

Do You Have an Alcohol Problem?

By Timothy Johnson, Equipment Manger, Bull's Eye Country Club

Editors Note: This month we welcome a article from Timothy Johnson the Equipment Manger at Bull's Eye Country Club.

No, I am not talking about the alcohol that you drink. I'm talking about ethanol-blended gasoline. Almost all gasoline dispensed in the United States contains 10% ethanol, referred to as E-10. Ethanol was mandated as a replacement for MTBE by the EPA, because MTBE was showing up in groundwater. Both ethanol and MTBE contain molecules of oxygen, which help reduce emissions in engines. Ethanol has certain characteristics that will cause problems in equipment used on the golf course. Ethanol normally is uniformly dissolved in the gasoline, forming a homogeneous mixture.

The problem with ethanol is that it loves water – it will absorb and hold water. In concentrations up to about 0.6%, it does not cause problems. In concentrations above 0.6%, the water and alcohol drops out of the fuel mix and goes to the bottom of the fuel tank. This is referred to as phase separation. Your engine won't run on the water and alcohol mixture that the engine is drawing from the bottom of the tank, and mixing fresh gas or additives will not restore the gasoline to usable condition. You will have to drain and dispose of the bad fuel.

Ethanol has other issues that will also cause problems. It causes softening, cracking, and swelling of rubber and plastic components. Alcohol is corrosive to metal parts, and it causes 2-stroke engines to run leaner and hotter, leading to seizure and scoring of pistons and cylinders. Ethanol is also an effective cleaning agent, scouring varnish and deposits that have sat in the fuel system for years plugging up the carburetor and filters. Some small engine manufacturers are claiming up to 75% of all problems are fuel or fuel related.

So what can you do about ethanol-laced fuel?

The easiest thing to do is buy ethanol-free fuel. I have been purchasing alcohol-free gas from my fuel supplier. The one drawback is its higher cost. There is a list of ethanol-free gas stations at www.pure-gas.org.

If you must use E-10, there are some preventative steps

that you can take. Get rid of all fuel that was stored over the winter months in fuel cans. If your cans don't have good caps, replace them. When mixing fuel for use in 2-stroke engines, I have changed the mix ratio to 40:1 (from 50:1). The added oil in the mix lowers engine temperature, helping to prevent seizure in 2-stroke engines. Add a good fuel-stabilizer to your gasoline. I have used Sea Foam, Star Tron, and STA-BIL with good success. Be aware that STA-BIL makes a marine formula for use with ethanol fuels.

If you are going to store your engines, I would recommend draining the fuel tank and running the engine until it stops, and then fogging the inside of the fuel tank and cylinder for engines that will be stored longer than a month.

Warning – running a generator with a load until it stops can cause the field to become de-energized. If you can't run your equipment dry, fill the tank full and add fuel stabilizer to the fuel. Try to start your engines monthly and run them a little bit, and then hope for the best. If you have carburetor problems, you generally will have better success replacing the carburetor rather than rebuilding, due to the corrosion you will find, plus many manufacturers have reduced the price of new carburetors to the point that it doesn't pay to rebuild them.

There are also companies that offer canned fuel. The fuel, oil and stabilizers are pre-blended and the fuel is alcohol-free, resulting in a 2+ year shelf life after opening the can. I have not used these, but it might be a good strategy for units like sod cutters and other infrequently used pieces. Fuel storage tanks can be another area of concern. I have been using a water separator filter (10 microns or better) to stop the problem at the source.

So What's Next?

Now that you see that ethanol-blended gasoline can cause problems, I have more bad news. It is going to get worse. In October 2010, the EPA made a decision to increase the amount of ethanol to 15%. While E-15 fuel is safe for 2001 and newer model vehicles, it is not safe for older cars, non-road and small engine equipment. There have been lawsuits filed in U.S. courts fighting the EPA's decision to use E-15 blended fuels. Even if E-15 mandate gets stopped, E-10 and all its associated problems are still here.

