

“Goods Movement 101”

Actions to Cut the Health Impacts from Diesel Engines

Faster Freight, Cleaner Air 2006
Long Beach, California
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Cynthia Marvin



Air Pollution Affects Everyone: Especially Children



Proximity Can Increase Exposure



3

Air Pollution from Goods Movement

- Ships, harbor craft, cargo equipment, trucks, and locomotives rely primarily on diesel engines to move goods
- Existing emissions must be reduced
- Growth will make the challenge greater

4

Diesel Engines Emit Multiple Air Pollutants

**Soot or Diesel
Particulate Matter
(Diesel PM)**

**Nitrogen
Oxides
(NO_x)**

**Sulfur
Oxides
(SO_x)**

**Hydrocarbons
+ others**

Diesel Fuel
→

Engine

5

Overall Health Impacts of Diesels in California

- Annual health impacts
 - 2,900 premature deaths
 - 5,300 ER visits and hospital admissions
 - 240,000 asthma attacks and respiratory illnesses
- Increased cancer risk near ports, rail yards, freeways, and other major diesel sources



6

Air Resources Board (ARB) Goals

To protect public health:

- Meet health-based air quality standards for particles and ozone
- Reduce health risk from air toxics like diesel PM, benzene, chrome

Clean Air Every Day



How does ARB reduce air pollution?

- Research/quantify health effects
- Adopt statewide regulations
- Push for national/international action
- Implement agreements
- Enforce emission requirements
- Fund incentive programs

1.3 Million Diesels in California

- 740,000 trucks registered
- 550,000 off-road equipment, locomotives, harbor craft, ship visits
- 90,000 stationary and portable engines

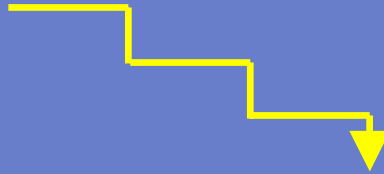


Cutting the Health Risk from Diesels

- Reduce emissions
 - Make new engines cleaner
 - Keep emissions low in operation
 - Introduce cleaner fuels
 - Modernize existing fleets
 - Limit nonessential idling
 - For interstate sources, concentrate cleanest models in California
- Reduce exposure

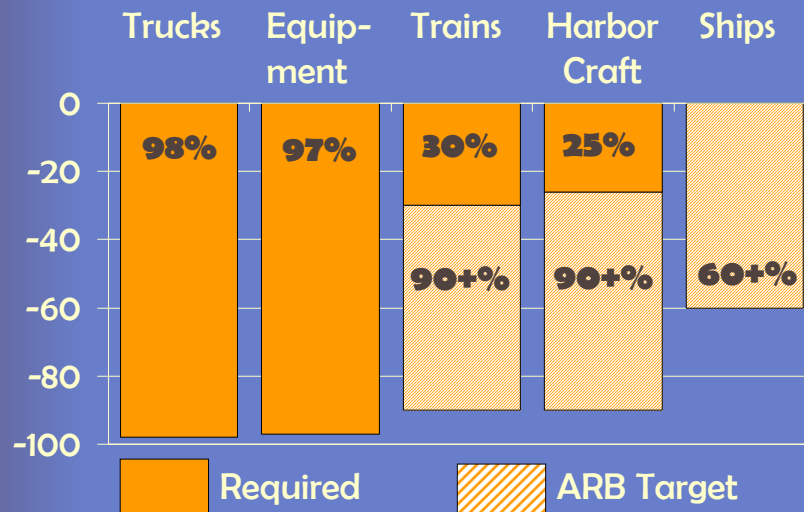
Make New Engines Cleaner

- ARB has low emission standards for new engines in trucks and off-road equipment
- U.S. EPA also sets national standards for harbor craft, locomotives, and ships
- California Fuel Cell Partnership is developing zero emission technology



11

PM Control Levels for New Engines



12

Keep Emissions Low in Operation

- ARB programs
 - Diagnostic equipment on new engines
 - Software upgrades on 1990s trucks
 - Prohibition on tampering with controls
 - In-use testing and recall provisions
 - Truck inspections for smoke & tampering

13

ARB Truck Inspections

- Neighborhoods
- Ports
- Freeways
- Border



Introduce Cleaner Fuels

- ARB rules for California diesel fuel
 - Cleaner than nationwide
 - Low sulfur diesel fuel now required for trucks, buses, equipment
 - Extends to all intrastate locomotives and harbor craft next year
- ARB rule for ship auxiliary engine fuel
- Alternative fuels available

15

Modernize Existing Fleets

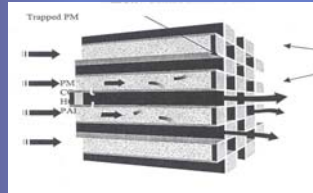
- Retrofit or add on control devices
 - Repower by installing a new(er) engine
 - Replace the entire vehicle/equipment
 - Use diesel blends/other fuels in existing engines

 - ARB verifies retrofit devices and fuels for effectiveness and durability
- See www.arb.ca.gov/diesel/verdev/verdev.htm

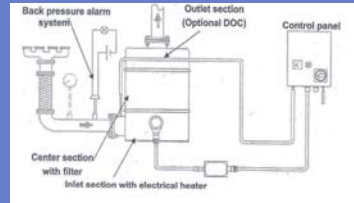
16

PM "Aftertreatment" Technologies

Passive Diesel PM Filter



Active Diesel PM Filter

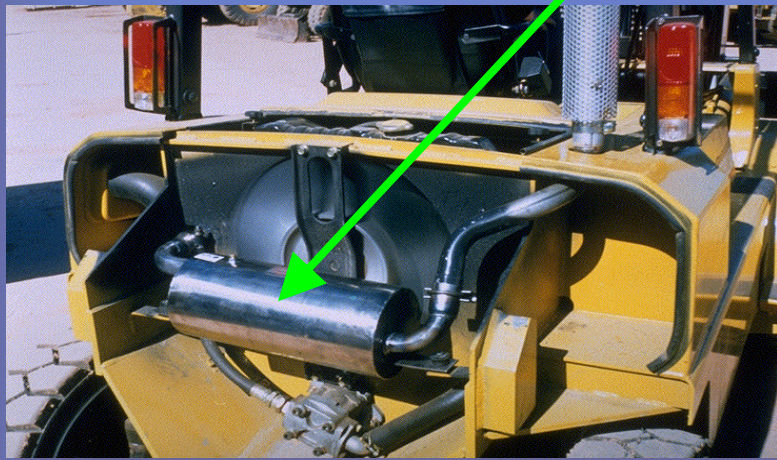


Diesel Oxidation Catalyst



17

Passive Diesel PM Filter



18

ARB Fleet Modernization Rules

- ✓ Public transit buses
- ✓ Refuse vehicles
- ✓ Stationary engines
- ✓ Portable engines
- ✓ Public/utility trucks
- ✓ Transportation refrigeration units
- ✓ Cargo equipment



19

Incentives for Fleet Modernization

- Funding to help clean up existing diesel engines to meet air quality goals
 - Carl Moyer Program
 - Lower Emission School Bus Program
 - Additional local programs
- Local rules on purchasing cleanest vehicles

20

Limits on Nonessential Idling

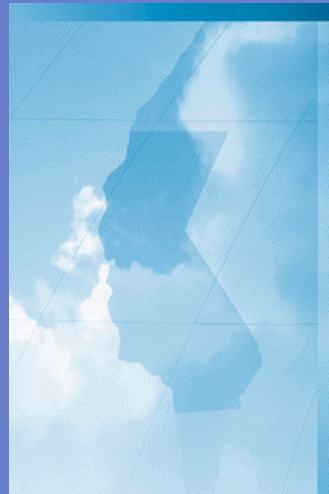
- Statewide idling restrictions
 - Trucks: 5 minutes
 - Locomotives: 60 minutes
- You can report suspected violations
 - Call ARB at 1-800-END-SMOG
 - Go online at:
www.arb.ca.gov/enf/complaints/complaints.htm
 - Contact your local air district



21

Concentrate Cleanest Models in California

- Cleanest locomotives deployed in South Coast
- International trucks operating here must meet U.S. standards



Reduce Exposure -- ARB Land Use Guidance

- **Air Quality and Land Use Handbook:
A Community and Health Perspective**



23

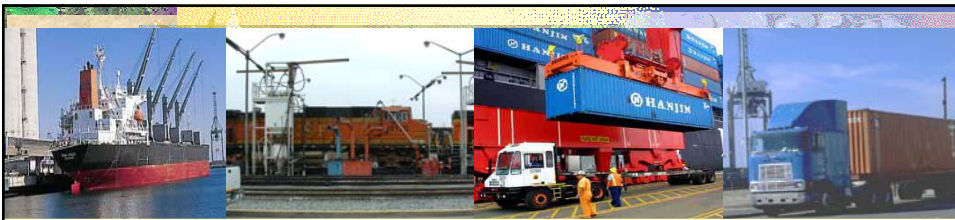
Goods Movement Priorities for 2006

24

Administration Initiatives

- “...consider clean air as part of our critical infrastructure.” *2006 State of the State Address*
 - Strategic Growth Plan: proposed \$1 billion in bonds (with equal match) to cut air pollution from goods movement
 - Goods Movement Action Plan: Phase II stakeholder process on infrastructure, mitigation, security, and funding
- See www.arb.ca.gov/gmp/gmp.htm

25



Air Resources Board's Draft Emission Reduction Plan for Ports and International Goods Movement in California

Released: December 1, 2005

See: www.arb.ca.gov/planning/gmerp/gmerp.htm



Air Resources Board
California Environmental Protection Agency

26



ARB Emission Reduction Plan

- Comprehensive health analysis (builds on Port of LA/Long Beach assessment)
- Strategies to meet targets
 - By 2010, reduce emissions to 2001 levels
 - Continue reducing emissions until air quality standards are met and community impacts are mitigated
 - By 2020, cut diesel PM risk 85%



27



Other ARB Activities in 2006

- Rulemaking
 - Commercial harbor craft
 - Incineration limits for cargo ships
- Port truck modernization report
- Shore power feasibility study
- Locomotive maintenance pilot project
- Locomotive remote sensing study
- Additional risk assessments
- National/international actions needed

28

Conclusion

- Californians experience serious health effects from diesel pollution
- Mitigating the air pollution from goods movement and other diesel sources is high priority
- Extensive control programs are underway
- New initiatives and rulemaking will further reduce emissions and impacts

29

Clean Air Depends on All of Us

Government

Community

Academia

Industry

30