



What studies are appropriate to use to estimate health impacts from specific sources such as diesel PM?

CARB Symposium:
*Estimating Premature Deaths from
Long-term Exposure to PM_{2.5}*

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Types of Studies Available

- Animal Studies (e.g., mice exposures to diesel emissions)
 - Advantages:
 - Controlled Conditions, Specific to Diesel pollution
 - Disadvantages:
 - Not realistic exposure mix and species extrapolation required
- Occupational Studies (e.g., of toll workers)
 - Advantages:
 - Human populations in real pollution mixes
 - Disadvantages:
 - “Healthy worker” effect, very high exposures
- Epidemiological Studies (e.g., of general population)
 - Advantages:
 - Real people, real exposure situations, including susceptibles
 - Disadvantages:
 - Hard to differentiate diesel-specific effects from other pollution

Options when Using Observational Epidemiology

- Proximity to Roadway Studies

- Advantages:

- Real populations with large diesel exposures

- Disadvantages:

- Not clear how much diesel vs. other, possible SES confounding

- Epidemiology Studies of Particulate Matter

- Advantages:

- Many studies, representative exposures and populations

- Disadvantages:

- Assumes that diesel particles of similar toxicity to all PM_{2.5}.

- Epid. Studies of PM Components (e.g., by constituent or source)

- Advantages:

- Yields results more specific to diesel PM

- Disadvantages:

- Few studies available considering PM_{2.5} components.