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
• Premature death
• Coughing and wheezing
• Asthma attacks
• Worsening of COPD
• Cardiovascular harm
• May harm central nervous system
• May increase risk of low birth weight

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

IARC report last October

Air Pollution, PM cause lung cancer
People at risk

Someone in every family faces higher risk from air pollution.
Children, teens have growing lungs, spend more time outdoors, inhale more air per pound.
Aging brings a gradual decline in the body’s systems that makes us more vulnerable.

Older Adults face higher risk
Having asthma or other lung diseases, cardiovascular disease or diabetes puts you at higher risk.
Working or exercising outdoors increases exposure, especially near highways.

Healthy adults face higher risk.
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?

- 15th 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$_{2.5}$)
  – 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.
In 2010-2012, over 8.8 million New Yorkers lived in counties with an F for air quality.
Westchester’s Grades

Ozone: F
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 fuel. 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.
<table>
<thead>
<tr>
<th>Age group</th>
<th>Avoided Annual incidences</th>
<th>% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality, All Causes</td>
<td>30+</td>
<td>780</td>
</tr>
<tr>
<td>Asthma, ER Visits</td>
<td></td>
<td>1,570</td>
</tr>
<tr>
<td>Cardiovascular Hospitalizations</td>
<td>40+</td>
<td>200</td>
</tr>
<tr>
<td>Respiratory Hospitalizations</td>
<td>20+</td>
<td>260</td>
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Emissions Reductions #6→#2

<table>
<thead>
<tr>
<th></th>
<th>Ultra Low Sulfur (15ppm)</th>
<th>ULS + B20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfur Emissions</td>
<td>99+%</td>
<td>99+%</td>
</tr>
<tr>
<td>NOx Emissions</td>
<td>50%</td>
<td>55-60%</td>
</tr>
<tr>
<td>PM Emissions</td>
<td>97%</td>
<td>98%</td>
</tr>
</tbody>
</table>
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.*