

# California's Diesel Retrofit Program

**Tom Cackette**

FACA Mobile Source Sub-Committee  
January 17, 2001

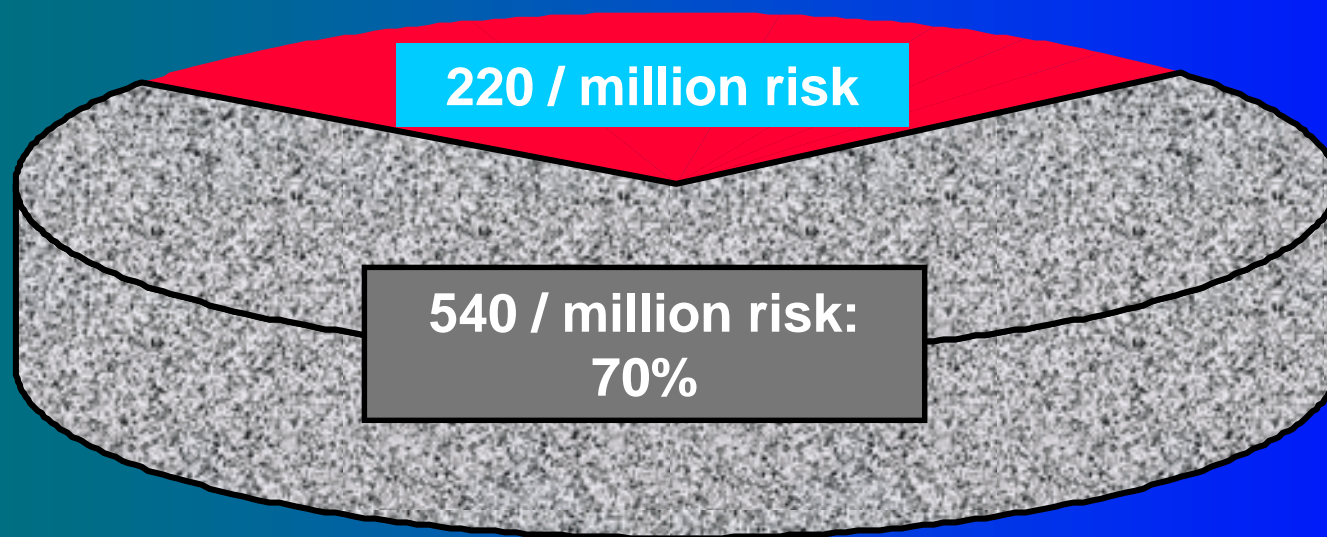
California Environmental Protection Agency

---



**Air Resources Board**

# 70% of Air Toxic Risk From Diesels



 **Diesel PM (70%)**

 **Other Air Toxics (30%)**

1,3 Butadiene (10%)

Benzene(8%)

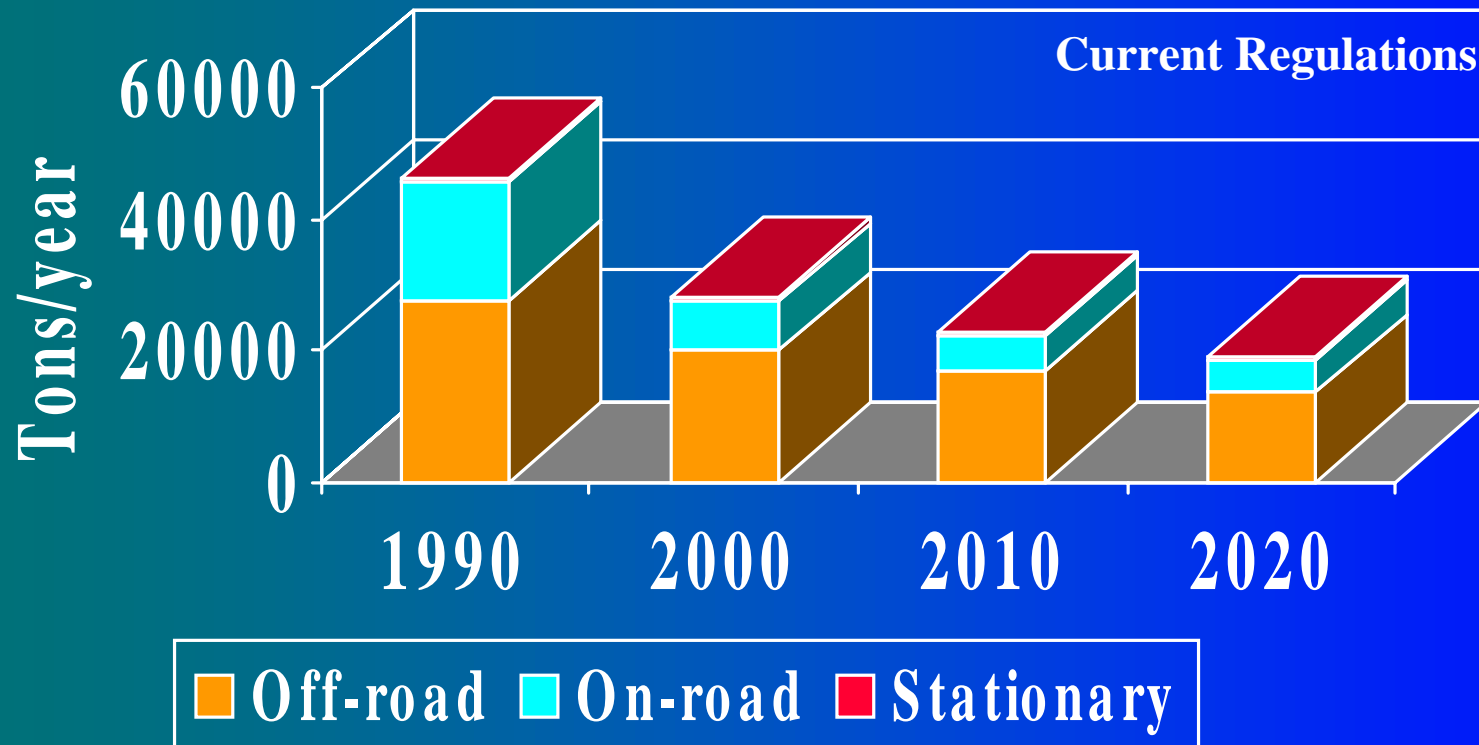
Carbon Tetrachloride (4%)

Formaldehyde (3%)

Hexavalent Chromium (2%)

All Others (3%)

# Diesel PM Emissions

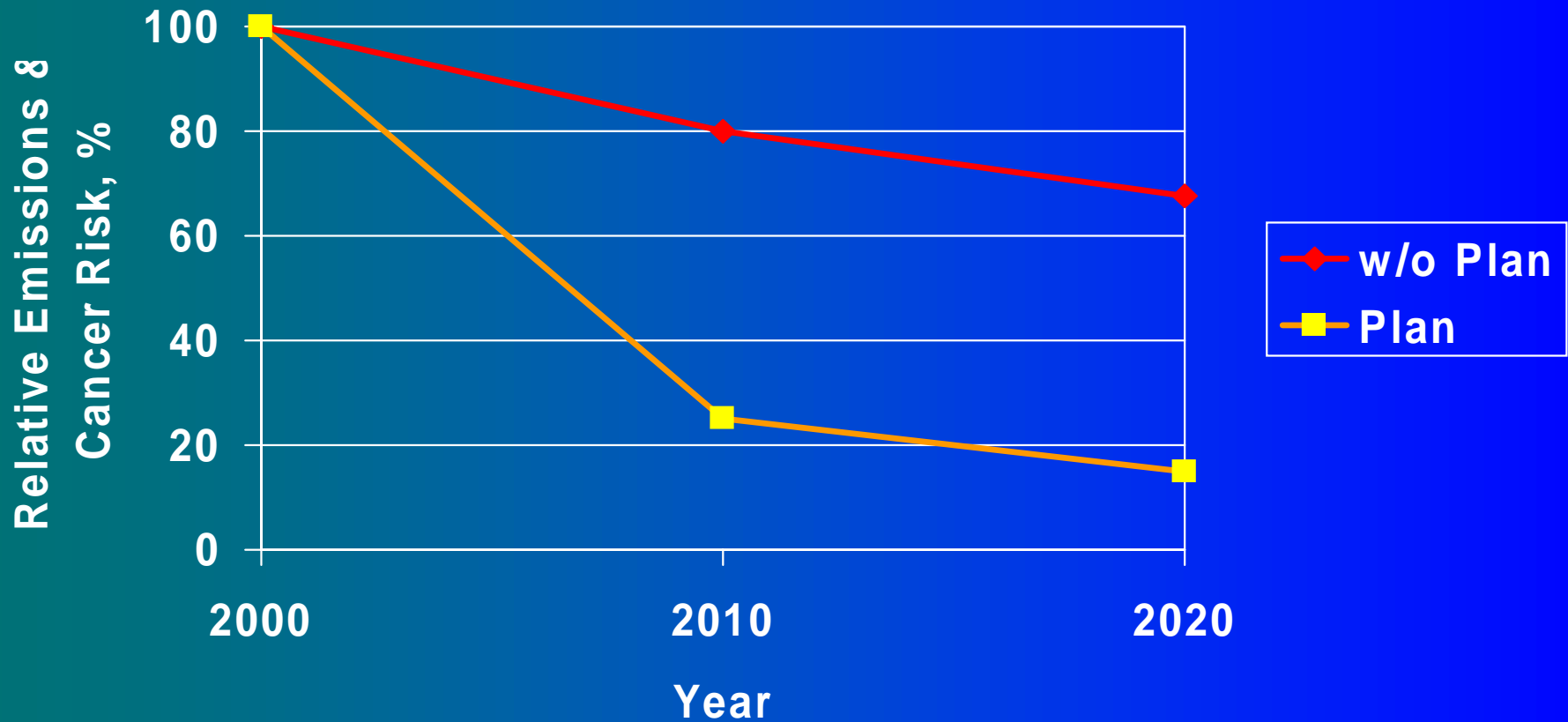


Statewide

# Diesel Risk Reduction Plan

- ◆ Adopted September, 2000
- ◆ Goal:
  - ◆ Reduce risk of exposure to diesel PM to near zero
  - ◆ Apply PM controls to all diesel engines
  - ◆ Integrate with NO<sub>x</sub> reduction efforts (SIP)

# PM Emissions and Risk Reduced: 75+% w/ Plan



# Elements of the Diesel Plan

- ◆ Reduce emissions from new engines
  - ┌ Trucks
  - └ Off-road
- ┌ Provide ultra-low sulfur fuel (<15ppm)
  - ┌ Available in CA now
- ◆ Ensure in-use emission performance
- ◆ Require retrofit of existing engines w/ filters

# Diesel PM In-Use Retrofit Program

- ◆ Achieves 80% of Plan's reductions (2010)
- ◆ Retrofit every Diesel in California w/ filters
  - ◆ Feasibility
  - ◆ Exposure
- ◆ Approaches
  - ◆ Regulation
  - ◆ Incentive funds
  - ◆ Voluntary action
- ◆ Effectiveness
  - ◆ Minimum 85% PM reduction/vehicle
  - ◆ Get NOx reduction when feasible

# Implementation

## Filter Retrofits

- ◆ Regulation
  - ◆ Urban transit buses
    - ◆ 4500 filter retrofits starting 2003
    - ◆ New engines - filters required 2002
  - ◆ Trash trucks
    - ◆ Regulation under development
- ◆ Permit conditions
  - ◆ e.g. major construction projects



# Implementation (cont.)

- ◆ Incentive funding
  - ◆ School buses
    - ◆ \$12.5 million
    - ◆ ~2000 filter retrofits, beginning 2001
  - ◆ Moyer program
    - ◆ \$100 million FY01/02
    - ◆ Incremental cost of new, repower, retrofit paid
    - ◆ NO<sub>x</sub> focus
    - ◆ PM filters where feasible

# Implementation (cont.)

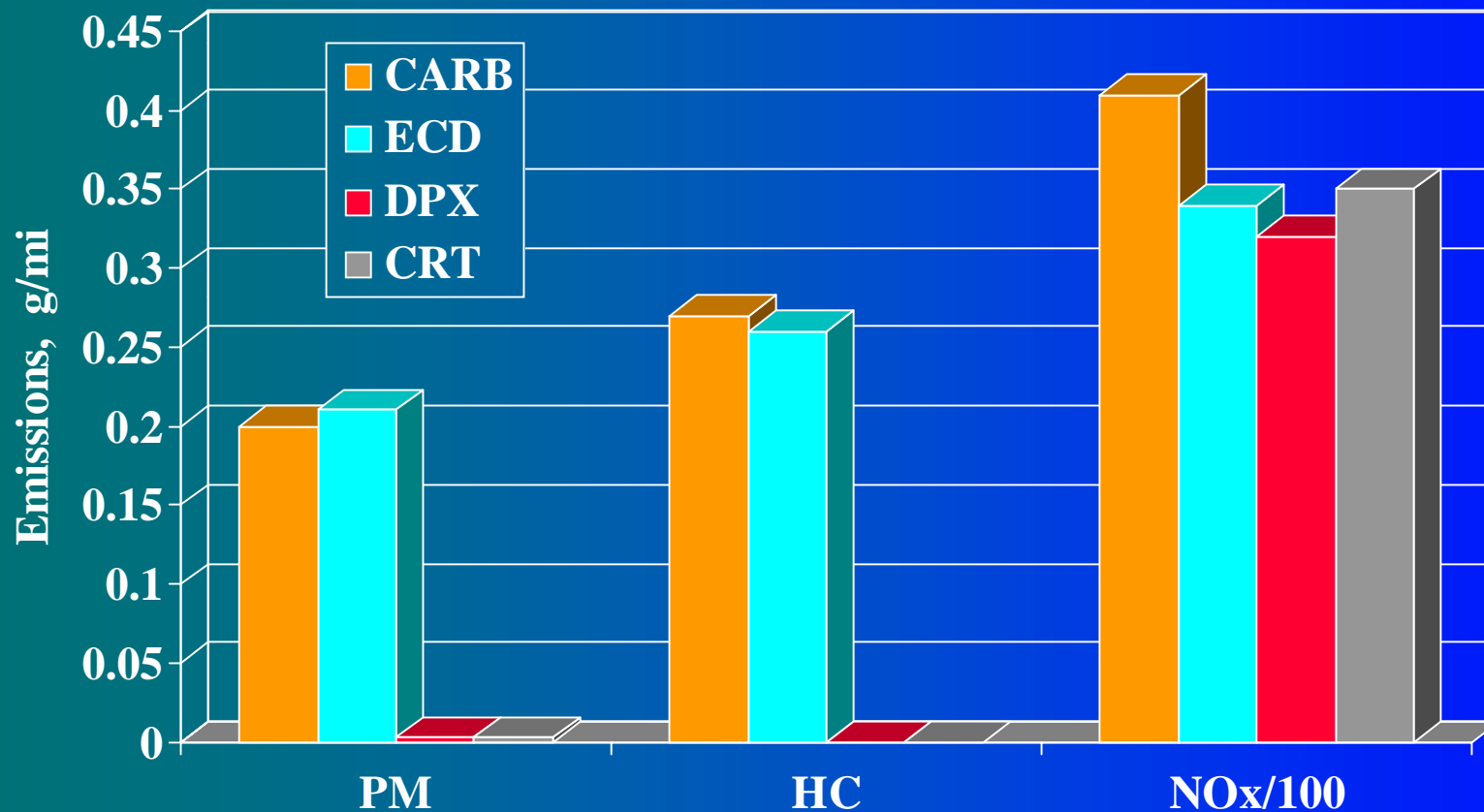
- ◆ Voluntary
  - ◆ City of Los Angeles
    - ◆ 1300 vehicles
  - ◆ Caltrans (state DoT)
    - ◆ Clean new purchases (e.g. LPG)
    - ◆ Retrofit filters (~600)
  - ◆ Need recognition for others
    - ◆ Labeling
    - ◆ Publicity

# Demonstration Programs Support Implementation

- ◆ BP ECD - (# vehicles with filters)
  - ◆ Ralph's grocery trucks (10)
  - ◆ BP tanker trucks (10)
  - ◆ LA County MTA (4)
  - ◆ Hertz equipment rental (10)
  - ◆ LA City Sanitation (10)
  - ◆ People movers/local amusement park (10)
  - ◆ School busses San Diego (10)
- ◆ School Busses LA (39)
- ◆ Construction equipment (19)

# Ralph's Grocery Fleet Demo

## Low Sulfur Fuel & PM Filters



City Suburban Heavy Vehicle Route

CARB = ~ 150 ppm S

ECD = <15 ppm S

# Technical Support & Outreach

- ◆ International Advisory Committee
- ◆ Certification of retrofit devices
- ◆ Testing and evaluation
- ◆ Application assessment
- ◆ Partnership with local agencies
- ◆ Coordination with U.S. EPA's program

# EPA's Help Needed

- ◆ Adopt filter-based PM standards for new off-road engines
  - ◆ Tier 3 off-road engines - ~2006
  - ◆ Tier 4 standards similar to trucks (NO<sub>x</sub> too!)
- ◆ Ultra-low sulfur fuel for off-road
  - ◆ 5000 ppm sulfur standard now
  - ◆ <15 ppm needed
- ◆ Implement retrofit program
  - ◆ Encourage 85%+ PM control devices

# Benefits



## Plan will reduce:

- PM emissions
- Cancer risk
- Respiratory impact

## Other benefits include:

- Improved visibility
- Reduced soiling



# For More Information

- ◆ Diesel Risk Reduction Website
  - ◆ [www.arb.ca.gov/toxics/diesel/diesel.htm](http://www.arb.ca.gov/toxics/diesel/diesel.htm)
  - ◆ Sign up to receive notices
- ◆ Talk to a real person ((626-575-6973), or \_\_\_\_\_@arb.ca.gov
  - ◆ Annette Hebert - Manager, In-use Diesel Control Branch
  - ◆ G. Scott Rowland - Manager, Assessment Section
  - ◆ Nancy Steele, PhD - Manager, Implementation Section