Community Air Risk Evaluation (CARE) Program

- Background
- Purpose/Goals
- Accomplishments
- Key Findings
- Next steps

Air Quality is Improving in the Bay Area

- Some communities have higher air pollution exposures and health impacts
- Near-source exposures, especially particles and toxic air contaminants
- Episodes with higher levels of fine particles and ozone

CARE Program Goals

- Evaluate regional and community health impacts from outdoor air pollution
- Identify sensitive populations
- Focus health risk mitigation measures on locations with higher impacts and sensitive populations

CARE Program Accomplishments

- Scientific studies: regional-scale & local-scale
- Mapping impacted areas
- Helping to prioritize Air District actions to support healthy communities
- Productive CARE Task Force meetings
- CARE Summary Report documents program accomplishments and future direction
Regional-Scale Studies

- Goal: Develop regional maps of risks from toxic air contaminants to complement regional assessments of ozone and fine particulate matter

Local-Scale Studies

- Goal: Develop information to understand and reduce health impacts from exposure to local sources of air pollution
  - West Oakland Case Studies
    - Diesel Particulate Matter Health Risk Assessment
    - West Oakland Truck Survey
    - Drayage Truck Plume Measurements
    - West Oakland Monitoring Study
  - Measurement studies near industrial facilities and near roadways

First Identified Cumulative Impact Areas (2009)

- Based on
  - Elevated cancer risk
  - High emissions of toxic air contaminants (TAC)
  - Vulnerable populations
    - Youth
    - Seniors
    - Low-income families

Why Update Maps?

- Same goal as current maps:
  - Focus actions/engagement where most needed
- Use latest data
- Consider additional air pollutants
  - In addition to toxics: fine particles and ozone
- Use new methods
  - Estimate health outcomes from air pollution
  - Use health records to reflect vulnerability
- Consider different types of impacts
  - Cumulative impacts: multi-pollutant, vulnerable populations
  - Exceedences: particles, ozone above standards

Health Effects of Air Pollutants

New Method for Identifying Cumulative Impacts

- Considers air pollution levels and community health

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Method</th>
<th>Health Impacts</th>
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<tbody>
<tr>
<td>Air Pollution</td>
<td>Health Records</td>
<td>Cumulative Impacts</td>
</tr>
<tr>
<td>TAC, PM2.5, Ozone</td>
<td>Death rates, Hospital admissions, ER visits</td>
<td>Increased cancer risk, Increased death rate, Increased costs from hospitalizations and ER visits</td>
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<tr>
<td>Models from US EPA and CalEPA</td>
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Revised Cumulative Impact Areas

- Map areas with greatest impact
- Develop boundaries to encompass areas with highest impacts
- Consider where emissions are also high
- Use major roadways, geographical features to form boundaries

Update to Cumulative Impact Areas

Episodic PM$_{2.5}$ and Ozone Exceedance Areas

- PM$_{2.5}$ Exceedance Areas
- Ozone Exceedance Areas

Uses of Maps

- Cumulative impact maps support and focus localized mitigation activities
  - Clean Air Communities Initiative
- Exceedance maps support and focus regional mitigation activities
  - Clean Air Plan policies and programs
  - Identify and reduce upwind sources of precursor emissions
  - Public outreach

Reducing Health Impacts

- Prioritize grant funding
- Focus outreach and education
- Focus enforcement activities
- Coordinate planning efforts
- Develop regulations targeted to source categories
- Prioritize local-scale measurement and modeling studies

Clean Air Communities Initiative: Examples

- Grants
  Prioritize grant funding to reduce emissions in impacted areas
- Enforcement
  Focus enforcement of CARB’s diesel rules for sources in impacted areas
Clean Air Communities Initiative: Examples

- Regulations
  - Develop regulations targeting pollutants and sources of concern in impacted areas
    - New Source Review
    - Source-specific regulations

- Planning
  - Support infill development and minimize exposure to air pollution
    - CEQA guidelines
    - Technical assistance to local staff
    - Community Risk Reduction Plans

Key Findings of the CARE Program

- Diesel PM is a significant contributor to cancer risk from toxic air contaminants
- Fine PM of all types is linked to poor health outcomes and mortality
- The updated method for identifying cumulative impact areas did not use socio-economic information. But, high impact areas have
  - lower household incomes
  - lower education levels
  - higher percentages of non-white residents

Key Findings of the CARE Program

- Grants, regulatory programs, and enforcement efforts are resulting in significant health benefits
- Exposures to local air pollution sources are important in determining health impacts, even in impacted areas
- Infill development can safely proceed in areas identified as impacted, if localized air pollution sources are avoided or mitigated
- Maps of episodic exceedance areas complement maps of cumulative impact areas

Next Steps

- Use updated maps to prioritize Air District programs and policies
- Continue to collaborate with other agencies
- Develop improved datasets, tools, and guidance to support healthy infill development
- Track personal exposures to air pollution
- Consider climate change in assessing community impacts and evaluating co-benefits of reducing pollutants