Proposed Amendments to Fuel Test Methods

Monitoring and Laboratory Division

January 25, 2013

Outline

- Clean Fuels Program
- Phase 3 RFG Requirements
- Proposed Amendments
- Costs
- Recommendation

California Needs Clean Fuels

- Clean fuels regulations are among the most effective programs we have, yielding substantial reductions in criteria and toxic emissions
- Core contribution to regional attainment strategies
- More stringent than US EPA rules

California Test Methods Needed

- State law authorizes ARB to adopt fuel specifications
- Greater benefits from controlling more fuel parameters, tighter specifications than U.S. EPA
- Requires test methods different from U.S. EPA, developed over years with refiner input
- Enable enforcement while letting refiners check on their compliance status

Properties Targeted by California's Clean Fuels Regulations

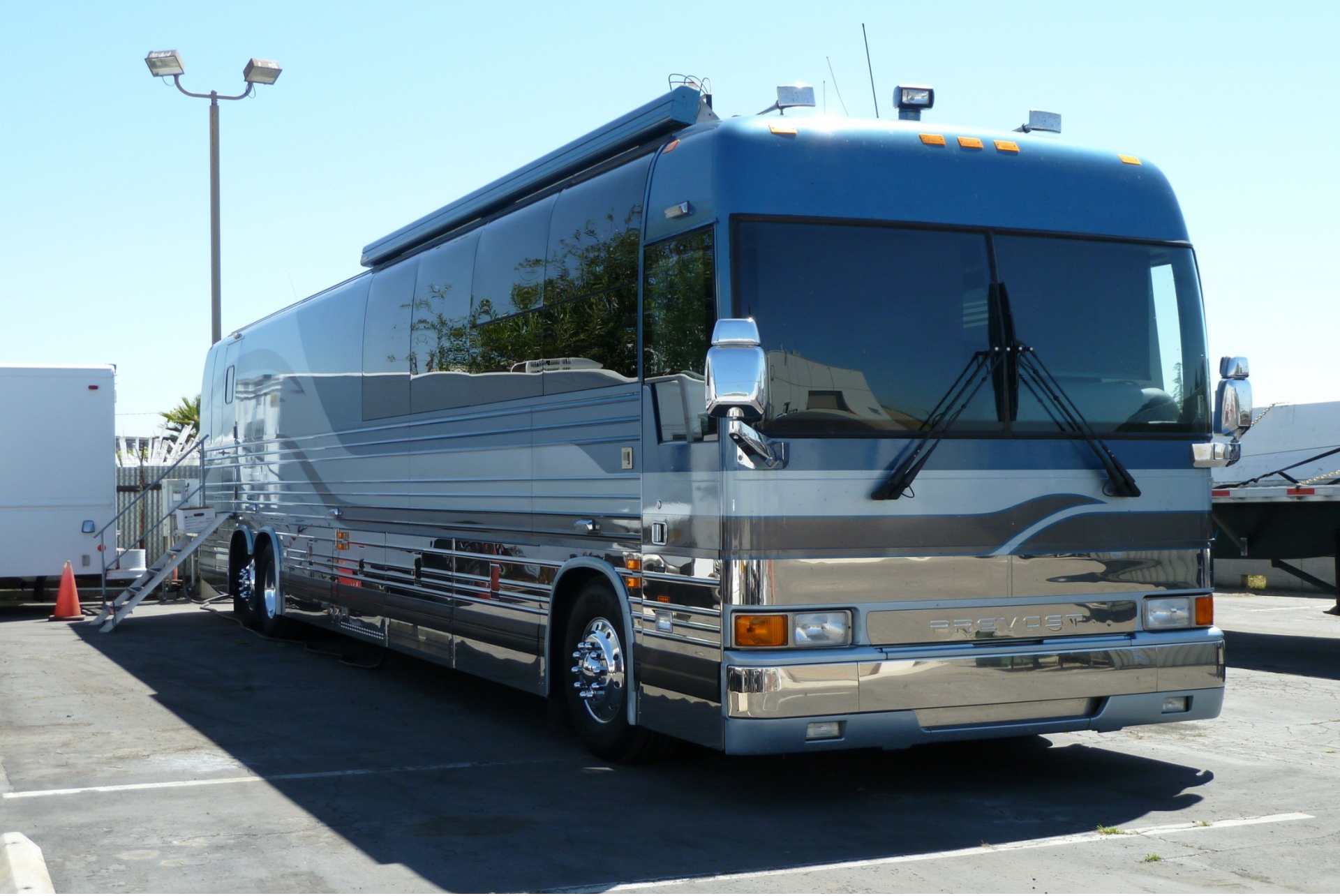
Fuel Parameter	Associated Air Quality Issues	Category
benzene	toxics	Compounds Present in Crude Oil
aromatics	toxics, ozone, PM	
olefins	ozone, PM	
diesel aromatics	PM	
sulfur	ozone, PM	
oxygenates	ozone, PM	Added Compounds
diesel nitrogen	PM	
vapor pressure	ozone	Physical Properties
distillation temperatures	ozone, toxics	

Fuel Testing Program

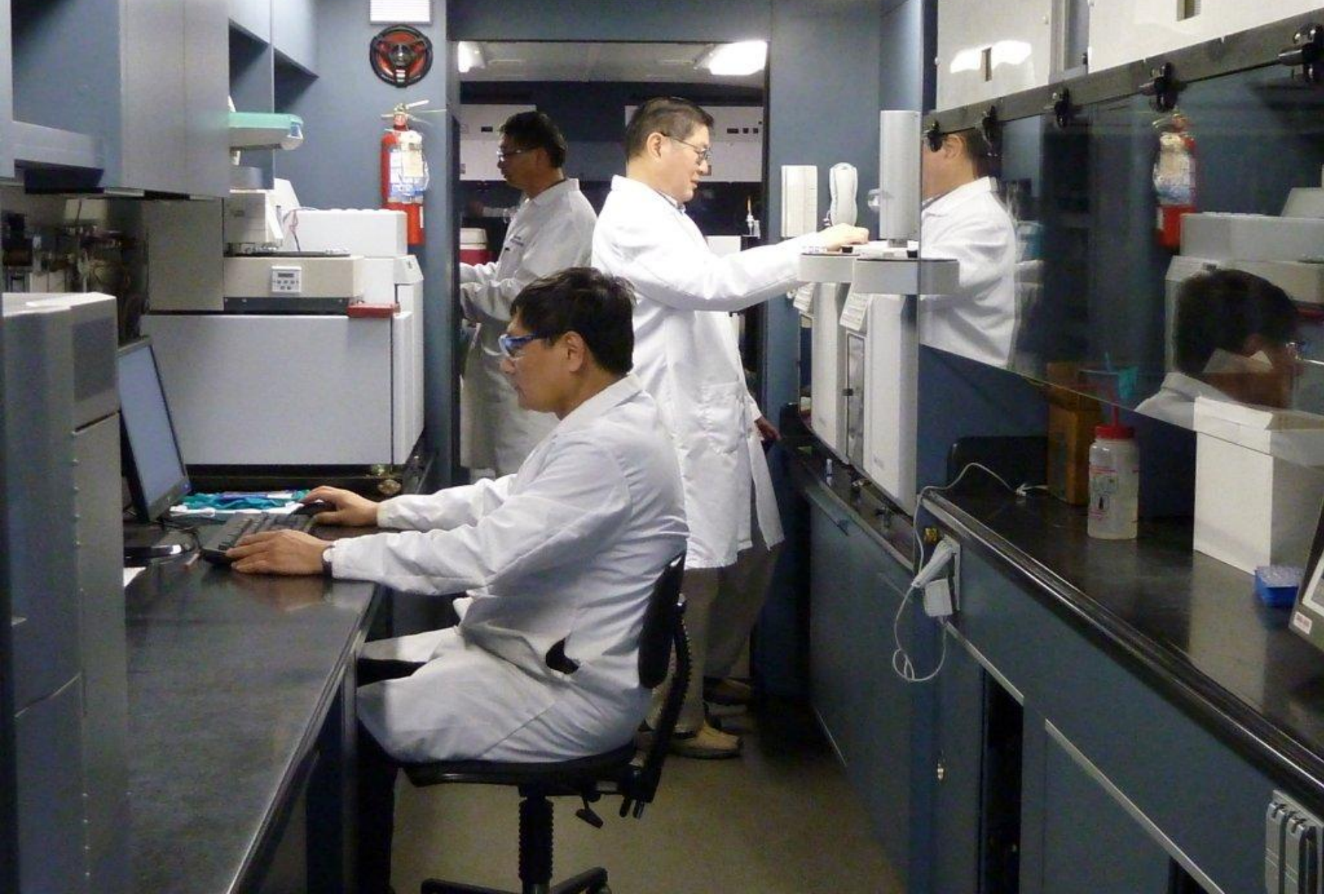
- Fuel enforcement testing supports emission reductions, not quality or energy content
- Fuel samples are obtained throughout the State by the Enforcement Division staff
- Samples are analyzed by Monitoring and Laboratory Division staff

Sampling Locations

- Refineries
- Terminals
- Stations
- Ports



ARB’s Mobile Fuel Laboratory



MLD Chemists Working Inside the Mobile Fuel Laboratory

Challenges for Phase 3 RFG Enforcement

- No test method for trace oxygenates in gasoline
- No methods for benzene, aromatics, or olefins in ethanol
  - Testing is performed on the denaturant before blending with ethanol
  - No downstream testing possible

Proposed Solutions

- New gasoline test method
  - Trace oxygenates - ASTM D7754-11
- New ethanol test methods
  - Olefins in ethanol - ASTM D7347-07e1
  - Aromatics in ethanol - ASTM D7576-10
- Enable downstream analysis and enforcement

Proposed Updates to Existing Fuel Test methods

- D6550-10: olefins in gasoline
  - ARB-specific information added
- D4815-09: oxygenates (ethanol) in gasoline
  - Corrections to previous version
- D5580-02 (2007): aromatics in gasoline
  - New precision statement
- D5186-03 (2009): aromatics in diesel
  - Streamlined QC procedures

Removal of Obsolete Test Method for Gasoline Sulfur Content

- Two designated methods:
  - ASTM D2622-94
  - ASTM D5453-93
- ASTM D2622-94 cannot measure sulfur content below 10 ppm
- WSPA survey indicates that no refiner is using ASTM D2622

Estimated Costs to Refineries

- Trace oxygenates (ASTM D7754-11) analysis:
  - $86,000 for a new instrument
  - $5,000 to upgrade an existing instrument
- Total cost for all refiners: $1.2 million
  - 0.002 cents/gallon of gasoline produced
- All other methods carry no additional cost
- Staff's proposal will not affect in-state production or imports

No Impact on Low Carbon Fuel Standard

- LCFS coexists with other fuel regulation
- LCFS Reporting Tool:
  - Volume of transportation fuels
  - Carbon intensities of those fuels
- Test methods do not apply

Proposed 15 Day Changes

- Define effective date for new methods
- Clarify that the ethanol methods are an optional alternative

Staff Recommendation

Adopt resolution approving the proposed fuel test method amendments