DOWNLOAD PDF BIODIESEL AND VEGETABLE OIL ARE NOT JUST FOR CARS!

Chapter 1 : Diesel vs. Biodiesel vs. Vegetable Oil | Homegrown Fuels - Consumer Reports

Vegetable oil is often confused with biodiesel because some people manufacture biodiesel at home. And like home winemaking, to make an acceptable product takes care, skill, and some specialized.

People across the country are using conversion kits to retrofit their vehicles. Others are taking a do-it-yourself approach. Some burn free waste vegetable oil from local restaurants; others burn clean straight vegetable oil. Technically, it may not be legal. Photo by John Hardesty Running a truck on vegetable oil does not decrease power significantly. This veggie oil powered Ford F easily handles a camper trailer. Photo by Shawn Schreiner In addition to making engine modifications, you must filter waste vegetable oil prior to burning it in your vehicle. Photo by John Hardesty You can run a diesel vehicle on vegetable oil. Vegetable oil can power your vehicle, but the effects on the environment are still unclear. This may sound strange, but you can run a diesel vehicle on vegetable oil and nearly eliminate your use of traditional gas or diesel. For certain people, veggie oil could lead to major savings. Called veggie cars or grease cars, these vehicles have fuel systems modified to burn both diesel fuel and straight vegetable oil. The idea is actually a modern twist on the original intention for the diesel engine. But even proponents say veggie oil is not for everyone because of the extra work it requires. These people are drawn to this alternative fuel because it saves them money, gives them more control of their transportation fuel needs and makes a difference for the environment. All this may sound too good to be true, and in some ways it is. Is it the most environmentally friendly alternative fuel? Should new vegetable oil or used grease be used? So, before you start hoarding Wesson Oil, there are a few things you should consider. To get a sense of how this works, consider the example of Ty Martin. On Thursdays and Sundays the Lawrence, Kan. As he eats with friends at the bar, kitchen staff fill a tank in the back of his truck with grease that was used to cook food just the day before. An hour later, truck and driver head home, both smelling faintly of burnt peanut oil. For Martin, burning vegetable oil means more than maintaining a dual fuel system. Whatever your motivation might be, if you have a diesel engine, it could run on cooking oil. In fact, in the s German inventor Rudolf Diesel originally designed his engine to run on vegetable oil. Vegetable oil works best when it is hot â€" ideally degrees â€" and it thickens like butter when it is cold. That means the engine has to be warmed up before it can run on vegetable oil, and the veggie oil must be flushed out before the engine cools down. Otherwise, you will have clogged fuel lines when you next try to start the car. To convert a diesel engine to run on veggie oil, you have several options. The conversion hardware can be bought in kit form from a variety of manufacturers. Lovecraft also sells a one-tank system. Some people custom build veggie cars. Veggie-Capable Vehicles Finding just the right car to burn vegetable oil can be more challenging. First and foremost, it has to have a diesel engine. The best cars to convert tend to be older models, according to Lovecraft. The exception appears to be the Volkswagen Jetta TDI â€" even more recent editions can be converted easily. Among the better older models for veggie conversions is the Mercedes SD, particularly model years to Greasecar, on the other hand, says the majority of its kits go in newer domestic trucks or Volkswagen cars. Diesel trucks get plenty of power out of vegetable oil. Martin said his Dodge Ram pickup made the switch without slowing down. Lovecraft and Greasecar both said the Ford F diesel models from to are well-suited for conversions. These trucks easily accommodate the necessary plumbing changes for burning vegetable oil. New or Used Cooking Oil? Vegetable oil enthusiasts love the idea of free fuel, so they take used cooking oil restaurants would otherwise throw away. Learn about collecting used vegetable oil by reading this article Negotiating For Waste Vegetable Oil. For converts less concerned about saving money, or perhaps skeptical about using waste oil, brand-new vegetable oil is another option. A company called Smarter Fuel , based in Bethlehem, Pa. But there are different schools of thought on how clean used vegetable oil needs to be before you burn it in an engine. One restaurant prefilters the oil for Martin and Markoulatos to clean it up a bit, and then the two tinkerers pour the oil into a gallon plastic drum with a spigot 6 inches from the bottom. They let the oil sit for a week before drawing off everything above the dregs. Before they pour that into their trucks,

they filter it again. Pollution-wise, the differences between burning new and used vegetable oil are less stark. William Kemp, in his book Biodiesel Basics and Beyond says that new and used oil just about tie on soot and nitrogen oxide emissions, while waste oil puts out more carbon monoxide, and new oil puts out more carbon dioxide. When comparing vegetable oil emissions to petrodiesel, the results are more mixed. Diesel exhaust puts out more soot than veggie oil, while putting out about 10 percent fewer hydrocarbons. You have to grow plants to produce vegetable oil so the carbon dioxide emitted by burning it is captured as a new crop of oil plants grows. It is available, usually blended with petrodiesel, at hundreds of filling stations across the country. Biodiesel proponents say veggie oil fuel, particularly waste oil, will always be a low-volume, backyard enterprise. The SVO concept distracts from the huge potential of the biodiesel industry. There are numerous fans of veggie oil fuel, though, who have come to the opposite conclusion and feel just as strongly. These contrasting perspectives are but one example of the contentious and evolving debate about the short- and long-term feasibility of biofuels. For more on their potential compared to other energy options, see Harnessing Solar Energy Power. Concerns about taxes and EPA regulations are significant. And for many people, filtering the veggie oil and the potential for mechanical problems would be inconvenient. But for those who can embrace these challenges, veggie oil is a fun and empowering solution. Veggie Oil Vehicles and the Law Excited about the idea of running your car on veggie oil? Maybe even free waste oil? Before you get too excited, carefully consider this problem: How could something so simple and well-intentioned cause legal problems? Using vegetable oil as a fuel without paying fuel tax on it is considered tax evasion. Environmental Protection Agency EPA frowns on using vegetable oil in engines designed to burn diesel fuel because the emissions are not the same. All states have a fuel tax of some kind and the federal government also taxes fuel, but enforcement of tax laws regarding vegetable oil as a fuel are inconsistent. When it comes to biodiesel, which is basically chemically processed vegetable oil that mimics petroleum diesel fuel, federal tax laws are straightforward: While enforcement of these laws has traditionally been lax, a few recent cases have received attention and may signal a new level of concern: If you buy veggie oil that is intended to be used as fuel, the taxes have already been paid by your supplier. He collects hundreds of thousands of gallons of oil from about 1, restaurants stretched across five states. The federal government does require you to fill out the necessary registration forms to make biodiesel for your car but it does not charge a fee for doing so, according to Enesta Jones, a spokesperson for the EPA. Using vegetable oil instead of diesel fuel could quite likely affect the emissions from your car, Millett says. On his website , Graydon Blair, owner of Utah Biodiesel Supply, a parts distributor for home biodiesel brewers, suggests you keep a log of the gallons of biodiesel or veggie oil you burn. Then if you do get into trouble with the state tax authorities you can produce the log and tell them you plan on paying at tax time. State and federal income tax forms have provisions for paying fuel taxes, Blair says. Consult your tax advisor for details on how to best handle taxes in your state. While he is an advocate of the technology, he offers a sobering assessment of its limitations in his answers here: Mechanically, what is the difference between grease cars and biodiesel cars? Also, in grease cars you need a system to preheat the oil and filter it before the fuel can be combusted. And what about the costs? Straight vegetable oil has the advantage in that the cost and complexity of the fuel drops dramatically, compared to biodiesel. The rest of the cost is processing that feedstock. Which is easier to use? You still need some petrodiesel or biodiesel fuel to run a vegetable oil car. The car has to start on diesel and it has to be shut down on diesel. Once the temperature of the vegetable oil gets to degrees, viscosity of the oil comes down to the level of diesel fuel and it becomes much like straight diesel fuel. Will vegetable oil cars ever be a mainstream mode of transportation? In a word, no. I think using virgin vegetable oil or waste vegetable oil is always going to be a fringe sector of the transportation industry. Automakers will never get behind it. Which is better for the environment? That has to be taken into consideration in the overall formula for the carbon released when you burn it.

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Chapter 2 : Advantages and Disadvantages of Biodiesel Fuel - Conserve Energy Future

Vegetable oil can be used as diesel fuel just as it is, without being converted to biodiesel. The downside is that straight vegetable oil (SVO) is much more viscous (thicker) than conventional diesel fuel or biodiesel, and it doesn't burn the same in the engine -- many studies have found that it can damage engines.

How can they do that? How can a car burn vegetable oil just like it is diesel fuel? If you know a little about the chemical structure of diesel fuel and vegetable oil, this mystery is easily solved. Diesel fuel is known as a Hydrocarbon. That means that it is made from hydrogen and carbon atoms. The carbon atoms form a chain. In diesel fuel, the chain is normally 16 or 17 carbons long, like this: Vegetable oil is made out of hydrocarbon chains too. A vegetable oil molecule actually has three chains that are bonded together. A vegetable oil molecule looks like this: But if you look at the legs, you see they look exactly like diesel fuel molecules! So these legs burn in the engine just like diesel fuel does. The thing on the left that holds the three legs together is called a glycerol, and it burns in the engine too without any trouble. So now you can see why Adam and Jamie were able to burn vegetable oil in their engine. Vegetable oil looks almost exactly like diesel fuel at the molecular level. You may have heard of biodeisel. To make biodiesel, you use heat and a little chemistry to take off the glycerol part and release the three legs. This turns the vegetable oil into actual diesel fuel. The advantage is that: But in the summer, vegetable oil works pretty well in its natural form! Have fun performing your own science experiments!

Chapter 3 : BIODIESEL: Cultivating Alternative Fuels

Biodiesel is a diesel fuel that is made by reacting vegetable oil (cooking oil) with other common chemicals. Biodiesel may be used in any diesel automotive engine in its pure form or blended with petroleum-based diesel. No modifications are required, and the result is a less-expensive, renewable.

Copyright notice Publication of EHP lies in the public domain and is therefore without copyright. All text from EHP may be reprinted freely. Use of materials published in EHP should be acknowledged for example,? Reproduced with permission from Environmental Health Perspectives? Articles from EHP, especially the News section, may contain photographs or illustrations copyrighted by other commercial organizations or individuals that may not be used without obtaining prior approval from the holder of the copyright. Back in the early s, U. Soybean oil, they reasoned, could be refined to make biodiesel, an alternative fuel source. In Europeâ€"where diesel fuel powers up to half the entire vehicle fleetâ€"biodiesel was being produced in industrial quantities using rapeseed oil. Why not do the same with soybean oil, the farmers asked, and turn existing surpluses into an energy commodity? The idea caught on; in , the National SoyDiesel Development Board was formed to study biodiesel production based on the European model. But ten years later, that volume had grown to 25 million gallons, mainly due to the efforts of the NBB. Assuming existing and emerging facilities operate at full capacity, U. Biodiesel, useable in any diesel engine, is now a key player in the alternative fuels market. Produced by industrial facilities that turn out millions of gallons annually, and also by smaller manufacturers that make it from used cooking grease, biodiesel could do much to reduce our reliance on foreign oil, experts say. Even if the passenger fleet were to shift entirely to diesel, U. Research Needs and Recommendations, agricultural capacity in the United States would probably limit production to at most 10 billion gallons of pure biodiesel a year, unless manufacturers used new higher-yield feedstocks, such as algae. Still, according to Jonathan Cogan, a spokesman for the federal Energy Information Administration, the United States consumed more than 40 billion gallons of diesel fuel in alone. The possibility that biodiesel could substitute for up to a quarter of that amount is significant, McCormick emphasizes. Diesel engines differ significantly from standard gas engines. Where gas engines ignite vaporized fuel in a cylinder using a spark plug, diesel engines compress air in a cylinder, making it so hot that when fuel hits the air, it explodes. That process converts fuel to energy more efficiently than spark plug designs, giving diesel engines greater fuel economy. Early diesel engines ran exclusively on vegetable oil. But in the s, the feed-stock shifted to petroleum distillates refined from crude oil during gasoline production. But while so-called petrodiesel was cheaper and more plentiful than vegetable oil, it was also lighter and less viscous. Automakers had to modify engine designs accordingly, and vegetable oil as a fuel source was sidelined for decades. Then in , the Arab oil embargo sent crude oil prices through the roof. With gas and diesel suddenly four times more expensive than before, interest in biofuels returned. But there was a dilemma: Short of going back to older engine designs, two options remained: The latter option led to biodiesel. Most producers chose a manufacturing method called transesterification, which the South Africans used to make fuel from vegetable oil before World War II. With that process, refiners mix the oil with alcohol in the presence of a catalyst, usually sodium hydroxide. The alcohol and fatty acids react, creating biodiesel and a by-product of glycerin. The alcohol used is usually methanol, yielding a biodiesel consisting of fatty acid methyl esters. Today, most biodiesel produced worldwide is made by transesterification. Most scientists dismiss earlier suggestions that biodiesel requires more fossil fuel energy to make in terms of chemical inputs, labor, transportation, and other factors than it generates as fuel. To use it in cold weather, drivers must install special heating systems to keep the fuel warm. Even pure diesel can gel up in extreme cold, Jobe says, and biodiesel blends at any level can exacerbate that problem. As an added hindrance, B has strong solvent properties that liberate rust and other engine contaminants, which plug filters and fuel injectors. To avoid these problems, most drivers use blends of B and petrodiesel mixed at varying ratios. Unlike fossil fuelsâ€"which contain carbon from underground

sourcesâ€”biodiesel contains carbon from plants that were recently alive and drawing carbon from the atmosphere. Diesel engines have traditionally had a bad reputation when it comes to pollution. Petrodiesel can contain a lot of sulfur, which generates sulfate-based particulates that cause acid rain and contributes to health problems ranging from respiratory illness to cancer. For that reason, some statesâ€”including Maine, California, Massachusetts, New York, and Vermontâ€”have banned sales of diesel-powered passenger vehicles altogether. Vehicles purchased elsewhere can still be registered in those states, however. Since 15 October , most diesel sold in the United States is ULSD, which contains a maximum of 15 ppm sulfur, and all model year diesel vehicles for highway use must use this fuel. Biodiesel does one better, however, because it contains no sulfur. Locking Horns over NOx However, McCormick points out that biodiesel emits questionable amounts of nitrogen oxides NOx â€"air pollutants that mix with sunlight to form smog, a respiratory irritant. But these results were challenged by NREL scientists, who claim the EPA relied too heavily on data for just one engine designâ€"the test-bed engine â€"thus biasing their results. Scott Gordon, a chemist and founder of Green Technologies, a small biodiesel producer in Winooski, Vermont, emphasizes that most U. Moreover, catalytic converters that normally remove NOx from gas engines can be used on compression engines that burn ULSD fuel, he says. EPA is currently working with stakeholders to understand all the potential impacts that NOx emissions from biodiesel may have. The proposed ban was scheduled to go into effect on 31 December Three weeks before that deadline, however, the TCEQ granted biodiesel a one-year reprieve. This extension will allow ongoing studies to reach final conclusions and give the industry a chance to continue testing formulations to comply with the Texas low-emission diesel standards. A product of NBB and other stakeholder lobbying, the credit applies mainly to fuel distributors and blenders. For every percentage of B blended in fuel, a penny gets deducted from the federal excise tax for diesel, which is In , a nationwide NREL survey of 38 blending facilitiesâ€"meaning facilities that mix biodiesel for distributionâ€"found unacceptably high levels of total glycerin in up to one-third of samples tested, indicating the feedstock fat had not been completely converted. That meant the samples were therefore out of compliance with quality standards issued by ASTM International, the body that governs standards for industrial materials. Jobe stresses that the NBB is concerned about quality, and suggests that lapses come from an explosive rise in demand. Could that signal a more dramatic competition to come as biodiesel production accelerates? Most experts say no. And Jobe emphasizes that by making soybean oil more valuable, biodiesel production lessens the pressure on solid soy meal the portion with the protein to generate dollars for the industry. Jake Stewart, vice president for strategic development at Organic Fuels, a Houston, Texasâ€"based refinery that made 30 million gallons of biodiesel in making it the largest producer in Texas and the third largest producer in the United States , says the industry has barely scratched the potential when it comes to higher-yield crops. Whereas soybeans generate roughly 50 gallons of biodiesel per acre, algal species can produce up to 8, gallons per acre per year, according to Michael Briggs, a PhD candidate in physics who investigates biodiesel production at the University of New Hampshire. This makes them the most promising potential feedstock by far. The trick is to somehow grow algae in systems that allow producers to control production. To make a uniform product, manufacturers need a system that grows just one selected species, without infiltration by others. Briggs says the favored approach employs closed bioreactors that keep unwanted species out while allowing for precise control of light, water quality, and nutrient inputs. In one blue-sky scenario, producers could install bioreactors throughout the country and grow algae with nutrients obtained from wastewater treatment facilities, he says. A total of 15, square miles, equal to about For another comparison, Briggs notes that 15, square miles works out to about 9. But beyond the United States, land diversions for biodiesel are more problematic. Indonesian rainforests are being burned now to free up acreage for palm trees, a biodiesel feedstock that yields more than gallons of B per acre. Rampant clearing in the tropics could have disastrous consequences: Moreover, according to a 5 December article in The Wall Street Journal, forest fires set to clear land for palm trees on Borneo have covered the capital city of Pontianak with smoke and added to the smog that already blankets much of Southeast Asia. Ultimately, biodiesel could offer a ray of hope for a world

squeezed by declining oil supplies, pollution, and global warming. Before long, it could be the fuel of choice for millions. Open in a separate window A brighter future? The Sun Trolley public transportation fleet in Fort Lauderdale, Florida, is one of the first in the United States to begin using biodiesel for its entire fleet. Biodiesel made from chemically altered vegetable oil burns more cleanly than traditional diesel fuel.

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Chapter 4 : Biodiesel - Wikipedia

Vegetable oil cars are not just a cost saving way for vehicle user and for the improvement of our economy's condition. The use of vegetable oil and biodiesel will also greatly reduce the pollutants and hazardous compounds in the environment.

Biodiesel Basics What is biodiesel? Biodiesel is a renewable, clean-burning diesel replacement that is reducing U. Made from a diverse mix of feedstocks including recycled cooking oil, soybean oil, and animal fats, it is the first and only EPA-designated Advanced Biofuel in commercial-scale production across the country and the first to reach 1 billion gallons of annual production. It is produced at plants in nearly every state in the country. With just over a decade of commercial-scale production, the industry is proud of its careful approach to growth and strong focus on sustainability. The biodiesel market has increased from about 25 million gallons in the early s to more than 2. This represents a small but growing component of the annual U. Consistent with projected feedstock availability, the industry has established a goal of producing about 10 percent of the diesel transportation market by Reaching that goal would significantly lessen U. There are currently about biodiesel plants across the country â€" from Washington state to Iowa to North Carolina â€" with registered capacity to produce some 3 billion gallons of fuel. The industry is supporting nearly 48, jobs, generating billions of dollars in GDP, household income and tax revenues. The industry supports jobs in a variety of sectors, from manufacturing to transportation, agriculture and service. According to the EPA, biodiesel reduces greenhouse gas emissions by at least 57 percent and up to 86 percent when compared to petroleum diesel â€" making it one of the most practical and cost-effective ways to immediately address climate change. In addition, biodiesel sharply reduces major tailpipe pollutants from petroleum diesel, particularly from older diesel vehicles. Biodiesel is produced using a broad variety of resources. This diversity has grown significantly in recent years, helping shape a nimble industry that is constantly searching for new technologies and feedstocks. In fact, industry demand for less expensive, reliable sources of fats and oils is stimulating promising research on next-generation feedstocks such as algae and camelina. Biodiesel, n - a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, designated B, and meeting the requirements of ASTM D How is biodiesel made? Biodiesel is made through a chemical process called transesterification whereby the glycerin is separated from the fat or vegetable oil. 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. Is Biodiesel the same thing as raw vegetable oil? Fuel-grade biodiesel must be produced to strict industry specifications ASTM D in order to ensure proper performance. Biodiesel is the only alternative fuel to have fully completed the health effects testing requirements of the Clean Air Act Amendments. Raw vegetable oil cannot meet biodiesel fuel specifications, and is not a legal motor fuel that meets the diesel fuel specifications of ASTM D For entities seeking to adopt a definition of biodiesel for purposes such as federal or state statute, state or national divisions of weights and measures, or for any other purpose, the official definition consistent with other federal and state laws and Original Equipment Manufacturer OEM guidelines is as follows: Biodiesel is defined as mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats which conform to ASTM D specifications for use in diesel engines. Biodiesel refers to the pure fuel before blending with diesel fuel. Biodiesel blends are denoted as, "BXX" with "XX" representing the percentage of biodiesel contained in the blend ie: Why should I use biodiesel? Biodiesel is better for the environment because it is made from renewable resources and has lower emissions compared to petroleum diesel. It is less toxic than table salt and biodegrades as fast as sugar. Where do I get biodiesel? Biodiesel is available nationwide. For additional information on biodiesel see:

Chapter 5 : Converting Diesel Vehicles to Run on Waste Vegetable Oil, by Polar Bear - calendrierdelascier

With a few modifications, you can run a diesel vehicle on vegetable oil to power your car or truck. People across the country are using conversion kits to retrofit their vehicles.

September 10, When Rudolph Diesel invented his internal combustion engine, he used refined peanut oil as fuel. The reasoning behind it was that farmers could essentially grow their own fuel for their tractors. Diesel cars have been widely manufactured and used all over Europe, but never really caught on in the United States. Diesel pickup trucks and Big Rigs are common in the US, and are renowned for their torque and towing abilities. Fuel stations around the country have only recently began carrying biodiesel. Enough history and chemistry, this article is going to give you the basics of converting a standard pickup truck or car so it will run on Dinodiesel, Biodiesel, or Straight Vegetable Oil! It can be stored for years if a biocide stabilizer [such as Pri-D] is used, there is a potential fuel cache behind almost any restaurant, and while other folks are waiting in gas lines, you could easily check out at Costco and have them load a pallet of soybean oil in your truck! Most all diesel cars and trucks will run biodiesel without any conversion at all, but you must understand that biodiesel is a very powerful organic solvent. It will clean out old deposits and varnishes left in your fuel system by years of dinodiesel use, and may clog up your fuel filters shortly after you start using it it is a good idea to carry spares! For the purposes of this article I will describe the conversion of a Ford F extended cab with a non-turbo 6. I designated the mid ship fuel tank for the veggie oil tank for two reasons: Basically, we need to install a heating device in the front tank to thin the oil, add an additional filter with heated housing to run the veggie through, and splice in all of the lines. All of the fittings required hose barbs clamps, etc can be purchased at Home Depot or some other hardware store. A kit with complete instructions and all parts can be purchased from Golden Fuel Systems , Frybrid. First, we need to purchase a transmission oil cooler. Now we drop the front fuel tank, and keeping in mind what we said about the float and pickup, cut a hole in the top of the tank the same size or just a bit bigger than the end of the transmission cooler. Now that we have created a hole in the top of the fuel tank, a patch plate will need to be fabricated. The plate needs to be fitted with hose barbs so the transmission cooler can be attached to it one set of hose barbs sticking in the tank and one set sticking out so the 3B hose can be attached to the other side. For clearance issues, I put those on a 90 degree elbow. Attach the transmission cooler to the hose barbs on the patch plate and insert the tranny cooler in to the tank, positioning it so it does not hit the fuel pickup or the gauge float. Then apply some high temperature RTV silicone sealant where the patch plate meets the steel of the tank and use self-tapping sheet metal screws to secure it in place. The metal shavings caused by the self-tapping screws can be removed from the interior of the tank with a magnet and a string. Now we must set aside the tank and mount the heated filter housing and filter. There are many heated filter housings on the market today. Essentially, the heated housing is a machined block of aluminum with water jackets bored through it to allow for hot engine coolant to pass through. The filter merely screws on. Keeping the veggie oil hot is a key component to the system. This filter housing and filter should be mounted anywhere close to the tank, but it must be between the tank and the tank switching valve; otherwise it would take much longer to re-prime the system with dinodiesel fuel. Why do we have to switch? Because veggie oil is much more viscous than diesel fuel. That is why we heat it. Essentially, the process of running your truck on Veggie Oil is this: Start your truck on Dinodiesel with the fuel tank selector switch set on the rear tank. When the temperature reaches about degrees, flip the switch to the front veggie tank. You will notice a slight drop in power and your engine will quiet down and run smoother. You are now running on veggie! If you are getting your Veggie for free as waste from a restaurant then you are not paying fuel and road taxes on it! This upsets the Government for some reason, so be careful! Remember, you must flip the fuel tank selector switch back to the tank containing dinodiesel and allow the engine time to re-prime with that fuel before shutting it down. Depending on the outside air temp and how long you are going to let it sit before restarting, I have left mine for up to an hour. It will be very hard to start! Once the filter

housing and filter are mounted and the 3B hoses run from the tank to the heated filter housing and then to the tank switch, the rest of the hose will replace the existing fuel line from the tank switch all the way up to the low pressure lift pump mounted on the engine. Just unplug the old fuel line and plug in the new one. Then take the two coolant lines and splice them, one each, in to the heater core lines running out of the firewall. Make sure you add coolant to the engine once it heats up so the new coolant lines you have installed can be fully primed. The last thing we need to do s install a heater band around the existing fuel filter. The fuel filter is the last area that we need to heat. A 12 VDC band heater that will heat up to about degrees is plenty. Once again, available from Golden Fuel Systems. The front tank may now be used for veggie oil, biodiesel, or DinoDiesel, in any combinations or mixtures! A Word on Harvesting Veggie Oil: New, fresh oil is obviously the best. It does not need to be filtered or treated for storage. There is also no worry of having water contamination. Much less expensive free actually, with permission from the restaurateur is Waste Oil. This oil can be harvested in a number of ways. Trans fats in hydrogenated or creamy shortenings are bad for your body and your engine! Only use transparent oil. It is best to pump it in to drums and let all of the little bits of food settle out, and then siphon off the top layer of oil for filtering. Your filters will last twice as long this way. These are available through FilterBag. It is small, runs on 12v and is totally self contained. This article is meant to be a primer only. I strongly recommend purchasing some books on conversions and doing your research! This is my obligatory disclaimer, I am not responsible for your success or failure, or mechanical ability. Well, I hope you are hooked and are going to give veggie oil a try. The two tank system takes a little getting used to, but you will smile every time you drive by a fuel station. It takes me only about one minute to siphon and filter 3 gallons of veggie oil. Good luck in your conversions! This fuel can be used is standard unmodified diesel cars, trucks, and tractors, without the need to rig a separate fuel tank. Call Bob at Ready Made Resources 1 for details.

Chapter 6 : Science on the Brain - Can you use vegetable oil as a fuel?

Biodiesel is made through a chemical process called transesterification whereby the glycerin is separated from the fat or vegetable oil. 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).

Cleanup tag, possible WP: The UK exported tonnes of rapeseed in This statement seems to violate WP: Additionally, it uses a loaded statement to call oil crop imports "environmentally damaging" without any additional facts or references to back it up. Much of this page is without a source. I suspect this is because there are relatively few third-party, non-commercial entities participating in the Veg Oil for fuel industry. Are there other sections you find problematic? Especially, as you point out, the emerging nature of this topic. It is the Greasecar page that I feel needs to be eliminated. This is at least a step in the right direction. Clearly this needs to be incorporated into the main, as this is the first-of-its-kind development. Although it is true that burning svo is carbon neutral meaning it is not producing more CO2 than is taken in, the belief is that converting all vehicles to run svo will therefore end global warming. However, the truth is that if all vehicles were replaced with svo running vehicles, there would physically not be enough land on the earth to produce the amount of svo the world would need. I intend to change my wording and say that "it is unlikely that we have the needed arable land to produce the amount of crops needed to replace fossil fuels. I know a lot of the information being tossed around is referring to biodiesel, but i figure for this particular issue, svo and biodiesel can be interchangeably used as the indicator. Regarding this matter, there is a tremendous amount of media speculation regarding this subject, and the section would need a [article] template. If you have solid, less-speculative sources, particularly scientific ones, they are welcome and needed. Feel free to post a proposal here or link your sandbox. You should definitely get the green light from at least one other editor before proceeding. It needs a bit of editing to comply with the Wikipedia guidelines for encyclopedic content. The weasel words must go, and the writing made more concise. Perception is temporal in nature, an specifically disqualified under guidelines. Perhaps this discussion should be split into two discussions, limitations of oil yield from agriculture, and carbon footprint, as has been done on the Biodiesel page: The belief is that using biofuels will stop the extra emission of CO2 because biofuels are carbon neutral, meaning that they emit the same amount of CO2 which gets taken in by the initial crop. There are two things wrong with this idea. First off, current research has indicated that biofuels are not entirely carbon neutral because the process to gather and create biofuels uses a large amount of fossil fuels due to its cheap price. Tad Patzek, University of California-Berkeley. This is my first contribution and I understand my writing skills are not up to encyclopedia standards. You can always ask other editors active on this page for assistance, too. Write to their talk pages. That article would be more appropriately be used in the tax issues section. See the "Significant coverage" and "Sources" discussion in particular. Wikipedia is not a news source: The Wikimedia project Wikinews covers topics of present news coverage. Further, the addition was also not properly sourced, so no peer-review of your work could be completed. Generally, any unsourced material on Wikipedia will generally be removed quickly if challenged. The burden is on the author to properly cite and read Wikipedia rules when posting. Why is the excise tax exemption on biodiesel mentioned here? Vegetable oil and biodiesel are not the same fuels. I think legality of biodiesel does pertain to legality of VO to some reasonable degree. The fuels in question are not the same, nor are the regulations and taxation schemes that apply to them in most countries. This content was moved to the Biodiesel by region page, so there is no loss of Wikipedia content from this change. Nitroglycerin, made from fats and oils, was used to make bombs and cordite to fight the war. Sales of margarine, made from vegetable oil, skyrocketed due to price and military use. Diverting the waste product cooking oil to fuel use effectively convert food to fuel. It looks right, but there were numerous statements of fact that were unsupported. Some statements were dubious. The tone conveyed a non-neutral point of view. The non-neutral tone cast doubt on the other seemingly neutral-toned statements made such as " The

non-neutral tone increases the need for good justification of the comparatively neutral statements that went with it. The text is also haphazard. But this text is preaching by someone with an obvious defensive point of view. I apologize somewhat the new user who made the edit. I saw the user had only ever made one edit, this one that I reverted. My first edit was reverted too, also because it was unencyclopedic. Also, take a deeper read of the WP: Fixing biased highly uncited! It is constantly reintroduced by usually well-meaning but overly "passionate" people. To fix it makes needless work for responsible editors. If it is simply reverted, it returns the monkey to the back of the person it belongs to. You suggest that irresponsible writing should be fixed by the followers and main editors of the article? Well, maybe if there are only one or two easy fixes. But the text was full of bias, errors of form, and uncited claims, and it was haphazard in structure. Let the original writer fix it. In this case, the passage had some "reasonable sounding" lines which camouflaged the bad stuff and so it probably would have stuck around for months. If it is reverted, all options are open. If you want to fix the text yourself before putting it back, also easy! And, while you are fixing it, the dubious passage is not in place. Revert, and get on with our lives, and let the ones who see a kernel of goodness in the text fix it offline. I bit a presumed "newbee", but I backed off later. I might have been a little mean, but I recognize reactionary defensive state of mind when I see it. Do whatever you want with the passage in question. Is there a dispute about the s collection assertion? Or that the demand for fats and oils skyrocketed during WWI? Did the collection of cooking oil begin earlier? Are there other problems with the content? I modified the above removed section slightly in the part that seems messed up to me. Can others tweak or cite it? The above topics would fit in the history section, and any integration should take place there. It appears that much of the similar content is unsourced and has been for some time, so any citations we can add will improve the page. The Nitroglycerin page also confirms some of the above summary. The statement regarding peanut oil is already in the history section, so it can be removed. Internal wikilinks, the above links, and perhaps, some additional links can solidify the remainder of the first paragraph. The last two sentences should be dropped unless reliable citations can be found. A few points that I think are worth including: Some of these things are mentioned here and there, but I think they coul dbe made more explicit. This article on a pilot program is a pretty good and up to date source [8]. More, many restaurants continue to pay to have grease removed, versus having it purchased from them. Filtering seems more like a how-to issue, and is therefore, excluded. So long as the content can avoid reading like a how-to i. This is not cited, neither is the statement on "atomizing" the fuel. A whole section of this article runs uncited, and I believe that for such claims to be made, they should be. Anyone opposed, and if not, anyone feel like finding cites? Link to vegetable oil economy The legislation on the subject is a morass of confusion. The latest HMRC figures quote all biodiesels as being taxed the same as mineral diesel, but make no clear statement either way about the litre exemption. Please take a moment to review my edit. If you have any questions, or need the bot to ignore the links, or the page altogether, please visit this simple FaQ for additional information. I made the following changes:

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Chapter 7 : Talk:Vegetable oil fuel - Wikipedia

Best Answer: Biodiesel is vegetable oil that has been put through a processed that remove the fatty acids and changes the viscosity to near that of diesel fuel. It will burn in any diesel without modifying the fuel system or engine.

The much-maligned diesel engine is not deserving of its bad rap. The diesel engine is one of the great feats of engineering, and was originally designed to run on vegetable oil as well as petroleum. In a way, the diesel engine is a victim of its own superiority. Because the engine is so forgiving, diesel fuel processing was done as cheaply as possible, making for toxic emissions. Now with the popular rediscovery of biofuels, and with its high torque and efficiency, the diesel engine can help us to reduce our CO2 emissions and our dependence on oil. The fact is that if biodiesel is put in a diesel engine, it will have dramatically reduced greenhouse gasses, carcinogens, toxins, soot, hydrocarbons and sulfur compared to either a gasoline engine or a diesel engine running on petroleum diesel. What kind of cars can I use biodiesel in? Again, there is no conversion necessary to run an older diesel engine on biodiesel. Conversions are only necessary if you use SVO- unprocessed straight vegetable oil. Depending on the manufacturer, running biodiesel in a newer car post may void the warranty on your exhaust system, and effect the frequency for standard engine maintenance, such as oil changes. Until biodiesel is more accepted by car manufacturers, they will not all guarantee their exhaust systems for use with it. For more information, the NBB has a comprehensive warranties page. Do you have to convert a car to run biodiesel? When you hear about engines being modified, it is only for SVO straight veggie oil. Vegetable oil is processed into biodiesel so that it has the physical properties that modern direct-inject turbo powered diesel engines require. Will it hurt my engine? Biodiesel that meets ASTM spec is better for your engine than petroleum diesel because it has higher lubricity and runs cleaner. If you have an older car with rubber parts in the fuel lines and gaskets, biodiesel will slowly degrade the rubber over time. Replacing these rubber parts with new synthetic ones is relatively cheap and easy, if you do it as maintenance and not emergency repair. Bad or out-of-spec biodiesel just like bad or out-of-spec petro-diesel can be bad for engines, and can quickly clog an injector or ruin an injector pump. Every time bad biodiesel is sold, it has the potential to give biodiesel a bad name. The grassroots biodiesel movement is concerned with quality assurance for this reason. How much does it cost to convert to biodiesel? A B wacko friend of ours once wrote this: This I view as my environmental tithe. Such as the time on the forums reading, posting etc. NOx is one issue, the other is that biodiesel spills such as changing your fuel filter may eat dings in your asphalt driveway. Can I legally make biodiesel and sell it to others? In the eyes of the EPA, any time a fuel or fuel additive enters commerce and is used on the road it must be registered with them which requires health effects testing etcâ€¦. The EPA defines entering commerce to include sale, trade, barter, exchange, so you cannot accept anything of value from your friends in exchange for the fuel including a plate of chocolate chip cookies. You can gift it for birthdays and holidays, or out of the goodness of your heart. Are there biodiesel fuel standards? ASTM spec describes the properties of biodiesel. The NBB has embarked on a certification program in order to protect the consumer from bad fuel. Is biodiesel or its fumes toxic or dangerous? Biodiesel has greatly reduced emissions compared with petroleum diesel. How long have people been using biodiesel? Are there any long-term studies? There have been extensive studies done in the U. Department of Energy, the U. Department of Agriculture, and Stanadyne Automotive Corp, among others. Hundreds of fleets and thousands of biodiesel enthusiasts have logged millions of miles running biodiesel. Aside from that, biodiesel is the only alternative fuel to have completed the Health Effects testing requirements of the Clean Air Act. Its effects on the environment and car engines are well known. How do I find out where biodiesel is being sold? Yes- the same storage, temperature and engine issues apply for boats as they do for cars. As biodiesel is non-toxic and biodegrades very quickly in the environment, marinelife willl thank you for using it. Biodieselnow has a good Marine Biodiesel forum. Will biodiesel affect my fuel economy and power? Many people feel no difference, however, because biodiesel has a higher cetane rating which tends to make up for the less energy content.

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Does it matter what kind of oil biodiesel is made from? Different feedstocks have different cold-weather properties. A good way to think about what the best feedstocks are for you is to think of what feedstocks grow in your climate. Palm oil, for instance is a good feedstock for the tropics, while canola oil is more suitable for Canada. Animal fats are a good summertime feedstock, but are too viscous in winter for most climates. Also, the sustainability of certain feedstocks is something to consider. Large tracts of rainforest are cleared for palm oil. Soy and corn are large scale monoculture crops and are not the most ecologically sound. Not to mention trucking oils from various feedstocks around the country defeats the purpose of using biofuels. Here in California, we need to think about what plants are good for use as local feedstocks. Biodiesel made from local walnut oil has proven to be great and crops such as algae and jatropha have been identified as good potential sources of oil for California. Currently, those tax breaks and subsidies are biased toward the agricultural especially soy and petroleum industries, however. In the past the subsidy was only for biodiesel made from an agricultural product and used as a blend. The California Biodiesel Council has worked hard to counter this bias, and currently, most California-based manufacturers emphasize using waste or repurposed food oils. I heard the U. Military is using biodiesel. Navy is the largest consumer of biodiesel in the world. As of June 1, , all U. What if everybody starts using biodiesel? Will there be enough? Will it drive up the price of the oil in our food? As the demand for biodiesel grows, there will be more processing plants coming online to fill those needs. As biodiesel can be made from virtually any vegetable oil and some animal fats, creative solutions, such as using oils from algae, fungus, and jatropha have been identified as potential sources of oil to keep pressure off our food supply. What about cold weather? Biodiesel gels at higher temperatures than petrodiesel, which means in cold weather, you have to take precautions. Blending in petroleum diesel, kerosene or de-gelling fuel additives is a common practice in cold weather. See our Biodiesel Precautions page for more details. Can you store biodiesel? You can store biodiesel in HDPE 2 plastic containers for up to 6 months. After that it is recommended that stability additives be used to prevent deterioration. What is the energy balance of biodiesel? It somewhat depends on the feedstock. Using soy, you get about 3 times as much energy as you put in. Other feedstocks, such as rapeseed, canola, and algae have an even higher better energy balance than soy. Petroleum diesel has a negative energy balance. It takes more energy to make it than you get out of it. We recommend doing all the research on SVO and Biodiesel you possibly can and making an informed decision for yourself. The tax break is given to the blender who then hopefully passes the savings down to the consumer. The Co-op does not speculate on large fuel contracts from our delivery service months in advance, based on the most recent price. In effect, members are pooling their moneys in advance for our next monthly buy. Individual members are also limited by the allotment sizes to what they intend to use in about a month. The Co-op does not sell either by the gallon, or in , or gallon allotments, because it simply does not fit our small consumer co-op business model. If a member were to burn through fuel faster than gallons a month, or has short-period special needs, like an extended travel vacation , the option would be to buy allotments more frequently to match that accelerated use pattern for example, every 3 weeks, rather than every 4. Biodiesel Precautions Some facts concerning biodiesel and its usage: The use of biodiesel and biodiesel blends has not been approved by all engine manufacturers. Your use of the fuel may effect your warranty; therefore you should check your owners manual or with your engine manufacturer before using biodiesel blends over B5. Biodiesel, in addition to being fuel, is an effective solvent, and will act accordingly. When this happens depends on many factors, but can be recognized by the following symptoms: Clogging of fuel filters also occurs with old fuel storage containers that contained petroleum diesel.

Chapter 8 : Whats The Difference Between Bio diesel And Just Regular Vegetable Oil For Ur Car? | Yahoo

Converting an engine to run on biodiesel, or even vegetable oil, is much simpler than converting a gasoline engine to run on ethanol. In fact, depending on your vehicle, you may not have to do any conversion work at all. Since petroleum diesel has been the norm for a century and change, and the.

Blends[edit] Biodiesel sample Blends of biodiesel and conventional hydrocarbon-based diesel are products most commonly distributed for use in the retail diesel fuel marketplace. Much of the world uses a system known as the "B" factor to state the amount of biodiesel in any fuel mix: Mixing in tanks at manufacturing point prior to delivery to tanker truck Splash mixing in the tanker truck adding specific percentages of biodiesel and petroleum diesel In-line mixing, two components arrive at tanker truck simultaneously. Metered pump mixing, petroleum diesel and biodiesel meters are set to X total volume, transfer pump pulls from two points and mix is complete on leaving pump. Applications[edit] Targray Biofuels railcar transporting Biodiesel. Biodiesel can be used in pure form B or may be blended with petroleum diesel at any concentration in most injection pump diesel engines. New extreme high-pressure 29, psi common rail engines have strict factory limits of B5 or B20, depending on manufacturer. Biodiesel has been known to break down deposits of residue in the fuel lines where petrodiesel has been used. Therefore, it is recommended to change the fuel filters on engines and heaters shortly after first switching to a biodiesel blend. The use of the specified biodiesel type in its cars will not void any warranty. Starting in , the city of Halifax, Nova Scotia decided to update its bus system to allow the fleet of city buses to run entirely on a fish-oil based biodiesel. This caused the city some initial mechanical issues, but after several years of refining, the entire fleet had successfully been converted. This fuel would be used to run its fleet. Prince Charles and Green Fuels managing director James Hygate were the first passengers on a train fueled entirely by biodiesel fuel. The program was discontinued in due to storage issues, but in January , it was announced that the park would then be running all trains on biodiesel manufactured from its own used cooking oils. This is a change from running the trains on soy-based biodiesel. Washington Cog Railway added the first biodiesel locomotive to its all-steam locomotive fleet. The fleet has climbed up the western slopes of Mount Washington in New Hampshire since with a peak vertical climb of The Eco-skies Boeing plane was fueled with 40 percent Solajet and 60 percent petroleum-derived jet fuel. For the next three years, the Paramount, California-based company will pump biofuel directly to the airport from their nearby refinery. Bioliquids Biodiesel can also be used as a heating fuel in domestic and commercial boilers, a mix of heating oil and biofuel which is standardized and taxed slightly differently from diesel fuel used for transportation. Bioheat fuel is a proprietary blend of biodiesel and traditional heating oil. ASTM recognizes blends of up to 5 percent biodiesel as equivalent to pure petroleum heating oil. Research is underway to determine whether such blends affect performance. Care must be taken, however, given that varnishes left behind by petrodiesel will be released and can clog pipes- fuel filtering and prompt filter replacement is required. Another approach is to start using biodiesel as a blend, and decreasing the petroleum proportion over time can allow the varnishes to come off more gradually and be less likely to clog. Thanks to its strong solvent properties, however, the furnace is cleaned out and generally becomes more efficient. Robertson presented his biodiesel heating oil research from his technical paper and suggested B20 biodiesel could reduce UK household CO2 emissions by 1. In a laboratory setting, oiled sediments that simulated polluted shorelines were sprayed with a single coat of biodiesel and exposed to simulated tides. Additionally, it has a higher buoyancy than crude oil, which later aids in its removal. Once the oil is liberated from the shoreline, the oil-biodiesel mixture is manually removed from the water surface with skimmers. Any remaining mixture is easily broken down due to the high biodegradability of biodiesel, and the increased surface area exposure of the mixture. Biodiesel in generators[edit] Biodiesel is also used in rental generators In , UC Riverside installed a 6-megawatt backup power system that is entirely fueled by biodiesel. Backup diesel-fueled generators allow companies to avoid damaging blackouts of critical operations at the expense of

high pollution and emission rates. By using B, these generators were able to essentially eliminate the byproducts that result in smog, ozone, and sulfur emissions. In remembrance of this event, 10 August has been declared " International Biodiesel Day ". Diesel stated in his published papers, "at the Paris Exhibition in Exposition Universelle there was shown by the Otto Company a small Diesel engine, which, at the request of the French government ran on arachide earth-nut or pea-nut oil see biodiesel , and worked so smoothly that only a few people were aware of it. The engine was constructed for using mineral oil, and was then worked on vegetable oil without any alterations being made. The French Government at the time thought of testing the applicability to power production of the Arachide, or earth-nut, which grows in considerable quantities in their African colonies, and can easily be cultivated there. Belgium , France, Italy, the United Kingdom, Portugal , Germany, Brazil , Argentina , Japan and China were reported to have tested and used vegetable oils as diesel fuels during this time. Some operational problems were reported due to the high viscosity of vegetable oils compared to petroleum diesel fuel, which results in poor atomization of the fuel in the fuel spray and often leads to deposits and coking of the injectors, combustion chamber and valves. Attempts to overcome these problems included heating of the vegetable oil, blending it with petroleum-derived diesel fuel or ethanol, pyrolysis and cracking of the oils. On 31 August , G. Chavanne of the University of Brussels Belgium was granted a patent for a "Procedure for the transformation of vegetable oils for their uses as fuels" fr. This patent described the alcoholysis often referred to as transesterification of vegetable oils using ethanol and mentions methanol in order to separate the fatty acids from the glycerol by replacing the glycerol with short linear alcohols. This appears to be the first account of the production of what is known as "biodiesel" today. This is similar copy to the patented methods used in the 18th century to make lamp-oil, and may be inspired by some old historical oil lamps, in some places. More recently, in , Brazilian scientist Expedito Parente invented and submitted for patent, the first industrial process for the production of biodiesel. No other proposed biofuel has been validated by the motor industry. By , the process for producing fuel-quality, engine-tested biodiesel was completed and published internationally. Throughout the s, plants were opened in many European countries, including the Czech Republic , Germany and Sweden. During the same period, nations in other parts of the world also saw local production of biodiesel starting up: Properties[edit] Biodiesel has promising lubricating properties and cetane ratings compared to low sulfur diesel fuels. Depending on the engine, this might include high pressure injection pumps, pump injectors also called unit injectors and fuel injectors. Older diesel Mercedes are popular for running on biodiesel. The calorific value of biodiesel is about Variations in biodiesel energy density is more dependent on the feedstock used than the production process. Still, these variations are less than for petrodiesel. It is slightly miscible with water, has a high boiling point and low vapor pressure. Fuel efficiency[edit] The power output of biodiesel depends on its blend, quality, and load conditions under which the fuel is burnt. The thermal efficiency for example of B as compared to B20 will vary due to the differing energy content of the various blends. Thermal efficiency of a fuel is based in part on fuel characteristics such as: The American Society for Testing and Materials has set standards in order to judge the quality of a given fuel sample. It was noted that, as the compression ratios increased, the efficiency of all fuel types â€” as well as blends being tested â€” increased; though it was found that a blend of B40 was the most economical at a compression ratio of The study implied that this increase in efficiency was due to fuel density, viscosity, and heating values of the fuels. Diesel fuel is expected to burn efficiently and produce as few emissions as possible. As emission standards are being introduced to diesel engines the need to control harmful emissions is being designed into the parameters of diesel engine fuel systems. The traditional inline injection system is more forgiving to poorer quality fuels as opposed to the common rail fuel system. The higher pressures and tighter tolerances of the common rail system allows for greater control over atomization and injection timing. This control of atomization as well as combustion allows for greater efficiency of modern diesel engines as well as greater control over emissions. Components within a diesel fuel system interact with the fuel in a way to ensure efficient operation of the fuel system and so the engine. If an out-of-specification fuel is introduced to a system that has specific parameters of operation, then the integrity

of the overall fuel system may be compromised. Some of these parameters such as spray pattern and atomization are directly related to injection timing. The smaller droplets were attributed to the lower viscosity and surface tension of traditional diesel fuel. It was found that droplets at the periphery of the spray pattern were larger in diameter than the droplets at the center. This was attributed to the faster pressure drop at the edge of the spray pattern; there was a proportional relationship between the droplet size and the distance from the injector tip. It was found that B had the greatest spray penetration, this was attributed to the greater density of B In another study it was found that there is a short injection delay when injecting biodiesel. This injection delay was attributed to the greater viscosity of Biodiesel. It was noted that the higher viscosity and the greater cetane rating of biodiesel over traditional petrodiesel lead to poor atomization, as well as mixture penetration with air during the ignition delay period. Environmental Protection Agency E. As these emissions are a byproduct of the combustion process, in order to ensure E. There are a number of new technologies being phased in to control the production of diesel emissions. The exhaust gas recirculation system, E. NOx emissions, however, were found to increase without the application of an E. The study also concluded that, with E. R, a B20 biodiesel blend considerably reduced the emissions of the engine. Their conclusions also showed great variance in carbon emissions of biodiesel based on the feedstock used. Of soy , tallow , canola , corn , and used cooking oil , soy showed the highest carbon emissions, while used cooking oil produced the lowest. It was found that CO and CO2 emissions increased with an increase in exhaust gas recirculation but NOx levels decreased. The opacity level of the jathropa blends was in an acceptable range, where traditional diesel was out of acceptable standards. It was shown that a decrease in Nox emissions could be obtained with an E. This study showed an advantage over traditional diesel within a certain operating range of the E. Characterization of exhaust emissions showed significant emission reductions compared to regular diesel. Biodiesel like methanol has an effect on copper-based materials e. Biodiesel also affects types of natural rubbers found in some older engine components. Studies have also found that fluorinated elastomers FKM cured with peroxide and base-metal oxides can be degraded when biodiesel loses its stability caused by oxidation. Low temperature gelling[edit] When biodiesel is cooled below a certain point, some of the molecules aggregate and form crystals. The fuel starts to appear cloudy once the crystals become larger than one quarter of the wavelengths of visible light â€” this is the cloud point CP.

Chapter 9 : Biodiesel Basics - calendrierdelascience.com

Biodiesel refers to a vegetable oil- or animal fat-based diesel fuel consisting of long-chain alkyl (methyl, ethyl, or propyl) calendrierdelascience.comsel is typically made by chemically reacting lipids (e.g., vegetable oil, soybean oil, animal fat (tallow)) with an alcohol producing fatty acid esters.

Frequently Asked Questions Are biodiesel and vegetable oil the same thing? No, biodiesel is produced through a chemical process called transesterification which converts oils and fats of natural origin into fatty acid methyl esters FAME. Combustion of vegetable oil without conversion to biodiesel will lead to soot accumulation and deposits that may lead to power loss and engine failure. See what is biodiesel. What is in biodiesel? Biodiesel is made through a chemical reaction between natural oils and alcohol, followed by purification. Biodiesel can be made from nearly any naturally occurring vegetable oil or fat. The most frequently used oils by Pacific Biodiesel facilities are used cooking oil, tallow, yellow grease, poultry grease, cottonseed oil, and soybean oil. Learn more about what biodiesel is here. Learn about biodiesel and sustainability here. Learn more about the Sustainable Biodiesel Alliance here. Do I need to do any modifications to my diesel vehicle to use biodiesel? If your car was made after , the answer is no. If your car was made prior to , the rubber fuel lines will probably have to be replaced. One of the major advantages of using biodiesel is the fact that it can be used in existing diesel engines without negative impacts to operating performance. Biodiesel is the only alternative fuel for heavyweight vehicles that does not require any special injection or storage modifications. Can I run biodiesel in my gasoline engine? No, biodiesel can only run in conventional compression-ignition diesel engines! Can I go back and forth between petroleum diesel and biodiesel? Yes, you can use biodiesel and diesel fuel interchangeably, as well as blended. Will I need to change my fuel filters more often when using biodiesel? Biodiesel is a solvent. It will clear many diesel deposits that have accumulated in your fuel tank. This may cause initial fuel filter clogging but continued use of biodiesel will not cause an increased frequency of filter changes. How does the fuel efficiency of biodiesel compare with petrodiesel? Vehicles running on biodiesel get virtually the same MPG rating as vehicles running on petrodiesel. Is biodiesel good for my engine? Yes, biodiesel can actually extend the life of your engine. Biodiesel has superior lubricating properties that reduce the wear of vital engine parts. How do the emissions of biodiesel and petrodiesel differ? Using biodiesel instead of petrodiesel will significantly reduce unburned hydrocarbons, carbon monoxide, and particulate matter from tail pipe emissions. It will also virtually eliminate sulfur oxides and sulfates which are major contributors to acid rain. Nitrogen oxide emissions may slightly increase, but can be remedied with newer low-emission diesel engines. Where can I find biodiesel in my state? A complete list of fueling stations that carry biodiesel can be found by clicking here. Does biodiesel contain diesel fuel?