

# Government-Reformulated Gas: Bad in More Ways than One

by Michael Heberling

The amended Clean Air Act (CAA) of 1990 called for cleaner automobile-engine combustion and a reduction in tailpipe emissions. To meet these goals, the Environmental Protection Agency (EPA) directed the petroleum industry to modify the composition of gasoline to comply with the “Oxygenated” and “Reformulated” Gasoline (RFG) Programs. While only those parts of the country with the most severe pollution (high ozone or carbon monoxide levels) would be required to participate in the programs, many city, county, and state governments in less-polluted areas volunteered their citizens to participate as well. The transition to the new environmentally friendly gasoline began in 1992. These programs would eventually affect over 100 million people in 19 states and the District of Columbia. Today, over 30 percent of the gasoline sold in the United States is RFG.<sup>1</sup>

The EPA requires the new reformulated gasoline to have an oxygen content of just over 2 percent to help the gasoline burn cleaner. The two primary oxygenate additives are ethanol (corn alcohol) and methyl

tertiary butyl ether (MTBE). Because these additives are not pure oxygen, the amount needed to meet the required oxygen content is significant. For example, since MTBE is only 19 percent oxygen, RFG made with this oxygenate additive must contain at least 11 percent MTBE.<sup>2</sup>

For environmentalists ethanol presents a dilemma. On the plus side it is a renewable energy source. On the minus side it is highly “volatile.” (It evaporates far more rapidly than gasoline.) In the summer the evaporative emissions of ethanol *before combustion* are a major contributor to smog. This serves to negate the advertised benefit of reduced tailpipe emissions.<sup>3</sup> It is therefore not surprising that advocates of ethanol only want us to look at what happens *during and after* combustion. To offset this problem, ethanol needs to be blended with a more expensive, lower-volatility gasoline that is not readily available in the market.<sup>4</sup> To make the situation worse, the ethanol separates from the gasoline if it is transported by pipeline over any significant distance. Because of this distribution problem, ethanol needs to be mixed with non-oxygenated gasoline as close to the final market as possible.<sup>5</sup>

Given all these inherent problems (environmental, cost, and logistical), ethanol is extremely fortunate to have very strong sup-

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port from the “Big Corn” lobby. This is a coalition of Midwest politicians, big agriculture, and such agri-business firms as Archer Daniels Midland. Ethanol is exempt from federal excise taxes.

MTBE is derived from natural gas. It has been used since the late 1970s in low concentrations as an octane booster. This coincided with the phase-out of lead in gasoline. Compared to ethanol, MTBE is far less expensive and it can be more easily added during the refining process. For these reasons, MTBE is used in over 87 percent of the reformulated gasolines. The oxygenated-gasoline mandate increased MTBE production from 83,000 barrels per day in 1990 to 269,000 barrels per day by 1997.<sup>6</sup>

While the RFG program is advertised as being “great for the environment,” the benefits for the consumer are hard to find. Since the oxygenate additives can cost up to twice as much as gasoline, reformulated gasoline can cost up to 10 cents more per gallon than the non-oxygenated gasoline.<sup>7</sup> Unfortunately, it gets worse. Both major oxygenated additives have a lower energy content than regular gasoline, MTBE roughly 20 percent less, ethanol 30 percent less.<sup>8</sup> This results in a 2–3 percent loss in fuel efficiency. Translation: Consumers pay more to get fewer miles per gallon than before.

## Vanilla Gasoline

Before the reformulated-gas mandates started to kick in, the logistics of fuel distribution were relatively simple. The product was homogeneous; all gas was “vanilla.” When one area of the country was experiencing a higher demand, it was easy to redirect more gas from another area to meet it. With RFG, in addition to “vanilla” we now have “rocky road” gas, “butter pecan” gas, and “pistachio almond” gas. While some parts of the country will require RFG all year long, others will only need a special gas in the summer to combat high ozone levels. Still other areas will only need a special gas in the winter to address high carbon-monoxide levels. As a result of the requirement for multiple types of gasoline that vary

both by location and season, the logistics of fuel distribution have become a nightmare for the petroleum industry.

Unfortunately for the consumer, multiple flavors of gas are not interchangeable. If one part of the country is running low on “rocky road” gas, you cannot divert surplus “butter pecan.” Thus it should not be surprising that since the implementation of the RGP there have been many shortages (with accompanying price spikes) in certain parts of the country.

As if on cue, the media responded with a barrage of headlines charging Big Oil with “price gouging” and “obscene profits.” Grandstanding politicians got airtime to “call for investigations.” However, nothing ever came of these investigations, and the news media dropped the subject because the villain was not Big Oil but Big Government and its “environmental gas” mandate. As Jerry Taylor of the Cato Institute put it during testimony before Congress, “This congressionally mandated balkanization of the gasoline market has seriously hampered the flexibility that refiners would otherwise have to react to spot shortages.”<sup>9</sup>

“Environmentally-friendly” MTBE has another problem. Since MTBE is extremely soluble in water, it moves farther and more rapidly through both groundwater and surface water than gasoline. A study by the Vermont Agency of Natural Resources (ANR) found that MTBE migrated nearly ten times the distance of the non-MTBE gasoline contaminants.<sup>10</sup>

In tests conducted by the U.S. Geological Survey, MTBE has been detected in approximately 20 percent of the ground water where RFG is sold. This compares to a 2 percent detection rate in non-RFG areas.<sup>11</sup> It is increasingly being found in municipal drinking-water wells and reservoirs. Even in extremely small amounts MTBE makes drinking water unusable. MTBE causes the water to smell and taste like turpentine. For some reason, humans are hypersensitive to even small traces of MTBE. We are able to detect MTBE-tainted water at ten times lower concentrations than water containing just gasoline.<sup>12</sup> As a result of this low thresh-

old, it only takes a spoonful of MTBE to completely contaminate enough water to fill an Olympic-sized swimming pool.<sup>13</sup>

To make matters worse, the cleanup of MTBE-contaminated water is more difficult and costly than water contaminated with just conventional gasoline. Much of the MTBE contamination remains “beyond the reach of even the most sophisticated cleanup technologies.”<sup>14</sup> Instead of degrading over time, MTBE has a tendency to accumulate. So as long as we have a mandate for reformulated gasoline with MTBE, water pollution will only get worse.

Most MTBE-contaminated ground water has been traced to leaking underground storage tanks. This comes as quite a surprise since the federal government ordered gas stations to replace their old underground tanks with double-walled tanks and pipes in an effort to prevent environmental damage. The conversion was to have been completed by 1998. But in California a “state study found that two-thirds of the upgraded tanks and pipes tested in Yolo and Sacramento counties [were] leaking MTBE.”<sup>15</sup>

These new upgraded storage tanks cost consumers \$2 billion. Even more tragic is the fact that thousands of gasoline stations across the country, mostly the “mom and pop” operations, were forced out of business.<sup>16</sup> They simply could not come up with the \$100,000 for “the upgrade.”<sup>17</sup>

## **MTBE Makes People Sick**

In November 1992 about 200 residents of Fairbanks, Alaska, reported having headaches, dizziness, eye irritation, a burning sensation in their noses and throats, disorientation, and nausea. These health problems were linked to the newly introduced reformulated gas containing MTBE. So many people complained that the governor banned its use after only three months.<sup>18</sup>

As the use of reformulated gas increased across the country, so did the incidence of illness. Thousands of people became ill after being exposed to MTBE/gasoline fumes (before combustion), MTBE/gasoline exhaust (after combustion), and MTBE-

tainted water. North Carolina banned MTBE after it was classified as a probable human carcinogen.<sup>19</sup> At its annual meeting in 1994 the American Medical Association passed a resolution calling for a moratorium on the use of oxygenated fuel based on the risks posed by MTBE.<sup>20</sup>

In addition to Alaska and North Carolina, at least 12 other states (Arizona, California, Colorado, Connecticut, Iowa, Maine, Michigan, Minnesota, Nebraska, New York, South Dakota, and Washington) have taken steps independent of the federal government to limit, phase-out, or ban MTBE.

As the biggest champion of reformulated gas, the EPA continually dismissed the growing criticism of MTBE. The agency’s official position was that while MTBE posed some risk, it was no greater than the risk of other gasoline components. The EPA responded to the ground water contamination problem by simply “providing information, intensifying research, and focusing on the need to minimize leaks from underground fuel tanks.”<sup>21</sup>

For six years the EPA opposed all measures to limit the use of MTBE. It was not until 1998 that the agency made MTBE a “potential candidate” for regulation under the Safe Drinking Water Act. Later that year the EPA finally established an independent panel to investigate the problems associated with the reformulated gas program. According to observers, the panel’s 1999 final report recommended, among other things, “that Congress act to remove the current Clean Air Act requirement that 2 percent of RFG, by weight, consist of oxygen,” that the “use of MTBE should be reduced substantially (with some members supporting its complete phase-out), and that Congress should act to provide clear federal and state authority to regulate and/or eliminate the use of MTBE and other gasoline additives that threaten drinking water supplies.”<sup>22</sup>

Given these damning findings, the EPA was forced to admit that its advocacy of the MTBE fuel additive had been a mistake.<sup>23</sup>

As a result of the government’s overzealousness in “helping the environment,” people pay more per gallon of gas, get fewer miles per gallon, and get sick. The biggest

irony, however, is that the environment is worse off thanks to this “environmental program.” So far, the misguided policy has cost consumers untold billions of dollars. Unfortunately, the environmental and economic nightmare caused by government gas is not over. Be prepared to cough up another \$30 billion or more to deal with the clean-up and phase-out costs of MTBE.<sup>24</sup>

## What Next?

From the current devastation wrought by the EPA, stand by for still more government command and control of the nation’s fuel supply. With MTBE rapidly falling into disfavor, that just leaves ethanol. The prospect of having ethanol as the only game in town has Big Corn salivating. In June the Senate approved an amendment to the energy bill that would mandate the use of ethanol in every state except Alaska and Hawaii by 2012. This new rule would also ban the use of MTBE. While the House version also supported ethanol, it left the resolution of the MTBE problem with the states.<sup>25</sup>

An alternative solution, based on common sense, calls for a policy that objectively weighs both environmental and economic trade-offs. With this criterion, a strong case can be made that the EPA should just get out of fuel micromanagement altogether. As Michael Centrone observes: “the need for oxygenated fuels may be unfounded inasmuch as 75–85% of [the] smog in major cities is from non-automobile sources and tailpipe emissions of new cars are 95% lower than they were in the 1960’s.”<sup>26</sup> Eric Stork, a former EPA employee, stated that “reformulated gasoline was a good idea 30 years ago, but in cars built in 1983 or later, the fuel is obsolete and pointless.”<sup>27</sup>

It is time for us to rein in the EPA so that it can no longer do damage to the environment, to our health, to the consumer, or to the business community. □

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