Biodiesel Working Group Meeting

March 20, 2007
9:00 AM-1:00 PM

Conference Call Access (866) 747-3140
Pass Code 2264298#
Web Cast:  http: www.arb.ca.gov
Agenda

• Introductions
• Update of Draft Biodiesel Advisory
• Biodiesel research study
  – Biodiesel emissions evaluation
  – NOx formation and mitigation evaluation
  – Multi-media evaluation
• Presentation by others
• Open discussion
Introductions

Dean Simeroth, Chief
Criteria Pollutants Branch

Gary M. Yee, Manager
Industrial Section

Robert Okamoto,
Staff Air Pollution Specialist
Draft Biodiesel Advisory

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

Consider:

• Definition to address mono-alkyl esters
• Joint Advisory with DMS
• ASTM efforts
• Efforts to ensure fuel quality
• Biodiesel blending with California diesel fuel
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
NOx Formation and Mitigation Study

Objective:
Investigate the mechanism of NOx formation and evaluate possible NOx mitigation options

- Changes in fuel specifications-match blending
- Refinery process
- Additives
Pollutants

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

• Integrate Emission and NOx mitigation evaluation
• Reference fuels: CARB and U.S. EPA 15 ppm sulfur
• Feedstocks: Soy and recycled grease
• Blend levels: B5, B20, B50, and B100
• Engine and chassis dynamometer
  – Up to two engines tested
  – Up to four vehicles tested (on-road and off-road)
  – Up to three test cycles
• Possible study expansions: Additional engines, LD vehicles, feedstocks, emission controls, toxics
Comments

• Engine, fuels, and test cycle selection
• Harmonize with US EPA biodiesel test program
• Create an advisory group to assist design of studies
Coordination with Stakeholders

• Form an advisory group
  – CRC, U.S. EPA, NBB
  – Other stakeholders

• Coordinate with US EPA biodiesel emissions study
Coordinate with US EPA Biodiesel Emissions Study

• Areas of common or overlapping interest
  – Engine selection
  – Fuel selection
  – Test cycle selection

• Areas where there are differences
  – NOx mitigation and multimedia
  – ARB wider range of emissions tested: characterization of unregulated chemical species, ultrafines, and biological endpoints
  – More biodiesel blend levels tested
  – Chassis dynamometer tests
NOx Mitigation Study

- Follow-on work could be done at ARB heavy duty emissions test facility
  - Requires upgrade of the engine dynamometer
Important Issues to Resolve

• Criteria for engine/vehicle selection
• Criteria for fuel selection
• Selection of test cycles
• Work out details of the advisory group
• NOx mitigation study-rely heavily on advisory committee to address:
  – Additives tested
  – Define refinery process
  – Second generation biodiesel fuels tested
  – Update ARB engine dynamometer at additional cost
Research Team

- **UCR CE-CERT**
  - Modern engine test facility

- **UCD**
  - Unique capability to conduct toxic and biological sampling and analysis

- **ARB**
  - In-house chassis dynamometer testing and unregulated emissions including ultra-fine particle testing
Estimated Cost

• Biodiesel Emissions characterization study
  – Estimated core cost $750,000
  – Additional funding address other issues such as additional feedstocks and vehicles/engines

• Biodiesel NOx mitigation study
  – $450,000
In Kind Contributions Needed

- **Fuels**
  - Biodiesel and biodiesel blends
  - CARB diesel

- **Fuel specification analysis**
  - ASTM D975
  - ASTM D6751
  - Blend level measurement

- **Engines/Vehicles to be tested**
  - Longer term commitment
  - Shorter term commitment

- **Double up with US EPA with biodiesel fuels and engines**
Multimedia Evaluation

Objectives:

• Evaluate impact of biodiesel and biodiesel blends relative to CARB ULSD fuel

• Consider feedstocks common to California
Multimedia Research Team

- UCD/UCB team
- Principle Investigators
  - Tom McKone, UCB
  - Tim Ginn, UCD
Estimated Cost of Multimedia Evaluation

- Estimated cost about $400,000
Discussion
Presentation by Others
Open Discussion