

In the Fall of 2008, under mandate from the EPA, the oil companies began replacing the MTBE with Ethanol. While it coincided with the timing of gas approaching \$4, that was not the cause of the change. MTBE is a carcinogen and had to be removed from the fuel.

Small engines are more susceptible to problems caused by ethanol than your car is. The key difference between small engines and car engines is that most car engines now have computer controlled fuel flow, while small engines do not.

One of the most common problems the ethanol is causing is contaminated or stale fuel. With current fuel formulas, we are finding fuel is beginning to go stale in as little as four weeks.

What makes gas go stale?

The first thing that happens is the lighter chemicals in it evaporate, leaving behind a heavier, less peppy product. As it sits unused, the more volatile components waft away, leaving a less volatile mixture which does not ignite as readily.

The second cause of bad gas is oxidation. Some of the hydrocarbons in the fuel react with oxygen to produce new compounds, almost all of them worse than what you started with. If you pour some into a glass container, you'll see it's turned dark and you might find small, solid particles of gum or varnish. Using oxidized gasoline is a



Fresh gas on the left, Stale gas on the right

bad idea, since the gum will clog your fuel filter and the carburetor.

Finally, there's the problem of contamination. Water is the main culprit. It usually gets into stored gas via condensation. As temperatures fluctuate, moisture in the air condenses on the inside of the fuel can and fuel tank, where it gets into the fuel.

The same problem affects automobiles during the winter, hence the sale of fuel line antifreeze. This problem is further enhanced by the ethanol which is hydrophilic and draws moisture out of the air (and into your gas!).

Helpful Hints:

- When storing your equipment for the off-season, place some mothballs or dryer sheets around it. This will help prevent mice from building nests in your equipment. Mice can cause considerable damage!
- It is better to have your power equipment serviced just before the season rather than at the end of the season.
- Carburetor Cleaner is great for cleaning the exterior of your carburetor, but will do nothing to remedy a fouled carburetor.

How to Keep Your Fuel Fresh?

- First, store it only in clean containers with tight caps.
- Keep the fuel tank and container nearly full to reduce exposure to air, but not completely full, so the gasoline can expand or contract as the temperature changes.
- Keep your fuel fresher by using a small fuel container (use a 1 gallon rather than a 2 ½ or 5) and keep it full.



- Try to minimize temperature swings by storing gasoline in a consistently cool place to reduce evaporation and oxidation.
- Fuel stabilizers are less effective than they once were and they are meant to prevent gasoline from going bad; they won't restore bad gas to its former health.
- The most effective fuel stabilizers we are aware of are Sea Foam, Startron, Marine Stab-il (blue), Briggs & Stratton Stabilizer. We do **NOT** recommend red Stab-il
- We recommend you stabilize your fuel when you purchase it, this will help keep it as fresh as possible.



- Small quantities of fuel go stale faster than large quantities. It is not a good idea to run your machine or carburetor out of fuel before storing. The very small amount of fuel that remains in the carburetor will likely gum up the needle or float.
- When you have unstabilized fuel that has been in the fuel can longer than four weeks, or stabilized fuel that has been sitting for more than two months, we suggest you not use it in your small engine powered equipment.
- You can use up the old fuel by pouring it into your car's fuel tank and mix it with a full tank of fresh fuel. This also works for 2-cycle (fuel & oil mixed) fuels. The 50:1 ratio you are using for your chain-saw becomes a 1000:1 ratio when added to twenty gallons of fuel.

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Please Remember:

Carburetor problems are not always fixed on the first repair.

There is often an accumulation gumming or varnishing up the fuel system which gradually breaks off or additional debris or water that works its way through the fuel system.

These result in additional problems which frequently require a new cleaning of the carburetor.

Symptoms of Carburetor Problems Caused by Bad Fuel:

- The engine starts then dies in under a minute
- The engine surges (high, low, high, low rpm's)
- Runs only on high rpm's (races)
- Runs only on low rpm's
- Runs only on choke
- Leaks fuel from the carburetor
- Will not start in the beginning of the season
- Ran well last season but won't start or run well now



IMPORTANT

If your engine just needed carburetor work, we would encourage you to empty your current supply of fuel into your car and get a fresh start.

If you do not start with new, fresh fuel, you are more likely to need additional work.

Please remember to treat your fuel with a stabilizer

Special Report

The Effects of Ethanol on Your Yard and Garden Equipment



How to Avoid Problems with Your Power Equipment

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31 Washington St.
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(508) 877-2841

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