



Health Risk Evaluations



West Oakland Steering Committee Meeting
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Bay Area Air Quality Management District
November 7, 2018

Air Quality and Health

Emissions



emission rates
types of pollutants



Ambient Concentrations



wind patterns
topography



Exposure



breathing rates
locations
time



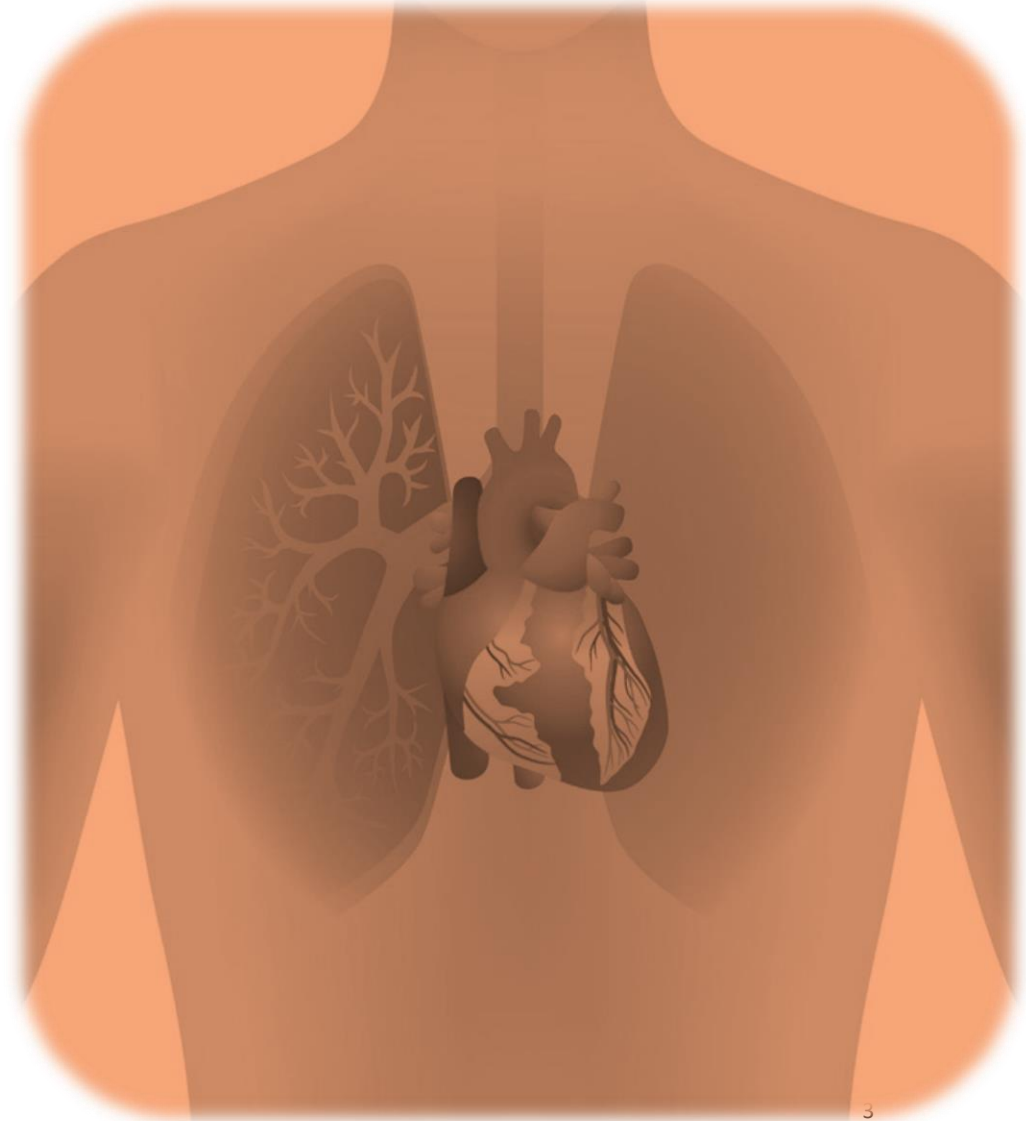
Health Effects



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



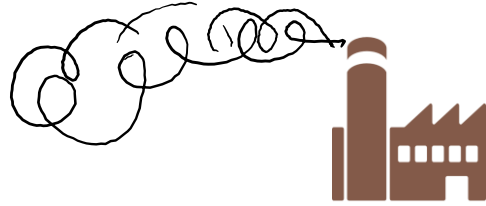
How can we assess the health effects from a source of air pollution emissions?

Health Risk Assessment

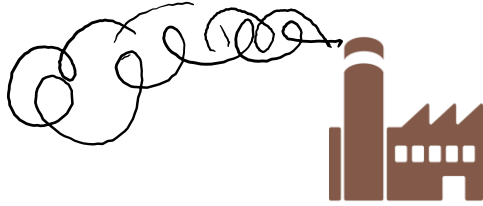
- A math model, plus instructions
- Inputs: air pollution emissions and wind information
- Outputs: estimated health risks

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

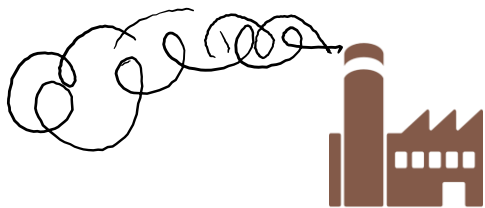


A **source-specific**
health risk
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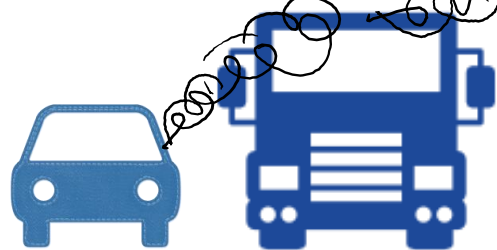


A **source-specific health risk assessment** aims to estimate adverse health impacts

- 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

