Health Risk Evaluations

West Oakland Steering Committee Meeting
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Air Quality and Health

Emissions
- emission rates
- types of pollutants

Ambient Concentrations
- wind patterns
- topography

Exposure
- breathing rates
- locations
- time

Health Effects
- toxicity
- susceptibility
Fine particles can penetrate deep into lungs and cause serious health effects

- Premature death
- Heart disease and stroke
- Respiratory disease, such as asthma
- Effects at concentrations below the current regulatory standards
- Greater impacts near freeways and other emission sources
Diesel exhaust particles identified as carcinogenic

- Lung cancer
- Possible increased risk of bladder cancer
- Major sources include heavy-duty trucks, trains, ships, and large generators
Other toxic air contaminants also have adverse health effects

Examples: benzene, butadiene, formaldehyde, some metals

Cancer: lung, leukemia

Non-cancer, chronic health effects: respiratory problems, kidney damage, anemia

Acute health effects: asthma, eye irritation
How can we assess the health effects from a source of air pollution emissions?

Health Risk Assessment

• A math model, plus instructions
• Inputs: air pollution emissions and wind information
• Outputs: estimated health risks

A tool for making comparisons

• Many sources of uncertainty → make conservative assumptions
• If applied consistently, pollution sources can be compared
• Health protective policies can be adopted
A source-specific health risk assessment aims to estimate adverse health impacts.
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- From toxic air contaminants
  - Cancer risk, non-cancer chronic impacts, and acute impacts
- From the specific emissions source
- On residents nearby
A cumulative health risk assessment aims to estimate adverse health impacts.

- From more pollutants, including fine particles
- From a more complete account of emissions sources and exposures