



Review of Aircraft and Airport Emissions

Presentation to CARE Program Task Force

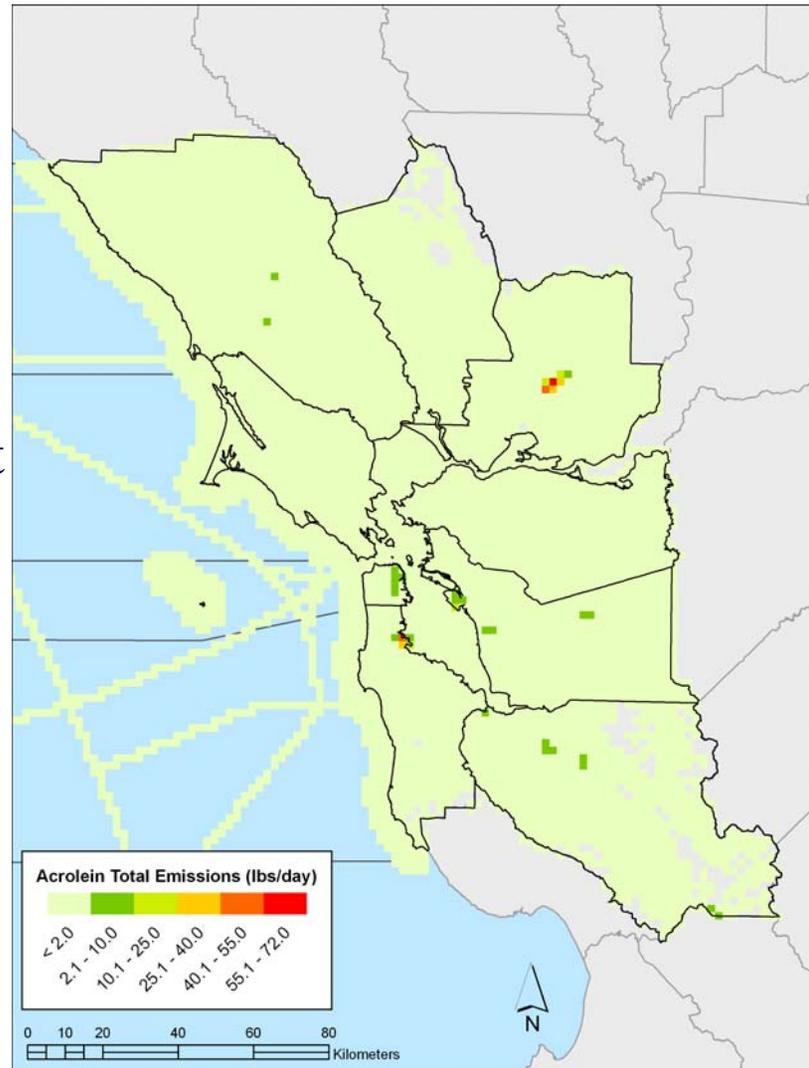
February 23, 2006

Amir Fanai, Principal Air Quality Engineer



Acrolein Emissions and Airports

- At the Last Task Force Meeting STi Presented Several Maps of Toxic Air Contaminants
- High Acrolein Emissions Were Noted Around Bay Area Airports, Particularly at Travis Air Force Base
- Task Force Members and Other Meeting Participants Expressed Interest in Airport Emissions





Source Inventory Overview

Emissions inventory is divided into three major categories

➤ **Stationary**

– **Point Sources**

- » **Refineries, Chemical Manufacturing Facilities**
- » **Combustion**

– **Area Sources**

- » **Petroleum/Solvent Evaporation (Gasoline, Paint, Hairspray)**
- » **Combustion (Fireplaces, Woodstoves, Cooking)**

➤ **Mobile**

– **On-Road Motor Vehicles**

– **Off-Road Mobile Sources**

- » **Aircraft, Ships, Trains**
- » **Construction, Utility Equipment**

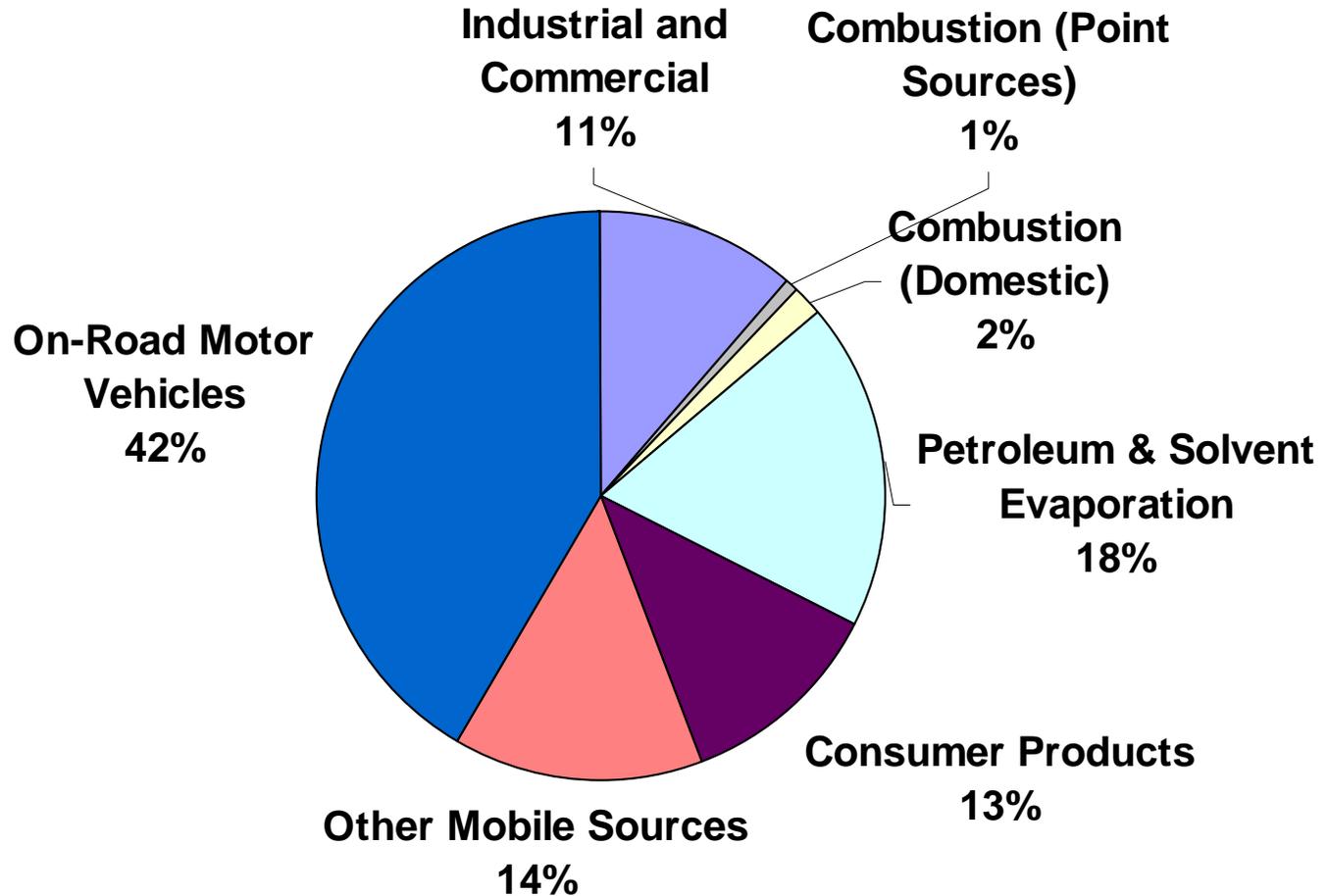
➤ **Biogenic Sources**



Contribution by Major Categories

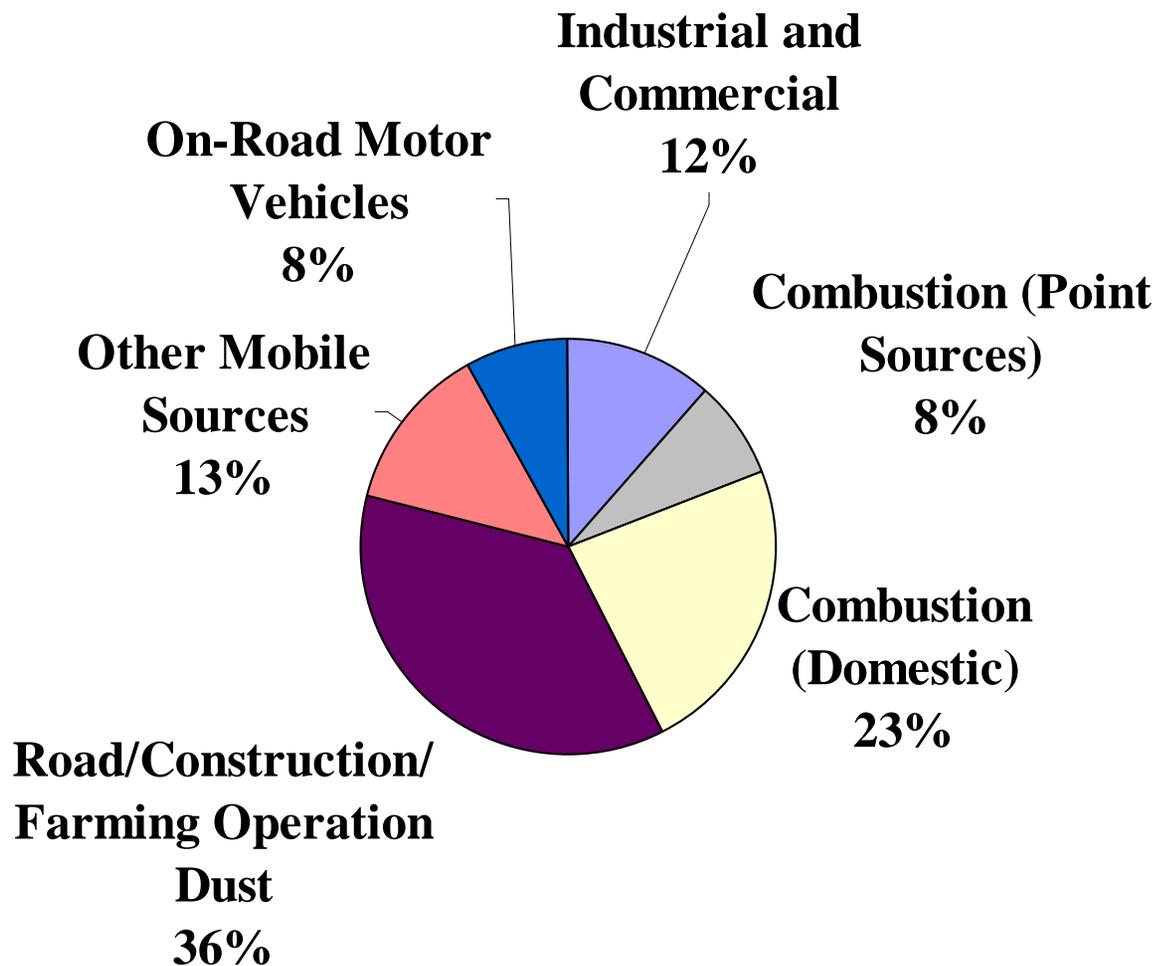
Annual Average; Year 2000

Reactive Organic Gases-ROG : 525 tons/day



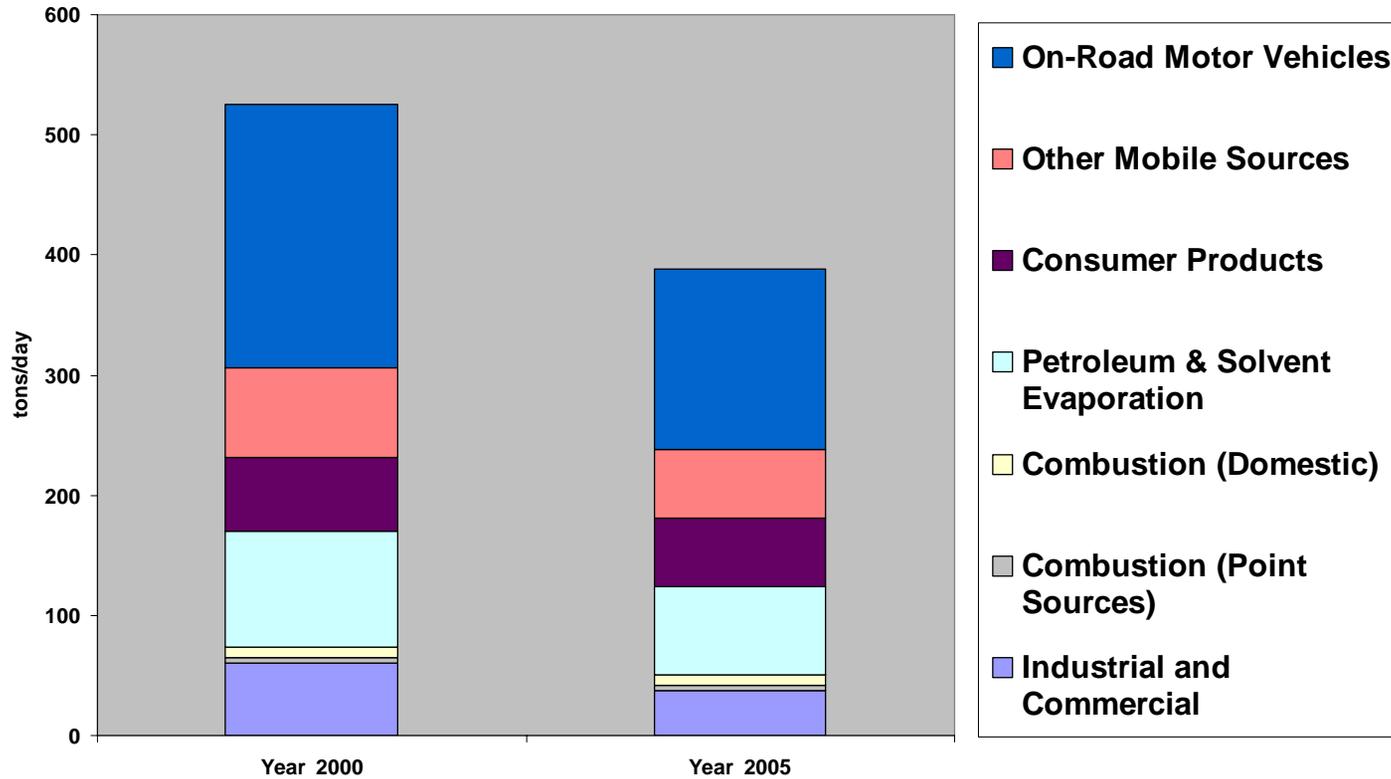


Particulate Matter < 2.5 microns (PM2.5) Year 2000-Annual Average 87 tons/day



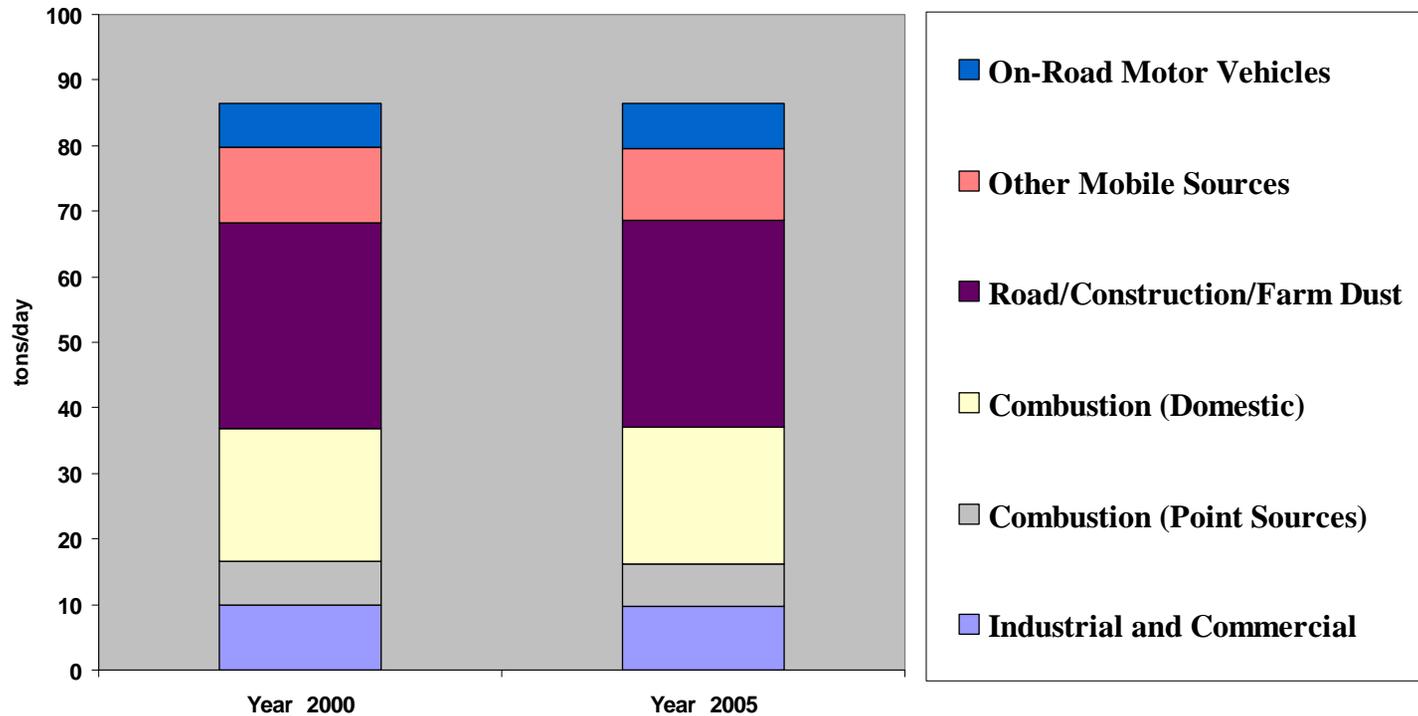


ROG Emissions Are Decreasing





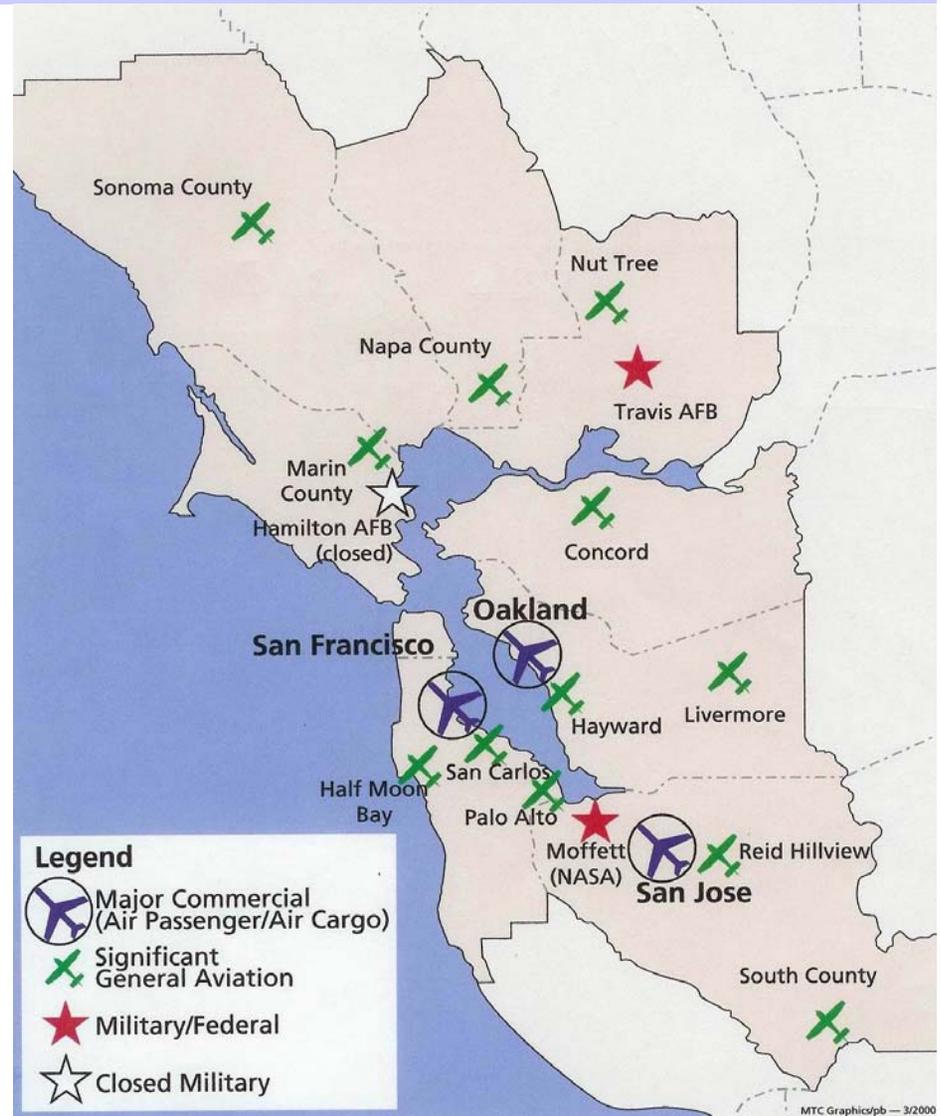
PM2.5 Emissions Trends





Bay Area Airports

- **Alameda**
 - **Oakland International**
 - **Hayward**
 - **Livermore**
 - **Oakland North**
- **Contra Costa**
 - **Concord**
 - **Buchanan Field and Byron**
- **Marin**
 - **Gross Field**
- **Napa**
 - **Napa County**
- **San Mateo**
 - **San Francisco International**
 - **San Carlos and Half Moon Bay**
- **Santa Clara**
 - **San Jose International**
 - **Palo Alto**
 - **South County**
 - **Reid-Hillview**
- **Solano**
 - **Solano County**
- **Sonoma**
 - **Sonoma County**
 - **Sonoma SkyPark**





Aircraft/Airport Categories

- **COMMERCIAL**
 - **Jet**
 - **Passenger**
 - **Cargo**
 - **Piston**
 - **Commuter/Taxi**

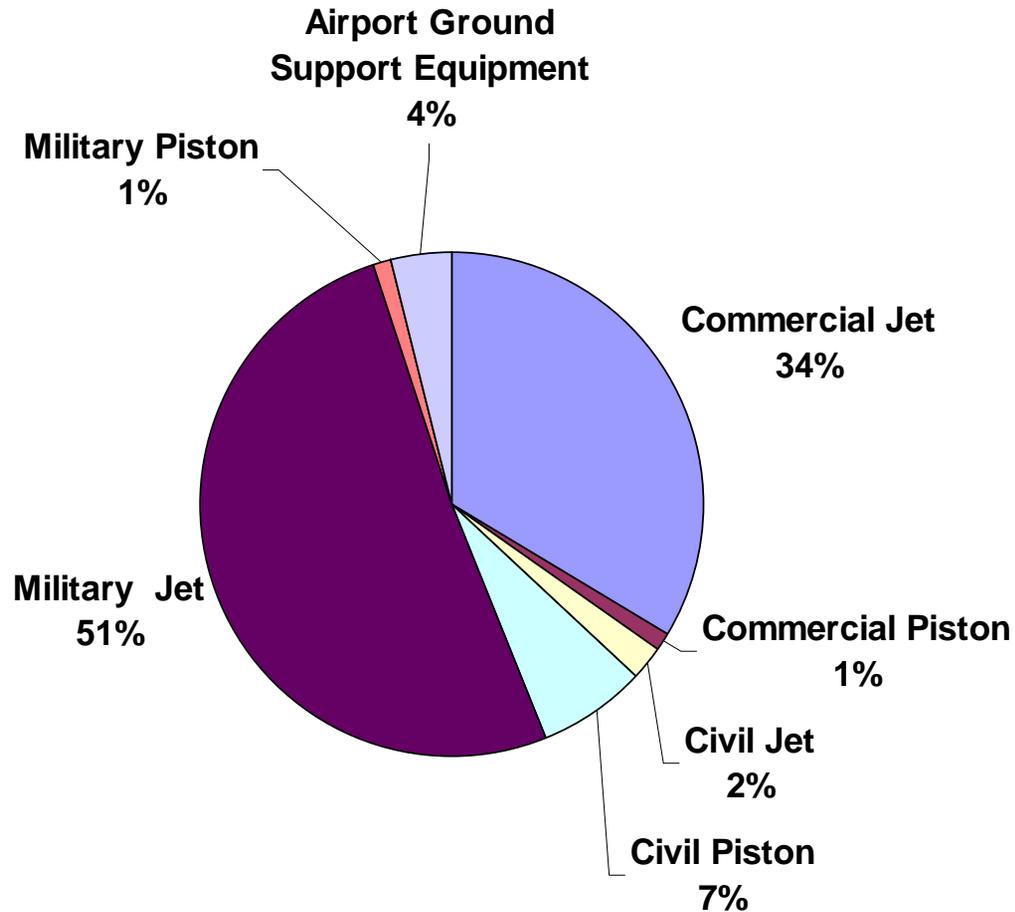
- **CIVIL**
 - **Jet**
 - **Piston**

- **MILITARY**
 - **Jet**
 - **Piston**

- **GROUND SUPPORT EQUIPMENT**

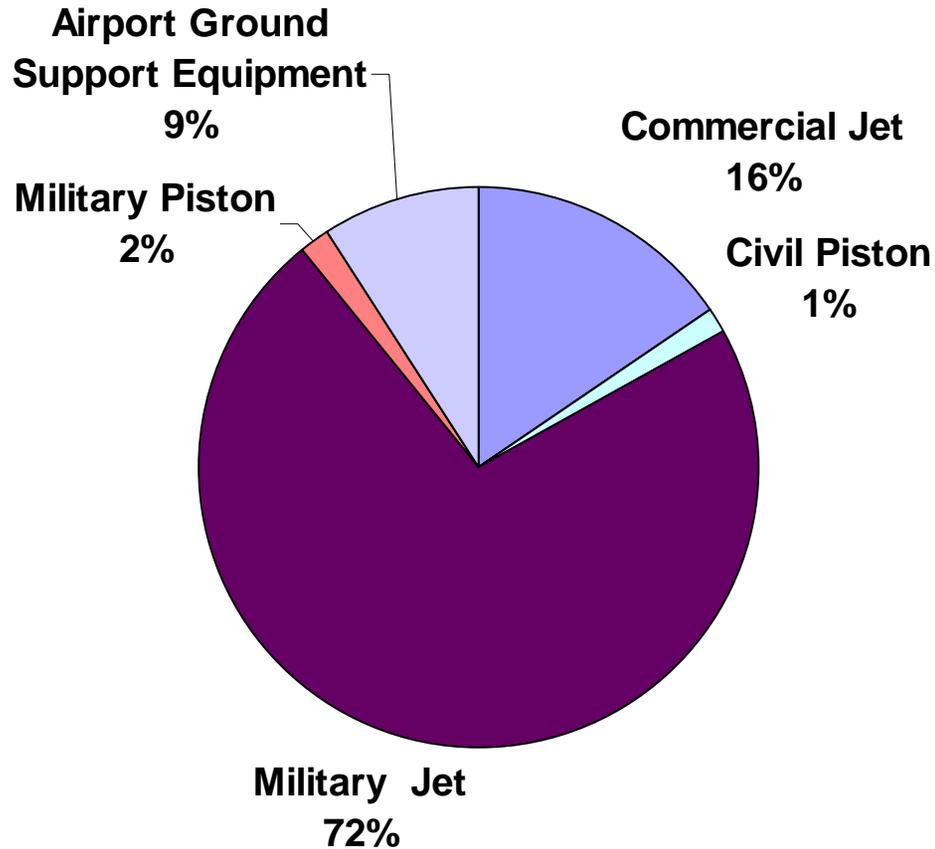


ROG Emissions By Category



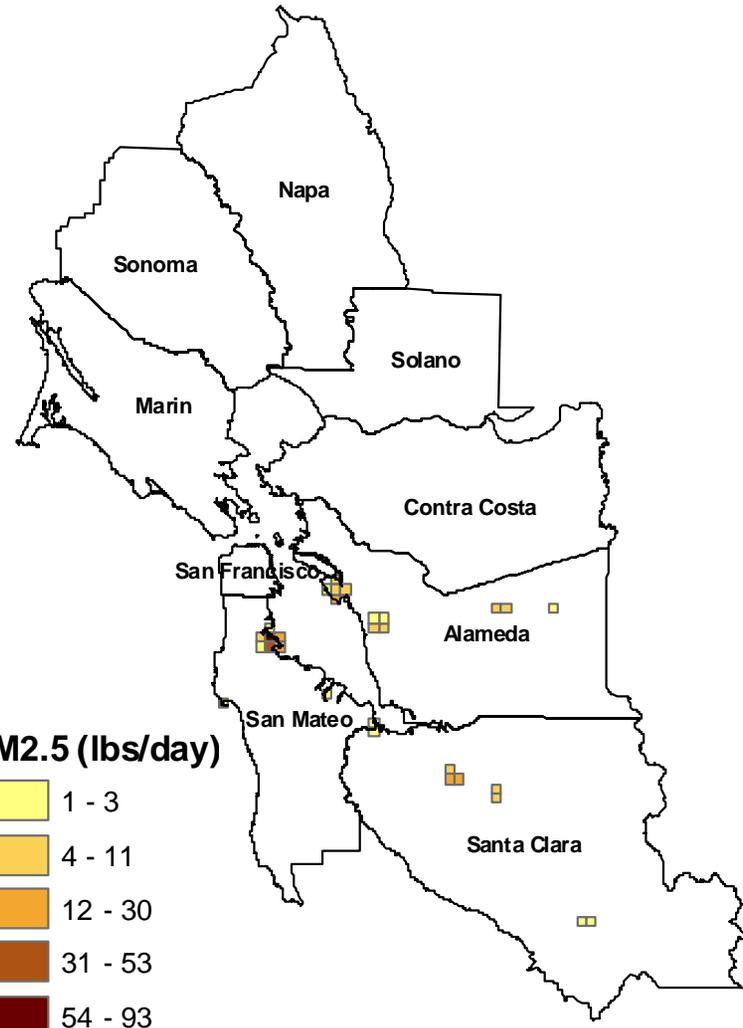


PM 2.5 Emissions by Category



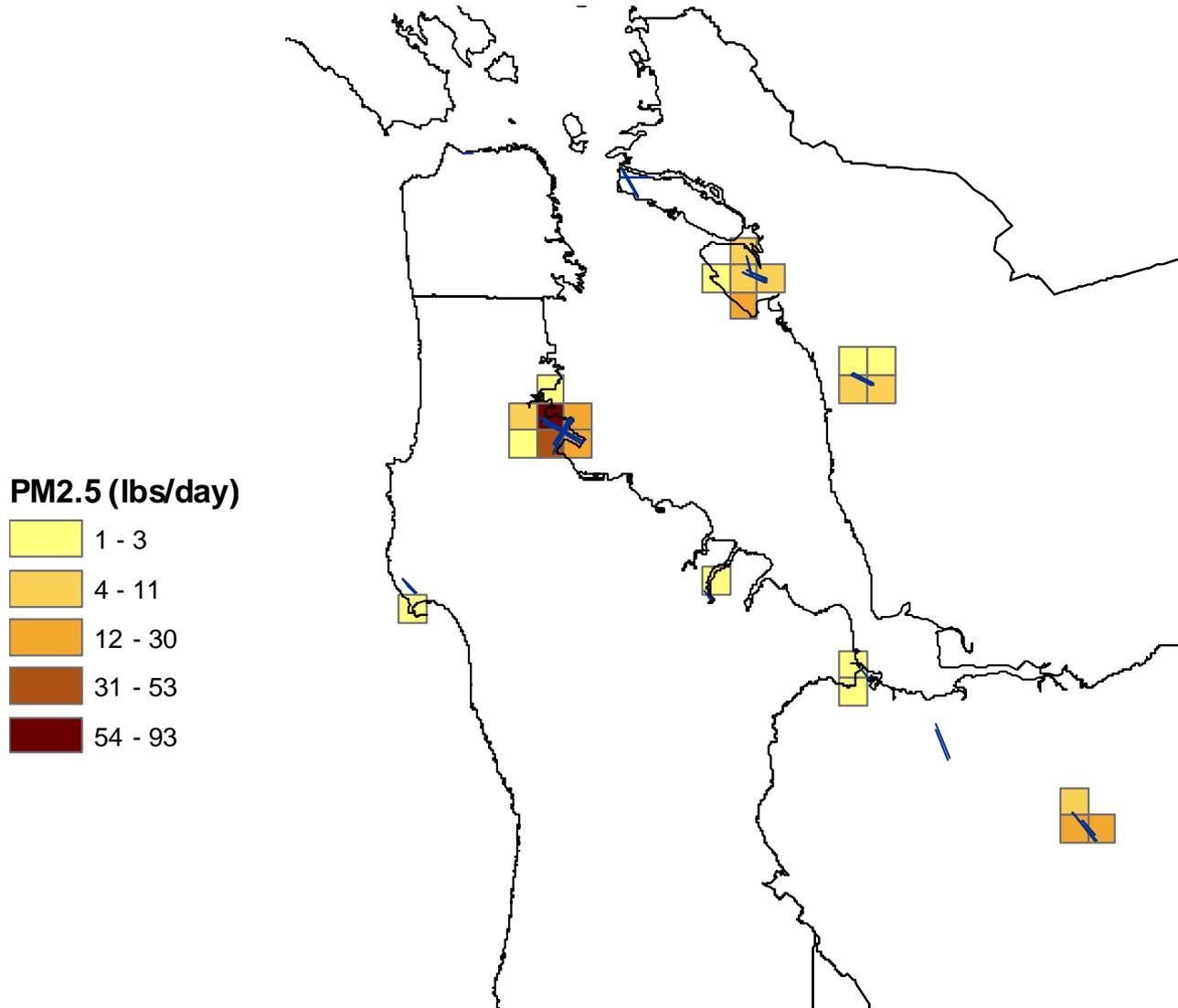


Commercial Jet Aircraft Emissions



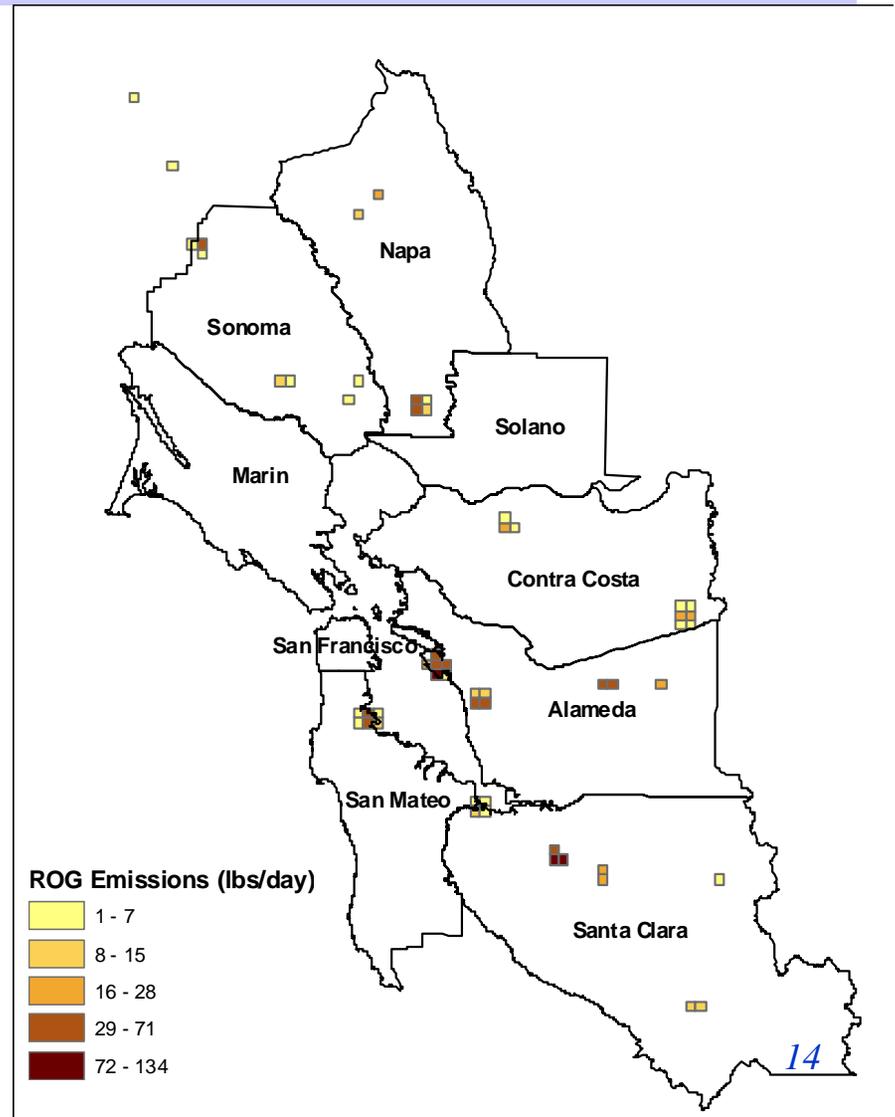
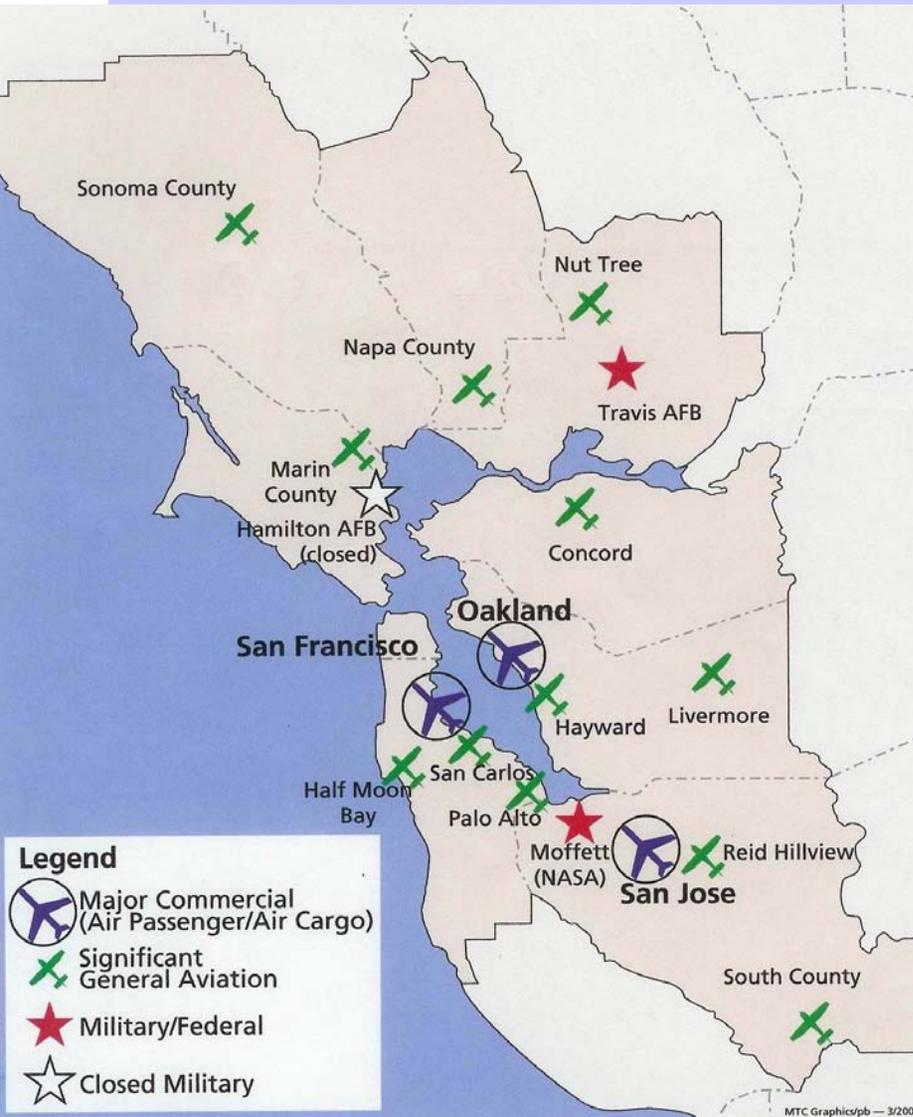


Commercial Jet Aircraft Emissions & Airport Runways





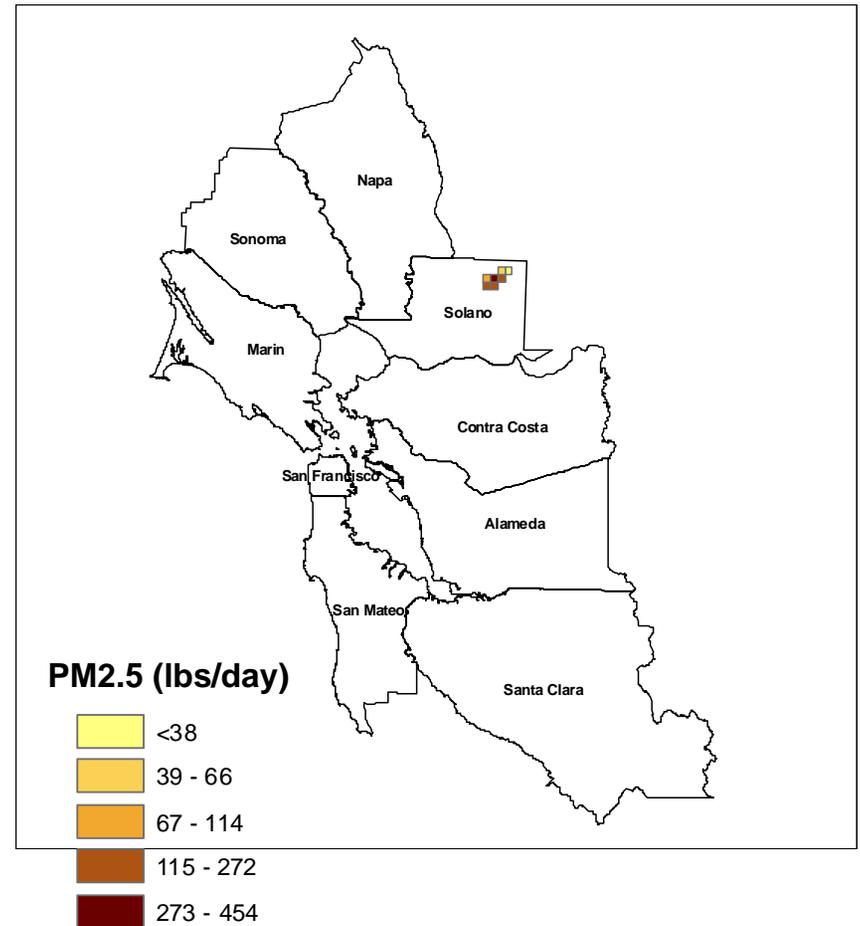
Civil Piston Aircraft Emissions





Military Jet Aircraft Emissions

- Travis AFB Emissions Have Been Mapped Correctly
- Emissions from Mofett Have Not Been Mapped (Approx. 3% of the Total Airports)
- Requires Further Investigation by STi

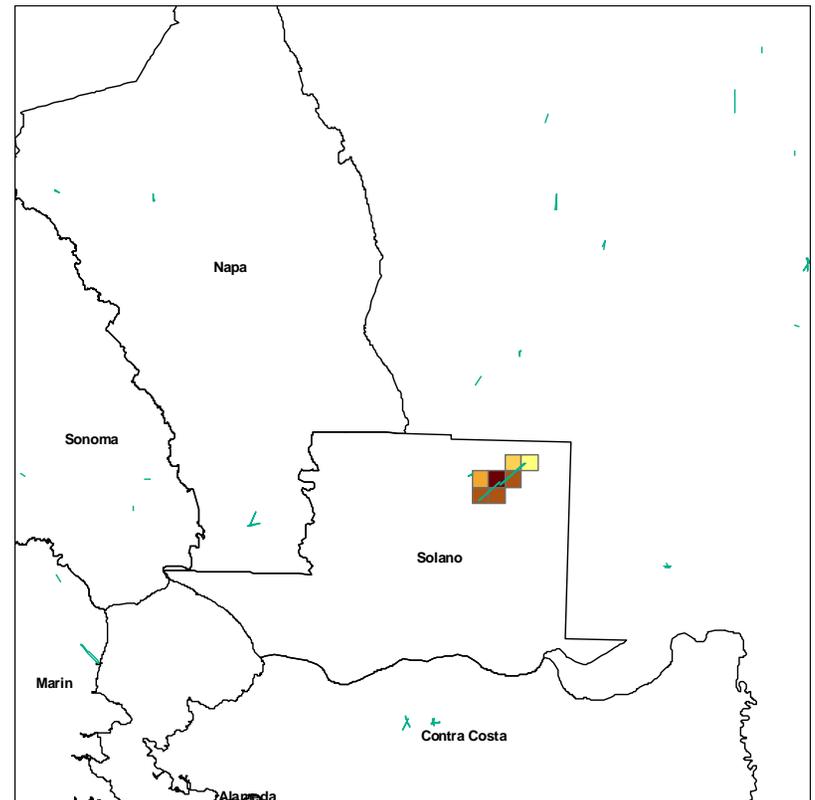
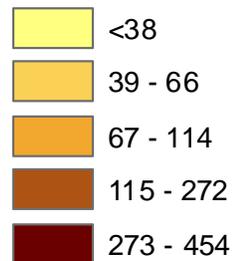




Military Jet Aircraft Emissions & Airport Runways

- Travis AFB Emissions Have Been Mapped Correctly

PM2.5 (lbs/day)





Summary

- Almost All of The Bay Area Airport Emissions (97%) Have Been Gridded Correctly
- Relatively Simple to Add Mofett Emissions to the Relevant Maps



Work in Progress

- Verify Emissions and Allocation for other Major Categories:
 - Trains
 - Construction Equipment
 - Ships
 - Lawn and Garden Equipment
- On-Road Motor Vehicle Diesel PM Emissions