

Health Effects by Occupation in the U.S. Trucking Industry

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Air Resources Board
California Environmental Protection Agency

Background

- Diesel exhaust a mixture of gaseous & PM air pollutants
- 1998 CA identified diesel PM as a toxic air contaminant
- Diesel PM is a contributor to ambient PM_{2.5}
- Several studies have related PM_{2.5} exposure to heart disease & lung cancer
- Few studies examine occupational exposure to diesel exhaust



Health Effects by Occupation in the U.S. Trucking Industry

- National study
- About 54,000 members of the Teamsters Union
- Employed from 1985 to 2000
- Job-specific exposures: long-haul, P&D and dockworkers
- Smoking rates similar to general population
- Compared death rates to general U.S. population



Laden et al., 'Cause-Specific Mortality in the Unionized U.S. Trucking Industry', EHP, August 2007.
Support by a grant from National Institutes of Health/National Cancer Institute.

Results

- Compared with the general U.S. population this study found:
 - All-cause death rate:
 - **28% lower**

However:

- Heart disease death rate:
 - **Drivers 49% higher**
 - **Dockworkers 32% higher**
- Lung cancer death rate:
 - **Drivers 10% higher**
 - **Dockworkers 10% higher**



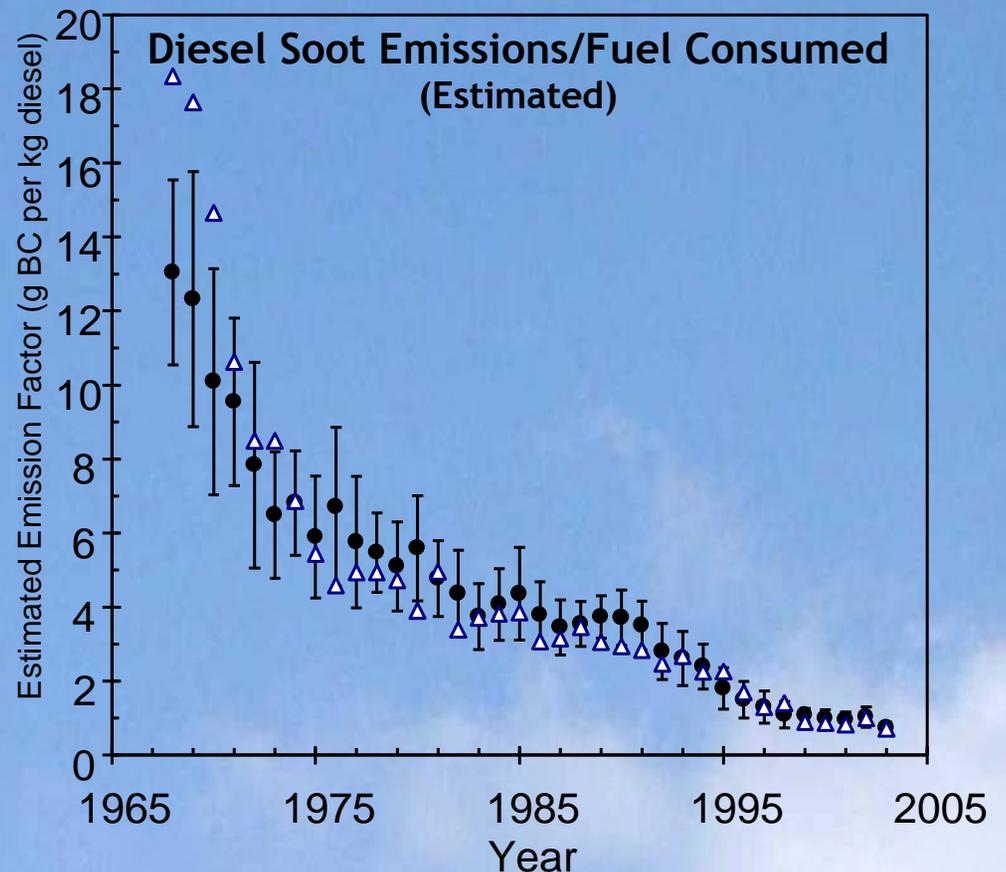
Conclusions & Implications

- Findings are important to:
 - U.S. trucking industry
 - General population that live, commute, or work in proximity to diesel-fueled vehicles
- ARB regulatory actions help the general population and also the U.S. trucking industry



Conclusions & Implications (con't)

- Last 40 years:
 - Engine diesel soot
↓ ~18 fold
 - Fuel usage
↑ ~6 fold
 - Ambient diesel soot
↓ ~3 fold
- Ongoing ARB regulatory actions:
 - Diesel Risk Reduction Plan
 - Carl Moyer Program
 - Goods Movement Emission Reduction Plan



Kirchstetter, et al., 'Black carbon concentrations and diesel vehicle emission factors derived from coefficient of haze measurements in California', Atmospheric Environment, January 2008.
Supported by the California Energy Commission and U.S. Department of Energy.