
Pittsburgh


Pittsburgh


63 MM


Burns White

VERT DE TERRE
234

LICHEN
19

CHAPPELL GREEN
83

CASTLE GRAY
92

CARD ROOM GREEN
79

ARSENIC
214

PAVILION BLUE
252

PALE POWDER
204

TERESA'S GREEN
236

GREEN BLUE
84

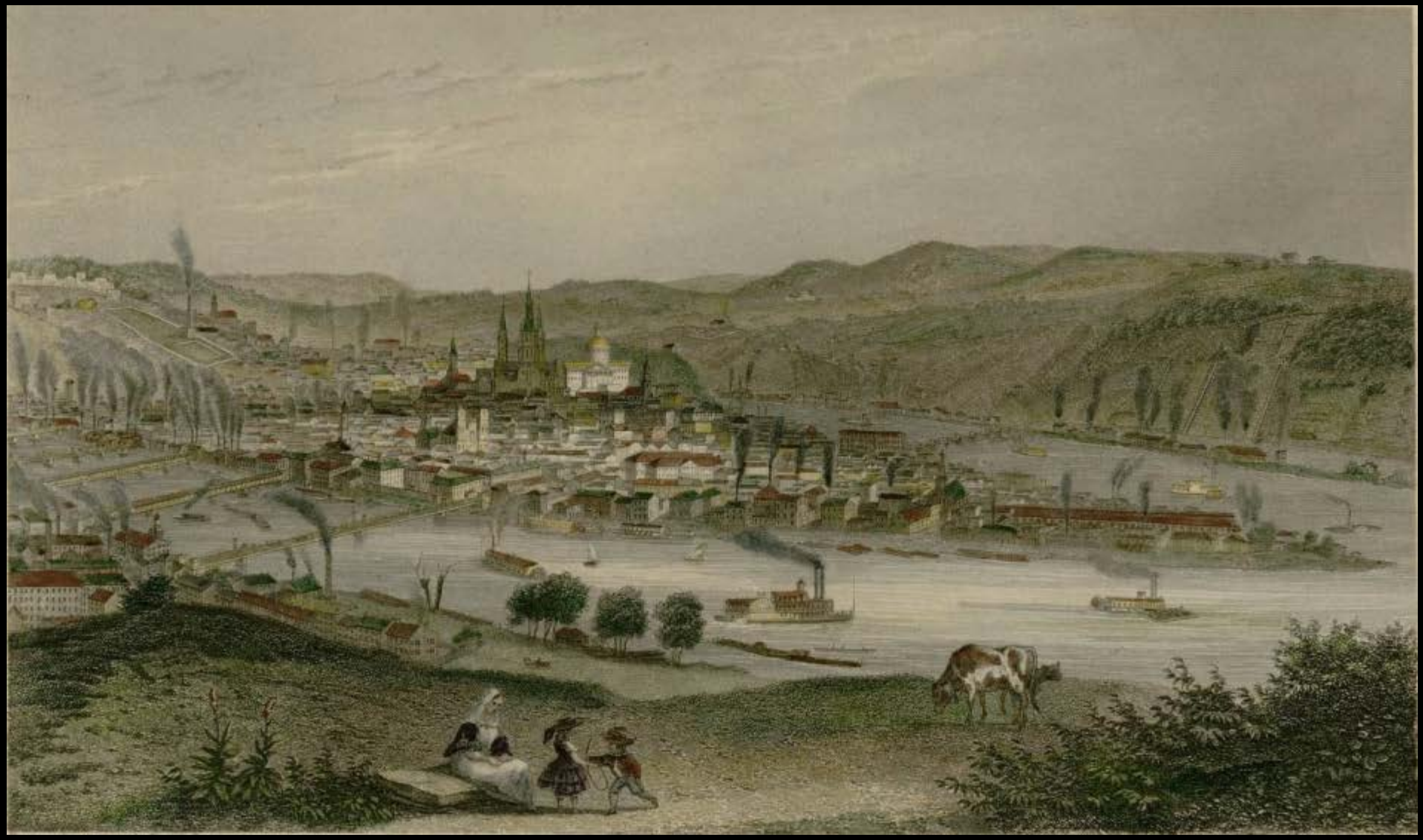
DIX BLUE
82

OVAL ROOM BLUE
85

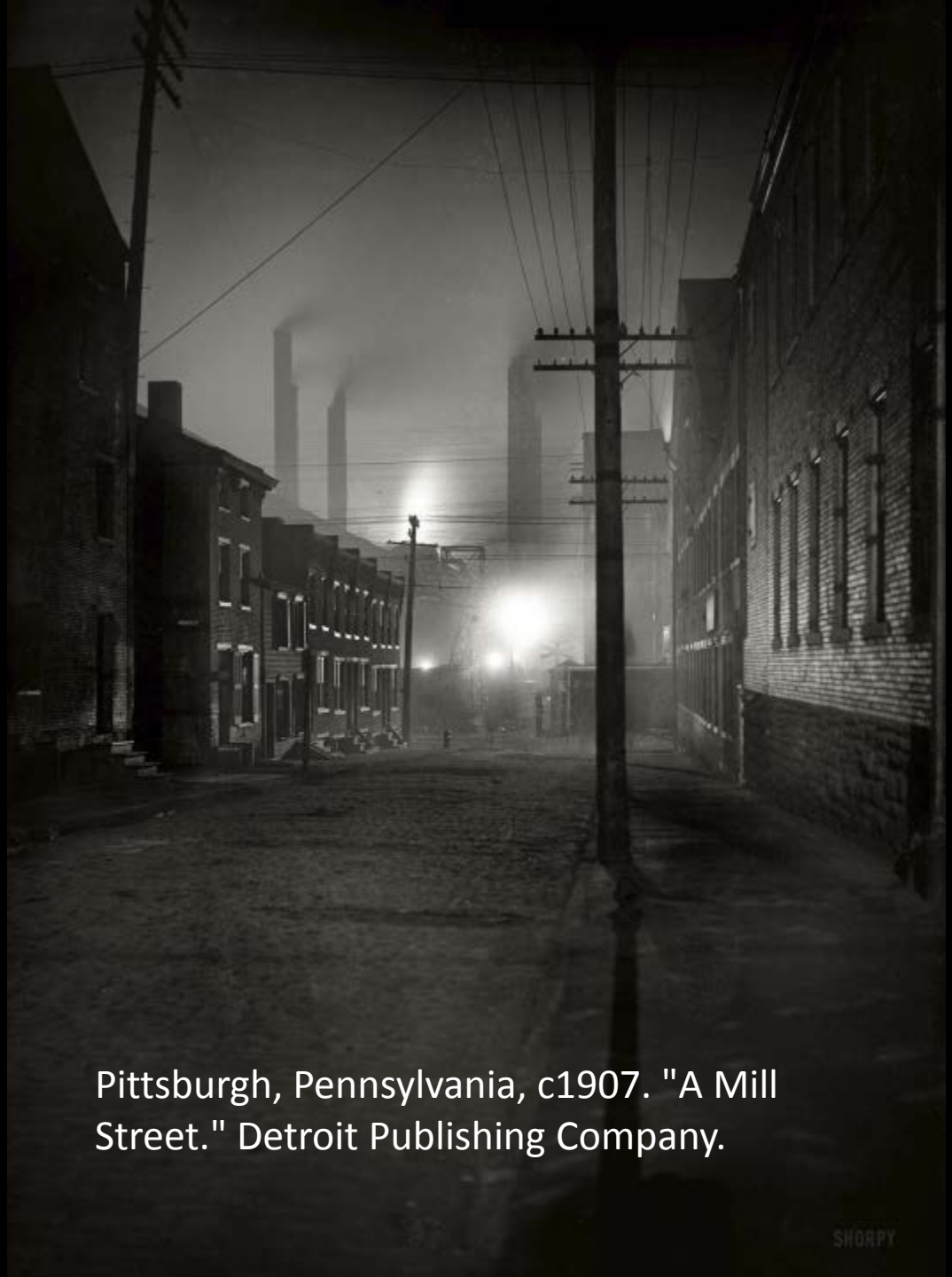
Lithographed by Pittsburgh Lith. Co.

VIEW OF THE CITY OF PITTSBURGH IN 1817.

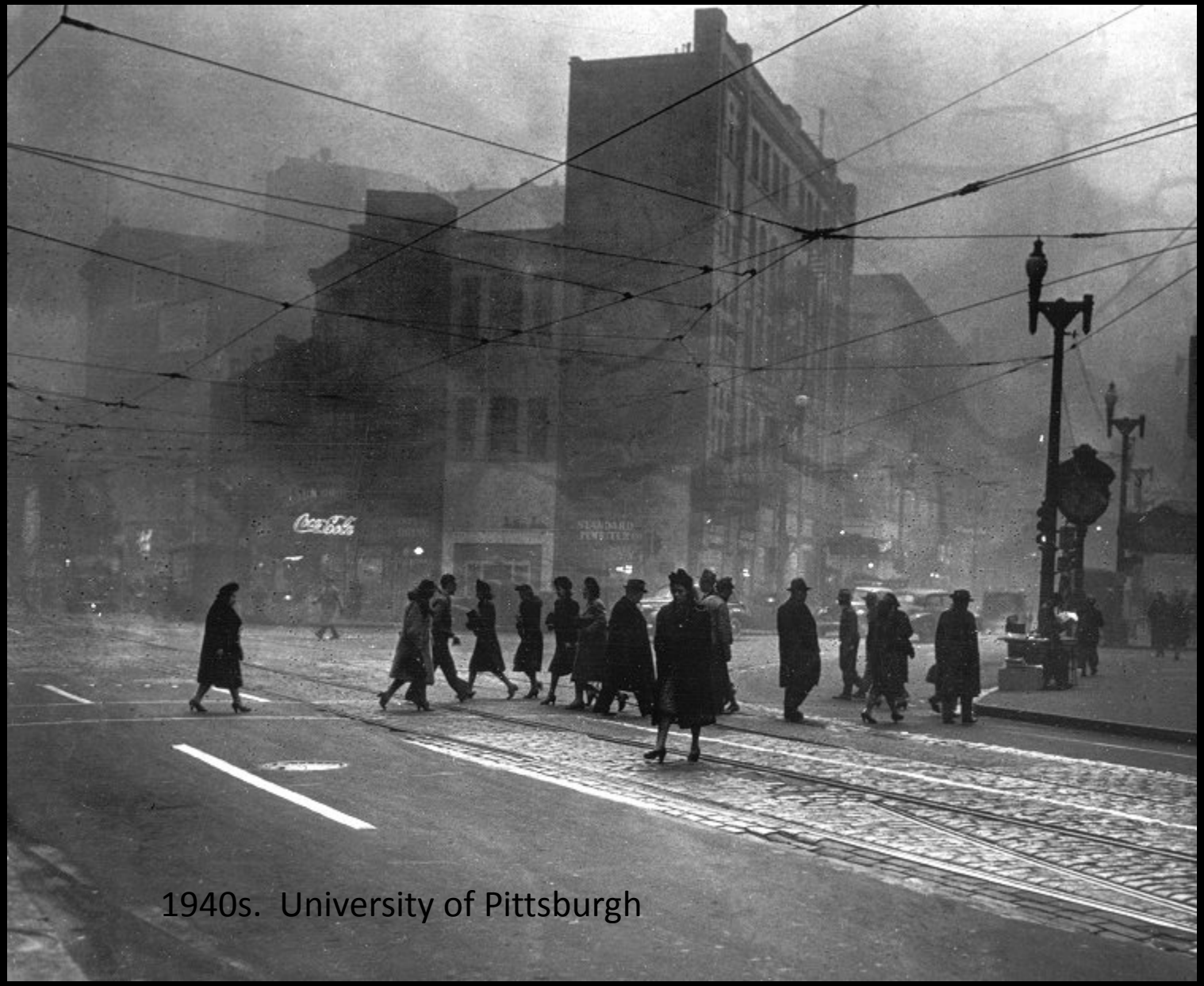
Taken from a sketch drawn by Mrs. E. C. Gibson Wife of Jas. Gibson, Esq. of the Phila'd'a. Bar. while on her Wedding Tour in 1817.



James T. Palmatary. 1859



Pittsburgh, Pennsylvania, c1907. "A Mill Street." Detroit Publishing Company.



1940s. University of Pittsburgh

Current health science

- Fine particulate matter ($PM_{2.5}$)
- Ozone
- Toxics

- Excess mortality, excess heart and lung disease, adverse reproductive outcomes, excess cancer

Who is at risk?

- Everyone
- Especially prenatals, children; persons with lung or heart disease, diabetes; elderly
- Anyone experiencing elevated exposures
- At least 40-50 percent of the population

There is no safe level of $PM_{2.5}$

- Even “moderate” levels of pollution can and do have very serious—and potentially deadly—impacts on our health.
  - Joel Schwartz, HSPH, 2013 Asthma Summit, Pittsburgh

Pittsburgh evidence

- 32 peer-reviewed journal papers & 3 technical reports (published 1970+) with Pittsburgh air pollution and health data.

- Positive and statistical significance for:
  - Excess mortality
  - Excess disease
  - Adverse reproductive outcomes

Source: R.H. White Consultants, 2013

Economic and quality of life impacts in Ontario

Total annual effects of PM2.5 in Ontario:

- 1,725 premature deaths
- 1,087 hospital admissions
- 48,000 visits to emergency departments
- 567,000 asthma-symptom days
- 8.35 million restricted-activity days.

MOE 1999, Abelsohn *et al.* 2002

California

Annual deaths:

$PM_{2.5}$ exposure	8,800
Motor vehicle crashes	3,200
Homicides	2,000

CARB 2007

Joel Schwartz, HSPH

Particulate air pollution kills more people in the U.S. each year than AIDS, Breast Cancer, and Prostate Cancer put together….”

“And yet we actually know how to solve the problem of air pollution.

“Air pollution each year kills as many people as does smoking. While smoking is riskier, only 20 percent of the population smokes. But everyone breathes.”

-- Arden Pope, 2013

Conundrum?

"People spend 90% of their time indoors… indoor air quality is what we need to focus on."

Thousands of epidemiology studies associate outdoor air pollution measurements with risk of adverse health outcomes to populations, including mortality and disease.

Not really…

- Fine particles and other pollutants penetrate into building envelopes
- Pressure, leaks, concentrations of pollutants and other variables
- Personal exposures = the sum of total exposures across all environments
- Time indoors is not just about indoor sources

EST 2003 Allen et al.

- Outdoor-generated particles accounted for average of 79 percent of indoor PM concentrations. Range was 40 – 100 percent.

JESEE 2010, Macintosh et al.

- If residential homes with AC converted to high-efficiency in-duct air cleaning…

Then reduction in ambient PM2.5 exposure would lead to significant reduction in premature deaths, hospital and ER visits, and asthma attacks in metropolitan areas.

EHP 2005 Koenig et al.

- When indoors, only outdoor particles were significantly associated with markers of airway inflammation in study of children with asthma

McConnell et al. 2002 (Lancet)

- 12 Southern CA communities
- 3,535 children, 5 years
- Time spent outside associated with higher incidence of asthma in areas of high ozone, but not in areas of low ozone.

Radon

Radon – decay of radioactive elements

- → A colorless odorless gas
- → found in soil and rock, water
- → that breaks down into progeny
- → High energy radiation – alpha particles DNA
- → attach to dust and particles
- → are breathed into lung
- → and damage DNA

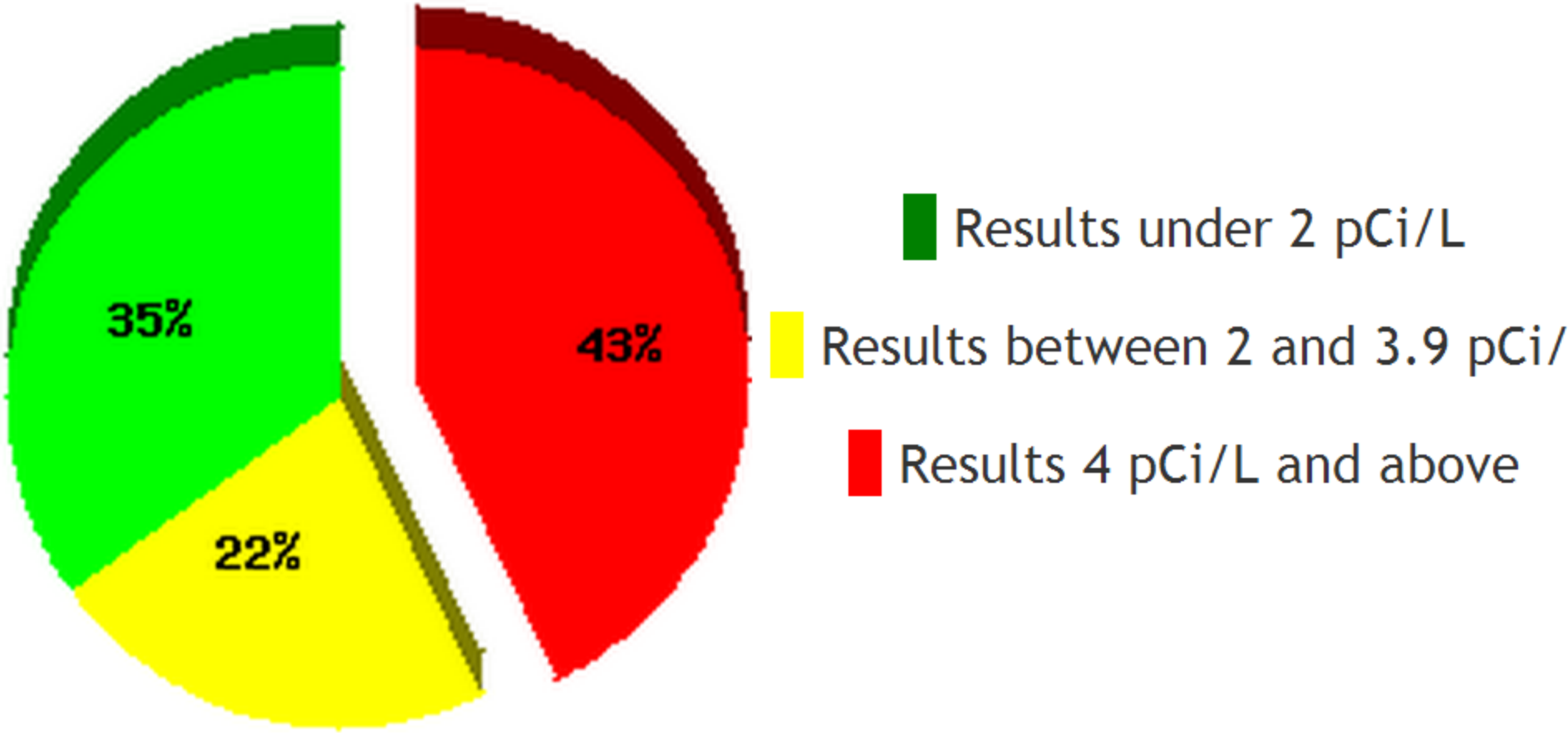
An indoor health threat

- Gas can enter structures through cracks and foundation
- Basements can be especially risky
- Exposures can occur in homes, schools and buildings where we work
- EPA's action guideline of 4 pCi/L.
- WHO guideline is 2.7 pCi/L.
- Risks double as levels double. NO SAFE LEVEL

Pathway to cancer

- ~ 40 percent of PA homes have radon levels above EPA'S action level
- Even those < 4 pCi/L present meaningful risk
- 860 - 3,800 lung cancer deaths per year in PA due to residential radon exposure.

radon.info/PA/Allegheny.html

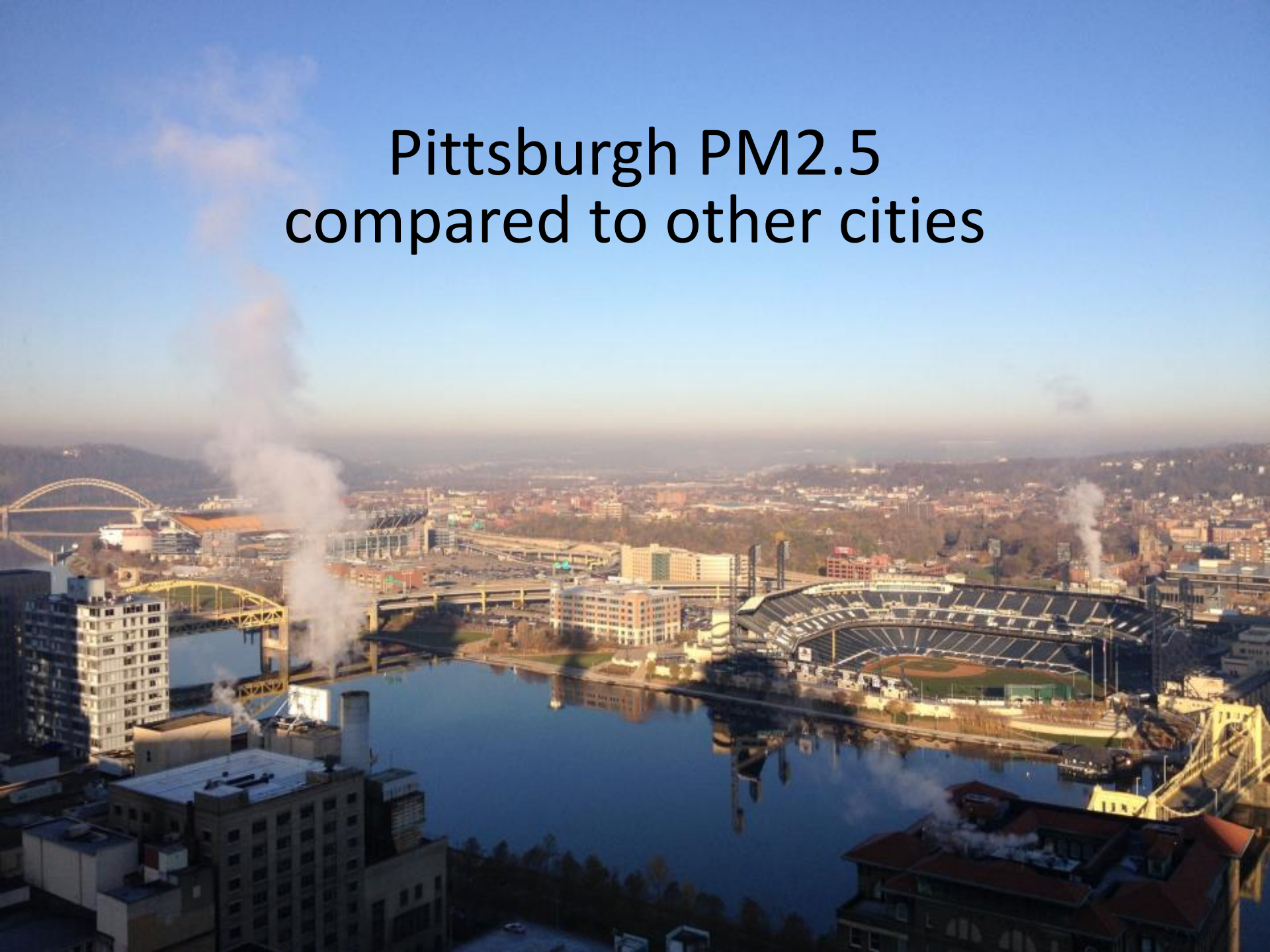


http://county-radon.info/PA/Allegheny.html

World Health Organization

Clean air is considered to be
a basic requirement
for human health and well being

Pittsburgh PM2.5 compared to other cities



- Like most cities in U.S., our air quality is trending in the right direction.

- We are improving and have made gains.

But….

- 9 of our 10 monitors

  in worst 1/3rd of country

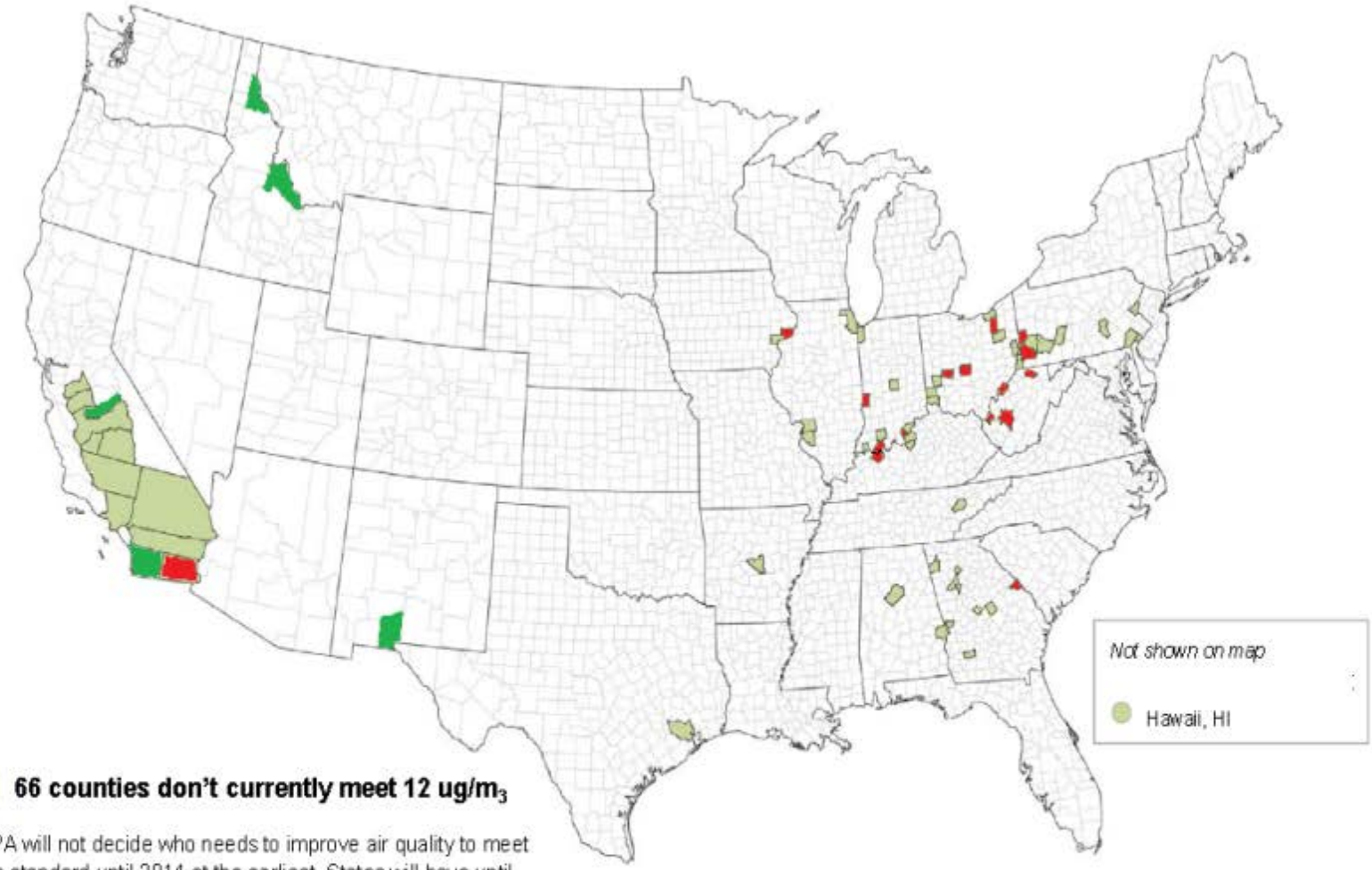
- 6 of our 10 monitors

  in worst 10 % of country

In 2013 alone…

- We had 239 days when the EPA said our air quality was not rated "good."
- 65 percent of the time.
- On these days, our health risk from air pollution ranged from "moderate" to "unhealthy" according to EPA.

Most of the U.S. Already Meets the Annual Fine Particle Health Standard of 12 µg/m^3



66 counties don't currently meet 12 ug/m$_3$

EPA will not decide who needs to improve air quality to meet the standard until 2014 at the earliest. States will have until 2020-2025 to meet the standard.

53 counties based on Data from 2010-12
Dark Green are additions, Red are subtractions.
Note these characterizations will likely NOT exactly reflect Nonattainment boundaries.

- Based on 2010-2012 monitoring data, our county was in the reamining 10 percent that failed to meet the 2012 annual standard (12 ug/m^3)

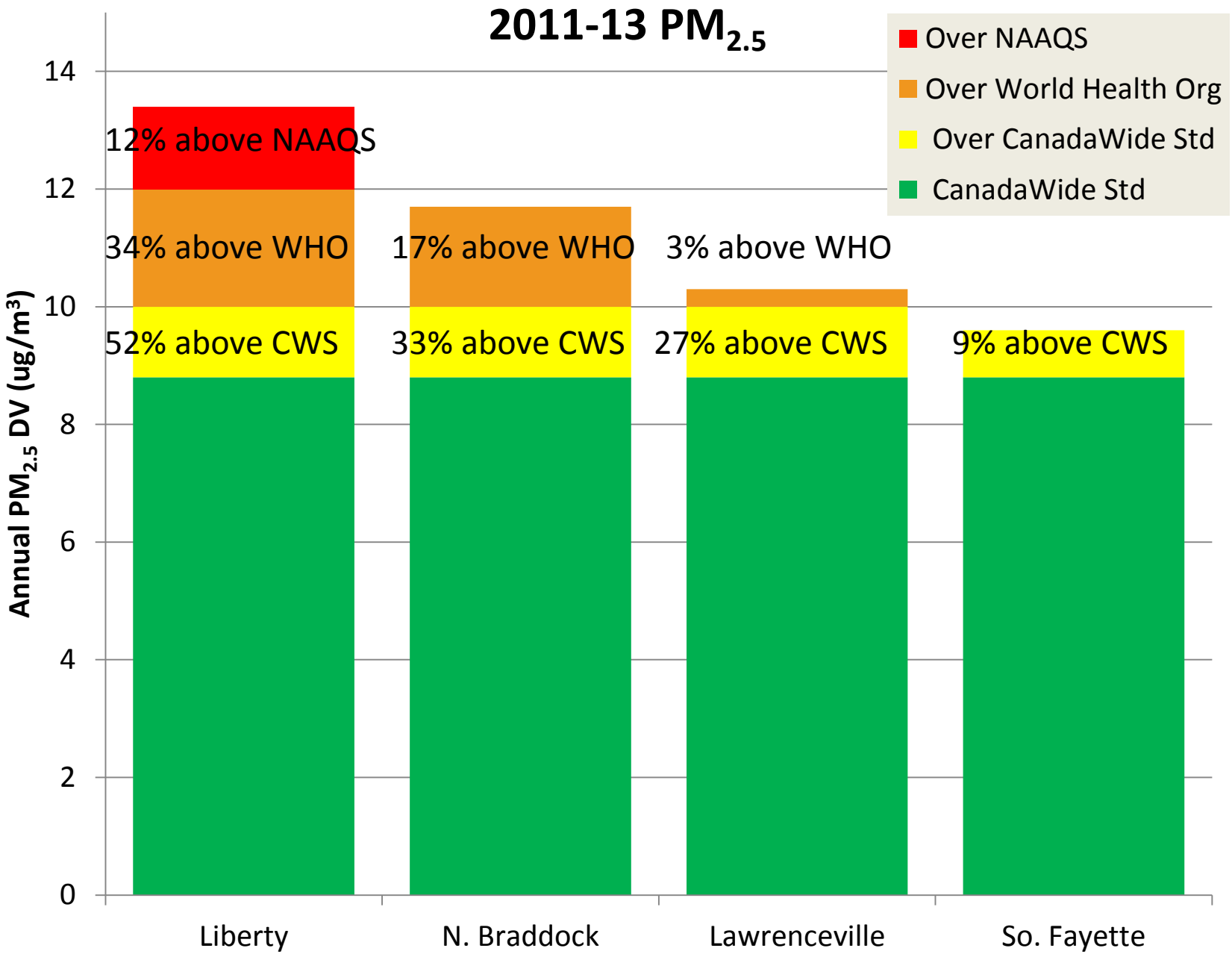
The Disconnect

NAAQS is not protective of our populations;

does not represent current science;

does not represent the most protective standards recommended by EPA's independent science advisory committee;

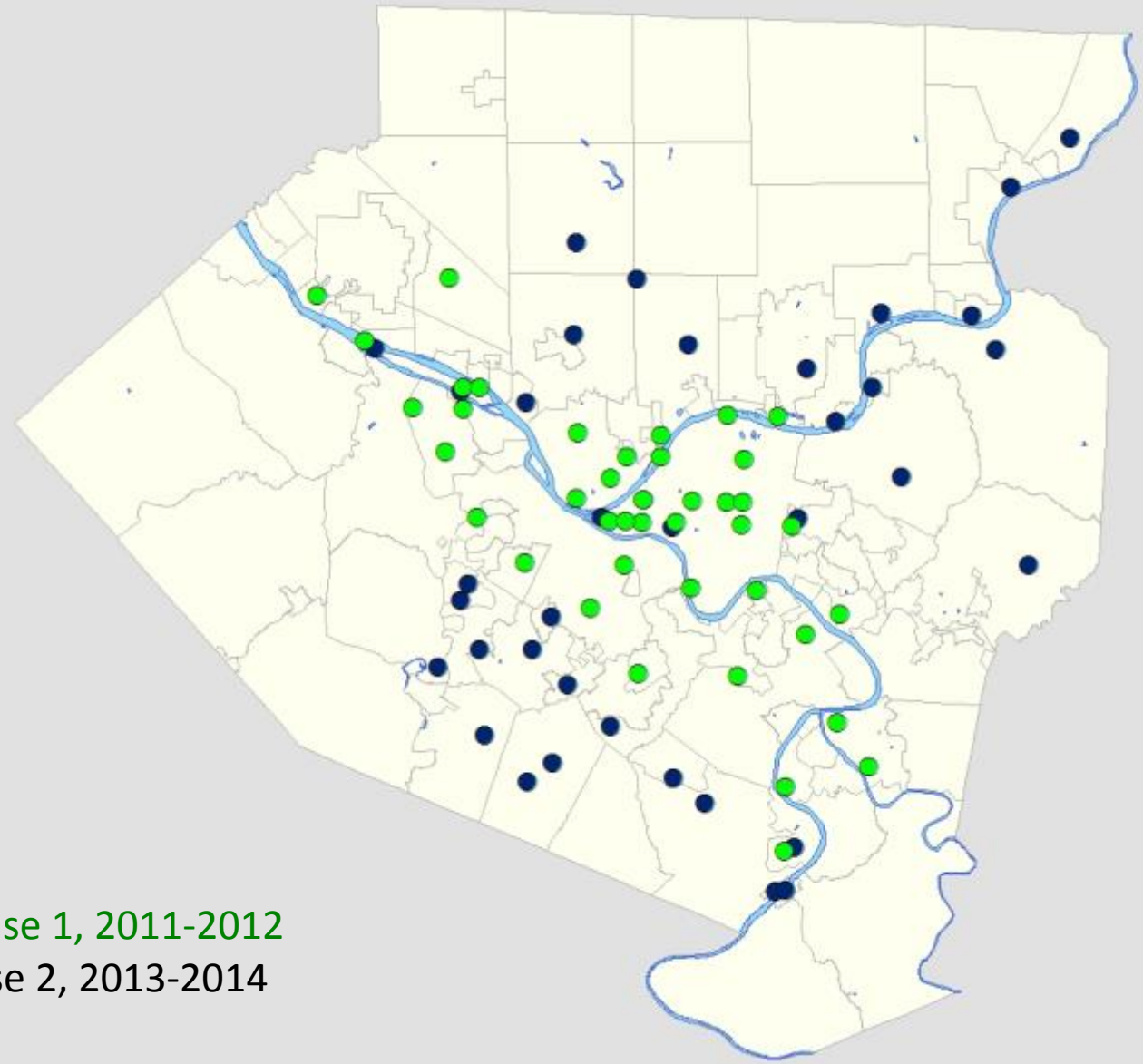
and is substantially weaker than standards used by other societies to protect their populations


2011-13 PM2.5
Over NAAQS
Over World Health Org
Over CanadaWide Std
CanadaWide Std
Annual PM2.5 DV (ug/m3)
14
12
10
8
6
4
2
0
12% above NAAQS
34% above WHO
52% above CWS
17% above WHO
33% above CWS
3% above WHO
27% above CWS
9% above CWS
Liberty
N. Braddock
Lawrenceville
So. Fayette

Monitors: we need more

- Studies uniformly recommend we need more monitors (CMU, Pitt GSPH, CATF: 2009-2014)
- Hotspots exist in city and region that are not monitored (CMU 2014)
- Air pollution outside ends up inside our buildings and homes

CMU: 2014



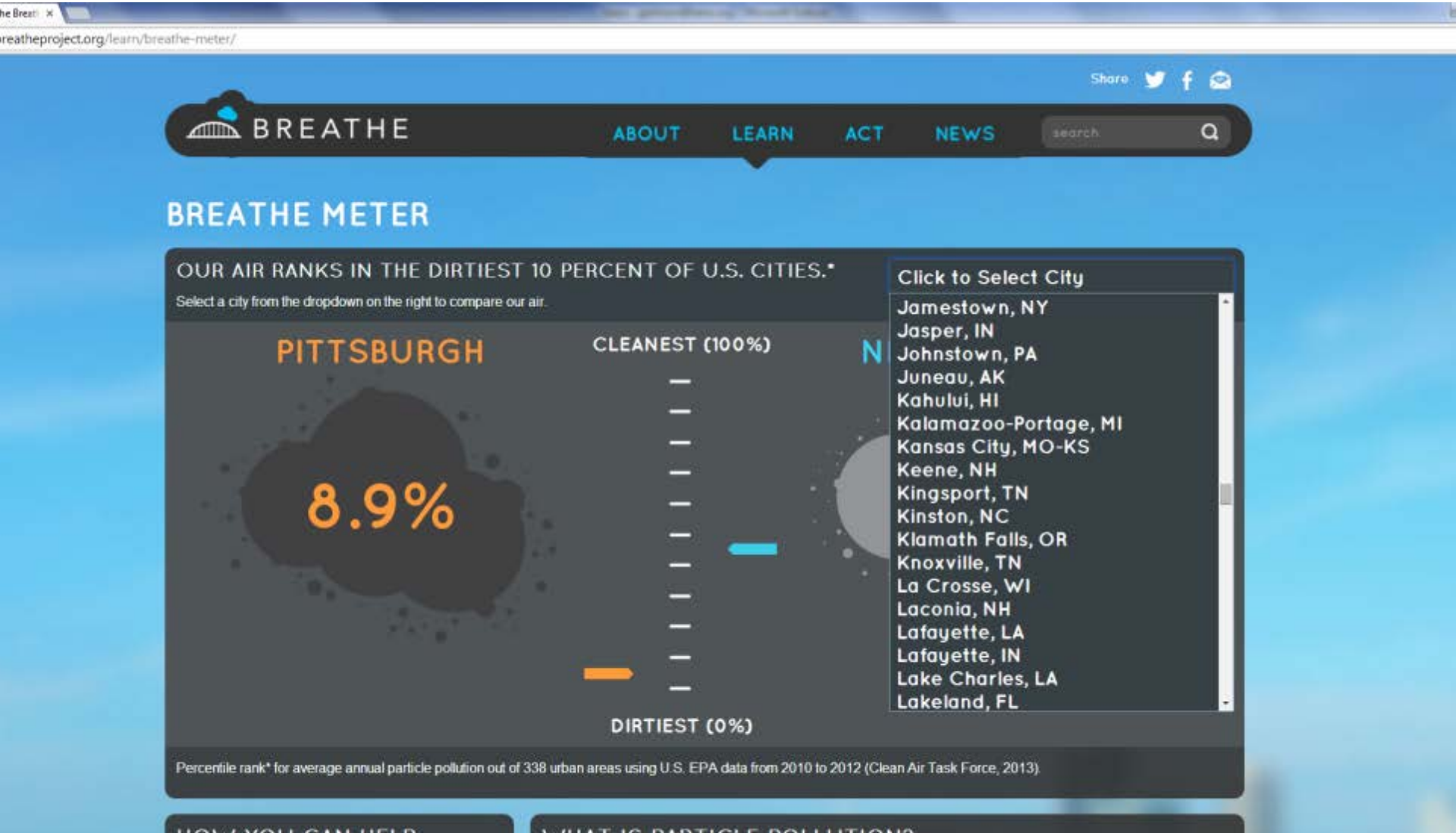
Green = Phase 1, 2011-2012
Black = Phase 2, 2013-2014

BREATHE

Let’s Clean Our Air – Together!

www. breatheproject.org

Breathe Meter



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ABOUT LEARN ACT NEWS search

RCENT OF U.S. CITIES.*

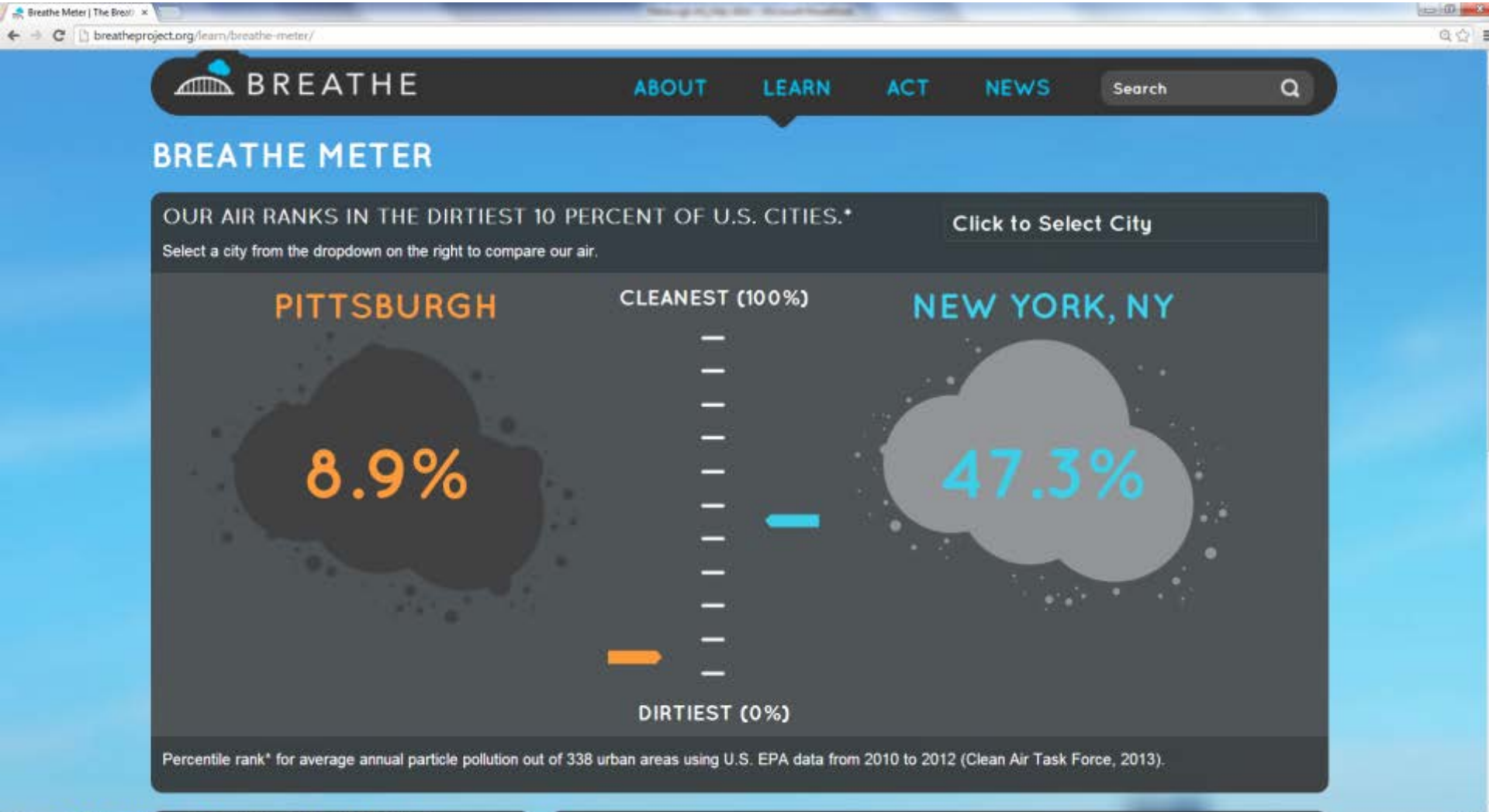
CLEANEST (100%)

DIRTIEST (0%)

Click to Select City

Jamestown, NY
Jasper, IN
Johnstown, PA
Juneau, AK
Kahului, HI
Kalamazoo-Portage, MI
Kansas City, MO-KS
Keene, NH
Kingsport, TN
Kinston, NC
Klamath Falls, OR
Knoxville, TN
La Crosse, WI
Laconia, NH
Lafayette, LA
Lafayette, IN
Lake Charles, LA
Lakeland, FL

areas using U.S. EPA data from 2010 to 2012 (Clean Air Task Force, 2013).


Breathe Meter | The Breath
breatheproject.org/learn/breathe-meter/
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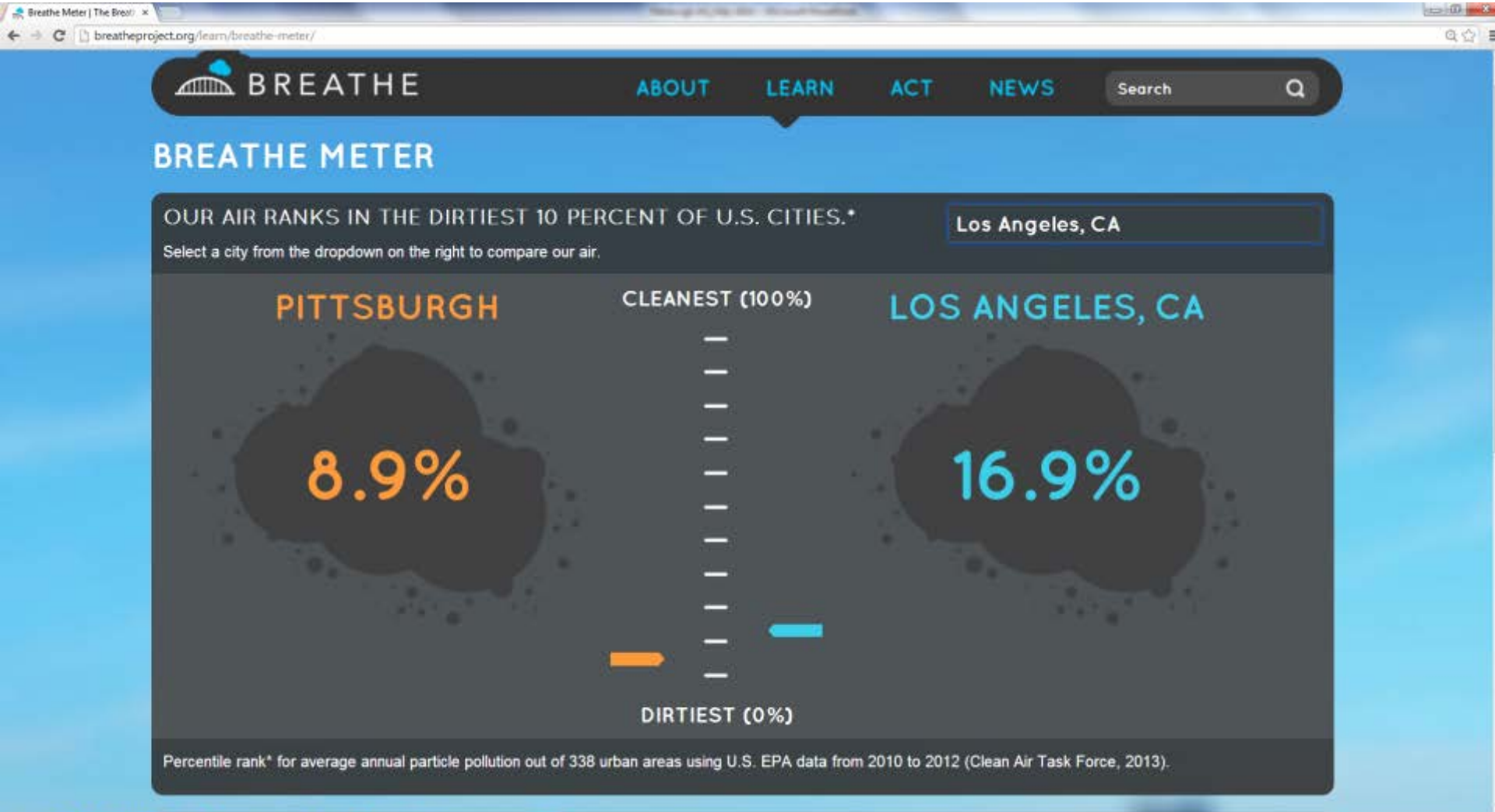
BREATHE METER
OUR AIR RANKS IN THE DIRTIEST 10 PERCENT OF U.S. CITIES.*
Click to Select City
Select a city from the dropdown on the right to compare our air.
PITTSBURGH
CLEANEST (100%)
NEW YORK, NY
8.9%
47.3%
DIRTIEST (0%)
Percentile rank* for average annual particle pollution out of 338 urban areas using U.S. EPA data from 2010 to 2012 (Clean Air Task Force, 2013).


breatheproject.org/learn/breathe-meter/
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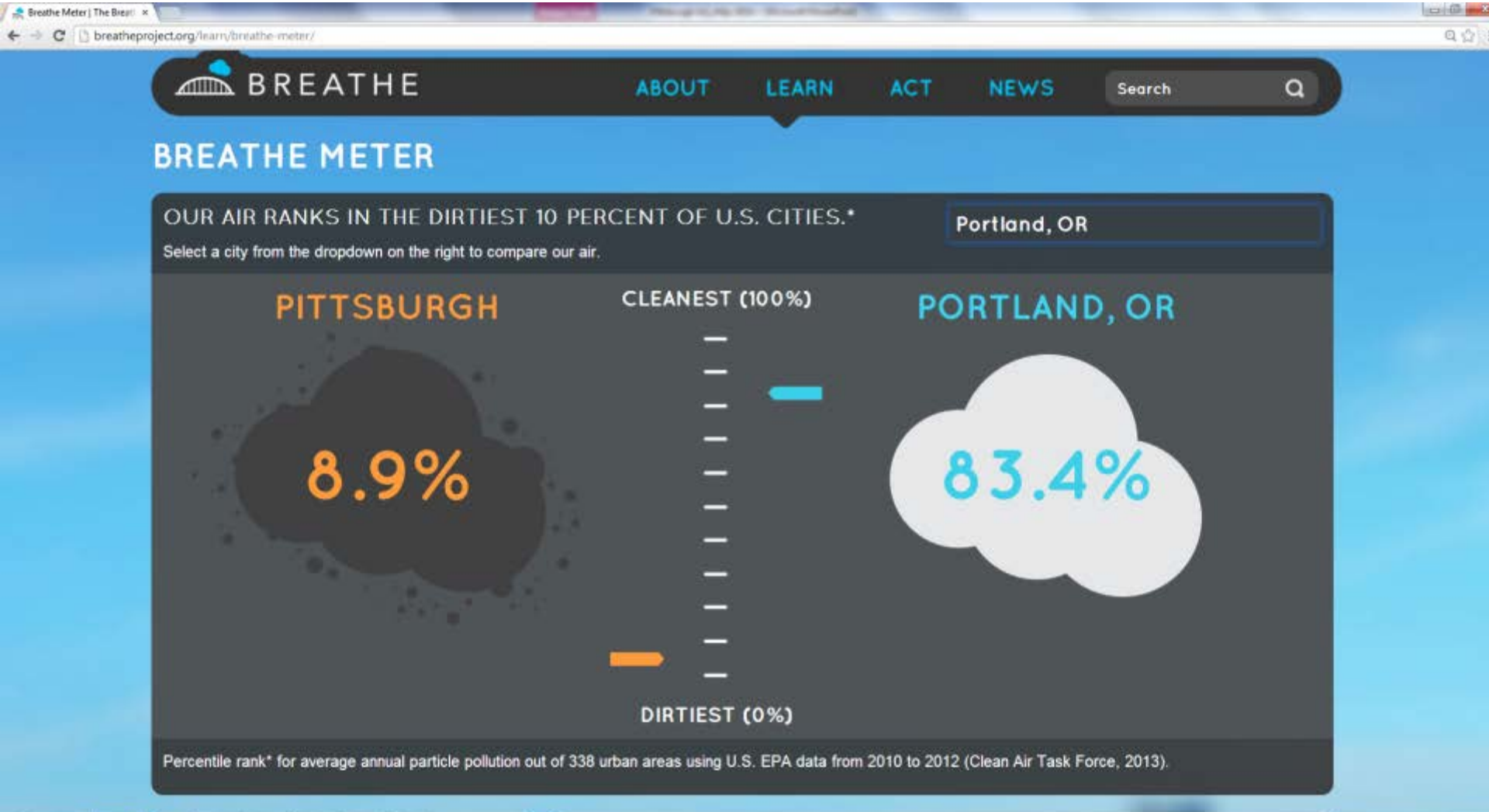
Search
BREATHE METER
OUR AIR RANKS IN THE DIRTIEST 10 PERCENT OF U.S. CITIES.*
Select a city from the dropdown on the right to compare our air.
Los Angeles, CA
PITTSBURGH
8.9%
CLEANEST (100%)
DIRTIEST (0%)
LOS ANGELES, CA
16.9%
Percentile rank* for average annual particle pollution out of 338 urban areas using U.S. EPA data from 2010 to 2012 (Clean Air Task Force, 2013).


breatheproject.org/learn/breathe-meter/
BREATHE
ABOUT
LEARN
ACT
NEWS
Search
BREATHE METER
OUR AIR RANKS IN THE DIRTIEST 10 PERCENT OF U.S. CITIES.*
Portland, OR
Select a city from the dropdown on the right to compare our air.
PITTSBURGH
8.9%
CLEANEST (100%)
DIRTIEST (0%)
PORTLAND, OR
83.4%
Percentile rank* for average annual particle pollution out of 338 urban areas using U.S. EPA data from 2010 to 2012 (Clean Air Task Force, 2013).

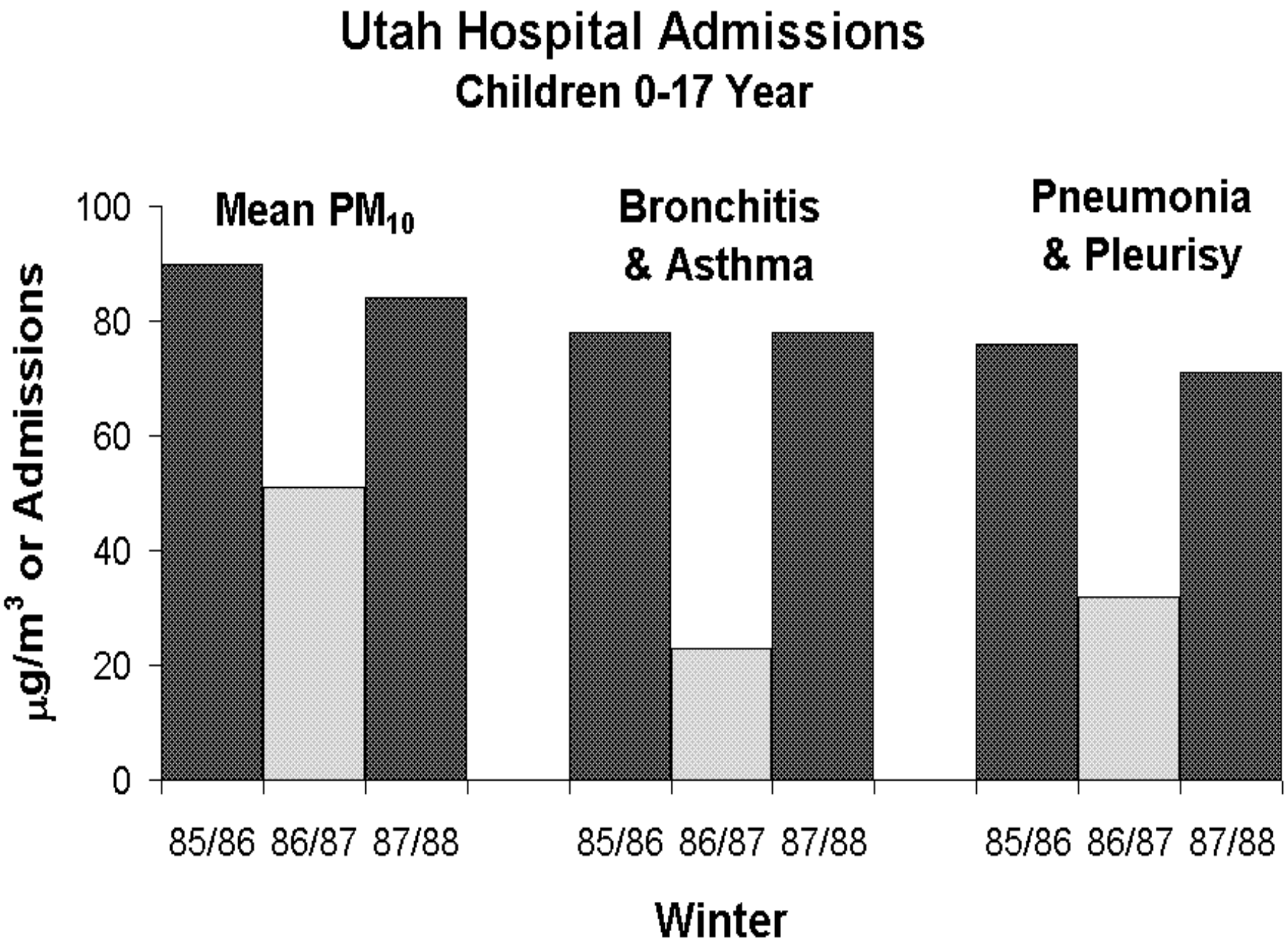
“Pittsburgh has come a long way, but has a ways to go.”

-- Arden Pope, 2013

Why does this matter?

- Families pay attention to this
- Businesses pay attention to this
- It affects community and individual quality of life, well-being and health
- It makes us more competitive with other cities
- It reduces our healthcare burden
- It tells folks considering moving here that we care about our future

It shows that we care about and are willing to protect the health of our children and their future



Pope, Amer J Public Health 1989; 79: 623

What can we do?

Source Ranges ($PM_{2.5}$)

- Allegheny County contribution
  - ~34 to 54 percent

- Allegheny County + PA sources
  - ~50 to 66 percent

Source: J Graham, CATF 2013

Sources

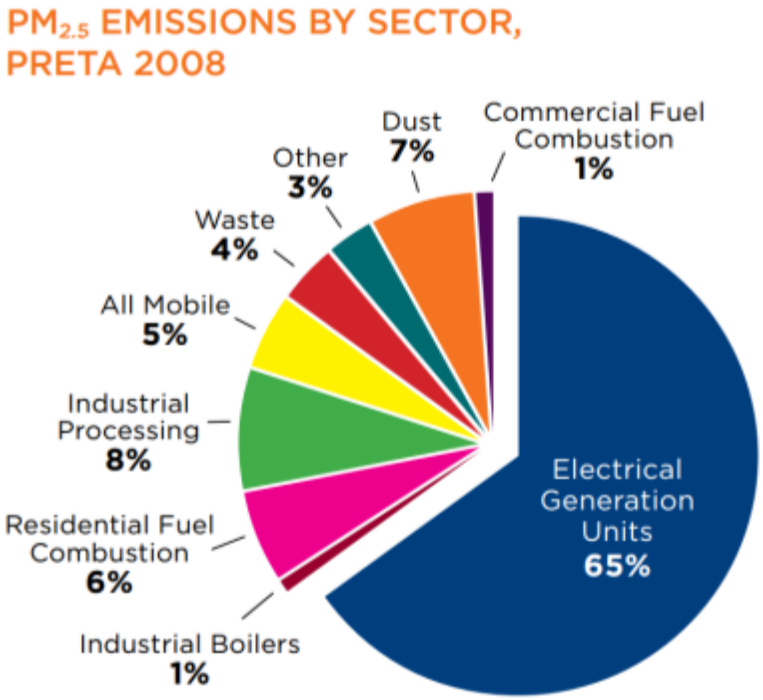


Figure 3. Sources of $PM_{2.5}$ emissions in the 10-county PRETA region for 2008 from the National Emissions Inventory v. 2.0[68]

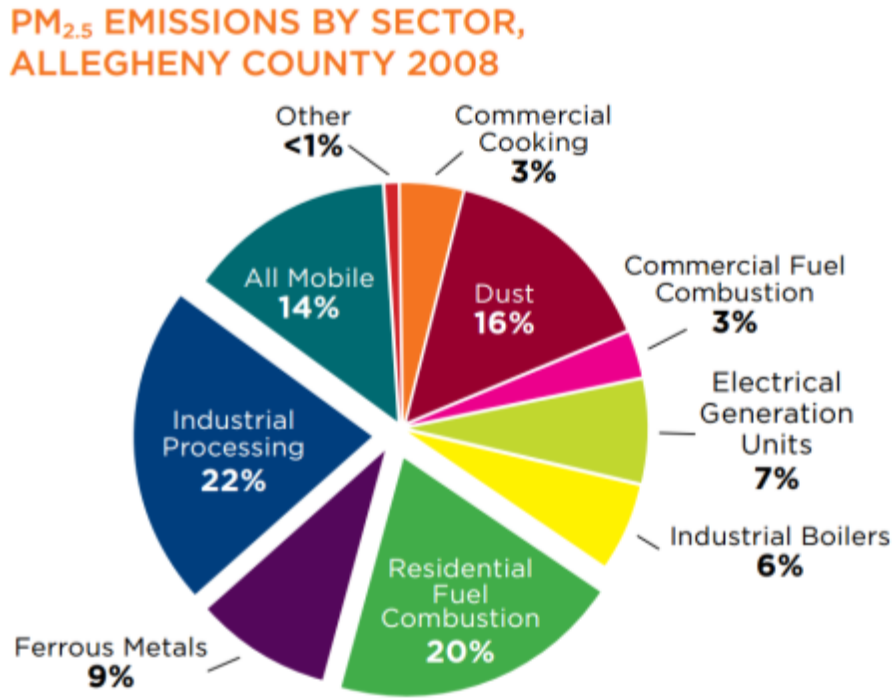


Figure 4. Sources of $PM_{2.5}$ emissions in Allegheny County for 2008 from the National Emissions Inventory v. 2.0[68]

Source: Pitt GSPH, CHEC 2012

Successes!

- The Green Workplace Challenge – businesses participating
- Engineers improving traffic flow
- Scientists finding hotspots
- Schools and parents are engaging
- We are improving residential and commercial energy efficiency
- Green building experts taking into account how outdoor air can compromise indoor air
- Healthcare community educating patients

More successes!

- Transportation and industrial equipment upgraded or retrofitted
- Cleaner fuels being used
- Air permits and compliance with laws being strengthened
- Tools developed to enhance visualization and mass quantification of air pollution

“It’s too easy for a community that had horrific air pollution to say it’s cleaner.

Small particle pollution is 50 percent higher in Pittsburgh than in Boston.

Why should people in Pittsburgh put up with that?

It’s perfectly possible to get down to those lower pollution levels because lots of places have.”

-- Joel Schwartz, 2013

We need to “own” our air quality…

… with the same passion and pride that we “own” our icons.