

So Why Are We Phasing Out MTBE?

A Review of the UC Study, "Health & Environmental Assessment of MTBE"
versus Real World Experience

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The Governor of California based his decision to phase out MTBE on a University of California MTBE Study (UC MTBE Study, 1998). Several major conclusions of the UC MTBE Study included a continued and increased threat to drinking water from the use of MTBE, and future cleanup associated with gasoline leaks costing billions of dollars more with MTBE than alternative oxygenates, such as ethanol. The Study also predicted that there would be no penalties for producing California gasoline without MTBE. However, as the following analysis demonstrates, the UC MTBE Study conclusions are not supported in the light of real world experience. This raises the question, "So why are we phasing out MTBE?"

Background

This UC MTBE Study, performed by various branches of the University of California, was mandated by order of SB 521 (1997) to perform a near-term health and environmental risk assessment of MTBE. Following the Study and public hearings, the Governor was required to issue a certification. The resulting Executive Order was based on the assessment, report and testimony presented at three public hearings. The certification was required to state either of the following conclusions: (1) that, "***on balance***, there is no significant risk to *human health or the environment* of using MTBE in gasoline in this state," or (2) that, "***on balance***, there is a significant risk to *human health or the environment* of using MTBE in gasoline in this state." The resulting Executive Order was absent any reference to a significant health risk consistent with the body of evidence and read, "WHEREAS, the findings and recommendations of the U.C. report, public testimony, and regulatory agencies are that, while MTBE has provided California with clean air benefits, ***because of leaking underground fuel storage tanks*** (USTs) MTBE poses an *environmental threat* to groundwater and drinking water."

At the time the University of California was commissioned to begin this study, presiding Governor Pete Wilson ordered an evaluation of California's UST program in tandem with the UC

MTBE Study. The UST program review was performed by a UST Advisory Panel team of experts. The resulting report documented many serious but correctable problems with the California UST program. The results of this tank program review were used in the development of many changes to the California UST program. It is unclear whether the new Governor was provided with the results of this rather comprehensive UST program review for his consideration regarding the phase out of MTBE.

UC MTBE Study vs. Real World

After more than two additional years during which usage of MTBE in California's gasoline actually increased, the dire predictions in the Study have simply not occurred ... the findings and predictions in the UC MTBE Study have not measured up to real world experience. The alleged continued and increased threats to the environment have not happened. In fact, by phasing out MTBE, California can effectively exacerbate an energy crisis that could severely threaten the State's economy. Taking out MTBE automatically reduces the State's available gasoline supplies by more than 11 volume percent. Given a no "backsliding" policy regarding air quality gains made with MTBE in gasoline, the state will have to replace the lost MTBE volume with more expensive clean burning components that are not available today. The use of ethanol will not fill this gap and cleaner burning gasoline component (i.e., alkylate) sources will be scarce as well.

Not only were the future projections in the UC MTBE Study grossly inaccurate but the recommendations based on review of current data and knowledge appear to have been misleading and incorrect. In addition, the tank program seems to be doing its job with a decline in leaking tanks throughout the state.

Closing Questions

So in terms of environmental, health, technical, scientific and economics; why should we continue to phase out MTBE in California? Is the California Air Resources Board going to be able to comply with the anti-backsliding provision in the Governor's Executive Order and in SB 989?

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UC MTBE Study versus Real World Experience

A comparison of UC MTBE Study impact analyses, cost projections and recommendations in the light of more than two additional years of continued use of MTBE in California's gasoline.

UC MTBE Study Conclusions

1. Increased & Continued Contamination of Groundwater

The UC Study predicts an increased and continued contamination of groundwater at a rate and magnitude as reported prior to and during the UC Study compilation.

2. a. The Cost of Retaining MTBE in CA Gasoline

The UC Study Cost/Benefits Analysis reported that the additional costs to CA for retaining MTBE in CA gasoline would be from \$900 million to \$2.8 billion per year. This economic analysis was performed to include MTBE related health costs, fuel costs, and water related costs. For ethanol in CA gasoline, the UC Study estimated costs from \$600 million to \$1.8 billion per year.

2. b. The Cost of Cleaning Up Contamination

Included in the UC Study Cost/Benefit Analysis, \$340 million to \$1.5 billion per year of the cost of retaining MTBE in CA gasoline was attributable to treatment of MTBE contaminated water.

Real World MTBE in CA Gasoline Facts

The actual detections of MTBE in drinking water sources have been extremely small and the trends have declined then leveled out at very low levels as indicated by CA Department of Health Services data (Graph 1). This is consistent with a decline in reported LUST cases. MTBE detections are not necessarily consistent in the same drinking water source over time when routinely sampled.

There is no evidence that retaining MTBE in CA's gasoline over the past two plus years has cost consumers the equivalent of those figures forecasted in the UC MTBE Study. In fact, MTBE has been used to extend the supply of gasoline in times of gasoline shortages. The CEC has estimated the cost of gasoline will go up as much as \$0.06 per gallon if MTBE is removed from gasoline. Adding ethanol to gasoline adds a minimum of \$0.02 per gallon to that cost and may actually worsen supply problems.

The actual costs of cleaning up gasoline contaminations containing MTBE have, in fact, proven not to be as expensive as predicted. While there have been some sites that were extraordinary as the failed USTs were late in being detected, the average costs of clean up are not exceedingly differential to the clean up of gasoline without MTBE. The CA LUST Fund is actually experiencing reduced claims for clean up refunds as compared to prior years.

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UC MTBE Study Conclusions

3. MTBE Toxicity

The UC Study characterizes MTBE as a low risk for ingestion due to its odor-taste detection but elaborates on a study that alleges a possible link to cancer. Claims of MTBE as cancer causing and related innuendos also continue in the media. The Governor's Executive Order makes no mention of a health risk from the use of MTBE in gasoline.

4. Emission Impacts on Vehicles

The UC Study points to the insignificant emission reduction benefits for newer vehicles and acknowledges a significant contribution that older vehicles make to undesirable emissions and the role that oxygen plays in reducing these emissions.

UC MTBE Study Recommendations

5. Vehicle Retirement Program

The UC Study proposed to remove these older vehicles from the general CA motor vehicle fleet with a recommended accelerated vehicle retirement program.

Real World MTBE in CA Gasoline Facts

Numerous government and world-renowned independent health organizations to date have not found sufficiently compelling reasons to classify MTBE as a possible cancer-causing agent for humans. This includes (1.) the European Union Risk Assessment on MTBE, (2.) the U.S. Department of Health & Human Services, National Toxicology Program, (3.) the World Health Organization, International Agency for Research on Cancer (IARC), (4.) the National Research Council (NRC), (5.) California's own Science Advisory Board for Proposition 65, (6.) the Northeast States for Coordinated Air Use Management (NESCAUM) and (7.) the Health Effects Institute (HEI). In summary, the available health and toxicity information on MTBE demonstrates that MTBE does not represent a threat to human health as a result of MTBE's current use in gasoline.

A very recent, real world emissions study conducted by the Automobile industry for California ARB shows that adding oxygenates to RFG fuels will continue to reduce the exhaust emissions from new model, cutting technology cars (Graph 2). This is contrary to the claim in the UC MTBE Study that adding oxygenates to RFG will have no emission benefits with new car technology. There is also the matter of MTBE's emission reducing benefits for many newer vehicles during start up, warm up time and in between Smog Check inspections. These issues were not addressed in the UC Study.

Real World MTBE in CA Gasoline Facts

An existing CA vehicle retirement program has not been very effective or practical. The oldest and dirtiest portion of the CA fleet is actually exempt from the Smog Check (I&M) program that assures emissions minimization through proper maintenance of vehicle emission control systems. Older models accounting for only 10% of all cars produce about half of the emissions.

UC MTBE Study Recommendations

6. Assessment of MTBE Alternatives

The Study recommends a full environmental assessment of all alternatives to MTBE in gasoline relative to potential threats to human health and environment. These assessments were to be made prior to the substitution for MTBE.

7. CA LUST Fund

The UC Study recommended an increase in the amount of funds that can be reimbursed out of the CA LUST Fund from \$1.0 million to \$1.5 million per occurrence to cover the projected increased costs of cleaning up MTBE and other gasoline constituents.

8. Water Reservoirs

The UC Study recognizes the minimal danger to surface waters due to the volatility of the MTBE but recommends best management practices (BMPs) for marina facilities.

9. Rice Straw Burning Emissions

One aspect of the UC Study promoted an increased use of rice straw to make CA-based ethanol given a phase out of MTBE. This would reduce the emissions from the current practice of burning rice straw.

Real World MTBE in CA Gasoline Facts

The CA Environmental Policy Council (EPC) was convened in January, 2000 to consider information from CARB, OEHHA and SWRCB assessments made on ethanol and alkylates regarding health effects and fate & transport. Following each agency presentation, there were unresolved health and environmental issues identified primarily due to a lack of data on the alternatives. Although the data indicated some increased risks associated with ethanol, the EPC decided that the risks were not significant. However, the health risks associated with ethanol can be greater than the risks from MTBE.

The actual costs associated with cleaning up MTBE have not been as high as predicted. Clean up activities and remedial technologies have proven to be more effective and less costly than originally predicted. The requests for reimbursement from the LUST Fund are actually declining. This is partially due to the closure of many substandard non-upgraded tanks prior to 1999.

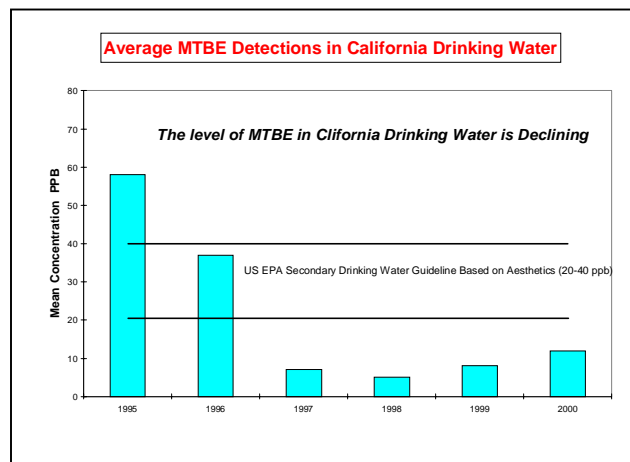
CARB has promulgated regulations requiring cleaner burning recreational marine vessel engines. Some recreational reservoirs in CA have specified non-MTBE gasoline overlooking the more serious health threat from benzene. The SWRCB is in the process of addressing the specific needs of marina refueling facilities as compared to motor vehicle gasoline dispensing facilities.

The CA Energy Commission (CEC) performed a study that investigated the use of rice straw in the production of CA ethanol. The study found that the current level of rice straw burning is already heavily controlled and is necessary to control rice plant related diseases. The CEC also found that the more practical source of biomass conversion to be forest clearing processes which is subject to further environmental concerns. CARB is currently considering further controls on the matter of rice straw burning.

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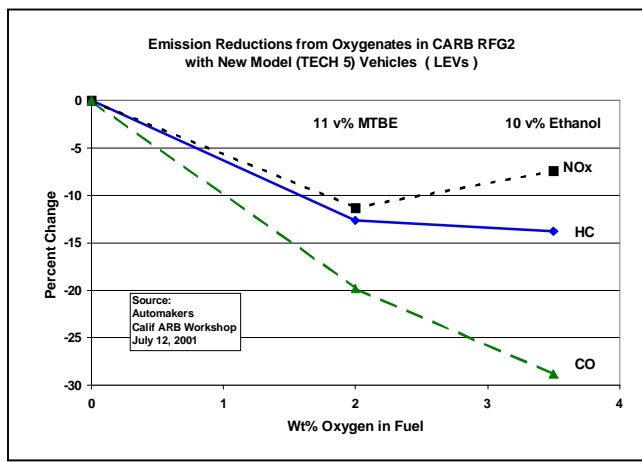
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Graph 1. Average MTBE Detection in CA Drinking Water Sources



Source: Exponent [2000 data include up to June 2000, data from the entire year 2000 show a lower mean concentration]

Graph 2. Emission Reductions from Oxygenates in CARB RFG2 with New Model (TECH 5) Vehicles (LEV) (July 2001)



Source: CARB RFG3 Mtg, 07/12/01 - Teir Associates, Inc

Acronym Glossary

CA	California
CARB	California Air Resources Board
CEC	California Energy Commission
CO	Carbon Monoxide
BMP	Best Management Practices
EPC	Environmental Policy Council
HC	Hydrocarbons (see VOC)
HEI	Health Effects Institute
I&M	inspection and maintenance (motor vehicle)
IARC	International Agency for Research on Cancer
LEV	Low Emission Vehicles
LUST	Leaking Underground Storage Tank (system)
MTBE	Methyl Tertiary Butyl Ether
NESCAUM	Northeast States for Coordinated Air Use Management

NOx	Nitrous Oxide compounds
NRC	National Research Council
OEHHA	Office of Environmental Health Hazard Assessment
PM10	Particulate Matter, 10 microns and less
RFG	Reformulated Gasoline
ROG	Reactive Organic Gases (i.e., gasoline vapors)
SAB	Science Advisory Board (Proposition 65)
SB	Senate Bill
SWRCB	State Water Resources Control Board
UC	University of California
UST	Underground Storage Tank (system)
VOC	Volatile Organic Compounds (see ROG)

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