Presentation Overview

• Major Health Effects
• Vulnerable Populations
• Toxic Air Contaminants
• Air Quality Standards
MAJOR HEALTH EFFECTS
Air Pollution and Public Health

• Science on the health impacts of air pollution dates back to 1930’s

• Health effects observed worldwide

• Particulate matter (PM) and ozone account for over 90% of identified health impacts

• Air pollution poses cancer risk
Mechanisms for Air Pollution Health Effects

• Air pollution exposure can:
  • Worsen existing disease
    • Cardiovascular diseases
    • Respiratory diseases
  • Cause disease
    • Cancer
    • Asthma
Major Health Effects of Air Pollution

• Premature Death
• Heart Attacks and Stroke
• Asthma
• Cancer Risk
Premature Death

• Strongest evidence for premature death from air pollution is for PM exposure

• Studies link PM to premature death in people with cardiovascular and respiratory disease

• Premature mortality from ozone exposure linked to respiratory causes
Cardiovascular Effects

• Studies show daily exposure to PM2.5, PM10, and ozone can worsen preexisting chronic cardiovascular disease.
Respiratory Effects

Air pollution effects on the lungs can result in:

- Asthma exacerbation
- Increased asthma medication
- Hospitalization
- Emergency department visits
Asthma and Air Pollution

- Nearly 3 million Californians are asthmatic
  - 1 million children
  - 1.9 million adults
- 14% of San Joaquin Valley children are asthmatic
- Ozone and traffic related air pollutants shown to worsen asthma
Cancer Risk from Air Pollution

• Specific pollutants are “toxic air contaminants (TAC)” due to cancer risk

• Human epidemiological studies and animal exposure studies show air pollution is linked to cancer risk

• Peer review by mandated “Scientific Review Panel”

• ARB regulations are reducing cancer risk form TACs
VULNERABLE POPULATIONS
Who Is Especially Vulnerable to Air Pollution?

- Children
- Elderly people
- People with chronic disease
- Outdoor workers and athletes
- People in low socioeconomic communities
What Population Characteristics Influence Vulnerability?

• Childhood: more outdoor activity and higher breathing rate

• Elderly: Chronic health conditions including heart and lung disease, diabetes

• Socioeconomic status: poverty, low level of education, other environmental justice community indicators
TOXIC AIR CONTAMINANTS
Toxic Air Contaminants

• Diesel PM is the TAC posing greatest statewide cancer risk

• Other key TACs:
  • Benzene
  • 1,3-butadiene
  • Chromium
  • Chlorinated solvents
Proximity Increases Health Risk

- Risk assessments show how TACs increase health risk in neighborhoods
- ARB regulations are reducing health risk near sources of air pollution
AIR QUALITY STANDARDS
Air Quality Standards

- U.S. EPA must set National Ambient Air Quality Standards (NAAQS) based on health impacts
- Level of NAAQS is specific to each pollutant
- Required NAAQS reviews are necessary to reflect new health research
- U.S EPA NAAQS assessments are subject to scientific peer review by the Clean Air Scientific Advisory Committee (CASAC)
Nature of NAAQS

• Level of NAAQS designed to:
  • protect public from short and long term air pollution exposure
  • protect sensitive populations

• NAAQS are a mandatory public health goal to be met by specific deadlines

• States must demonstrate how NAAQS will be met
Ongoing Scientific Studies

- Improve understanding of:
  - Multi-pollutant exposures
  - Near source exposures
  - Impacts on vulnerable populations
  - Role of genetics
Summary

• Health impacts of air pollution include:
  • Premature death
  • Heart disease and stroke
  • Asthma
  • Cancer risk

• California’s improving air quality is providing public health benefits

• Meeting NAAQS and reducing risk from TACs requires ongoing new emission reductions
Our Goal: Clean Air in all communities