

BIODIESEL Education Network News

TM by the National Biodiesel Board

From the National Biodiesel Board

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10 steps for successful biodiesel handling and storage

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By now you may be considering adding biodiesel, the nation's fastest growing clean liquid fuel, to your product line. It's clean, safe and delivers performance benefits that generic diesel alone can't provide. Plus, it enables you to offer a unique product and fill a demand that your competitors may not.

Like conventional diesel, biodiesel should be handled properly to ensure a positive experience. Below are **10** steps to make biodiesel distribution a seamless part of your business.

1. Quality is critical. Don't just assume you are receiving a spec product. Biodiesel has earned a full specification from the American Society of Testing and Materials (ASTM), a major milestone in ensuring fuel quality. Specify and take receipt of only ASTM D 6751 biodiesel and ASTM D 975 diesel fuel.

2. Professionally test your fuel. Develop a relationship with a local fuel testing laboratory. Discuss a semi-annual or annual tank management program for your site to ascertain the status of your fuel quality and see if it meets ASTM target values.

3. Take Samples. If you intend on using an existing diesel or kerosene tank for storage of your biodiesel, either pure or blended, make sure that you take a bottom sample of the proposed tank and verify lack of moisture content and microbial activity.

4. Ensure Materials Compatibility. Biodiesel in its pure form (B100) has excellent solvency characteristics. Left



alone through your transition to biodiesel, heavy petroleum sediment formation in your systems may increase the probability of plugging system filters prematurely. Pre-blended B20 would have less of an effect. Exercise the precautions detailed in step number three, and to ensure compatibility, store biodiesel in only steel and aluminum tanks. Any gasket or o-rings that would come in contact with pure biodiesel should be manufactured from Viton or

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how did microbes get in my fuel?

This is the time of year many fuel distributors and fuel users confront the negative impact of microbes in their fuel. Because biodiesel is a relatively new addition to the fuel mixes, users and newcomers to the fuel often believe that microbes are a direct result of biodiesel use. This is **FALSE!**

The Cause

"Microbes develop in fuel systems that lack good housekeeping protocols," said Paul Nazzaro, president of Advanced Fuel Solutions. "Biodiesel seems like it would be a good source of food for microbes, but it isn't any more likely to grow them than petroleum diesel. If water is in the tank, you will be guaranteed to suffer the headaches associated with this long standing industry problem."



Petroleum contaminated with microbes

In warmer weather, the presence of water in tanks may encourage the growth of fungi or bacteria which live in the tank water bottoms and feed on the fuel. Under the power of a microscope, these bugs look like deep-sea creatures.

To the naked eye, these bugs show up as slimy mats of substance that

can be green or black. Under ideal conditions, these bacteria can double in number in as little as four hours. When left unchecked, they can be drawn out through suction lines and plug filters. In addition, the byproducts of their fuel consumption are very acidic and can cause pitting and decay in tank bottoms.

Water also causes corrosion in storage tanks and engine systems. The byproducts of this corrosion, including scale and rust, can all lead to filter plugging or injector fouling.

Fuel injection pumps are often lubricated only by the fuel they are pumping, and are therefore susceptible to seizing if water gets into them. These high-pressure pumps are not tolerant of dirt, debris and organic deposits, all of which can be carried into them with water. The barrel and plunger clearance is often times only one to two microns. This tight tolerance is necessary to maintain fuel injection pressures and ensure minimal leakage past the plunger shaft.

The Solution

- Ideally, storage tanks should be checked with a stick treated with water-finding paste prior to and immediately following delivery.
- Underground tanks can settle to one side and unless you are checking at the low end, you can get a misleading indication of how much water is present. Most tanks have more water than can be easily detected, so err on the side of caution.
- All water should be drained from storage tanks periodically. The frequency will depend on the ease of removal, volume of fuel throughput and tolerance of water-related problems. It is not always an easy task, but tanks should never go more than 6 months without



The end result: a troublefree fuel system

having bottoms removed.

- Be sure to remove water and bottoms until the product being removed is **clear and bright**. Remember, emulsions held stable at the bottom of the tank due to sediment or biological growth can cause problems just as severe as if you were pumping straight water.
- If all the water cannot be removed, drain as much as possible and treat the remaining in-tank water with a water-soluble biocide. Fuel which must be stored for long periods of time in tanks containing water can also be treated with a fuel-soluble biocide to reduce the chance of problems.
- Pump suction lines should be far enough off tank bottoms to prevent problems — preferably six inches. This will vary by tank and operating conditions. Become familiar with this draw-off height for problem solving information should your system become contaminated.

Microbial growth need not become an issue with biodiesel. "An ounce of prevention is worth a pound of cure," Nazzaro said. "Be proactive and your fuel system will perform flawlessly."

From The Capitol



The biodiesel industry continues its fierce pursuit of a tax incentive that would lower the cost of biodiesel to the end consumer while providing flexibility to refiners and petroleum distributors.

"Congress can and should get this legislation passed," said Bob Metz, chairman of the National Biodiesel Board and South Dakota soybean farmer. "America gets nearly 60 percent of its oil from overseas. This trend will never change without legislation like the biodiesel tax incentive."

The incentive is a federal excise tax credit that amounts to one penny per percentage point of biodiesel blended with petroleum diesel. The tax incentive will be available to diesel excise taxpayers and other fuel distributors who purchase biodiesel and blend it into diesel fuel. The incentive is intended to reduce the cost of biodiesel to the end consumer in both taxable and tax exempt markets.

Sen. Charles Grassley (R-Iowa) has championed the biodiesel tax incentive at the federal level. It is currently in the Senate version of the Transportation Bill, the Energy Bill, and the Senate version of the FSC/ETI Bill, commonly known as the corporate jobs bill.

Kansas terminal first to pre-blend at rack

Farmer and rancher requests for soy biodiesel have led grain and energy company CHS to become the first to offer pre-blended biodiesel at petroleum loading racks. Farmer leaders recently joined CHS representatives in McPherson, Kan., to announce the advancement in infrastructure and view a demonstration of the blending and loading system. Offering pre-blended soy biodiesel at petroleum loading racks significantly streamlines the distribution process.

"This new innovative system further integrates biodiesel into the existing petroleum infrastructure that distributors have relied on for years," said Mark Fenner, CHS Region Sales Manager. "Now a distributor can pull up to this terminal and fill up with pre-blended fuel."

CHS will market the biodiesel products under the Cenex brand as an extension of their Ruby Fieldmaster Premium Diesel Fuel. The new system will provide a B2 blend (2 percent soy biodiesel and 98 percent diesel) to Cenex

brand fuel distributors.

"Soybean checkoff surveys show biodiesel use among soybean farmers 50 percent or higher in some states," said NBB Chairman Bob Metz. "We farmers should continue to ask for it and use it. The soybean checkoff helped discover biodiesel and continues to expand its use. When we take it one step further and use biodiesel on the farm, it will come back to us in the form of sustained higher soybean prices."

CHS also opened a pre-blended biodiesel fuel system in Council Bluffs, Iowa, and plans to open another one in McFarland, Wis.

Harold Kraus, who uses soy biodiesel on his farm in Kansas, said, "If every farmer and rancher in the United States used at least B2 soy biodiesel on their farm, we could use the soybean oil from over 50 million bushels of soybeans each year."



Farmer Harold Kraus at the opening

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Biodiesel Handling

Teflon materials. All blended biodiesel products, such as B2 and B5, would have a minimal effect on less durable compounds such as nylon, polypropylene and polyurethane. For a more comprehensive list of these materials, visit www.biodiesel.org and click "Fuel Facts."

5. Take Cold Weather Precautions. B100 stored in cold temperatures (less than 40 degrees F) must be heated to at least 60 degrees Fahrenheit prior to distribution or blending into middle distillates of any grade. If pumping biodiesel in cold weather through a conventional fuel pump, keep the hose and supply line to the pump equally protected with heat. An option to heating the systems is to blend B100 with 50% kerosene to dilute the cold weather properties of the biodiesel.

6. Remember Uncle Sam. If you are selling biodiesel, pure or blended at any ratio into road diesel, the biodiesel percentage must be assessed all necessary federal and state taxes that apply to diesel fuel.

7. Dye Your Biodiesel. Off-road sales of biodiesel require the industry standard red dye to distinguish it as off-road fuel and therefore not subject to road diesel tax. Blends of 20% can dilute the color of red-dyed fuel and push it out of color specification, which could lead to issues with the tax authorities. Treat B100 with the same amount of red dye as petroleum diesel for off-road fuel.

8. Know Your Diesel. It is important to start with the absolute best generic diesel fuel in terms of cold weather characteristics when

blending with biodiesel. If you don't know what your cold flow specifications are for the base diesel you sell, you won't know what your B20 blend would be once combined with the generic portion of that blend. B20 can be successfully used in the harshest winter climates when proper attention is given to the storing and blending of the two fuels.

9. Use Common Sense When Upgrading Infrastructure. The best way to utilize your current assets is to select a storage and blending option that will meet your needs while being supported by your existing equipment. Depending on the percentage of biodiesel you plan to offer, different issues need attention, including pump capacity, loading arm demands, meters, automation and mechanical engineering and electrical values to bring it all together. A handling kit for petroleum distributors is available from your state soybean office.

10. Be Prepared. The ultimate success in taking receipt of, storing, blending and shipping biodiesel starts with knowing what you buy, keeping your supply sources accountable for upholding quality and becoming knowledgeable on biodiesel basics. The more prepared you and your team are, the more success your company will have and the happier your customers will be year-round with biodiesel and biodiesel blends.

For the most comprehensive biodiesel information source in the nation, visit the National Biodiesel Board Web site at www.biodiesel.org.

On the Web

The National Biodiesel Board is pleased to announce a new staff member...of sorts.

In partnership with the Petroleum Marketers Association of America (PMAA), distributors can now ask their technical, marketing and basic biodiesel questions to BEN – the Biodiesel Education Network.

Via e-mail, a biodiesel and petroleum expert will get back to you through BEN ASAP to answer your questions. There's no question too big or too small. Look for details on the PMAA Web site, www.PMAA.org.





Jefferson City Oil co-owner Tom Kolb

Missouri distributor blazes trail

When Jefferson City Oil Company was established 76 years ago as a family business in Jefferson City, Mo., no one could have imagined that the company would become a pioneer in a vegetable oil-based fuel.

Jefferson City Oil has distributed biodiesel for almost three years. Co-owner Tom Kolb says he first became curious when he saw the biodiesel-powered truck owned by the Missouri Soybean Merchandising Council (MSMC). He wondered what it meant for a vehicle to be "powered by soy diesel," as the truck promoted. Soon after, Kolb was in contact with key players in the industry, and it didn't take long for him to see the potential in soy biodiesel.

"After missing out on the early success of ethanol, I wanted to get in on the ground floor with biodiesel," he said.

The 15,000-gallon biodiesel tank, kept inside the Jefferson City Oil warehouse, became the first of its kind in Missouri.

The company primarily purchases its biodiesel from West Central Soy in Ralston, Iowa. A source closer to home is expected to come soon, with Missouri soybean farmers

making plans to put up the state's first major biodiesel processing plant, called Mid-America Biofuels, L.L.C.

Jefferson City Oil's biodiesel customers are primarily farmers and government fleets. The company provides B20 to Fort Leonard Wood Army Base in Missouri and recently won a bid to start supplying it to Little Rock Air Force Base in Arkansas. "When we arrived in Arkansas to deliver our first load of biodiesel, we were met by all kinds of media," Kolb recalls. "It attracted a lot of attention."

Other customers include the Missouri Department of Transportation and the marina at the Lodge of Four Seasons in Lake Ozark, Mo., which sells it to boaters.

In addition to offering year-round accessibility to bulk B100 in Jefferson City, Mo., the company also sells B20 at a public pump. Kolb's outlook for the future of biodiesel is so optimistic that he anticipates someday soon making the B100 tank available 24-hours a day.

"I believe the biodiesel wave is coming," he said. "I'm a visionary. I'm in it early, on the ground floor, and it's going to pay off."

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