

Biodiesel Working Group Meeting

Friday, December 15, 2006

9AM-1:30 PM

Conference Call Access (866) 747-3140

Pass Code 2264298#

Web Cast: <http://www.arb.ca.gov>

Agenda

- Introductions
- Planned activities and schedule
- Revised ARB Draft Advisory on biodiesel use
- Biodiesel research study
- ASTM fuel specification efforts update
- Presentation by others
- Open discussion

Introductions

Dean Simeroth, Chief
Criteria Pollutants Branch

Gary M. Yee, Manager
Industrial Section

Robert Okamoto,
Staff Air Pollution Specialist

Planned Activities and Schedule

- Biodiesel Advisory (Jan 2007)
- Biodiesel Research Study (Jan 2007- 2008)
- Multimedia Evaluation (2007/2008)
- Consider Biodiesel Specifications (Dec 2007)

Draft Biodiesel Advisory

Purpose:

Clarify the use of biodiesel with respect to existing ARB regulations and provide guidance on the voluntary use of biodiesel.

California Regulations Applicable to Biodiesel

- Senate Bill 975
- CA Diesel Fuel Regulations
- Airborne Toxic Control Measures
- In-Use Strategies Verification
- Division of Measurement Standards

Recommendations

- **Biodiesel Fuel Characteristics**
 - Biodiesel portion meets D6751 (15ppm sulfur)
 - Diesel portion complies with California diesel regulations Title 13, CCR, 2281 and 2282
 - Resulting blend contains no more than 20 percent biodiesel

Recommendations (contd)

- Vehicles retrofitted with verified devices
 - Purpose of reducing particulate matter only
 - Original verification based on using diesel fuel meeting Title 13, CCR, Sections 2281 and 2282
 - Users should check engine warranty
 - ARB will continue to pursue modifications of warranty provisions of devices

Other Information

- Biodiesel portion meeting ASTM D6751 should contain less than 10% aromatics and have a cetane greater than 53
- Biodiesel blends greater than B20 not recommended
- EMA draft test specifications
<http://www.enginemanufacturers.org/admin/library/upload/924.pdf>

Discussion

Draft Biodiesel Research Study

- Biodiesel emissions evaluation
- NOx formation and mitigation evaluation
- Multi-media evaluation

Biodiesel Emissions Evaluation

Objectives:

- Fully evaluate emissions
- Address NOx impact

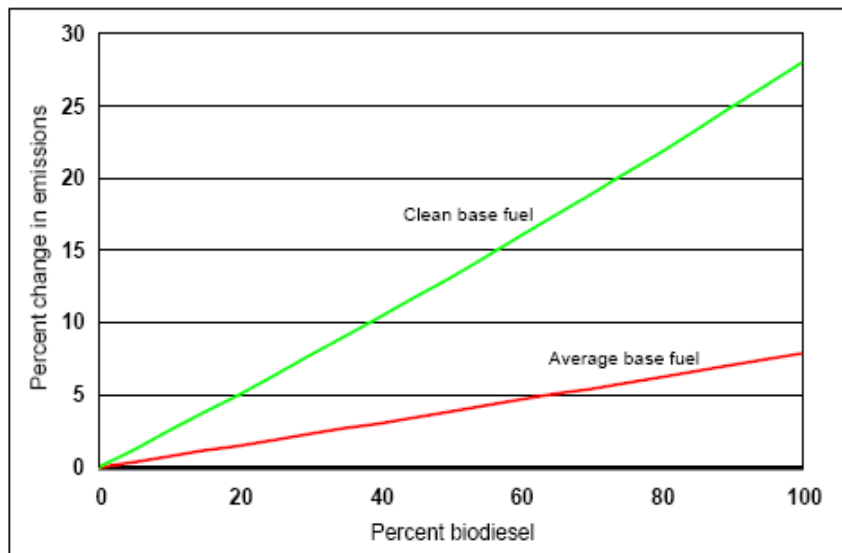
Biodiesel Emissions Evaluation

(contd)

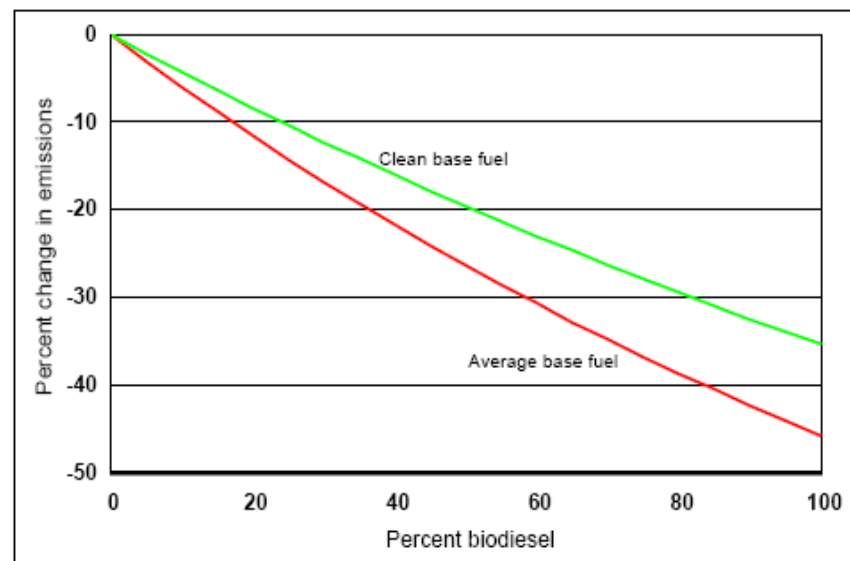
- Assessments:
 - Evaluate emissions impact of biodiesel in California
 - Directly compared to CARB 15 ppm Sulfur diesel
 - Evaluate potential NO_x increases
 - Investigate bias in chassis and engine dynamometer tests
 - Evaluate toxics emissions

Fuel Effects for NOx and PM

Fuel Effects for NOx



Fuel Effects for PM



Pollutants

- Criteria emissions
- Toxic pollutants
- Selected greenhouse
- Other species
- Biological assays and chemical analysis

Test Design

- Reference fuel: CARB ULSD 15 ppm sulfur
- Feedstocks: Soy and recycled grease
- Three blend levels: B20, B50, and B100
- Engine and chassis dynamometer
 - Up to three test cycles
 - Up to five vehicles tested
 - Off-road and on-road

NO_x Evaluation

- Chassis and engine dynamometer comparison
- Same engine tested on chassis and engine dynamometer using the same test cycles

Estimated Cost

- Estimated core cost \$550,000
- Estimated expanded cost \$310,000

NO_x Formation and Mitigation Study

Objective:

Evaluate mitigation of NO_x increase

- Changes in fuel specifications-Match blending
- Additives
- Refinery process

Test Procedures

- Standardized test procedures
- Compare to CARB diesel

Estimated Cost

- Approximately \$500,000

Multimedia Evaluation

Objectives:

- Evaluate impact of biodiesel and biodiesel blends against CARB ULSD fuel
- Consider feedstocks common to California

Process

- Guidance from Cal/EPA multimedia working group
- Conduct in accordance with draft guidelines

Tasks

- Review available literature
- Fill knowledge gaps
- Use appropriate methodologies to conduct multimedia
- Final Report

Estimated Cost

- Estimated cost about \$300,000

Discussion

ASTM Fuel Specification Efforts Update

- Latest version of ASTM D6751 approved in December 2006
- Recent work includes:
 - Limits on flashpoint, total and free glycerin, combined sodium and potassium, and combined calcium and magnesium
 - Stability

Presentation by Others

Open Discussion