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

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

Based on 1999 Monitoring Data

- 0-5 Days
- 6-50 Days
- 50-100 Days
- >100 Days

Statewide Air Toxics Risk for Year 2000

- Diesel Exhaust PM10 (70%)
- 1,3 Butadiene (10%)
- Benzene (8%)
- Carbon Tetrachloride (4%)
- Formaldehyde (3%)
- Hexavalent Chromium (2%)
- All Others (3%)
Health-Related Impacts of Air Pollution

Improving Air Quality is a Cooperative Effort
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

- Eureka
- Pittsburg
- Crockett
- Benicia
- Richmond
- San Francisco
- Oakland
- Redwood City
- Sacramento
- Stockton
- Port Hueneme
- Los Angeles
- Long Beach
- San Diego
Intermodal Facilities - Railyards

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

Cargo Handling Equipment

Diesel PM

NOx

- Off-Road Diesel 22%
- Off-Road Diesel 17%
- Stationary/Area Sources 23%
- Other Mobile Sources 38%
- On-Road Diesel 22%
- On-Road 19%
- Off-Road 76%
- Stationary/Area Sources 6%
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
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
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

Cargo Handling Equipment → Public Outreach Meetings → Scoping Workshops/Individual Meetings → Draft Regulations → Public Workshops → Proposed Regulations

Public Input

ARB Public Hearings

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
**Potential Approaches**

**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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