



**Cumberland District Public Health Council**  
**Full Council Meeting**  
**March 15, 2013**  
**10:00 a.m. — 12:00 p.m.**  
**Portland Water District, Third Floor Training Room**  
**225 Douglass Street, Portland**

**Present:** Deb Deatrack, Kristen Dow, Dennis Fitzgibbons, Steve Fox, Mark Grover, Paul Hunt, Valerie Landry, Becca Matusovich, Paul Niehoff, Karen O'Rourke, Linda Putnam, Emily Rines, Lucie Rioux, Amanda Sears, Toho Soma, Ashley Soule, Julie Sullivan, Ted Trainer, Anne Tricomi-Lang ; Shane Gallagher ; Tim Cowan, Effie Craven, Peter Crichton, Anne Hill, Penny Hudson, Alex Hughes, Sarah Morris, Alex Peck, Elizabeth Trice

**Absent:** Neal Allen, Leslie Brancato, Jim Budway, Faye Daley, Megan Hannan, Colleen Hilton, Liz Horton, Jessica Loney, Zoe Miller, Bernice Mills, Cathy Patnaude, Erica Schmitz, Pamela Smith, Peter Stuckey, Carol Zechman

Topic	Discussion	Actions
New Member Slate	Toho Soma presented a slate of new members for Council approval (see Appendix A).	Motion to Approve: Toho Soma Second: Julie Sullivan Vote: 15 Yea 0 Nay Result: Unanimous approval
Presentation: American Lung Association-Maine Healthy Air Campaign	Effie Craven presented information on the American Lung Association's Maine Healthy Air Campaign (See Appendix B).	Individuals or organizations interested in joining the campaign can contact Effie Craven ( <a href="mailto:ecraven@LungNE.org">ecraven@LungNE.org</a> ).
Lyme Disease Forum	Becca Matusovich provided background information on the idea for a Lyme Disease Forum in partnership with the ME CDC Infectious Disease Program. The Council was receptive to the idea. Kristen	Anyone interested in participating on the planning conference call can contact Becca Matusovich ( <a href="mailto:Becca.Matusovich@maine.gov">Becca.Matusovich@maine.gov</a> ) .

Topic	Discussion	Actions
	Dow and Linda Putnam expressed interest in helping plan the forum. A conference call will be scheduled to discuss additional planning.	
Presentation: 2012 MaineHealth Index	Deb Deatrack and Tim Cowan presented the 2012 MaineHealth Index Report (see Appendix C).	No actions required.
By-Laws Amendments	Shane Gallagher, Toho Soma, and Becca Matusovich presented the suggested By-Laws Amendments from the previous Executive Committee meeting. There was vigorous discussion around the proposed language, purpose, and necessity of the recommendations.	The By-Laws Amendments were tabled and sent back for further discussion at the next Executive Committee meeting.
District Public Health Improvement Plan Prioritization Results	<p>Toho Soma and Becca Matusovich presented the results from the District Public Health Prioritization process (see Appendices D, E, and F).</p> <p>Council members were surprised at the results for Mental Health and Substance Abuse, which scored highly in the initial survey, but fell to 8<sup>th</sup> in the prioritization process.</p> <p>The Council discussed several variations for structuring work groups around priorities. The discussion used the</p>	The results were tabled and sent back for further discussion at the next Executive Committee meeting.

Topic	Discussion	Actions
	remaining time of the meeting.	

**Next Meeting:** Full Council—May 17, 2013 from 10:00 a.m. — 12:00 p.m. at location TBD. Executive Committee—April 22, 2013 from 1:00 p.m. — 3:00 p.m. at City Hall, Room 24, 389 Congress Street, Portland.



Slate

**March 15, 2013**

**10:00 a.m. — 12:00 p.m.**

Portland Water District  
225 Douglass Street, Portland

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**New Members**

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- ❖ **Leslie Brancato**-Portland Community Health Center
  - ❖ **Kristen Dow**-Healthy Portland/City of Portland
  - ❖ **Mark Grover**-Cumberland County Commissioner (District 3)
  - ❖ **Zoe Miller**-Healthy Lakes/Opportunity Alliance
  - ❖ **Linda Putnam**-Portland Public Library
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# The Maine Healthy Air Campaign

**Effie Craven**  
**American Lung Association**

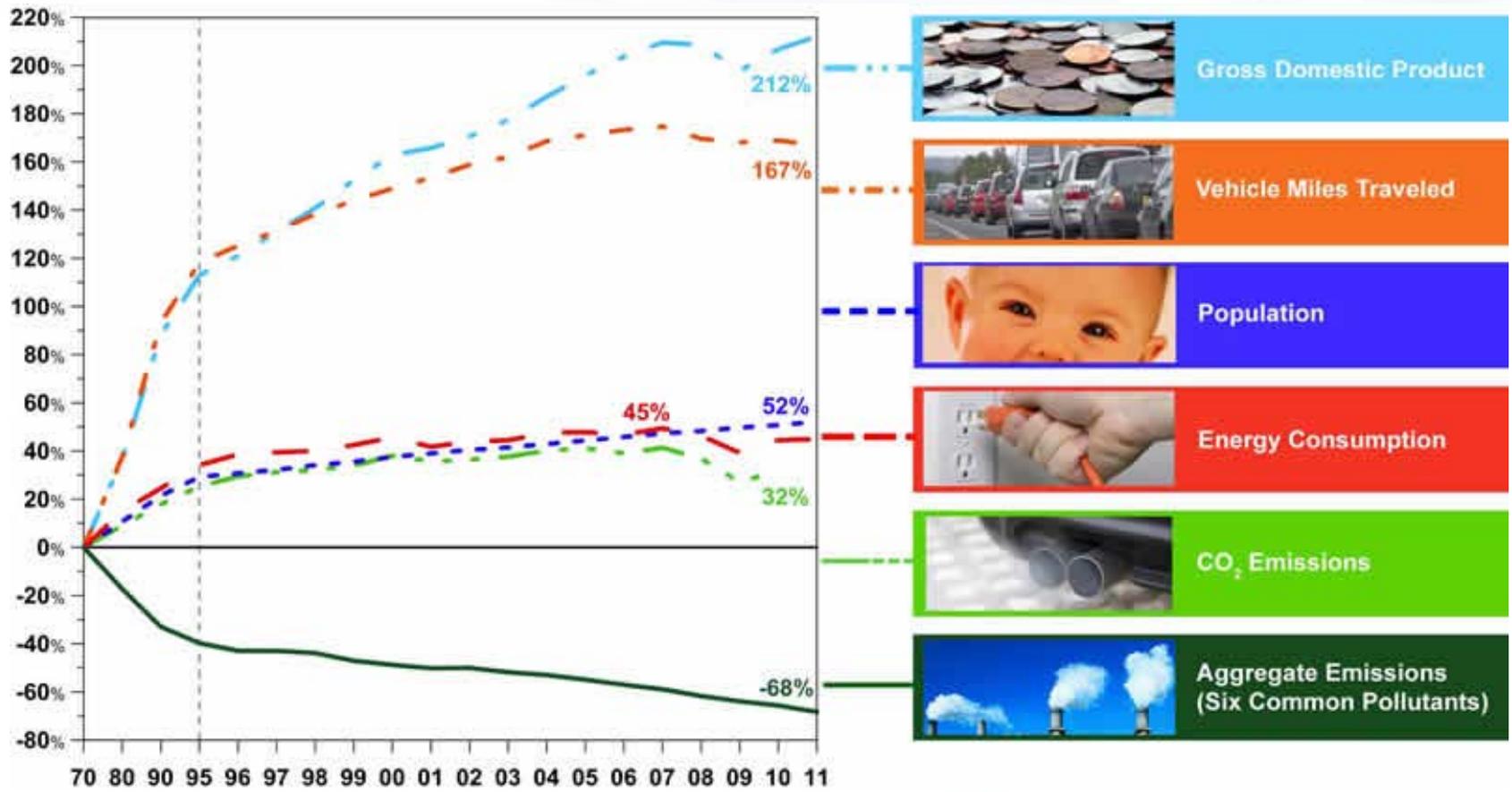
## In 2010 alone, the Clean Air Act

- Saved 160,000 lives
- Prevented 130,000 acute myocardial infarctions
- Prevented 1.7 million asthma exacerbations
- Prevented 86,000 ED visits

– *EPA, 2011*



# Air pollution drops 68% since 1970

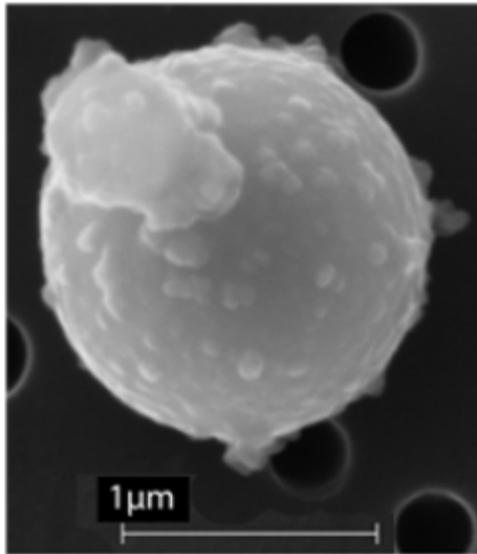


# Outdoor Air Pollutants

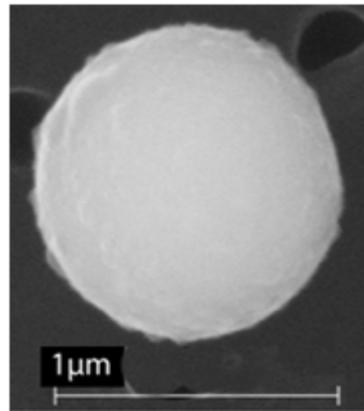
Most common:

- Ozone (smog)
- Particulate matter (soot)

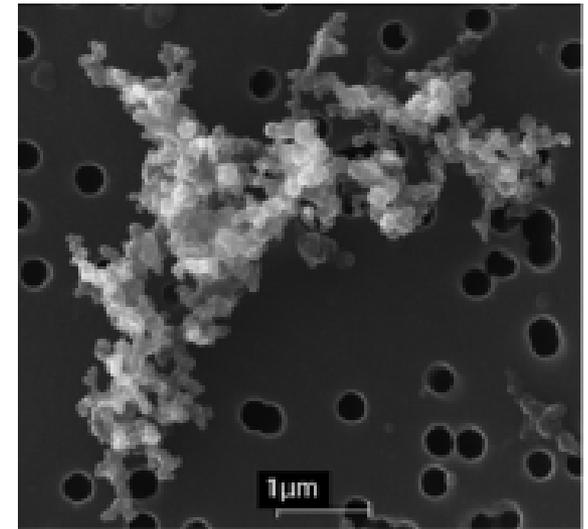
## Particles (Soot) are tiny bits of stuff



From a coal-fired power plant



From a steel manufacturing plant



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

-EPA, 2009

# What is particulate matter?

Particles are microscopic

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

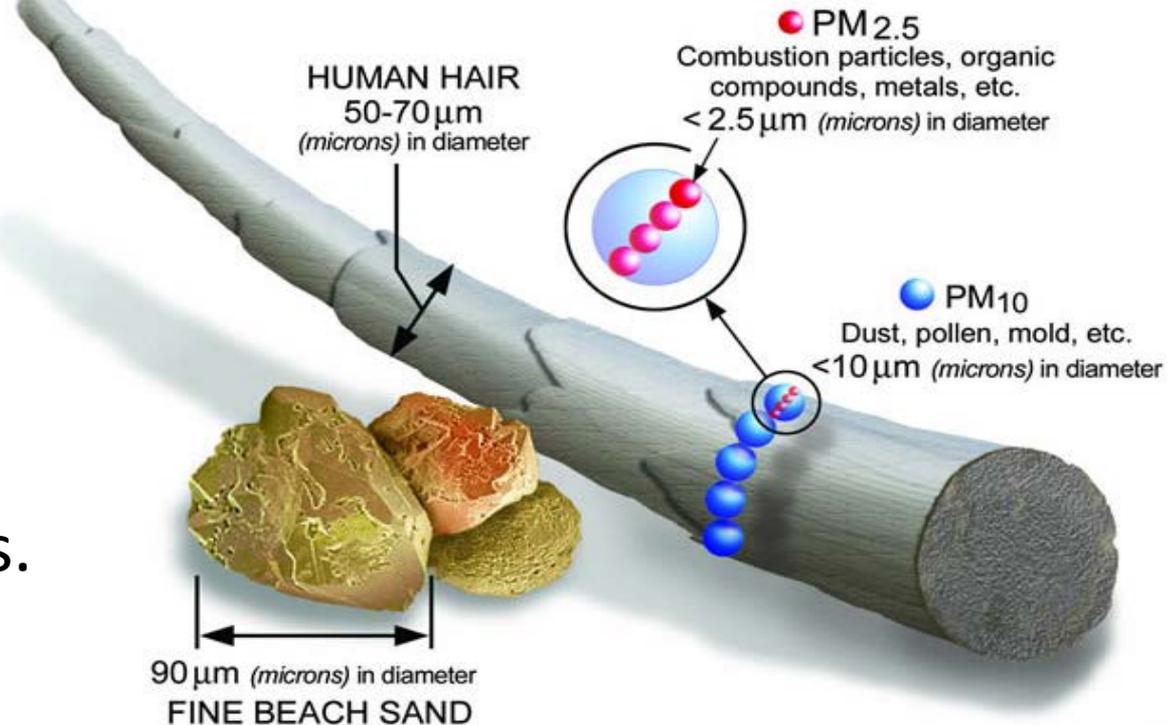
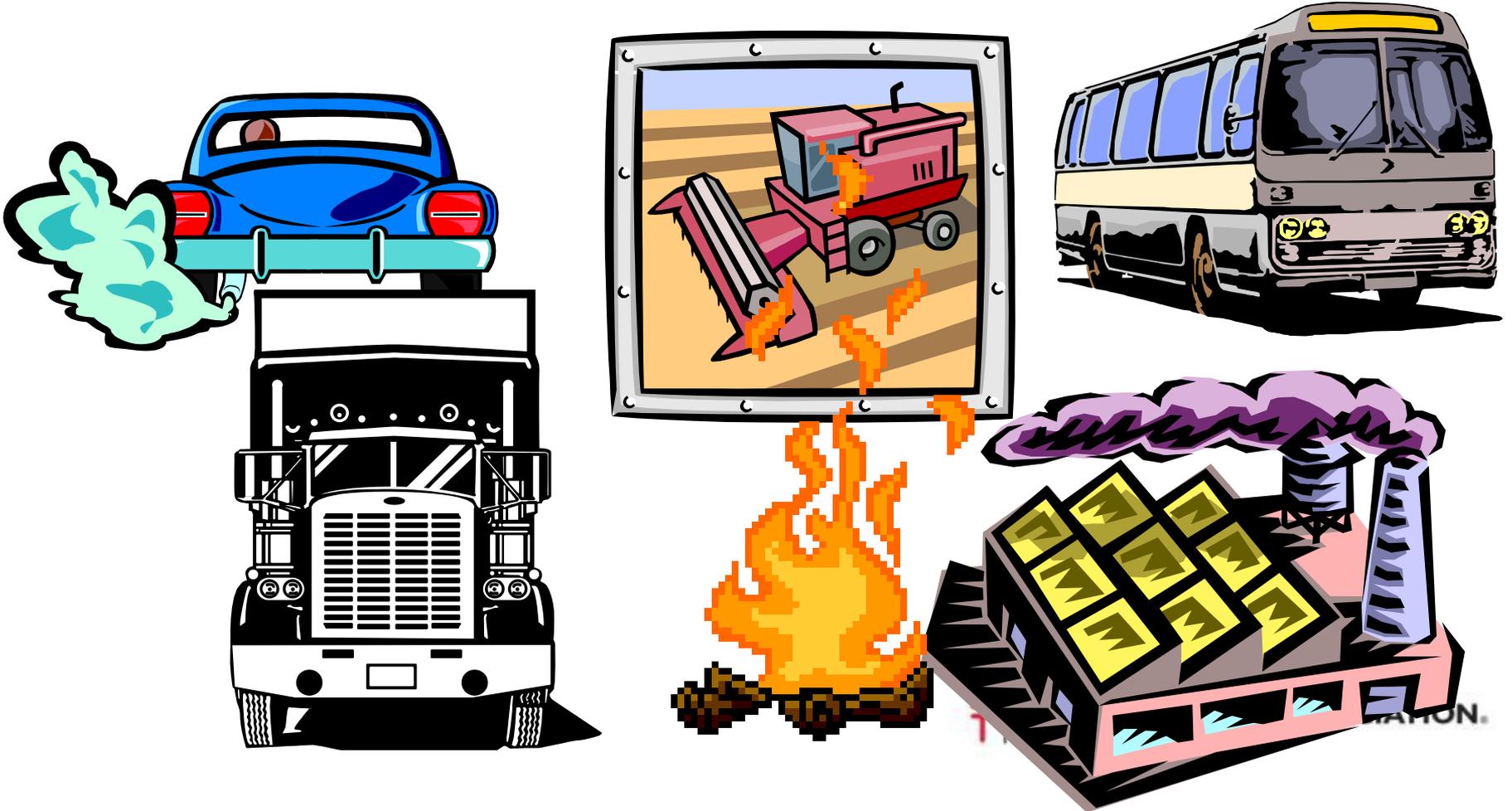


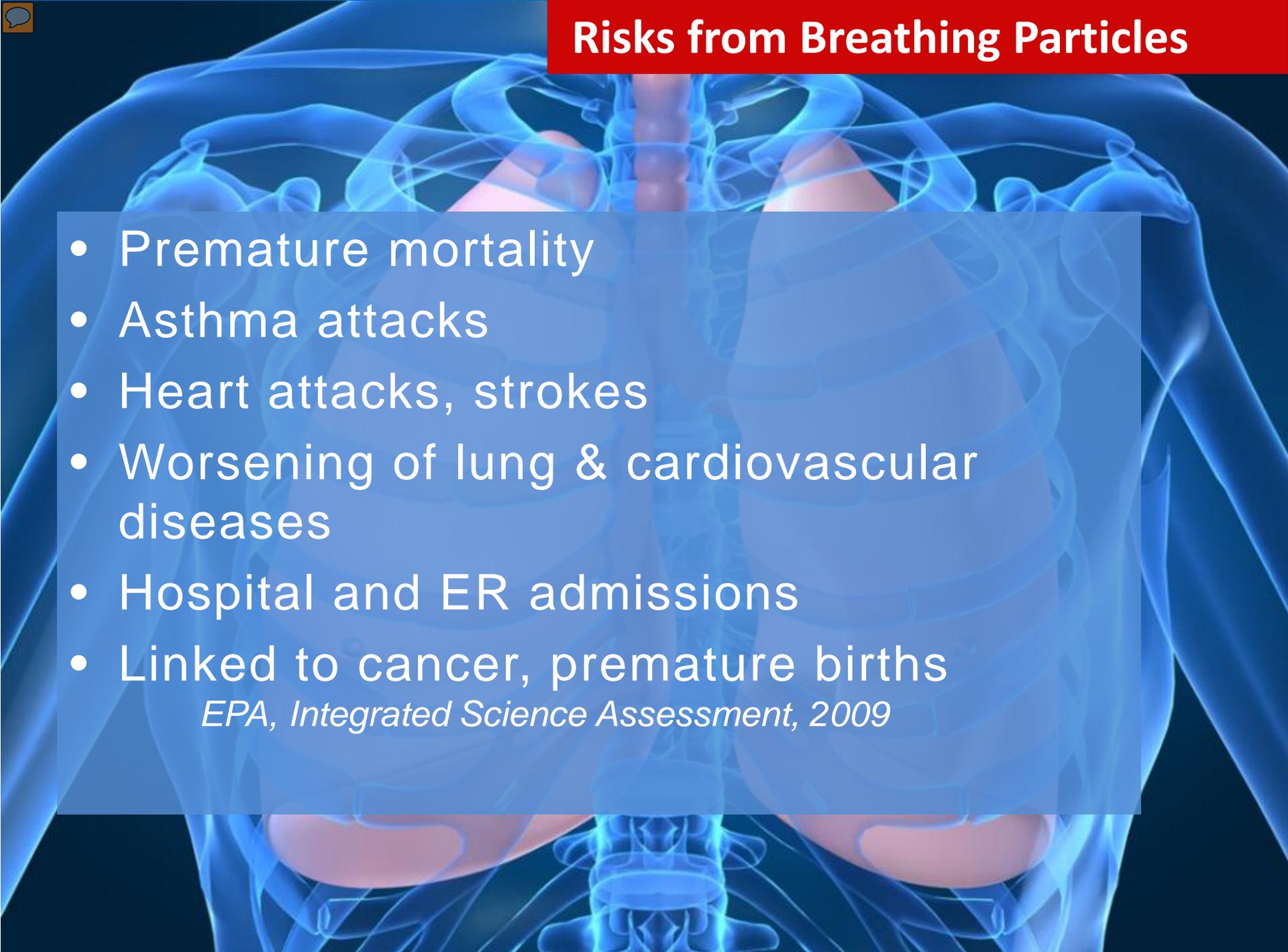
Image courtesy of the U.S. EPA

# What is particulate matter?

## Particle Pollution

Comes from many sources, including—





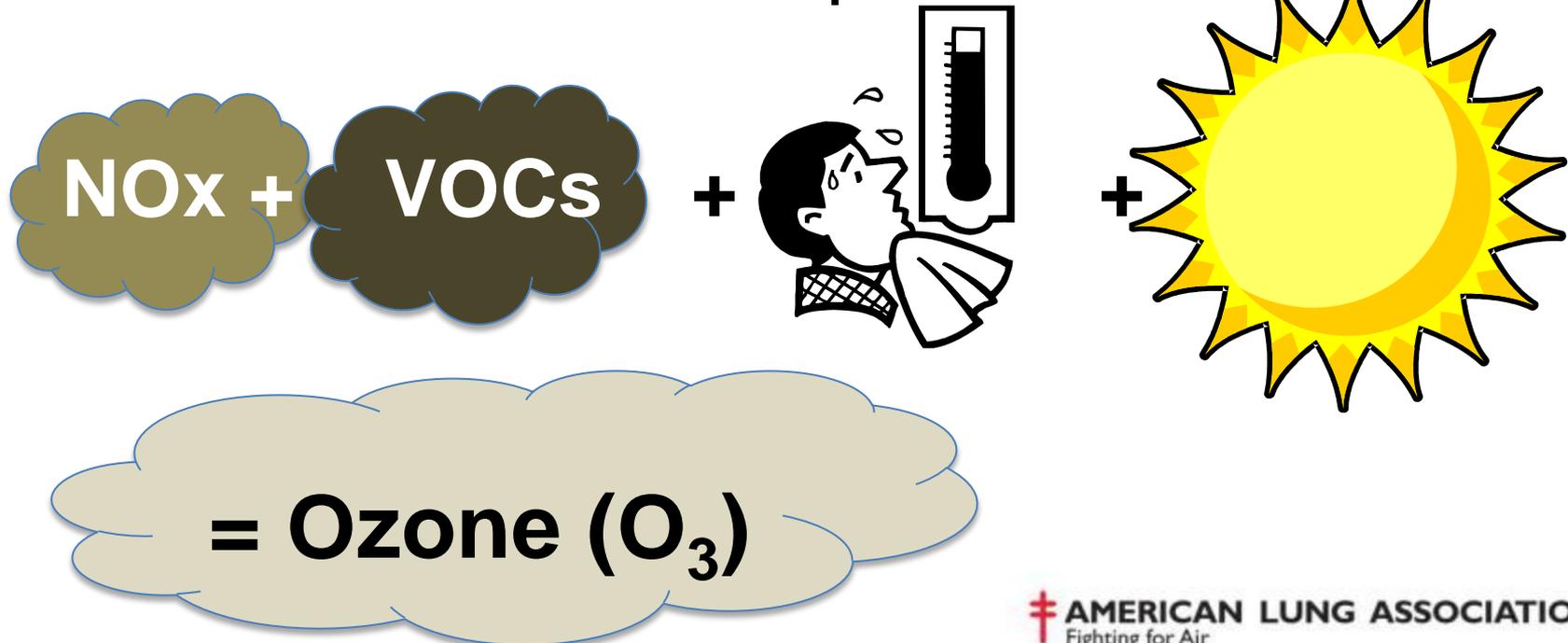
# Risks from Breathing Particles

- Premature mortality
- Asthma attacks
- Heart attacks, strokes
- Worsening of lung & cardiovascular diseases
- Hospital and ER admissions
- Linked to cancer, premature births

*EPA, Integrated Science Assessment, 2009*

## What is ozone?

- Gas, sometimes called smog
- Created in the atmosphere



## Ozone pollution

Comes from many sources, including—



# Health Effects of Air Pollution



## Health Effects of Secondhand Smoke

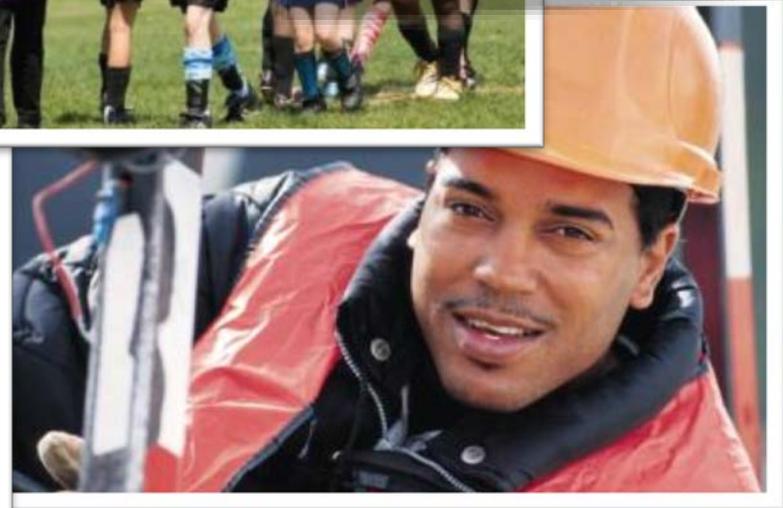
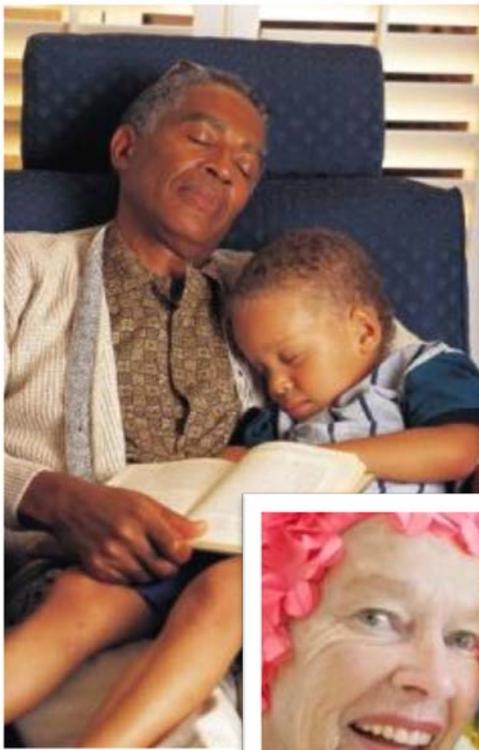
## Health Effects of Bad Air

- Shortness of breath & wheezing
- Asthma attacks
- ER visits & hospitalizations
- Long-term lung & cardiovascular disease
- Lung Cancer
- Premature death in seniors and infants

# Health Effects of Air Pollution

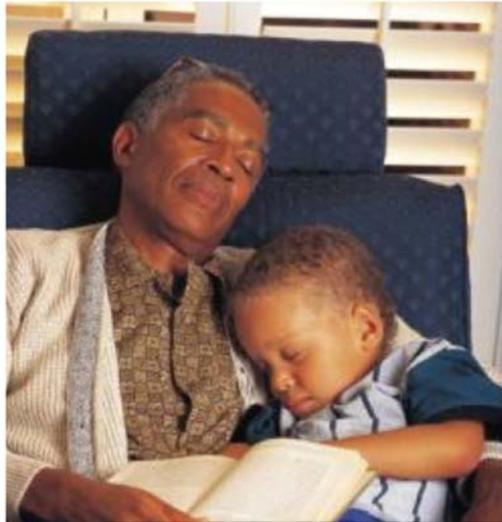


Someone in every family faces higher risk from air pollution

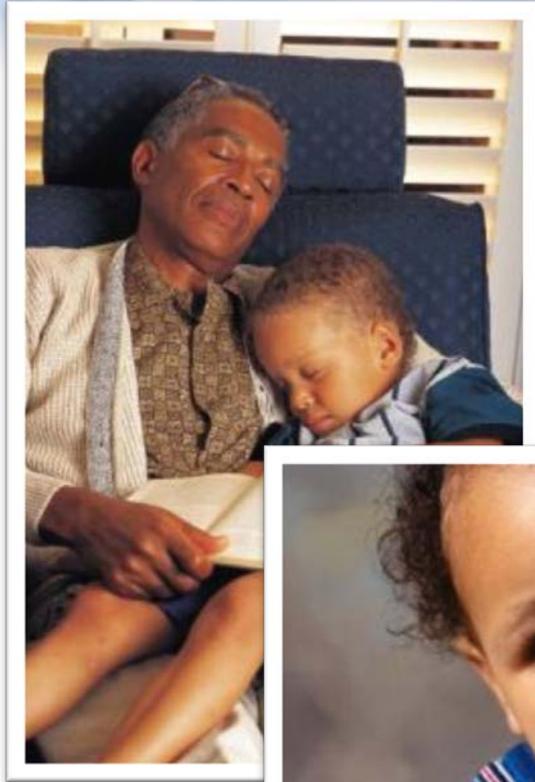


# Older Adults face higher risk

Aging brings a gradual decline in physiological processes that adds vulnerability.



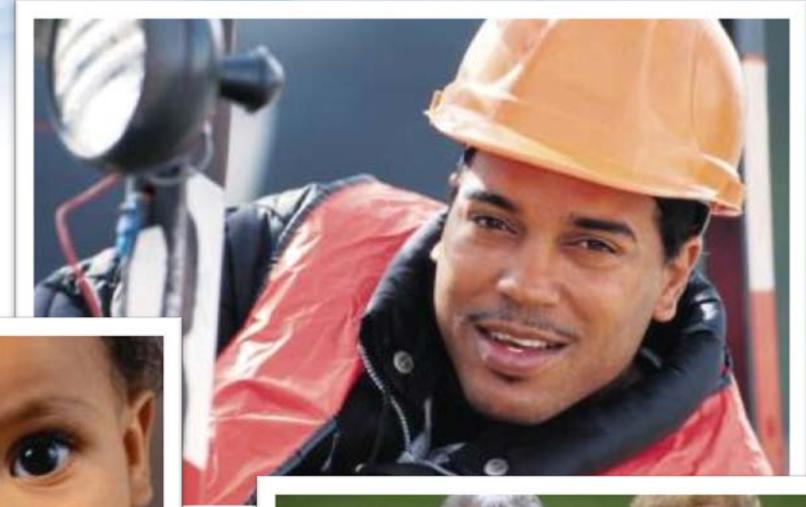
# Children, Teens face higher risk



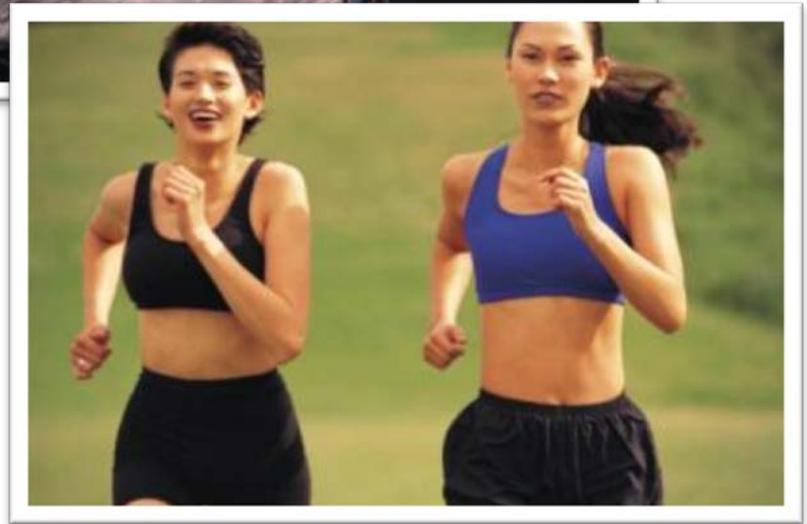
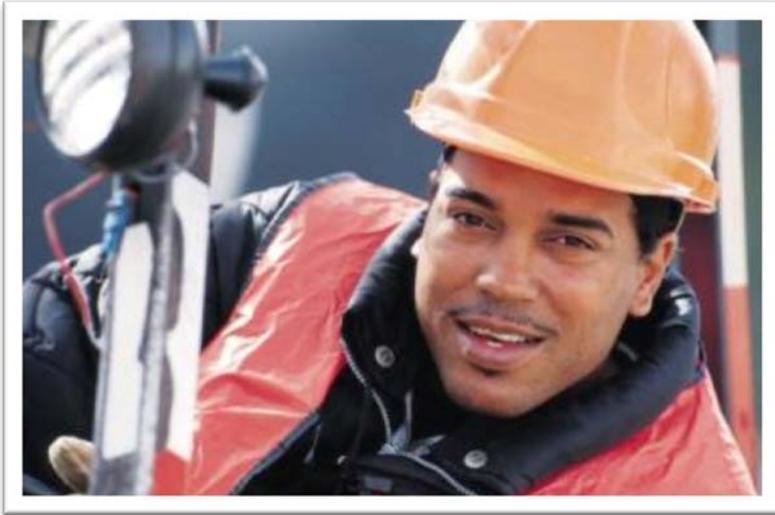
Children, teens have growing lungs, spend more time outdoors, inhale more air per pound

*Pediatrics*, 2004, reaffirmed 2010.

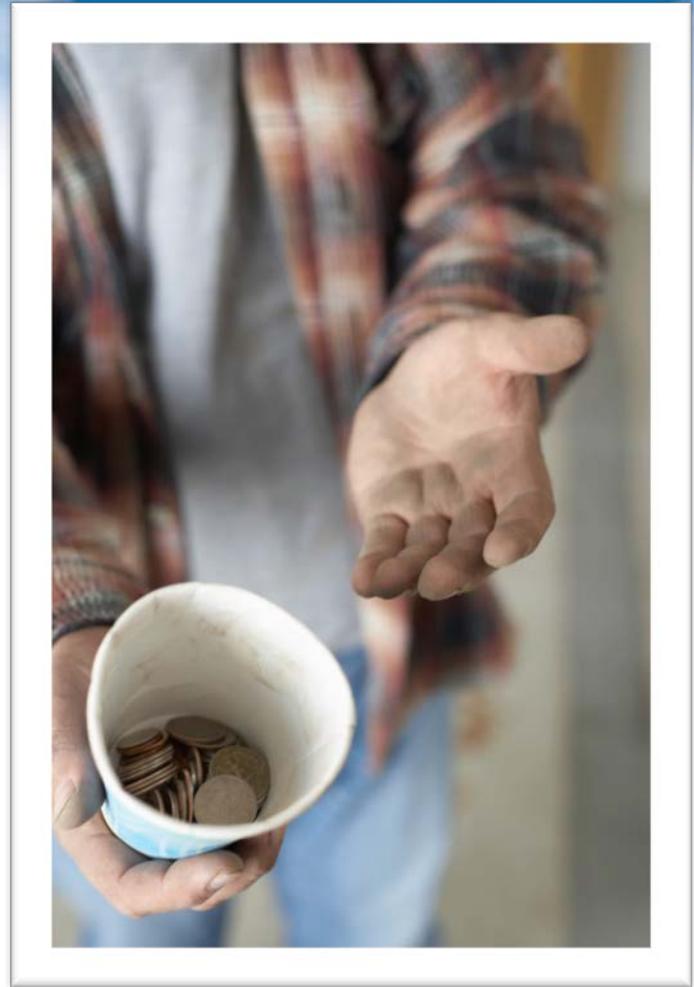
Children or adults with **asthma** or other lung diseases, **cardiovascular disease** or **diabetes** are at higher risk.



Working or exercising outdoors increases exposure, especially near highways

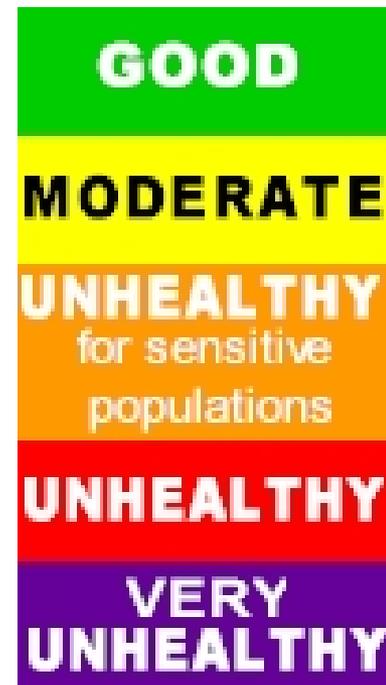


Poorer people often live closer to sources of pollution, may have higher incidence of disease, and less access to care.



## Protection from pollution

- Watch for forecasts for high air pollution days to know when to take precautions.
  - [www.airnow.gov](http://www.airnow.gov)
- Don't exercise near high-traffic areas.
- Limit exercise outdoors when pollution levels are high.



# Maine breathes everyone else's bad air

Why?

The Jet Stream moves air from west to east, south to north, leaving Maine vulnerable to air pollution produced in the rest of the nation.

- **Did you know?** Maine (and the Northeast) is nicknamed the “tailpipe of the United States.”

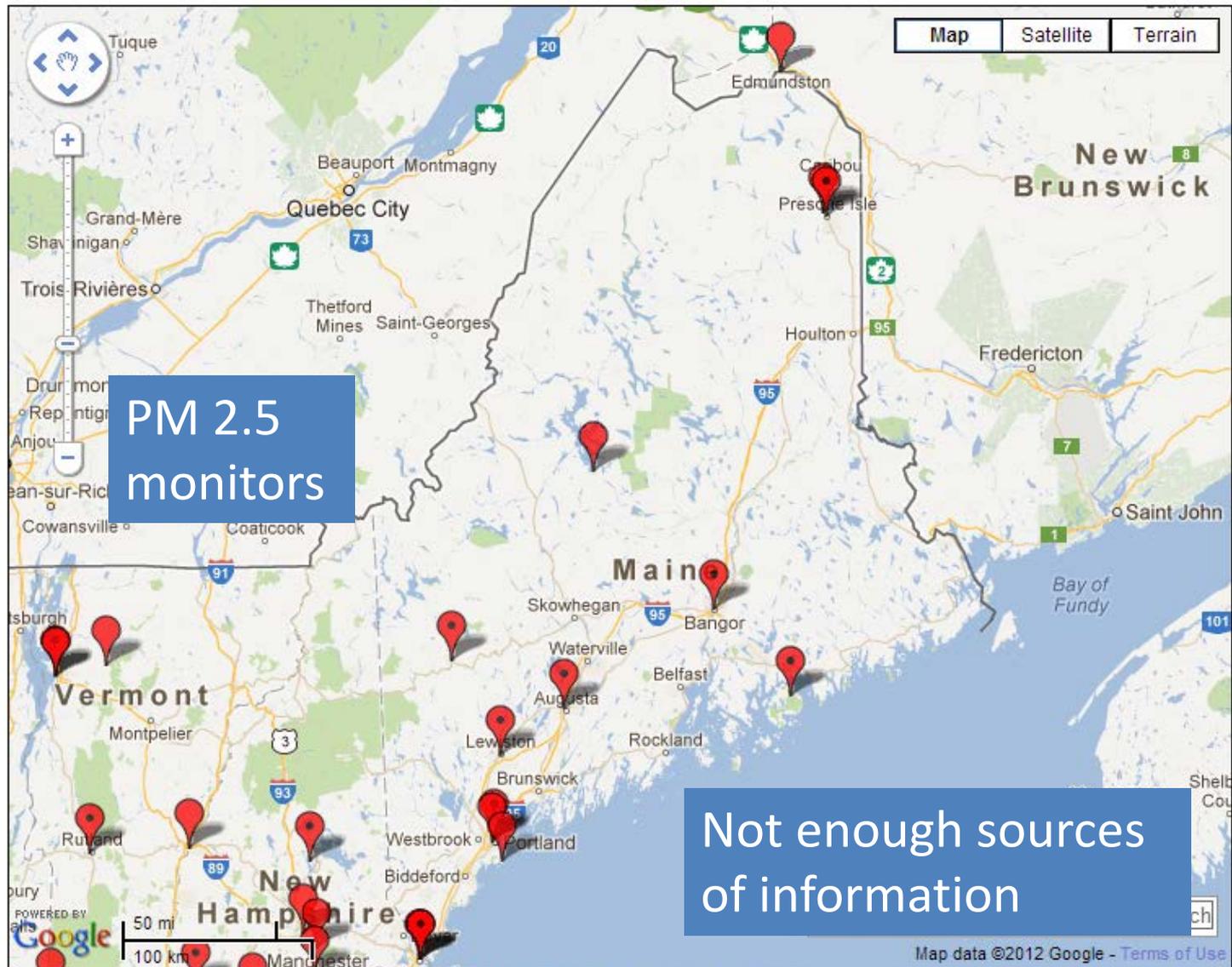


The Jet Stream  
(Bermuda High during summer)

Polluted air blows from Southeast, Midwest, Southwest, & California

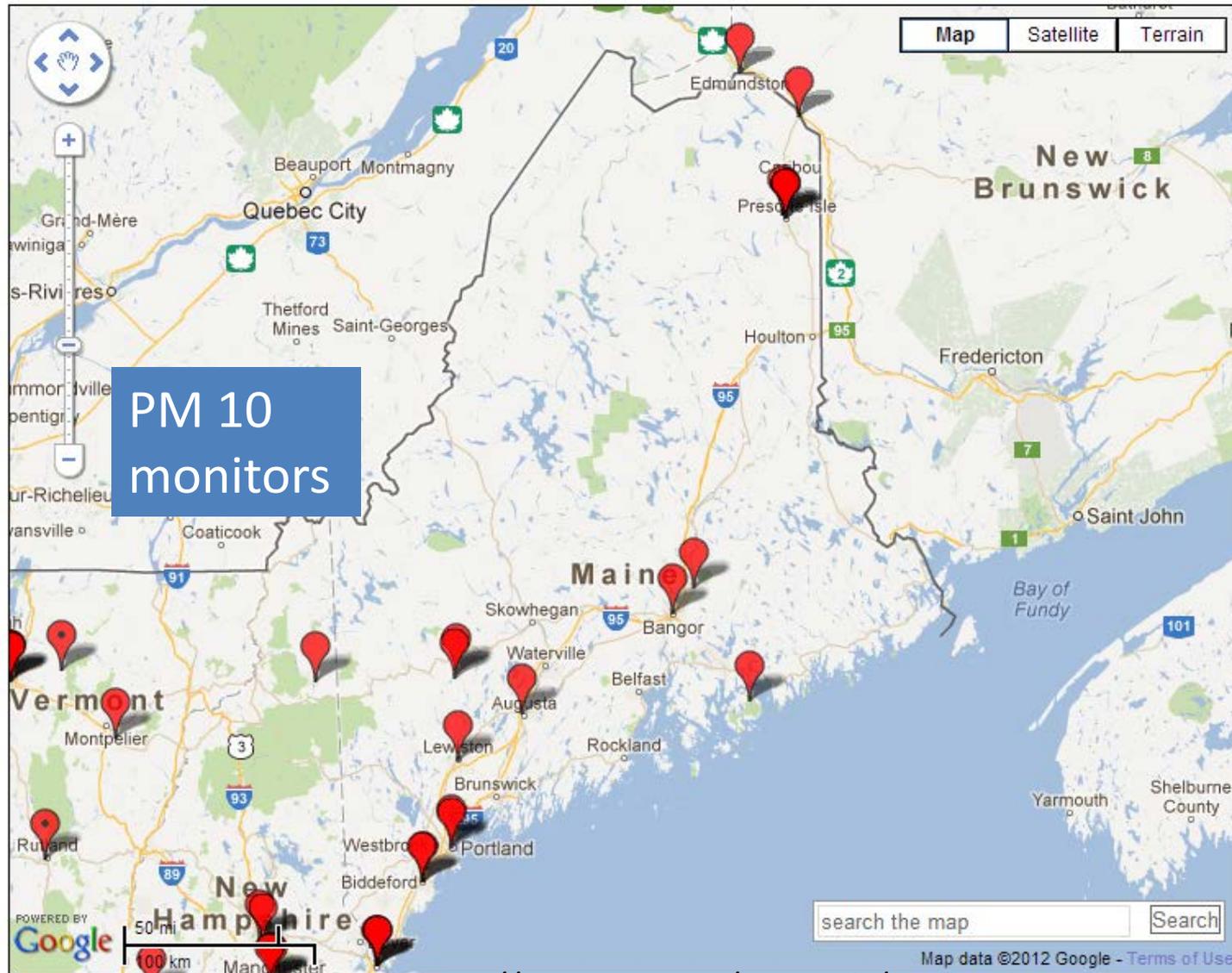


# Telling people the truth about their air



<http://www.epa.gov/airtrends/pm.html#pmloc>

# Telling people the truth about their air



<http://www.epa.gov/airtrends/pm.html#pmloc>

## We need your help:

- Share your story with us- how have you been impacted by air quality issues?
- Let me know:
  - Effie Craven [ecraven@lungNE.org](mailto:ecraven@lungNE.org)

### THE MAINE HEALTHY AIR COALITION and THE CLEAN AIR ACT

**The Maine Healthy Air Coalition** is a group of more than 50 statewide and local health care and public health organizations. We are concerned about Maine's air quality and the recent attacks on the Clean Air Act in Congress. We are committed to defending and protecting the Clean Air Act – a cornerstone law that has been working effectively to make our air healthier for over 40 years.

**The Clean Air Act is part of Maine's heritage and the key to our future.** It is also the best tool we have to protect all Americans from dangerous air pollution. The Clean Air Act protects public health by reducing levels of smog, soot, and other air toxins and it gives the Environmental Protection Agency (EPA) the power to clean up the air.

**We need the Clean Air Act because air pollution doesn't respect state borders.** Pollution comes into Maine from other states, especially those with coal-fired power plants. The Clean Air Act and national air quality standards help protect our families from air pollution imported from other states.

### THE IMPORTANCE OF HEALTHY AIR

**The two most widespread air pollutants, ozone and particle pollution, can lead to serious health effects.** Ozone, also known as smog, is created in the atmosphere by gasses that come out of tailpipes and smokestacks and mix with warm air and sunshine. Particle pollution is a mixture of very tiny solid and liquid particles in the air, which come directly from tailpipes, smokestacks and wood fires.

**Half of the people in Maine live in counties with unhealthy air,** according to the American Lung Association's 2012 *State of the Air Report*. Unhealthy air leads to dangerous health effects for all of us, but the most vulnerable are children, the elderly, and people with chronic diseases like asthma, bronchitis, emphysema, cardiovascular disease, and diabetes.

**Maine families and businesses need healthy air to grow and succeed.** Our health, our economic opportunities, and our quality of life all depend on clean and healthy air. When people are healthy, children do better in school, workers are more productive, and businesses can add jobs because their health costs are lower. We need a strong Clean Air Act now more than ever.

### HOW TO JOIN THE CAMPAIGN

**Sign up for updates.** Email our coordinator at [ecraven@lungne.org](mailto:ecraven@lungne.org) and mention you'd like to join the Maine Healthy Air Campaign.

**Like us on Facebook.** You can become a fan at [facebook.com/MEHealthyAir](https://facebook.com/MEHealthyAir)

**Help us collect stories, or share yours.** If you have friends, family, patients, or coworkers who have asthma, diabetes, cardiovascular disease or another health condition worsened by the dangers of air pollution, please have them contact us. And if you have a story to share, let us know.

**Recruit your friends.** The more people we have fighting for healthy air, the more effective we will be. Together we will speak with one voice to insist that Congress protect and defend the Clean Air Act.



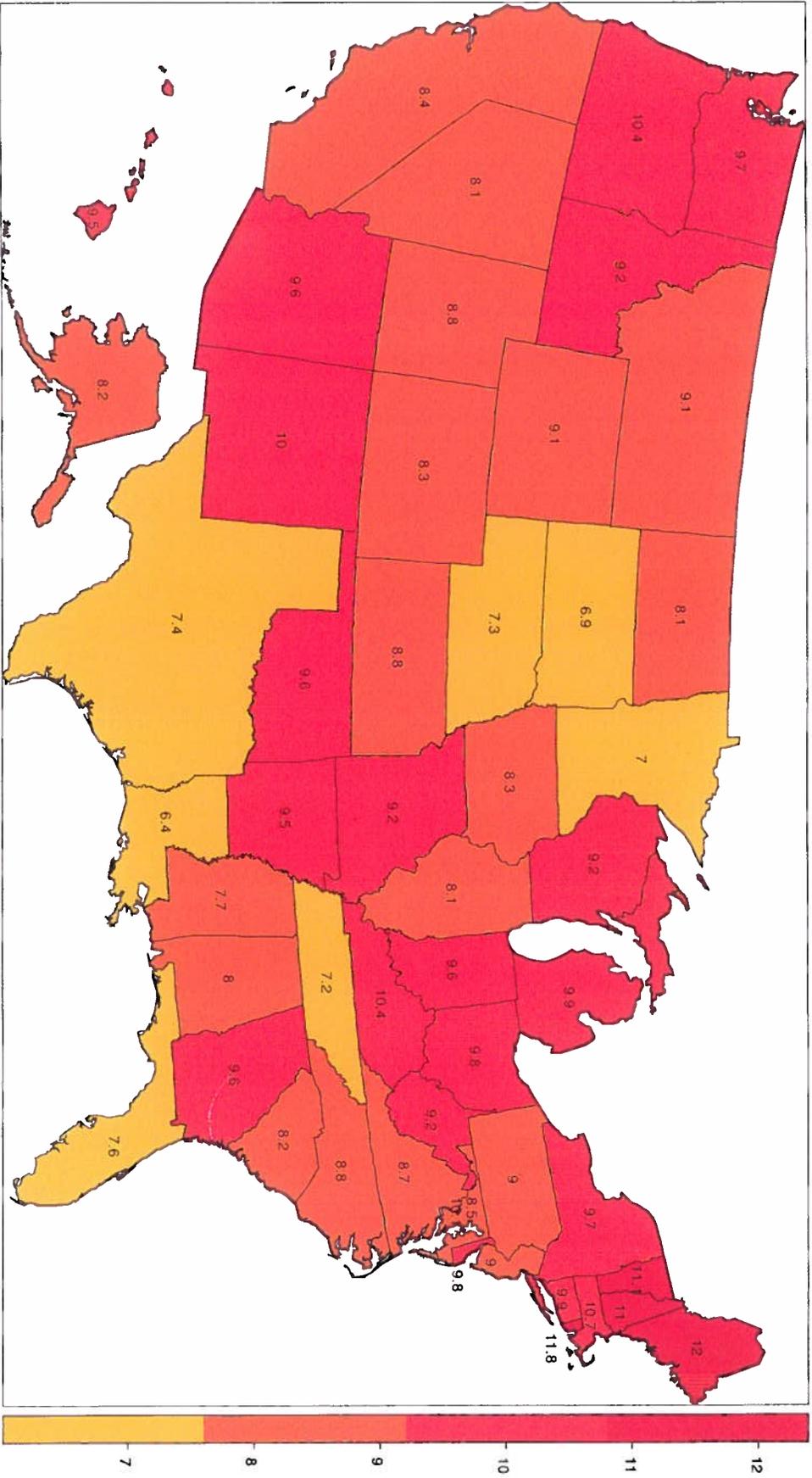
## Maine Healthy Air Coalition

### Coalition Partners as of March 4, 2013

Access Health  
AH! Asthma Health  
American Academy of Pediatrics, Maine Chapter  
American Cancer Society  
American College of Physicians- Maine Chapter  
American Heart Association  
American Lung Association of the Northeast  
American Nurses Association- Maine  
Bangor Region Public Health and Wellness  
Bucksport Bay Healthy Communities Coalition  
Chest Medicine Associates  
Choose to Be Healthy  
City of Bangor Health and Community Services  
Coastal Healthy Communities Coalition  
Community Wellness Coalition  
Consumers for Affordable Health Care  
Downeast Association of Physician Assistants  
Eastern Maine Healthcare Systems  
Frannie Peabody Center  
Greater Somerset Public Health Collaborative  
Greater Waterville PATCH  
Healthy Acadia  
Healthy Androscoggin  
Healthy Aroostook  
Healthy Casco Bay  
Healthy Community Coalition of Greater Franklin County  
Healthy Communities of the Capital Area  
Healthy Lakes Region  
Healthy Lincoln County  
Healthy Northern Kennebec  
Healthy Oxford Hills  
Healthy Rivers Region  
Healthy Sebecook Valley Coalition  
Home Care & Hospice Alliance of Maine  
Let's Go!  
Maine Academy of Family Physicians  
Maine Allergy Society  
Maine Association of School Nurses  
Maine Asthma Coalition  
MaineHealth  
Maine Hospital Association  
Maine Labor Group on Health  
Maine Medical Association  
Maine Osteopathic Association  
Maine Primary Care Association  
Maine Public Health Association  
Maine Society for Respiratory Care  
March of Dimes- Maine Chapter  
Mid Coast Hospital  
Partners for Healthier Communities  
Partnership for a Healthy Northern Penobscot  
Physicians for Social Responsibility- Maine Chapter  
Piscataquis Public Health Council  
Portland Public Health  
Power of Prevention  
River Valley Healthy Communities Coalition  
Washington County One Community

To learn more or get involved, please contact Effie Craven at [ecraven@lungNE.org](mailto:ecraven@lungNE.org) or (207) 624-0323

**Figure 4: Asthma - Current Adult Prevalence (%) by State, 2011**



Source: BRFSS 2011.

Note: Due to significant methodology changes in 2011 to the survey used to obtain these data, comparisons with previous years are not advisable.

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# State Table Notes

A full explanation of the sources of data and methodology is in the Methodology.

## Notes for all state data tables

1. **Total Population** is based on 2010 U.S. Census and represents the at-risk populations in counties with ozone or PM<sub>2.5</sub> pollution monitors; it does not represent the entire state's sensitive populations.
2. Those **18 & under** and **65 & over** are vulnerable to ozone and PM<sub>2.5</sub>. Do not use them as population denominators for disease estimates—that will lead to incorrect estimates.
3. **Pediatric asthma** estimates are for those under 18 years of age and represent the estimated number of people who had asthma in 2010 based on the state rates (Behavioral Risk Factor Surveillance System, or BRFSS), applied to county population estimates (U.S. Census).
4. **Adult asthma** estimates are for those 18 years and older and represent the estimated number of people who had asthma during 2010 based on state rates (BRFSS) applied to county population estimates (U.S. Census).
5. **Chronic bronchitis** estimates are for adults 18 and over who had been diagnosed within 2010 based on national rates (from the National Health Interview Survey, or NHIS) applied to county population estimates (U.S. Census).
6. **Emphysema** estimates are for adults 18 and over who have been diagnosed within their lifetime based on national rates in 2010 (NHIS) applied to county population estimates (U.S. Census).
7. **Cardiovascular disease** estimates are for adults 18 and over who have been diagnosed within their lifetime, based on national rates in 2010 (NHIS) applied to county population estimates (U.S. Census). CV disease includes coronary heart disease, hypertension, stroke, and heart failure.
8. **Diabetes** estimates are for adults 18 and over who have been diagnosed within their lifetime based on state rates (BRFSS) applied to county population estimates (U.S. Census).
9. **Poverty** estimates include all ages and come from the U.S. Census Bureau's Small Area Income and Poverty Estimates program. The estimates are derived from a model using estimates of income or poverty from the Annual Social and Economic Supplement and the Current Population Survey, 2010.
10. Adding across rows does not produce valid estimates. Adding emphysema and chronic bronchitis will double-count people with both diseases.

## Notes for all state grades tables.

1. Not all counties have monitors for either ozone or particle pollution. If a county does not have a monitor, that county's name is not on the list in these tables. The decision about monitors in the county is made by the state and the U.S. Environmental Protection Agency, not by the American Lung Association.
2. **INC** indicates that monitoring is underway for that pollutant in that county, but that the data are incomplete for all three years. Those counties are not graded or received an Incomplete.
3. **DNC** (Data Not Collected) indicates that data on that particular pollutant is not collected in that county.
4. The **Weighted Average (Wgt. Avg)** was derived by adding the three years of individual level data (2008-2010), multiplying the sums of each level by the assigned standard weights (i.e. 1=orange, 1.5=red, 2.0=purple and 2.5=maroon) and calculating the average. Grades are assigned based on the weighted averages as follows: A=0.0, B=0.3-0.9, C=1.0-2.0, D=2.1-3.2, F=3.3+.
5. The **Design Value** is the calculated concentration of a pollutant based on the form of the National Ambient Air Quality Standard, and is used by EPA to determine whether the air quality in a county meets the standard. Design values for the annual PM<sub>2.5</sub> concentrations by county were collected from data previously summarized by the EPA and were downloaded on September 24, 2011 from EPA's website at <http://www.epa.gov/air/airtrends/values.html>. The numbers refer to micrograms per cubic meter, or µg/m<sup>3</sup>.
6. The annual average National Ambient Air Quality Standard for PM<sub>2.5</sub> is 15 µg/m<sup>3</sup>. Counties with design values of 15 or lower received a grade of "Pass." Counties with design values of 15.1 or higher received a grade of "Fail."

## American Lung Association in Maine

122 State Street  
 Augusta, ME 04330  
 (207) 624-0308  
[www.lung.org/maine](http://www.lung.org/maine)

## AT-RISK GROUPS

### Lung Diseases

County	Total Population	Under 18	65 & Over	Lung Diseases				Cardio-vascular Disease	Diabetes	Poverty
				Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema			
Androscoggin	107,702	24,308	15,184	2,274	8,336	3,667	1,660	28,366	6,947	15,240
Aroostook	71,870	14,384	13,651	1,346	5,716	2,661	1,344	21,673	5,367	9,828
Cumberland	281,674	58,894	40,157	5,510	22,276	9,827	4,446	76,089	18,645	28,176
Hancock	54,418	9,977	9,937	933	4,426	2,058	1,021	16,674	4,129	7,461
Kennebec	122,151	25,308	18,960	2,368	9,670	4,359	2,046	34,375	8,461	13,896
Knox	39,736	7,710	7,594	721	3,185	1,491	755	12,174	3,018	5,251
Oxford	57,833	12,317	9,843	1,152	4,536	2,096	1,026	16,873	4,173	8,511
Penobscot	153,923	30,355	22,253	2,840	12,354	5,399	2,426	41,567	10,165	23,508
Piscataquis	17,535	3,365	3,564	315	1,407	672	350	5,570	1,386	2,869
Sagadahoc	35,293	7,422	5,788	694	2,780	1,275	615	10,199	2,519	3,662
Washington	32,856	6,564	6,426	614	2,613	1,226	628	10,056	2,494	6,182
York	197,131	42,091	30,353	3,938	15,482	7,007	3,297	55,376	13,641	20,065
<b>Totals</b>	<b>1,172,122</b>	<b>242,695</b>	<b>183,710</b>	<b>22,706</b>	<b>92,781</b>	<b>41,738</b>	<b>19,614</b>	<b>328,992</b>	<b>80,944</b>	<b>144,649</b>

### HIGH OZONE DAYS 2008-2010

County	Orange	Red	Purple	Wgt. Avg	Grade
Androscoggin	1	0	0	0.3	B
Aroostook	0	0	0	0.0	A
Cumberland	4	1	0	1.8	C
Hancock	8	0	0	2.7	D
Kennebec	1	0	0	0.3	B
Knox	4	0	0	1.3	C
Oxford	0	0	0	0.0	A
Penobscot	1	0	0	0.3	B
Piscataquis	DNC	DNC	DNC	DNC	DNC
Sagadahoc	0	0	0	0.0	A
Washington	2	0	0	0.7	B
York	8	0	0	2.7	D

### HIGH PARTICLE POLLUTION DAYS 2008-2010

24 Hour					Annual	
Orange	Red	Purple	Wgt. Avg	Grade	Design Value	Pass/Fail
2	0	0	0.7	B	7.8	PASS
1	0	0	0.3	B	7.1	PASS
1	0	0	0.3	B	8.4	PASS
0	0	0	0.0	A	4.4	PASS
0	0	0	0.0	A	7.5	PASS
DNC	DNC	DNC	DNC	DNC	DNC	DNC
2	0	0	0.7	B	8.2	PASS
0	0	0	0.0	A	7.4	PASS
1	0	0	0.3	B	5.3	PASS
DNC	DNC	DNC	DNC	DNC	DNC	DNC
DNC	DNC	DNC	DNC	DNC	DNC	DNC
DNC	DNC	DNC	DNC	DNC	DNC	DNC

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.***

### **About the American Lung Association**

*Now in its second century, the American Lung Association is the leading organization working to save lives by improving lung health and preventing lung disease. With your generous support, the American Lung Association is “Fighting for Air” through research, education and advocacy. For more information about the American Lung Association, a Charity Navigator Four Star Charity and holder of the Better Business Bureau Wise Giving Guide Seal, or to support the work it does, call 1-800-LUNG-USA (1-800-586-4872) or visit [www.lung.org](http://www.lung.org).*



## HEALTHY AIR AGENDA

February 2013

**Maine families and businesses need healthy air to grow and succeed.** Our health, our economic opportunities, and our quality of life all depend on clean and healthy air. When people are healthy, children do better in school, workers are more productive, and businesses can add jobs because their health costs are lower.

**The path to healthy air is clear.** Following the Healthy Air Agenda will reduce dangerous air pollution; improve the health of children, seniors, and people with chronic heart and lung disease; and lower health costs for all of us.

### SMOKESTACKS

- **Clean up coal-fired power plants.** Coal-fired power plants are a major source of hazardous pollutants and the single largest source of carbon pollution that is linked to climate change. Many of these pollutants, such as mercury, benzene, dioxins, and arsenic can cause cancer and heart disease; harm the kidneys, lungs and nervous system; and even kill.

### TAILPIPES

- **Clean up gasoline and vehicles.** Toxic emissions from cars and light trucks are a major source of dangerous air pollution. We need to improve pollution standards for passenger vehicles by reducing the amount of sulfur in gasoline and setting tighter pollution limits on new vehicles.

### RESEARCH & ENFORCEMENT

- **Fund the infrastructure that ensures healthy air.** The EPA, along with state and local air pollution agencies, are essential parts of the national infrastructure that monitors and cleans our air and protects the health of our communities. Adequate funding will enable them to measure air quality effectively, implement critical air quality programs, and meet national clean air goals.

### NO WEAKENING OR DELAYS

- **Fully implement Clean Air Act rules and standards.** Without the Clean Air Act, millions would be put at risk of more asthma attacks, reduced lung function, complications from lung disease, and even premature death. Congress must oppose all attempts to roll-back, weaken, block, or delay the Clean Air Act's life-saving protections.

**Senators Collins and King, Representatives Michaud and Pingree:**

**Stand up for Maine kids. Sign on to the Healthy Air Agenda.**

*The Maine Healthy Air Coalition is a group of more than 50 statewide and local health care and public health organizations. We are concerned about Maine's air quality because air pollution doesn't respect state borders.*

*For more information, please contact: Effie Craven at [ecraven@lungne.org](mailto:ecraven@lungne.org) or (207) 624-0323*



## Maine Healthy Air: Real Stories

### THE CLEAN AIR ACT AND REAL STORIES

**We need the Clean Air Act.** The promise of the Clean Air Act is healthy air to breathe. We have kept this promise for more than 40 years, but now it is under attack in Congress by those who want to weaken the Clean Air Act and allow more toxic pollutants. The data is clear: this would harm children, older adults, those with asthma and other lung diseases, and many others. But the data is not enough.

**We need real stories to protect our air and the Clean Air Act.** Help us show our members of Congress that clean air is essential. Tell us why clean air is important to you: share your story.

**Real stories make an impact.** There is nothing like hearing about a real person living with a health condition that is caused or worsened by air pollution to help lawmakers understand why clean air is essential. Real stories create a visual and bring a name and a face to the issue---and this is far more powerful than any set of facts and figures we could provide.

### HOW WE USE REAL STORIES

**We work with you.** If you're willing to share your story, we work with you to determine ways to share your story that are most comfortable for you. There are many ways to share your story, and the choice is entirely yours.

- [Let us mention you in a letter to the editor or to a lawmaker](#)
- [Work with us to write a letter yourself](#)
- [Attend a press event and share your story](#)
- [Meet directly with your member of congress and share your story](#)

**There are many options,** and it's up to you how you would like to be engaged. No matter which way you choose to be involved, your story will help us protect the Clean Air Act and the air we breathe.

### YES, I'LL SHARE MY STORY TO HELP DEFEND THE CLEAN AIR ACT

Name: \_\_\_\_\_

Town: \_\_\_\_\_

Phone Number: \_\_\_\_

Email Address: \_\_\_\_\_

I am:

A Parent of a Child with Asthma

An Adult with Asthma or Another Lung Disease

An Adult with Cardiovascular Disease

The Relative of Someone Affected by Unhealthy Air

Someone with A Different Story

To learn more or get involved, please contact: Effie Craven at [ecraven@lungne.org](mailto:ecraven@lungne.org) or (207) 624-0323

# Health Effects of Ozone and Particle Pollution

Ozone and particle pollution are the most widespread air pollutants—and among the most dangerous. Recent research has revealed new insights into how they can harm the body—including taking the lives of infants and altering the lungs of children. All in all, the evidence shows that the risks are greater than we once thought.

Recent findings provide more evidence about the health impacts of these pollutants:

- A major review of particle pollution and other air pollutants concluded that many cause heart attacks, even when people inhale elevated levels for as little as one week.<sup>1</sup> This review looked at evidence from 177 studies and found that particle pollution (both fine and coarse), carbon monoxide, nitrogen oxides, and sulfur dioxide all increased the risk of heart attack.
- Particle pollution that lasts for just a short while may be causing strokes, even at levels considered safe, according to a study of Boston area patients.<sup>2</sup> In particular, researchers found that breathing levels of traffic-related particles were linked to increased risk of stroke within 12 to 14 hours of breathing them.
- Up to 35,700 premature deaths can be prevented in the United States every year if the Environmental Protection Agency (EPA) strengthens the health standards for particle pollution—also known as soot—according to a report, Sick of Soot: How the EPA Can Save Lives by Cleaning Up Fine Particle Pollution, released in November by the American Lung Association, Clean Air Task Force and Earthjustice. That report summarized the findings of an in-depth look at how cleaning up the particles could have powerful, life-saving benefits.<sup>3</sup>
- Good news: Reducing air pollution has extended life expectancy. Thanks to a drop in particle pollution between 1980

and 2000, life expectancy in 51 U.S. cities increased by five months on average, according to a 2009 analysis.<sup>4</sup>

- Growing evidence shows that diabetics face a greater risk from air pollution than once believed. Several studies found increased risk of several factors associated with cardiovascular risks in people with diabetes.<sup>5</sup> Some new research with animals indicates that fine particle pollution may impact insulin resistance and other factors.<sup>6</sup>
- More people may be vulnerable to air pollution than previously understood. Researchers studying people who had received kidney transplants found that long-term exposure to ozone pollution increased their risk of fatal coronary heart disease.<sup>7</sup>
- Lower levels of ozone and particle pollution pose bigger threats. A Canadian study showed that particle pollution levels well below those considered safe in the U.S. for these pollutants caused premature death.<sup>8</sup> An earlier study had found higher risk of asthma attacks and emergency room visits and hospital admissions for children with asthma.<sup>9</sup> Another study found that low levels of these pollutants increased the risk of hospital treatment for pneumonia and chronic obstructive pulmonary disease (COPD).<sup>10</sup>
- Ozone pollution can shorten life, a conclusion confirmed by a 2008 scientific review by the National Research Council.<sup>11</sup> Evidence warns that some segments of the population may face higher risks from dying prematurely because of ozone pollution, including communities with high unemployment or high public transit use and large African-American populations.<sup>12</sup>
- Could particulate matter cause lung cancer in never-smokers? That question is getting closer to being answered with a strong “yes” after researchers looked at the records of 1.2 million volunteers which found that levels of fine particles

measured across the nation in the past few decades are linked to small, but measurable increases in lung cancer in people who never smoked.<sup>13</sup>

- Research is warning that obesity may place people at higher risk from particle pollution. Some studies link particle pollution to increases in measurable reactions in the body that signal harm to health.<sup>14</sup> The increase in the prevalence of obesity in the nation may mean that more people are at risk.
- Busy highways are high risk zones. Not only may they worsen diseases, but some evidence warns that years of breathing the pollution near busy roads may increase the risk of developing chronic diseases.
  - ◆ A growing body of evidence suggests breathing pollution from heavy traffic may cause new cases of asthma in children.<sup>15</sup>
  - ◆ Emerging research has found particle pollution associated with increasing the risk of new cases of three chronic diseases in adults: adult-onset asthma,<sup>16</sup> diabetes,<sup>17</sup> and COPD, especially in people who already have asthma or diabetes.<sup>18</sup>
  - ◆ Research had already connected pollution from heavy highway traffic to higher risks for heart attack, allergies, premature births and the death of infants around the time they are born.<sup>19</sup> Evidence of the impact of traffic pollution, even in a city with generally “cleaner” air, expanded the concern over the health effects of chronic exposure to exhaust from heavy traffic.<sup>20</sup>

Two types of air pollution dominate the problem in the U.S.: ozone and particle pollution. They aren't the only serious air pollutants: others include carbon monoxide, lead, nitrogen dioxide, and sulfur dioxide, as well as scores of toxins such as mercury, arsenic, benzene, formaldehyde, and acid gases. However, ozone and particle pollution are the most widespread pollutants.

## Ozone Pollution

It may be hard to imagine that pollution could be invisible, but ozone is. The most widespread pollutant in the U.S. is also one of the most dangerous.

Scientists have studied the effects of ozone on health for decades. Hundreds of research studies have confirmed that ozone harms people at levels currently found in the United States. In the last few years, we've learned that it can also be deadly.

### What Is Ozone?

Ozone (O<sub>3</sub>) is an extremely reactive gas molecule composed of three oxygen atoms. It is the primary ingredient of smog air pollution and is very harmful to breathe. Ozone attacks lung tissue by reacting chemically with it.

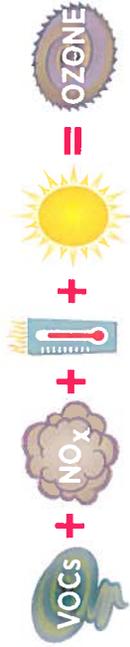
The ozone layer found high in the upper atmosphere (the stratosphere) shields us from much of the sun's ultraviolet radiation. However, ozone air pollution at ground level where we can breathe it (in the troposphere) is harmful. It causes serious health problems.

### Where Does Ozone Come From?

What you see coming out of the tailpipe on a car or a truck isn't ozone, but the raw ingredients for making ozone. Ozone is formed by chemical reactions in the atmosphere from two raw gases that do come out of tailpipes, smokestacks and many other sources. These essential raw ingredients for ozone are nitrogen oxides (NO<sub>x</sub>) and hydrocarbons, also called volatile organic compounds (VOCs). They are produced primarily when fossil fuels like gasoline, oil or coal are burned or when some chemicals, like solvents, evaporate.

When NO<sub>x</sub> and VOCs come in contact with both heat and sunlight, they combine and form ozone smog. NO<sub>x</sub> is emitted from power plants, motor vehicles and other sources of high-heat combustion. VOCs are emitted from motor vehicles, chemical plants, refineries, factories, gas stations, paint and other sources. The formula for ozone is simple, and like any

formula, the ingredients must all be present and in the right proportions to make the final product.



You may have wondered why “ozone action day” warnings are sometimes followed by recommendations to avoid activities such as mowing your lawn or refilling your gas tank during daylight hours. Lawn mower exhaust and gasoline vapors are VOCs that could turn into ozone in the heat and sun. Take away the sunlight and ozone doesn’t form, so refilling your gas tank after dark is better on high ozone days. Since we can’t control sunlight and heat, we must reduce the chemical raw ingredients if we want to reduce ozone.

### Who is at risk from breathing ozone?

Five groups of people are especially vulnerable to the effects of breathing ozone:

- children and teens;
- anyone 65 and older;
- people who work or exercise outdoors;
- people with existing lung diseases, such as asthma and chronic obstructive pulmonary disease (also known as COPD, which includes emphysema and chronic bronchitis); and
- “responders” who are otherwise healthy but for some reason react more strongly to ozone.<sup>21</sup>

The impact on your health can depend on many factors, however. For example, the risks would be greater if ozone levels are higher, if you are breathing faster because you’re working outdoors or if you spend more time outdoors.

Lifeguards in Galveston, Texas, provided evidence of the impact of even short-term exposure to ozone on healthy, active

adults in a study published in 2008. Testing the breathing capacity of these outdoor workers several times a day, researchers found that many lifeguards had greater obstruction in their airways when ozone levels were high. Because of this research, Galveston became the first city in the nation to install an air quality warning flag system on the beach.<sup>22</sup>

### How Ozone Pollution Harms Your Health

Breathing ozone can shorten your life. Two early studies published in 2004 found strong evidence of the deadly impact of ozone in cities across the U.S. and in Europe. Even on days when ozone levels were low, the researchers found that the risk of premature death increased with higher levels of ozone. They estimated that over 3,700 deaths annually in the U.S. could be attributed to a 10-parts-per-billion increase in ozone levels.<sup>23</sup> Another study, published the same week, looked at 23 European cities and found similar effects on mortality from short-term exposure to ozone.<sup>24</sup>

Confirmation came in the summer of 2005. Three groups of researchers working independently reviewed and analyzed the research around deaths associated with short-term exposures to ozone. The three teams—at Harvard, Johns Hopkins and New York University—used different approaches but all came to similar conclusions. All three studies reported a small but robust association between daily ozone levels and increased deaths.<sup>25</sup> Writing a commentary on these reviews, David Bates, MD, explained how these premature deaths could occur:

“Ozone is capable of causing inflammation in the lung at lower concentrations than any other gas. Such an effect would be a hazard to anyone with heart failure and pulmonary congestion, and would worsen the function of anyone with advanced lung disease.”<sup>26</sup>

In 2008 a committee of the National Research Council, a division of the National Academy of Sciences, reviewed the evidence again and concluded that “short-term exposure to

ambient ozone is likely to contribute to premature deaths.” They recommended that preventing early death be included in any future estimates of the benefits of reducing ozone.<sup>27</sup>

New research has begun to identify which groups face higher risk of death from ozone. A study published in 2010 examined records from ten cities in Italy and found women, diabetics and older adults to have a higher risk of premature death from high ozone.<sup>28</sup>

Ozone at levels currently in the U.S. causes immediate health problems. Many areas in the United States produce enough ground-level ozone during the summer months to cause health problems that can be felt right away. Immediate problems—in addition to increased risk of premature death—include:

- shortness of breath;
- chest pain when inhaling;
- wheezing and coughing;
- asthma attacks;
- increased susceptibility to respiratory infections;
- increased susceptibility to pulmonary inflammation; and
- increased need for people with lung diseases, like asthma or chronic obstructive pulmonary disease (COPD), to receive medical treatment and to go to the hospital.<sup>29</sup>

Breathing ozone for longer periods can alter the lungs’ ability to function. Two studies published in 2005 explored ozone’s ability to reduce the lung’s ability to work efficiently, a term called “lung function.” Each study looked at otherwise healthy groups who were exposed to ozone for long periods: outdoor postal workers in Taiwan and college freshmen who were lifelong residents of Los Angeles or the San Francisco Bay area. Both studies found that the long exposure to elevated ozone levels had decreased their lung function.<sup>30</sup>

Inhaling ozone may affect the heart as well as the lungs. A 2006 study linked exposures to high ozone levels for as little as

one hour to a particular type of cardiac arrhythmia that itself increases the risk of premature death and stroke.<sup>31</sup> A French study found that exposure to elevated ozone levels for one to two days increased the risk of heart attacks for middle-aged adults without heart disease.<sup>32</sup>

New studies warn of serious effects from breathing ozone over longer periods. With more long-term data, scientists are finding that long-term exposure—that is, for periods longer than eight hours, including days, months or years—may increase the risk of early death. Examining the records from a long-term national database, researchers found a higher risk of death from respiratory diseases associated with increases in ozone.<sup>33</sup> New York researchers looking at hospital records for children’s asthma found that the risk of admission to hospitals for asthma increased with chronic exposure to ozone. Younger children and children from low income families were more likely to need hospital admissions even during the same time periods than other children.<sup>34</sup> California researchers digging into data from their long-term Southern California Children’s Health Study found that some children with certain genes were more likely to develop asthma as adolescents in response to the variations in ozone levels in their communities.<sup>35</sup>

Breathing other pollutants in the air may make your lungs more responsive to ozone—and breathing ozone may increase your body’s response to other pollutants. For example, research warns that breathing sulfur dioxide and nitrogen oxide—two pollutants common in the eastern U.S.—can make the lungs react more strongly than to just breathing ozone alone. Breathing ozone may also increase the response to allergens in people with allergies. A large study published in 2009 found that children were more likely to suffer from hay fever and respiratory allergies when ozone and PM<sub>2.5</sub> levels were high.<sup>36</sup>

Even low levels of ozone may be deadly. A large study of 48 U.S. cities looked at the association between ozone and all-cause mortality during the summer months. Ozone concentrations by city in the summer months ranged from 16 percent to

80 percent lower than EPA currently considers safe. Researchers found that ozone at those lower levels was associated with deaths from cardiovascular disease, strokes, and respiratory causes.<sup>37</sup>

## Particle Pollution

Ever look at dirty truck exhaust?

The dirty, smoky part of that stream of exhaust is made of particle pollution. Overwhelming evidence shows

that particle pollution—like that coming from that exhaust smoke—can kill. Particle pollution can increase the risk of heart disease, lung cancer and asthma attacks and can interfere with the growth and work of the lungs.

### What Is Particle Pollution?

*Particle pollution* refers to a mix of very tiny solid and liquid particles that are in the air we breathe. But nothing about particle pollution is simple. First of all, the particles themselves are different sizes. Some are one-tenth the diameter of a strand of hair. Many are even tinier; some are so small they can only be seen with an electron microscope. Because of their size, you can't see the individual particles. You can only see the haze that forms when millions of particles blur the spread of sunlight. You may not be able to tell when you're breathing particle pollution. Yet it is so dangerous it can shorten your life.

The differences in size make a big difference in how they affect us. Our natural defenses help us to cough or sneeze larger particles out of our bodies. But those defenses don't keep out smaller particles, those that are smaller than 10 microns (or micrometers) in diameter, or about one-seventh the diameter of a single human hair. These particles get trapped in the lungs, while the smallest are so minute that they can pass through the lungs into the blood stream, just like the essential oxygen molecules we need to survive.

Researchers categorize particles according to size, grouping them as coarse, fine and ultrafine. Coarse particles fall be-

tween 2.5 microns and 10 microns in diameter and are called PM<sub>10-2.5</sub>. Fine particles are 2.5 microns in diameter or smaller and are called PM<sub>2.5</sub>. Ultrafine particles are smaller than 0.1 micron in diameter<sup>38</sup> and are small enough to pass through the lung tissue into the blood stream, circulating like the oxygen molecules themselves. No matter what the size, particles can be harmful to your health.

Because particles are formed in so many different ways, they can be composed of many different compounds. Although we often think of particles as solids, not all are. Some are completely liquid; some are solids suspended in liquids. As the U.S. Environmental Protection Agency puts it, particles are really "a mixture of mixtures."<sup>39</sup> The mixtures differ between the eastern and western United States and in different times of the year. For example, the Midwest, Southeast and Northeast states have more sulfate particles than the West on average, largely due to the high levels of sulfur dioxide emitted by large, coal-fired power plants. By contrast, nitrate particles from motor vehicle exhaust form a larger proportion of the unhealthy mix in the winter in the Northeast, Southern California, the Northwest, and North Central U.S.<sup>40</sup>

### Who Is at Risk?

Anyone who lives where particle pollution levels are high is at risk (you can take a look at levels in your state in this report). Some people face higher risk, however. People at the greatest risk from particle pollution exposure include:

- Anyone with lung disease such as asthma and chronic obstructive pulmonary disease (COPD), which includes chronic bronchitis and emphysema;
- Anyone with heart disease or diabetes<sup>41</sup>;
- Anyone over 65;
- Infants, children and teens;
- People with low incomes; and
- People who work or are active outdoors.<sup>42</sup>

Diabetics face increased risk at least in part because of their higher risk for cardiovascular disease. A 2010 study examined prevalence of diagnosed diabetes in relation to fine particle pollution in 2004-2005. The evidence suggested that air pollution is a risk factor for diabetes.<sup>43</sup> Traffic-related air pollution was implicated in two studies. A German study of nondiabetic women found that new cases of diabetes were more likely as levels of traffic-related pollution and particle pollution increased.<sup>44</sup> A similar finding of an increased risk for diabetes in women who lived near roadways came in a large study of nurses and health professionals, although that study did not find a strong association with levels of particle pollution.<sup>45</sup>

### What Can Particles Do to Your Health?

Particle pollution can be very dangerous to breathe. Breathing particle pollution may trigger illness, hospitalization and premature death, risks showing up in new studies that validate earlier research.<sup>46</sup>

Good news came in 2009 from researchers who looked at the impact of the drop in year-round levels of particle pollution between 1980 and 2000 in 51 U.S. cities. Thanks to reductions in particle pollution people living in these cities had five months added to their life expectancy on average.<sup>47</sup> This study adds to the growing research that cleaning up air pollution improves life and health. Other researchers estimated that reductions in air pollution can be expected to produce rapid improvements in public health, with fewer deaths occurring within the first two years after reductions.<sup>48</sup>

Researchers are exploring possible differences in health effects of the three sizes of particles and particles from different sources, such as diesel particles from trucks and buses or sulfates from coal-fired power plants. So far, the evidence remains clear that all particles from all sources are dangerous.<sup>49</sup>

### Short-Term Exposure Can Be Deadly

First and foremost, short-term exposure to particle pollution can kill. Peaks or spikes in particle pollution can last for hours to days. Deaths can occur on the very day that particle levels are high, or within one to two months afterward. Particle pollution does not just make people die a few days earlier than they might otherwise—these are deaths that would not have occurred if the air were cleaner.<sup>50</sup>

Researchers from Harvard University recently tripled the estimated risk of premature death following a review of the newer evidence from fine particle monitors (PM<sub>2.5</sub>) in 27 U.S. cities.<sup>51</sup>

Particle pollution also diminishes lung function, causes greater use of asthma medications and increased rates of school absenteeism, emergency room visits and hospital admissions. Other adverse effects can be coughing, wheezing, cardiac arrhythmias and heart attacks. According to the findings from some of the latest studies, short-term increases in particle pollution have been linked to:

- death from respiratory and cardiovascular causes, including strokes,<sup>52, 53, 54, 55</sup>
- increased mortality in infants and young children;<sup>56</sup>
- increased numbers of heart attacks, especially among the elderly and in people with heart conditions;<sup>57</sup>
- inflammation of lung tissue in young, healthy adults;<sup>58</sup>
- increased hospitalization for cardiovascular disease, including strokes and congestive heart failure;<sup>59, 60, 61</sup>
- increased emergency room visits for patients suffering from acute respiratory ailments;<sup>62</sup>
- increased hospitalization for asthma among children,<sup>63, 64, 65</sup> and
- increased severity of asthma attacks in children.<sup>66</sup>

Again, the impact of even short-term exposure to particle pollution on healthy adults showed up in the Galveston lifeguard

study, in addition to the harmful effects of ozone pollution. Lifeguards had reduced lung volume at the end of the day when fine particle levels were high.<sup>67</sup>

### Year-Round Exposure

Breathing high levels of particle pollution day in and day out also can be deadly, as landmark studies in the 1990s conclusively showed.<sup>68</sup> Chronic exposure to particle pollution can shorten life by one to three years.<sup>69</sup> Other impacts range from premature births to serious respiratory disorders, even when the particle levels are very low.

Year-round exposure to particle pollution has also been linked to:

- increased hospitalization for asthma attacks for children living near roads with heavy truck or trailer traffic;<sup>70, 71</sup>
- slowed lung function growth in children and teenagers;<sup>72, 73</sup>
- significant damage to the small airways of the lungs;<sup>74</sup>
- increased risk of dying from lung cancer;<sup>75</sup> and
- increased risk of death from cardiovascular disease.<sup>76</sup>

Research into the health risks of 65,000 women over age 50 found that those who lived in areas with higher levels of particle pollution faced a much greater risk of dying from heart disease than had been previously estimated. Even women who lived within the same city faced differing risks depending on the annual levels of pollution in their neighborhood.<sup>77</sup>

The Environmental Protection Agency released the most thorough review of the current research on particle pollution in December 2009.<sup>78</sup> The Agency had engaged a panel of expert scientists, the Clean Air Scientific Advisory Committee, to help them assess the evidence, in particular research published between 2002 and May 2009. EPA concluded that particle pollution caused multiple, serious threats to health. Their findings are highlighted in the box below.

### EPA Concludes Fine Particle Pollution Poses Serious Health Threats

- Causes early death (both short-term and long-term exposure)
- Causes cardiovascular harm (e.g. heart attacks, strokes, heart disease, congestive heart failure)
- Likely to cause respiratory harm (e.g. worsened asthma, worsened COPD, inflammation)
- May cause cancer
- May cause reproductive and developmental harm

—U.S. Environmental Protection Agency, *Integrated Science Assessment for Particulate Matter*, December 2009, EPA 600/R-08/139F

### Where Does Particle Pollution Come From?

Particle pollution is produced through two separate processes—mechanical and chemical.

Mechanical processes break down bigger bits into smaller bits with the material remaining essentially the same, only becoming smaller. Mechanical processes primarily create coarse particles.<sup>79</sup> Dust storms, construction and demolition, mining operations, and agriculture are among the activities that produce coarse particles. Tire, brake pad and road wear can also create coarse particles. Bacteria, pollen, mold, and plant and animal debris are also included as coarse particles.<sup>80</sup>

By contrast, chemical processes in the atmosphere create most of the tiniest fine and ultrafine particles. Combustion sources burn fuels and emit gases. These gases can vaporize and then condense to become a particle of the same chemical compound. Or, they can react with other gases or particles in the atmosphere to form a particle of a different chemical compound. Particles formed by this latter process come from the reaction of elemental carbon (soot), heavy metals, sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds with water and other compounds in the atmosphere.<sup>81</sup> Burning fossil fuels in factories, power plants, steel mills, smelters, diesel- and gasoline-powered motor vehicles (cars and trucks) and equipment generate a large part of the raw

materials for fine particles. So does burning wood in residential fireplaces and wood stoves or burning agricultural fields or forests.

## Focusing on Children's Health

Children face special risks from air pollution because their lungs are growing and because they are so active.

Just like the arms and legs, the largest portion of a child's lungs will grow long after he or she is born. Eighty percent of their tiny air sacs develop after birth. Those sacs, called the alveoli, are where the life-sustaining transfer of oxygen to the blood takes place. The lungs and their alveoli aren't fully grown until children become adults.<sup>82</sup> In addition, the body's defenses that help adults fight off infections are still developing in young bodies.<sup>83</sup> Children have more respiratory infections than adults, which also seems to increase their susceptibility to air pollution.<sup>84</sup>

Furthermore, children don't behave like adults, and their behavior also affects their vulnerability. They are outside for longer periods and are usually more active when outdoors. Consequently, they inhale more polluted outdoor air than adults typically do.<sup>85</sup>

In 2004, the American Academy of Pediatrics issued a special statement on the dangers of outdoor air pollution on children's health, pointing out the special differences for children.<sup>86</sup>

### Air Pollution Increases Risk of Underdeveloped Lungs

Another finding from the Southern California Children's Health study looked at the long-term effects of particle pollution on teenagers. Tracking 1,759 children between ages 10 and 18, researchers found that those who grew up in more polluted areas face the increased risk of having underdeveloped lungs, which may never recover to their full capacity. The average drop in lung function was 20 percent below what was expected

for the child's age, similar to the impact of growing up in a home with parents who smoked.<sup>87</sup>

Community health studies are pointing to less obvious, but serious effects from year-round exposure to ozone, especially for children. Scientists followed 500 Yale University students and determined that living just four years in a region with high levels of ozone and related co-pollutants was associated with diminished lung function and frequent reports of respiratory symptoms.<sup>88</sup> A much larger study of 3,300 school children in Southern California found reduced lung function in girls with asthma and boys who spent more time outdoors in areas with high levels of ozone.<sup>89</sup>

### Cleaning Up Pollution Can Reduce Risk to Children

There is also real-world evidence that reducing air pollution can help protect children. Two studies published in 2005 added more weight to the argument.

Changes in air pollution from the reunification of Germany proved a real-life laboratory. Both East and West Germany had different levels and sources of particles. Outdoor particle levels were much higher in East Germany, where they came from factories and homes. West Germany had higher concentrations of traffic-generated particles. After reunification, emissions from the factories and homes dropped, but traffic increased. A German study explored the impact on the lungs of six-year olds from both East and West Germany. Total lung capacity improved with the lower particle levels. However, for those children living near busy roads, the increased pollution from the increased traffic kept them from benefiting from the overall cleaner air.<sup>90</sup>

In Switzerland, particle pollution dropped during a period in the 1990s. Researchers there tracked 9,000 children over a nine-year period, following their respiratory symptoms. After taking other factors such as family characteristics and indoor air pollution into account, the researchers noted that during

the years with less pollution, the children had fewer episodes of chronic cough, bronchitis, common cold, and conjunctivitis symptoms.<sup>91</sup>

## Disparities in the Impact of Air Pollution

The burden of air pollution is not evenly shared. Poorer people and some racial and ethnic groups are among those who often face higher exposure to pollutants and who may experience greater responses to such pollution. Many studies have explored the differences in harm from air pollution to racial or ethnic groups and people who are in a low socioeconomic position, have less education, or live nearer to major sources,<sup>92</sup> including a workshop the American Lung Association held in 2001 that focused on urban air pollution and health inequities.<sup>93</sup>

Many studies have looked at differences in the impact on premature death. Results have varied widely, particularly for effects between racial groups. Some studies have found no differences among races,<sup>94</sup> while others found greater responsiveness for Whites and Hispanics, but not African-Americans,<sup>95</sup> or for African-Americans but not other races or ethnic groups.<sup>96</sup> Other researchers have found greater risk for African-Americans from air toxics, including those pollutants that also come from traffic sources.<sup>97</sup>

Socioeconomic position has been more consistently associated with greater harm from air pollution. Recent studies show evidence of that link. Low socioeconomic status consistently increased the risk of premature death from fine particle pollution among 13.2 million Medicare recipients studied in the largest examination of particle pollution mortality nationwide.<sup>98</sup> In the 2008 study that found greater risk for premature death for African-Americans, researchers also found greater risk for people living in areas with higher unemployment or higher use of public transportation.<sup>99</sup> A 2008 study of Washington, DC found that while poor air quality and worsened asthma went hand-in-hand in areas where Medicaid enrollment was high,

the areas with the highest Medicaid enrollment did not always have the strongest association of high air pollution and asthma attacks.<sup>100</sup> However, two other recent studies in France have found no association with lower income and asthma attacks.<sup>101</sup>

Scientists have speculated that there are three broad reasons why disparities may exist. First, groups may face greater exposure to pollution because of factors ranging from racism to class bias to housing market dynamics and land costs. For example, pollution sources may be located near disadvantaged communities, increasing exposure to harmful pollutants. Second, low social position may make some groups more susceptible to health threats because of factors related to their disadvantage. Lack of access to health care, grocery stores and good jobs, poorer job opportunities, dirtier workplaces or higher traffic exposure are among the factors that could handicap groups and increase the risk of harm. Finally, existing health conditions, behaviors, or traits may predispose some groups to greater risk. For example, diabetics are among the groups most at risk from air pollutants, and the elderly, African-Americans, Mexican-Americans and people living near a central city have higher incidence of diabetes.<sup>102</sup>

## Highways May Be Especially Dangerous for Breathing

Being in heavy traffic, or living near a road, may be even more dangerous than being in other places in a community. Growing evidence shows that the vehicle emissions coming directly from those highways may be higher than in the community as a whole, increasing the risk of harm to people who live or work near busy roads.

The number of people living “next to a busy road” may include 30 to 45 percent of the population in North America, according to the most recent review of the evidence. In January 2010, the Health Effects Institute published a major review of the evidence by a panel of expert scientists. The panel looked at over 700 studies from around the world, examining the health

effects. They concluded that traffic pollution causes asthma attacks in children, and may cause a wide range of other effects including: the onset of childhood asthma, impaired lung function, premature death and death from cardiovascular diseases, and cardiovascular morbidity. The area most affected, they concluded, was roughly 0.2 mile to 0.3 mile (300 to 500 meters) from the highway.<sup>103</sup>

Children and teenagers are among the most vulnerable—though not the only ones at risk. A Danish study found that long-term exposure to traffic air pollution may increase the risk of developing chronic obstructive pulmonary disease (COPD). They found that those most at risk were people who already had asthma or diabetes.<sup>104</sup> Studies have found increased risk of premature death from living near a major highway or an urban road.<sup>105</sup> Another study found an increase in risk of heart attacks from being in traffic, whether driving or taking public transportation.<sup>106</sup> Urban women in a Boston study experienced decreased lung function associated with traffic-related pollution.<sup>107</sup>

## How to Protect Yourself from Ozone, Particle Pollution

To minimize your exposure to ozone and particle pollution:

- Pay attention to forecasts for high air pollution days to know when to take precautions;
- Avoid exercising near high-traffic areas;
- Avoid exercising outdoors when pollution levels are high, or substitute an activity that requires less exertion;
- Do not let anyone smoke indoors and support measures to make all places smokefree; and
- Reduce the use of fireplaces and wood-burning stoves.

**Bottom line:** Help yourself and everyone else breathe easier. Support national, state and local efforts to clean up sources of pollution. Your life and the life of someone you love may depend on it.

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# MaineHealth

## Health Index Initiative Update

**Cumberland Public Health District Coordinating Council**

**March 15, 2013**

Timothy Cowan, MSPH  
Director, Health Index Initiative  
MaineHealth

# Today's Presentation

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- Review the Health Index Initiative: Purpose & Priorities
- Maine's overall ranking in America's Health Rankings, 2012 edition
- Population Health Priorities at Maine Medical Center
- What's ahead for 2013 - The Health Index *Online*

# MaineHealth's Health Index Initiative

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Systematic approach toward improving health status of population in 11-county MaineHealth Service Area

– Inform:

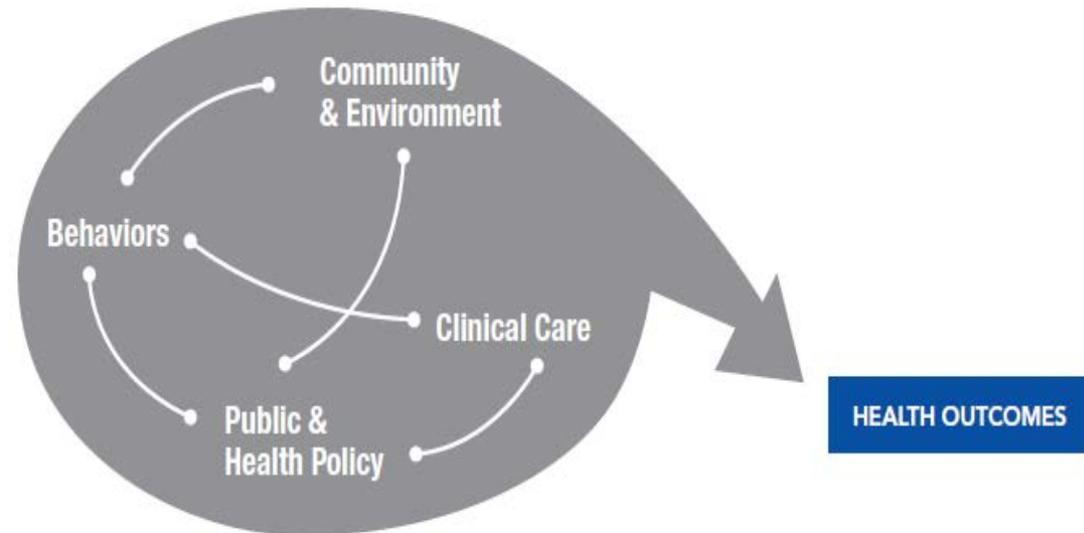
- Strategic directions (system-wide and local)
- Allocation of resources
- Movement toward patient/family centered and accountable care
- **Formation and expansion of partnerships**

– Routinely monitor & evaluate

- Update priority health issues as needed
- Revise strategies to maximize effectiveness

# Foundation for Health Index Initiative: America's Health Rankings®

- Annual ranking of 50 states for 23 years.
- Monitors social determinants of health not just clinical care.

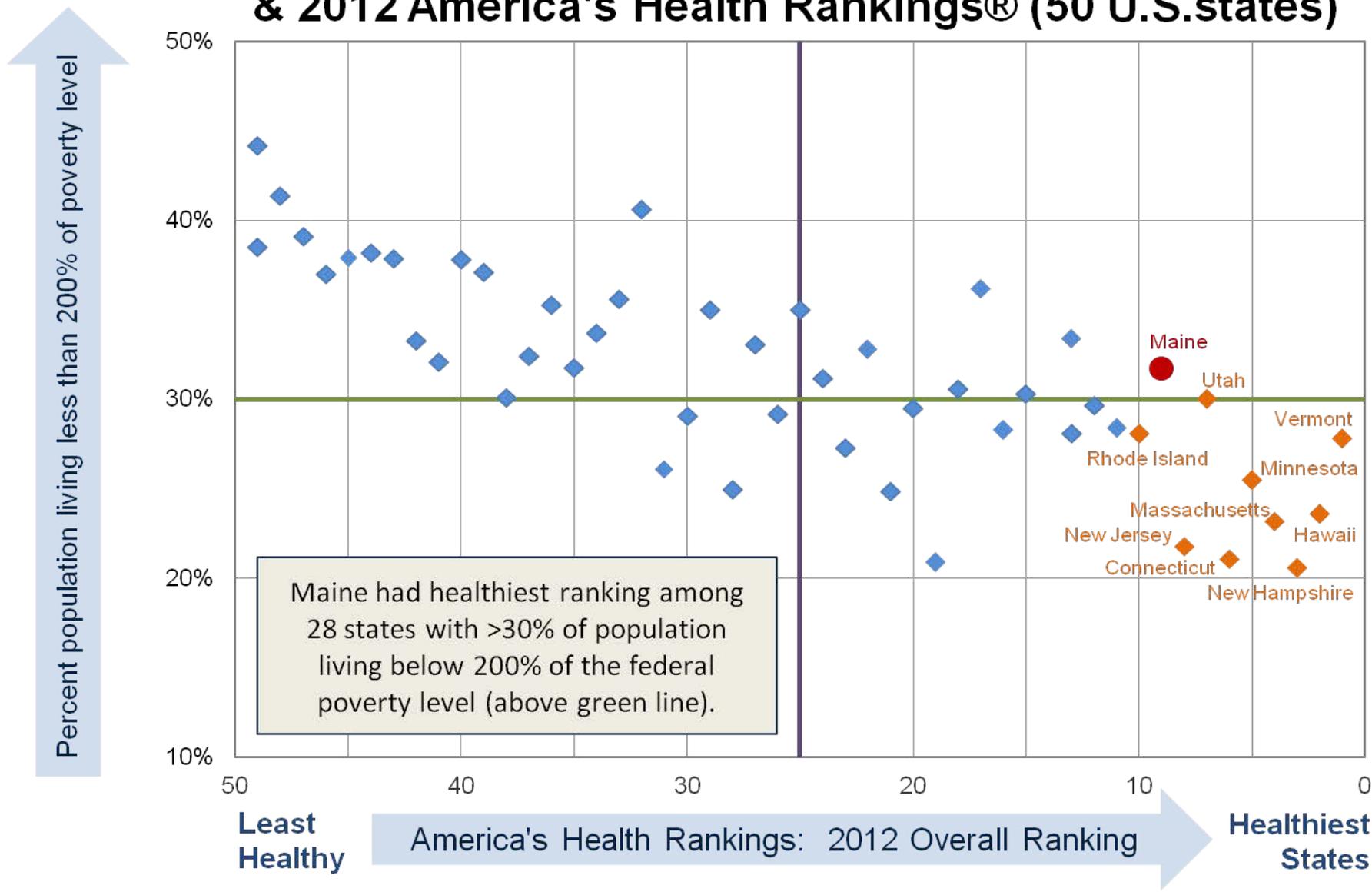


- Scientific foundation for ranking states
  - ❖ Regular review and refinement of methodology
  - ❖ Each measure is weighted, based on degree it influences health of a population

# 2012 Overall Rankings



# Relationship between Percent with Low Income & 2012 America's Health Rankings® (50 U.S. states)



# 2012 County Health Rankings

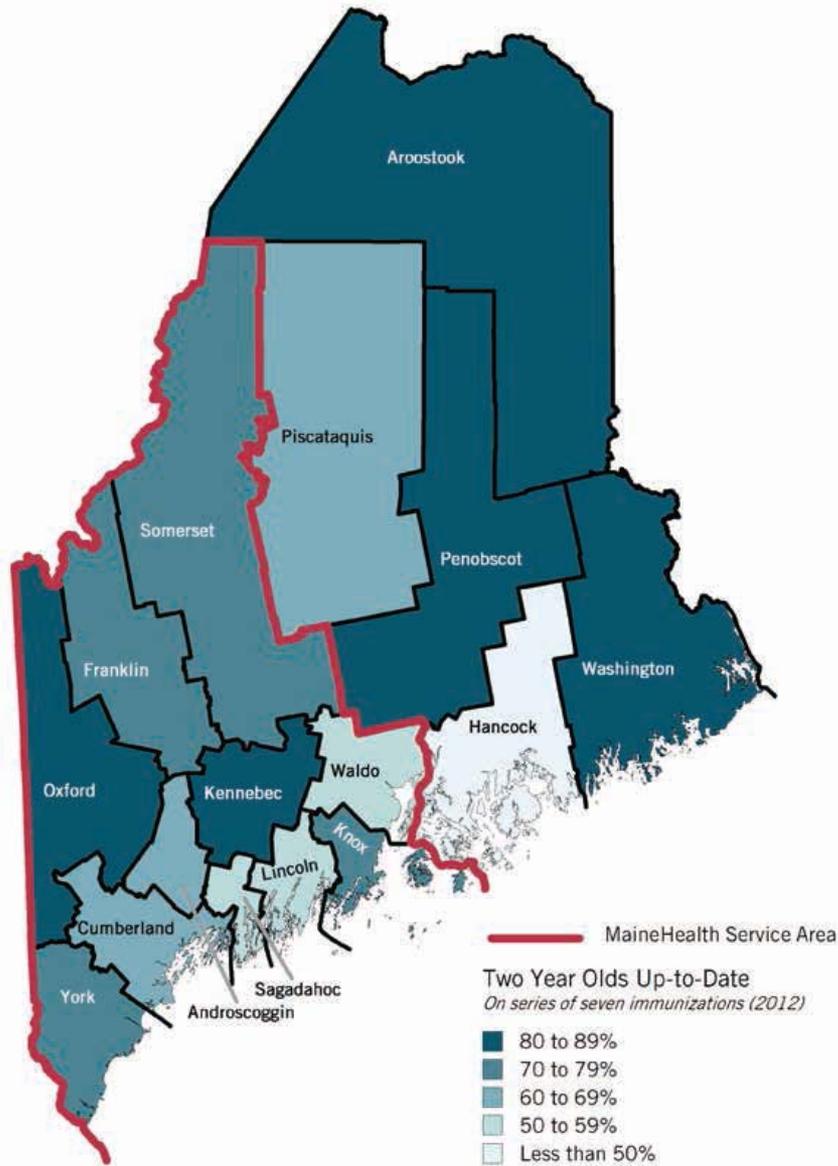
[www.countyhealthrankings.org](http://www.countyhealthrankings.org)

Rank	Health Outcomes	Rank	Health Factors
1	Sagadahoc	1	Cumberland
2	Hancock	2	Sagadahoc
3	Cumberland	3	York
4	York	4	Lincoln
5	Knox	5	Hancock
6	Waldo	6	Knox
7	Lincoln	7	Kennebec
8	Franklin	8	Franklin
9	Kennebec	9	Penobscot
10	Penobscot	10	Waldo
11	Androscoggin	11	Aroostook
12	Aroostook	12	Androscoggin
13	Piscataquis	13	Oxford
14	Somerset	14	Piscataquis
15	Oxford	15	Somerset
16	Washington	16	Washington

Health Outcomes=  
Today's Health

Health Factors=  
tomorrow's health.

# Increase Childhood Immunizations



## *Getting to the Next Level*

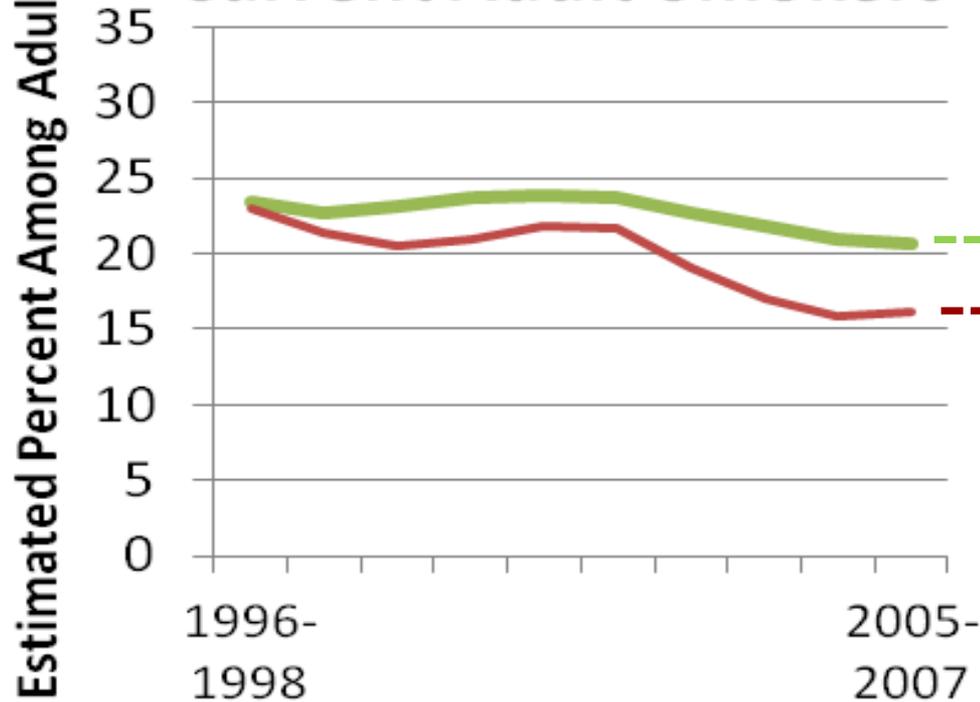
- 1. Training and coaching for clinical support staff*
- 2. Tools and resources for clinicians*
- 3. Implement data sharing between Epic and IMPACT*
- 4. Maine Vaccine Board: implement Universal Childhood Immunization Program*

# Decrease Tobacco Use

BRFSS

Smoking Rates  
stagnated in  
recent years

## Current Adult Smokers

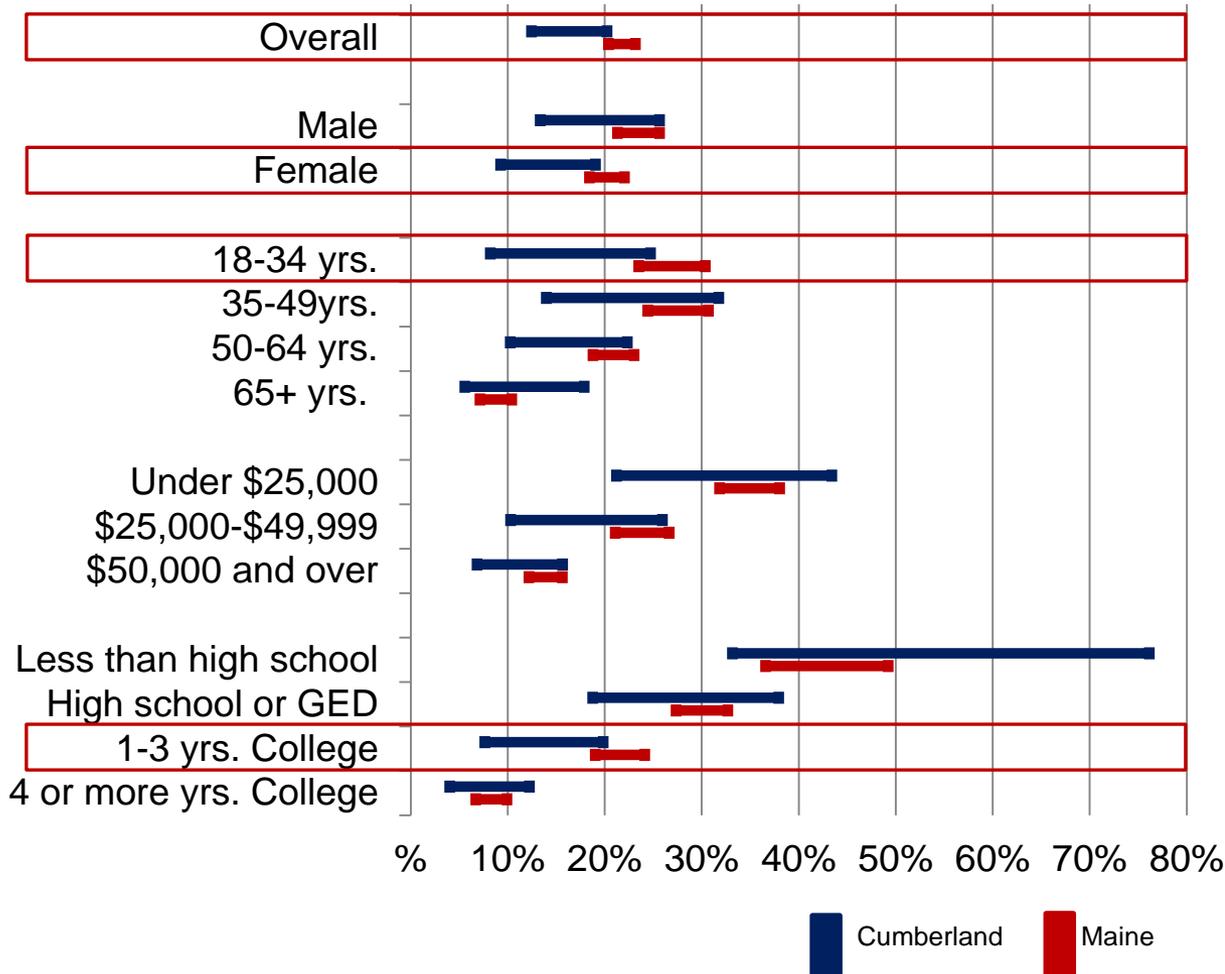


2010  
CHNA

— Maine- Statewide — Cumberland County

# Decrease Tobacco Use

## Prevalence of Tobacco Use



## Getting to the Next Level

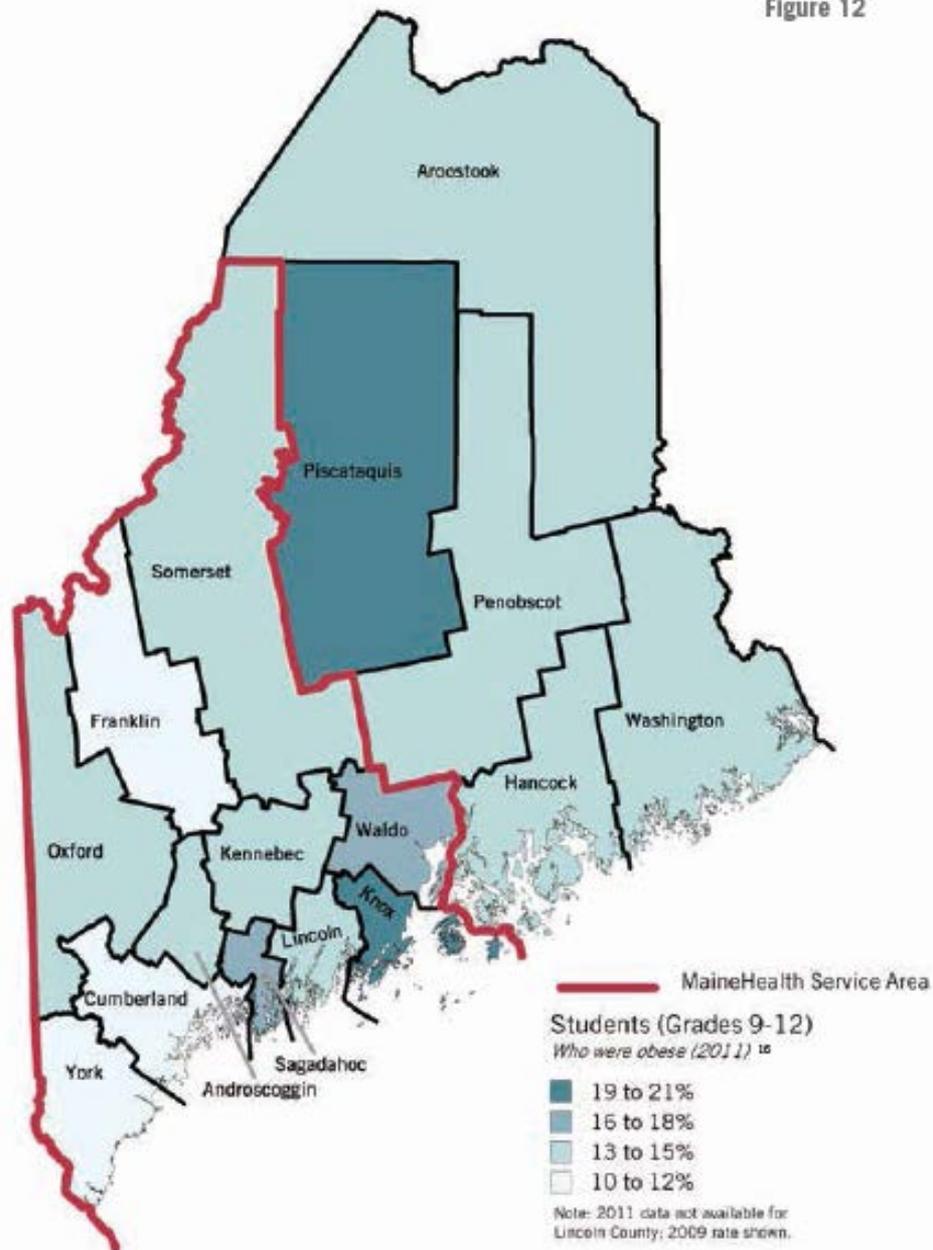
1. Decrease use by youth
2. Optimize referrals via EPIC EMR
3. Increase use of Maine Tobacco HelpLine
4. Increase tobacco taxes
5. Gold Status for MMC in MTFHN

# Decrease Obesity

Figure 12

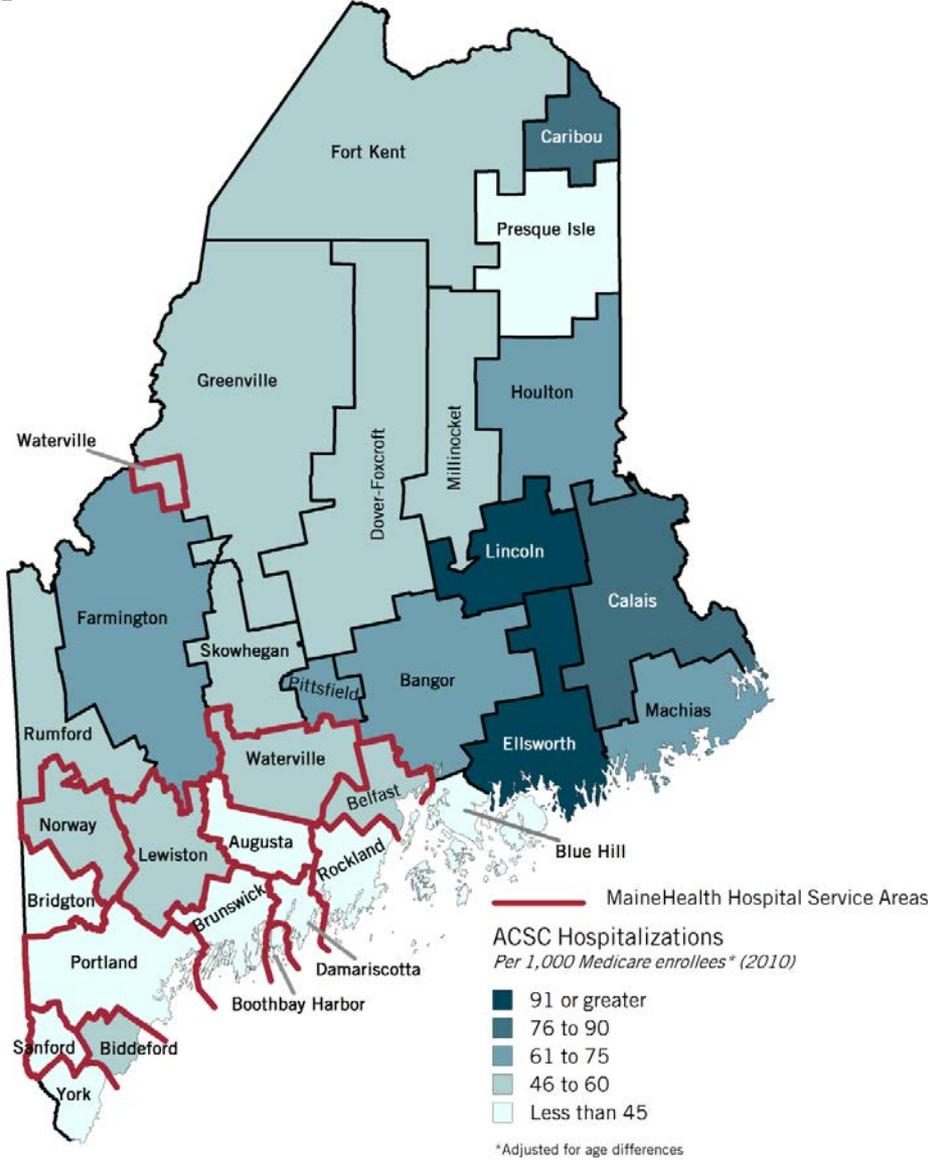


[www.lets-go.org](http://www.lets-go.org)



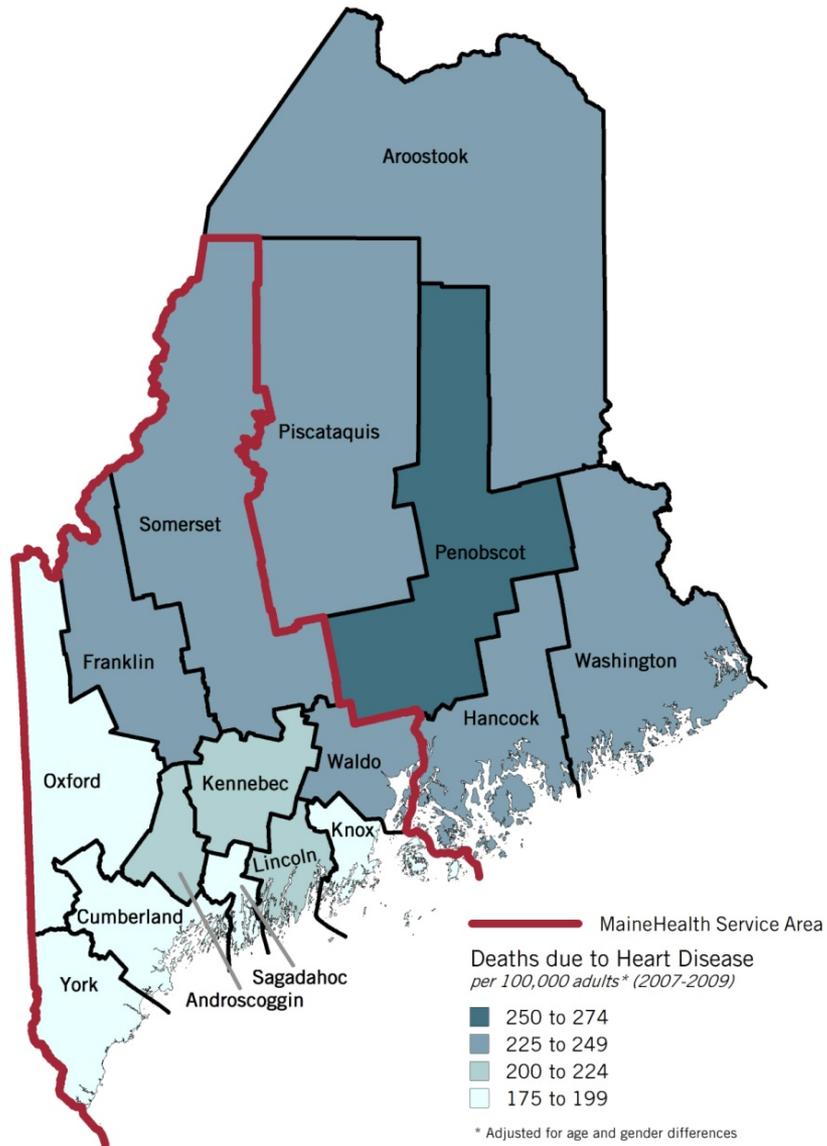
# Reducing Preventable Hospitalizations

ACSC Hospitalizations per 1000 Medicare beneficiaries	2009	2010
Portland Hospital Service Area	46	36
MaineHealth hospital service areas (red lines)- combined	51	42
non-MaineHealth HSAs	62	59



- Current Strategies**
- Transitions of Care Programs
    - Reduce 30-day readmissions by 10% over three years (by 2013)
    - Community-based Care Transitions Program
  - Care Management
  - Community Care Teams
  - Homehealth, tele-monitoring

# Reducing Cardiovascular Mortality



## Getting to the Next Level

1. **Million Hearts™ initiative at MMP and across MaineHealth system**
2. **Care management & home health for chronic heart disease**
3. **Continue focus on heart attacks**
  - **Community education on signs of heart attack**
  - **Reduce time-to-treatment**
4. **Reduce tobacco use & obesity**

# Decrease Cancer Mortality

Figure 23

## Maine Cancer Death Rates and Five-Year Survival Rates<sup>39, 40</sup>

	Maine Death Rates 2008~	Five-year U.S. Survival Rates <sup>♦</sup> 2001-2007
All malignant cancers	186*	
Lung and bronchus	56*	16%
Other tobacco-related	33	6-78%
Prostate	24	99%
Breast (females only)	22	89%
Cervix uteri	2	69%
Colon and rectum	16	64%

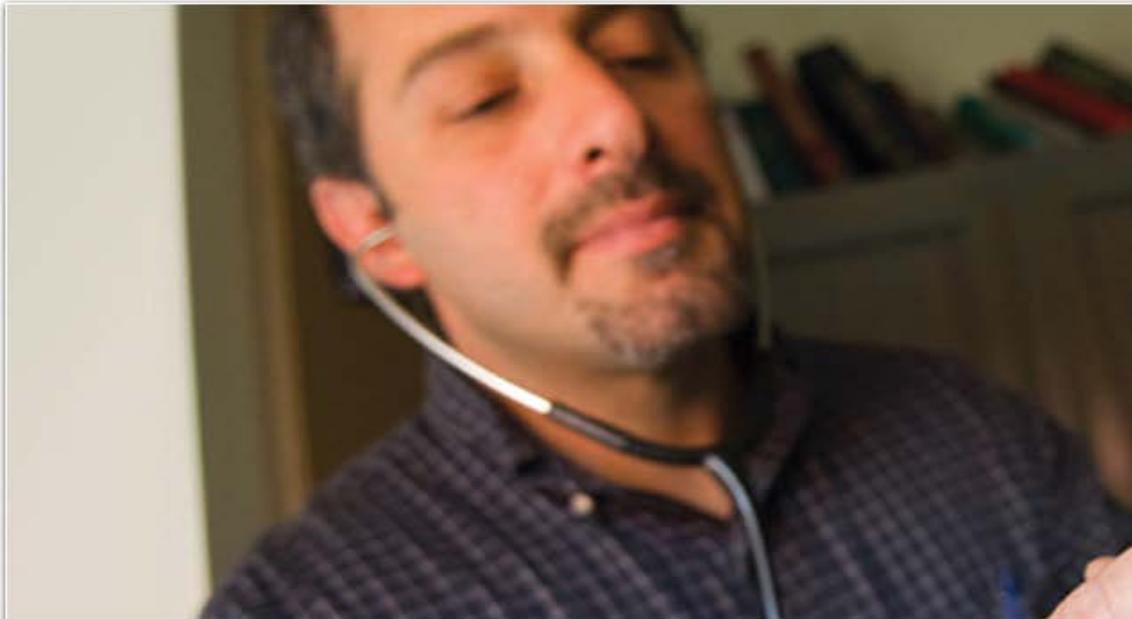
~Rates are per 100,000 population and age-adjusted to the year 2000 U.S. standard population.

♦ Survival rates are for all diagnosed from 2001-2007, adjusted for normal life expectancy.

\*Maine 2008 death rate was significantly higher than the rate for U.S. whites.

## Getting to the Next Level

1. Reduce tobacco use
2. Reduce obesity
3. Increase screenings
  - Colorectal cancer
4. Develop MaineHealth Regional Oncology Plan

[Cancer](#)[Cardiovascular  
Deaths](#)[Immunizations  
Coverage](#)[Obesity](#)[Opiates Use](#)[Preventable  
Hospitalizations](#)[Tobacco Use](#)

## The Index In Action

Maine's cardiovascular mortality rate decreased from 408 per 100,000 people in 1985-87 to 242 in 2006-08, the third largest decrease in the nation over these 22 years.<sup>1</sup> MaineHealth and its partners continue to improve management of risk factors to prevent heart disease and quality of care for patients who have heart disease.

[Read More](#)

## News & Features

[View all news & features](#)

### Header Goes Here

MaineHealth and its partners continue to improve management of risk factors to prevent heart disease.

[Continue Reading](#)

### Header Goes Here

MaineHealth and its partners continue to improve management of risk factors to prevent heart disease.

[Continue Reading](#)



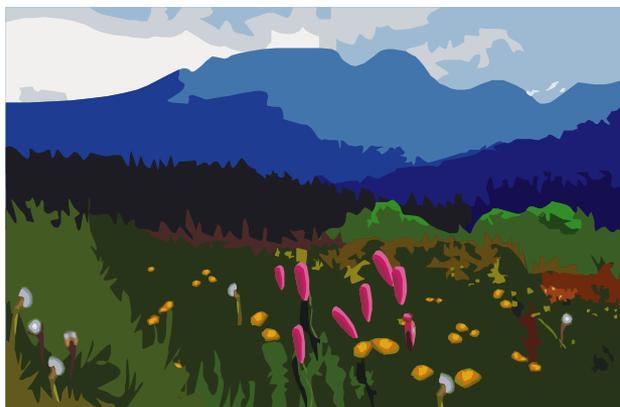
# Comments and Questions

## Contacts:

**Timothy Cowan, MSPH**  
Director, Health Index Initiative  
[cowant@mainehealth.org](mailto:cowant@mainehealth.org)

**Deborah Deatrck, MPH**  
VP, Community Health  
[deatrd@mainehealth.org](mailto:deatrd@mainehealth.org)

# Selecting priorities for the 2013-14 Cumberland District Public Health Improvement Plan



CDPHC meeting - March 15, 2013

Becca Matusovich

Cumberland District Public Health Liaison, Maine  
CDC

# Overall goals for the DPHIPs:

- Strengthen the local/district public health infrastructure and improve performance on priority EPHS model standards
- Increase effectiveness & efficiency of public health strategies that will impact key Population Health Indicators
- Address other district priorities if identified

# Aligned Population Health Improvement Planning [a simplified view!]

**SCC:** provides input into  
State Health Improvement Plan

*State Health Improvement Plan  
expected in 2013 as part of  
MeCDC's preparations for  
accreditation*

**all DCCs:**  
District Public Health  
Improvement Plans

***DPHIPs priorities updated  
for 2013-14***

**all HMPs:**  
Community Health  
Improvement Plans  
*Mobilizing for Action Through Planning  
and Partnerships [MAPP]*

*CHIPs finalized in the spring of 2011.  
Action plans on selected strategic  
issues & objectives currently in  
implementation stage*

# What does it mean for something to be a DPHIP (District Public Health Improvement Plan) priority?

## ***Council commitment:***

- ✓ Council members contribute core leadership and backbone support for a workgroup
- ✓ Council members join the workgroup if the priority aligns with your organization's goals/objectives, help engage other partners
- ✓ Assist with implementation of strategies based on specific requests from workgroup
- ✓ Monitor progress through verbal/written updates at Council meetings or through email

## ***Workgroup commitment:***

- ✓ Create a logic model and workplan to lay out collaborative objectives, strategies, activities
- ✓ Meet regularly/as needed to implement strategies & activities
- ✓ Request Council assistance with specific strategies/activities
- ✓ Report back to the Council on a regular basis

# Process kicks off: Nov. 2012 CDPHC meeting

- Presentation & discussion of district data from the State Health Assessment
- Endorsed criteria for selection of priorities
  - Same criteria as last time:
    - Opportunity to build capacity on EPHS 3 (Inform, Educate & Empower), EPHS 4 (Mobilize partnerships) & EPHS 7 (Ensure access to personal health services)
    - Good “bang for the buck”, i.e. cost-effective evidence-based strategies exist
    - CDPHC is the best vehicle for leveraging collective action
  - Plus, added criteria reflecting the 3 pre-conditions for “Collective Impact”:
    - Influential champions (core leadership for workgroup)
    - Sense of urgency (Data, community/partner concern & energy)
    - Adequate resources (Backbone support & workgroup participation)
- Nominated potential priorities for consideration

# Gathering input

## Dec-Jan Survey Monkey:

- 51 respondents
- Gathered input to assess sense of urgency
- Requested interest/willingness to provide backbone support and core leadership for each potential priority
- Also requested input from existing workgroups focused on any of the potential priorities

## January CDPHC meeting:

- Reviewed survey results and commitments for backbone support & core leadership
- Core leaders provided background information on current work and opportunities related to each of the potential priorities
- Endorsed next steps and prioritization process

# Executive Committee: Prioritization Process

- Used an established prioritization matrix tool for criteria weighting by in February Executive Committee meeting
- A subgroup met March 1 to complete the process by scoring and ranking all the potential priorities
- Shane ran all the numbers two different ways to make sure the results demonstrated internal consistency

Criteria weights:

35% Backbone Support

27% Influential Champions/  
Core leadership

14% CDPHC is the best vehicle  
for leveraging collective  
action

11% Cost-effective evidence-  
based strategies exist

10% Opportunity to build capacity  
on EPHS 3, 4, 7

2% Public concern

2% Sense of urgency

(see handout for full scoring)

# Prioritization Results

1. Obesity, Physical Activity, Nutrition: 107
2. Health Equity: 105
3. Tobacco: 104
4. Public Health Preparedness: 102
5. Flu Vaccinations: 097
6. STDs and Reproductive Health: 093
7. Healthy Homes: 093

Executive  
Committee's  
recommendation:  
select top 7

- 
8. Mental Health/Substance Abuse: 082
  9. Blood Pressure: 080
  10. Infectious Disease (e.g., Lyme disease, Pertussis): 055
  11. Community Planning/Transportation: 052
  12. Prenatal Care: 029

*Note: Aspects of the other issues may also be addressed as part of one of the selected priorities, i.e. disparities in mental health and substance abuse services, and integration of blood pressure screening into flu clinics or tobacco education.*

# Next steps

- Questions?
- Official vote to select priorities
- Get involved - see handout with contacts for each priority
- We will need to experiment with how to best report out on work on the priorities – some combination of written updates and items on full council meeting agendas

## 2013 Cumberland District Public Health Improvement Plan Prioritization Matrix

<b>Criteria vs. Priority Issues</b>	<b>Backbone Support</b>	<b>Infuential Champions</b>	<b>CDPHC is the Best vehicle for leveraging collective action</b>	<b>Cost Effective Evidence Based Strategies Exist</b>	<b>Opportunity to Build Capacity on EPHS 3, 4, and 7</b>	<b>Public Concern</b>	<b>Sense of Urgency</b>	<b>Total Weighted Score</b>
<i>Weight</i>	<i>35%</i>	<i>27%</i>	<i>14%</i>	<i>11%</i>	<i>10%</i>	<i>2%</i>	<i>2%</i>	
Obesity/Physical Activity/Nutrition	9	9	9	9	8	9	10	<b>9.01</b>
Health Equity	9	9	10	7	8	5	9	<b>8.83</b>
Tobacco	9	9	9	10	6	7	7	<b>8.82</b>
Public Health Preparedness	9	10	8	9	4	7	6	<b>8.62</b>
Flu Vaccination	9	7	10	7	7	9	7	<b>8.23</b>
STDs/Reproductive Health	8	8	8	7	8	5	7	<b>7.89</b>
Healthy Homes	9	8	5	9	6	8	6	<b>7.88</b>
Mental Health/Substance Abuse	7	5	7	8	9	10	9	<b>6.94</b>
Blood Pressure	7	6	8	6	7	7	4	<b>6.77</b>
Infectious Disease (e.g., Pertussis, Lyme Disease, Multi-drug Resistant Organisms)	2	5	7	6	6	9	7	<b>4.61</b>
Community Planning/Housing/Transportation	2	7	4	8	2	5	5	<b>4.43</b>
Prenatal Care	1	2	4	4	4	4	2	<b>2.41</b>

**Cumberland District Public Health Improvement Plan – Proposed Priorities 2013-2014**

**DRAFT 3/15/13**

	<b>Core leadership</b>	<b>Backbone Support</b>	<b>Contact emails</b>	<b>Current strategies/focus areas</b>
<b>Obesity/ physical activity/ nutrition</b>	Karen O'Rourke Bethany Sanborn Kristen Dow Emily Rines	Anne Lang Shane Gallagher	<a href="mailto:ACT@portlandmaine.gov">ACT@portlandmaine.gov</a> <a href="mailto:STG@portlandmaine.gov">STG@portlandmaine.gov</a>	Create an overall district "plan" that covers the big picture and the long-term vision for all of the work that relates to physical activity, nutrition, and active community environments
<b>Health Equity</b>	Toho Soma Kolawole Bankole Becca Matusovich Jessica Loney Carol Zechman Zoe Miller (strategy 3)	Toho Soma Shane Gallagher Becca Matusovich (strategy 2) Zoe Miller (strategy 3)	<a href="mailto:TSoma@portlandmaine.gov">TSoma@portlandmaine.gov</a> <a href="mailto:STG@portlandmaine.gov">STG@portlandmaine.gov</a> <a href="mailto:Becca.matusovich@maine.gov">Becca.matusovich@maine.gov</a> <a href="mailto:Zoe.Miller@opportunityalliance.org">Zoe.Miller@opportunityalliance.org</a>	1. Health on the Move pilot 2. Greater Portland Refugee & Immigrant Healthcare Collaborative 3. Lakes Region Access to Care 4. Disparities data
<b>Tobacco</b>	Claire Schroeder Fred Wolff Sarah Mayberry Anne Lang	Claire Schroeder Fred Wolff	<a href="mailto:Claire.Schroeder@opportunityalliance.org">Claire.Schroeder@opportunityalliance.org</a> <a href="mailto:WOLFFF@mainehealth.org">WOLFFF@mainehealth.org</a>	1. Sharing resources & information 2. Engaging broader network of partners in tobacco efforts, coordinating publicity and public messaging 3. Strategies focused on hard-to-reach populations
<b>Public Health Preparedness</b>	Jim Budway Caity Hager Paul Weiss Becca Matusovich	Ron Jones (strategy 1) Caity Hager (strategy 2 & 3) Paul Weiss (strategy 4)	<a href="mailto:jones@cumberlandcounty.org">jones@cumberlandcounty.org</a> <a href="mailto:CHager@portlandmaine.gov">CHager@portlandmaine.gov</a> <a href="mailto:WeissP@mmc.org">WeissP@mmc.org</a>	1. Medical Reserve Corps 2. Cities Readiness Initiative 3. Communications plan to ensure language access for public health emergency communications 4. Public health Hazard Vulnerability Analysis
<b>Flu Vaccination</b>	Cathy Patnaude Cassie Grantham Caity Hager Ted Trainer	Cathy Patnaude Becca Matusovich	<a href="mailto:patnaudec@vnahomehealth.org">patnaudec@vnahomehealth.org</a> <a href="mailto:Becca.matusovich@maine.gov">Becca.matusovich@maine.gov</a>	1. School clinics 2. Public flu clinics (adults) 3. Coordinated communications, joint campaign to promote 211 and flu clinics
<b>STDs/ reproductive health</b>	Bridget Nevers Sarah Bly LeighAnn Miller	Alex Hughes LeighAnn Miller	<a href="mailto:AFK@portlandmaine.gov">AFK@portlandmaine.gov</a> <a href="mailto:LeighAnn.Miller@maine.gov">LeighAnn.Miller@maine.gov</a>	1. Joint campaign to promote STD testing 2. Provider education related to testing recommendations & increasing access to treatment 3. Targeted effort in Rivers (& Lakes?) region based on Community Health Improvement Plan objectives
<b>Healthy Homes</b>	Sarah Mayberry Lynn Holaday Jim Braddick Eric Frohmberg	Alex Hughes	<a href="mailto:AFK@portlandmaine.gov">AFK@portlandmaine.gov</a>	1. Initiative to educate families of children aged 0-5 2. Creation of district Healthy Homes Resource Inventory

**Backbone support functions:**

- Provide structure through which partners can engage together in collaborative efforts
- Scheduling meetings, facilitating meetings, creating agendas (with input from core leadership as needed)
- Nurture core leadership, keep influential champions engaged
- Communication:
  - manage email list for workgroup
  - develop logic model & living “workplan”
  - provide meeting summaries/workplan updates to document decisions & next steps
  - keep workgroup members informed when miss meetings
  - reporting back to Council
  - point of contact for new recruits to the workgroup

**Core leadership/Influential champions functions:**

- Content experts
- Represent organizations with substantial resources devoted to the priority area
- Consistent and active participants in workgroup
- Help with drafting agendas, workplans, and other products
- Help with facilitating meetings
- Recruit other partners in the field to participate in the workgroup
- Champion the workgroup’s strategies within their own organization and with other relevant groups/networks