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Four Essentials To Know About Fuel & Three Solutions Your Customers Need

Are you or your customers experiencing problems with fuel storage tanks or the fuels you're using? Having answers to these and other important questions will position you as the expert and a trusted advisor for your customers.

Fact: When customers have problems with their fuel, the first people they blame are the fuel distributors, even if the problem had nothing to do with them. Therefore, a fuel distributor must know the problems and solutions AND be the trusted advisor to their customers before the problems happen.

Here are four important pieces of information you need to know.

#1 – Water in fuel tanks or stored fuels means a microbial problem soon. Creating ULSD has made this problem more widespread.

Experienced fuel suppliers and users know that the water phase in a storage tank is the determining factor for whether microbe problems are going to raise their head. Like all biological organisms, bacteria and fungi (sometimes called algae) need water to survive. These microbes live between the water at the bottom of the tank and the diesel fuel on top of the tank. They draw nutrients from feeding on the complex organic components of the fuel and multiply like crazy until you have a microbe infestation problem in the tank.

ULSD (ultra-low sulfur diesel) had the unintended consequence of making this problem worse. Removing the sulfur from the fuel made it better for the environment, but also made it more inviting for microbes to grow and thrive in, as sulfur used to act as a natural bactericide. So customers who store ULSD are more likely to have bacterial problems in their fuel tanks than they were ten years ago.

And keep in mind that “microbial growth” causes these problems:

- destroyed fuel quality
- tank corrosion
- plugged filters & stalled equipment

It's a costly problem for businesses on multiple levels.

#2 - Microbes Don't Just Grow In Diesel Fuel, Ethanol and Biodiesel Have Issue Too

Fuel suppliers and those storing fuels have traditionally focused the majority of their efforts on on-road and marine diesel fuels with respect to keeping them free of microbes like bacteria and fungi. Not because other fuels like ethanol (E10 or E15) or biodiesel are resistant to them, but because of #2 diesel's more widespread availability or use in the market segments that tend to store them for longer periods of time, and storage time is a key influencer on whether microbial problems will occur (longer storage times equal longer exposure to the conditions favorable to microbial growth in a given system). All other things being equal, ethanol blends and biodiesel blends are just as likely to wind up with microbial contamination as on-road or marine diesel fuel.

Many fleets now are using low-percentage biodiesel blends like B5 to enhance the lubricity of their ultra low sulfur diesel blends while helping them meet green fuel standards. Biodiesel blends are not immune to



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microbial problems; they provide excellent sources of nutrients for bacteria and fungi in stored fuel tanks, even at low concentrations.

#3 – Controlling Water Is The Key to Preservation of Fuel Quality, Especially With Ethanol

For the customers who store ethanol fuels for any length of time, restricting the accumulation of stored water is the key to ensuring the stability of the fuel blend and the prevention of microbial problem that would otherwise be inevitable. Water impacts ethanol fuels to a greater extent than it does diesel fuels.

Ethanol blends like E10 or E15 are a blend of two phases – gasoline and ethanol (ethyl alcohol). Normally this mixture stays seamlessly together. But ethanol loves to attract water and causes a certain percentage of the attracted water to mix with the fuel blend, absorbing it. Each ethanol blend has a tolerance threshold for the volume of water it may absorb, and this threshold varies according to temperature and the percent alcohol in the fuel blend. A good baseline threshold to consider is 0.5% by volume.

Once the amount of absorbed water reaches this threshold, any additional water causes ‘phase separation’. That’s when the ethanol within the fuel mix cannot absorb any more water, and it falls out of solution along with any of the water it had absorbed up to that point. The user now has a layer of ethanol and water at the bottom of the tank. If they’re unlucky enough to have it happen within an engine fuel tank, that engine may start burning close-to-pure ethanol fuel, with undesirable consequences.

Phase separation is the aspect of ethanol fuel instability that your customers are most likely to be concerned with. If their ethanol fuel separates, they’re going to lose octane value (because the ethanol phase strips out octane-enhancing components from the fuel) in the fuel they’ve invested in. It’s also an aspect of potential fuel stability degradation that may readily manifest itself at any point downstream after the fuel distributor (you) has made the sale. If the customer’s housekeeping practices aren’t up to par, they will likely face some serious problems and be looking to you for solutions and guidance, if not assigning the blame to the problem on those upstream that sold them the fuel (you know who that will be).

#4 – Federal Mandates May Not Stop at 10% Ethanol - E15 is on its way. You should know the problems your customers will be facing.

For the majority of customers, ethanol usage used to top out at 5-7% of the gasoline volume. That changed in the mid-2000s after the phase out of MTBE as a gasoline oxygenate (which was then-and-now required in order to make on-road gasoline more friendly for air quality). 10% ethanol became the norm in the marketplace almost immediately became aware of the fuel’s deficiencies with respect to its interactions with polymers (rubber and plastic) and an increase in fuel consumption.

There’s little doubt that your customers feel the same way about E15 fuels and ethanol blends in general. So it may help to be prepared with some answers for the questions that will follow from your fuel buyers. We’ve also prepared some additional resources on ethanol problems and causes at www.WeFixFuel.com/ethanolgasresources. Feel free to visit the page and access those at your convenience.

What effects will E15 have when your customers start implementing it? The short answer is, more of the same problems that E10 users are facing currently.



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Lower Mileage from Less Energy - A 15% ethanol fuel has even less energy value than E10 does, so user fuel mileage will continue to drop.

More Phase Separation - Phase separation becomes more common with E15 fuel because the water absorption threshold decreases as the ethanol goes up.

More and Faster Ethanol Solvency Damage - The issue of solvency and corrosion damage also becomes more severe as the concentration of ethanol increases by 50% from E10 to E15, causing fastening softening and dissolving of polymer parts in fuel systems. This damage is less of a recent in recent vehicle models, but the older vehicle models manufactured before 2007 and most small equipment older than a year old can be prone to this.

More Corrosion for Storage Customers - The corrosion of aluminum and other metals from consistent exposure to ethanol blends is a multi-faceted problem that produces costs both in capital equipment replacement and lost opportunity costs from production interruptions.

Fuel Suppliers Can Be Integral Cogs In Preventing or Spreading Microbial Problems

Microbial contamination is an excellent example of a customer fuel concern that fuel distributors can play a vital role in eliminating from the start.

If a fuel supplier or gas station has a bacterial issue, their customers are probably going to have one, too. These microbes transfer easily from tank to tank, especially if the distribution system components have gone years without treatment. From that point, it's a short jump to where microbes are multiplying in fuel tanks until the end user has the same kind of problems the supplier had. Namely, clogged fuel filters, corroding tanks and performance-robbing buildup of deposits (made worse by the acids the microbes excrete, which cause fuel to break apart and lose combustion quality).

Fuel suppliers spend significant amounts of time and money each year trying to keep the problem of bacteria in fuel under control. An infected storage tank can choke off the life blood of their business - consumer confidence in the quality of their fuel. Not to mention the resulting headaches from fuel inspectors dropping by and discovering the problem.

You Can Be The Trusted Advisor For Solutions To Your Customers

Chances are, your customers are not completely satisfied with the fuels they're using because of one or more of the problems we've been talking about. As their fuel distributor, it is your opportunity to be a resource for your customers, either to ensure their fuel usage experience is the best it can be (by guiding them towards solving the problems they already have or may not even know they have) or by enabling them to anticipate the problems they might expect to have in the near future. Or both.

We promised three solutions for your customers. We may give you more than that. I'm sure nobody is going to complain about it if we do.



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- **Microbial problems can be eliminated, but only with the right kind of solution**

For microbial problems, use a biocide followed by a water-controlling fuel treatment.

What's Your Role? Having knowledge of the availability of **fuel biocide products** is one of the best services you can do for your customers. Biocides are very tightly controlled from a regulatory standpoint and there aren't that many of them out there. If you can offer your customers something that will kill off the microbial presence with stored fuel, you've got a potential profit center on your hands. Being able to guide your affected customers through the proper application and distribution of the biocide within their system is also essential. Customers with microbial problems typically call their contacts with a "code red emergency" attitude. And they may not know that a biocide is the only solution for their need. If you can fill that gap, your customer loyalty base will grow by leaps and bounds.

To prevent the establishment of microbial presence in tanks, you do have to keep water buildup under control (in states with humid climates year-round, that's certainly a tall order). But once microbes do infest a fuel tank, simply removing the water will not be enough to kill and remove the infestation. They can still hang around in the fuel tank, waiting for water to accumulate again so they can begin their lifecycle anew. Or they can lay dormant behind shields of biomass where they become revived when the biomass is disturbed by the influx or movement of new fuel somewhere in the system.

Any product that claims to destroy and remove an infection simply by controlling water accumulation is not telling the whole truth. To get rid of the fuel infection for good (and the problems that go with it), you need to use a fuel biocide to disinfect the tank and kill the microbes for good. Biocide treatments are not so easy to find because they are very tightly regulated by the EPA.

Of the biocide solutions available, you can expect to have a treat ratio of between 1:2000 and 1:10000. The biggest influence on treat rate in this wide margin is whether you're using it as a shock treatment (to kill an existing infection that has reared its head) or an on-going maintenance dosage (to prevent microbial problems from appearing in the future). Generally, the treat rate for shock treatment is about twice that of a maintenance dosage.

- **For diesel fuel storage, antioxidants and water controllers are essential**

For preserving diesel stability and quality, use an antioxidant and a water controller.

What's Your Role? For diesel and biodiesel products, outside of biocides, having antioxidant and water control solutions will offer the greatest benefit for your customers concerned with fuel stability. An antioxidant, simply speaking, interrupts the chemical reactions that happen in fuel when it is exposed to oxygen and heat. Oxygen exposure initiates the reactions while heat (the kind you'd get in a warm climate area) provides the energy to drive the reactions faster. For these customers working with diesel and biodiesel, they should be looking towards an antioxidant fuel treatment that may be added as early on in the storage process as possible, even as early as at the fuel distributor level. The earlier the antioxidant is in the fuel, the faster it can stop chemical precursors of instability from happening.



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Water controllers for diesel fuel help to eliminate any of the reactions initiated by water exposure. If you're talking about solutions with the greatest potential of benefit for downstream customers, you'd probably want to lean towards a multifunction water control that also adds benefits like detergency. This would provide maximum benefit for fuel users.

- **Ethanol fuel users need water control but their needs don't stop there**

We mentioned water control in diesel, but as expressed earlier, it is most critical in ethanol blends. But ethanol has so many problems, real and perceived, that the greatest opportunity to help your ethanol fuel customers revolves around solutions that effectively control the water and stop phase separation while also offering them peace of mind in terms of regaining some of the mileage they lose with E10 and E15.

What's Your Role? Having solutions for your customers that address all three of these concerns will position you in the best possible light. There are choices for water controllers for ethanol, but the key caveat with those is that you do not want to utilize one that uses an alcohol base for its effectiveness. As you probably can figure out, using such a treatment would be like simply adding more ethanol to control the water being attracted by the ethanol. If your customers are experiencing a spike in maintenance costs related to the ethanol fuel (as a trusted advisor, one of your roles may be to help them see that if they cannot recognize the root cause of it), those can be substantially reduced with an ethanol fuel protectant that protects against ethanol solvency and corrosion. If they're battling lower mileage because of ethanol, this can be improved by adding a combination of combustion improver and fuel detergent.

Maintenance issues can be most effectively influenced with a protectant that interrupts the solvency and corrosion of the fuel. Reduced mileage can be influenced positively with a combustion improver that should be paired with detergency.

This whole area of mileage is the largest grey-area that companies like to prey upon when they're discussed the benefits of whatever they're selling. There is nothing you can add to the fuel that will suddenly boost the mileage someone's going to get from their E10/E15 by 25% or similar figures. When you incorporate a detergent to restore engine conditioning to its peak, customers can expect 5-10% improvements, which typically should be more than enough for them to see substantial improvement to their bottom line.

Customers Appreciate Solutions

At Bell Performance, we fix fuel and we help fuel distributors become the experts for their customers. In this day and age where there's so much information out there, your customers can be overwhelmed in trying to sort it all out. Your customers depend on you to help them with their fuel needs and fuel problems. If you know the problems they're having, why those problems are happening, and what will solve those problems, you will have customers for life.

If you liked this free report, there's more where that came from. Visit us at www.WeFixFuel.com and www.BellPerformance.com.