



# Heating Oil, Air Quality, and Public Health

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# What we will cover today

- Effects of air pollution
- State of the Air in Westchester
- Comparison of heating oils
- Effects of reducing sulfur in heating oil

## Risks from Breathing Ozone

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





## Risks from Breathing Particles

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

*EPA, Integrated Science Assessment, 2009, WHO 2013*

IARC report last October



IARC Scientific Publication No. 161

*Air Pollution and Cancer*

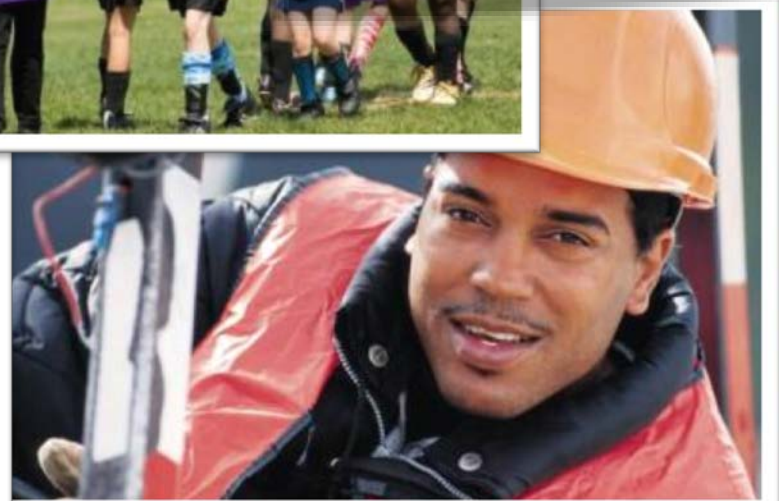
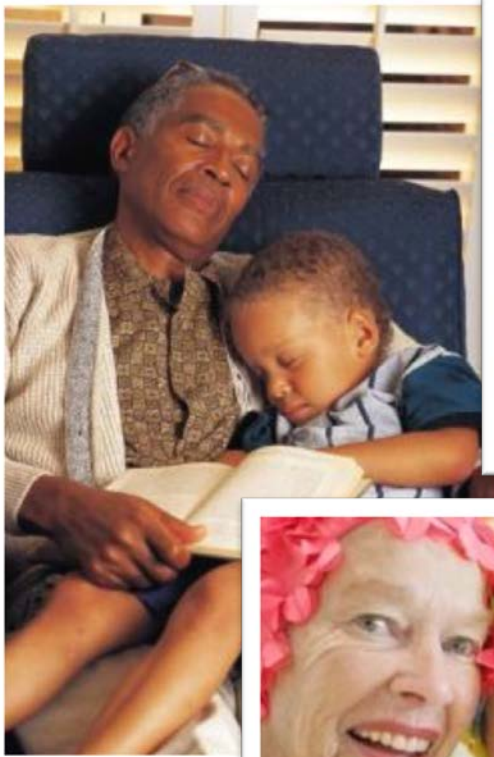
Editors: Kurt Straif, Aaron Cohen, and Jonathan Samet

Air Pollution, PM cause lung cancer



# People at risk

Someone in every family faces higher risk from air pollution



# Children, Teens face higher risk

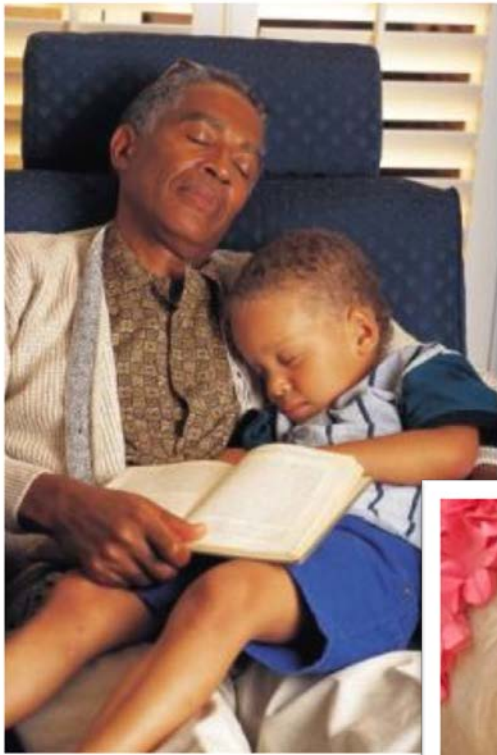


Children, teens have growing lungs, spend more time outdoors, inhale more air per pound



# Older Adults face higher risk

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





# Chronic diseases mean higher risk

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



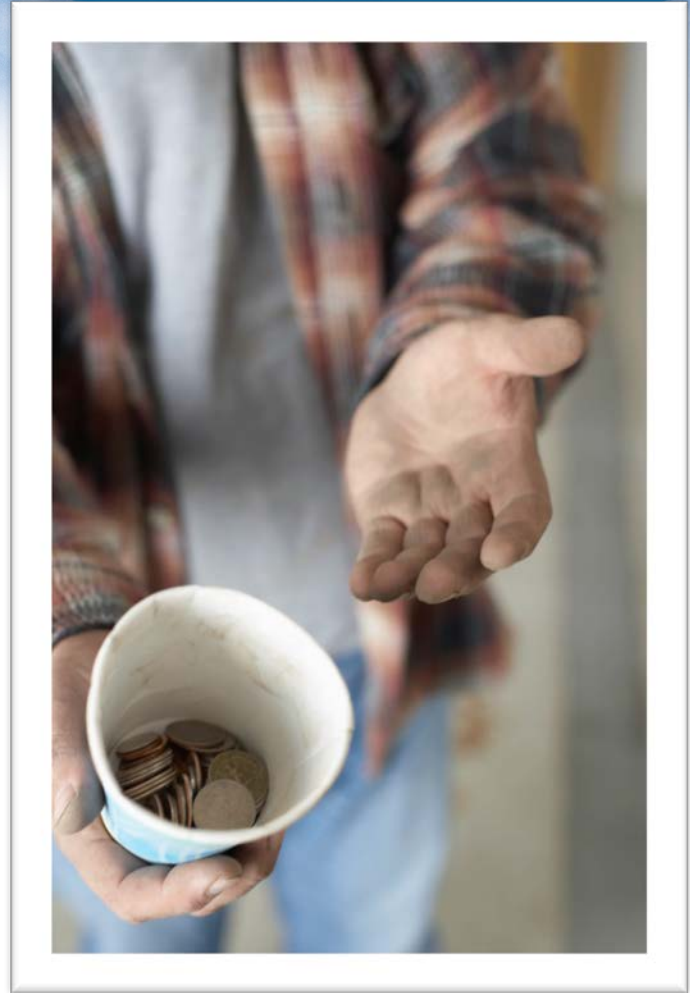
# Healthy adults face higher risk

Working or exercising outdoors increases exposure, especially near highways





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



# What is the State of the Air report?

- 15<sup>th</sup> annual look at ozone and PM 2.5
- Gives **A** - **F** Grades or **Pass/Fail** to 800+/- counties with monitors (out of 3,068 counties)
- Ranks metro areas by pollution
- Access to county, state info by zip code
- Provides trend data on changes in air quality



## What we grade

- **Ozone**
- **Particle pollution (PM<sub>2.5</sub>)**
  - Short-term (24-hour) measures “spikes”
  - Year-round (annual average) measures “day-in and day-out”
- Only counties with monitors get grades
- Grade only air quality—not “effort to clean up”

## The News in *State of the Air 2014*

- **More people lived in areas with dangerous levels of ozone or particle pollution** in this report than in last year's report.
- 147.6 million live where air pollution was unhealthy, compared to 131.8 million in 2013 report.
- 27.8 million live where the air received all Fs.





# The News

In 2010-2012

## over 8.8 million

## New Yorkers

lived in counties with an

## F for air quality



## Westchester's Grades

**Ozone**



**Particle Pollution 24-  
hour**

**INC**

**Particle Pollution  
Annual**

**INC**

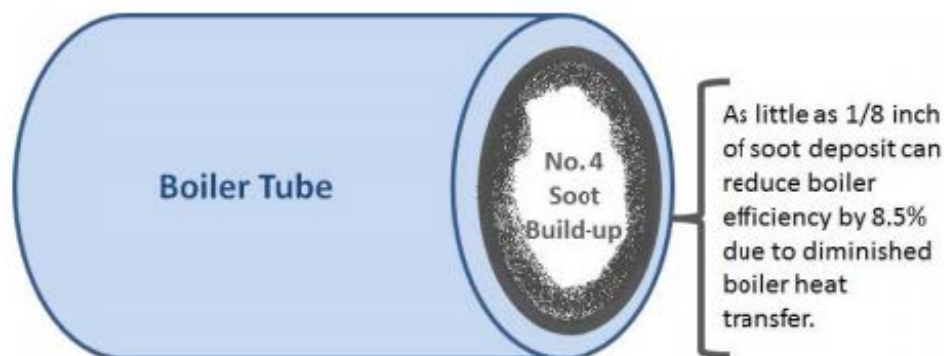
# Comparison of #2,#4,#6 Fuels





# The Hidden Costs of #4 Fuel

**The Problem:** Soot accumulates within the boiler when burning No. 4<sup>i</sup>. This causes decreased heat transfer and reduced efficiency in between boiler maintenance visits.



**The Result:** More gallons of oil need to be burned for the same amount of heat that a clean boiler would produce.




# Health events avoided in 2009-11 relative to 2005-07 in NYC

	Age group	Avoided Annual incidences	% Reduction
Mortality, All Causes	30+	780	25%
Asthma, ER Visits		1,570	24%
Cardiovascular Hospitalizations	40+	200	24%
Respiratory Hospitalizations	20+	260	23%

# Emissions Reductions #6→#2

	Ultra Low Sulfur (15ppm)	ULS + B20
Sulfur Emissions	99+%	99+%
NOx Emissions	50%	55-60%
PM Emissions	97%	98%





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.***