



Cleaning Up Diesel Engines: *A Public Health Priority*

Clean Diesel Workshop
Macon, Georgia

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Rebecca Watts Hull
Mothers & Others for Clean Air





Mothers & Others for Clean Air is a partnership of seven leading public health, environmental and child advocacy organizations dedicated to improving air quality by educating the public about the negative health impacts of air pollution and engaging people in both individual change and public policy advocacy.



Diesel Exhaust and Health

- What is in diesel exhaust?
- What are the risks?
- Who is affected?
- Where do we find “hotspots?”



What is in diesel exhaust?

Fine Particulate

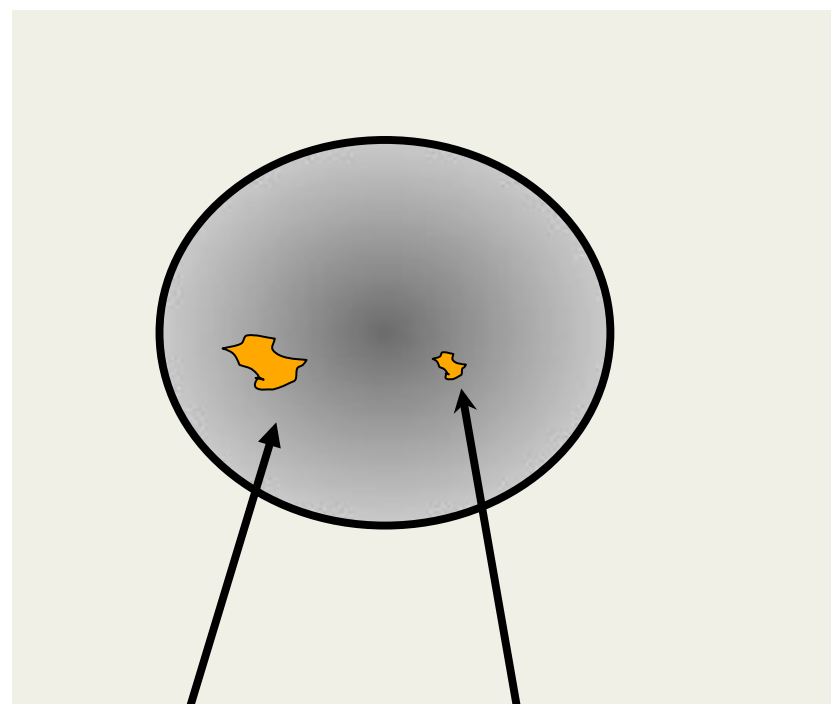
Matter: Complex mixture of extremely small particles and liquid droplets

Ultra-Fine Particulate

Matter: Even tinier!

Not yet regulated but may be even more dangerous

Hair cross section (70 μm)



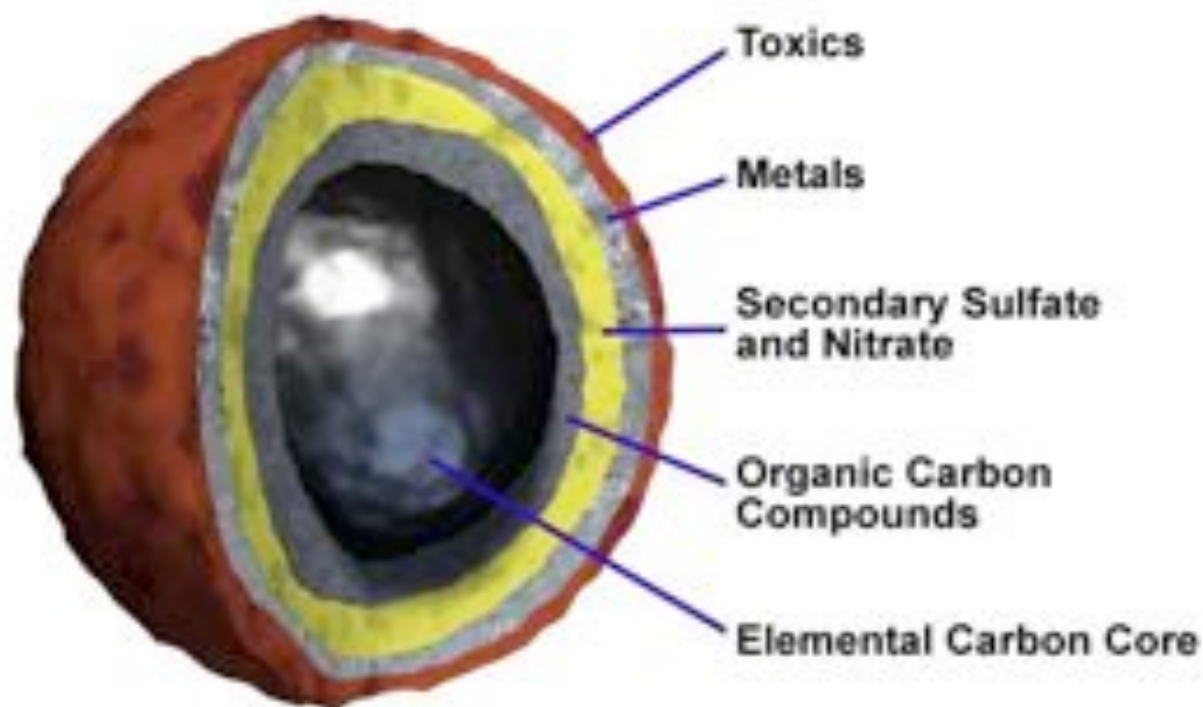
PM₁₀
(10 μm)

PM_{2.5}
(2.5 μm)

M. Lipsett, California Office of Environmental
Health Hazard Assessment



Diesel Exhaust Particle



Source: Clean Air Task Force, Diesel and Health in America: The Lingering Threat, 2006

Nationally, diesel exhaust poses a cancer risk that is 7 times higher than the COMBINED total cancer risk from all other 181 air toxics tracked by EPA.



What are the risks?

Respiratory Illness

- Increased rates of asthma
- More ER visits and higher death rates for people with asthma
- Other respiratory diseases: emphysema, bronchitis, pneumonia, sinusitis

Cancer

- Lung cancer
- Bladder cancer

Heart Disease

Additional Risks

- Nervous system impairment
- Stroke
- Premature Death
- Increased circulatory and cardiovascular risk for diabetics



What are the risks?



Child Development

- Reduced lung function growth
- Infant mortality

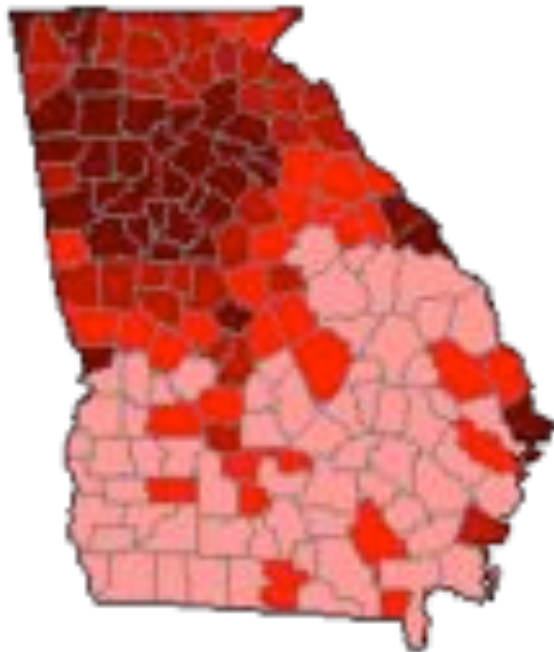
In Utero

- Slowed fetal growth
- DNA damage



Who is affected?

Georgia's Risk



Diesel Health Risk

Lowest Impact



Highest Impact

Images courtesy of Clean Air Task Force

Georgia's Annual Diesel Fine Particle Health Impacts Projected in 2010:

Adults

- 335 Premature deaths
- 425 Non-fatal heart attacks
- 14,068 Asthma attacks
- 254 Chronic bronchitis
- 58,010 Work loss days
- 335,061 Minor restricted activity days

Children

- 481 Asthma ER visits
- 721 Cases acute bronchitis
- 8,592 Lower respiratory symptoms
- 6,540 Upper respiratory symptoms

Monetized value of health impacts:

\$2.8 billion



Who is affected?

Georgia's Risk

Nationally, Georgia's risk from diesel soot ranks 15th of 49

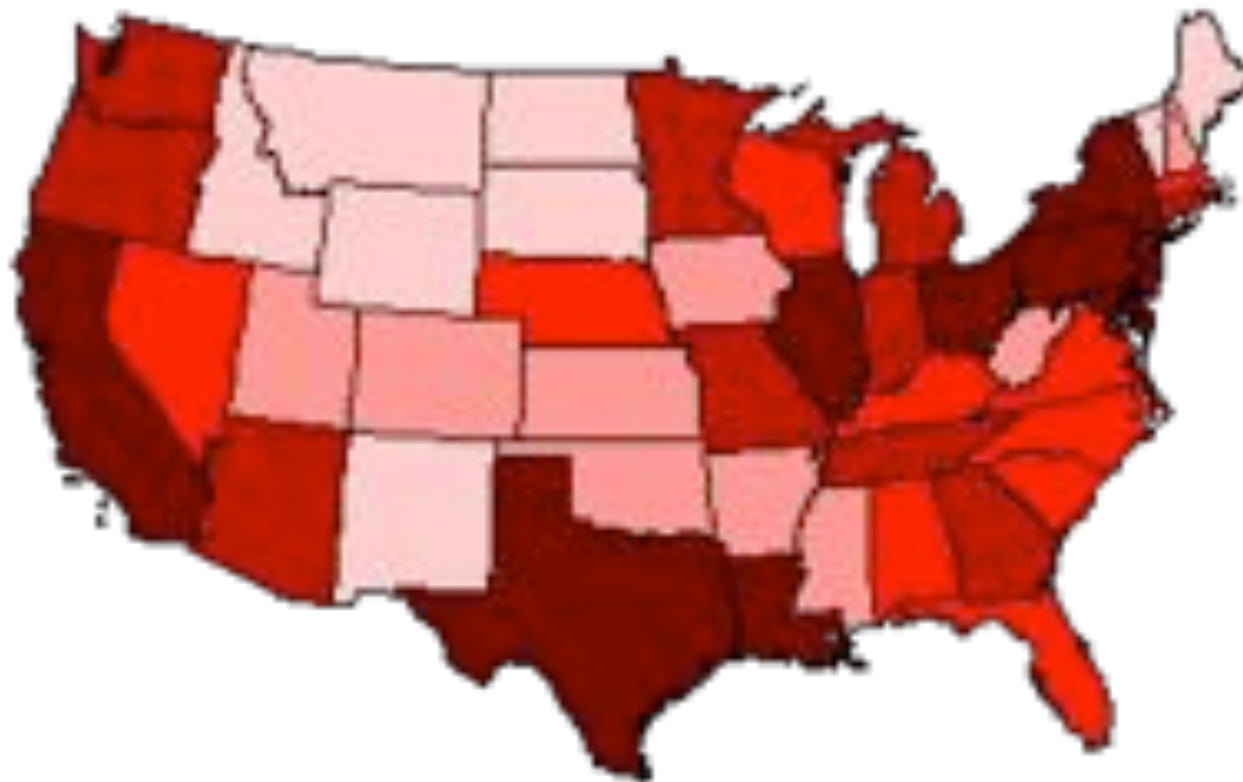


Image courtesy of Clean Air Task Force



Who is affected?

Occupational Exposures

- 629,000 industrial truck and tractor operators
- 89,000 city construction equipment operators
- 284,000 firefighters and 61,000 EMTs and Paramedics
- 134,000 state and local highway maintenance workers.
- 76,000 drilling, derrick operators, roustabouts in oil and gas exploration
- 191,000 municipal bus drivers
- 457,000 school bus drivers (155,000 taxi drivers exposed in traffic)
- 103,000 commercial pilots, copilots and flight engineers.
- 488,000 mining employees
- 1.7 million heavy truck and tractor trailer drivers.
- 941,000 delivery truck drivers.
- 270,000 diesel service technicians.
- 142,000 aircraft and avionics equipment mechanics and service technicians
- 178,000 heavy vehicle and mobile equipment service technicians and mechanics.
- 259,000 Class 1 Railroad workers including 36,000 locomotive engineers, 66,000 rail yard engineers, switch operators etc.
- 3.6 million transportation and warehousing employees.
- 1 million construction laborers and 393,000 construction equipment operators.
- 600,000 utilities workers



Who is affected?

General Population

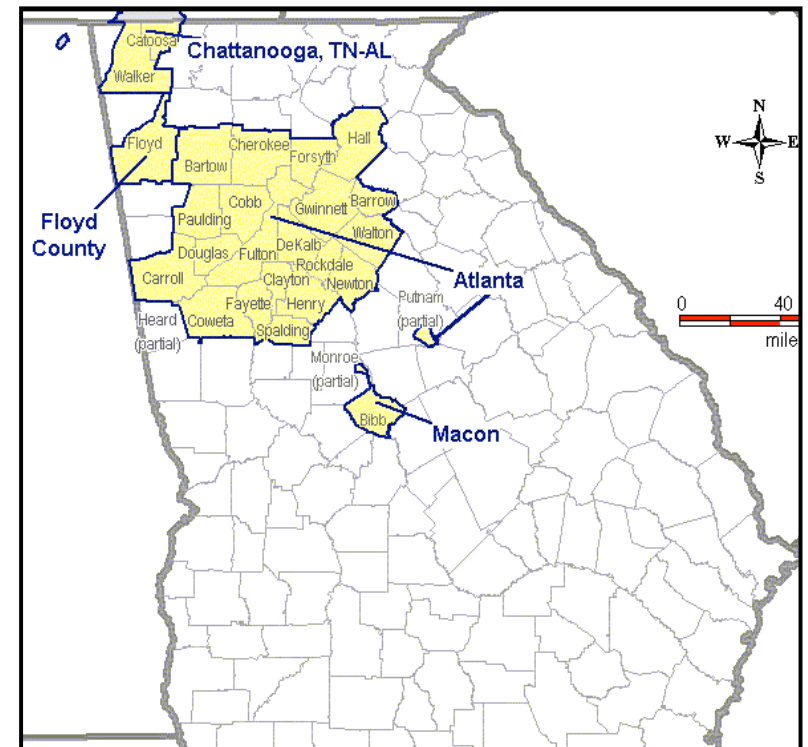
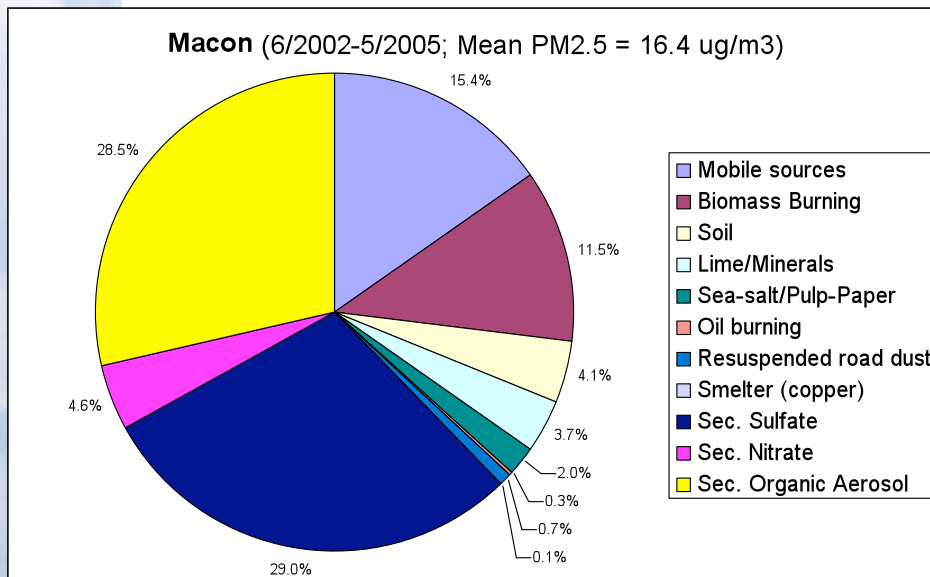
- Children
- The elderly
- People with respiratory and cardiac illnesses
- People living, working or commuting near “hotspots”
 - Highways
 - Busy intersections
 - Rail yards, airports and marine ports
 - Commuters (bus and diesel train riders, pedestrians, cyclists and car passengers)



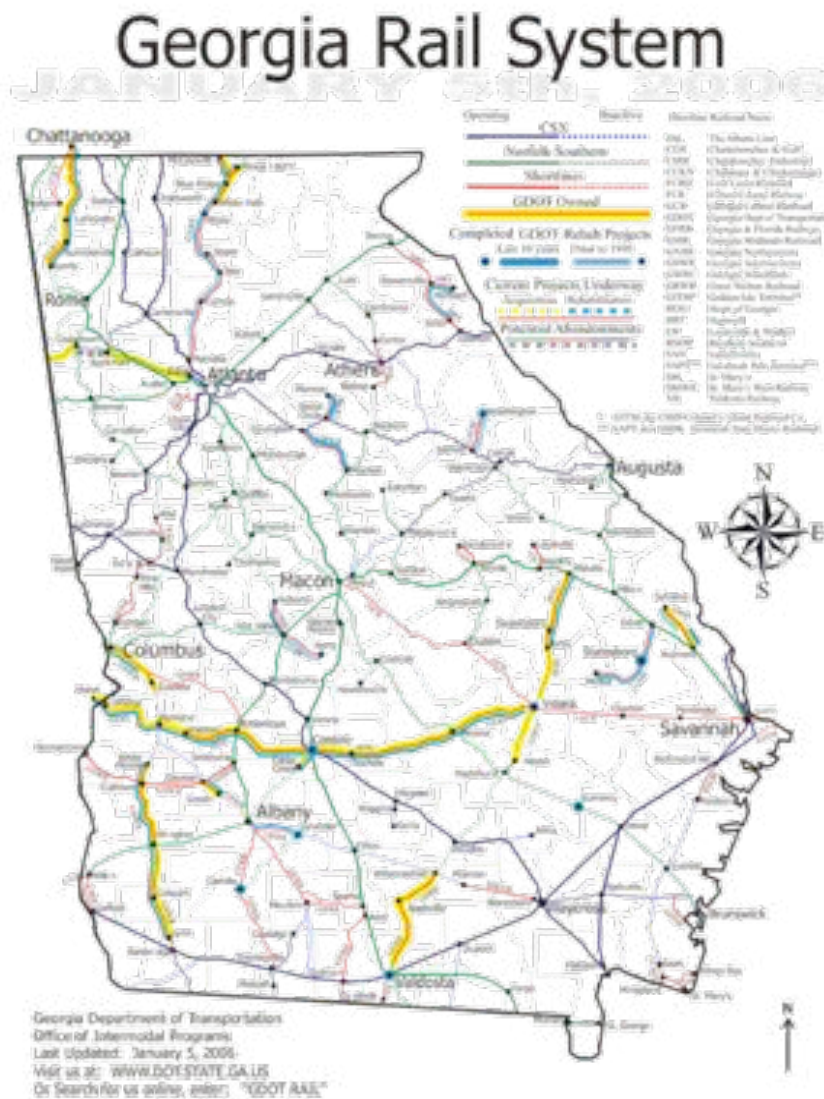
Who is affected?

Millions living in “nonattainment” areas

- ❖ 27 counties or partial counties fail the federal standard (annual) for PM_{2.5}
- ❖ The standard is being re-examined; if strengthened, additional counties may fail to attain
- ❖ Diesel retrofit projects reduce PM_{2.5} helping regions attain federal standards

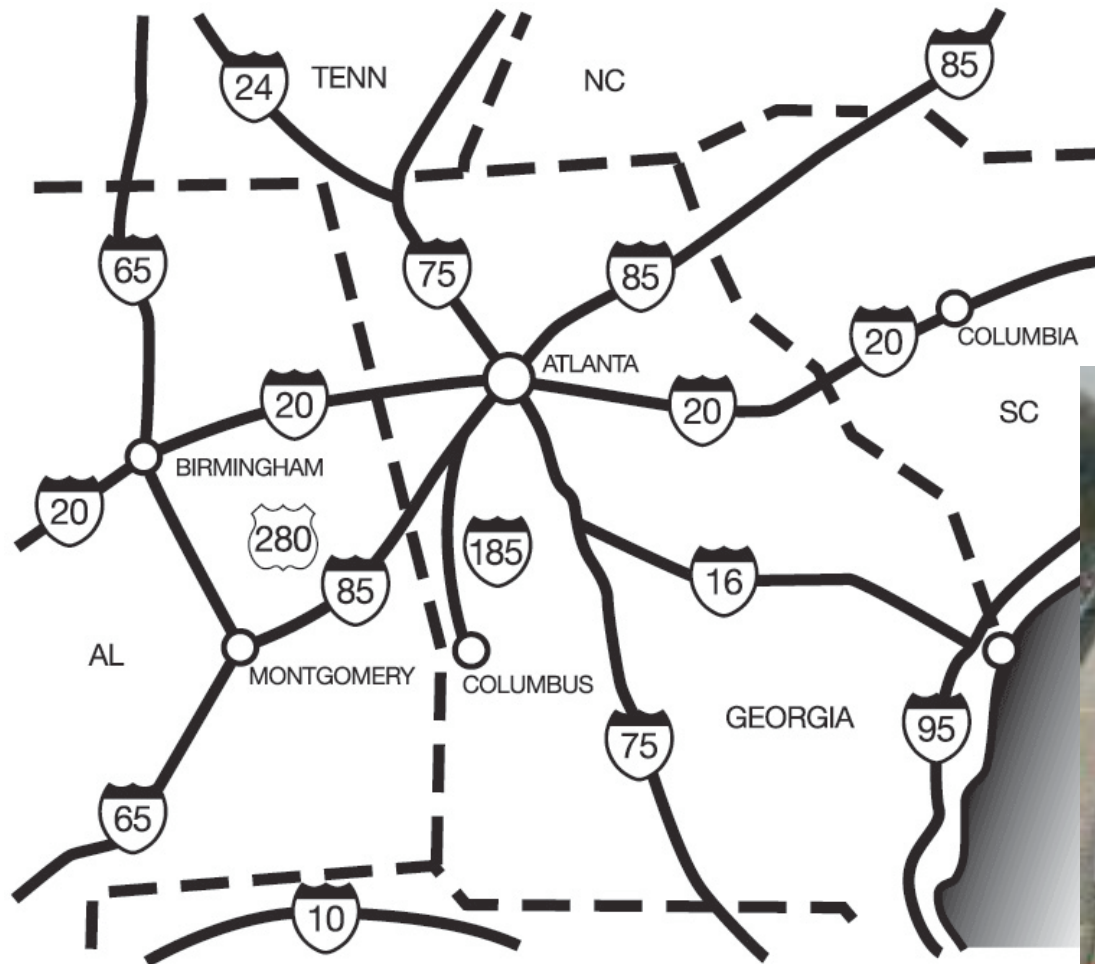


Where do we find “Hotspots?”



Where do we find hotspots?

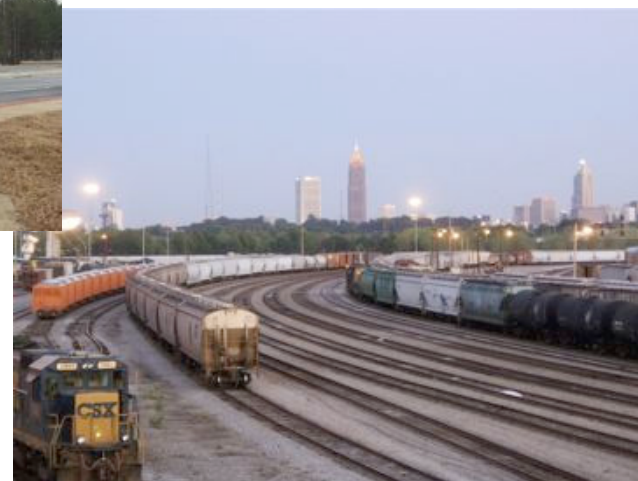
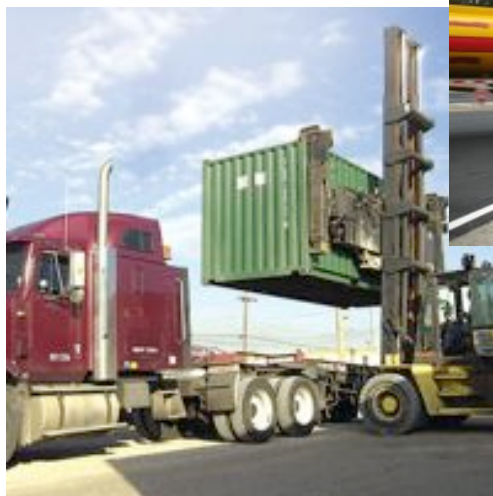
Freight Corridors



Where do we find hotspots?

Freight Corridors

Some communities are home to busy freight corridors that connect interstates, intermodal centers, distribution centers and retail destinations. They may be exposed daily to concentrations of diesel exhaust much higher than in other communities.



Where do we find hotspots?

Freight Corridors & Schools



One-third of all U.S. public schools are located within the “air pollution danger zone” near major roadways, putting students at risk. How many of these “major roadways” are freight corridors?



Where do we find hotspots?

Construction sites



Where do we find hotspots?

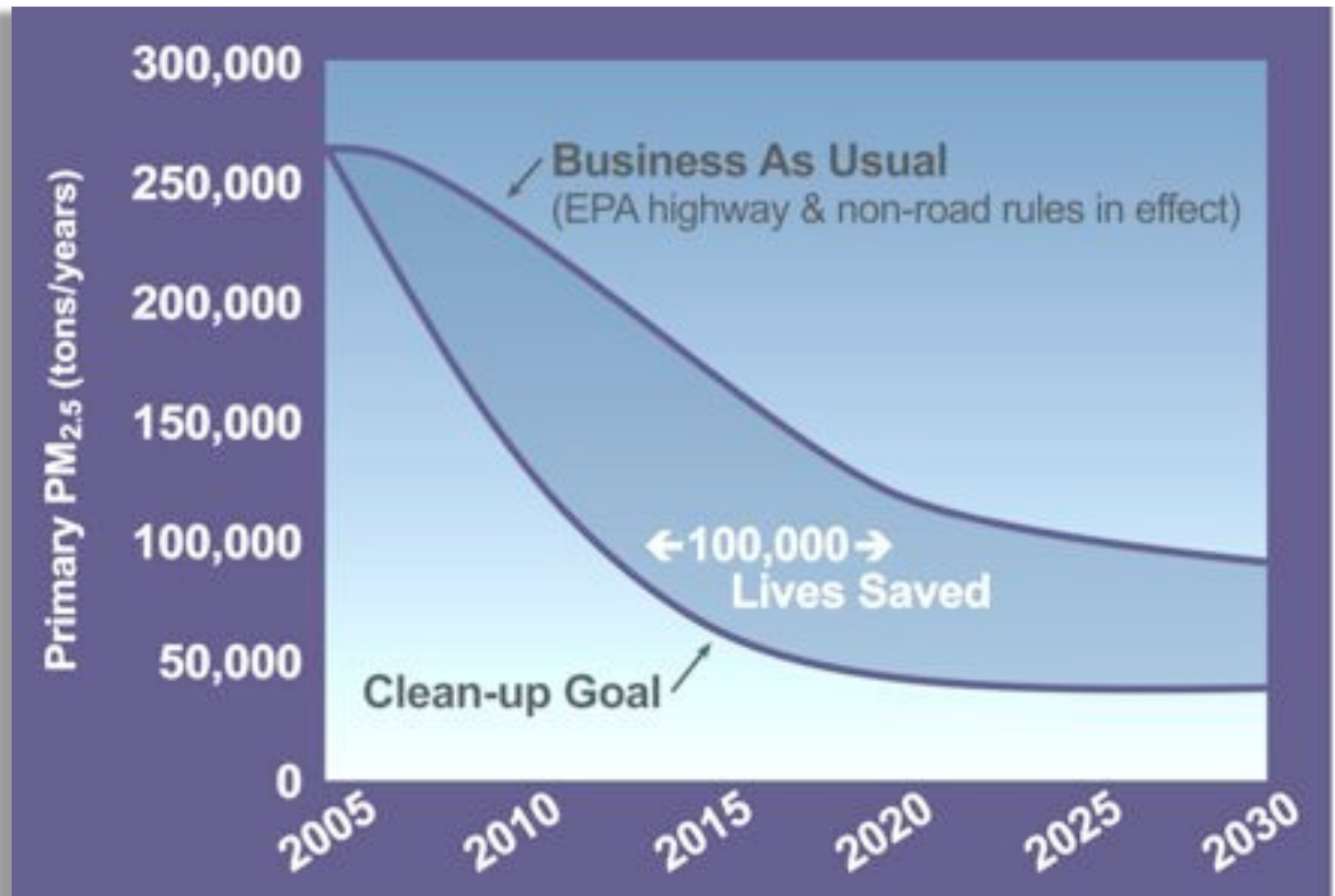
Municipal sources



Multiple exposures



We Can't Wait for New Engines!



Questions & Comments?

Rebecca Watts Hull
Mothers & Others for Clean Air
rebecca@mocleanair.org
678-244-1121

