Questions have been raised about the storage of ethanol blends during the off season. The basics of gasoline storage are the same with or without ethanol. Although some gasolines may remain stable in excess of 90 days you won’t know for sure without a chemical analysis of the product. Three main issues to consider in the storage of gasoline are: weathering, moisture and oxidation.

1) **Weathering** has to do with a gasoline’s “volatility”, or tendency to evaporate. Gasoline stored for long periods can lose volatile components resulting in “cold start” and “warm up” problems. If possible, provide shade to keep your storage tank cool. The volatility of the gasoline you buy changes considerably in mid September and again in early May when refiners change the recipe to improve cold weather start ups in winter and to prevent “vapor lock” in summer. Using stored gasoline purchased in fall or winter (with a vapor pressure of 14 pounds) could cause vapor lock problems on a hot spring day. Using stored summer gasoline (with a vapor pressure of 9 pounds) will make your snowmobile hard to start on a cold winter day. Ethanol blends do not change the basics of managing fuel weathering and volatility problems.

2) **Moisture** contamination usually is not a problem until water “phase separates” from the gasoline and falls to the bottom of the tank. Ethanol blends do not draw more water into the tank. If gasoline must be stored, be sure the container has no “water bottom” and is water tight. Keeping the tank full or sheltered from weather will minimize “breathing” and condensation on tank walls. In most tanks it would take more than a year for conventional gasoline to draw enough moisture from the air to “phase separate”, much longer for ethanol blends. The most common causes of water contamination problems are introducing ethanol blends into a tank with a water bottom and faulty tanks or covers that allow water to flow into the fuel.

3) **Oxidation** is a chemical process that reduces the octane quality of the gasoline. Oxidation can lead to sludge and acidic deposits, damage of flexible parts and hoses, sticky rings and valves, and poor carburetor or fuel injector performance. According to the Society of Automotive Engineers, “The type of hydrocarbon present in gasoline is very important in terms of storage stability or resistance to oxidation of that gasoline.” Some small engine manufacturers actually use aviation gasoline for factory fill and startup since it is low in “olefins”, gasoline components that oxidize easily. The new unit can then be stored until shipment without concerns of oxidation. Olefins are common in gasoline, so refiners normally use antioxidants to increase storage stability. But to protect all gasoline for several months of storage in poor conditions may not be practical. Most gasoline is stored briefly in cool underground tanks and is used in a few weeks. Moreover, the addition of too much antioxidant can cause other problems. “Fuel stabilizer” products that contain antioxidants should be used in stored gasoline according to label instructions. This, in addition to the avoidance of high temperatures, dirt and sludge deposits and copper anywhere in the fuel system, will reduce the oxidation of stored gasoline.

Storage of gasoline is part of life in our “theater of seasons”. It is difficult to predict which gasolines (with or without ethanol) will store well for months at a time but paying close attention to the above mentioned issues will reduce your risk of storage problems.

If you have questions call Ralph Groschen at 651-297-2223.

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