By Carolyn Raffensperger

Is Ethanol Answer To MTBE? Maybe

An interstate dispute has escalated into an international dispute, and no matter who wins, the environment could be the real loser. The controversy began when Iowa and several other Midwestern states opposed California's bid for a waiver from federal clean air requirements to add an oxygenate to gasoline, which reduces emissions of smog precursors. Such "reformulated gasoline" is required in cities with smog problems.

California is faced with difficult choices. Recent rulings under the Safe Drinking Water Act require phasing out MTBE, the most commonly used oxygenate, by 2004, because it pollutes groundwater. The state worries that as it changes away from MTBE, gas supply disruptions may occur. Hence the waiver request. The most likely replacement is ethanol, which can be made from corn. Iowa quickly opposed the waiver and was joined by other corn-growing states.

California, in a fit of pique over the Midwest's opposition, began negotiating with Brazilian companies for ethanol produced from sugar cane. Officials from California EPA said that Brazil could provide about one-third of the state's needs. The 54-cents-a-gallon tariff on Brazilian ethanol plus high transportation costs might make it prohibitively expensive. However, under the almost-forgotten Caribbean Basin Economic Recovery Act, passed during the Reagan administration, Brazil can avoid the tariff by processing its cane in the Caribbean.

MTBE has a short but checkered history. It was used in limited quantities as a substitute for lead to boost octane from the 1970s until the 1990s. In 1992, Arco and other gasoline refiners developed a technique for synthesizing MTBE from refinery waste products, the same year that the 1990 Clean Air Amendments began requiring oxygenates. Thus, a double bonus for refiners, who have turned substances they had to dispose of into a value-added product they could use to meet new federal requirements.

However, MTBE has a small molecular size and is highly soluble in water. Accordingly, it is quite mobile in water or wet soils and can be picked up in the atmosphere and redeposited through rain or snow. This solubility makes MTBE a bad actor and it is now found to have leaked from underground gas tanks and contaminated the drinking water of numerous communities in California and elsewhere.

The only viable replacement is ethanol. But our unhappy history with gasoline additives suggests we should take a closer look at ethanol. It's not only MTBE. Lead of course may have raised octane in gasoline but it lowered intelligence in humans. Is ethanol any better? This question has fierce proponents on both sides.

A central question in the debate is whether the fuel conversion is favorable. Does it take more BTUs to make ethanol from corn than the finished product provides? Scientists have gone in circles estimating the energy balance for farming corn, transporting it to the processing plant, processing it, and transporting the ethanol to the fuel pump. Each step can have widely varied estimates. For instance, in states where irrigation is used, it takes more energy to produce corn. Similarly, wet or dry milling at the ethanol plant can significantly affect the equation. Add in transportation and the figures swing widely.

Another question is how much pollution is generated in ethanol production process, and does ethanol really provide cleaner air? The answer again is, "It depends." The kicker with ethanol is burning it contributes to the greenhouse effect more than burning straight gasoline. According to the Energy Information Administration, the statistical wing of the Department of Energy, ethanol produces less carbon monoxide and carbon dioxide than gasoline but more nitrous oxide and methane. Ethanol also produces aldehydes and alcohol, which are carcinogens.

Two apparent advantages of Iowa-produced fuel are U.S. energy independence — ethanol plants use coal, whereas MTBE manufacturing uses petroleum — and profit for farmers, who could earn as much as 30 cents a bushel more for corn if ethanol were used as the primary oxygenate in states like California.

But are these the right considerations? There are three lessons we should take to heart from our experiences with lead, MTBE, and similar environmental snafus. First, ask the right questions. Do we really want to use the fertile soils of Iowa to raise automobile fuel of questionable quality and efficiency? A better question might be, What kind of air quality do we want, and what do we have to do to our transportation system to get it?

The second lesson is to address environmental problems systemically. Environmental law governing ethanol has been created piecemeal out of the Caribbean Recovery Act (which allows Brazil to avoid tariffs), the Clean Air Act (which requires an oxygenate), the Safe Drinking Water Act (which finds that one of those oxygenates endangers supplies), and the Farm Bill (which de facto favors the producers of ethanol). It's time to create a unified policy that does not shift problems from one medium to another or one part of the country or world to another.

The final lesson is that one size does not fit all. Diversity is one of the methods nature uses to create resilience. Ethanol probably makes sense in Iowa and other midwestern states. It may or may not make sense in California. The more options we use, and the more we tailor them to a specific place, the more resilient the economy will be, and the less likely we will be to make serious mistakes like putting lead in gasoline — or having Brazil trump U.S. farm and air policy because California is mad at Iowa.

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