



(incite)

## Drunk on Ethanol

*Our addiction to corn-derived alcohol is not only costing us a lot of money, it's also wiping out fish and wildlife habitat, and polluting our air, soil, and water.*

By Ted Williams

The answer is the American public.

The question was: Who would spend 10 cents to 20 cents more per gallon for gasoline that reduces mileage, degrades your car, destroys fish and wildlife, increases air pollution, and makes the United States more dependent on foreign oil?

8/2004 With its 1990 amendments to the Clean Air Act, Congress tried a revolutionary strategy: regulating not just how gasoline was burned in motor vehicles but how it was made. The idea was to require the use of gasoline with at least 2 percent oxygen-containing chemicals (oxygenates) in areas where clean-air standards weren't being met. This way more carbon monoxide, toxic hydrocarbons, and smog-producing volatile organic compounds would get burned up.

Senator Bob Dole (R-KS), Senator Tom Daschle (D-SD), and other politicians from the Corn Belt who had pushed this "reformulated-gasoline program" were ecstatic. The amendments created a new future for the corn-produced oxygenate ethanol (a.k.a. "white lightning" or grain alcohol), which hadn't found a decent market for anything save drinking despite \$5 billion in federal subsidies. With the mandated use of "gasohol" (one part ethanol, nine parts gasoline), the moribund ethanol industry would spring heel-clicking from its wheelchair.

Agribusiness would prosper. And America would get cleaner air and homegrown energy. It was going to be a win-win-win-win.

Fourteen years later there are 78 ethanol plants in 19 states. More than half are being expanded, and scores of new ones will soon come online. Fully 10 percent of all corn grown in the United States goes into ethanol. And Senator Daschle, Representative Dennis Hastert (R-IL), and President George W. Bush have been trying to legislate a mandate requiring states to increase the amount of ethanol used in reformulated gasoline from about 3 billion gallons to 5 billion gallons by 2012.

But the reformulated-gasoline program has turned out to be a colossal failure, and the ethanol industry has transmogrified into a sacrosanct, pork-swilling behemoth that gets bigger and hungrier with each feeding. Ethanol dirties the air more than it cleans it. Its production requires vast plantings of corn, which wipe out fish and wildlife by

destroying habitat and polluting air, soil, and water. Of all crops grown in the United States, corn demands the most massive fixes of herbicides, insecticides, and chemical fertilizers, while creating the most soil erosion.

**To the chagrin of Corn Belt politicians**, there was nothing in the 1990 amendments that says the oxygenate used in gasoline must be ethanol. There is another polluting oxygenate, derived from natural gas, which we also don't need. It's called methyl tertiary butyl ether, or MTBE. In noncompliant states outside the Corn Belt—or even in compliant states that wanted to be excused from other clean-air investments mandated by the Environmental Protection Agency (EPA)—MTBE became the oxygenate of choice. These states would have used ethanol had it not been so difficult and expensive to import. Ethanol separates from gasoline when it encounters moisture in pipes and storage tanks; so unlike gasoline oxygenated with MTBE, gasohol cannot pass through existing pipelines. Instead, ethanol—which costs three and a half times as much as gasoline to produce and yields 20 percent less energy—must be shipped separately and mixed on-site. And because ethanol evaporates so rapidly, it can be added only to a special and expensive "blendstock" of gasoline. Some coastal states might import foreign ethanol if U.S. ethanol weren't protected by a 54-cent-per-gallon foreign-trade tariff.

MTBE comes with a different set of liabilities. For one thing, if you drink it, you'll suffer lots more than a hangover. While it's by no means the most toxic of fossil fuel derivatives, it's among the worst smelling and tasting, and it penetrates farther and hangs around longer than most any other. Still, by marketing MTBE, the oil and gas industry performed an important public service. MTBE's vile taste and odor in tap water alerted the nation to the deplorable, porous condition of underground gasoline storage tanks, which were leaking into aquifers. To hear Corn Belt politicians and ethanol manufacturers talk, you'd think their single overriding concern is safe drinking water for California, the Northeast, and other places where MTBE gets mixed with gasoline. "MTBE has contaminated groundwater in 43 states and is considered by public health experts to present a risk of cancer in humans," proclaims Senator Daschle. "It is estimated that there are at least 150,000 MTBE-contaminated sites nationwide." But America doesn't have an MTBE problem so much as it has a leaky-gas-tank problem. And since the MTBE panic of the late 1990s, there has been progress in fixing the tanks.

"Abusing our precious croplands to grow corn for an energy-inefficient process that yields low-grade automobile fuel amounts to unsustainable, subsidized food burning."

With the enthusiastic help of the ethanol lobby—most notably the Renewable Fuels Association—17 states have banned MTBE. Most are in the Corn Belt and never would have used it anyway, but there were three major exceptions: California, New York, and Connecticut. MTBE bans in these states have created a de facto ethanol mandate.

Such a mandate is anathema to politicians from MTBE-producing states. To hear them talk, you'd think their single overriding concern is saving Americans from high gasoline prices and dirty air. In 2002 some ethanol plants were found to be emitting 10 to 12 times more pollutants than anyone realized. "These plants were slapped together really fast," declares Frank Maisano, a lobbyist for the MTBE industry. "They're loud; they smell. A million people live around Gopher State Ethanol, near St. Paul, Minnesota, and they absolutely despise it."

Among the most ardent champions of low gasoline prices and clean air (if only when it is threatened by ethanol) are House Majority Leader Tom DeLay (R-TX) and Joe Barton (R-TX), chairman of the House Energy Committee. However, their main priority for last session's energy bill was liability relief for manufacturers of MTBE in cases where it had polluted groundwater—a provision that would have voided some 200 lawsuits in 12 states. "If the price of the energy bill is no safe harbor [for MTBE], then there won't be a bill," vowed Barton, and he was right.

Daschle and other Corn Belt legislators strongly disapprove of such relief for ethanol's competitor. They also strongly disapprove of the waivers from the oxygenate requirement being sought by California, New York, and Connecticut. This despite overwhelming scientific evidence from such respected sources as the National Academy of Sciences that modern blends of gasoline without ethanol or MTBE burn more cleanly than the reformulated gasoline now required in nonattainment areas.

"The bottom line is that both the motor vehicle industry and the refining industry have evolved since the early 1990s, when these requirements went into effect," remarks Frank O'Donnell, director of the Clean Air Trust, an air-quality-defense group put together nine years ago by former U.S. senators Edmund Muskie of Maine and Robert Stafford of Vermont. "Oxygenates aren't necessary anymore. Modern cars have oxygen sensors that adjust the air-to-fuel ratio, which is one of the things that oxygenates were supposed to do. And we have better fuels."

### **So does this mean an end to the federal oxygenate requirement?**

No way. The ethanol industry is far too powerful to allow such a thing. Basically, it gets whatever it demands, no matter who's occupying the White House. When California and the northeastern states asked President Bill Clinton for the same waivers they now seek from President Bush, Clinton refused. He didn't want to risk offending the swing state of Iowa, which went to Al Gore by one percent. Bush is worried about Iowa, too.

Some Corn Belt politicians are refreshingly candid about why the wasteful, obsolete oxygenate requirement needs to stay in place. "I once asked Governor Tom Vilsack of Iowa at a news conference why Californians and northeasterners should be forced to put ethanol in

their gasoline when the science clearly shows it has no environmental benefits," recalls Paul Rogers of the *San Jose Mercury News*. "Because it helps farmers from my state expand their markets, he explained. 'So I guess you'd support a new federal law to require everybody in Des Moines to buy a computer, to help people in Silicon Valley expand their markets?' I asked. He didn't concur."

In addition to showing that there are "no environmental benefits" to ethanol, science clearly shows that there are enormous environmental costs. For example, the general use of ethanol significantly increases air pollution. Ethanol evaporates faster than gasoline. So while gasoline reformulated with ethanol may release less carbon monoxide, it releases more volatile organic compounds, hydrocarbons, and nitrogen oxides.

"Adding ethanol to our fuel supply causes air pollution," says Peter Iwanowicz, director of the American Lung Association of New York State. "You have more vapor emissions when you're refueling and when your car is sitting in a parking lot on a hot summer day. And ethanol can degrade systems in cars, so you'll get more leaks. You don't need ethanol or MTBE in gasoline to make it burn cleaner, but we didn't focus on the oxygenate issue. Instead, the ethanol crowd went around trying to get MTBE banned, and we just ran this nasty chemical out of town. We could have had both healthy air and clean drinking water."

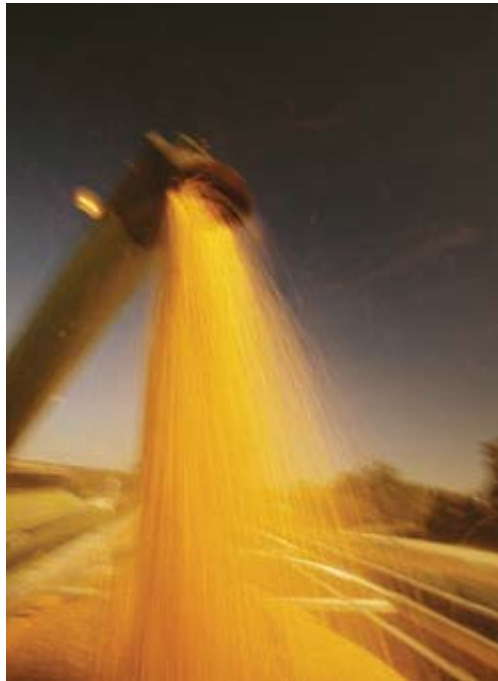
The fact that Frank Maisano represents the MTBE industry doesn't mean he hasn't got it exactly right when he observes that ethanol plants themselves are major sources of air pollution. For example, in April 2003 Archer Daniels Midland, the agribusiness giant that controls about 60 percent of the ethanol market, settled an enforcement case with the EPA, agreeing to put in \$340 million worth of pollution controls at 52 plants in 16 states; spend \$6.3 million for retrofitting diesel engines in school buses; and pay a \$4.6 million civil penalty. And in October 2002 the EPA settled with 12 ethanol plants in Minnesota, hitting them with civil penalties ranging from \$29,000 to \$39,000 each, and requiring that each spend about \$2 million cutting back on emissions of nitrogen oxides, carbon monoxide, volatile organic compounds, particulates, and other hazardous pollutants.

MTBE pollutes ground and surface water, but so does ethanol. With each gallon of ethanol you get 12 gallons of sewagelike effluent produced by the fermentation/distillation process. Then there's the question of how "sustainable" and "renewable" corn really is. "To really answer that," prairie advocate Cindy Hildebrand of Ames, Iowa, told me, "one has to consider how much soil is washing into the creeks, how much nitrogen is swirling down to the Gulf [of Mexico], how much formerly unbroken prairie is being broken as the subsidized Corn Belt grows westward, how much atrazine and Lorsban and other pesticides pelt down upon the land each year."

I took her advice, learning that soil is being lost from corn plantations about 12 times faster than it is being rebuilt, and that meeting the fuel

requirements of just one year's worth of U.S. population growth with straight ethanol (assuming each baby lived 70 years), would cost: 52,000 tons of insecticides, 735,000 tons of herbicides, 93 million tons of fertilizer, and the loss of 2 inches of soil from the 12.3 billion acres on which the corn was grown.

After all the soil, nitrogen, and pesticides reach the Gulf, they help create a poisoned, deoxygenated, algae-clogged, bacteria-infested "dead zone" that's lethal to fish, crustaceans, mollusks, and virtually all gill breathers. In some years, depending on water conditions and spring and summer heat, the dead zone can be bigger than the state of Massachusetts. The U.S. Geological Survey reports that more than half of the 1.6 million metric tons of nitrogen that enters the Gulf comes from fertilizer. According to a research team funded by the National Oceanic and Atmospheric Administration, a 30 percent reduction in nutrient loadings over five years could shrink the dead zone by 20 percent to 60 percent. Yet in the face of this finding, the states and the feds are encouraging the increased production of unneeded corn.



One-tenth of all corn grown in the United States is used to produce ethanol.

Photography by Richard Hamilton Smith

Wetlands—the most productive fish and wildlife habitat there is—consume nitrogen and filter out pesticides and sediments, but wetlands are being drained in order to produce surplus corn. The Corn Belt has lost about 70 percent of its wetlands. In some areas, such as Nebraska, corn has to be irrigated by pumps that suck water from the ground faster than it percolates back in. Moreover, the pumps are powered by natural gas, the frenzied production of which is creating horrendous problems for fish, wildlife, and livestock (see "[The Mad Gas Rush](#)," March 2004).

According to President Bush's own Department of

Energy, the national mandate sought by the administration to ramp up ethanol production to 5 billion gallons a year by 2012 could increase the cost of gasoline by 10 cents per gallon.

But ethanol's cost to Americans goes beyond the loss of fish and wildlife, beyond compromised air, water, and soil. The approach has been: Don't invest to make ethanol more affordable; pour corporate welfare into ethanol producers to make unoxygenated, cleaner-burning gasoline less affordable. For instance, gasohol gets a per-gallon tax break of 5.4 cents from the 18.4-cent federal gasoline excise tax. And companies that blend ethanol get federal tax reductions. Some Corn Belt states make direct payments. For example, Minnesota awards ethanol manufacturers a 20-cent-per-gallon "producer incentive," by which strategy it boosted the state's annual ethanol output from 1 million gallons in 1987 to 380 million gallons today.

In 2001 South Dakota handed out \$3.1 million to ethanol plants in just three towns. Nebraska is equally generous. For each gallon of ethanol produced, taxpayers pay about 60 cents in federal subsidies and 20 cents in state subsidies. And on top of this the Farm Security and Rural Investment Act of 2002 provided corn growers with \$26 billion in direct subsidies over six years.

The main recipients of all this state and federal loot aren't family farmers but bloated agribusiness corporations. For example, the nation's biggest ethanol producer, Archer Daniels Midland, has received at least \$10 billion in subsidies since 1980. ("We have to have tax incentives . . . to make that [ethanol] program work," it explains.) According to one estimate—by financial analyst James Bovard of the Cato Institute—every dollar in profits earned by ADM costs taxpayers \$30.

ADM oils the pork conveyor belt by contributing lavishly to whatever party is in power or looks as if it might be coming into power. Since 1988, ADM, its subsidiaries, and the family of ADM's former chairman, Dwayne Andreas, have given about \$2 million in soft-money contributions to Republicans and about \$1.1 million to Democrats. The strategy gets results. In 1994, a few days after Andreas cut a \$100,000 check at a presidential fund-raiser, President Bill Clinton tried to push through a rule requiring that about 10 percent of all gasoline contain ethanol, explaining that the mandate would create "thousands of new jobs" and be "good for our environment, our public health, and our nation's farmers." Two years later ADM pled guilty to price-fixing for nonethanol products and paid a fine of almost \$100 million. Nonetheless, both political parties continued to accept ADM donations.

The Bush administration perpetuates this kind of corporate welfare, but it is no worse in this regard than any administration since Richard Nixon's, when the Soviet grain deal and bad weather in the Corn Belt caused a spike in domestic food prices. The ensuing political heat induced Nixon to initiate direct payments to farmers and urge them,

in the words of his Secretary of Agriculture, Earl Butz, to plant "fencerow to fencerow." Thus did four decades of farm policy designed to discourage overproduction evaporate like gasohol on hot asphalt.

The Arab-oil embargo and the resulting energy panic spawned the Energy Tax Act of 1978, which subsidized the cost of adding ethanol to gasoline. But when corn prices soared in the mid-1980s, ethanol fell into disfavor among gasoline producers. In 1986 the U.S. Department of Agriculture (USDA) made perhaps its most honest and perceptive assessment of the ethanol industry: that it could not survive without more "massive government subsidies." It got them.

**If you're talking to an ethanol fan** and the conversation starts to drag, bring up the name of David Pimentel, the Cornell University agricultural scientist and former Audubon board member who has exhaustively studied the economics, efficiency, and alleged environmental benefits of ethanol, and who chaired a U.S. Department of Energy panel that investigated these same issues. After you've heard all the expletives you'll get a list of researchers who have divined that ethanol is really an elixir for clean air and energy self-sufficiency (see Letters to the Editor, next issue).

In his latest project, Pimentel calculated the real energy costs of raising corn, including the enormous amounts of fossil fuel required to power irrigation pumps, run planting and harvesting machinery, cook the corn in the fermentation/distillation process, and make the fossil fuel-based nitrogen fertilizer that agribusiness is hooked on. Without even factoring in the fuel that's required to ship ethanol to blending sites, Pimentel found that it takes about 29 percent more energy to produce ethanol than you get from burning it.

Then, figuring in state and federal subsidies, Pimentel found that ethanol costs \$2.24 a gallon to produce, compared with 63 cents for gasoline. Other costs of allocating corn to ethanol production, reports Pimentel, include higher food prices, because about 70 percent of the corn grown in the United States is fed to cattle. "Increasing the cost of food and diverting human food resources to the costly, inefficient production of ethanol fuel raise major ethical questions," Pimentel writes. "These occur at a time when more than half of the world's population is malnourished. The ethical priority for corn and other food crops should be for food and feed. Abusing our precious croplands to grow corn for an energy-inefficient process that yields low-grade automobile fuel amounts to unsustainable, subsidized food burning."

I asked Pimentel how he would respond to the researchers—such as the ones employed by the ethanol-promoting USDA—who say he's got it all wrong and that ethanol is really economical and efficient, and a ticket out of foreign-oil dependency. He told me he had "gotten on" the USDA for ignoring or not fully taking into account energy values for such things as the operation and repair of farm machinery,

and for the fossil fuel-based fertilizers required for corn production. And he has chided the agency for taking planting and yield data only from the states with the best soils and productivity. Thus does the ethanol lobby cook the books. "If I did everything they did, I think I could get my figures to be positive, too," says Pimentel.

But maybe the most convincing statement about the economics of ethanol comes not from any scientist but from the stock market, which clearly perceives that what is really being protected by this allegedly efficient, cost-effective, homegrown, salubrious oxygenate is the high price of gasoline. On April 1 Energy Secretary Spencer Abraham declared that the EPA was considering granting the oxygenate-requirement waivers long sought by California, New York, and Connecticut. The EPA quickly announced that no decision was imminent, but within minutes of Abraham's comment, gasoline futures fell almost six cents a gallon.

*Ted Williams's Appalachian ancestors made ethanol, although not for cars and not legally.*