

DIESEL RETROFIT PROGRAM

Proposed Refuse Removal Vehicle Rule

June 2001



California Environmental Protection Agency

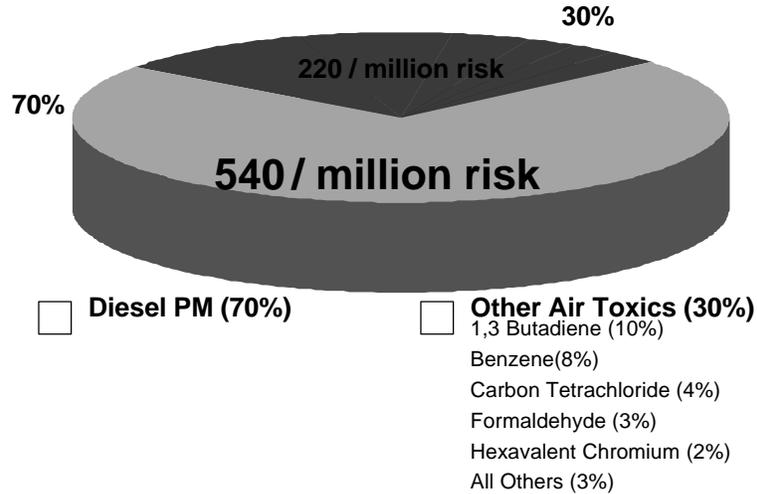


Air Resources Board

Presentation Outline

- ◆ Why a Rule?
- ◆ The Rule
- ◆ Technological Feasibility
- ◆ Cost
- ◆ Fuel Availability

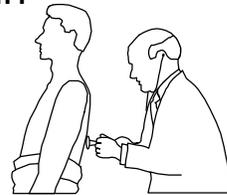
70% of Air Toxic Risk is From Diesels



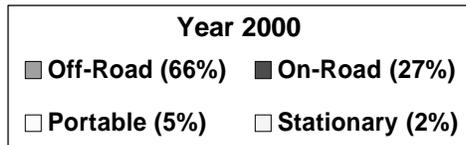
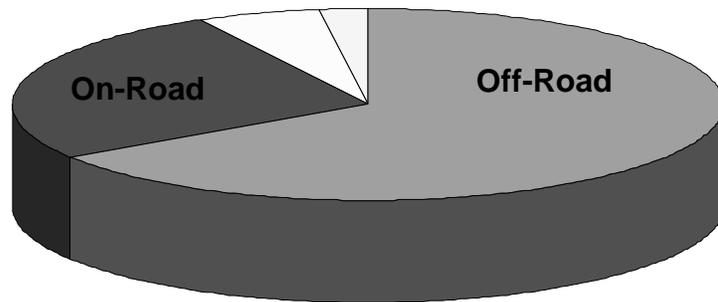
Diesel PM as a Toxic Air Contaminant

PARTICULATE MATTER

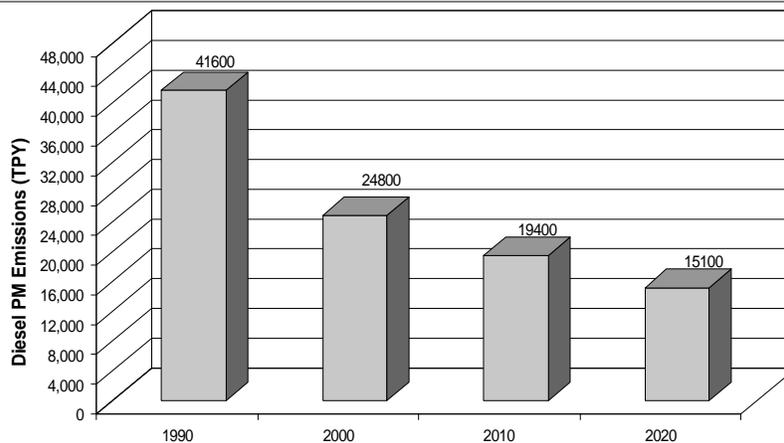
- Increases Lung Cancer
- Increases Asthma Attacks
- Aggravates Bronchitis
- Contributes to Premature Death in Those with Existing Heart & Lung Disease



98% of Diesel PM is Emitted by Mobile Sources



Diesel PM Emissions Trend Under Current Program



Diesel Risk Reduction Plan (DRRP)

- ◆ Reduce Emissions from New Engines
- ◆ Ensure In-use Emission Performance
- ◆ Provide Low Sulfur Fuel (<15ppm) to Enable Aftertreatment Technology
- ◆ ***Require Retrofit of Existing Engines***

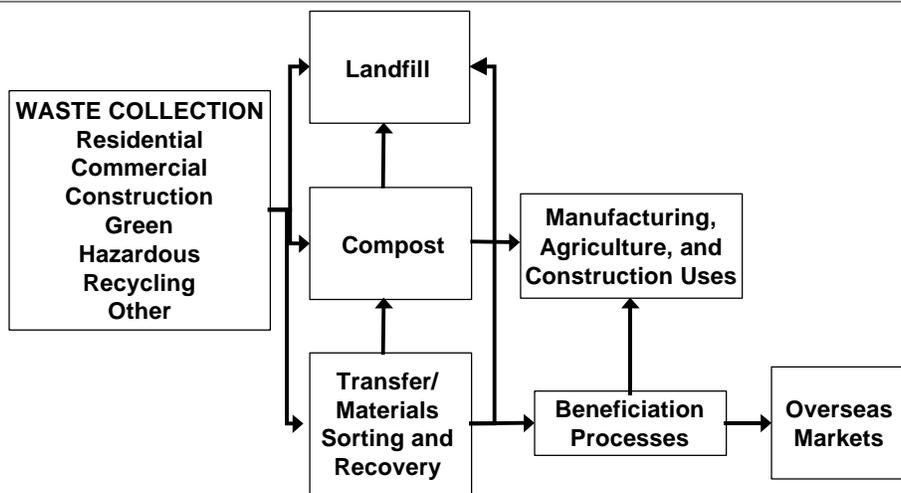
Mobile Diesel PM Retrofit Rules

- ◆ Public Transit Bus Fleets (Feb. 2000)
- ◆ Refuse Removal Vehicles (Dec. 2001)
- ◆ Fuel Tanker Trucks (2002)
- ◆ Remaining on- and off-road heavy-duty diesel fleets (2003+)

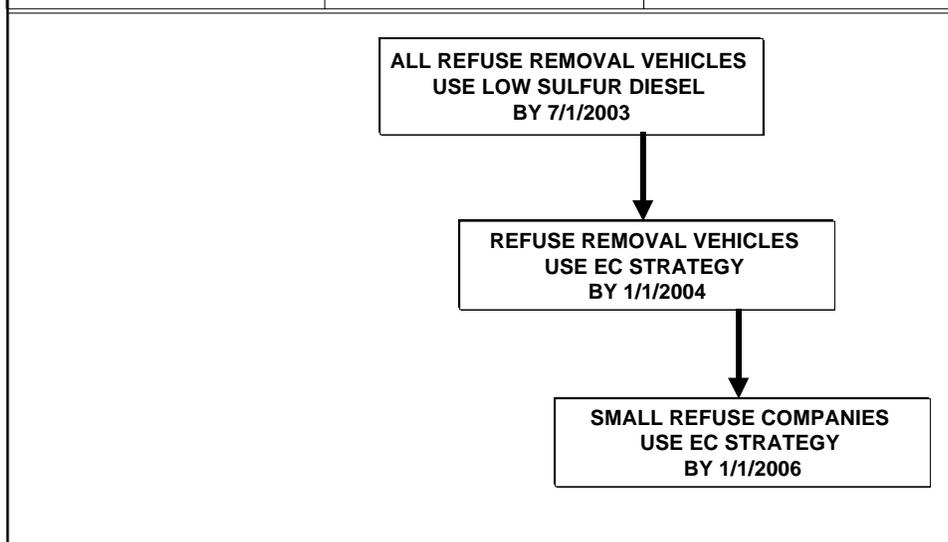
Proposed Rule Draft - Scope

- ◆ Definition of “refuse removal vehicle”
 - ◆ HDDE on HDDV in solid waste management
 - ◆ on-road HDDV greater than 14,000 lbs. GVWR
 - ◆ ALL vehicles involved in the process of solid waste management will qualify

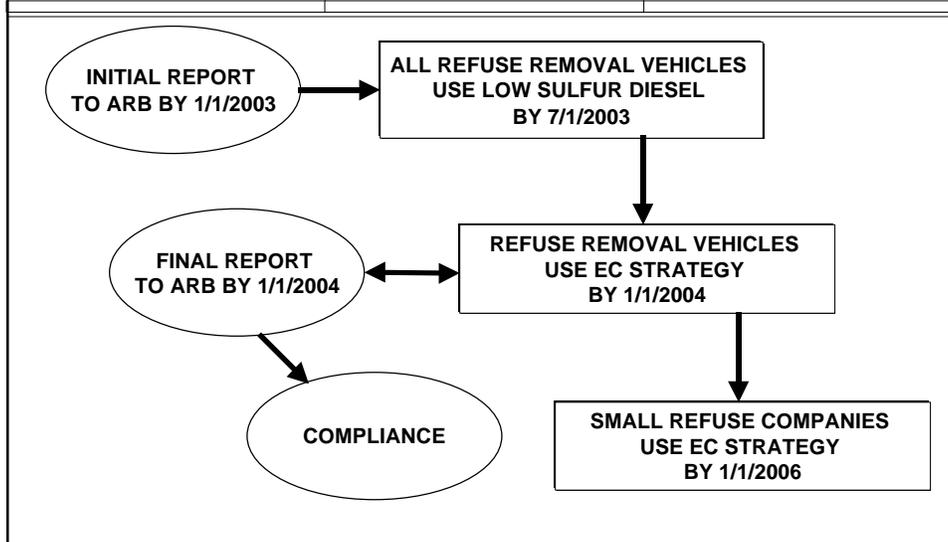
Refuse Removal Process



Proposed Rule Draft - Deadlines



Proposed Rule Draft - Reporting



Proposed Rule Draft - Exemptions

◆Exemptions

- ◆Emission control system (ECS) unavailability
 - ◆One year delay
- ◆Engine retirement
 - ◆Exempt from the exhaust standards

Technological Feasibility

- ◆ Verification Procedure
- ◆ Refuse Removal Vehicle Inventory

Verification of Retrofit Devices

- ◆ PM emission reductions $\geq 85\%$ or PM levels of ≤ 0.01 g/bhp-hr
- ◆ Emission reduction claims are accurate
- ◆ Devices are:
 - ◆ Durable
 - ◆ System compatible
 - ◆ Fuel compatible

Verification: Current Status

- ◆ Several manufacturers have applied
- ◆ No ECS verified yet
- ◆ First verification expected late summer/early fall

Minimum Defects Warranty

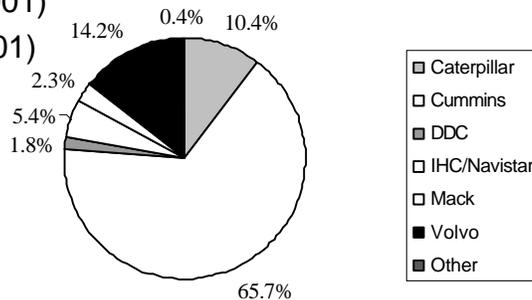
Engine	Years	Miles
Light heavy-duty, 70 to 170 hp, less than 19,500 lbs. GVWR	4	40,000
Medium heavy-duty, 170-250 hp, GVWR 19,500 – 33,000 lbs.	4	65,000
Heavy heavy-duty, over 250 hp, greater than 33,000 lbs. GVWR	4	100,000

Engine Survey

◆ Mfr. & Model Years

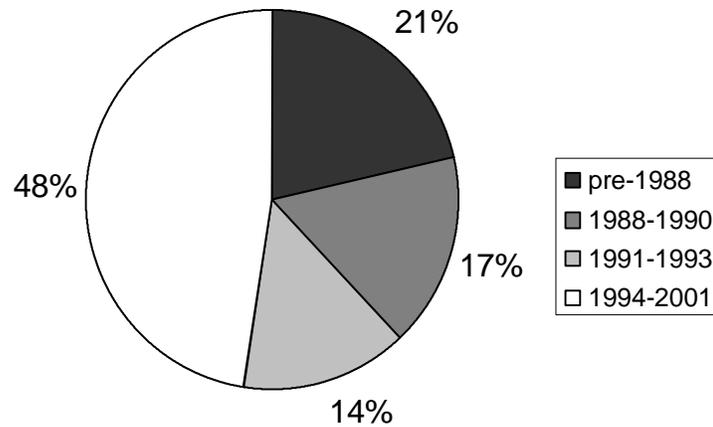
- ◆ Caterpillar (1970-2001)
- ◆ Cummins (1976-2001)
- ◆ DDC (1966-2000)
- ◆ Ford (1989-2000)
- ◆ GMC (1991)
- ◆ Isuzu (1990-2000)
- ◆ Mack (1978-1990)
- ◆ Navistar (1981-2001)

Engine Types in California Refuse Removal Vehicles



Engine Survey

Refuse Removal Vehicle Fleet Engine Age Distribution



Retrofit Probability Comparison

- ◆ Newer engines have higher probability of successful retrofits
- ◆ Older engines need more R&D
- ◆ Missing engine manufacturer, model, and model year has been sent to MECA

Additional Data Collection

- ◆ **Demonstration Programs**
 - ◆ LA City Sanitation - 15 trash trucks
 - ◆ 1998 model year vehicles passing the test!
- ◆ **ARB Study**
 - ◆ Other refuse hauler demonstrations
 - ◆ To test older vehicles
 - ◆ In-depth engine survey for pre-1991 model year engines

Cost of ECS

- ◆ **Emission Control System (ECS) -**
est'd \$3000 - \$5500
- ◆ **Maintenance -** yearly cleaning of the
ECS
- ◆ **Disposal fee**
- ◆ **Low sulfur diesel fuel (LSD) -** est'd
about \$0.05/gal incremental cost

Fuel Availability

- ◆ Suppliers
 - ◆ BP
 - ◆ Equilon
 - ◆ Tosco
 - ◆ Ultramar
- ◆ Supply
 - ◆ Sufficient for demand
- ◆ Infrastructure
 - ◆ Until the 2006 rule, no pipeline
 - ◆ Truck delivery

Regulation Plans

- ◆ Workshops
 - ◆ Public comment ends July 19, 2001
- ◆ Staff report and proposed rule
 - ◆ October 26, 2001
- ◆ Board Hearing:
 - ◆ December 13 – 14, 2001

www.arb.ca.gov/diesel/dieselrrp.htm

Comments Encouraged

- ◆ Scope
- ◆ Applicability
- ◆ Timeline

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