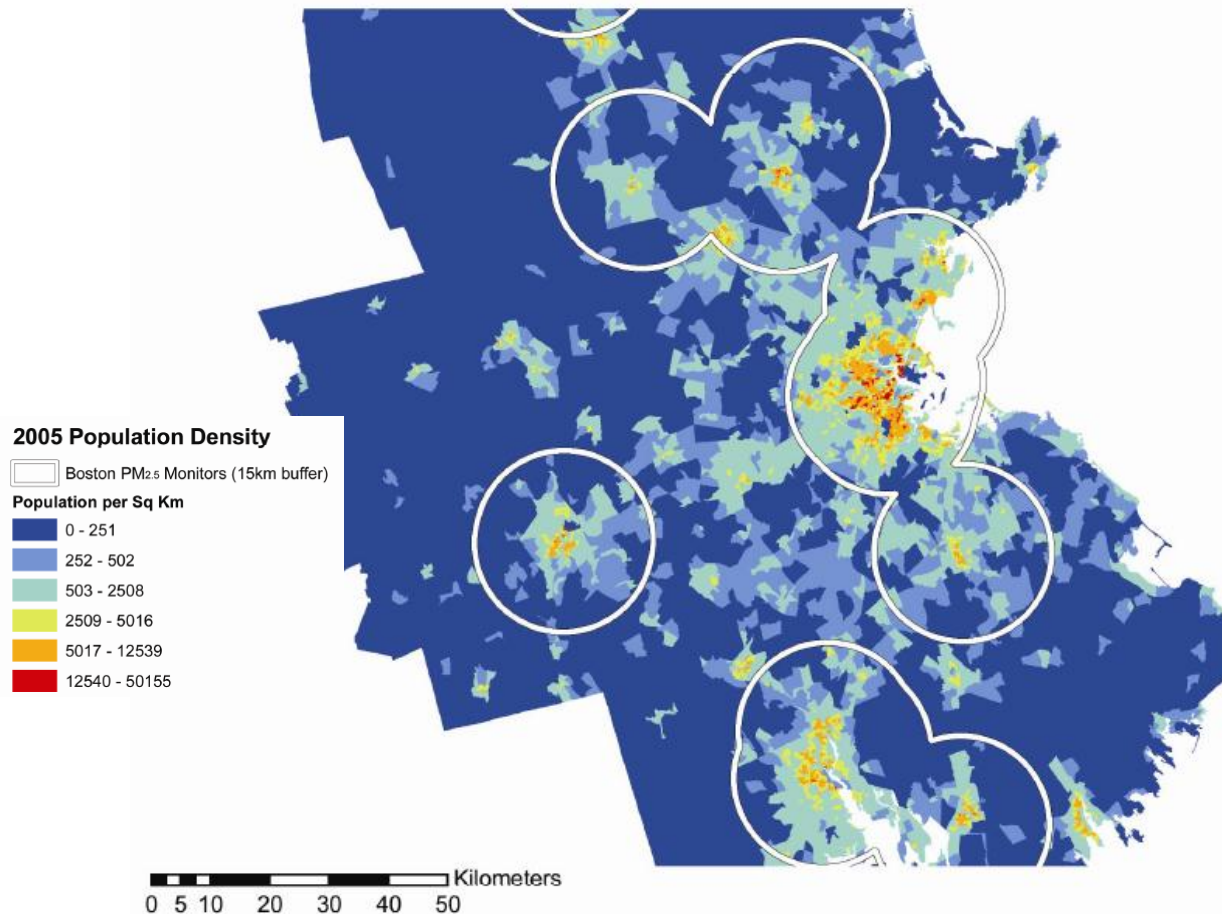


Ozone monitors widespread in metros



Particle monitors in cities

Boston Combined Statistical Area



-EPA, 2009

AMERICAN LUNG ASSOCIATION®
For Air

How AQI is calculated

- Raw measurements collected from monitors
- Monitor readings converted into AQI using standard formulas for pollutants
 - Ozone
 - Particulate matter (PM 2.5 & PM 10)
 - Nitrogen oxides, Sulfur dioxide, carbon monoxide
- Highest AQI prevails

The highest AQI prevails

- On July 12 monitor readings show
Ozone at 84 ppb, PM at 65 $\mu\text{g}/\text{m}^3$
- Ozone reading = 122 AQI **code orange**
- PM reading = 156 AQI **code red**
- PM wins. Day is **code red**

Oddities

- Q: How can AQI in the dense urban cities be better than AQI in suburbs?
- A: Chemistry. Ozone forms in the atmosphere, often showing up downwind, often a few hours later. Also, nitrogen oxides in urban areas “scavenge” ozone, but are also harmful. Particles may be higher in urban core, but may also form in atmosphere.

Much is missing

- Need more monitors in nation, especially near roadways.
 - Only about 900 counties of 3,068 have monitors
- Funding for NOAA's forecasting unsettled.
 - Had proposed cutting it in March, but is “evaluating all alternatives”
 - “when/if” decision made to terminate, they expect to give notice

Toxic air pollution

No monitoring, forecasting or other than emergency notices about 180 hazardous air pollutants that harm health in other ways, including ...



Just some of the toxic pollutants

Cause Cancer

- *Arsenic*
- *Dioxins and furans*
- *Benzene*
- *Formaldehyde*

May damage reproductive systems

- *PAHs*

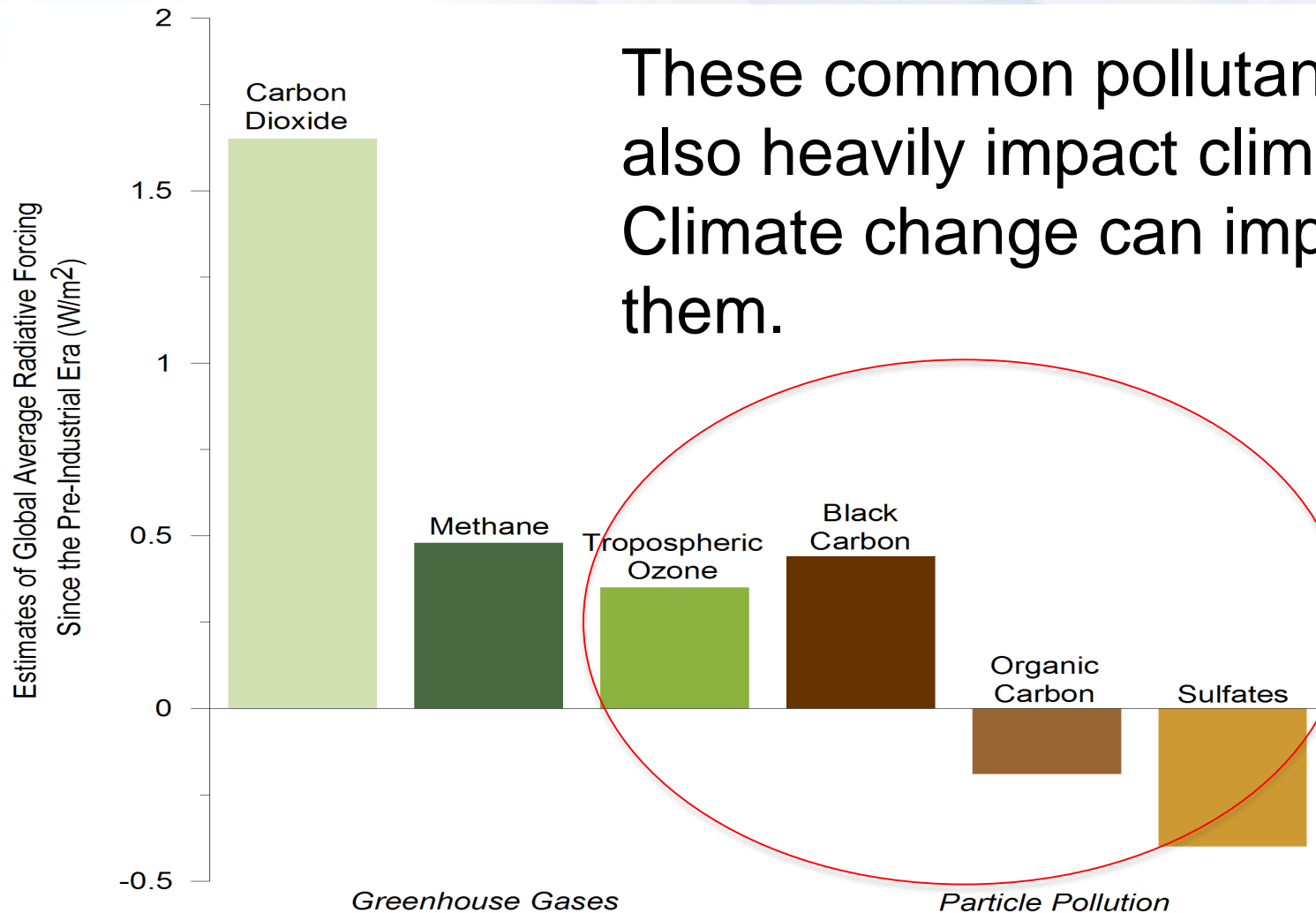
Damage developing nervous systems

- *Mercury*
- *Lead*

Irritates skin, eyes, breathing passages

- *Acid gases*

Climate change powerhouses



StateoftheAir.org

STATE OF THE AIR 2012 |  **AMERICAN LUNG ASSOCIATION.**

Key Findings **City Rankings** **Our Fight** **Health Risks** **Compare Your Air** **Pres**

What's the State of Your Air?

For 13 years, the American Lung Association has analyzed data from state air quality monitors to compile the *State of the Air* report. The more you learn about the air you breathe, the more you can protect your health and take steps to make our air cleaner and healthier.

REPORT CARD:
What's the Grade



Protect Your Family
Tell Congress we need cleaner air.
[Learn more.](#)

Breathing polluted air can harm your health and even shorten your life. **State of the Air**

GO



What State of the Air Does



• Puts air pollution into everyday language

Gives public local information

Focuses attention on ozone and particle pollution

What is the State of the Air report?

- This will be our 14th Annual look at air pollution - 2009-2011 data
- Gives **A- F** Grades or **Pass/Fail** to 900 counties with monitors (out of 3,068 counties)
- Ranks 25 metro areas with worst pollution (& cleanest)
- Access county, state info by zip code

- Released – **April 24**
 - Embargo lifts at 12 AM, local time
 - Website launches 12 AM EDT
- Questions? Email us:
Janice Nolen, Nick Sukachevin
Janice.Nolen@Lung.org
Nickom.Sukachevin@Lung.org



Lung Association's State of the Air App



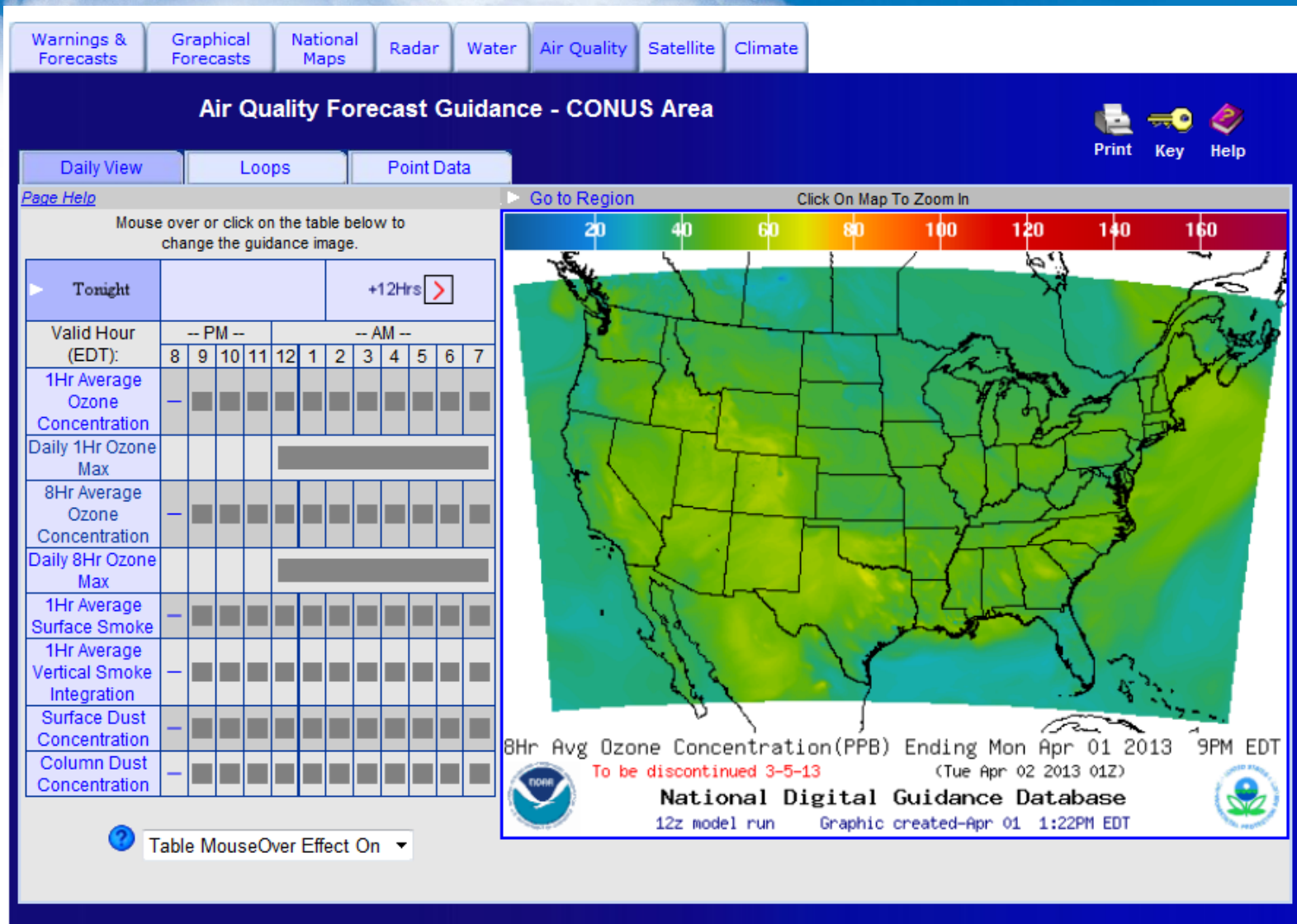
- Provides forecasts using data from state/local air agencies nationwide
- Works on iPhone and Android platforms
- Available from iPhone app store and Google Play

NOAA information

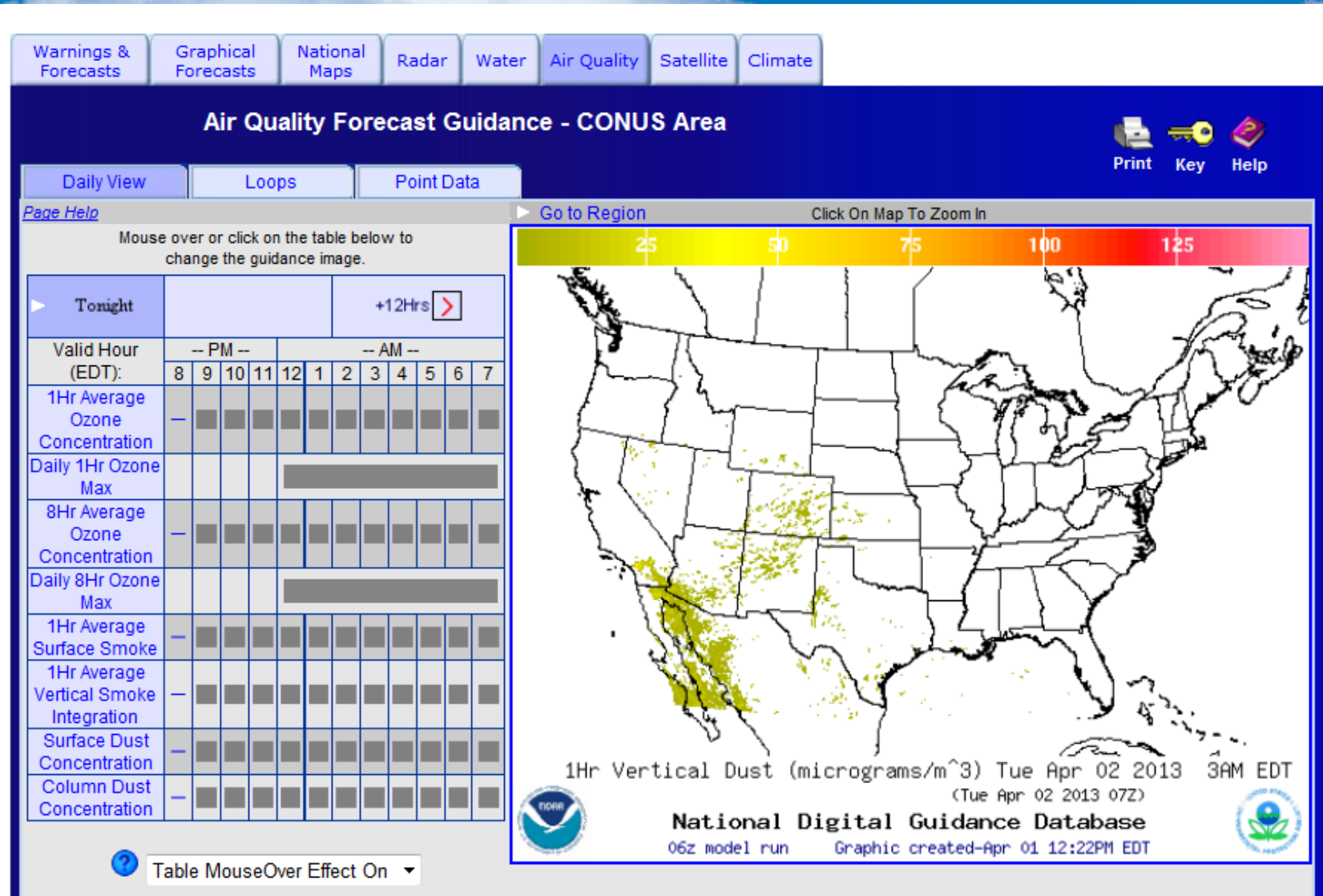
- Overview of the NOAA's work in air quality for the public
 - <http://www.nws.noaa.gov/airquality/>
- Air quality forecast Capability
 - http://www.nws.noaa.gov/ost/air_quality/
-



Detailed NOAA forecasts



Detailed NOAA forecasts



At EPA, contact:

For more information on the AQI, call:

- Alison Davis
media contact – 919-541-7587 davis.alison@epa.gov
- Debbie Stackhouse
outreach contact – 919-541-5354
stackhouse.debbie@epa.gov
- Susan Stone
health contact – 919-541-1146 stone.susan@epa.gov
- Richard "Chet" Wayland
meteorologists contact – 919-541-4603
wayland.richard@epa.gov

Airnow.gov


- Toolkit for weathercasters
 - <http://airnow.gov/index.cfm?action=aqifor.weathercast>
- Lots of resources for weathercasters, especially TV
 - <http://www.airnow.gov/index.cfm?action=tvweather.index>
- PowerPoints, brochures, other video resources

Other Lung Association Resources







- www.Fightingforair.org website has personal stories from people affected by air pollution
- B-roll of air pollution, including animated video showing how pollution affects your lungs
 - http://plowsharegroup.com/media_downloads/ala.php
(scroll down to find Air Pollution video)

More from the Lung Association

PSA Download Center

 **AMERICAN LUNG ASSOCIATION.**
Fighting for Air

Campaigns | Print (83) | TV (78) | Radio (16) | Documents (11) | Out of Home (11) | Downloads (0) ?

 ▶ 00:00 00:00	 ▶ 00:00 00:00	 ▶ 00:00 00:00
"Air monitor station, no audio" <input type="checkbox"/> Broadcast :15 mov <input type="checkbox"/> Broadcast :15 mpg	"Traffic pollution, no audio" <input type="checkbox"/> Broadcast :15 mpg	"Alternative power, no audio" <input type="checkbox"/> Broadcast :15 mpg <input type="checkbox"/> Broadcast :15 mov
 ▶ 00:00 00:00	 ▶ 00:00 00:00	 ▶ 00:00 00:00
"Environment friendly cars, no audio" <input type="checkbox"/> Broadcast :30 mpg	"Particles in the lungs" <input type="checkbox"/> Broadcast :15 mpg	"Industrial pollution" <input type="checkbox"/> Broadcast :60 mov

http://plowsharegroup.com/media_downloads/ala.php

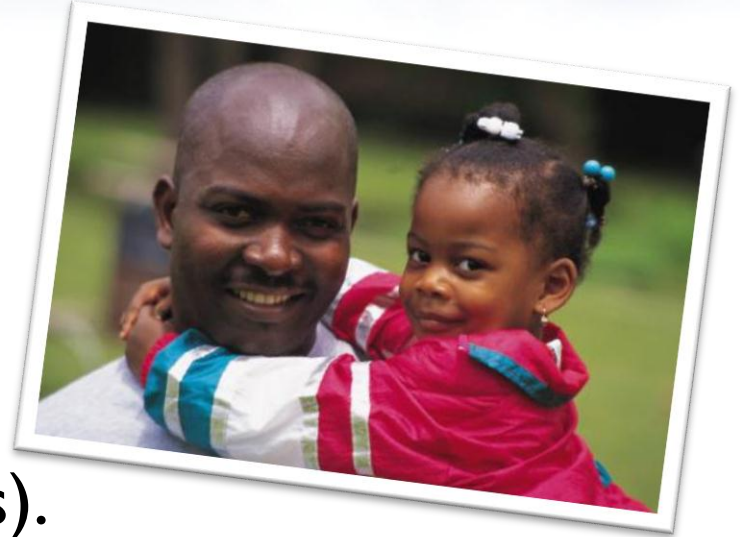
Remember . . .


Why do we care about the air?

Millions of reasons

- Over 120 million people live in counties with too many days of dirty air (either ozone or particles).
- Too many will become sick or die early.

Thank you for your help.





We will breathe easier when the air in every
American community is clean and healthy.

We will breathe easier when people are free from the addictive
grip of tobacco and the debilitating effects of lung disease.

We will breathe easier when the air in our public spaces and
workplaces is clear of secondhand smoke.

We will breathe easier when children no longer
battle airborne poisons or fear an asthma attack.

Until then, we are fighting for air.