

# BIODIESEL

Biodiesel, a clean burning  
alternative fuel produced from  
domestic renewable resources

## Reduces Global Warming

Biodiesel is a way to reduced human caused global warming. Vehicles are a major source of atmospheric carbon dioxide (CO<sub>2</sub>), the main greenhouse gas that causes global warming. Research has shown that use of biodiesel reduces the GHG emissions by over 76% compared to petroleum diesel.

## It's Good for the Health of Our Children

Biodiesel is a great health benefit to our children. Studies on school buses have indicated that children who ride buses to school face up to eight times greater exposure to toxic diesel exhaust than that if they walked. The US Environmental Protection Agency (US EPA) says children are the most susceptible to the dangerous pollutants in diesel exhaust yet must ride diesel-powered buses for nine months of the year. Many school bus operations around the country have begun to use biodiesel fuel in an effort to reduce the harmful effects on children of breathing diesel exhaust. According to US EPA, use of B100 reduces carbon dioxide emissions by 75% compared with fossil diesel, and use of B20 (20% biodiesel and 80% petroleum diesel fuel) reduces carbon dioxide emissions by 15%. Using B100 can also cut the carbon monoxide and particulate matters by 50%, and hydrocarbons by 70%.

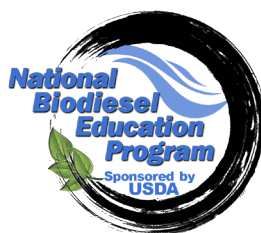
BIODIESEL IS SIMPLY  
A BETTER FUEL THAN DIESEL



## University of Idaho

A service of the  
University of Idaho  
Biodiesel Education Program

Sponsored by  
U.S. Department of Agriculture



## DEPARTMENT OF BIOLOGICAL ENGINEERING

Pioneers & Leaders in Biodiesel  
Research & Education

For More Biodiesel Information:

Visit us at  
[www.BiodieselEducation.org](http://www.BiodieselEducation.org)

Email us at  
[biodiesel@uidaho.edu](mailto:biodiesel@uidaho.edu)

Call us at  
208-885-7626

## Biodiesel Program at University of Idaho

Sponsored by U.S. Department of Agriculture



# Why Use Biodiesel?



# Why Should we use BIODIESEL?

Biodiesel is an alternative diesel made from renewable resources such as vegetable oils (soy, canola, mustard, etc.), animal fats (tallow, lard, etc.), and recycled cooking greases (grease, cooking oil, etc.). Biodiesel can be used in pure form (B100) or blended with petroleum diesel at any level (such as B20 or 20% biodiesel in diesel).

## Biodiesel Helps Clean the Air We Breathe

Biodiesel burns significantly cleaner than regular petroleum diesel. This means vehicles that use biodiesel will produce appreciably less harmful exhaust emissions. The higher the percentage of biodiesel used, the greater the reduction in dangerous emissions. Using a 20% biodiesel blend or B20 will reduce the amount of harmful emissions into our air by approximately the following amounts:

• Carbon monoxide	12.6%
• Hydrocarbons	20.0%
• Particulates	18.0%
• Air toxics	12% to 20%
• Mutagenicity	20%



## Lower Greenhouse Gas Emissions

Biodiesel production is part of the carbon cycle. Unlike petroleum diesel, biodiesel feedstocks are not dug up from underground and do not release long-stored carbon as carbon dioxide into the atmosphere. Instead, biodiesel comes from the oil seed crops that capture carbon dioxide in the air; when biodiesel is burned, carbon dioxide is released back into the atmosphere to complete the carbon cycle.

## Better for Our Air

New diesel engines are very clean. But diesel engines last for 30 years or more, so may older engines currently on the road would benefit from a clean burning fuel like biodiesel. The most notable advantage of biodiesel is that it does not have the almost unbearable smell and black smoke of diesel fuel. Biodiesel is 11% oxygen, which means that even in a blend such as B20, it assists in the combustion of the hydrocarbons. Biodiesel reduces air pollution and the exhaust from biodiesel burning engines smells much better than that from diesel engines, plus the black soot level is reduced.

## Safer

Biodiesel causes far less damage than petroleum diesel does if spilled or released to the environment because of biodiesel's better biodegradability. It is safer than petroleum diesel because it is less combustible. The flashpoint for biodiesel is higher than 130°C (266°F), compared with about 52°C (126°F) for petroleum diesel. Biodiesel is safe to handle, store, and transport.

## No Engine Modifications

Using biodiesel as a vehicle fuel improves air quality and the environment, increases energy security, and provides safety benefits.

## Good for Our Engines

Biodiesel can extend the life of diesel engines because it is more lubricating than petroleum diesel fuel. Biodiesel also has a higher cetane number or raises the cetane number of the fuel when blended with petroleum diesel. A higher cetane number means it ignites more quickly in the engine, yet it is less explosive and generally safer than petroleum diesel fuel. Biodiesel does have a slightly lower BTU value than diesel fuel because of its oxygen content. Oxygen improves combustion and reduces emissions but has no energy value. Biodiesel is a solvent. While this means your engine will be cleaner, it also means that the first time users may need to change their fuel filters more often as diesel fuel contaminates are cleaned out. The main concern of most first time biodiesel users is that biodiesel has cold flow issues, which can be dealt with same way as the petroleum diesel cold flow issues.

## Economic Opportunity

Biodiesel has the potential for significant economic opportunities for rural communities and farmers by creating markets for crops. Many communities have worked to build an industry in their areas to keep some of the petroleum money that now flows out of the community, state, and nation.

**Biodiesel is a domestically produced, clean-burning, renewable substitute for petroleum diesel. Using biodiesel as a vehicle fuel improves air quality and the environment, increases energy security, and provides safety benefits.**