



CLEANUP – CLEAN AIR

DIESEL EMISSIONS & GREEN HOUSE GAS REDUCTIONS

Goals

- Begin using cleaner heavy-duty diesel vehicles and construction equipment at Superfund cleanup and redevelopment sites
- Reduce green house gases at Superfund cleanup and redevelopment sites
 - renewable energy technologies
 - energy efficiencies
 - carbon sequestration



Why is Reducing Diesel Emissions Important?

Diesel Emissions Reductions

Degrades Air Quality

- Particulate Matter (PM) 2.5 in California
 - 860 tons per day
- Diesel engines are one of the biggest sources of PM 2.5
 - In California, diesel mobile sources release 102 tons per day of PM 2.5 (Approximately 12% of total)
- Ozone precursors

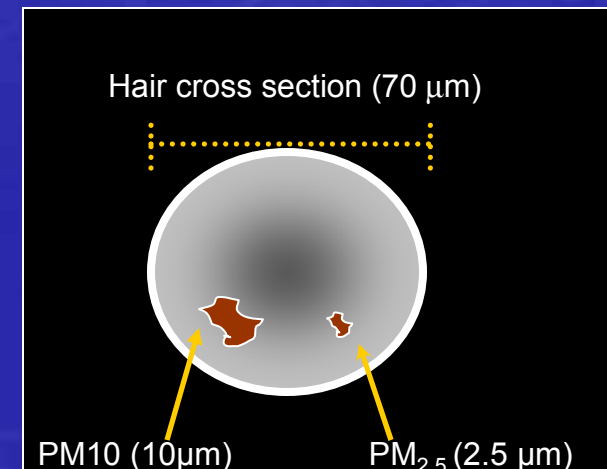
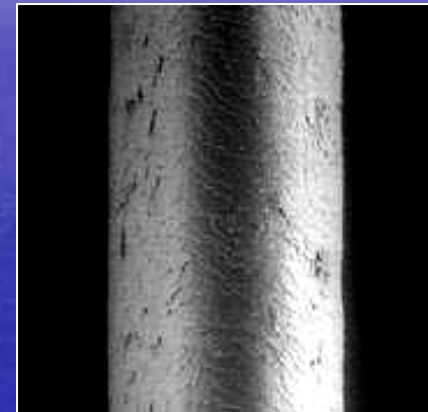
Serious Health Effects

- Diesel exhaust is a **“likely human carcinogen”** and respiratory irritant

Costs for Society

- \$Billions in healthcare per year related to PM exposure

Particulate matter (PM) in diesel exhaust is the driver of risk



Why is Reducing Diesel Emissions Important?



Nose (bones and cartilage make inhaled air swirl to deposit large particles)

Mouth (no filtering system)

Tongue

Pharynx

Esophagus (tube leading to the stomach)

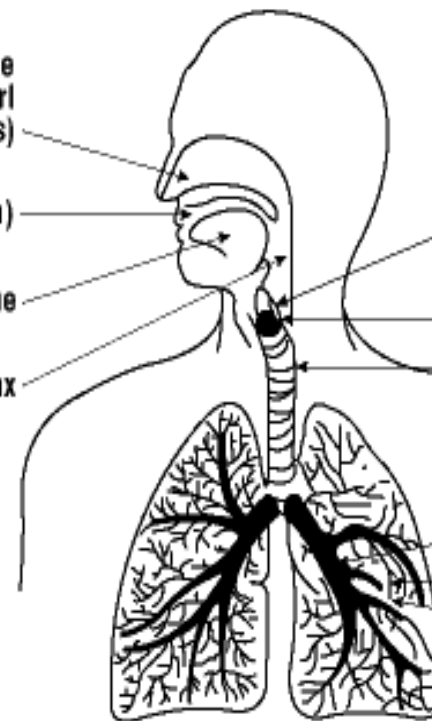
Trachea Opening

Trachea (tube leading to the lungs)

Bronchus

Bronchiole

Alveoli (tiny air sacs at the end of each bronchiole)



Why is Reducing Diesel Emissions Important?

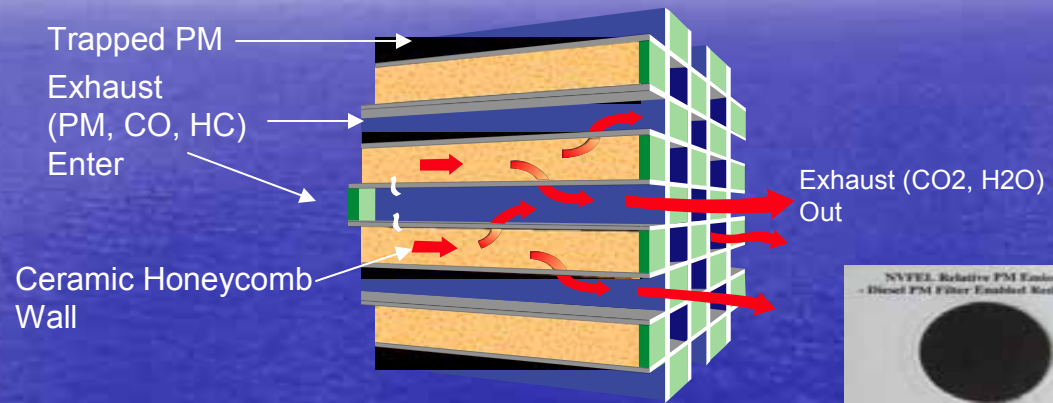
- Construction sector is big part of diesel particulate emissions
 - In California, construction sector accounts for about 30% of diesel particulates
- Diesel construction equipment and vehicles are used at Superfund Sites
 - Field work, construction and redevelopment
 - Remedial, Emergency Response, Federal Facilities, and Brownfields



Diesel Emissions Control Devices

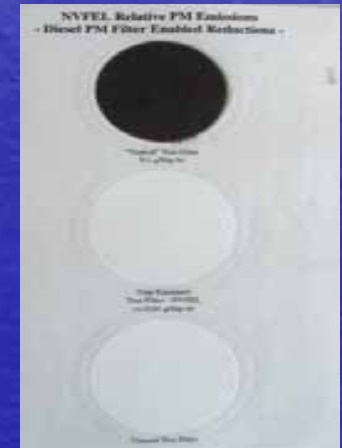
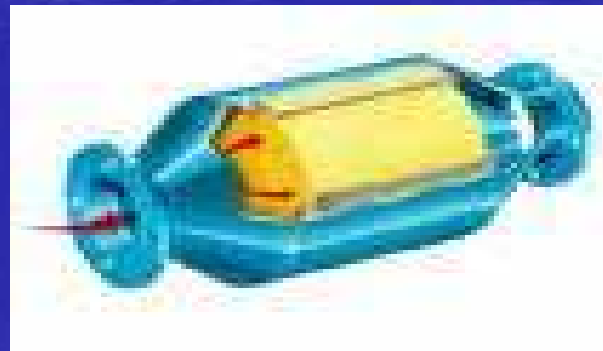
- Diesel Particulate Filters (DPFs)

- 95% PM reduction
- 90% HC reduction
- 90% CO reduction



- Diesel Oxidation Catalysts (DOCs)

- 20% - 50% reduction in PM
- 60% - 90% reduction in HC
- >90% reduction in CO



Other Emissions Control Devices & Fuels

- Selective Catalytic Reduction (SCRs)
 - 20% - 50% reduction in PM
 - 60% - 90% reduction in HC
 - >90% reduction in CO
 - 25% - 50% reduction in NOx
- Biodiesel – Neet or blends (~\$3/gallon - virgin biodiesel)
 - 10% to 50 % reduction in PM
- Emulsified fuel
- Ultra Low Sulfur Diesel (ULSD)
 - 15 ppm v. 500 ppm



Why is Reducing Diesel Emissions Important?

Benefits

- \$1 invested in diesel emissions reductions = \$13 in health benefits.
- Reduces exposure in communities and sensitive populations



Reducing Green House Gases

- Superfund can reduce and off-set green house gases and save on energy costs
 - Use renewable energies
 - Increase energy efficiencies
 - Carbon sequestration



Why is Reducing Green House Gases Important?

Importance

- Reduce significant, long-term energy demands of some Superfund site cleanup operations
- Reduce greenhouse gases, and overall environmental footprint
- Reduce need for peak demand "dirty" power
- Decrease site energy costs
- Demonstrates environmental leadership

Incentives/Benefits

- Can take advantage of State and Federal rebates and tax incentives for cleaner energy
- Redirects waste for energy use – e.g., harnessing landfill gas, and biomass



Implementing Cleanup – Clean Air Initiative

- On-going energy efforts in Superfund program
- Develop Smart Energy Resources Guide (SERG) to make it easier for RPMs and other site managers
- Demonstrate feasibility with pilot projects
 - Hunters Point Shipyard (Diesel emissions reductions)
 - Whittier Narrows OU (Optimization)
 - Pemaco (Renewable energy)
 - Hassayampa (Renewable energy)

Questions?

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www.epa.gov/region09/cleanup-clean-air

