Public Workshop to Discuss Reducing Emissions from Diesel-Fueled Cargo Handling Equipment at Intermodal Facilities

July 7, 2004 - Port of Los Angeles
July 8, 2004 - Oakland

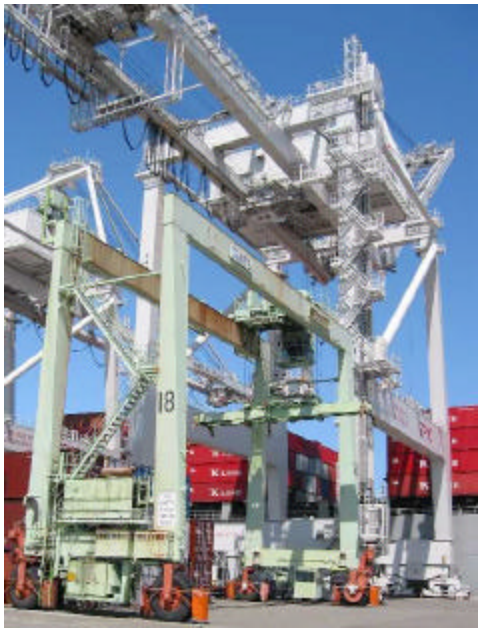
California Environmental Protection Agency

Air Resources Board

Overview

- Background
- Cargo Handling Equipment
- Existing Programs
- Regulatory Proposal
- Potential Approaches
- Next Steps

Background



Background

Need for Reductions

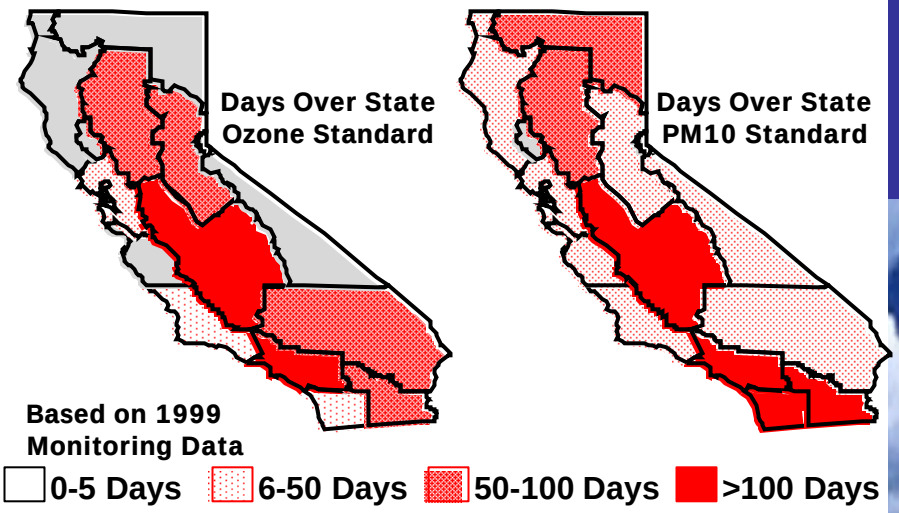
Public Health Is Imperative

- Port and intermodal rail yard emissions are substantial
- Will prevent attainment if not addressed
- Localized exposure & risk also a significant concern

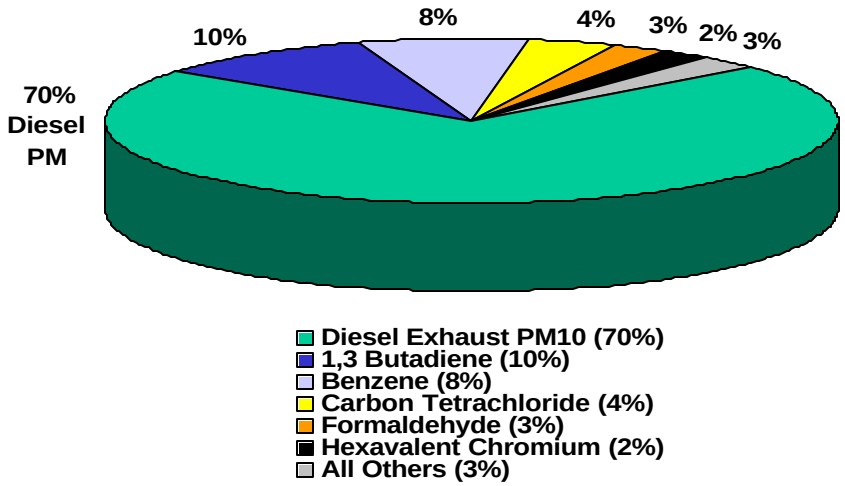
Future Trends

- Dramatic increase in trade
- More emissions from entire goods movement system
- Concentrated near population centers

Over 90% of Californians Breathe Unhealthy Air at Times

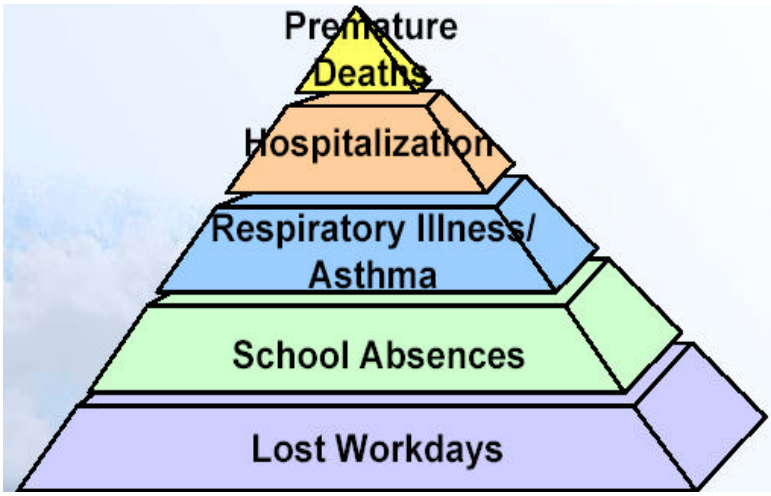


Statewide Air Toxics Risk for Year 2000



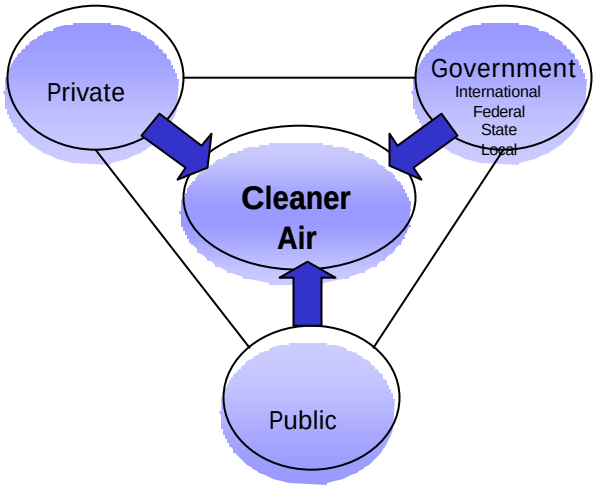
Background

Health-Related Impacts of Air Pollution



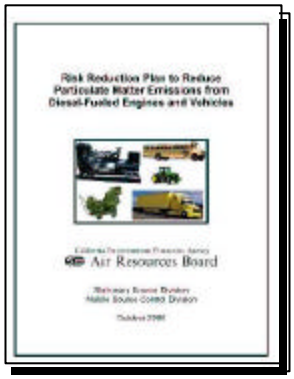
Background

Improving Air Quality is a Cooperative Effort



Background

Framework for Continuing Improvement



Governor's Action Plan

Cargo Handling Equipment

Equipment Types

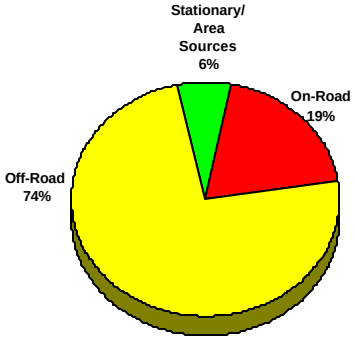
- yard trucks
- top handlers
- side handlers
- reach stackers
- rubber-tired gantry cranes
- forklifts
- skid steer loaders
- rubber-tired loaders
- sweepers
- dozers
- excavators
- cranes

Intermodal Facilities - Ports

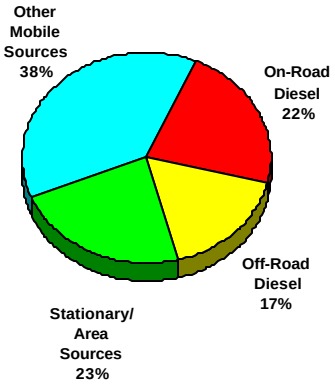
Intermodal Facilities - Railyards

Estimated Contribution to Statewide Emissions from Off-Road Engines in 2010

Diesel PM



NOx



Existing Programs

Existing Programs Will Result in Emission Reductions

- New engine standards
  - implementation will result in new engines over 90% cleaner than uncontrolled engines
- In-Use Strategies
  - Carl Moyer incentive program
  - port-sponsored voluntary programs
- Emission benefits will directly affect those communities located near intermodal facilities

Existing Programs

Ports/Terminals Working to Reduce Emissions

- Many ports have environmental plans that call for reductions from port-side equipment
  - installation of diesel oxidation catalysts (DOCs)
  - use of emulsified diesel fuel and ultra-low sulfur diesel fuel
  - replacing with on-road engines
  - alternative fuel demonstrations

Regulatory Proposal

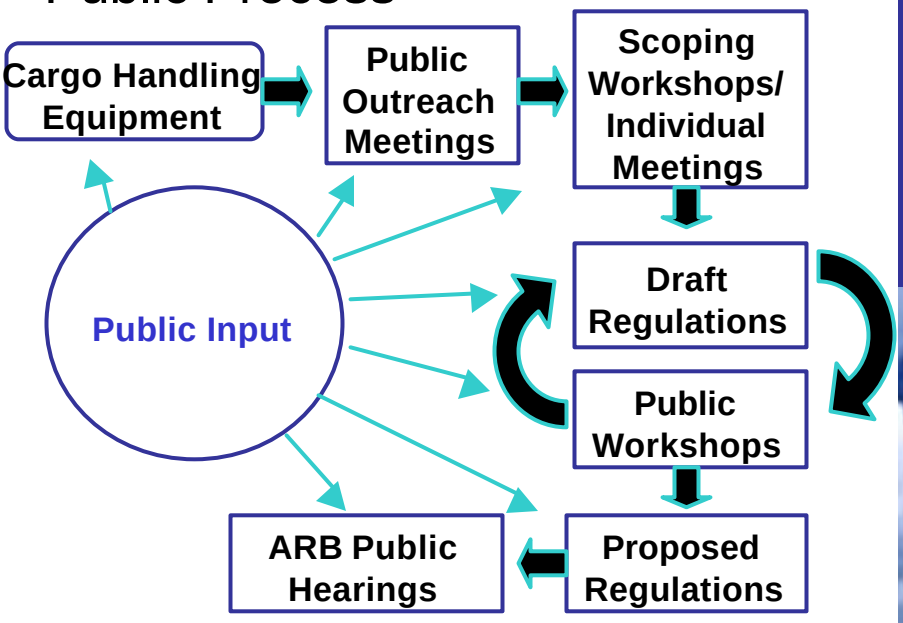
Airborne Toxic Control Measure (ATCM)

- Statewide approach
- Would apply to diesel-fueled mobile cargo handling equipment at intermodal facilities

Goals

- Achieve maximum emission reductions for PM and NOx
  - achieve both near term and long term reductions
- Recognize and build upon reductions already achieved
- Maintain “level playing field” for all intermodal facilities
- Ensure flexible, cost-effective approach

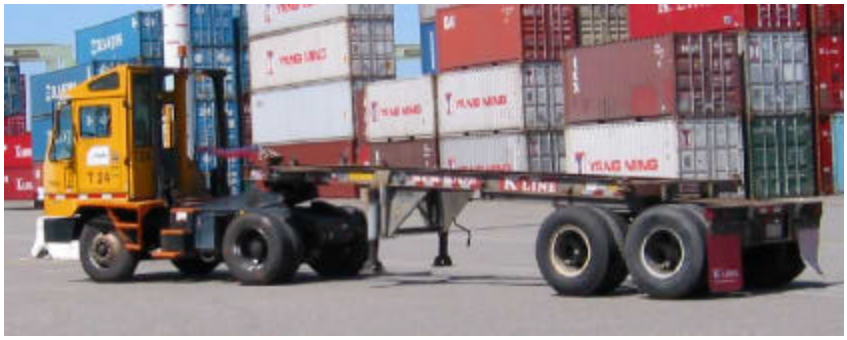
Public Process



Regulatory Timeline

- Begin Regulatory Development Process
  - July 2004
- Public Workshops and Stakeholder Meetings
  - July 2004 through Fall 2005
- ARB Public Hearing
  - Fall 2005

Potential Approaches

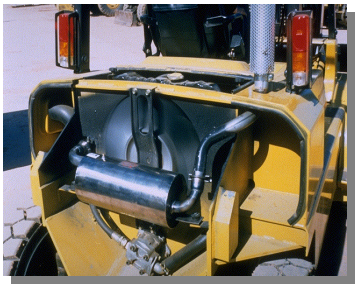


Emission Control Technologies

- Diesel Oxidation Catalysts (DOCs)
  - can reduce PM by 25-45%
  - can reduce CO and HC by 50-90%
  - one has been ARB-verified for some 1996-2003 model year engines 150-600 hp
  - commercially available; used on over 250,000 off-road vehicles and equipment

Emission Control Technologies (cont.)

- Diesel Particulate Filters (DPFs)
  - can reduce PM by up to 90%
  - commercially available for on-road applications
  - ARB has verified some for on-road use



- Cleaire Longview
  - 85% PM reduction
  - 25% NOx reduction
  - ARB-verified for some on-road applications

Emission Control Technologies (cont.)

- Potential Retrofits under Development
  - flow through filter
  - NOx adsorber catalyst
  - lean NOx catalyst
- Alternative Fuels & Alternative Diesel Fuels
  - CNG, LNG, LPG, biodiesel
  - emulsified diesel fuel

Emission Control Technologies (cont.)

- New On-Road Engines
  - compared to off-road engines: NOx is 50% less; PM is 35% less
  - current emission control technologies for off-road are applicable to on-road engines
  - potential for long-term control technologies would be better for on-road than off-road

Preliminary Regulatory Concepts

- Option 1: Best Available Control Technology (BACT)
- Option 2: % Reduction
- Option 3: Declining Fleet Average
- Option 4: Accelerated Turnover

Option 1: BACT

- Establish Best Available Control Technology (BACT)
  - emission standards
  - use of verified control technology
  - use of alternative fuels
  - use of cleaner engines (i.e., certified on-road engines where applicable)

Option 2: % Reduction

- Require percentage of emissions to be reduced (from baseline) by a certain date(s)
- Gives flexibility for meeting the reductions

Option 3: Declining Fleet Average

Example:

- Modified fleet approach
  - by 2010, all engines must be certified to an off-road engine standard
  - fleet standards become applicable in 2013 and 2017
- Final compliance by 2020
  - Tier 4 engine or
  - retrofit with verified technology to achieve 85% reduction

Option 4: Accelerated Turnover

- Establish emission performance standards and implementation dates that accelerate introduction of Tier 4 engines into the fleet
- Standards could be met by
  - Tier 4 certified engines
  - equipment with verified emission control system
  - alternative fuel

Next Steps

- Next public workshop in October 2004
- Stakeholder meetings
- Workgroup meetings
- Draft regulatory language available by the end of the year

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