The nation is poised to do something about oxygenate additives in reformulated fuels. Discussion today centers around the use of ethanol, an already viable option, as a replacement for MTBE, the current culprit.

As early as the fuel embargo of the 1970's, ethanol was being promoted as a fuel additive. U.S. production of ethanol could reach 1.7 billion gallons during the year 2000, as reported by the Renewable Fuels Association in the September 2000 edition of Planet ARK website (www.planetark.org). They report that "ethanol is a safe, biodegradable and renewable oxygenate that does not harm drinking water resources." A Cambridge Environmental Inc. report also claims that "no health threat is expected from increased ethanol use."

The presence of ethanol blended fuels in STI labeled underground steel storage tanks has not been shown to cause steel tank failures. This has been verified through insurance records and discussions with regulatory officials. In fact, the incidence of internal corrosion on steel tanks due to any cause is rare. However, accumulation of water in the bottom of petroleum storage tanks has long been a topic of discussion. Experts agree that water needs to be removed from the tank as a matter of good total fueling system maintenance and that water, sludge, etc. can affect other tank system components at a service station. EPA has stepped up its efforts to help ensure that careful operation and effective maintenance become common business practice. This maintenance includes cleaning, and removal of sludge, debris, and accumulated water from the UST. Regardless of tank material, industry standards and tank manufacturer warranties call for water removal. This was an industry recommended practice since long before the introduction of ethanol-blended fuels. The need for proper maintenance and water removal will not diminish with the use of different fuel additives.

Several years ago, the Steel Tank Institute investigated the possible corrosive effects of oxygenated fuel additives and water on steel underground storage tanks. Welded and non-welded carbon steels were exposed to various mixtures of methanol with ASTM Reference Fuel C. (Methanol is known to be somewhat more electrically conductive than ethanol and gasoline.) Water was added to some of these fuel mixtures to create a phase separation within the fuel. Upon evaluation, the carbon steel test panels immersed in methanol fuel mixtures exhibited no degradation. Surprisingly, the study demonstrated that a control mixture of 96% Reference Fuel C and 4% water was initially a more corrosive environment than any of the oxygenated fuel blend solutions.

Studies conducted in 1986 for the Steel Tank Institute by L.J. Broutman and Associates confirm that there is no loss of steel strength or stiffness following 15,000 hours test exposure to 10% ethanol / 90% unleaded gasoline. The study also tested strength and
Barcol Hardness of FRP tank materials designed to be used with ethanol gasoline products. Some of the hardness values reduced to less than 25% of their original values when extrapolated to 10 and 30 years exposure. According to the report, "the loss in Barcol Hardness might indicate a loss of erosion resistance."

According to EPA, there are more than 740,000 active tanks in the United States. In late 1999, the Steel Tank Institute conducted a survey of tank registration information from the databases of State UST offices. The states reported that 66.9% of active tanks were bare steel, coated steel, cathodic protected steel, steel composite or steel jacketed construction. The states also reported that 58.2% of new tanks being installed are steel, and that 41.7% continue to be of non-metallic construction.

Unfortunately, there was generally no expectation in the 1980's that all motor fuel tank systems would eventually need to handle ethanol additives. It is impossible to tell whether a buried FRP tank in service is listed for alcohol-petroleum blended fuels without authoritative documentation or excavation to look at the label. In March 2000, the California State Water Resources Control Board issued an Advisory to Underground Storage Tank Owners/Operators Regarding Ethanol-Blend Fuel Compatibility. The purpose for this advisory was to notify tank owners that "some underground storage tank and piping (UST) systems may not be compatible with ethanol-blend fuels". Let's hope that in 2020, we will not be saying the same thing about the tanks being installed today!