

What is BIO-DIESEL?

Bio-diesel is a biodegradable non-toxic, clean burning fuel made from algae, vegetable oil, animal fats and recycled restaurant greases. It is created through a chemical process called transesterification in which the glycerin is separated from the fat or vegetable oil leaving behind two products; bio-diesel and glycerin a byproduct used in soaps and other products.

Why Danchanko Inc. produces its own bio-diesel?

During the spring of 2007, as the cost of diesel was nearing \$4.00 a gallon, CEO/Manager of Danchanko Inc., Matt Danchanko knew he had to do something to conserve fuel costs in order to be competitive in his concrete and construction business. According to Matthew, "it was a no-brainer for me when I learned that an investment of approximately \$3,500 for the processor would help me to manufacture my own diesel fuel for less than an average of 99 cents.

Advantages to Bio-diesel...

- Burns cleaner than petroleum-based diesel, creating about 60% less net carbon dioxide emissions
- Less toxic than table salt and biodegrades as quickly as sugar
- Decreases our dependence on foreign oil and contributes to our own economy
- According to the National Bio-diesel Board website, the production of bio-diesel will create an estimated 36,102 new jobs in all areas of the economy
- The additional tax revenues from production will more than pay for the federal tax income incentives provided to the industry
- It will keep, at minimum, \$13.6 billion in American that otherwise would be spent on foreign oil.

Fuel Cost Comparison...as of June 23, 2009

Diesel Fuel	Bio-diesel	Savings
\$2.64 per gallon	\$.99 per gallon	\$1.64 per gallon

Danchanko Inc.'s Monthly Cost Savings...

Currently Danchanko Inc. processes enough bio-diesel to fuel their diesel equipment 100%. Our diesel equipment includes a skid steer, mini-excavator, 4 ton dump truck and 8 ton dump truck. We use approximately 100 gallons of bio-diesel a month

Monthly Fuel Usage	Diesel Cost	Bio-diesel Cost	Savings	Yearly Savings ¹
100 Gallons	\$264	\$99	\$165	\$1,980

¹ As fuel increases, so does the savings. Last year's diesel fuel reached \$5 a gallon, therefore, our savings last year was approximately \$336 per month or \$4032 for the year. In relevant terms a trip for four (4) people to Disney World is about \$1500.

How is bio-diesel made?

Bio-diesel is actually very simple to make. It is made by chemically altering the molecular structure of any organic oil through the use of a chemical catalyst and an alcohol. To do this, oil is simply heated to a designated temperature (to help with the chemical reaction) and then a mixture of catalyst and an alcohol are added to the oil. The oil, catalyst, and alcohol mixture are then mixed for a period of time and then allowed to settle. If successful, the chemical reaction between the oil, alcohol, and the catalyst will have broken down the oil into several layers. The top layer will be bio-diesel, chemically called an Ester, the next layer may contain soap, and the bottom layer will be glycerin.

Once the layering has occurred, the glycerin and soap are drained off. The bio-diesel is then washed with a mist-wash, a bubble-wash, or both. The washing is done to remove any additional soap, alcohol, or other impurities in the bio-diesel. After it's been washed, it is then dried to remove any water. Commonly it is then filtered through fuel filters and is then ready to be used.

Processing Equipment...

Although you can design your own equipment, Danchanko Inc. decided to purchase a ready-to-run system. Our system is the EZ80 bio-diesel processor kit – it had all that we needed except for some minor retrofits. For more on the EZ Bio-diesel go www.ezbiodiesel.com

Finding oil...

Used oil can be found at Restaurants, bakeries, retirement homes, hospitals, schools, companies with cafeterias, and special events. Everyone knows someone in the food business. We recommend that you list the people you know and start calling. In most cases, the oil is just thrown away and the vendor will be happy to give you the oil. Once a relationship is made with a vendor, maintain it by picking up the oil as requested. If the oil is stored in 55 gallon drums, you will need a truck and hand crane to pick up the oil. We prefer that the oil is left in its original 5 gallon containers because it is easier to pick up and store.

Safety...

Bio-diesel is less volatile than the gasoline in your car's fuel tank but the chemicals used to make bio-diesel are considered to be extremely hazardous if used improperly. If you take the proper safety precautions, however, you can safely make bio-diesel at home.

- One chemical is lye or KOH and it can burn your skin, and damage materials. Use gloves to protect your skin

Second chemical used is methanol

- Dangerous to skin

- Flammable – although methanol can be ignited, the EPA actually states that is SAFER than gasoline in several ways.
 - Lower volatility –does not evaporate or form vapor as gasoline does
 - Higher flammability requirement – methanol vapor must be four times more concentrated in air than gasoline vapor for ignition to occur
 - Lower vapor density – gasoline vapor is two to five time denser than air, so it tends to travel along the ground to ignition sources. Methanol vapor is only slightly denser than air and disperses more rapidly to noncombustible concentrations
 - Lower heat release rate – Methanol burns 25 percent as fast as gasoline and methanol fires release heat at only one eighth the rate of gasoline fires.
 - Storage is a major consideration with methanol

So you want to make bio-diesel...

- Danchanko Inc. will help you determine the size processor that is applicable to your needs
- We will help you find the best price for the processor
- We can help you with the setting up of your processor by providing personalized technical assistance
- If modifications are required for your applications, we can also assist in designing those modifications
- AND...Danchanko Inc. can offer you assistance in finding the best price for chemicals

Save Bio-diesel...

'Save Bio-diesel is a grassroots campaign to petition diesel vehicle manufacturers, the Environmental Protection Agency and the California Air Resources Board to ensure that new diesel emission technologies are compatible with bio-diesel. **The emissions technology currently being used in diesel vehicle models from 2007-2009 has been shown to be incompatible with bio-diesel in any blend, from B5 to B100.** This poses a great threat to the future of bio-diesel as a viable fuel alternative.

The irony is that bio-diesel itself is a great emissions reducer, in addition to its other major environmental and domestic benefits. We are grateful that the EPA and CARB have required vehicle manufacturers to lower emissions-- but by not requiring that new emission technologies be compatible with bio-diesel, these environmental protection agencies are shooting themselves in the foot.

We must demand that new diesel vehicles be made bio-diesel-compatible!

To learn more about the problem and how you can help, visit their website at: www.savebiodiesel.org . Be sure to at least Sign the Petition to encourage auto manufacturers to remedy this situation.

