

The changeover from the use of MTBE as a gasoline blending component, to ethanol, in New York State and Connecticut on January 1, 2004 is likely to lead to price volatility in the oil market and make risk management using the Nymex Unleaded contract far more complicated. *Sandy Fielden* explains

Life without MTBE

★ The Unites States Clean Air Amendment Act of 1990 mandated the use of Federal Reformulated Gasoline (RFG) to reduce toxic emissions from gasoline in areas that had not attained the required pollution control standards. Today, RFG represents about one third of all US gasoline consumed – primarily in major population centres.

Until 1998, most states used RFG that contained methyl tertiary butyl ether (MTBE). MTBE increases the oxygen content of RFG to a minimum of 2%, so that gasoline burns more completely, reducing harmful exhaust emissions. However, a build-up of MTBE in some water supplies caused Chicago and Milwaukee (1998) and California (2003) to phase out MTBE in motor fuel. Now New York State and Connecticut will follow suit from January 1 2004.

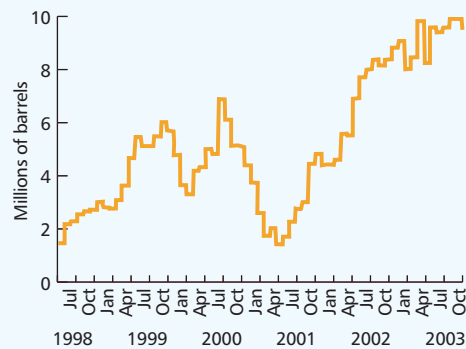
So refiners need an equally effective alternative to MTBE. The most common choice is ethanol. The case for and against ethanol is hotly debated. Advocates say it is clean and renewable, while critics say it is inefficient – to make a gallon of ethanol requires “about 29% more energy from fossil fuels than a gallon of ethanol provides”, says David Pimentel of Cornell University. But thanks to the unpopularity of MTBE and Congressional pressure, ethanol emerges as the clear winner. The expected surge in demand for ethanol in 2004 has led to a rapid build in US ethanol stocks (see figure 1).

An October 2003 Energy Information Administration (EIA) study titled “Preparations for meeting New York and Connecticut MTBE bans” said gasoline supplies were likely to be disrupted by the move to ethanol. The EIA report predicts price spikes of 30 to 40 cents per gallon for ethanol-blended gasoline as a result of supply and logistic problems during the first quarter of 2004.

Using ethanol certainly creates problems. Unlike MTBE, ethanol mixes with water. Since water is present in most of the pipeline and shipping infrastructure, ethanol-blended gasoline cannot be co-mingled with gasoline en-route to terminals and must be carried and stored separately. So a new type of gasoline blend stock is required in the place of RFG that is an unfinished product suitable for blending with ethanol at terminals. This gasoline blend stock is known as reformulated gasoline blend stock for oxygenate blending (RBOB). RBOB must be refined, distributed and delivered to terminals separately from ethanol and then blended prior to distribution to retail gas station outlets. Refiners and shippers are scrambling to set up the facilities to handle ethanol and RBOB as well as keeping them separate from RFG (which will still be used in New Jersey) and conventional gasoline (which is permitted in areas with cleaner air).

On the east coast of the US, the gasoline consumed is mostly refined outside the region. The EIA estimates 26% of the region’s RFG comes from the US Gulf and 37% from imports, with only

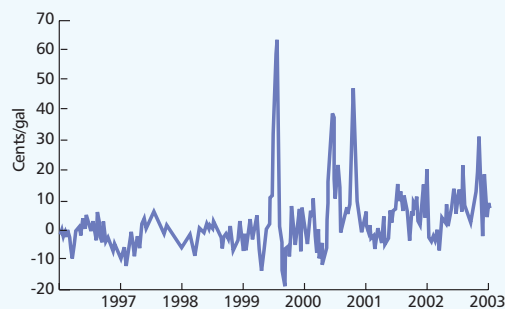
Fig 1. Total US ethanol stocks



Source: US Department of Energy Petroleum Supply Monthly

US Ethanol stocks have risen considerably in the past 3 years in response to perceived demand for the product as a replacement for MTBE in RFG gasoline.

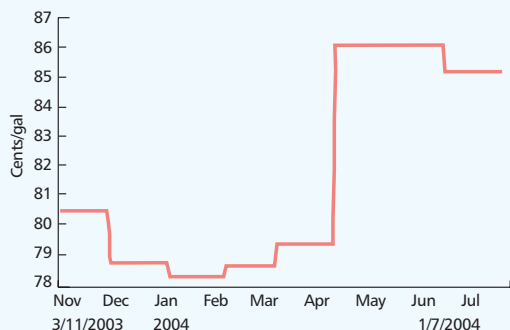
Fig 2. Chicago RBOB prices v. Nymex Unleaded (prompt contract) since 1997



Source: Platts and Nymex

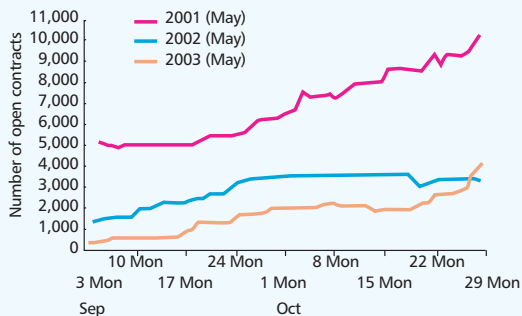
RBOB is blended with ethanol to produce unleaded gasoline, but the Nymex unleaded contract is blended with MTBE. Volatility between RBOB and Nymex prices such as that seen after 2000 in Chicago, is expected in New York and Connecticut in 2004.

Fig 3. Nymex Unleaded forward curve, Oct 31, 2003



The forward curve of Nymex unleaded gasoline futures prices on October 31, 2003 shows activity only 8 months out (compared with 72 months on Nymex Crude) and a sharp increase in prices during the spring of 2004 in anticipation of higher summer demand.

Fig 4. Unleaded Nymex open interest for May contracts



Uncertainty about the Nymex Unleaded Contract, based on its MTBE-blended specifications and its delivery only to New Jersey after January 1, 2004, has reduced open interest. In 2001, the average open interest was 6800 contracts; by 2003 it was down to 1600.

38% sourced locally. This means the switch to ethanol-blend RBOB will require changes to refineries and pipelines among many importers to meet the new requirements.

It is still unclear whether existing importers of RFG gasoline to New York and Connecticut will be able to service the market after MTBE is banned. The EIA feels that increased production of RBOB in New Jersey is likely to overcome the short-term crunch in January of 2004, but anticipates bigger problems in May of 2004. May is the start of the summer driving season in the US when higher gasoline demand is likely to strain supplies.

Summer also brings higher emissions standards from the Clean Air Act in the form of tighter specifications for Reid vapor pressure (RVP) – a measure of a fuel's inherent tendency to evaporate. Refiners must manufacture lower RVP gasoline in the summer months to reduce emissions from evaporation in the warmer weather. When used as a blending component however,

ethanol actually increases the RVP of gasoline. Refiners using ethanol must add new blending components to RBOB to compensate for the higher RVP and still meet the standards. Many refiners will need to invest in new equipment to manufacture summer-grade RBOB.

The history of the change to RBOB in the Chicago area is illustrative. Since that city completed the move to the more stringent pollution standards of phase 2 of the RFG programme in 2000, prices of RBOB have been consistently more volatile. Between 1997 and 2000, the spread between Chicago RBOB and the Nymex Unleaded contract (the standard benchmark US gasoline price east of the Rockies) averaged about half a cent under Nymex with a standard deviation of 3.45. Since 2000 the average spread has jumped to six cents over Nymex with a standard deviation of 10.5. There have been several large spikes, (see figure 2).

And US refiners, marketers and gasoline importers from Europe and South America worry about the impact the MTBE ban will have on the Nymex Unleaded contract – historically the benchmark contract for US gasoline pricing, and which defines the forward curve of market price expectations (See chart 3).

The Nymex unleaded contract specification is based on RFG gasoline and calls for delivery into New York Harbor or New Jersey. From January 1, 2004, the contract will only be deliverable into New Jersey because of the New York MTBE ban. The widely anticipated spreads and volatility between RBOB prices and unleaded RFG such as those that occurred in Chicago in 2000 are leading to questions about the viability of an RFG-based Nymex contract. Will refiners want to hedge using an RFG contract when they are delivering RBOB with price spreads between the two likely to spike to 30 cents? Uncertainty about the Nymex unleaded contract has cut the number of forward months of trading from 12 consecutive months in 2001 to only eight today.

Lack of confidence in the effectiveness of the Nymex unleaded futures contract as a hedge instrument has also led to a fall in open interest. For example, the May 2004 contract had the lowest open interest in the months of September and October of any May contract since 1996 (see chart 4). Nymex may need to consider a separate RBOB-based gasoline contract if the volatility of the RBOB/RFG spread remains high. More likely, over-the-counter financial instruments will develop to bridge the difference, but they won't make life any simpler for risk managers.

As other states contemplate the move towards a ban on MTBE, they will be watching the situation in New York and Connecticut carefully. Supply shortages and price volatility associated with the transition to ethanol will be compounded by the potential lack of an effective gasoline hedging tool at the Nymex. The critical imports, which New York and Connecticut need to meet their gasoline demand, will be discouraged if refiners cannot lock in prices before they take the risk of shipping product. One thing is sure – politics continue to make life more complicated for the oil industry in developed countries. **ER**

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