

Reducing the Health Threat Posed By Diesel School Bus Emissions

Michael Seilback
Senior Director of
Coalitions & Policy



**AMERICAN
LUNG
ASSOCIATION®**
of New York State, Inc.

What are we talking about?



Placing Diesel in Context: AMERICAN LUNG ASSOCIATION.

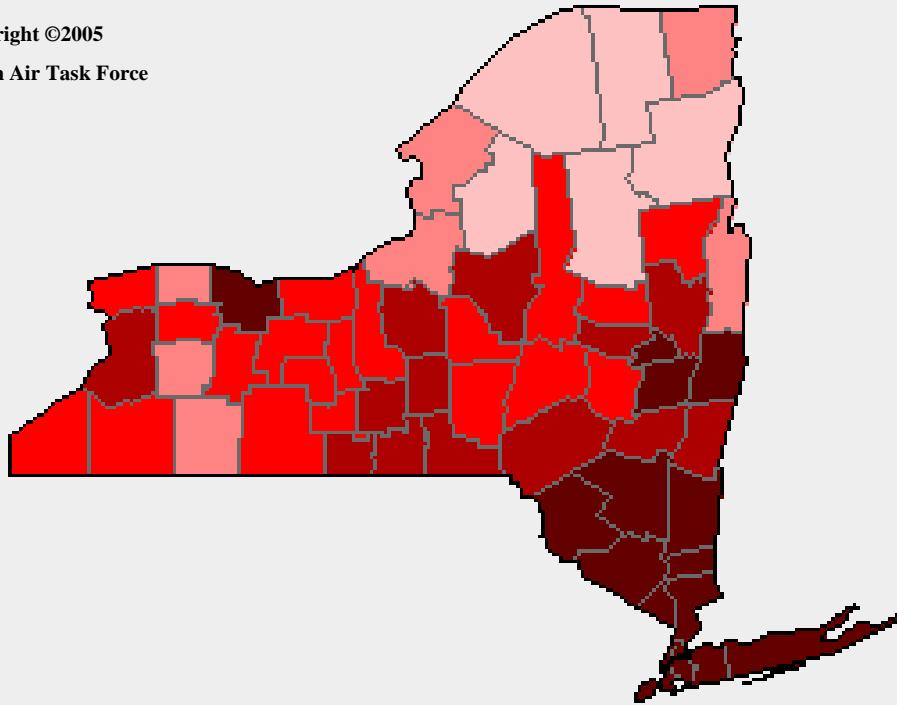
Impact on Health

- Diesel exhaust contains over 40 hazardous air pollutants—some of which are known cancer agents
- The EPA classifies diesel exhaust particles as a likely human carcinogen
- Diesel exhaust particles have been linked to: Asthma attacks; exacerbation/triggering of allergies; and, other respiratory illness
- Diesel exhaust particles are a major source of smog and fine particle pollution—which have their own health impacts

Placing Diesel in Context: Community Impact



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Clean Air Task Force



Diesel Health Risk

Lowest Impact



Highest Impact

Placing Diesel in Context:

School Bus Emissions and Kids' Health

- Higher rate of breathing = greater exposure
- Studies of school air quality finds levels higher inside the bus than out:
 - CT study—fine particle levels 5-10 times higher than those measured outside
 - CA study—air toxic levels in the bus 23 to 46% higher than levels deemed to be a significant cancer risk
- Diesel exhaust and asthma don't mix—it triggers attacks and kids miss school

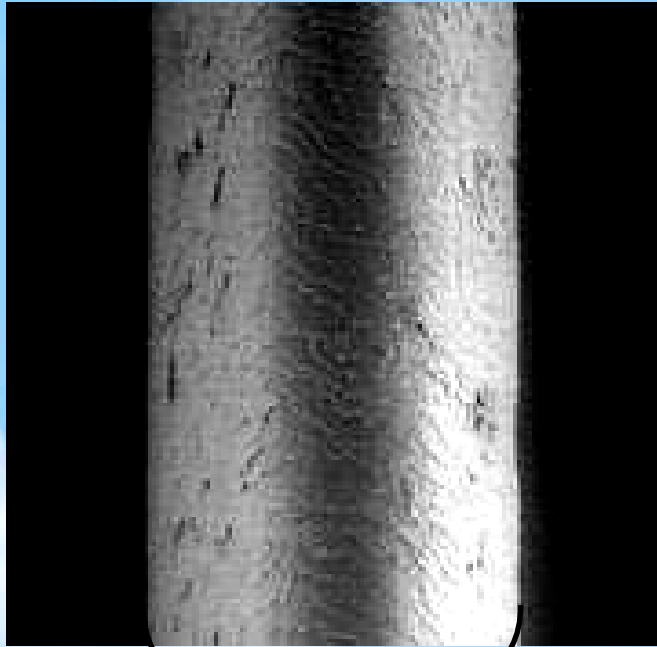
Placing Diesel in Context: a precursor to fine particle (PM) formation



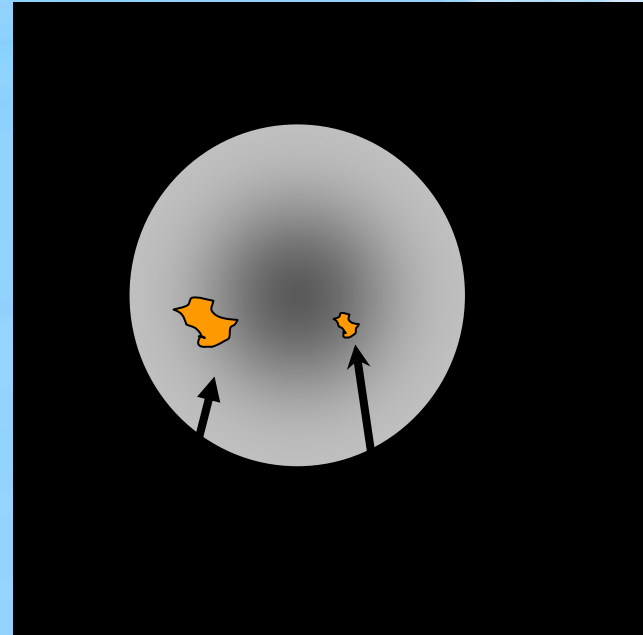
- Fine particles are fast emerging as a big health threat—for the community and for those directly exposed
- Fine PM has been linked to a host of health ailments:
 - Asthma attacks;
 - Heart attacks for those with preexisting disease;
 - Stroke;
 - Lung Cancer (especially sulfate particles); and
 - Premature death (some 1,200 each year in NYS)
- All of Long Island fails to meet EPA's standard for fine particle pollution

Particles: What are we talking about?

Hair cross-section (70 μm diameter)



Human Hair (70 μm diameter)



PM₁₀
(10 μm)

PM_{2.5}
(2.5 μm)

Placing Diesel (NO_x) In



Context: a precursor to ozone formation

- Ozone (O₃) is a highly reactive form of oxygen which has serious health effects:
- Typically a problem during summer months—but not entirely
- Long Island's air is considered in Severe Non Attainment for EPA's health standard for ozone

What is ozone?

- Sometimes called smog
- Created in the atmosphere when:

• $\text{NO}_x + \text{VOCs} +$



+



= Ozone (O_3)

Good Ozone vs. Bad Ozone



“Good Up High, Bad Near By”



- **In the stratosphere (extends upward from about 6 to 30 miles above earth) = GOOD**
- **Good Ozone protects life on Earth from the sun's harmful ultraviolet (UV) rays.**
- **In the troposphere (ground level to 6 miles up) = BAD**

Ozone exposure linked to increased:

- risk of premature death
- pulmonary inflammation
- asthma attacks
- need for medical treatment and for hospitalization of persons with asthma
- aggravation of COPD (emphysema)

And maybe:

- causes asthma?

Why all the fuss?



One Immediate Change to Consider: Idle Free School Zones



- Reducing idling is a no-cost way to achieve significant emission reductions
- A typical bus will burn $\frac{1}{2}$ gallon a fuel for each hour it idles (SAVES \$\$ on Fuel)

- No idle = no emissions
- Idle Free Policies are currently enacted in this school district.



Improving Life, One Breath at a Time

Beginning our second century, the American Lung Association is the leading organization working to prevent lung disease and promote lung health. Lung disease death rates continue to increase while other leading causes of death have declined.

The American Lung Association of New York State funds vital research on the causes of and treatments for lung disease. With the generous support of the public, the American Lung Association is *"Improving life, one breath at a time."*

For more information about the American Lung Association of New York State or to support the work it does, call **1-800-LUNG-USA** (1-800-586-4872) or log on to **www.alanys.org**.