

## What's the Problem?

In the Fall of 2008, under mandate from the EPA, oil companies began adding Ethanol to gasoline. This has created significant problems for small engines, which are more susceptible to problems caused by ethanol than a car engine.

With current fuel formulas, we are finding fuel is beginning to go stale in less than four weeks.

## What makes gas go bad?

The first thing that happens is the lighter chemicals evaporate, leaving behind a heavier, less peppy product which won't not ignite as readily.

The second cause of stale gas is oxidation. Some of the hydrocarbons in the fuel react with oxygen to produce new compounds, 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 bad idea, since the gum will clog your fuel filter and the carburetor.

The final issue is contamination which is caused by water which gets into gasoline via condensation. As temperatures fluctuate, moisture in the air condenses on the inside of the fuel can or tank, where it gets into the fuel. This problem is further enhanced by the ethanol which is hydrophilic and draws moisture out of the air (and into your gas!)

**If you follow the 10 steps, you will have fewer problems with your small engine.**



Fresh gas on the left, Stale gas on the right

## 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.

## 10 Steps to Fewer Fuel Problems

1. Keep your fuel fresher by using a small fuel container. (use a 1 gallon gas can rather than a 2 ½ or 5)
2. Use **89 Octane Fuel** and store it only in clean containers with tight caps.
3. Use a fuel additive when you purchase the fuel, The most effective fuel additives we are aware of are Sea Foam, Startron, Marine Stab-il (blue), Briggs & Stratton Stabilizer. We do **NOT** recommend red Stab-il.
4. When you are done using the machine, top off the gas tank and put the rest of the fuel into your car's fuel tank.
5. Keep the fuel tank and container full. A partial container of fuel is highly susceptible to condensation. Be sure to allow a little room for the fuel to expand and contract.
6. To reduce evaporation and oxidation, try to minimize temperature swings by storing gasoline in a consistently cool place.
7. 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.
8. **When your machine will not be used for 2 months or longer, drain the fuel tank and run the machine until it stops on it's own. Then add a quart of ethanol free fuel (available in our stores) and start the machine and allow it to run for 5 minutes.**
9. When you have unstabilized fuel which 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.
10. 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.



### Symptoms of Carburetor Problems Caused by Bad Fuel:

- The engine starts then dies in less than 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

On November 13, 2010, the EPA mandated we will be going to 15% Ethanol.

Over 1/2 the car and small engines failed during testing with 15% Ethanol.

Following our advice will save you grief, aggravation and money.

© 2013 Robinsons Hardware www.Robinsons1874.com

### 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.

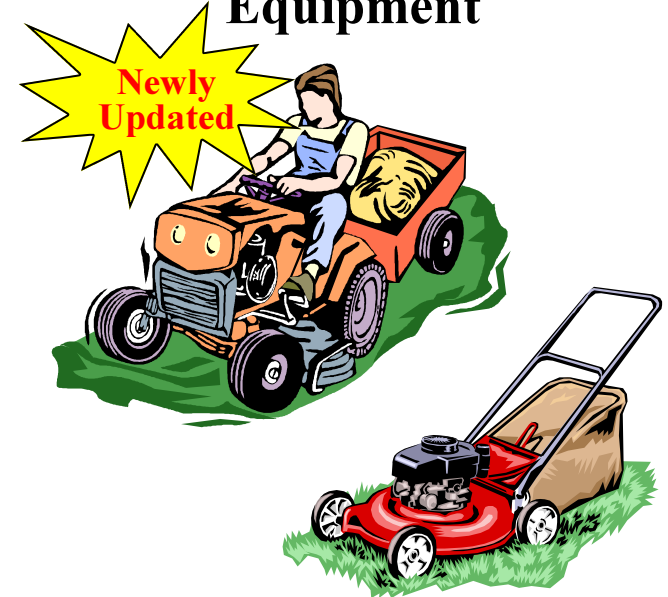
If you do not start with new, fresh fuel that you have added a stabilizer to and is from a cleaned gas can you are more likely to need additional work.

We have the most experienced staff of small engine mechanics in the area. We have the area's **only** Briggs & Stratton **Master Technician** and Stihl **Master-Wrench Gold Level Technician**.

We can repair or service most small engine powered equipment including:



## The Effects of Ethanol on Your Yard and Garden Equipment



## 10 Steps to Fewer Fuel Problems

# ROBINSONS

HARDWARE  
since 1874

<b>Hudson</b> 31 Washington St. (across from McDonald's) Hudson, MA 01749 (978) 562-7317	<b>Framingham</b> 1 Nicholas Rd. (Water St at Nicholas Rd) Framingham, MA 01701 (508) 877-2841
--	--

[www.Robinsons1874.com](http://www.Robinsons1874.com)