

# Lung Cancer by Occupation in the U.S. Trucking Industry

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Air Resources Board  
California Environmental Protection Agency

# Background

- Diesel exhaust particles identified as a toxic air contaminant with the potential to cause cancer
- Diesel PM contributes to outdoor PM<sub>2.5</sub> levels
  - Associated with heart disease, lung cancer & premature death
- Previous results<sup>1</sup> showed increased risk for:
  - Heart disease and lung cancer deaths for drivers and dockworkers vs. general population



<sup>1</sup>Laden, F., et al. 'Cause-Specific Mortality in the Unionized U.S. Trucking Industry', Environmental Health Perspectives 115:1192-1196 (2007). Funded by a grant from the National Institutes of Health/National Cancer Institute.

# U.S. Trucking Industry Study

- National study of 31,000 Teamsters Union members
- Work records & cause of death, 1985-2000
- Job-specific exposures: clerks, mechanics, long-haul, pick up & delivery (P&D), dockworkers, and combination (dockworkers and P&D)
- Examined lung cancer mortality and employment duration in each job category
- Accounted for “healthy worker” effect

Garshick, E., et al. 'Lung Cancer and Vehicle Exhaust in Trucking Industry Workers' *Environmental Health Perspectives* 116:1327-1332 (2008).  
Funded by grants from the National Institutes of Health/National Cancer Institute and from the National Institute of Environmental Health Sciences.



# Results

- 4,306 total deaths and 779 lung cancer deaths
- Higher risk of lung cancer for:  
(by job category vs all workers)
  - More years worked
  - Long haul, dockworkers, P&D, combination (dockworkers and P&D): 65% to 120% for 20 yrs worked
- Limitations
  - No information on previous work history, personal risk factors or exposure



# Comparison to Other Lung Cancer Risks

- Trucking industry lung cancer rates one of the five highest of all surveyed<sup>1</sup>
- Railroad workers also showed increased risk of lung cancer<sup>2</sup>
- Lung cancer risk from environmental tobacco smoke exposure<sup>3</sup> similar to most exposed workers in the trucking industry



<sup>1</sup> Proportional mortality rate for white males, 15-64 years old, 1984-1998, Centers for Disease Control and Prevention, National Institute of Occupational Health, National Occupational Mortality Surveillance:  
<http://www.cdc.gov/niosh/topics/surveillance/NOMS/default.html>.

<sup>2</sup> Garshick, E., et al. 'Lung Cancer in Railroad Workers Exposed to Diesel Exhaust' Environmental Health Perspectives 112: 539-1543 (2004). Supported by grants from NIOSH and the National Cancer Institute.

<sup>3</sup> The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General (2006) Office of the Surgeon General, U.S. Department of Health and Human Services

# Conclusions & Implications

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- Workers in the trucking industry exposed to vehicle exhaust have an elevated risk of lung cancer with increasing years of work
- Reduction of diesel PM expected to have health benefits for workers in the trucking industry
- Diesel PM control measures will also reduce exposure and risk of adverse health impacts for all Californians

