MARYLAND
Department of the Environment

Facts About…

BIODIESEL FUEL

- **What is Biodiesel Fuel?**
  - Biodiesel fuel is made from renewable sources, such as agricultural and animal products. Renewable sources include soybean oil, cottonseed oil, canola oil, sunflower oil and animal fats.
  - Pure biodiesel (B100) contains no petroleum, but it can be blended at any level with standard diesel fuel to create a biodiesel blend.
  - B20 (20% biodiesel, 80% petroleum diesel) is the most common blend.
  - Biodiesel (specification ASTM D6751) is a registered fuel and fuel additive with the EPA.

- **How is Biodiesel Made?**
  - Biodiesel is made through a chemical process using vegetable oil or animal fats, called transesterification.
  - The process leaves behind two products: methyl esters (the chemical name for biodiesel) and glycerin (a valuable byproduct usually sold to be used in soaps and other products).

- **Benefits**
  - Biodiesel is a domestically-produced renewable resource that decreases the United States' dependency on imported foreign oil.
  - Biodiesel reduces pollutant emissions, except nitrogen oxides (NOx) (see table on next page).
  - Pure biodiesel (B100) contains no sulfur, which is important, since many new diesel emission reduction technologies are sulfur intolerant. As a result, B100 enables sulfur intolerant retrofit technologies, such as diesel particulate filters. This situation is similar to unleaded gasoline being required for catalytic converters to work properly.
  - In general, biodiesel requires no storage / refilling infrastructure modifications.
  - No major engine modifications are required to use biodiesel.
  - Biodiesel provides similar power, torque, and fuel economy as petroleum diesel. Because it has a higher cetane number than petroleum diesel fuel, biodiesel increases engine performance.
  - Biodiesel has excellent lubricity properties.
  - Biodiesel is nontoxic and biodegradable.

- **Disadvantages**
  - Biodiesel costs more than petroleum diesel fuel.
  - Biodiesel increases NOx emissions which may be due to advanced injection timing and start of combustion. This is currently being researched.
  - There is limited availability of biodiesel; biodiesel is only available at certain stations in Maryland.
  - Biodiesel has a limited storage life. It should be used within six months.
  - Biodiesel has a solvent effect that may release deposits accumulated on tank walls and pipes or in engines from previous petroleum diesel storage or use. Release of deposits could clog filters initially.
  - High percentage biodiesel blends may degrade certain types of elastomers and natural rubber compounds used in fuel hoses and fuel pump seals.

- Biodiesel has more cold weather starting problems than conventional diesel. Temperatures below 30° Fahrenheit can cause biodiesel to cloud and even gel. However, solutions to cold weather conditions are the same for biodiesel as for petroleum diesel, including the use of a pour point depressant, blending with #1 diesel (kerosene), or use of line and tank heaters. B20 starts to freeze at only 3° to 5° F warmer than petroleum diesel, and this is such a small increase in temperature that no special precautions are necessary.

Average Biodiesel Emissions Compared to Petroleum Diesel

Emission Type	Pollutant	B100	B20
Regulated	HC	-67%	-20%
	CO	-48%	-12%
	PM	-47%	-12%
	NOx	+10%	+2%
Non-Regulated	Sulfates	-100%	-20%
	CO_2	-78%	-16%
	PAH (Polycyclic Aromatic Hydrocarbons)	-80%	-13%
	nPAH	-90%	-50%
	Ozone Potential of HC	-50%	-10%

For locations of biodiesel stations, please click here.

For further information about biodiesel, please go to the web site for The National Biodiesel Board (NBB), the national trade association representing the biodiesel industry in the United States, located here.