BIODIESEL

• The invention
• How does it work?
• The feasibility
• How is it made?
• What is Biodiesel?
History of Diesel
Rudolph Diesel

• Born March 18, 1858.
• Invented Diesel.
• Had to change it so that piston is filled with fuel,
  • It will push it up the chamber then when it hits the top, The air mixes it
  • It Ignites,
• And then it will push the piston back down.
Diesel

- Filed for a patent
  February 27, 1892 in Germany.
- Patent No. 6720.
The Diesel Engine

- When a gas is compressed, its temperature rises, a diesel engine uses this property to ignite the fuel. Air is drawn into the cylinder of a diesel engine and compressed by the rising piston at a much higher compression ratio than for a spark-ignition engine, up to 25:1. The air temperature reaches 700–900 celcius, or 1300–1650 farenhiet.
Biodiesel
The History of Biodiesel

- Has been used since the early 1800’s.
- Used first for making soap.
- Rudolph Diesel showed his first diesel using peanut oil, the original biodiesel.
- Henry Ford, original owner of the Ford company made first car, Model T with Ethanol.
What is biodiesel?

• Clean, alternative fuel
• Processed from domestic, renewable resources
  • Doesn’t contain petroleum
• Can be used with little or no change
How is biodiesel made?

• Bio-diesel is made through a process called Transesterification where the glycerin is separated from the fat or vegetable oil.
Transesterification

- The process leaves behind two products:
  - methyl esters
  - glycerin.
Environmental Benefits of Biodiesel

- Reduces 50% Carbon Monoxide.
- Reduces 78% Carbon Dioxide.
- Fewer Hydrocarbons.
- Eliminates sulfur emissions.
- Reduces cancer risks by 94%.
- Ignites faster than petrodiesel.

- Produces more nitrides of oxygen. Catalytic converters stop that.
- Biodegradable and Non-toxic.
- Only alternative fuel to successfully pass the Health Effects Testing Requirements.
Two Issues of Biodiesel

- Gelling up at temperatures below 40° Fahrenheit.
- Biodiesel is Hydrophilic:
  1. Water lowers heat. More smoke
  2. Corrosion of vital fuel systems.
  3. Forms crystals at 32°.
Feasibility of Oil in Owens Valley
Contacted businesses

- Carl's Jr.
- Taco bell
- McDonald's
- Burger king
Questions we asked

- How many fryers do they have
- How big are they
- How much oil do they use
- How do they dispose of it
Carl's Jr.

- 3 fryers
- Medium size
- 5 gallons a day
- Throws it away
McDonald's

- 3 fryers
- Big
- 30 pounds a day
- Throws it away
Taco bell

- 1 fryer
- Medium
- 10 gallons a day
- Throws it away
Burger king

- 4 fryers
- Big
- 50 gallons a day
- Pays $39.00 to dispose of it
The amount of oil used in a year from each business
Total of Gallons Used Here in the Valley

114,975
End