Biodiesel and Renewable Diesel Rulemaking Workshop

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January 20, 2010

Overview

- Background
- Biodiesel Performance
- Emissions Results
- Regulatory Concept
- Next Steps
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- Questions & Discussion

Background

- Driving Forces:
  - Global Warming Solutions Act of 2006
  - Low Carbon Fuel Standard (2009)
  - Increasing demand for biofuels

Background

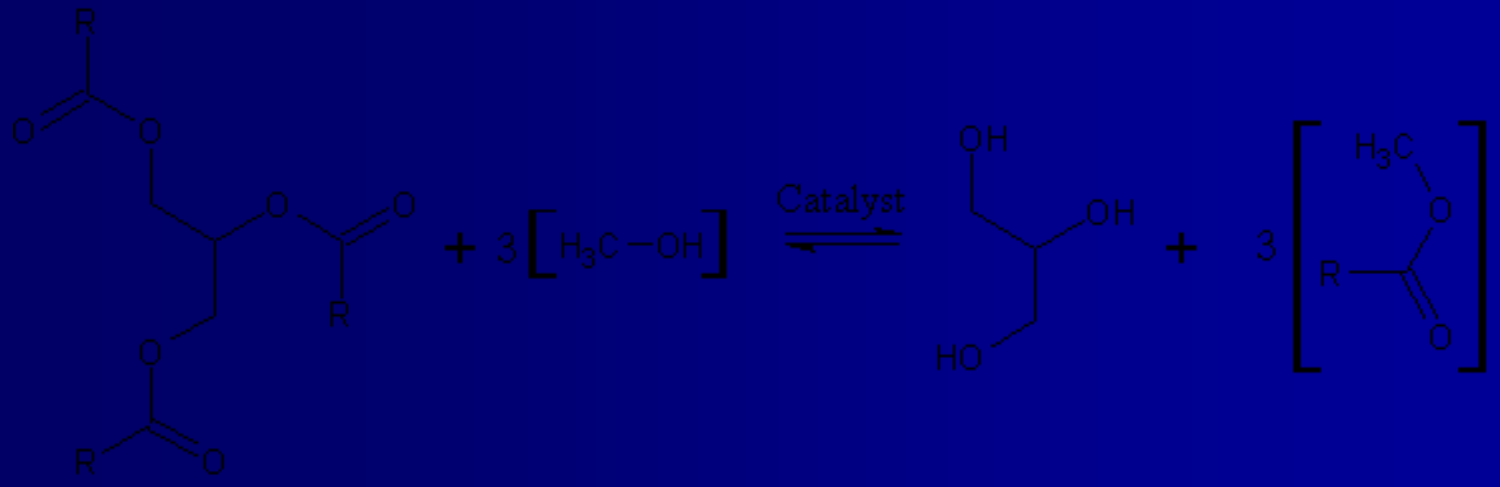
- 2008 CA Diesel Consumption
  - 4.2 billion gallons (ARB 2009)
- 2020 CA Projected Demand
  - 5.91-6.60 billion gallons (CEC 2007)
- 2008 US biodiesel production
  - 700 million gallons produced (NBB 2008)
  - 2.6 billion gallons capacity (NBB 2008)

Background

- What is biodiesel?
  - Straight Vegetable Oil (SVO) vs Fatty Acid Methyl Esters (FAME)
  - Feed stocks
- What is renewable diesel?
  - Hydrotreating
  - Feed stocks

Background

- Reaction of a triglyceride with methanol to make biodiesel



Triglyceride Methanol (3) Glycerol Methyl Esters (3)

Background

- Biodiesel and renewable diesel blends:
  - Blends are labeled B% or R% to signify the amount of biodiesel or renewable diesel blended into petroleum diesel
  - Example:
    - B5 is a blend of 5 percent biodiesel and 95 percent petroleum diesel
    - R20 is a blend of 20 percent renewable diesel and 80 percent petroleum diesel

Biodiesel Performance

- Fleet Survey Coordinated by ARB:
  - 40 Agencies
  - Vehicle Types
    - School Buses, Transit Buses, Ambulances, Road Maintenance Trucks, Shipping Trucks, Construction Vehicles, Boats, and Off-road Equipment
  - 80 to 220,000 gallons per week
  - Earliest fleet used since 1995

Biodiesel Performance

- Fleet Survey Results:
  - B20 was most common blend
  - Some fleets switched to B5 in the winter
  - 20 of 40 reported no fuel filter plugging
  - 18 of 40 experienced fuel filter plugging before tanks cleaned and filters changed
  - One injector erosion and increase in elastomer seal failures with B100

Biodiesel Performance

- Biodiesel performance:
  - Stakeholder feedback and data are requested on in-use performance of biodiesel including:
    - Glycerin impurities
    - Cloud point
    - Stability
    - Engine impacts

Emissions Results

- Presentation by Bob Okamoto, SAPS

Regulatory Concept

- Guiding Principles:
  - Simplicity
  - Ease of compliance
  - Preserve emissions performance of CARB diesel

Regulatory Concept

- Primary focus:
  - Mitigate NOx impact of biodiesel
    - NOx mitigation strategies vary depending on blend level
    - Equivalent emissions certification instead of mitigating measures
  - Renewable diesel is considered NOx mitigated if it meets ASTM specifications

Regulatory Concept

- Add the following section to the alternative fuels regulations:
  - 13 CCR 2292.8 Specifications for Biodiesel and Renewable diesel fuels
    - B5 or less
    - B6 to B20
    - R1 to R100

Regulatory Concept

- Applicability
  - All biodiesel and renewable diesel sold in California will have to comply with these specifications

Regulatory Concept

- NOx mitigation measures for all biodiesel blends:
  - Biodiesel blendstock must meet ASTM D6751 08
  - These requirements apply even if certification is the mitigation method

Regulatory Concept

- NOx mitigation measures for blends B5 or less:
  - Blend must conform to ASTM D975 08ae1
  - Blend with up to 2500 ppm Ditertiarybutylperoxide (DTBP); or
  - Blend with renewable diesel in a ratio of at least 3 parts renewable to 1 part biodiesel; or
  - Emissions equivalent certification

Regulatory Concept

- NOx mitigation measures for blends B6 to B20:
  - Blend must conform to ASTM D7567 08
  - Blend with renewable diesel in a ratio of at least 4 parts renewable to 1 part biodiesel; or
  - Emissions equivalent certification

Regulatory Concept

- Biodiesel Blends above B20:
  - There is no ASTM specification for biodiesel fuel blends above B20
  - ARB found no NOx mitigating strategies for biodiesel blends above B20

Regulatory Concept

- Equivalent emissions certification:
  - The fuel producer may subject their fuel to the procedures in 13 CCR §2282(g) to demonstrate NOx emissions equivalence to CARB diesel
  - Staff is currently looking into development of a predictive model

Regulatory Concept

- Renewable diesel blends:
  - Renewable diesel blendstocks must meet both ASTM D975 08ae1 and 13 CCR §2280-2283 to be considered NOx mitigated;

Next Steps

- Comments requested by Feb 4, 2010
- Draft Regulatory Language
- Discuss at Next Public Workshop (Late February to Early March– Tentative)

Contacts

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Questions & Discussion