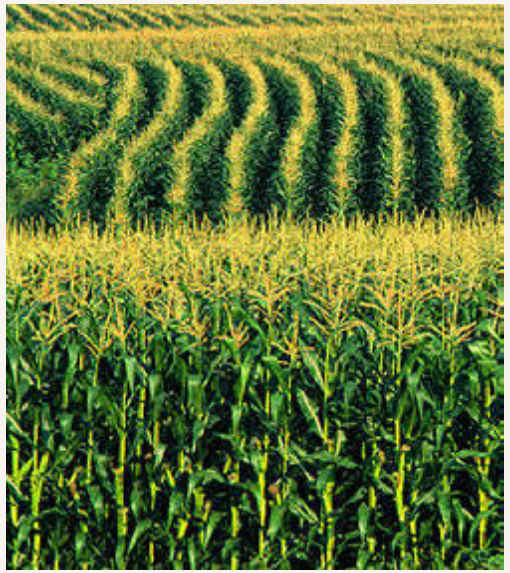
Snap out of it!!

What's Wrong with Ethanol?

by Brittany Taylor



Years ago, there was hopeful talk of eccentrics altering their cars' motors so that they could fill up at fast food joints and make use of old fry-cooking oil. Ethanol was all the rage and it seemed like the dreams of many lay upon the fields of young ears of corn, not yet grown into their husks. Nowadays, however, I hear candidates dismissing ethanol as something of the past, an alternative fuel that's just not good enough. That leaves me asking what, exactly, happened?

The first ethanol engine dates back to Samuel Morey's 1826 creation that ran on ethanol and turpentine. Prior to the Civil War, ethanol had been widely used for illumination, but when an excise tax was imposed on the oil in 1862, it became too expensive to continue to be used for that purpose. Henry Ford's first automobile, the quadricycle, ran on ethanol, as did his later Model T, which was a flexible fuel vehicle capable of running on ethanol and gasoline. Through the early 20th century, it was used to various extents as a fuel either solo or mixed with gasoline, but after World War II and before the late 1970s, there was little-to-no commercial availability of ethanol as a fuel anywhere in the U.S. By 1973, measures were in place to reduce the amount of lead in gasoline, and three years later, the Energy Tax Act formally defined 'gasohol', "a blend of gasoline with at least 10 percent alcohol by volume, excluding alcohol made from petroleum, natural gas, or coal" (EIA). The number of ethanol plants designed for this purpose peaked at 163 in 1984. One year later, only 45% of that number remained. The first real nod towards using ethanol as an alternative fuel to benefit the environment came, according to the EIA, in 1988, "when Denver, Colorado mandated oxygenated fuels for winter use to control carbon monoxide emissions." Under this mandate, ethanol was added to gasoline once again, but this time with a distinctly different purpose. The Energy Policy Act of 1992 "defined ethanol blends with at least 85% ethanol as 'alternative transportation fuels'" and required "specified car fleets to begin purchasing alternative fuel vehicles." During the same year, amendments to the Clean Air Act mandated expansion of the use of oxygenated fuels. Flexible fuel vehicles were made en masse by major U. S. automobile manufacturers beginning in 1997. These cars were able to run on E85 (a blend of 85% ethanol and 15% gasoline), but because of the limited availability of E85 at gas stations, most used straight gasoline. In 2002, only 169 stations in the U.S. sold E85. Currently, there are around 1,400.

There are several different varieties of this clean-burning, high-octane fuel, none of which is comprised of 100% ethanol.

The American Coalition for Ethanol reports that about 70% of American motor vehicles currently run on E10, a blend of 10% ethanol and 90% unleaded gasoline. E85 is on the other end of the spectrum, offering the highest ethanol percentage of any other fuel on the market. Midrange blends include E20, E30, and E40. Most if not all vehicles, however, can run on some percentage of ethanol fuel. With the current domestic production of 6 billion gallons of ethanol each year, the U. S. could statistically reduce foreign gasoline imports by one third. And, according to the EIA, if this production capacity reaches 7.5 billion gallons, we could reduce oil consumption by 80,000 barrels each day.

And yet, arguments exist that oppose widespread ethanol production and use, and certainly the staking of ethanol against fossil fuels as a main energy source. The main complaints are that ethanol is not entirely clean in its production, as windy power is, given that it burns fossil fuels in the production of ethanol and its byproducts. It has in some concentrations also not proved itself to be as energy efficient as traditional gasoline, though the USDA insists otherwise, even in the research shows only marginal improvements. In addition to these consumer concerns, a July 2008 report from the EIA presented data collected in 2006 illustrating that “a considerable amount of biomass energy is lost or goes to coproducts during production of ethanol.” In many statements made by the presidential candidates, you’ll find that they do indeed mention ethanol while discussing energy and environmental policy, but they mention it not typically as a be-all and end-all of alternative energy sources. It is, rather, listed in a group of other alternative energy options, like solar and wind power, and often further development and research of ethanol sources and production techniques are discussed as well.

Because all of America’s ethanol is corn-based, there is great fear that increasing ethanol production would cause corn prices, and the prices of corn products, to rise vastly. Or, on the other hand, should there be a poor corn harvest, we would face a sort of energy drought. Thus, other options are being bandied about, but with no immediate sun on the horizon. The largest producer of ethanol on the planet, Brazil, uses more than half of its sugar cane harvest to produce ethanol. This is much more efficient than using corn, as ethanol is derived from sugar. Cellulosic ethanol is currently the much-debated proposed substitute for corn-based ethanol in the U.S. According to a February 2007 EIA report “Biofuels in the U.S. Transportation Sector”, the first cellulosic ethanol production plant should be completed and working “between 2010 and 2015, with a total capacity of 250 million gallons per year.” The problem with cellulosic ethanol production is the price; it is much more exorbitant than even current gasoline prices, making it a tough sell to consumers, despite the benefits it could bring with widespread use and the potential energy efficiency it promises.

It is Ethanol Across America, fittingly enough, that asks the right question: “But what if you could make ethanol from products with little or no energy inputs?” They continue to mention possible products, “such as municipal waste; specialty energy crops, such as switchgrass or fast growing woody poplars; or forestry and agricultural residues; food processing wastes and assorted yard and green wastes. Products that all have a minimum energy input, yet can be attractive feedstocks for ethanol offering yields competitive with feedgrains. At that point the energy savings become dramatic,” they say, and no doubt, they are correct. Corn-based ethanol is, in my humble opinion, a start. It is a start desperately in need of improvement, growth, thoughtful examination, and evolution, but it is a start, nonetheless, particularly when we look at the statistics that could come out of it. Research has shown that 10% ethanol blends have brought a 20% reduction in greenhouse gas emissions. But biomass-derived ethanol could bring about a near-100% reduction. Isn’t that worth it?

Sources: “Net Energy Balance of Ethanol Production” produced by Ethanol Across America; “Driving on Drink” by Oliver Balch, *The Guardian*; Energy Information Administration

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