Ethanol ... or not?

Public Opinion photos by Mason Dockter

We asked local auto mechanics if it's safe to use higher ethanol blends in non-flex fuel cars. They said Modern cars, such as these Chevrolet Impalas (far left), can usually handle E-30 blends. In older cars, such as this 1976 Oldsmobile Toronado, mechanics recommend not using ethanol blends above 10 percent. Higher ethanol blends could potentially cause a variety of problems in aging vehicles, they said.

Most vehicles safe for E-30, mechanics say

By Mason Dockter
Public Opinion Staff Writer

Watertown is in the midst of the great E-30 ethanol challenge, and several local gas stations are offering attractive discounts for the fuel as part of the promotion.

People who drive non-flex fuel vehicles sometimes wonder whether their car can handle mid-level ethanol blends such as E-30. The *Public Opinion* asked several area mechanics this question, and they all said that most cars today can handle E-30 without a problem.

This is not to say ethanol use is without its drawbacks, however. Older vehicles may not react well to ethanol fuel, and some mechanics say that ethanol use results in reduced fuel economy, hard winter starting and check engine lights.

Andy Wicks, owner of DynoTune Speed and Performance in Watertown and a local authority on ethanol use, said that people ask him regularly whether they should use ethanol in their cars.

"I've had lots and lots of people express concerns" about whether ethanol is a safe automotive fuel, Wicks said.

"It's absolutely not an issue" to use ethanol in modern, fuel injected vehicles, he said. "Ethanol does not directly cause any problems."

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Any vehicle manufactured after 1996, Wicks suggested, should be fine to use E-30 ethanol blends.

Vehicles older than 1996 can be run on E-10 blends, but anything higher may cause a check engine light to appear, he said.

Flex fuel vehicles, on the other hand, are designed to burn high ethanol blends efficiently. These cars do not have significant structural differences from other cars, except for different computer programming and slight fuel pump differences.

"Ninety-nine percent of the parts are exactly the same" between flex fuel and regular vehicles, Wicks said.

There are several reasons older vehicles may or may not struggle to use ethanol, but generally it boils down to a few key issues: computer programming, engine compression and component materials.

Certain vehicles that weren't designed to run on higher ethanol blends won't actually suffer mechanical issues from burning the fuel, but small internal changes caused by the ethanol will confuse the car's computer system, leading it to think there's a problem and turn on the "check engine" light.

Shane Schock, service manager at Sharp Automotive, said that he has seen about four vehicles come in recently with check engine lights that the owners blamed on ethanol. The only cases where ethanol actually caused the check engine light

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was in certain Toyotas, which he said for some reason do not always respond well to ethanol.

But in almost no case does the ethanol cause physical, permanent damage to a vehicle engine. In the worst cases Schock has seen, people put E-85 in cars not designed for the fuel.

When such a large quantity of ethanol is put into an engine that can't handle it, Schock said the cars can run extremely poorly, but they recover once the ethanol is removed or burned off and replaced with gasoline.

Jake Sams, service manager at Watertown Ford Chrysler, said that he too has seen check engine lights that were caused by improper use of ethanol.

"I've seen check engine lights come on, but no damage," he said. "They'll either dump the fuel out or just run the tank." Once the ethanol is gone, the car can be filled with gasoline and the problem is solved.

Engine compression in older vehicles can be another cause for ethanol troubles.

The engines of older vehicles tend to have lower compression, while newer models use higher compression. Ethanol burns poorly at low compression, so a decades-old vehicle may not run well with high ethanol blends.

Rubber hoses in older vehicles may not be ready for ethanol either. Today's fuel lines are usually metal or an advanced rubber called Viton, which are more durable and can handle ethanol.

But in older vehicles, the fuel lines are usually simple rubber hoses. The aging hoses in an old vehicle may not handle ethanol well – and if the ethanol causes them to deteriorate badly, the loosened rubber could clog a fuel filter.

DeLyle Kruger, owner of DeLyle's South 81 Service station, said that when looking at the fuel hoses of an old vehicle, it can be difficult to say whether ethanol caused the hose to deteriorate, or if it was simply a matter of age.

"I can't say that I've been able to attribute ethanol to any problems on them, because it's a 50-year-old car and it's got rotten rubber hoses," Kruger said.

Also problematic for older vehicles, ethanol acts as a "cleansing" fuel, Kruger said. This is good for newer cars, but not in an old car with a rusted gas tank – the cleansing action can loosen rust and carry it to the fuel filter, clogging and possibly ruining it.

Brad Schultz, director of commodities and risk management with Glacial Lakes Energy, admitted that "ethanol can be corrosive under certain circumstances," but cautioned that gasoline, particularly when adulterated with benzene and other aromatic compounds, can be even more corrosive to car parts.

Schultz also acknowledged that the majority of the research into ethanol use has been done on newer vehicles, and very little is known about older vehicles and ethanol.

"If you want to try it, you can," Schultz said in reference to fueling an older vehicle with E-30.

Today, cars old enough to have ethanol problems are uncommon. Wicks says the number of vehicles still in service that are old enough to be troubled by ethanol is low – he estimates 2 to 3 percent of today's cars are that old.

Jake Sams agreed, saying that he hardly ever sees such old cars in his shop.

"Really, we don't see too many of those anymore that come through," Sams said. "Pretty much everything we see is modern, fuel-injected."

Gas mileage is another matter of contention when using ethanol blends, and not all the mechanics agreed on how much mileage is affected, or whether it's affected at all.

Schock said that he believes E-30 and similar blends can reduce gas mileage by about three to four percent. The cost of this reduced efficiency is usually offset by the fact that ethanol blends are cheaper.

However, Schock said E-85, which he uses in his personal flex fuel vehicle, causes fuel economy to plummet perhaps 30 to 40 percent compared with gasoline.

The reason ethanol causes poorer mileage, he said, is that "it burns faster and hotter" than gasoline.

Schultz, on the other hand, said that ethanol in a flex fuel vehicle actually "burns cooler," because the onboard computer is designed to recognize the presence of ethanol and adjust for it. A cooler burning fuel, he said, is essential for the longevity of an engine.

By Andy Wicks' estimation, non-flex fuel vehicles see poorer mileage with ethanol because their engines cannot fully utilize the fuel.

"Some cars don't have the cylinder pressure that can support higher blends" of ethanol, Wicks said.

Sams said that sometimes the cars he sees actually get better fuel economy out of ethanol. He also noted that some peoples' poor driving patterns can seriously impact gas mileage.

"On Chryslers, they seem to be getting better fuel economy," Sams said. "Some of the Fords, there's a little bit of a loss, but that could be how they're driving too – some guys with EcoBoost, they like to hit the gas and go fast."

Some people who have put ethanol in their non-flex fuel vehicles in the winter have complained that the car takes much longer to start in frigid weather, or refuses to start at all.

Wicks said that this, too, is an issue with cylinder compression, because colder temperatures cause lower compression – and ethanol does not appreciate low engine compression.

"It becomes harder to light ethanol in lower compression engines," he said. However, he says that normally people who use E-30 in non-flex fuel vehicles won't have a problem until the temperature is at least 30 degrees below zero.

Schock agreed, saying that an ethanol-filled engine may take longer to turn over and ignite on a cold winter's morning.

"Start time can take a little longer than normal" when it's freezing outside, he said.

However, Sams said that today's flex fuel vehicles can burn E-85 in the dead of winter without a problem.

"Initially, before they had the flex fuel vehicles, they'd have extended crank (time) in the middle of winter," Sams said. "But now, most of your vehicles, you've got a flex fuel option – that's not an issue anymore."

There is one group that strongly warns against using ethanol in non-flex fuel vehicles: the manufacturers.

The manuals and warranties of most vehicles directly state that fuel for the vehicle should not contain more than 10 percent ethanol, unless the vehicle is designated as flex fuel.

"It's kind of a catch-22 for dealers," Schock said. Practically no owner's manual in a non-flex fuel vehicle will recommend anything more than E-10 ethanol blends, he said.

This could be especially serious if a vehicle has an engine problem while filled with an ethanol blend the manual does not approve of. If the motor needs work and there is evidence that damage was caused by the ethanol, the car's warranty may not cover the damage, Schock said.

Kruger said manufacturers can find themselves in a "sticky" situation when it comes to vehicle owners disregarding the manuals and filling their cars with unapproved ethanol fuel.

"From a warranty standpoint, the manufacturers are only going to stand behind what they have designated the car to run on," Kruger said. "So, if your check engine light comes on under warranty and it's because you put in E-30 instead of E-10, then the manufacturer doesn't want to have to stand behind the labor cost of figuring out why that check engine light's on."

Still, Kruger said he's never seen any actual engine damage from ethanol use.

"My experience has been the only thing that occurs is a warning light, until you get the vehicle back to a blend that it's happy with," Kruger said.